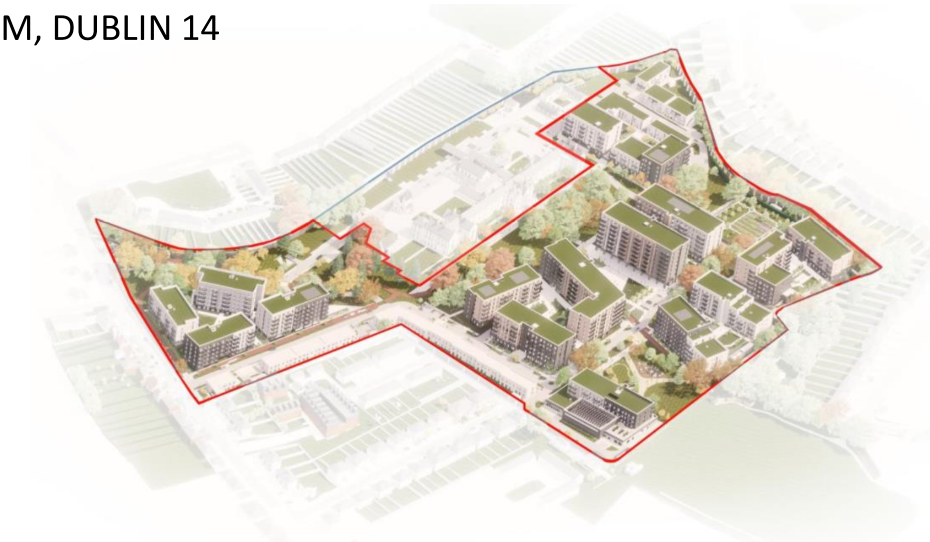
ENVIRONMENTAL IMPACT ASSESSMENT REPORT

VOLUME 2 – APPENDICES

PART 10 PLANNING APPLICATION AT FORMER CENTRAL MENTAL HOSPITAL, DUNDRUM, DUBLIN 14



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APPENDICES

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Measures To be read in conjunction with the relevant chapters of this EIAR

Appendix 8.1:

Winter Bird Survey Report 2020/2021

TPA Bird Surveys, Dundrum, Co. Dublin

DOCUMENT DETAILS

Client:	**TPA**
Project Title:	**TPA Bird Surveys, Dundrum, Co. Dublin**
Project Number:	**200828**
Document Title:	**Winter Bird Survey Report 2020/2021**
Document File Name:	**200828 – F– Winter Bird Survey Report 2020/2021 – 2021.06.01**
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MKO Planning and Environmental Consultants

Rev	Status	Date	Author(s)	Approved By
01	Draft	16/04/2021	KS	PM
02	Draft	04/05/2021	KS/PM	DO'D
02	Final	01/06/2021	KS/PM	DO'D

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TABLE OF TABLES

1. INTRODUCTION

McCarthy Keville O'Sullivan (MKO) was appointed to carry out bird survey works at Dundrum, County Dublin during the period from September 2020 to March 2021 inclusive. The proposed development scheme consists of a large housing development on an area of built land dominated by hospital buildings alongside areas of amenity grassland. The site is approximately 11.4 ha in area and is located between the River Dodder to the north and Dundrum Town Centre to the south (Grid reference: 53.299560, -6.242815). Figure 1 (Appendix 2) provides a map of the location of the proposed development boundary.

This report describes the ornithological survey methods employed and survey data collected at Dundrum, County Dublin for the period from September 2020 to March 2021 inclusive. This report also contains information compiled during the desktop study. Particular attention has been paid to species of conservation importance and identified target species.

The report is supported by Technical Appendix 1 which contains the raw data from the winter bird surveys in 2020/2021. This includes detail on survey times, weather conditions, surveyors, survey results and other additional information. Maps containing flight data and significant flocks observed during surveys are shown in Appendix 2.

The report is structured as follows:

- An introduction describing the background and statement of authority regarding ornithological works.
- A description of the desktop study carried out with regard to the site.
- A comprehensive description of survey methods.
- A full description of results for all ornithological surveys conducted.
- A discussion of the potential impacts.

The following defines terms used in this report:

- "Zones of Influence" (ZOI) for potential ornithological receptors refers to the zone within which potential effects are anticipated. ZOIs were assigned following the best available guidance (SNH 2016 and McGuinness et.al 2015).

1.1 Statement of Authority

This report has been prepared by Kathryn Sheridan (M.Sc.), an Ornithologist with MKO, Patrick Manley (B.Sc.), a Project Ornithologist with MKO and Project Director, Dervla O'Dowd (B.Sc. Env.). The field surveys were undertaken in the 2020/2021 winter season by Donnacha Woods and Kathryn Sheridan, both of whom are competent experts in bird surveying.

CVs for the authors of this report and all personnel who carried out survey work are provided in Appendix 3.

2. DESK STUDY

2.1 Desk Study Methods

A comprehensive desk study was undertaken prior to surveys in winter 2020 to search for any relevant information on species of conservation concern which may potentially make use of the study area. The assessment included a thorough review of the available ornithological data including:

- Review of online web-mappers: National Parks and Wildlife Service (NPWS), National Biodiversity Data Centre (NBDC), Irish Wetland Bird Survey I-WeBS.
- Review of Birds of Conservation Concern (BoCCI) in Ireland 2020-2026 (Gilbert, et al. 2021)
- Review of Special Protection Areas: including site synopsis, SCI species and conservation objectives.

2.2 Desk Study Results

2.2.1 Identification of Designated Sites within the Likely Zone of Influence

In the absence of any specific European or Irish guidance on the core foraging range, the Scottish Natural Heritage (SNH) Guidance, 'Assessing Connectivity with Special Protection Areas (SPA)' (2016) was consulted. This document provides guidance concerning the identification of connectivity between proposed development proposals and Special Protection Areas. The guidance takes into consideration the distances some species may travel beyond the boundary of their SPAs and outlines information on dispersal and foraging ranges of bird species which are frequently encountered when considering plans and projects. Using GIS software, SPAs within a potential 15km ZOI of the proposed development were identified.

The nearest SPA, South Dublin Bay and Tolka River Estuary SPA is located to the northeast of the proposed development opposite the N11. The SPA is located 2.8km from the proposed development area and comprises the intertidal area between the River Liffey and Dun Laoghaire, the River Tolka estuary to the north of the River Liffey and Booterstown Marsh. The SPA is an important foraging site for an internationally important population of Brent Geese due to the beds of Eelgrass at the Merrion Gates and serves as an important staging/passage site for several tern species in autumn.

Designated sites located within the Likely Zone of Influence are listed below in Table 2-1 and illustrated in Appendix 2, Figure 2.

Table 2-1 Designated sites within likely zone of influence

Designated site and code	Distance from proposed development (Km)	Qualifying Interests/Special Conservation Interests for which the European Site has been designated (https://www.npws.ie, last viewed 13/04/2021)	Conservation Objectives
South Dublin Bay and River Tolka Estuary SPA (004024)	2.8km northeast of the proposed development site	Light-bellied Brent Goose (*Branta bernicla hrota*) [A046] Oystercatcher (*Haematopus ostralegus*) [A130] Ringed Plover (*Charadrius hiaticula*) [A137] Grey Plover (*Pluvialis squatarola*) [A141] Knot (*Calidris canutus*) [A143] Sanderling (*Calidris alba*) [A144] Dunlin (*Calidris alpina*) [A149] Bar-tailed Godwit (*Limosa lapponica*) [A157] Redshank (*Tringa totanus*) [A162] Black-headed Gull (*Chroicocephalus ridibundus*) [A179] Roseate Tern (*Sterna dougallii*) [A192] Common Tern (*Sterna hirundo*) [A193] Arctic Tern (*Sterna paradisaea*) [A194] Wetland and Waterbirds [A999]	This site has detailed conservation objectives for each species listed as Qualifying Interests of the SPA: "To maintain or restore the favourable conservation condition of the bird species listed as Special Conservation Interests of this SPA." This site also has a second conservation objective: "To maintain the favourable conservation condition of the wetland habitat in South Dublin Bay and River Tolka Estuary SPA as a resource for the regularly occurring migratory waterbirds that utilise it." NPWS (2015) Conservation Objectives: South Dublin Bay and River Tolka Estuary SPA 004024. Version 1. National Parks and Wildlife Service, Department of Arts, Heritage and the Gaeltacht.
North Bull Island SPA (004006)	6km to the northeast of the proposed development site	Light-bellied Brent Goose (*Branta bernicla hrota*) [A046] Shelduck (*Tadorna tadorna*) [A048] Teal (*Anas crecca*) [A052] Pintail (*Anas acuta*) [A054] Shoveler (*Anas clypeata*) [A056] Oystercatcher (*Haematopus ostralegus*) [A130] Golden Plover (*Pluvialis apricaria*) [A140] Grey Plover (*Pluvialis squatarola*) [A141]	This site has detailed conservation objectives for each species listed as Qualifying Interests of the SPA: "To maintain or restore the favourable conservation condition of the bird species listed as Special Conservation Interests of this SPA." This site also has a second conservation objective:

Designated site and code	Distance from proposed development (Km)	Qualifying Interests/Special Conservation Interests for which the European Site has been designated (https://www.npws.ie, last viewed 13/04/2021)	Conservation Objectives
		Knot (*Calidris canutus*) [A143] Sanderling (*Calidris alba*) [A144] Dunlin (*Calidris alpina*) [A149] Black-tailed Godwit (*Limosa limosa*) [A156] Bar-tailed Godwit (*Limosa lapponica*) [A157] Curlew (*Numenius arquata*) [A160] Redshank (*Tringa totanus*) [A162] Turnstone (*Arenaria interpres*) [A169] Black-headed Gull (*Chroicocephalus ridibundus*) [A179] Wetland and Waterbirds [A999]	"To maintain the favourable conservation condition of the wetland habitat in North Bull Island SPA as a resource for the regularly occurring migratory waterbirds that utilise it" NPWS (2015) Conservation Objectives: North Bull Island SPA 004006. Version 1. National Parks and Wildlife Service, Department of Arts, Heritage and the Gaeltacht.
Wicklow Mountains SPA	7.4km south of the proposed development site	Merlin (*Falco columbarius*) [A098] Peregrine (*Falco peregrinus*) [A103]	This site has detailed conservation objectives for each species listed as Qualifying Interests of the SPA: "To maintain or restore the favourable conservation condition of the bird species listed as Special Conservation Interests for this SPA" Citation: NPWS (2021) Conservation objectives for Wicklow Mountains SPA [004040]. Generic Version 8.0. Department of Housing, Local Government and Heritage.
Dalkey Islands SPA (004172)	9.8km east of the proposed development site	Roseate Tern (*Sterna dougallii*) [A192] Common Tern (*Sterna hirundo*) [A193] Arctic Tern (*Sterna paradisaea*) [A194]	This site has detailed conservation objectives for each species listed as Qualifying Interests of the SPA: "To maintain or restore the favourable conservation condition of the bird species listed as Special Conservation Interests for this SPA"

Designated site and code	Distance from proposed development (Km)	Qualifying Interests/Special Conservation Interests for which the European Site has been designated (https://www.npws.ie, last viewed 13/04/2021)	Conservation Objectives
			NPWS (2021) Conservation objectives for Dalkey Islands SPA [004172]. Generic Version 8.0. Department of Housing, Local Government and Heritage.
Baldoyle Bay SPA (004016)	12.9km northeast of the proposed development site	Light-bellied Brent Goose (*Branta bernicla hrota*) [A046] Shelduck (*Tadorna tadorna*) [A048] Ringed Plover (*Charadrius hiaticula*) [A137] Golden Plover (*Pluvialis apricaria*) [A140] Grey Plover (*Pluvialis squatarola*) [A141] Bar-tailed Godwit (*Limosa lapponica*) [A157] Wetland and Waterbirds [A999]	This site has detailed conservation objectives for each species listed as Qualifying Interests of the SPA: "To maintain or restore the favourable conservation condition of the bird species listed as Special Conservation Interests of this SPA." This site also has a second conservation objective: "To maintain the favourable conservation condition of the wetland habitat in Baldoyle Bay SPA" NPWS (2013) Conservation Objectives: Baldoyle Bay SPA 004016. Version 1. National Parks and Wildlife Service, Department of Arts, Heritage and the Gaeltacht.
Howth Head Coast SPA (004113)	14.1km northeast of the proposed development site	Kittiwake (*Rissa tridactyla*) [A188]	This site has detailed conservation objectives for each species listed as Qualifying Interests of the SPA: "To maintain or restore the favourable conservation condition of the bird species listed as Special Conservation Interests for this SPA"

Designated site and code	Distance from proposed development (Km)	Qualifying Interests/Special Conservation Interests for which the European Site has been designated (https://www.npws.ie, last viewed 13/04/2021)	Conservation Objectives
			NPWS (2021) Conservation objectives for Howth Head Coast SPA [004113]. Generic Version 8.0. Department of Housing, Local Government and Heritage.

2.2.2 Irish Wetland Bird Survey (IWeBS) Records

The dataset for Dublin Bay (which incorporates the South Dublin Bay and Tolka River Estuary SPA) was downloaded from www.birdwatchireland.ie and reviewed. Data from this I-WeBS site has been used to estimate the population of waterbirds in the area surrounding the proposed development area. The most recent 5-season period and mean counts for this period are presented in Table 2-2.

Table 2-2 I-WeBS data for Dublin Bay

Species	2013/14	2014/15	2015/16	2016/17	2017/18	5- season mean 2013/14-2017/18:
Mute Swan	5	6	9	6	12	8
Light-bellied Brent Goose	3717	4862	4195	4420	3331	4105
Shelduck	961	2927	744	1811	1611	1611
Wigeon	691	2201	1106	1839	918	1351
Gadwall	2	2	-	-	-	1
Teal	1378	1233	1291	1654	1092	1330
Mallard	97	106	120	70	111	101
Pintail	200	150	124	190	222	177
Shoveler	126	97	115	116	144	120
Long-tailed Duck	1	-	-	2	-	1
Common Scoter	42	-	40	19	65	33
Goldeneye	-	2	1*	1	-	1
Red-breasted Merganser	60	57	69	80	53	64
Goosander	-	-	-	-	2	0
Red-throated Diver	7	2	7	6	5	5
Great Northern Diver	3	-	5	1	2	2
Little Grebe	1	5	-	4	4	3
Great Crested Grebe	755	143	307	193	60	292
Red-necked Grebe	1	-	-	-	-	0
Cormorant	198	41	71	170	199	136
Shag	36	3	71	19	22	30
Little Egret	59	69	59	71	87	69
Grey Heron	68	40	44	30	29	42
Moorhen	5		5	3	2	3
Oystercatcher	3074	3315	3588	4042	3521	3508
Ringed Plover	139	121	109	208	285	172
Golden Plover	1080	742	1155	1010	2501	1298
Grey Plover	310	452	240	245	248	299
Lapwing	52	54	143	25	32	61
Knot	4547	4950	2495	5850	6555	4879
Sanderling	510	266	841	374	800	558
Purple Sandpiper	2	1	2	-	-	1
Dunlin	5907	3603	3376	8280	7484	5730
Snipe	20	-	31	53	57	32

Species	2013/14	2014/15	2015/16	2016/17	2017/18	5- season mean 2013/14-2017/18:
Black-tailed Godwit	1768	873	2185	1274	1479	1516
Bar-tailed Godwit	1710	1658	2173	2653	1934	2026
Whimbrel	2	4	-	-	-	1
Curlew	932	1424	567	834	494	850
Spotted Redshank	1	-	3	-	-	1
Greenshank	34	47	78	35	47	48
Redshank	2460	1889	1648	1430	2274	1940
Turnstone	466	250	584	286	334	384
Mediterranean Gull	39	27	64	68	6	41
Black-headed Gull	2649	1259	2768	2731	3802	2642
Ring-billed Gull	-	-	-	1	-	0
Common Gull	985	272	890	213	321	536
Lesser Black-backed Gull	5	20	16	5	14	12
Herring Gull	490	261	538	461	607	471
Yellow-legged Gull	1	-	2	1	-	1
Iceland Gull	-	-	-	1	-	0
Glaucous Gull	-	-	-	1	-	0
Great Black-backed Gull	190	52	263	151	115	154
Sandwich Tern	52	-	8	-	9	14
Common Tern	39	-	1	2	2	9
Common/ Arctic Tern	-	-	-	105	-	21
Kingfisher	1	-	1	-	-	0

As previously discussed, data from I-WeBS sites in County Dublin has been used to estimate County populations of wintering waterbirds discussed in this report. Datasets for the following sites were downloaded from www.birdwatchireland.ie and reviewed:

Dublin IWeBS Sites

- Baldoyle Bay
- Brittas Pools
- Broadmeadow (Malahide) Estuary
- Delvin River – Hampton Cove
- Dublin Bay
- Dublin Zoo Ponds
- Grand Canal (Dublin)
- Hick's Tower and Robswall
- Hynestown Lake Naul
- Ireland's Eye
- Knock Lake
- Lambay Island
- Mountseskin/Gortlum
- Portmarnock Marsh

- Rockabill
- Rogerstown Estuary
- Seagrange Park
- Skerries Coast
- Skerries Islands
- Skerries, Baldongan
- South Dublin Coastline
- St. Stephen's Green
- Tymon Park

2.2.3 Method of Identification of Target Species

Following a comprehensive desk study by MKO, initial site visit and consultation, a list of "Target species" likely to occur at the site was compiled. The survey work carried out on the site was specifically designed to survey for these identified target species. The target species list was drawn from:

- Annex I of the Birds Directive,
- Special Conservation Interests (SCI) of Special Protection Areas (SPA) within the zone of likely significant effects,
- Red listed birds of Conservation Concern in Ireland,
- Species with the potential to be impacted by this type of development.

All species within these categories were considered as target species for the purpose of these surveys.

3. FIELD SURVEYS

3.1 Field Survey Methods

This section of the report describes the various field survey methods employed. Field surveys were undertaken from September 2020 – March 2021 inclusive. Field survey methodologies have been devised to survey for the bird species composition and assemblages that occur within the study area.

3.1.1 Initial Site Assessment

Based on the results of the desk study, the likely importance of the study area for bird species was determined. Based on the collated information available from the above preliminary assessment and adopting a precautionary approach, a site-specific scope for the ornithological surveys was developed.

3.1.2 Vantage Point Surveys

Vantage Point surveys were undertaken to determine the presence of bird species of high conservation concern within areas of potentially suitable habitat in the study area. These surveys were undertaken in the form of a vantage point watch overlooking the proposed development boundary. Due to the number of buildings within the proposed development site which partially obsecured the view, three vantage points within the development site were required to provide good coverage of all amenity grassland habitats within the proposed development site.

The survey was undertaken (onsite) over two three-hour periods[1] (morning and afternoon), which included the two hours on either side of high tide, as this is the period when birds from the nearby SPAs are most likely to make use of terrestrial habitats, such as those present within the proposed development site. The main aim of the survey was to identify if SCIs from the nearby SPAs were utilising areas onsite for foraging or roosting. Along with target species, all additional species observed were recorded to inform the evaluation of supporting habitat.

Survey effort, including details of survey duration and weather condition, is presented in Appendix 1, Table 1-1. Figure 1 in Appendix 1 shows the survey study area.

3.1.3 Walkover and Habitat Surveys

Transect routes were walked during each survey to assess the quality and composition of habitats at various points (10 maximum) within the proposed development boundary. Transect routes were devised to ensure coverage of different habitat complexes within the study area, during each survey visit. At each point grass sward height, percentage of grass, percentage of forb species and percentage of bare ground was recorded. The abundance of brent geese droppings present at each transect point was also recorded during these surveys. Results of these habitat transects are presented in Table 3-4 below.

A further consideration during the walkover was to identify signs (e.g. droppings) of bird species of high conservation concern within areas of potentially suitable habitat in the study area. The walkover survey was undertaken within the redline boundary.

The survey was undertaken (onsite) within two hours of high tide, as this is the period when birds from the nearby SPAs are most likely to make use of terrestrial habitats, such as those present within the proposed development area. The main aim of the survey was to identify if SCIs from the adjacent SPA

[1] *With the exception of the September and the first visit in October, these surveys focused on a two hour period overlapping with high/low tides.*

were utilising areas onsite for foraging or roosting. Along with target species, all additional species observed were recorded to inform the evaluation of supporting habitat.

Survey effort, including details of survey duration and weather condition, is presented in Appendix 1, Table 1-1. Figure 1 in Appendix 1 shows the survey study area.

3.1.4 Survey Justification

A comprehensive suite of bird surveys was undertaken at the site between September 2020 and March 2021, as detailed in this report.

The surveys undertaken provide the information necessary to allow a complete, comprehensive and robust assessment of the potential impacts of the proposed development on avian receptors.

3.2 Field survey results

3.2.1 Survey Effort

Surveys were undertaken between the 16th of September 2020 and the 24th of March 2021. Two visits a month were undertaken during this period, with 12 surveys carried out in total. Table 3-1 shows the survey effort for the 2020/2021 winter season.

Table 3-1 Survey Effort

Survey Date	Survey Duration	Surveyor
16/09/2020	2:00 starting at 11:00	DW
28/09/2020	2:00 starting at 09:30	DW
14/10/2020	2:00 starting at 09:15	DW
30/10/2020	6:00 starting at 09:15	DW
13/11/2020	6:00 starting at 09:30	DW
26/11/2020	6:00 starting at 09:30	DW
18/12/2020	6:45 starting at 09:00	KS
04/01/2021	6:00 starting at 09:00	KS
18/01/2021	3:00 starting at 09:00	KS
18/01/2021	3:00 starting at 13:00	KS
29/01/2021	3:00 starting at 09:00	KS
29/01/2021	3:00 starting at 13:00	KS
12/02/2021	3:00 starting at 09:00	KS
12/02/2021	3:00 starting at 13:00	KS
26/02/2021	3:00 starting at 09:00	KS
26/02/2021	3:00 starting at 13:00	KS
12/03/2021	3:00 starting at 09:00	KS
12/03/2021	3:00 starting at 13:00	KS
24/03/2021	3:00 starting at 09:00	KS
24/03/2021	3:00 starting at 13:00	KS

3.2.2 Vantage Point Survey Results

As previously discussed, surveys were undertaken at the proposed development between September 2020 and March 2021 inclusive. Summary results from the vantage point surveys are presented below in Table 3-2 and Table 3-3, and discussed in further detail in Section 4 of this report. Figure numbers refer to figures provided in Appendix 2.

Table 3-2 Total number of each species recorded commuting over the proposed development site during surveys (Peak Counts for each species are presented in bold)

Species	Conservation Status	September		October		November		December	January			February		March		Figure No.
		16th	28th	14th	30th	13th	26th	18th	4th	18th	29th	12th	26th	12th	24th	
Black-headed Gull	BoCCI Red Listed (Breeding Populations)	-	-	-	-	-	-	**505**	198	77	185	215	73	3	4	Figure 1
Brent Goose	BoCCI Amber Listed	-	-	-	-	-	-	-	-	-	-	-	-	**106**	-	Figure 2
Common Gull	BoCCI Amber Listed (Breeding Populations)	-	-	-	-	-	-	13	3	3	5	13	**16**	12	-	Figure 3
Curlew	BoCCI Red Listed	-	-	-	-	-	-	**70**	35	-	-	-	-	-	-	Figure 4
Little Egret	Annex I; BoCCI Green Listed	-	-	-	-	-	-	-	**1**	-	-	-	-	-	-	Figure 5
Great Black-backed Gull	BoCCI Amber Listed (Breeding Populations)	-	-	-	-	-	-	-	-	**1**	-	-	-	-	-	Figure 6
Herring Gull	BoCCI Red Listed (Breeding Populations)	-	-	-	-	-	-	**220**	62	190	112	55	56	78	79	Figure 7
Lesser Black-backed Gull	BoCCI Amber Listed (Breeding Populations)	-	-	-	-	-	-	-	-	-	-	3	4	7	**22**	Figure 8
Mallard	BoCCI Amber Listed	-	-	-	-	-	-	-	**6**	-	-	-	-	2	**6**	Figure 9

Table 3-3 Total number of each species recorded on, or within 500m of, the proposed development site (i.e. observed foraging/roosting) (Peak Counts for each species are presented in bold)

Species	Conservation Status	September		October		November		December	January			February		March		Figure No.
		16th	28th	14th	30th	13th	26th	18th	4th	18th	29th	12th	26th	12th	24th	
Black-headed Gull	BoCCI Red Listed (Breeding Populations)	-	-	9	5	46	23	13	36	38	15	**46**	21	-	-	Figure 1.1.1
Common Gull	BoCCI Amber Listed (Breeding Populations)	-	-	1	3	**5**	1	-	2	-	2	4	-	-	-	Figure 1.3.1

Species	Conservation Status	September		October		November		December	January			February		March		Figure No.
		16th	28th	14th	30th	13th	26th	18th	4th	18th	29th	12th	26th	12th	24th	
Curlew	BoCCI Red Listed	-	-	-	-	-	-	-	**24**	-	-	-	-	-	-	Figure 1.4.1
Little Egret	Annex I; BoCCI Green Listed	-	-	-	-	-	**1**	-	-	-	-	-	-	-	-	
Herring Gull	BoCCI Red Listed (Breeding Populations)	2	20	-	-	**95**	28	94	15	9	-	-	5	-	1	Figure 1.7.1
Lesser Black-backed Gull	BoCCI Amber Listed (Breeding Populations)	-	-	-	-	-	-	-	-	-	-	-	-	1	**2**	Figure 1.8.1

3.2.3 Walkover and Habitat Survey Results

Habitat quality and composition were recorded along walked transects within the proposed development were assessed at visits between November and March inclusive. The monthly range and averages of habitat compositions are detailed in Table 3-4 below. Also included are average monthly sward heights and the abundance of brent goose droppings.

Table 3-4 Habitat quality and composition of walked transects within the proposed development. Also included is the abundance of brent geese droppings observed on transects.

Month	Sward Height (cm)	Grass (%)		Forbs (%)		Bare Ground (%)		Number of Droppings
		Range	Average	Range	Average	Range	Average	
November	9.3	60-100	86	0-40	13.5	0-5	0.2	0
December	8.9	80-100	94.8	0-20	5.2	0	0	0
January	11	80-100	93.9	0-20	6	0	0	0
February	7.5	90-100	97.1	0-10	2.9	0	0	0
March	6.9	80-100	96.2	0-20	3.8	0	0	0

4. DISCUSSION

The following provides a synopsis of the findings of the surveys undertaken between September 2020 and March 2021.

Within the proposed development site and/or within 500m of the site, the following key observations were noted:

- On the 4th of January, curlew were observed using an area of amenity grassland within the proposed development site for foraging.
- Herring gull, black-head gull, lesser black-backed gull and common gull were frequently observed using the proposed development site for foraging and roosting.
- Black-headed gull and herring gull were observed regularly commuting over the proposed development.
- Curlew and brent geese were observed commuting over the proposed development site infrequently.

Key impacts that could result from the proposed development on local avian receptors include habitat loss, disturbance/displacement and water pollution.

The proposed development is currently in use as a hospital facility, with amenity grasslands regularly maintained and mown by gardeners on-site. These grasslands have a short grass sward length (6.9-11cm; see Table 3-4) which would be favourable to SCI species, however, these grasslands are frequently accessed for recreational use leading to a high level of disturbance. Curlew were observed twice on an amenity grassland used as a walking area/football pitch within the proposed development, however, the flocks were flushed due to disturbance on both occasions.

Of the SCI species listed for the SPAs within the ZOI, black-headed gull, brent goose and curlew were observed on, or within 500m of, the proposed development site. There were no flocks of county importance observed roosting or foraging within the proposed development site for any of these species (see Table 3-3).

Black-headed gull flocks of county importance (>90 birds; 1% of the county population) were observed on one occasion commuting over the proposed development site. Brent goose flocks of county importance (>84 birds; 1% of the county population) were observed on one occasion commuting over the proposed development site and curlew flocks of county importance (>29 birds; 1% of the county population) were observed on two occasions commuting over the proposed development site. Flocks of importance relative to the local population (1% of the Dublin Bay I-WeBS site population) were recorded for black-headed gull on fifteen occasions, brent goose on one occasion and curlew on four occasions.

The potential for birds commuting over the site to be impacted by construction activities is considered to be limited. There is the potential for disturbance/displacement and habitat loss for species observed utilising habitats within the proposed development site during the construction phase. If impacts are assessed to be significant, the likelihood is that disturbance/displacement impacts can be avoided or reduced by imposing suitable mitigation measures. Such mitigation could include limiting construction activities to the summer when wintering birds are not present.

5. CONCLUSION

There are six SPAs within the ZOI, the nearest SPA to the proposed development is South Dublin Bay and River Tolka Estuary SPA (2.8km to the northeast). Of the SCI species listed for the SPAs within the ZOI, black-headed gull, brent goose and curlew were the only species recorded commuting or foraging on, or within 500m of, the proposed development.

The proposed development site is not within a SPA, however, given the proximity of several SPAs, there may be potential for impacts to result during construction and operational phases of the proposed development on birds that are associated with these SPAs. Potential impacts could include:

- Loss of potential foraging/roosting habitat within the proposed development site.
- Disturbance/displacement during construction works and the operational phase, including through movement of machinery, personnel, noise, vibration and/or noise associated with domestic dwellings.
- Water pollution of downstream SPAs.

The maximum likely distance at which disturbance will impact SCIs from a SPA is 300m (Cutts et al., 2013) from the proposed development boundary. Given the separation distance from the SPAs, disturbance impacts within SPAs are not anticipated. However, given the level of activity of black-headed gull at the development site, disturbance/displacement and habitat loss impacts during the construction phase cannot be ruled out. The peak number of black-headed gull observed foraging within the proposed development were not of county importance for this species, therefore it is unlikely that disturbance to this species will be ecologically significant. It is unlikely that there will be any significant disturbance/displacement of curlew in the proposed development site, given the lack of evidence that the site is used with any regularity. Brent geese were not observed foraging or roosting within the proposed development (Table 3-3) nor was there any evidence of geese on the proposed development (Table 3-4). Therefore significant disturbance/displacement of brent geese are not anticipated at the proposed development site.

When built, the proposed housing scheme may result in disturbance of SCIs of the SPAs within the likely ZOI of the proposed development site. However, habituation will likely occur to this new source of disturbance given that the SCIs of the SPA are already accustomed to the disturbance associated with Dundrum town and existing surrounding housing developments.

A wide range of environmental factors are required to support water bird species including good water quality and clarity and a good supply of food resources. Thus, water quality impacts resulting from the proposed development (i.e. during the construction and operational phases) could result in a reduction in the availability of suitable habitat for water bird species at downstream wetland sites. The effect of such a reduction in water quality has the potential to be ecologically significant. However, it is likely that best practice design and mitigation can be implemented that would avoid or reduce such impacts.

BIBLIOGRAPHY

Birds Directive (2009/47/EC) – http://ec.europa.eu/environment/nature /legislation/birdsdirective /index _en.htm

Bibby, C.J., Burgess, N.D., Hill, D.A., and Mustoe, S. (2000) *Bird Census Techniques.* Academic Press, London.

Birds of conservation concern in Ireland 2014-2019 – https://www.birdwatchireland.ie/LinkClick.aspx?fileticket=VcYOTGOjNbA%3D&tabid=178

Burke, B., Lewis, L.J., Fitzgerald, N., Frost, T., Austin, G., and Tierney, T.D. (2018) *Estimates of waterbird numbers wintering in Ireland, 2011/12 – 2015/16* Irish Birds

Council Directive 92/43/EEC of 21 May 1992 on the conservation of natural habitats and of wild fauna and flora (Habitats Directive) and Directive 2009/147/EC (codified version of Directive 79/409/EEC as amended) (Birds Directive) – transposed into Irish law as European Communities (Birds and Natural Habitats) Regulations 2011 (SI 477/2011).

Cutts, N., Hemingway, K. and Spencer, J. (2013). *Waterbird Disturbance Mitigation Toolkit Informing Estuarine Planning & Construction Projects.* Institute of Estuarine & Coastal Studies (IECS) University of Hull

Gilbert et al. (1998) *Bird Monitoring Methods.* Pelagic Publishing.

Gilbert, G., Stanbury, A., and Lewis, L. (2021), *Birds of Conservation Concern in Ireland 2020-2026.* Irish Birds 9: 523-544

Mullarney, K., Svensson, L., Zetterström, D. and Grant, P. J. (1999). *Collins Bird Guide.* Harper Collins, London.

SNH (2016) *Assessing Connectivity with Special Protection Areas (SPAs) – Version 3, June 2016.* Scottish Natural Heritage.

www.npws.ie – Distribution maps and associated information for sites designated for nature conservation by NPWS (i.e. SPAs, SACs, NHAs, pNHAs)

IWeBS (2015). http://f1.caspio.com/dp.asp?AppKey=f4db3000060acbd80db9403f857c. Irish Wetland Bird Survey Records.

Appendix 8.2

FLYNN FURNEY
ENVIRONMENTAL CONSULTANTS

Issue Date: 7 March 2022

Winter Bird Survey Report

Dundrum

Prepared for: TPA

By: Flynn Furney Environmental Consultants

Table of Contents

1. INTRODUCTION

1.1 This Report

Flynn Furney Environmental Consultants have been commissioned by TPA to carry out bird survey work at a site in Dundrum, Co. Dublin. These surveys were carried out over winter months in 2021 and 2022. The purpose of these surveys was to complete a suite of surveys previously carried out by consultants MKO during winter months in 2020 and 2021 and to compare results from the present survey with the previous work.

1.2 Site under Survey

The site under survey comprises the grounds of the Central Mental Hospital at the townland of Churchtown, Co. Dublin, c. 0.5 km north of Dundrum Village. The centre of the site is at 717162 729156 (ITM). The site contains a number of hospital and associated buildings as well as extensive green areas which include lawns, playing fields and a small amount of pasture. The site location is shown graphically in Appendix A. Given the sensitive nature of the site, the surveyor did not take any photographs during survey.

1.3 Statement of Authority

The survey work was carried out by Eric Dempsey. Eric has around 40 years' experience in ornithology and is a leading authority on Irish birds. He is the author of 8 books on Irish birds including the *Complete Field Guide to Irish Birds*. He is a listed Heritage Expert with The Heritage Council.

The report was written by Billy Flynn. Billy is a Chartered Environmental Scientist and Ecologist with over 20 years' experience. He has worked on a wide range of projects including national infrastructure such as motorway and rail projects. He is Lead Ecologist on a number of ongoing survey projects including greenways, lakes and sites of heritage significance.

2. METHODOLOGY

2.1 Desk Study

A review of the reporting by consultants MKO (2021) was carried out. A review of Irish Wetland Birds data (IWeBS) records as reported in the above was also carried out as well as a review of the Special Conservation Interests (SCIs) of the Special Protection Areas (SPAs) within the zone of influence (ZOI) of the project as identified by MKO.

As detailed in the above reporting, there are several SPAs within the possible zone of influence of the site under survey. These are shown in Appendix A. Species that are Special Conservation Interests of the SPAs were specifically targeted by the survey as were birds of greatest conservation concern (the 'Red Listed' species, see Gilbert et al., 2021) and any other birds that are on Annex I of the EU Birds Directive.

2.2 Field Survey

2.2.1 Vantage Point Surveys

Field survey methodology followed that utilised by MKO (2021). Vantage Point surveys as detailed by Bibby et al. (2000) were carried out. As per the previous MKO work, these were carried out from 3 no. points within the grounds of the site. They were chosen for the maximum field of view of the grassland areas of the site. Surveys were undertaken over 2 no. 3 hour periods (morning & afternoon) which includes a 2-hour period either side of the high tide on these days. This would capture the time period when the target species of the SPAs would be most likely to utilise the site at Dundrum.

2.2.2 Walkover/Habitat Surveys

A walkover survey of the site was carried out in order to confirm the location, character and extent of habitats as recorded in the survey by MKO (2021). Further, more targeted walkover surveys were carried out throughout the duration of the project in order to identify droppings of target species birds (e.g. geese) within the grassland areas of the site.

2.2.3 Survey Effort

Surveys as described above were carried out at Dundrum between 24 November 2021 and 28 February 2022. This amounted to 7 no. survey days of 6 hour's duration, a total of 42 hours survey time.

3. RESULTS

3.1 Vantage Point Surveys

The results of the target species recorded during surveys undertaken between November 2021 and January 2022 are summarised in the table below:

Table 1. Total of hourly peak species counts for each species recorded.

Species	Conservation status	November	December	January	February
Black-headed Gull	Greatest Conservation Concern (Red list)	7	64	45	29
Herring Gull	Greatest Conservation Concern (Red List)	20	136	106	161
Common Gull	Medium Conservation Concern (Amber List)	0	9	0	0
Little Egret	Least Conservation Concern (Green List), Annex I Species	0	1	0	0

Table 2. Peak species counts for each species recorded.

Species	Conservation status	November	December	January	February
Black-headed Gull	Greatest Conservation Concern (Red list)	2	11	8	7
Herring Gull	Greatest Conservation Concern (Red List)	5	51	19	36
Common Gull	Medium Conservation Concern (Amber List)	0	5	0	0
Little Egret	Least Conservation Concern (Green List), Annex I Species	0	1	0	0

3.2 Walkover / Habitat Surveys

The results of the walkover survey and habitat description are summarised in the table below.

Table 3. Species composition per month

Month	Grass	Forb	Bare Ground
	(approximate % surface area)		
November	>90	<10	<1
December	>90	<10	<1
January	>90	<10	<1
February	>90	<10	<1

The results of the search for droppings of geese are shown in the table below.

Table 4. Droppings found per month

Month	No of Droppings
November	0

December	0
January	0
February	0

4. DISCUSSION

This section of the report summarises the results of the surveys carried out between 24 November 2021 and 28 February 2022. The results may be seen in full in Appendix B of this report.

A total of four of the target species were recorded foraging or roosting within site proposed for development. These were: Herring Gull *Larus argentatus*, Black-headed Gull *Larus ridibundus*, Common Gull *Larus canus* and Little Egret *Egretta garzetta*.

Of these, Herring Gull was recorded in greatest numbers. The highest peak count for this species being 51 no. on the 8 December 2021. Of the above, Black-headed Gull is the only Special Conservation Interest (SCI) species of any of the SPAs within the likely zone of influence (ZOI) of the project.

No Curlew *Numenius arquata* were recorded utilising the site. In conversation with members of grounds staff, the ornithologist was told that Curlew has occasionally been seen within the site but not in "recent" times. Brent Goose was not recorded within the survey period.

The habitat surveys carried out were largely in line with the results of the MKO surveys (2021) which showed a dominance of grass species (>90%) across the areas surveyed and non-grass species (forbs) being consistently less than 10% of surface area. The grass was seen to be well-maintained throughout the site and areas of bare ground were rare (<1%). Consistent with the MKO survey, no droppings of any goose species were found during the survey period.

The findings of the bird surveys would indicate that there is only limited potential for disturbance or displacement of the SCI species of the SPAs within the ZOI arising from the proposed development. It is not predicted that the proposed development would result in any habitat loss of any significance to any SCI species. This is based upon the low numbers of the only SCI species recorded and the availability of similar habitat type (amenity grassland) within the immediate and wider areas.

Surveys of the site are ongoing at time of writing. It is recommended that the surveys are continued until the end of March (2022) as per the methodology of the present survey.

5. CONCLUSION

Of the target species of the bird survey, only one SCI species listed for the Special Protection Areas within the ZOI of the proposed development was recorded. This was Black-headed Gull. This species was also recorded in the previous survey by MKO (2021). Two other SCI species recorded in the previous survey (Curlew and Brent Goose) were not recorded within the survey period of this present survey.

No direct impacts to any of the SPAs within the ZOI may be expected. This is given the remove of these sites from the area proposed for development and the lack of connectivity between this and the protected sites. Indirect effects on the SPAs (e.g. on water quality) are considered unlikely given the nature of the proposed development and the lack of connectivity to these designated sites. As described in the MKO report, best practice design and site practice would prevent such impacts from arising.

While some disturbance and displacement impacts may occur to the SCI species recorded, this would not be deemed to be of potential significance. This is due to the habituation of this species to anthropogenic disturbance within the site and wider urban area and its likely habitation to any disturbance resulting from the proposed development.

Some loss of foraging habitat for this species will occur. However, this is not considered significant given the relative abundance of this habitat type (amenity grassland) within both the immediate and wider areas surrounding the site.

It is recommended that the ongoing surveys are continued until the end of March 2022.

6. REFERENCES

Print

Bibby, C.J., Burgess, N.D., Hill, D.A. and Mustoe, S (2000) *Bird Census Techniques*. Academic Press, London.

Gilbert, G, Stanbury, A, & Lewis, L (2021) Birds of Conservation Concern in Ireland 4: 2020 –2026. *Irish Birds 43:* 1—22.

MKO (2021) *Winter Bird Survey Report 2020/21. TPA Bird Surveys, Dundrum, Co. Dublin*. Unpublished report by MKO for TPA.

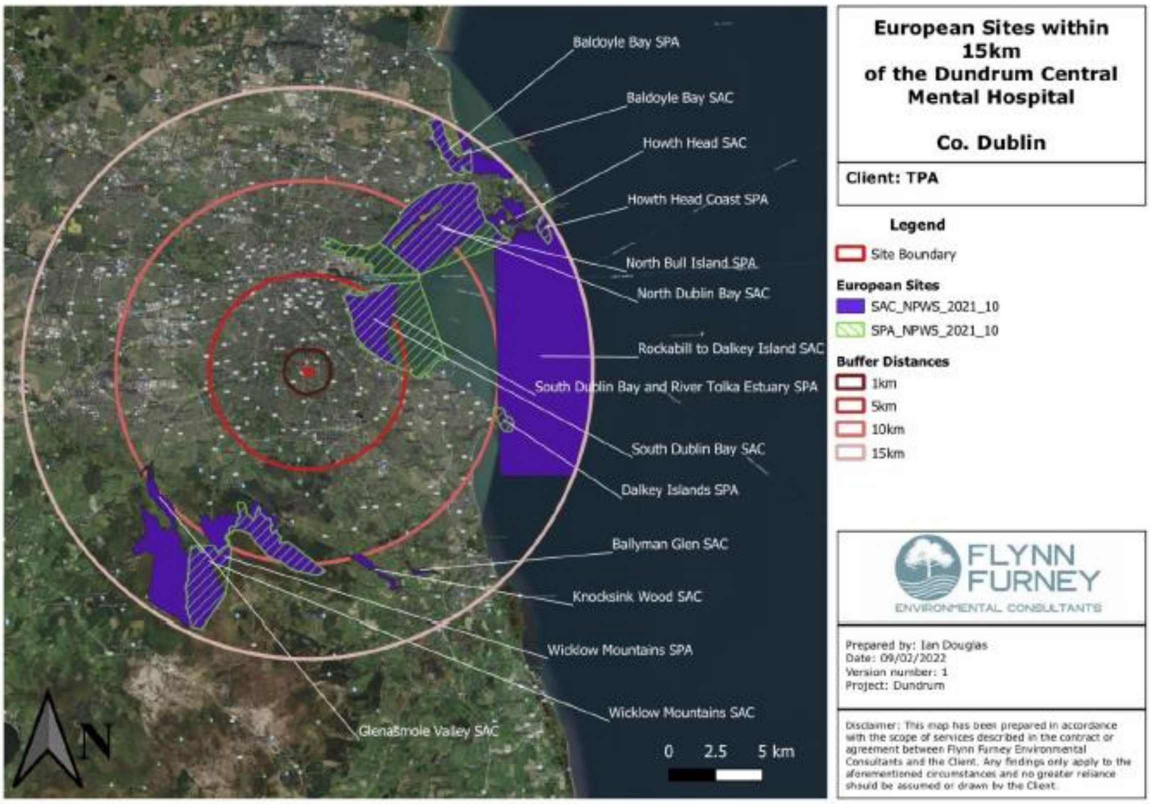
Web Resources

www.npws.ie National Parks and Wildlife Service: Designated site data and shapefiles.

www.birdwatchireland.ie & http: c0amf055.caspio.com: Species data and iWeBS (wetland birds) records.

Fig. 1. Site Location and Survey Area

Fig. 2. Location of Natura 2000 sites within Likely Zone of Influence of Proposed Development



Appendix B: Survey Data

Dundrum Survey - 2021						Species - Peak Counts per hour											
Date	Observer	Start time	End time	BG	CU	OC	LB	BH	HG	CM	ET	BG droppings	Wind	Cloud	Precip	Vis	Dublin High Tide
24/11/2021	ED	10:30	11:30	0	0	0	0	2	3	0	0	N	3	3	1	5	14:25
24/11/2021	ED	11:30	12:30	0	0	0	0	2	2	0	0	N	3	3	1	5	14:25
24/11/2021	ED	12:30	13:30	0	0	0	0	0	5	0	0	N	3	3	1	5	14:25
24/11/2021	ED	13:30	14:30	0	0	0	0	0	5	0	0	N	3	3	1	5	14:25
24/11/2021	ED	14:30	15:30	0	0	0	0	2	2	0	0	N	3	3	1	5	14:25
24/11/2021	ED	15:30	16:30	0	0	0	0	1	3	0	0	N	3	3	1	5	14:25
08/12/2021	ED	09:55	10:55	0	0	0	0	8	12	4	0	N	7	3	3	5	14:18
08/12/2021	ED	10:55	11:55	0	0	0	0	11	12	5	0	N	7	3	3	5	14:18
08/12/2021	ED	11:55	12:55	0	0	0	0	7	4	0	0	N	7	3	3	5	14:18
08/12/2021	ED	12:55	13:55	0	0	0	0	5	8	0	1	N	7	3	3	5	14:18
08/12/2021	ED	13:55	14:55	0	0	0	0	2	6	0	0	N	7	3	3	5	14:18
08/12/2021	ED	14:55	15:55	0	0	0	0	3	51	0	0	N	7	3	3	5	14:18
22/12/2021	ED	09:40	10:40	0	0	0	0	6	3	0	0	N	4	3	2	5	13:24
22/12/2021	ED	10:40	11:40	0	0	0	0	2	0	0	0	N	4	3	2	5	13:24
22/12/2021	ED	11:40	12:40	0	0	0	0	0	4	0	0	N	4	3	2	5	13:24
22/12/2021	ED	12:40	13:40	0	0	0	0	5	2	0	0	N	4	3	2	5	13:24
22/12/2021	ED	13:40	14:40	0	0	0	0	9	3	0	0	N	4	3	2	5	13:24
22/12/2021	ED	14:40	15:40	0	0	0	0	7	31	0	0	N	4	3	2	5	13:24

British Trust for Ornithology Species Codes: BG-Brent Goose, CU-Curlew, OC-Oystercatcher, LB-Lesser Black-backed Gull, BH-Black-headed Gull, HG-Herring Gull, CM-Common Gull, ET-Little Egret.

TPA Dundrum Winter Bird Survey

Dundrum Survey - 2022						Species - Peak Counts per hour											
Date	Observer	Start time	End time	BG	CU	OC	LB	BH	HG	CM	ET	BG droppings	Wind	Cloud	Precip	Vis	Dublin High Tide
17/01/2022	ED	09:30	10:30	0	0	0	0	4	7	0	0	N	2	1	1	5	11:18
17/01/2022	ED	10:30	11:30	0	0	0	0	3	7	0	0	N	2	1	1	5	11:18
17/01/2022	ED	11:30	12:30	0	0	0	0	3	4	0	0	N	2	1	1	5	11:18
17/01/2022	ED	12:30	13:30	0	0	0	0	4	2	0	0	N	2	1	1	5	11:18
17/01/2022	ED	13:30	14:30	0	0	0	0	2	19	0	0	N	2	1	1	5	11:18
17/01/2022	ED	14:30	15:30	0	0	0	0	3	16	0	0	N	2	1	1	5	11:18
31/01/2022	ED	09:10	10:10	0	0	0	0	2	5	0	0	N	4	3	2	5	10:48
31/01/2022	ED	10:10	11:10	0	0	0	0	3	11	0	0	N	4	3	2	5	10:48
31/01/2022	ED	11:10	12:10	0	0	0	0	5	4	0	0	N	4	3	2	5	10:48
31/01/2022	ED	12:10	13:10	0	0	0	0	8	5	0	0	N	4	3	2	5	10:48
31/01/2022	ED	13:10	14:10	0	0	0	0	2	12	0	0	N	4	3	2	5	10:48
31/01/2022	ED	14:10	15:10	0	0	0	0	6	14	0	0	N	4	3	2	5	10:48

British Trust for Ornithology Species Codes: BG-Brent Goose, CU-Curlew, OC-Oystercatcher, LB-Lesser Black-backed Gull, BH-Black-headed Gull, HG-Herring Gull, CM-Common Gull, ET-Little Egret.

Dundrum Survey - 2022						Species - Peak Counts per hour											
Date	Observer	Start time	End time	BG	CU	OC	LB	BH	HG	CM	ET	BG droppings	Wind	Cloud	Precip	Vis	Dublin High Tide
15/02/2022	ED	09:10	10:10	0	0	0	0	0	7	0	0	N	3	3	1	5	11:18
15/02/2022	ED	10:10	11:10	0	0	0	0	0	3	0	0	N	3	3	1	5	11:18
15/02/2022	ED	11:10	12:10	0	0	0	0	0	0	0	0	N	3	3	1	5	11:18
15/02/2022	ED	12:10	13:10	0	0	0	0	1	5	0	0	N	3	3	1	5	11:18
15/02/2022	ED	13:10	14:10	0	0	0	0	3	9	0	0	N	3	3	1	5	11:18
15/02/2022	ED	14:10	15:10	0	0	0	0	5	13	0	0	N	3	3	1	5	11:18
28/02/2022	ED	08:50	09:50	0	0	0	0	3	17	0	0	N	3	4	2	5	09:50
28/02/2022	ED	09:50	10:50	0	0	0	0	0	6	0	0	N	3	4	2	5	09:50
28/02/2022	ED	10:50	11:50	0	0	0	0	0	14	0	0	N	3	4	2	5	09:50
28/02/2022	ED	11:50	12:50	0	0	0	0	4	22	0	0	N	3	4	1	5	09:50
28/02/2022	ED	12:50	13:50	0	0	0	0	7	36	0	0	N	3	4	1	5	09:50
28/02/2022	ED	13:50	14:50	0	0	0	0	6	29	0	0	N	3	4	2	5	09:50

British Trust for Ornithology Species Codes: BG-Brent Goose, CU-Curlew, OC-Oystercatcher, LB-Lesser Black-backed Gull, BH-Black-headed Gull, HG-Herring Gull, CM-Common Gull, ET-Little Egret.

Appendix 8.3

Issue Date: 15 April 2024

Winter Bird Survey Report 2023-2024

Dundrum Central Mental Hospital LRD

Prepared for: TPA

By: Flynn Furney Environmental Consultants

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TPA Dundrum Winter Bird Survey

2. METHODOLOGY

2.1 Desk Study

A review of the reporting by consultants MKO (2021) and by FFEC (2022) was carried out. A review of Irish Wetland Birds data (IWeBS) records as reported in the above was also carried out as well as a review of the Special Conservation Interests (SCIs) of the Special Protection Areas (SPAs) within the zone of influence (ZOI) of the project as identified by MKO.

As detailed in the above reporting, there are several SPAs within the possible zone of influence of the site under survey. These are shown in Appendix A. Species that are Special Conservation Interests of the SPAs were specifically targeted by the survey as were birds of greatest conservation concern (the 'Red Listed' species, see Gilbert et al., 2021) and any other birds that are on Annex I of the EU Birds Directive (see Nelson et al, 2019).

The nearest SPA, South Dublin Bay and Tolka River Estuary SPA is located to the northeast of the proposed development opposite the N11. The SPA is located 2.8km from the proposed development area and comprises the intertidal area between the River Liffey and Dun Laoghaire, the River Tolka estuary to the north of the River Liffey and Booterstown Marsh. The SPA is an important foraging site for an internationally important population of Brent Geese due to the beds of Eelgrass at the Merrion Gates and serves as an important staging/passage site for several tern species in autumn.

The survey work carried out on the site was specifically designed to survey for these identified target species. The target species list was drawn from:

- Annex I of the Birds Directive,
- Special Conservation Interests (SCI) of Special Protection Areas (SPA) within the zone of likely significant effects,
- Red listed birds of Conservation Concern in Ireland,
- Species with the potential to be impacted by this type of development.

All species within these categories were considered as target species for the purpose of these surveys.

2.2 Field Survey

2.2.1 Vantage Point Surveys

Field survey methodology followed that utilised by MKO (2021) and present authors (2022). Vantage Point surveys as detailed by Bibby et al. (2000) were carried out. This is an accepted standard best practice for surveys of this kind. As per the previous MKO work, these were carried out from 3 no. points within the grounds of the site. They were chosen for the maximum field of view of the grassland areas of the site. Surveys were undertaken over 2 no. 3 hour periods (morning & afternoon) which includes a 2-hour period either side of the high tide on these days. This would capture the time period when the target species of the SPAs would be most likely to utilise the site at Dundrum.

2.2.2 Walkover/Habitat Surveys

A walkover survey of the site was carried out in order to confirm the location, character and extent of habitats as recorded in previous surveys. Further, more targeted walkover surveys were carried out throughout the duration of the project in order to identify droppings of target species birds (e.g. geese) within the grassland areas of the site. This would assist in determining whether any of the target species were utilising the habitat within the grounds. These surveys were undertaken within a 2-hour period either side of the high tide on each of the survey days. This would capture the time period when the target species of the SPAs would be most likely to utilise the site at Dundrum.

2.2.3 Survey Effort

Surveys as described above were carried out at Dundrum between 14 November 2023 and 15 March 2024. This amounted to 10 no. survey days of 6 hour's duration, a total of 60 hours of survey time. This is believed to be a robust sample of the site over the season under survey.

3. RESULTS

3.1 Vantage Point Surveys

The results of the target species recorded during surveys undertaken between November 2023 and March 2024 are summarised in the table below:

Table 1. Monthly totals of hourly peak species counts for each species recorded.

Species	Conservation status	November	December	January	February	March
Black-headed Gull	Greatest Conservation Concern (Red list)	18	12	20	12	12
Herring Gull	Greatest Conservation Concern (Red List)	72	78	86	77	64

Table 2. Peak species counts for each species recorded.

Species	Conservation status	November	December	January	February	March
Black-headed Gull	Greatest Conservation Concern (Red list)	3	3	4	5	4
Herring Gull	Greatest Conservation Concern (Red List)	9	13	12	11	8

3.2 Walkover / Habitat Surveys

The results of the walkover survey and habitat description are summarised in the table below.

Table 3. Species composition per month

Month	Grass	Forb	Bare Ground
	(approximate % surface area)		
November	>90	<10	<1
December	>90	<10	<1
January	>90	<10	<1
February	>90	<10	<1

The results of the search for droppings of geese are shown in the table below.

Table 4. Droppings found per month

Month	No of Droppings
November	0
December	0
January	0
February	0
March	0

4. DISCUSSION

This section of the report summarises the results of the surveys carried out between 14 November 2023 and 15 March 2024. The results may be seen in full in Appendix B of this report.

A total of two of the target species were recorded foraging and/or roosting within the site proposed for development. These were: Herring Gull *Larus argentatus* and Black-headed Gull *Larus ridibundus*.

Of these, Herring Gull was recorded in greatest numbers. The highest peak count for this species being 13 no. on the 7 December 2023. Of the above, Black-headed Gull is the only Special Conservation Interest (SCI) species of any of the SPAs within the likely zone of influence (ZOI) of the project. Brent Goose was not recorded within the survey period, nor evidence of this species found. No Curlew *Numenius arquata* were recorded utilising or overflying the site. Numbers of both Herring Gulls and Black-headed Gulls recorded were significantly lower than those recorded during the 2021-2022 survey period. Common Gull and Little Egret were not recorded during the most recent survey period.

The habitat surveys carried out showed results consistent with the results of the MKO surveys (2021) and the later FFEC (2023) survey which showed a dominance of grass species (>90%) across the areas surveyed and non-grass species (forbs) being consistently less than 10% of surface area. The grass was seen to be well-maintained throughout the site and areas of bare ground were rare (<1%). Consistent with the previous surveys (MKO, 2021; FFEC, 2023), no droppings of any goose species were found during the survey period.

The findings of the bird surveys would indicate that there is only limited potential for disturbance or displacement of the SCI species of the SPAs within the ZOI arising from the proposed development. It is not predicted that the proposed development would result in any habitat loss of any significance to any SCI species. This is based upon the low numbers of the only SCI species recorded and the availability of similar habitat type (amenity grassland) within the immediate and wider areas.

Surveys of the site are now completed. It is believed that given the consistent results garnered over 3 years that the above findings of this report are robust.

5. CONCLUSION

Of the target species of the bird survey, only one SCI species listed for the Special Protection Areas within the ZOI of the proposed development was recorded. This was Black-headed Gull. This species was also recorded in the previous surveys by MKO (2021) and FFEC (2022). Two other SCI species recorded in the 2021 survey (Curlew and Brent Goose) were not recorded within the survey period of this present survey.

No direct impacts to any of the SPAs within the ZOI may be expected. This is given the remove of these sites from the area proposed for development and the lack of connectivity between this and the protected sites. Indirect effects on the SPAs (e.g. on water quality) are considered unlikely given the nature of the proposed development and the lack of connectivity to these designated sites. As described in the MKO report (2021), best practice design and site practices would prevent such impacts from arising.

While some disturbance and displacement impacts may occur to the SCI species recorded, this would not be deemed to be of potential significance. This is due to the habituation of this species to anthropogenic disturbance within the site and wider urban area and its likely habitation to any disturbance resulting from the proposed development.

Some loss of foraging habitat for these species will occur. However, this is not considered significant given the relative abundance of this habitat type (amenity grassland) within both the immediate and wider areas surrounding the site.

6. REFERENCES

Print

Bibby, C.J., Burgess, N.D., Hill, D.A. and Mustoe, S (2000) *Bird Census Techniques*. Academic Press, London.

FFEC (2022) *Winter Bird Survey Report 2021/22. TPA Bird Surveys, Dundrum, Co. Dublin*. Unpublished report by Flynn Furney Environmental Consultants for TPA.

Gilbert, G, Stanbury, A, & Lewis, L (2021) Birds of Conservation Concern in Ireland 4: 2020 –2026. *Irish Birds 43:* 1—22.

MKO (2021) *Winter Bird Survey Report 2020/21. TPA Bird Surveys, Dundrum, Co. Dublin*. Unpublished report by MKO for TPA.

Citation: Nelson, B., Cummins, S., Fay, L., Jeffrey, R., Kelly, S., Kingston, N., Lockhart, N., Marnell, F., Tierney, D. and Wyse Jackson, M. (2019) Checklists of protected and threatened species in Ireland. Irish Wildlife Manuals, No. 116. National Parks and Wildlife Service, Department of Culture, Heritage and the Gaeltacht, Ireland.

Web Resources

www.npws.ie National Parks and Wildlife Service: Designated site data and shapefiles.

www.birdwatchireland.ie & http: c0amf055.caspio.com: Species data and iWeBS (wetland birds) records.

Fig. 1. Site Location and Survey Area

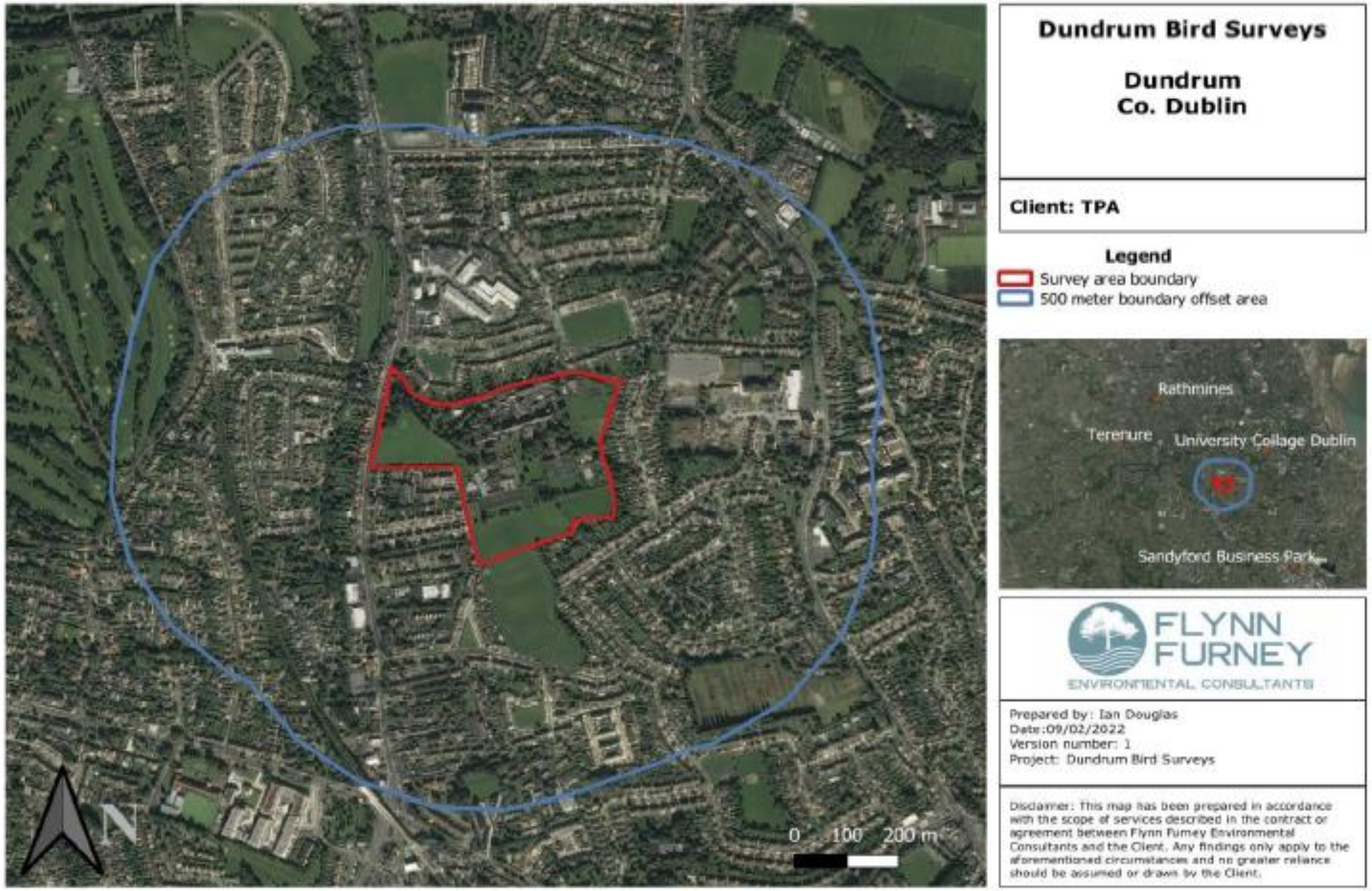
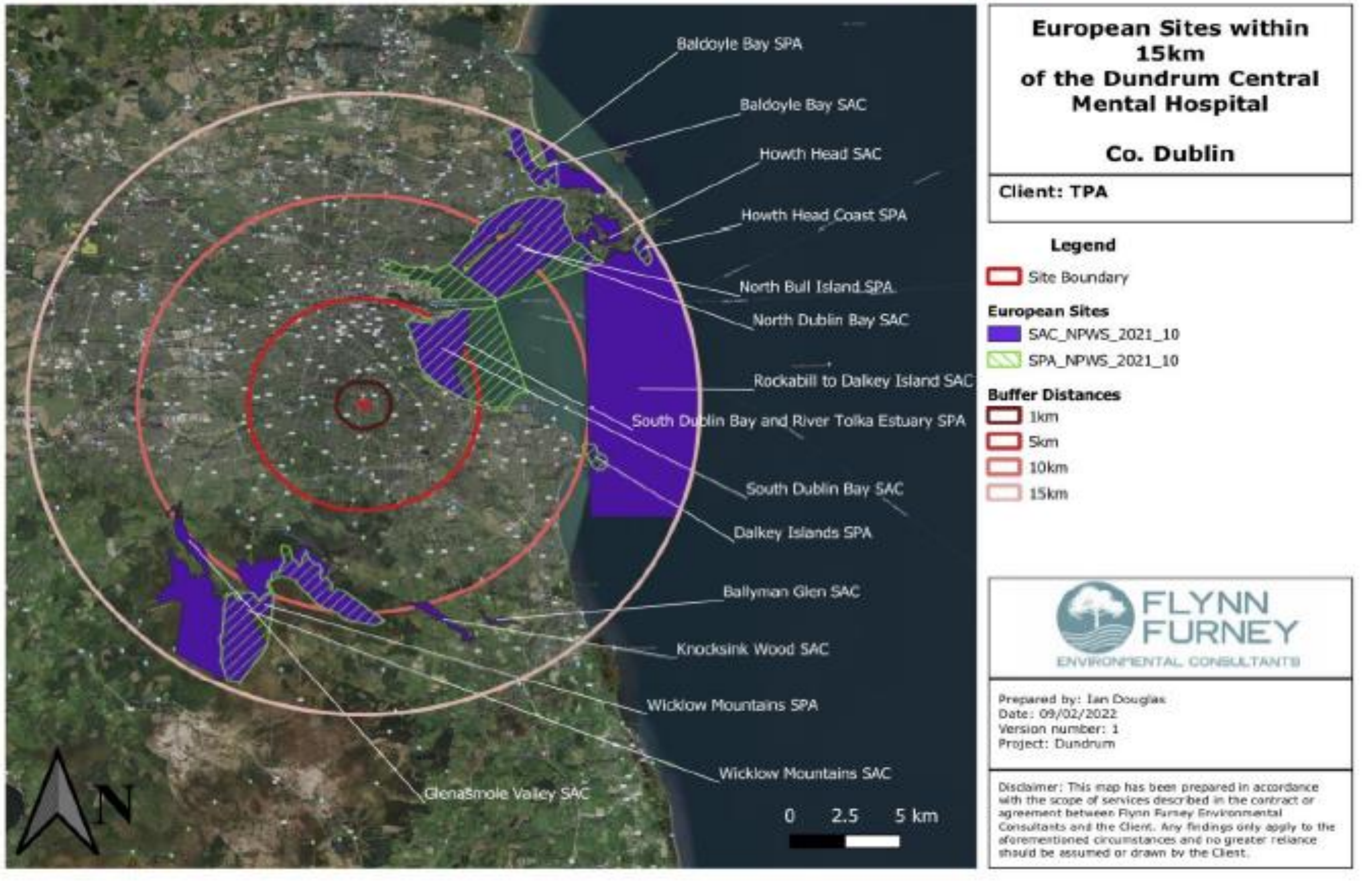


Fig. 2. Location of Natura 2000 sites within Likely Zone of Influence of Proposed Development



Appendix B: Survey Data

November 2023

Dundrum Survey - 2023/24				Species - Peak Counts per hour												
Date	Observer	Start time	End time	BG	CU	OC	LB	BH	HG	CM	BG droppings	Wind	Cloud	Precip	Vis	Dublin High Tide
14/11/2023	ED	09:20	10:20	0	0	0	0	2	6	0	N	4	3	1	5	11:37
14/11/2023	ED	10:20	11:20	0	0	0	0	2	4	0	N	4	3	1	5	11:37
14/11/2023	ED	11:20	12:20	0	0	0	0	3	8	0	N	4	3	1	5	11:37
14/11/2023	ED	12:20	13:20	0	0	0	0	0	7	0	N	4	3	1	5	11:37
14/11/2023	ED	13:20	14:20	0	0	0	0	3	5	0	N	4	3	1	5	11:37
14/11/2023	ED	14:20	15:20	0	0	0	0	1	4	0	N	4	3	1	5	11:37
24/11/2023	ED	09:40	10:40	0	0	0	0	1	4	0	N	2	3	1	5	09:05
24/11/2023	ED	10:40	11:40	0	0	0	0	3	7	0	N	2	3	1	5	09:05
24/11/2023	ED	11:40	12:40	0	0	0	0	2	8	0	N	2	3	1	5	09:05
24/11/2023	ED	12:40	13:40	0	0	0	0	0	7	0	N	2	3	1	5	09:05
24/11/2023	ED	13:40	14:40	0	0	0	0	1	9	0	N	2	3	1	5	09:05
24/11/2023	ED	14:40	15:40	0	0	0	0	0	3	0	N	2	3	1	5	09:05

British Trust for Ornithology Species Codes: BG-Brent Goose, CU-Curlew, OC-Oystercatcher, LB-Lesser Black-backed Gull, BH-Black-headed Gull, HG-Herring Gull, CM-Common Gull, ET-Little Egret.

December 2023

Dundrum Survey - 2023/24				Species - Peak Counts per hour												
Date	Observer	Start time	End time	BG	CU	OC	LB	BH	HG	CM	BG droppings	Wind	Cloud	Precip	Vis	Dublin High Tide
07/12/2023	ED	09:30	10:30	0	0	0	0	2	6	0	N	5	3	3	5	07:23
07/12/2023	ED	10:30	11:30	0	0	0	0	0	9	0	N	5	3	3	5	07:23
07/12/2023	ED	11:30	12:30	0	0	0	0	0	5	0	N	5	3	3	5	07:23
07/12/2023	ED	12:30	13:30	0	0	0	0	3	13	0	N	5	3	3	5	07:23
07/12/2023	ED	13:30	14:30	0	0	0	0	0	5	0	N	5	3	3	5	07:23
07/12/2023	ED	14:30	15:30	0	0	0	0	0	4	0	N	5	3	3	5	07:23
21/12/2023	ED	09:20	10:20	0	0	0	0	3	11	0	N	7	3	1	5	06:33
21/12/2023	ED	10:20	11:20	0	0	0	0	2	4	0	N	7	3	1	5	06:33
21/12/2023	ED	11:20	12:20	0	0	0	0	0	7	0	N	7	3	1	5	06:33
21/12/2023	ED	12:20	13:20	0	0	0	0	0	3	0	N	7	3	1	5	06:33
21/12/2023	ED	13:20	14:20	0	0	0	0	1	7	0	N	7	3	1	5	06:33
21/12/2023	ED	14:20	15:20	0	0	0	0	0	4	0	N	7	3	1	5	06:33

British Trust for Ornithology Species Codes: BG-Brent Goose, CU-Curlew, OC-Oystercatcher, LB-Lesser Black-backed Gull, BH-Black-headed Gull, HG-Herring Gull, CM-Common Gull, ET-Little Egret.

January 2024

Dundrum Survey - 2023/24				Species - Peak Counts per hour												
Date	Observer	Start time	End time	BG	CU	OC	LB	BH	HG	CM	BG droppings	Wind	Cloud	Precip	Vis	Dublin High Tide
05/01/2024	ED	09:10	10:10	0	0	0	0	3	7	0	N	3	3	1	5	06:09
05/01/2024	ED	10:10	11:10	0	0	0	0	4	3	0	N	3	3	1	5	06:09
05/01/2024	ED	11:10	12:10	0	0	0	0	2	12	0	N	3	3	1	5	06:09
05/01/2024	ED	12:10	13:10	0	0	0	0	0	5	0	N	3	3	1	5	06:09
05/01/2024	ED	13:10	14:10	0	0	0	0	3	11	0	N	3	3	1	5	06:09
05/01/2024	ED	14:10	15:10	0	0	0	0	5	6	0	N	3	3	1	5	06:09
19/01/2024	ED	09:25	10:25	0	0	0	0	1	4	0	N	2	1	1	5	05:54
19/01/2024	ED	10:25	11:25	0	0	0	0	0	7	0	N	2	1	1	5	05:54
19/01/2024	ED	11:25	12:25	0	0	0	0	0	3	0	N	2	1	1	5	05:54
19/01/2024	ED	12:25	13:25	0	0	0	0	0	11	0	N	2	1	1	5	05:54
19/01/2024	ED	13:25	14:25	0	0	0	0	2	8	0	N	2	1	1	5	05:54
19/01/2024	ED	14:25	15:25	0	0	0	0	0	9	0	N	2	1	1	5	05:54

British Trust for Ornithology Species Codes: BG-Brent Goose, CU-Curlew, OC-Oystercatcher, LB-Lesser Black-backed Gull, BH-Black-headed Gull, HG-Herring Gull, CM-Common Gull, ET-Little Egret.

February 2024

Dundrum Survey - 2023/24				Species - Peak Counts per hour												
Date	Observer	Start time	End time	BG	CU	OC	LB	BH	HG	CM	BG droppings	Wind	Cloud	Precip	Vis	Dublin High Tide
06/02/2024	ED	09:20	10:20	0	0	0	0	0	7	0	N	3	3	5	5	08:22
06/02/2024	ED	10:20	11:20	0	0	0	0	0	4	0	N	3	3	5	5	08:22
06/02/2024	ED	11:20	12:20	0	0	0	0	0	11	0	N	3	3	5	5	08:22
06/02/2024	ED	12:20	13:20	0	0	0	0	5	7	0	N	3	3	5	5	08:22
06/02/2024	ED	13:20	14:20	0	0	0	0	3	7	0	N	3	3	5	5	08:22
06/02/2024	ED	14:20	15:20	0	0	0	0	4	6	0	N	3	3	5	5	08:22
20/02/2024	ED	09:40	10:40	0	0	0	0	0	5	0	N	3	2	2	5	08:52
20/02/2024	ED	10:40	11:40	0	0	0	0	0	7	0	N	3	2	2	5	08:52
20/02/2024	ED	11:40	12:40	0	0	0	0	0	9	0	N	3	2	2	5	08:52
20/02/2024	ED	12:40	13:40	0	0	0	0	0	5	0	N	3	2	2	5	08:52
20/02/2024	ED	13:40	14:40	0	0	0	0	0	6	0	N	3	2	2	5	08:52
20/02/2024	ED	14:40	15:40	0	0	0	0	0	3	0	N	3	2	2	5	08:52

British Trust for Ornithology Species Codes: BG-Brent Goose, CU-Curlew, OC-Oystercatcher, LB-Lesser Black-backed Gull, BH-Black-headed Gull, HG-Herring Gull, CM-Common Gull, ET-Little Egret.

March 2024

Dundrum Survey - 2023/24				Species - Peak Counts per hour												
Date	Observer	Start time	End time	BG	CU	OC	LB	BH	HG	CM	BG droppings	Wind	Cloud	Precip	Vis	Dublin High Tide
04/03/2024	ED	09:30	10:30	0	0	0	0	3	6	0	N	4	3	4	5	17:50
04/03/2024	ED	10:30	11:30	0	0	0	0	2	5	0	N	4	3	4	5	17:50
04/03/2024	ED	11:30	12:30	0	0	0	0	4	8	0	N	4	3	4	5	17:50
04/03/2024	ED	12:30	13:30	0	0	0	0	1	3	0	N	4	3	4	5	17:50
04/03/2024	ED	13:30	14:30	0	0	0	0	2	6	0	N	4	3	4	5	17:50
04/03/2024	ED	14:30	15:30	0	0	0	0	0	5	0	N	4	3	4	5	17:50
15/03/2023	ED	10:15	11:15	0	0	0	0	0	5	0	N	3	2	1	5	15:02
15/03/2023	ED	11:15	12:15	0	0	0	0	0	7	0	N	3	2	1	5	15:02
15/03/2023	ED	12:15	13:15	0	0	0	0	0	3	0	N	3	2	1	5	15:02
15/03/2023	ED	13:15	14:15	0	0	0	0	0	6	0	N	3	2	1	5	15:02
15/03/2023	ED	14:15	15:15	0	0	0	0	0	5	0	N	3	2	1	5	15:02
15/03/2023	ED	15:15	16:15	0	0	0	0	0	5	0	N	3	2	1	5	15:02

Appendix 8.4 - Breeding Bird Assessment for a proposed development at the former Central Mental Hospital, Dundrum Road, Dublin 14.

16th September 2024

Prepared by: Frank Spellman of Altemar Ltd.
On behalf of: Dún Laoghaire Rathdown County Council and the Land Development Agency

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Document Control Sheet			
Project	Breeding Bird Assessment for a proposed development at former Central Mental Hospital, Dundrum Road, Dublin 14		
Report	Breeding Bird Assessment		
Date	16th September 2024		
Version	Author	Reviewed	Date
Final	Frank Spellman	Bryan Deegan	16th September 2024

Summary

Structure/features:	The survey area consists primarily of grassland, scrub, treelines, mature standalone coniferous and deciduous tree, artificial buildings and surfaces, recolonised bare ground, bare ground and ornamentals.
Location:	Dundrum Road, Dublin 14.
Species breeding (2023 survey area):	Blackcap, Feral Pigeon, Goldcrest, Herring Gull, Magpie, Swallow, Wren.
Species breeding (2023 proposed site):	Magpie, Wren, Blackcap, Goldcrest.
Species breeding (2024 survey area):	Blackbird, Feral Pigeon, Herring Gull, Jackdaw, Magpie, Robin, Rook, Swallow, Woodpigeon, Wren.
Species breeding (2024 proposed site):	Blackbird, Magpie, Robin, Rook, Woodpigeon, Wren.
Proposed work:	Residential development.
Impact on breeding birds:	The proposed development will result in a long-term low adverse effect on breeding birds due to habitat loss. Mitigation measures are proposed.
Surveys by:	Frank Spellman
Survey dates (2023):	7th June, 14th June, 30th June 2023.
Survey dates (2024):	23rd April, 10th May, 17th May and 7th June 2024.

Competency of assessor

Since its inception in 2001, Altemar has been delivering ecological and environmental services to a broad range of clients. Operational areas include: residential; infrastructural; renewable; oil & gas; private industry; Local Authorities; EC projects; and, State/semi-State Departments.

Frank Spellman (BSc Zoology, MSc Zoology).

This report has been prepared by Frank Spellman. Frank has extensive experience in carrying out a wide range of fauna surveys as both a sub-contractor and employee for environmental consultancies and organisations in Ireland and the US. These include both roving and static acoustic bat surveys, terrestrial non-avian mammal surveys, breeding/wintering bird surveys, and freshwater ecology surveys. Frank has been lead ornithologist on numerous development projects within Ireland carrying out full wintering bird and breeding bird assessments.

Legislative context

The Wildlife Act 1976 protects wild birds in Ireland. Based on this legislation it is an offence to wilfully interfere with or destroy wild birds and their nests and eggs (other than the wild species mentioned in the Third Schedule of this Act). Under this legislation it is an offence for any person who "*wilfully takes or removes the eggs or nest of a protected wild bird otherwise than under and in accordance with such a licence, wilfully destroys, injures or mutilates the eggs or nest of a protected wild bird, wilfully disturbs a protected wild bird on or near a nest containing eggs or unflown young.*"

Habitats Directive- Council Directive 92/43/EEC 1992 on the conservation of natural habitats and of wild fauna and flora has been transposed into Irish Law, including, via, *inter alia*, the European Communities (Birds and Natural Habitats) Regulations 2011 (as amended).

Council Directive 2009/147/EC 2010 on the conservation of wild birds provides for the conservation of wild birds by, among other things, classifying important ornithological sites as Special Protection Areas. The Directive relates to the conservation of all species of naturally occurring birds in the wild state, their eggs, nests and habitats in the European territory of the Member States. The Directive prohibits in particular:

- deliberate killing or capture by any method;
- deliberate destruction of, or damage to, their nests and eggs or removal of their nests;
- taking their eggs in the wild and keeping these eggs even if empty;
- deliberate disturbance of these birds particularly during the period of breeding and rearing, in so far as disturbance would be significant having regard to the objectives of this Directive;
- keeping birds of species the hunting and capture of which is prohibited.

Under the European Communities (Birds and Natural Habitats) Regulations 2011 (as amended), notwithstanding any consent, statutory or otherwise, given to a person by a public authority or held by a person, except in accordance with a licence granted by the Minister under Regulation 54, a person who in respect of the species referred to in Part 1 of the First Schedule:

- deliberately captures or kills any specimen of these species in the wild,
- deliberately disturbs these species particularly during the period of breeding, rearing, hibernation and migration,
- deliberately takes or destroys eggs of those species from the wild,
- damages or destroys a breeding site or resting place of such an animal, or
- keeps, transports, sells, exchanges, offers for sale or offers for exchange any specimen of these species taken in the wild, other than those taken legally as referred to in Article 12(2) of the Habitats Directive, shall be guilty of an offence

Breeding bird survey

This report presents the results of site visits on the 7th, 14th and 30th June 2023 and the 23rd April, 10th May, 17th May and 7th June 2024 by Frank Spellman. A breeding bird transect survey was carried out on three occasions, as well as a building check carried out on 17th May 2024. All buildings were accessible on the 7th June 2023. The site outline is seen in Figures 1 & 2.

Survey methodology

2023

This Breeding bird survey was carried out based on the BTO Common Bird Census (Bibby *et al.*, 2000 and Gilbert *et al.*, 1998) and following CIEEM guidelines. Surveys were carried out within the breeding bird survey season and initiated within 1 hour before/after sunrise. A 15-minute settlement period was given following arrival to allow resumption of bird activity after any possible disturbance caused by arrival to the site. Due to the large size of the site with various features such as a woodland, buildings, scrub, grassland, and hedgerows, a single winding transect roughly following the full perimeter was carried out by two surveyors, covering all areas and features available for breeding activity within the survey area. A total of three surveys were carried out across three separate dates.

Transects began at the front of the main building. As the site was subdivided into various fields/parcels of land, upon entering each section of the site, transects took rough clockwise/anti-clockwise directions throughout the site, deviating where necessary. Upon entering each section of the site, each surveyor would commence surveying the boundary of that section in opposite directions before linking up and surveying all features of interest within that section.

Progress along the transect was carried out slowly, with pauses every few meters as appropriate to locate and identify any birds, continuing once all birds observed within an area/feature had been recorded. Each survey took 1.5 – 3.5 hours to complete. Care was taken not to double count any observations. Weather conditions were optimal on each occasion.

2024

This Breeding bird survey was carried out following the methodologies of 2023. A site outline was provided for survey purposes, although the entire Central Mental Hospital site was surveyed as per 2023 surveys for comparative purposes.

A 15-minute settlement period was given following arrival to allow resumption of bird activity after any possible disturbance caused by arrival to the site. Various features and habitats such as artificial buildings/surfaces, scrub, grassland, treelines, mature trees, hedgerows and ornamentals were present within the survey area. A single transect following the full perimeter of the survey area was carried out on each occasion, covering all areas and features available for breeding activity within and adjacent to the survey area. General transect direction was alternated between surveys to account for potential activity level variations throughout morning hours. Each survey was carried out by a single surveyor, deemed sufficient due to the familiarity of the site by the surveyor (Frank Spellman) following the previous years' surveys. The buildings within the survey area were also assessed both from the inside (17th May) and outside for breeding activity.

The survey was carried out over 2-4 hours on 3 occasions, beginning at dawn and ending once all areas/features had been surveyed. Care was taken not to double count any observations. Weather conditions were optimal on each occasion.

Figure 1. *Proposed site outline and survey area.*

Figure 2. *Proposed site and survey location.*

Survey results

Habitats of breeding bird potential

A desk and ground level breeding habitat assessment were carried and used to examine the structures and vegetation on site for features that could provide breeding habitat. Potential nesting features include scrub, treelines, mature conifer/deciduous canopies, an abandoned building etc. All vegetated areas and man-made structures on site were assessed for breeding bird potential.

Areas of high breeding bird potential included the artificial structures, scrub, treelines, mature trees, hedgerows and ornamental gardens throughout the survey area and its boundaries.

Breeding activity survey

2023

A total of 25 species were recorded on site across three surveys. Seven of these species were confirmed breeding during at least one survey.

Five amber-listed bird species of conservation concern were recorded on site: goldcrest, herring gull, mallard, magpie, and swallow. One red listed bird species of conservation concern was recorded on site: swift.

Breeding activity was confirmed for seven species: blackcap, feral pigeon, goldcrest, herring gull, magpie, swallow, and wren.

Goldcrest is an amber listed species of conservation concern in Ireland that was confirmed breeding within a large coniferous tree along the road leading from the main entrance to the main building on 14th June 2023.

Herring gull is an amber listed species of conservation concern in Ireland that was confirmed breeding on the roof of the western end of the main building on 30th June 2023.

Swallow is an amber listed species of conservation concern in Ireland for which recent breeding activity was observed on 14th June 2023. The observation was a nest displaying signs of recent activity (droppings, fresh nest materials etc.) within a utility building to the rear of the eastern end of the main building.

No red listed species of conservation concern in Ireland were observed breeding on site.

Table 1. *Species confirmed breeding within the survey*

Common name	BTO	Latin name	BoCCI
Blackcap	BC	*Sylvia atricapilla*	Green
Feral Pigeon	FP	*Columba livia f. domestica*	Green
Goldcrest	GC	*Regulus regulus*	Amber
Herring Gull	HG	*Larus argentatus (hospital roof)*	Amber
Magpie	MG	*Pica pica*	Green
Swallow	SL	*Hirundo rustica (utility building)*	Amber
Wren	WR	*Troglodytes troglodytes*	Green

Table 2. *Total species recorded within the survey*

Common name	BTO	Latin name	BoCCI
Blackbird	B.	*Turdus merula*	Green
Blackcap	BC	*Sylvia atricapilla*	Green
Blue Tit	BT	*Cyanistes caeruleus*	Green
Bullfinch	BF	*Pyrrhula pyrrhula*	Green
Chaffinch	CH	*Fringilla coelebs*	Green
Chiffchaff	CC	*Phylloscopus collybita*	Green
Coal Tit	CT	*Periparus ater*	Green
Collared Dove	CD	*Streptopelia decaocto*	Green
Dunnock	D.	*Prunella modularis*	Green
Feral Pigeon	FP	*Columba livia f. domestica*	Green
Goldcrest	GC	*Regulus regulus*	Amber
Goldfinch	GO	*Carduelis carduelis*	Green
Herring Gull	HG	*Larus argentatus*	Amber
Hooded Crow	HC	*Corvus cornix*	Green
Jackdaw	JD	*Corvus monedula*	Green
Magpie	MG	*Pica pica*	Green
Mallard	MA	*Anas platyrhynchos*	Amber
Robin	R.	*Erithacus rubecula*	Green
Rook	RO	*Corvus frugilegus*	Green
Sparrowhawk	SH	*Accipiter nisus*	Green
Starling	SG	*Sturnus vulgaris*	Amber
Swallow	SL	*Hirundo rustica*	Amber
Swift	SI	*Apus apus*	Red
Woodpigeon	WP	*Columba palumbus*	Green
Wren	WR	*Troglodytes troglodytes*	Green

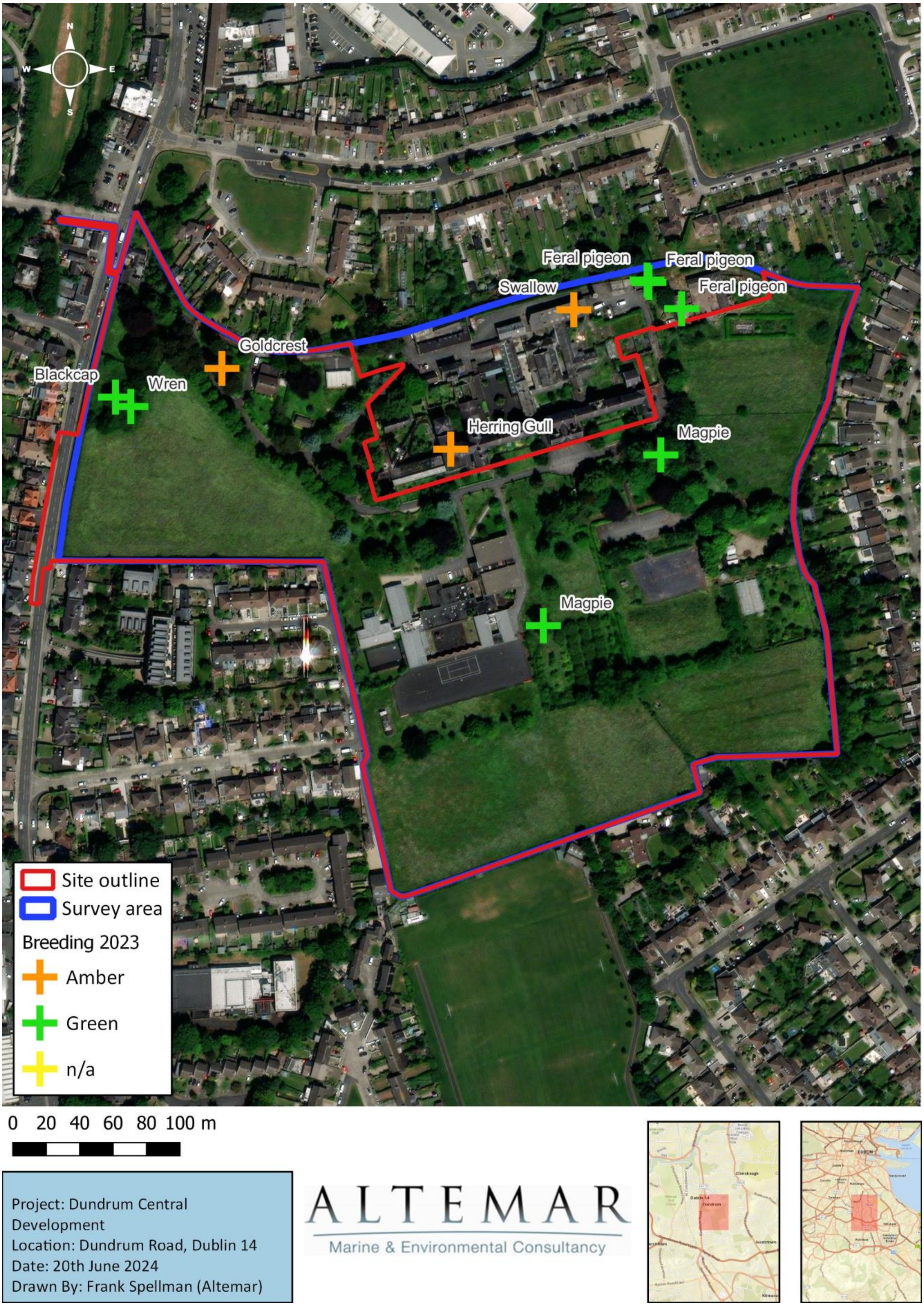

Figure 5. *Breeding locations (2023).*

2024

A total of 23 species were recorded within the survey area across three surveys as well as a building check. Of these species, goldcrest, herring gull, mallard, starling and swallow are amber listed BoCCI. The remaining species are all green listed BoCCI. No red listed BoCCI were recorded.

Ten species were recorded breeding or displaying behaviour indicative of breeding within the survey area. Two breeding species (herring gull & swallow) are amber listed BoCCI, the remaining being green-listed BoCCI.

Within the proposed site outline for submission, six species were recorded breeding or displaying behaviour indicative of breeding within the survey area. All of these breeding species are currently green-listed BoCCI.

Table 3. *Species confirmed breeding within the survey*

Common name	BTO	Latin name	BoCCI
Blackbird	B.	*Turdus merula*	Green
Feral Pigeon	FP	*Columba livia f. domestica*	Green
Herring Gull	HG	*Larus argentatus (Roof main building)*	Amber
Jackdaw	JD	*Corvus monedula*	Green
Magpie	MG	*Pica pica*	Green
Robin	R.	*Erithacus rubecula*	Green
Rook	RO	*Corvus frugilegus*	Green
Swallow	SL	*Hirundo rustica (Utility building)*	Amber
Woodpigeon	WP	*Columba palumbus*	Green
Wren	WR	*Troglodytes troglodytes*	Green

Table 4. *Species confirmed breeding within the proposed site*

Common name	BTO	Latin name	BoCCI
Blackbird	B.	*Turdus merula*	Green
Magpie	MG	*Pica pica*	Green
Robin	R.	*Erithacus rubecula*	Green
Rook	RO	*Corvus frugilegus*	Green
Woodpigeon	WP	*Columba palumbus*	Green
Wren	WR	*Troglodytes troglodytes*	Green

Table 5. *Total species recorded within the survey*

Common name	BTO	Latin name	BoCCI
Blackbird	B.	*Turdus merula*	Green
Blackcap	BC	*Sylvia atricapilla*	Green
Blue Tit	BT	*Cyanistes caeruleus*	Green
Bullfinch	BF	*Pyrrhula pyrrhula*	Green
Buzzard	BZ	*Buteo buteo*	Green
Chaffinch	CH	*Fringilla coelebs*	Green
Coal Tit	CT	*Periparus ater*	Green
Feral Pigeon	FP	*Columba livia f. domestica*	Green
Goldcrest	GC	*Regulus regulus*	Amber
Goldfinch	GO	*Carduelis carduelis*	Green
Great Tit	GT	*Parus major*	Green
Herring Gull	HG	*Larus argentatus*	Amber
Hooded Crow	HC	*Corvus cornix*	Green
Jackdaw	JD	*Corvus monedula*	Green
Magpie	MG	*Pica pica*	Green
Mallard	MA	*Anas platyrhynchos*	Amber
Robin	R.	*Erithacus rubecula*	Green
Rook	RO	*Corvus frugilegus*	Green
Song Thrush	ST	*Turdus philomelos*	Green
Starling	SG	*Sturnus vulgaris*	Amber
Swallow	SL	*Hirundo rustica*	Amber
Woodpigeon	WP	*Columba palumbus*	Green
Wren	WR	*Troglodytes troglodytes*	Green

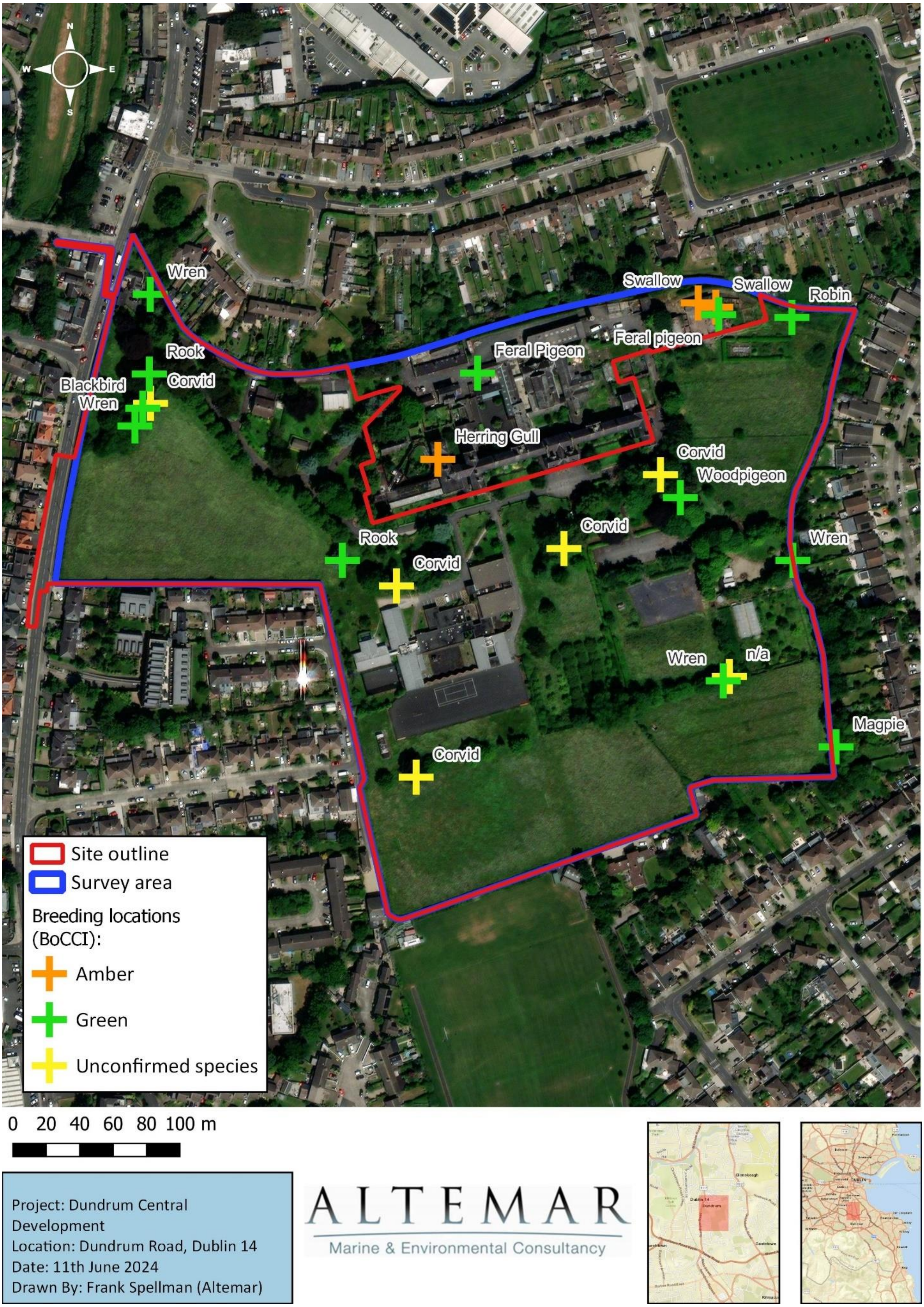

Figure 5. *Breeding locations (2024).*

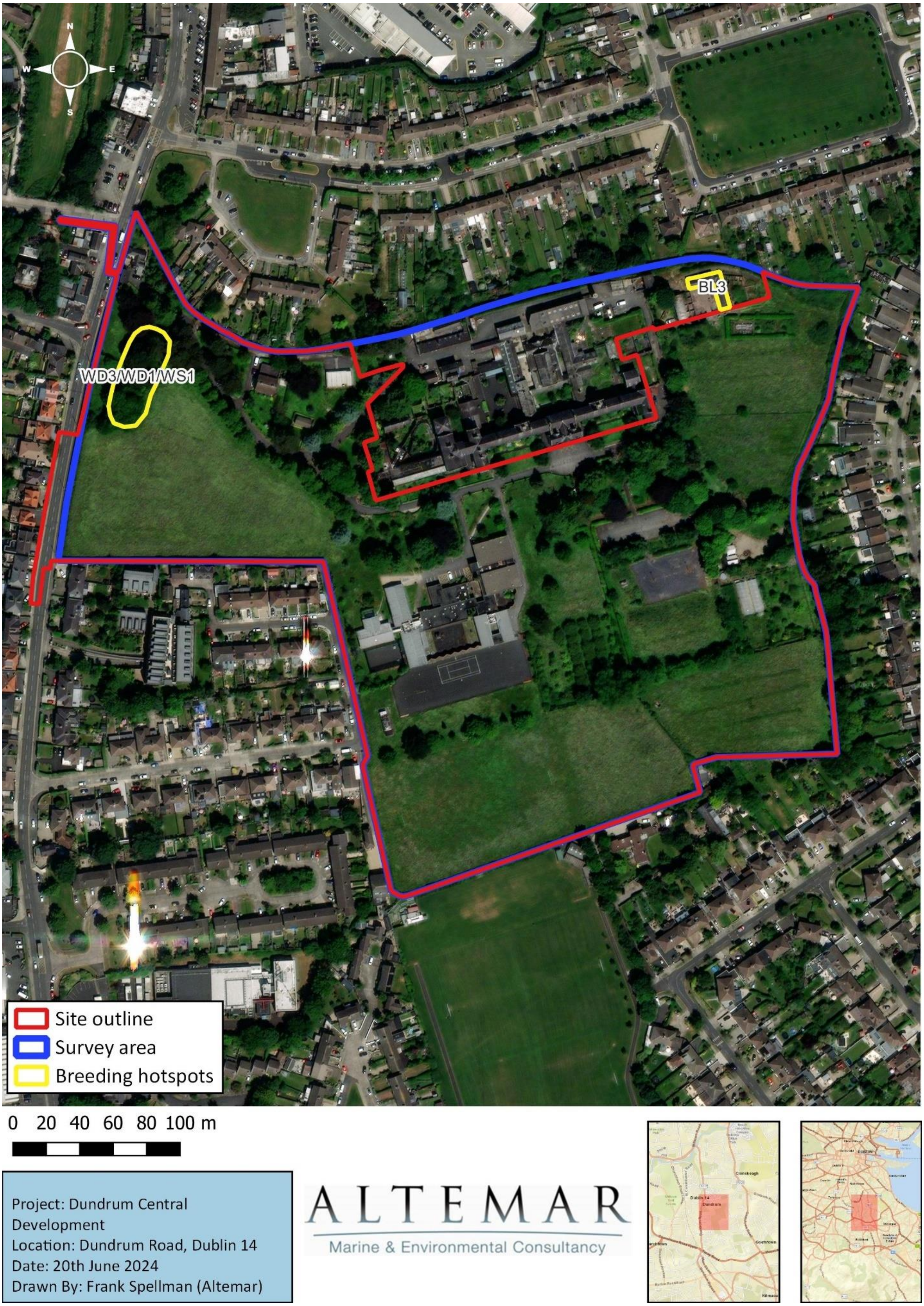

Figure 6. *Breeding hotspots.*

Breeding bird assessment findings

Review of local bird records

The review of existing bird records (sourced from NBDC Database) within a 2 km^2 grid (Reference grid O12U) encompassing the study area reveals that 58 known bird species have previously been observed and recorded locally (*Table 2*).

Table 6: *Status of bird species within 2 km^2 (grid O12Z)*

Species Name	Record Count	Date of Last Record	Dataset	BoCCI Status
Barn Swallow (Hirundo rustica)	1	31/12/2011	Bird Atlas 2007 - 2011	Protected Species: Wildlife Acts || Threatened Species: Birds of Conservation Concern || Threatened Species: Birds of Conservation Concern >> Birds of Conservation Concern - Amber List
Black-billed Magpie (Pica pica)	6	08/01/2023	Birds of Ireland	
Blackcap (Sylvia atricapilla)	5	14/02/2017	Birds of Ireland	
Black-crowned Night Heron (Nycticorax nycticorax)	1	31/03/1904	Rare birds of Ireland	
Black-headed Gull (Larus ridibundus)	4	10/11/2022	Birds of Ireland	Protected Species: Wildlife Acts || Threatened Species: Birds of Conservation Concern || Threatened Species: Birds of Conservation Concern >> Birds of Conservation Concern - Red List
Blue Tit (Cyanistes caeruleus)	10	08/01/2023	Birds of Ireland	
Chaffinch (Fringilla coelebs)	5	30/09/2016	Ireland's BioBlitz	
Coal Tit (Periparus ater)	7	23/02/2023	Birds of Ireland	
Common Blackbird (Turdus merula)	16	01/03/2023	Birds of Ireland	
Common Bullfinch (Pyrrhula pyrrhula)	6	03/03/2022	Birds of Ireland	
Common Buzzard (Buteo buteo)	3	30/03/2021	Birds of Ireland	
Common Chiffchaff (Phylloscopus collybita)	1	31/12/2011	Bird Atlas 2007 - 2011	
Common Kestrel (Falco tinnunculus)	1	31/12/2011	Bird Atlas 2007 - 2011	Protected Species: Wildlife Acts || Threatened Species: Birds of Conservation Concern || Threatened Species: Birds of Conservation Concern >> Birds of Conservation Concern - Amber List
Common Kingfisher (Alcedo atthis)	6	12/04/2023	Birds of Ireland	Protected Species: Wildlife Acts || Protected Species: EU Birds Directive || Protected Species: EU Birds Directive >> Annex I Bird Species || Threatened Species: Birds of Conservation Concern || Threatened Species: Birds of Conservation Concern >> Birds of Conservation Concern - Amber List
Common Moorhen (Gallinula chloropus)	2	31/12/2011	Bird Atlas 2007 - 2011	
Common Pheasant (Phasianus colchicus)	1	31/07/1991	The Second Atlas of Breeding Birds in Britain and Ireland: 1988-1991	Protected Species: Wildlife Acts || Protected Species: EU Birds Directive || Protected Species: EU Birds Directive >> Annex II, Section I Bird Species || Protected Species: EU Birds Directive >> Annex III, Section I Bird Species
Common Raven (Corvus corax)	2	30/09/2016	Ireland's BioBlitz	

Species Name	Record Count	Date of Last Record	Dataset	BoCCI Status
Common Starling (Sturnus vulgaris)	13	01/03/2023	Birds of Ireland	Protected Species: Wildlife Acts || Threatened Species: Birds of Conservation Concern || Threatened Species: Birds of Conservation Concern >> Birds of Conservation Concern - Amber List
Common Swift (Apus apus)	3	08/07/2023	Swifts of Ireland	Protected Species: Wildlife Acts || Threatened Species: Birds of Conservation Concern || Threatened Species: Birds of Conservation Concern >> Birds of Conservation Concern - Amber List
Common Wood Pigeon (Columba palumbus)	2	31/12/2011	Bird Atlas 2007 - 2011	Protected Species: Wildlife Acts || Protected Species: EU Birds Directive || Protected Species: EU Birds Directive >> Annex II, Section I Bird Species || Protected Species: EU Birds Directive >> Annex III, Section I Bird Species
Eurasian Collared Dove (Streptopelia decaocto)	4	11/03/2022	Birds of Ireland	
Eurasian Curlew (Numenius arquata)	1	31/12/2011	Bird Atlas 2007 - 2011	Protected Species: Wildlife Acts || Protected Species: EU Birds Directive || Protected Species: EU Birds Directive >> Annex II, Section II Bird Species || Threatened Species: Birds of Conservation Concern || Threatened Species: Birds of Conservation Concern >> Birds of Conservation Concern - Red List
Eurasian Jackdaw (Corvus monedula)	6	10/02/2023	Birds of Ireland	
Eurasian Oystercatcher (Haematopus ostralegus)	2	28/02/2013	Birds of Ireland	Protected Species: Wildlife Acts || Threatened Species: Birds of Conservation Concern || Threatened Species: Birds of Conservation Concern >> Birds of Conservation Concern - Amber List
Eurasian Siskin (Carduelis spinus)	3	30/09/2016	Ireland's BioBlitz	
Eurasian Sparrowhawk (Accipiter nisus)	3	30/09/2016	Ireland's BioBlitz	
Eurasian Treecreeper (Certhia familiaris)	3	30/09/2016	Ireland's BioBlitz	
European Goldfinch (Carduelis carduelis)	4	30/09/2016	Ireland's BioBlitz	
European Greenfinch (Carduelis chloris)	6	30/09/2016	Ireland's BioBlitz	
European Robin (Erithacus rubecula)	15	01/03/2023	Birds of Ireland	
Goldcrest (Regulus regulus)	3	27/01/2016	Birds of Ireland	
Great Cormorant (Phalacrocorax carbo)	1	31/12/2011	Bird Atlas 2007 - 2011	Protected Species: Wildlife Acts || Threatened Species: Birds of Conservation Concern || Threatened Species: Birds of Conservation Concern >> Birds of Conservation Concern - Amber List
Great Spotted Woodpecker (Dendrocopos major)	2	17/03/2021	Birds of Ireland	
Great Tit (Parus major)	2	31/12/2011	Bird Atlas 2007 - 2011	
Grey Heron (Ardea cinerea)	4	30/09/2016	Ireland's BioBlitz	
Grey Wagtail (Motacilla cinerea)	2	31/12/2011	Bird Atlas 2007 - 2011	
Hedge Accentor (Prunella modularis)	3	31/12/2011	Bird Atlas 2007 - 2011	

Species Name	Record Count	Date of Last Record	Dataset	BoCCI Status
Herring Gull (Larus argentatus)	2	31/12/2011	Bird Atlas 2007 - 2011	Protected Species: Wildlife Acts || Threatened Species: Birds of Conservation Concern || Threatened Species: Birds of Conservation Concern >> Birds of Conservation Concern - Red List
Hooded Crow (Corvus cornix)	2	19/03/2022	Birds of Ireland	
House Martin (Delichon urbicum)	1	31/07/1991	The Second Atlas of Breeding Birds in Britain and Ireland: 1988-1991	Protected Species: Wildlife Acts || Threatened Species: Birds of Conservation Concern || Threatened Species: Birds of Conservation Concern >> Birds of Conservation Concern - Amber List
House Sparrow (Passer domesticus)	3	31/12/2011	Bird Atlas 2007 - 2011	Protected Species: Wildlife Acts || Threatened Species: Birds of Conservation Concern || Threatened Species: Birds of Conservation Concern >> Birds of Conservation Concern - Amber List
Lesser Black-backed Gull (Larus fuscus)	2	30/09/2016	Ireland's BioBlitz	Protected Species: Wildlife Acts || Threatened Species: Birds of Conservation Concern || Threatened Species: Birds of Conservation Concern >> Birds of Conservation Concern - Amber List
Lesser Redpoll (Carduelis cabaret)	3	30/09/2016	Ireland's BioBlitz	
Long-tailed Tit (Aegithalos caudatus)	4	30/09/2016	Ireland's BioBlitz	
Mallard (Anas platyrhynchos)	3	31/12/2011	Bird Atlas 2007 - 2011	Protected Species: Wildlife Acts || Protected Species: EU Birds Directive || Protected Species: EU Birds Directive >> Annex II, Section I Bird Species || Protected Species: EU Birds Directive >> Annex III, Section I Bird Species
Mew Gull (Larus canus)	1	31/12/2011	Bird Atlas 2007 - 2011	Protected Species: Wildlife Acts || Threatened Species: Birds of Conservation Concern || Threatened Species: Birds of Conservation Concern >> Birds of Conservation Concern - Amber List
Mistle Thrush (Turdus viscivorus)	2	31/12/2011	Bird Atlas 2007 - 2011	
Mute Swan (Cygnus olor)	1	31/12/2011	Bird Atlas 2007 - 2011	Protected Species: Wildlife Acts || Threatened Species: Birds of Conservation Concern || Threatened Species: Birds of Conservation Concern >> Birds of Conservation Concern - Amber List
Pied Wagtail (Motacilla alba subsp. yarrellii)	2	30/09/2016	Ireland's BioBlitz	
Rock Pigeon (Columba livia)	10	01/03/2023	Birds of Ireland	Protected Species: Wildlife Acts || Protected Species: EU Birds Directive || Protected Species: EU Birds Directive >> Annex II, Section I Bird Species
Rook (Corvus frugilegus)	2	31/12/2011	Bird Atlas 2007 - 2011	
Sand Martin (Riparia riparia)	1	31/12/2011	Bird Atlas 2007 - 2011	Protected Species: Wildlife Acts || Threatened Species: Birds of Conservation Concern || Threatened Species: Birds of Conservation Concern >> Birds of Conservation Concern - Amber List
Snowy Owl (Bubo scandiaca)	2	08/04/2016	Birds of Ireland	Protected Species: Wildlife Acts || Protected Species: EU Birds Directive || Protected Species: EU Birds Directive >> Annex I Bird Species || Threatened Species: Birds of Conservation Concern || Threatened Species:

Species Name	Record Count	Date of Last Record	Dataset	BoCCI Status
				Birds of Conservation Concern >> Birds of Conservation Concern - Amber List
Song Thrush (Turdus philomelos)	5	30/09/2016	Ireland's BioBlitz	
Tufted Duck (Aythya fuligula)	1	31/12/2011	Bird Atlas 2007 - 2011	Protected Species: Wildlife Acts || Protected Species: EU Birds Directive || Protected Species: EU Birds Directive >> Annex II, Section I Bird Species || Protected Species: EU Birds Directive >> Annex III, Section II Bird Species || Threatened Species: Birds of Conservation Concern || Threatened Species: Birds of Conservation Concern >> Birds of Conservation Concern - Amber List
White Wagtail (Motacilla alba)	1	31/12/2011	Bird Atlas 2007 - 2011	
White-throated Dipper (Cinclus cinclus)	5	11/05/2019	Birds of Ireland	
Winter Wren (Troglodytes troglodytes)	6	11/06/2022	Birds of Ireland	

Mitigation

The proposed site outline within the survey area is of low importance to the local breeding bird population. However, the impact of the development during construction phase will be a loss of existing habitats and species. The following mitigation measures relevant to birds, as well as those outlined within the accompanying NIS and EIAR, shall be implemented to minimise any potential negative impact on biodiversity:

- An Ecological Clerk of Works (ECoW) will be appointed to oversee the construction phase and to oversee the implementation of all mitigation including compliance with Wildlife Acts and Water Pollution Acts and ensure that biodiversity in neighbouring areas including birds will not be impacted.
- Lighting during construction will be carried out in consultation with the project ecologist.
- Relevant guidelines and legislation (Section 40 of the Wildlife Acts, 1976 to 2012) in relation to the removal of trees and timing of nesting birds will need be followed e.g. do not remove trees or shrubs during the nesting season (1st March to 31st August). Should this not be possible a pre-clearance inspection will be carried out by an ecologist and clearance will not take place if nests are present.

Conclusion

This report presents the results of three breeding bird surveys on the site by Frank Spellman in 2023 and three surveys in 2024. Three breeding bird transect surveys were carried out in each season. The surveys comply with bird survey guidance documentation including BTO Common Bird Census (Bibby *et al.*, 2000 and Gilbert *et al.*, 1998) following CIEEM guidelines. Weather conditions were favourable on each occasion.

A total of 25 species in 2023 and 23 species in 2024 were recorded within the overall survey area. Seven species in 2023 and ten species (six within the proposed site outline) in 2024 were recorded breeding or displaying behaviour indicative of breeding.

In 2023, four green-listed species (blackcap, feral pigeon, magpie and wren) and three amber-listed species (goldcrest, herring gull, swallow) were confirmed breeding within the survey area.

In 2024, six green-listed bird species of conservation concern were recorded breeding within the proposed site outline; blackbird, magpie, robin, rook, woodpigeon and wren. No amber-listed bird species of conservation concern were recorded breeding within the proposed site outline.

A hotspot of breeding activity observed within the proposed site outline consists of a mature coniferous canopy and a deciduous (mostly ash) stand with a scrub understory, in the west of the survey area south of the main entrance. Another hotspot outside of the proposed site outline exists in an area of old stone buildings/sheds in the northeast of the site, where nests of swallow (amber BoCCI) were confirmed. Although no other specific areas of high breeding value for birds exists, standalone mature trees (coniferous and deciduous) throughout the site provide valuable breeding habitat for corvid species.

Mitigation measures are proposed.

References

1. **Bibby, C.J., Burgess, N.D., Hill, D.A. & Mustoe, S.H. (2000)** Bird Census Techniques. Academic Press, London
2. **Bird Survey & Assessment Steering Group. (2022)**. Bird Survey Guidelines for assessing ecological impacts, v.1.0.0. https://birdsurveyguidelines.org [15/05/2023]
3. **Chartered Institute of Ecology and Environmental Management (2018).** *Guidelines for Ecological Impact Assessment in the UK and Ireland: Terrestrial, Freshwater, Coastal, and Marine.* Chartered Institute of Ecology and Environmental Management, Winchester.
4. **Collated by the National Biodiversity Data Centre from different sources, General Biodiversity Records from Ireland**, National Biodiversity Data Centre, Ireland, accessed 17 October 2023, <https://maps.biodiversityireland.ie/Dataset/7>
5. **Convention on the Conservation of European Wildlife and Natural Habitats (Bern Convention) 1982**
6. **Convention on the Conservation of Migratory Species of Wild Animals (Bonn Convention) 1979**
7. **Department of Housing, Planning and Local Government (December, 2018).** *Urban Development and Building Heights Guidelines for Planning Authorities*.
8. **EC Directive on The Conservation of Natural habitats and of Wild Fauna and Flora (Habitats Directive) 1992**
9. **EU Directive on the Conservation of Wild Birds 2009**
10. **Gilbert, G., Gibbons, D.W., & Evans, J. (1998)** Bird Monitoring Methods: A Manual of Techniques for UK Key Species. The Royal Society for the protection of Birds, Sandy, Bedfordshire, England.
11. **Gilbert G, Stanbury A and Lewis L (2021)**, "Birds of Conservation Concern in Ireland 2020 – 2026". Irish Birds 9: 523—544
12. **Wildlife Act 1976 and Wildlife [Amendment] Act 2000**. Government of Ireland.

Appendix 8.4a – Breeding bird survey data 2024

(Breeding observations highlighted in yellow)

Survey	Date	Redline	Time	Species	No.	Behaviour	Height (m)	Details
1	23/04/2024	Y	05:32	Blackbird	1	Foraging		Ivy within treeline to southeast of main CMH building.
1	23/04/2024	Y	05:33	Wren	1	Calling		Within treeline to southeast of main CMH building.
1	23/04/2024	Y	05:34	Magpie	3	Roosting		Within treeline to southeast of main CMH building.
1	23/04/2024	Y	05:34	Woodpigeon	8	Roosting		Within treeline to southeast of main CMH building.
1	23/04/2024	Y	05:36	Robin	1	Singing		Within treeline to southeast of main CMH building.
1	23/04/2024	Y	05:38	Bullfinch	1	Singing		Within treeline to southeast of main CMH building.
1	23/04/2024	Y	05:44	Magpie	1	Breeding		In sycamore in residential garden adjacent to southeast boundary wall.
1	23/04/2024	Y	05:48	Hooded Crow	2	Perched		In treeline along southern boundary of orchard.
1	23/04/2024	Y	05:50	Herring Gull	1	Flight Path	60	West flight across centre of CMH site.
1	23/04/2024	Y	05:52	Woodpigeon	5	Roosting		In large mature deciduous tree to south of main building entrance.
1	23/04/2024	Y	05:55	Coal Tit	1	Calling		In mature conifer canopy to south of main entrance to CMH building.
1	23/04/2024	Y	05:55	Woodpigeon	6	Roosting		In mature conifer canopy to south of main entrance to CMH building.
1	23/04/2024	Y	05:57	Woodpigeon	1	Roosting		In standalone tree to north of orchard.
1	23/04/2024	Y	05:58	Woodpigeon	2	Roosting		In standalone tree to north of orchard.
1	23/04/2024	Y	05:59	Herring Gull	1	Flight Path	20	South flight across centre of site.
1	23/04/2024	Y	06:00	Hooded Crow	2	Flight Path	10	Southeast flight across centre of site.
1	23/04/2024	Y	06:00	Woodpigeon	1	Flight Path	20	Northeast flight across south of site.
1	23/04/2024	Y	06:01	Herring Gull	1	Flight Path	20	North flight across centre of site.
1	23/04/2024	Y	06:02	Blackbird	1	Foraging		In south of orchard.
1	23/04/2024	Y	06:04	Wren	1	Calling		Within vegetation along east boundary of orchard.
1	23/04/2024	Y	06:05	Herring Gull	1	Flight Path	30	West flight across centre of CMH site.
1	23/04/2024	Y	06:07	Goldcrest	1	Calling		In mature conifer canopy to south of main entrance to CMH building.
1	23/04/2024	Y	06:07	Jackdaw	1	Perched		In large deciduous tree canopy to south of main building entrance.
1	23/04/2024	Y	06:10	Magpie	2	Foraging		On open grassland to northwest of buildings in southwest of site.
1	23/04/2024	Y	06:16	Hooded Crow	2	Perched		Treeline along drive to front of CMH.
1	23/04/2024	Y	06:18	Magpie	2	Perched		In large conifer adjacent to entrance.
1	23/04/2024	Y	06:20	Corvid nest	1	Breeding		In large conifer adjacent to entrance.
1	23/04/2024	Y	06:22	Hooded Crow	1	Perched		Moving around canopy of large coniferous tree adjacent to entrance.
1	23/04/2024	Y	06:24	Blackcap	1	Calling		From ash stand along west boundary wall.
1	23/04/2024	Y	06:26	Blackbird	1	Perched		On west boundary wall.
1	23/04/2024	Y	06:28	Woodpigeon	1	Flight Path	10	Southeast flight over northwest of site.
1	23/04/2024	Y	06:31	Blackbird	1	Perched		In treeline adjacent to house in northwest of site.
1	23/04/2024	Y	06:33	Hooded Crow	2	Perched		On pre-fab in northwest of site.
1	23/04/2024	Y	06:35	Chaffinch	1	Singing		Vegetation along northwest boundary wall.
1	23/04/2024		06:37	Herring Gull	2	Breeding		Mating on roof of CMH adjacent to church.

Survey	Date	Redline	Time	Species	No.	Behaviour	Height (m)	Details
1	23/04/2024		06:45	Feral Pigeon	3	Perched		On roof of CMH main building.
1	23/04/2024		06:46	Feral Pigeon	3	Breeding		Male harassing females on roof to rear of main CMH building.
1	23/04/2024		06:50	Blue Tit	1	Calling		From boundary wall to north of main CMH building.
1	23/04/2024		06:51	Feral Pigeon	2	Perched		On roof of boarded-up sheds in northeast.
1	23/04/2024		06:53	Blue Tit	2	Foraging		In vegetation along boundary wall.
1	23/04/2024		07:01	Feral Pigeon	1	Perched		On roof of easternmost wing of main CMH building.
1	23/04/2024		07:01	Hooded Crow	1	Perched		On roof of easternmost wing of main CMH building.
1	23/04/2024		07:01	Jackdaw	3	Perched		On roof of easternmost wing of main CMH building.
1	23/04/2024	Y	07:04	Corvid nest	1	Breeding		In mature tree canopy to front of Main CMH building entrance.
1	23/04/2024	Y	07:14	Herring Gull	2	Flight Path	10	Southeast flight across northeast of site.
1	23/04/2024	Y	07:28	Herring Gull	2	Large Flight		Over east boundary of site.
1	23/04/2024	Y	07:30	Blue Tit	1	Foraging		In scrub in west of gardens in east of site.
1	23/04/2024	Y	07:31	Great Tit	1	Foraging		In southeast corner of gardens in east of site.
1	23/04/2024	Y	07:31	Robin	1	Foraging		In southeast corner of gardens in east of site.
1	23/04/2024	Y	07:32	Goldfinch	4	Foraging		In treeline canopy from domestic gardens overhanging boundary wall in southeast.
1	23/04/2024	Y	07:37	Nest	1	Breeding		Nest of unidentified species in treeline along drainage ditch to southeast of gardens.
1	23/04/2024		07:47	Blue Tit	1	Foraging		In ornamentals to front of CMH.
1	23/04/2024	Y	07:57	Herring Gull	1	Foraging		Adjacent to asylum seeker accommodation.
1	23/04/2024	Y	07:57	Hooded Crow	2	Foraging		Adjacent to asylum seeker accommodation.
1	23/04/2024	Y	07:57	Jackdaw	6	Foraging		Adjacent to asylum seeker accommodation.
1	23/04/2024	Y	07:57	Magpie	5	Foraging		Adjacent to asylum seeker accommodation.
1	23/04/2024	Y	07:58	Corvid nest	1	Breeding		Corvid nest in treeline within refugee accommodation area.
1	23/04/2024	Y	08:03	Jackdaw	3	Foraging		On artificial surface between asylum seeker accommodation.
1	23/04/2024	Y	08:03	Starling	3	Foraging		On artificial surface between asylum seeker accommodation.
2	10/05/2024	Y	05:18	Chaffinch	1	Perched		On west of north boundary wall.
2	10/05/2024		05:24	Feral Pigeon	2	Perched		On roof of main CMH building.
2	10/05/2024		05:24	Woodpigeon	1	Perched		On roof of main CMH building.
2	10/05/2024		05:28	Woodpigeon	1	Perched		On north boundary wall.
2	10/05/2024		05:32	Goldfinch	3	Foraging		Adjacent to sheds in northeast.
2	10/05/2024		05:35	Blackbird	1	Perched		On east of north boundary wall.
2	10/05/2024	Y	05:39	Herring Gull	1	Flight Path	20	Southeast flight across northeast of site.
2	10/05/2024	Y	05:45	Great Tit	1	Flight Path	10	Northeast flight across northeast of site.
2	10/05/2024	Y	05:49	Hooded Crow	1	Perched		Treeline to southwest of sheds in northeast.
2	10/05/2024	Y	05:53	Blackbird	2	Foraging		On lane between main building and sheds in northeast.
2	10/05/2024		05:56	Herring Gull	1	Flight Path	20	East flight over northeast of site.
2	10/05/2024	Y	05:58	Robin	1	Breeding		Agitated calls from scrub along ditch in northeast.
2	10/05/2024	Y	06:06	Blackcap	1	Foraging		In tree canopy overhanging boundary wall in northeast.
2	10/05/2024	Y	06:06	Robin	1	Foraging		In tree canopy overhanging boundary wall in northeast.
2	10/05/2024	Y	06:08	Blackcap	1	Perched		In scrub in northeast of site.
2	10/05/2024		06:12	Herring Gull	2	Flight Path	20	East flight over north boundary wall.

Survey	Date	Redline	Time	Species	No.	Behaviour	Height (m)	Details
2	10/05/2024	Y	06:18	Woodpigeon	1	Breeding		In ivy-clad chestnut in treeline to southeast of main CMH building.
2	10/05/2024	Y	06:25	Robin	1	Singing		In treeline to southeast of main CMH building.
2	10/05/2024	Y	06:35	Wren	1	Breeding		In scrub to east of gravel area along east boundary wall.
2	10/05/2024	Y	06:38	Feral Pigeon	2	Flight Path	20	Southeast flight across east of site.
2	10/05/2024	Y	06:40	Song Thrush	1	Perched		On scrub in gravel area in east of site.
2	10/05/2024	Y	06:50	Mallard	1	Perched		On east boundary wall in gravel garden.
2	10/05/2024	Y	07:00	Blue Tit	2	Foraging		In scrub in west of garden.
2	10/05/2024	Y	07:09	Rook	1	Flight Path	10	Southeast flight across southeast of site.
2	10/05/2024	Y	07:11	Woodpigeon	1	Roosting		In treeline to west of gravel garden.
2	10/05/2024	Y	07:14	Magpie	2	Perched		In canopy of mature deciduous tree to south of CMH main building.
2	10/05/2024	Y	07:16	Corvid nest	1	Breeding		Inactive corvid nest in large coniferous canopy to south of CMH main building.
2	10/05/2024	Y	07:18	Woodpigeon	1	Perched		In canopy of young deciduous tree to front of main CMH building entrance.
2	10/05/2024	Y	07:20	Jackdaw	3	Breeding		Defensive behaviour under canopy to south of front of CMH building.
2	10/05/2024	Y	07:27	Hooded Crow	1	Perched		On artificial structure in northeast of southeastern field.
2	10/05/2024	Y	07:28	Wren	1	Singing		Treeline along drainage ditch in southeast of site.
2	10/05/2024	Y	07:32	Nest	1	Breeding		Nest of unidentified species in treeline along drainage ditch to southeast of gardens.
2	10/05/2024	Y	07:33	Wren	2	Breeding		1 x nests in ivy-clad evergreen in treeline along drainage ditch to southeast of gardens.
2	10/05/2024	Y	07:39	Hooded Crow	1	Foraging		In orchard.
2	10/05/2024	Y	07:40	Herring Gull	1	Perched		On roof of building in southwest of site.
2	10/05/2024		07:45	Feral Pigeon	1	Perched		On roof of main CMH building.
2	10/05/2024		07:46	Feral Pigeon	6	Perched		On roof of main CMH building.
2	10/05/2024		07:46	Herring Gull	1	Perched		On roof of main CMH building.
2	10/05/2024		07:46	Magpie	1	Perched		On roof of main CMH building.
2	10/05/2024	Y	07:52	Feral Pigeon	2	Foraging		Adjacent to house in northeast of site.
2	10/05/2024	Y	07:54	Hooded Crow	1	Foraging		In northwest of site.
2	10/05/2024	Y	07:57	Corvid nest	1	Breeding		In conifer canopy in northwest of site.
2	10/05/2024	Y	07:58	Woodpigeon	1	Perched		In conifer canopy in northwest of site.
2	10/05/2024	Y	08:01	Rook	1	Breeding		Sitting on nest in canopy of conifer in northwest of site.
2	10/05/2024	Y	08:05	Herring Gull	1	Flight Path	10	West flight over west of survey area.
2	10/05/2024	Y	08:06	Woodpigeon	1	Roosting		In lime tree along drive to building in southwest of site.
2	10/05/2024	Y	08:08	Rook	1	Breeding		Active nest in conifer to northwest of building in southwest of site.
2	10/05/2024	Y	08:09	Corvid nest	1	Breeding		In tree canopy to north of building in southwest of site.
2	10/05/2024	Y	08:12	Magpie	1	Foraging		On grass adjacent to building in southwest of site.
3	17/05/2024			Feral Pigeon	1	Breeding		In old livestock shed along east of courtyard in northeast of survey area.
3	17/05/2024			Feral Pigeon	1	Breeding		At least one active nest in 2 storey shed to northwest of courtyard in northeast of survey area.
3	17/05/2024			Swallow	3	Breeding		1 nest in attic and two nests downstairs of shed in along north of courtyard in northeast of survey area.
3	17/05/2024			Swallow	1	Breeding		Inactive nest in old livestock shed along east of courtyard in northeast of survey area.
4	07/06/2024	Y	05:17	Jackdaw	1	Flight Path	20	Southwest flight across northwest of site.
4	07/06/2024	Y	05:22	Chaffinch	1	Singing		In treeline overhanging boundary wall north of prefab in northwest of site.

Survey	Date	Redline	Time	Species	No.	Behaviour	Height (m)	Details
4	07/06/2024	Y	05:29	Coal Tit	1	Calling		From scrub along boundary wall to east of CMH entrance.
4	07/06/2024	Y	05:32	Goldfinch	3	Foraging		Foraging in scrub along boundary wall to east of CMH entrance.
4	07/06/2024	Y	05:40	Wren	1	Breeding		Nest with fledgling beneath in bay bush.
4	07/06/2024	Y	06:12	Goldcrest	3	Foraging		In conifer canopy in northwest of site.
4	07/06/2024	Y	06:16	Hooded Crow	1	Perched		In treeline along drive adjacent to CMH main entrance.
4	07/06/2024	Y	06:21	Herring Gull	1	Flight Path	20	Southeast flight across northwest of survey area.
4	07/06/2024	Y	06:25	Blackbird	1	Breeding		Fledgling in scrub to south of CMH main entrance.
4	07/06/2024	Y	06:28	Wren	1	Breeding		Fledgling in scrub to south of CMH main entrance.
4	07/06/2024	Y	06:36	Hooded Crow	1	Perched		In treeline along lane in northwest of site.
4	07/06/2024	Y	06:38	Corvid nest	1	Breeding		In mature pine canopy in northwest of survey area.
4	07/06/2024	Y	06:40	Woodpigeon	1	Perched		In lime tree along drive to building in southwest of site.
4	07/06/2024		06:57	Woodpigeon	1	Flight Path		North flight from main CMH building over northern boundary wall.
4	07/06/2024	Y	07:02	Magpie	1	Foraging		Along drive between CMH entrance and main building.
4	07/06/2024	Y	07:09	Buzzard	1	Perched		In large horse chestnut prior to flying southeast over site boundary.
4	07/06/2024	Y	07:13	Robin	1	Foraging		In gravel garden.
4	07/06/2024	Y	07:45	Chaffinch	1	Singing		From treeline/scrub adjacent to gravel garden.
4	07/06/2024	Y	07:49	Blackcap	1	Singing		From scrub along boundary wall adjacent to gravel garden.
4	07/06/2024	Y	07:50	Magpie	1	Calling		Canopy of horse chestnut adjacent to gravel garden.
4	07/06/2024	Y	08:11	Buzzard	1	Flight Path	20	Southwest flight across southeast of site being harassed by herring gull.
4	07/06/2024	Y	08:11	Herring Gull	1	Flight Path	20	Southwest flight across southeast of site harassing buzzard.
4	07/06/2024	Y	08:18	Wren	1	Singing		In treeline along drainage ditch in southeast.
4	07/06/2024	Y	08:18	Wren	1	Singing		In treeline along drainage ditch in southeast corner of orchard.
4	07/06/2024		08:25	Jackdaw	2	Perched		On roof of main CMH building.
4	07/06/2024	Y	08:27	Magpie	1	Perched		In canopy of copper beech to south of main CMH building entrance.
4	07/06/2024	Y	08:35	Blackcap	1	Singing		From treeline along drive to east of main CMH building.
4	07/06/2024	Y	08:35	Chaffinch	1	Singing		From treeline along drive to east of main CMH building.
4	07/06/2024		08:40	Feral Pigeon	2	Foraging		On artificial surface to rear of main CMH building.
4	07/06/2024		08:42	Feral Pigeon	3	Perched		On roof of building to rear of main CMH building.
4	07/06/2024		08:45	Feral Pigeon	5	Perched		On roof of main CMH building.
4	07/06/2024		08:45	Magpie	2	Perched		On roof of main CMH building.
4	07/06/2024		08:45	Woodpigeon	4	Perched		On roof of main CMH building.
4	07/06/2024	Y	08:50	Magpie	1	Perched		On boundary wall to northwest of main building.
4	07/06/2024		08:56	Herring Gull	2	Perched		On west roof of main CMH building.
4	07/06/2024	Y	09:02	Magpie	2	Foraging		In amenity grass to northwest of buildings in southwest of survey area.
4	07/06/2024	Y	09:08	Goldcrest	1	Singing		From treeline along drive between main building and entrance.

Appendix 8.4b – Breeding bird survey data 2023

(Breeding observations highlighted in yellow)

Survey	Date	Time	Species	No.	Behaviour	Details
1	07/06/2023	05:17	Unidentified gull	1	Flight path	Northeast flight path across main building.
1	07/06/2023	05:17	Blackbird	1	Foraging	On grass verge north of high security building on west of the site.
1	07/06/2023	05:17	Woodpigeon	1	Calling	Coniferous tree to the north of the high security building on the west of the site.
1	07/06/2023	05:20	Magpie	1	Flight path	Northerly flight across centre of site.
1	07/06/2023	05:20	Collared dove	1	Calling	Coniferous tree to the north of the high security building on the west of the site.
1	07/06/2023	05:30	Chaffinch	1	Calling	From canopy of large coniferous trees immediately south of main building.
1	07/06/2023	05:31	Blackbird	1	Flight path	Northerly flight path across main building.
1	07/06/2023	05:36	Magpie	1	Breeding	Active nest within large coniferous tree between car park and main building.
1	07/06/2023	05:43	Starling	15	Flight path	Northeast flight path across centre of site.
1	07/06/2023	05:45	Robin	1	Foraging	North of high security building
1	07/06/2023	05:55	Wren	1	Calling	In orchard in centre of site.
1	07/06/2023	06:00	Magpie	1	Breeding	Within coniferous tree adjacent to orchard.
1	07/06/2023	06:02	Coal Tit	1	Foraging	Within coniferous tree adjacent to orchard.
1	07/06/2023	06:15	Woodpigeon	1	Flight path	Southerly route over southeast of site.
1	07/06/2023	06:22	Swift	1	Foraging	On the wing over southeast area of site.
1	07/06/2023	06:42	Blackbird	1	Foraging	On grass verge of car park between orchard and ornamental garden.
1	07/06/2023	07:07	Robin	1	Singing	Song from within treeline directly northeast of ornamental gardens.
1	07/06/2023	07:08	Dunnock	1	Calling	Calling within hedgerow adjacent to polytunnels in east of site.
1	07/06/2023	07:14	Blue Tit	1	Foraging	Among ornamentals adjacent to polytunnels.
1	07/06/2023	07:15	Bullfinch	1	Foraging	Among ornamentals adjacent to polytunnels.
1	07/06/2023	07:17	Blue Tit	1	Foraging	Among ornamentals adjacent to polytunnels.
1	07/06/2023	07:39	Blackbird	1	Foraging	In northeast of site adjacent to northern site border.
1	07/06/2023	07:51	Mallard	1	Flight path	Northerly flight path across centre of site originating and ending off site.
1	07/06/2023	07:55	Jackdaw	1	Calling	In treeline adjacent west of greenhouse in northeast of site.
1	07/06/2023	07:57	Chaffinch	1	Foraging	In ornamentals in front of main building.
1	07/06/2023	08:03	Goldfinch	1	Foraging	Within ornamentals along front of main building.
1	07/06/2023	08:11	Woodpigeon	1	Perching	In tree on northern boundary of site.
1	07/06/2023	08:16	Woodpigeon	1	Flight path	Southeast flight across western end of site.
1	07/06/2023	08:19	Wren	1	Breeding	Within dense ivy within woodland on western boundary.
1	07/06/2023	08:31	Blackbird	1	Foraging	Adjacent to caged courtyard in west of site.
1	07/06/2023	08:34	Woodpigeon	1	Perching	Within treeline adjacent to playing pitches in southwest of site.
2	14/06/2023	04:32	Blackbird	1	Foraging	Foraging below treeline along road to southwest of main building.
2	14/06/2023	04:33	Wren	1	Foraging	In treeline along road from entrance to main building.
2	14/06/2023	04:34	Goldcrest	1	Breeding	Within canopy of conifer within treeline along road to main building from entrance.
2	14/06/2023	04:37	Hooded Crow	1	Perching	In treeline along road from entrance to main building.
2	14/06/2023	04:40	Blackbird	1	Foraging	Foraging in woodland on west of site.
2	14/06/2023	04:44	Woodpigeon	1	Perching	In canopy of woodland on west of site.

Survey	Date	Time	Species	No.	Behaviour	Details
2	14/06/2023	04:44	Wren	1	Singing	In woodland on west of site.
2	14/06/2023	04:44	Blackcap	1	Singing	In woodland on west of site.
2	14/06/2023	04:47	Magpie	1	Flight path	Northerly flight path along northwest boundary of site.
2	14/06/2023	04:48	Chiffchaff	1	Flight path	Easterly flight across northwestern portion of site.
2	14/06/2023	04:54	Blackcap	2	Breeding	Active nest in ash tree in wood in northwest of site.
2	14/06/2023	04:57	Goldfinch	1	Foraging	Woodland canopy in northeast of site.
2	14/06/2023	05:02	Wren	1	Flight path	Northerly flight path across northwest of site.
2	14/06/2023	05:04	Woodpigeon	1	Perching	Along northern boundary wall.
2	14/06/2023	05:13	Magpie	1	Perching	In tree canopy adjacent west to main building.
2	14/06/2023	05:28	Swallow	1	Breeding	Inactive nest within building adjacent to chimney directly adjacent northwest to the main building.
2	14/06/2023	05:30	Blackbird	1	Foraging	In green adjacent south to chimney.
2	14/06/2023	05:31	Feral Pigeon	3	Perching	On roof of building within green adjacent to chimney.
2	14/06/2023	05:35	Feral Pigeon	1	Breeding	Second floor of building adjacent east of chimney stack.
2	14/06/2023	05:40	Jackdaw	2	Flight path	Southerly flight path across northeast of site.
2	14/06/2023	05:51	Blue Tit	1	Foraging	In overgrown ammenity grass/scrub in northeast of site.
2	14/06/2023	05:56	Sparrowhawk	1	Perching	Perched in treeline overlooking overgrown grassland in northeast of site.
2	14/06/2023	06:12	Jackdaw	2	Perching	On roof of main building.
2	14/06/2023	06:36	Coal Tit	1	Foraging	In orchard.
3	30/06/2023	04:45	Magpie	2	Perched	In tree to south of main building.
3	30/06/2023	04:51	Rook	1	Flight Path	Southwest flight path across southwest of site.
3	30/06/2023	05:08	Wren	1	Singing	From treeline adjacent to field in southeast of the site.
3	30/06/2023	05:10	Woodpigeon	1	Flight path	Southwest flight path across southeast of site.
3	30/06/2023	05:15	Herring Gull	1	Flight Path	Northeast flight across east of site.
3	30/06/2023	05:17	Wren	1	Foraging	Amongst ornamentals adjacent to polytunnels.
3	30/06/2023	05:19	Goldfinch	1	Foraging	Amongst ornamentals adjacent to polytunnels.
3	30/06/2023	05:23	Woodpigeon	1	Flight path	Southerly flight path across southeast of site.
3	30/06/2023	05:26	Woodpigeon	1	Foraging	On grass to the north of polytunnels.
3	30/06/2023	05:28	Herring Gull	1	Flight Path	Northerly flight across northeast of site.
3	30/06/2023	05:29	Magpie	1	Perching	Perched in treeline in east of site.
3	30/06/2023	05:29	Woodpigeon	1	Perched	Perched in treeline in east of site.
3	30/06/2023	05:30	Feral Pigeon	8	Breeding	Displaying breeding behaviour around entrances on boarded up building in northeast.
3	30/06/2023	05:30	Herring Gull	1	Perching	Perched on roof on main building.
3	30/06/2023	05:32	Feral Pigeon	6	Breeding	Open steel shed, nests built in wire mesh on roof ends.
3	30/06/2023	05:42	Blue Tit	1	Foraging	In canopy of tree along northern site boundary to the east of the main building.
3	30/06/2023	05:43	Herring Gull	1	Breeding	On rooftop utilising chimney on roof of building.
3	30/06/2023	05:44	Feral Pigeon	24	Perched	Perched on rooftops behind main building.
3	30/06/2023	05:44	Goldcrest	1	Singing	In large trees lining road to west of main building.
3	30/06/2023	05:47	Wren	1	Singing	In woodland on western boundary of site.
3	30/06/2023	05:50	Goldcrest	1	Singing	In large coniferous trees at entrance of the site (west).

Appendix 8.5- Mammal impact assessment for a proposed development at former Central Mental Hospital, Dundrum Road, Dublin 14

16th September 2024

Prepared by: Frank Spellman of Altemar Ltd.
On behalf of: Dún Laoghaire Rathdown County Council and the Land Development Agency

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Document Control Sheet			
Project	Non-avian terrestrial mammal impact assessment for a proposed development at former Central Mental Hospital, Dundrum Road, Dublin 14		
Report	Non-avian terrestrial mammal impact assessment		
Date	16th September 2024		
Version	Author	Reviewed	Date
Final	Frank Spellman	Bryan Deegan	16th September 2024

Summary

Structure/features:	The survey area consists primarily of grassland, scrub, treelines, mature standalone coniferous and deciduous tree, artificial buildings and surfaces, recolonised bare ground, bare ground and ornamentals.
Location:	Dundrum Road, Dublin 14.
Fauna species present:	Badger (*Meles meles*), grey squirrel (*Sciurus carolinensis*), fox (V*ulpes vulpes*) and brown rat (*Rattus norvegicus*)
Survey by:	Bryan Deegan & Frank Spellman
Survey date:	27th November 2023 & 8th January 2024 (periodic monitoring from November 2023 to July 2024).

Receiving environment

Background

Dún Laoghaire Rathdown County Council, in partnership with The Land Development Agency, is seeking a ten year approval to carry out the following proposed development which is located on a total application site area of c. 9.7 ha, located on the former Central Mental Hospital, Dundrum Road, Dundrum, Dublin 14 and areas of Dundrum Road and St. Columbanus Road, Dublin 14. The subject site is in the immediate setting and curtilage of a number of protected structures, namely the 'Asylum' (RPS No. 2072), the 'Catholic Chapel' (RPS No. 2071) and the 'Hospital Building' (RPS No. 2073).

The development will consist of the construction of a residential scheme of 934 no. dwellings on an overall site of c. 9.7 ha.

The development will consist of the demolition of existing structures associated with the existing use (3,677 sq m), including:

- Single storey former swimming pool / sports hall and admissions unit (2,750 sq m);
- Two storey redbrick building (305 sq m);
- Single storey ancillary and temporary structures including portacabins (618sq m);
- Removal of existing internal sub-divisions/ fencing, including removal of security fence at Dundrum Road entrance;
- Demolition of section of porch and glazed screens at Gate Lodge building (4 sq m);
- Removal of walls adjacent to Main Hospital Building;
- Alterations and removal of section of wall to Walled Garden.

  The development will also consist of alterations and partial demolition of the perimeter wall, including:
- Alterations and removal of section of perimeter wall adjacent to Rosemount Green (south);
- Formation of a new opening in perimeter wall at Annaville Grove to provide a pedestrian and cyclist access;
- Alterations and removal of sections of wall adjacent to Dundrum Road (including removal of existing gates and entrance canopy), including reduction in height of section, widening of existing vehicular access, and provision of a new vehicle, cyclist and pedestrian access;
- Alterations and removal of section of perimeter wall adjacent to Mulvey Park to provide a pedestrian and cyclist access.

  The development with a total gross floor area of c. 94,058 sq m (c. 93,980 sq m excluding retained existing buildings), will consist of 934 no. residential units comprising:
- 926 no. apartments (consisting of 342 no. one bedroom units; 98 no. two bedroom (3 person) units; 352 no. two bedroom (4 person) units; and 134 no. three bedroom units) arranged in 9 blocks (Blocks 02-10) ranging between 2 and 8 storeys in height (with a lower ground floor to Blocks 02 and Block 10 and Basements in Blocks 03 and 04), together with private balconies and private terraces and communal amenity open space provision (including courtyards) and ancillary residential facilities, including an 130 sq m internal residential amenity area at the Ground Floor Level of Block 3;
- 6 no. three bedroom duplex apartments located at Block 02, together with private balconies and terraces.
- 2 no. 5 bedroom assisted living units and private rear gardens located at Block 02.

  The development will also consist of 4,380 sq m of non-residential uses, comprising:
- Change of use and renovation of existing single storey Gate Lodge building (former reception/staff area) to provide a café unit (78 sq m);
- 1 no. restaurant unit (266 sq m) located at ground floor level at Block 03;
- 3 no. retail units (1,160 sq m) located at ground floor level at Blocks 03 and 07;
- 1 no. medical unit (288 sq m) located at ground floor level at Block 02;
- A new childcare facility (716 sq m) and associated outdoor play area located at lower ground and ground floor level at Block 10;
- A management suite (123 sq m) located at ground floor level at Block 10; and

- A new community centre facility, including a multi-purpose hall, changing rooms, meeting rooms, storage and associated facilities (1,749 sq m) located at ground and first floor level at Block 06.

  Vehicular access to the site will be from a new signalised access off Dundrum Road to the south of the existing access and the existing access of Dundrum Road will be retained for emergency vehicle, pedestrian and cyclist access only. The development will also consist of the provision of public open space and related play areas; hard and soft landscaping including internal roads, cycle and pedestrian routes, active travel routes for cyclists and pedestrians, pathways and boundary treatments, street furniture, wetland features, part-basement, car parking (524 no. spaces in total, including car sharing and accessible spaces); motorcycle parking; electric vehicle charging points; bicycle parking (long and short stay spaces including stands); ESB substations, piped infrastructural services and connections (including connection into existing surface water sewer in St. Columbanus Road); ducting; plant (including external plant for Air Source Heat Pumps and associated internal heating plantrooms); waste management provision; SuDS measures (including green roofs, blue roofs, bio-retention areas); attenuation tanks; sustainability measures (including solar panels); signage; public lighting; any making good works to perimeter wall and all site development and excavation works above and below ground.

The proposed site outline, location, and landscape plan are demonstrated in figures 1-4.

Landscape

The landscape strategy for the proposed development has been prepared by AECOM Ireland Limited to accompany this planning application. This has incorporated badger mitigation measures and in in line with the Badger Survey Assessment and Mitigation Measures for the proposed development at Central Mental Hospital, Dundrum, Dublin seen in Appendix 8.7. The proposed landscape plan is demonstrated in figure 5.

0 20 40 60 80 100 m

Project: Dundrum Central Development
Location: Dundrum Road, Dublin 14
Date: 11th June 2024
Drawn By: Frank Spellman (Altemar)

ALTEMAR
Marine & Environmental Consultancy

Figure 1. *Proposed site outline and survey area.*

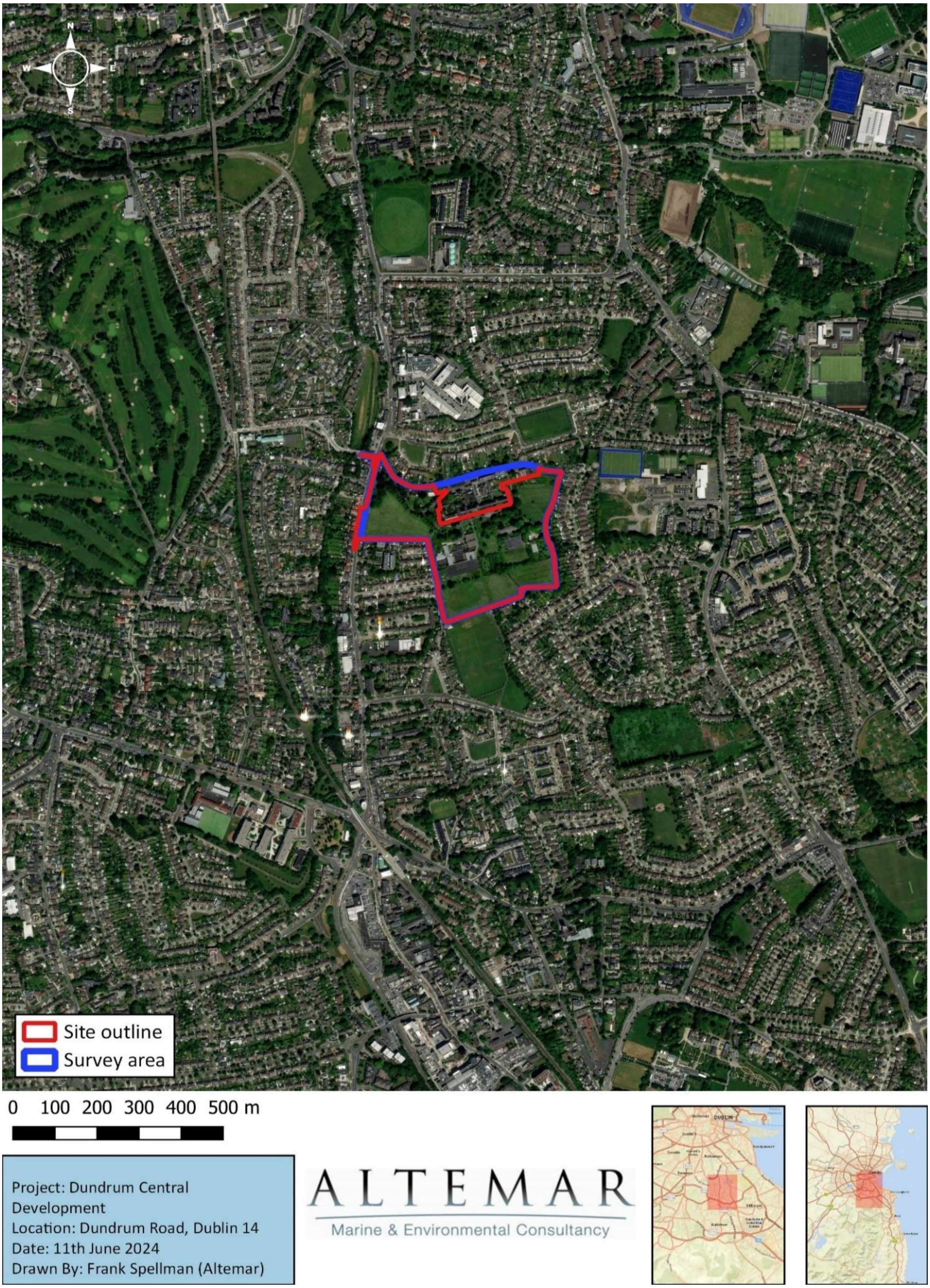

Figure 2. *Proposed site and survey area location*

Figure 3. *Site outline*

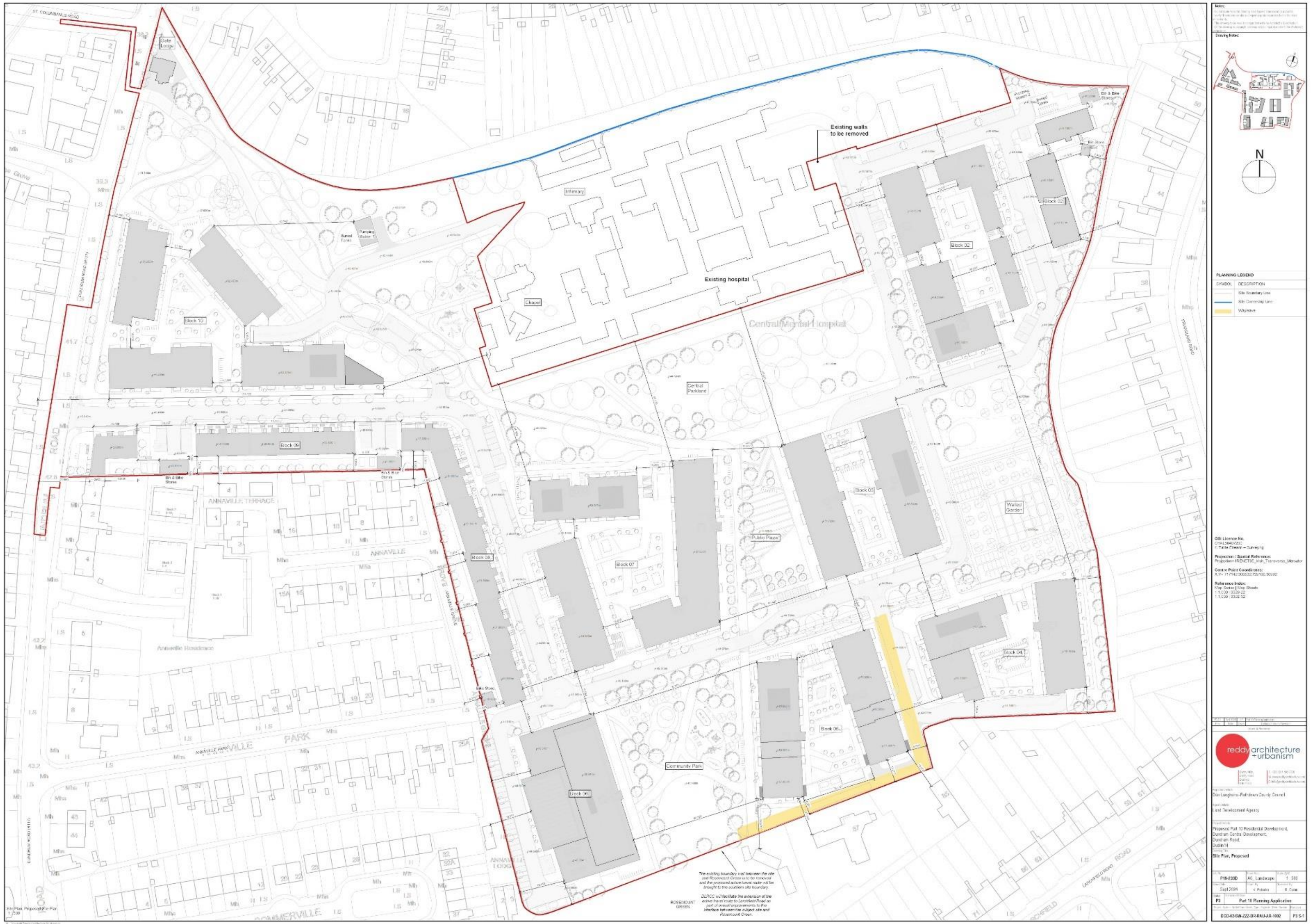

Figure 4. *Proposed overall layout*

Figure 5. Proposed landscape plan

Competency of assessor

Since its inception in 2001, Altemar has been delivering ecological and environmental services to a broad range of clients. Operational areas include: residential; infrastructural; renewable; oil & gas; private industry; Local Authorities; EC projects; and, State/semi-State Departments.

Frank Spellman (BSc Zoology, MSc Zoology).

Frank has extensive experience in carrying out a wide range of fauna surveys as both a sub-contractor and employee for environmental consultancies and organisations in Ireland and the US. These include both roving and static acoustic bat surveys, terrestrial non-avian mammal surveys, breeding/wintering bird surveys, and freshwater ecology surveys. Frank has been lead surveyor on numerous development projects within Ireland carrying out full mammal assessments.

Bryan Deegan (MCIEEM, BSc Applied Marine Biology, MSc Environmental Science)

Bryan Deegan, the managing director of Altemar, is an Environmental Scientist and Marine Biologist with 30 years' experience working in Irish terrestrial and aquatic environments, providing services to the State, Semi-State and industry. He is currently lead project ecologist for Project Pembroke and was contracted to Inland Fisheries Ireland as the sole "External Expert" to environmentally assess internal and external projects. He is also chair of an internal IFI working group on environmental assessment. Bryan Deegan (MCIEEM) holds a MSc in Environmental Science, BSc (Hons.) in Applied Marine Biology, NCEA National Diploma in Applied Aquatic Science and a NCEA National Certificate in Science (Aquaculture).

Legislative context

A number of non-avian terrestrial mammal species are protected under the Wildlife Act (1976), Wildlife [Amendment] Acts (2000 to 2012), and Annex IV of the Habitats Directive (transposed into Irish law by the European Communities (Birds and Natural Habitats) Regulations, 2011-2021. These include species such as badger, Irish stoat, Irish hare, brown hare, pine marten, red squirrel, otter, hedgehog, all deer species, and pygmy shrew.

The badger is also a Red Data Book species, but it is a relatively common species and ubiquitous through much of the Irish countryside (Smal, 1995).

It is standard best practice to make special provisions for badgers affected by development. Whilst the species is common in much of the Irish landscape, badgers are notable for their practice of constructing large underground tunnel and chamber systems (setts). Provisions are made for their humane removal or for their conservation on site where feasible or practicable. The Wildlife [Amendment] Act (2000-2012) protects all resting places of protected species.

Otters are protected under the Irish Wildlife Acts and are also listed under Annex II and Annex IV of the EU Habitats Directive.

Otters are relatively common in Ireland, and they do occur on most rivers in this country. Protection of this species is important and provisions are made to ensure that holts are not interfered with except under especial circumstances and to ensure the quality of their foraging habitat.

Non-avian mammal survey

This report presents the results of site visits by Bryan Deegan and Frank Spellman from February to June 2024. Four mammal specific surveys were carried out by Bryan Deegan on 1st, 2nd, 14th and 22nd February, and 16th April 2024. A badger/mammal transect survey was carried out on each occasion. Mammal observations recorded during breeding bird surveys from April to June 2024 by Frank Spellman were included in this assessment. Surveys were carried out using techniques approved and recommended by CIEEM.

Survey methodology

These non-avian mammal surveys were carried out based on techniques approved and recommended by CIEEM.

Surveys were undertaken throughout the survey area which consisted of artificial buildings/surfaces, scrub, grassland, treelines, mature trees, hedgerows and ornamental gardens. Due to the small but complex nature of the survey area, a single roving transect following the full perimeter and circumnavigating all habitats and features within the survey area was carried out on each visit. Trail cameras were places on areas and burrows showing evidence of recent mammal activity.

Movements were carried out slowly, with pauses to observe open spaces, further following trails to determine their direction and investigate recipient areas for potential dens/setts/scatt/prints/scrapes/latrines etc. Camera traps were brought to place in areas where high evidence of mammal activity and/or an active den/sett was likely. Two camera traps were set on suspected badger setts by Bryan Deegan, one in the northeast and another in the east on 2nd February 2024.

Survey results

Habitats of non-avian terrestrial fauna potential

A ground level habitat assessment was carried out and used to examine the structures and vegetation on site for features that could facilitate non-avian terrestrial mammals. Potential features include heavy scrub, piles of vegetative/construction debris, grassland etc. All areas on site were assessed for evidence of non-avian mammals.

Areas of high non-avian mammal potential in the survey area included the scrub and treelines throughout the survey area, the orchard, grassland and former ornamental garden and former livestock pens and pasture.

Non-avian terrestrial fauna surveys.

A total of four fauna species were confirmed within the survey area by visual confirmation and behavioural evidence: badger (*Meles meles*), fox (*Vulpes vulpes*), grey squirrel (*Sciurus carolinensis*) and brown rat (*Rattus norvegicus*). These are visually represented in Figure 6.

An active badger sett was identified in the northeast of the survey area, under a concrete slab adjacent to an area previously used for housing livestock. Camera footage identified an individual boar utilising this sett. The areas in the vicinity of this sett are foraged extensively as evidenced by the high number of snuffle holes and trails.

An active breeding sett was identified and confirmed by camera footage within the treeline boundary between fields in the northeast and the gravel garden in the east. A large spoil heap and high amounts of bedding in the vicinity suggests extensive excavation and activity. Two cubs and a sow were observed almost daily by camera footage entering/exiting the sett and playing/resting around the sett entrance. The nearby boar was occasionally observed in this area alone, as well as accompanying the sow and the cubs in the presence of the sow. The boar also entered this sett with the sow on at least one occasion. It is suspected that the boar in video footage of the breeding sett is the same individual residing in the sett in the northeast of the site based on its physical characteristics (colouring, size etc.). It is likely based on the behaviour around the sett and with the sow and cubs that this boar is the father of the cubs.

The male boar was observed exiting the former Central Mental Hospital site via the stream exit under the wall in the east of the site. Camera footage also detected the sow and cubs in the vicinity of this exit. Regular footage of foxes exiting the site through this stream, but not returning, suggests a delay in motion detection triggering the camera between mammals coming through the exit and exiting the frame. The lower profile of badgers compared to foxes in relation to vegetation may have resulted in an under-detection of badgers in this area. The camera was repositioned on 7th June 2024 and is currently in operation to determine if this is being regularly used by badgers to enter and exit the site. Additional, cameras were placed on site to monitor the setts on site.

Foxes were regularly observed by camera footage in all areas where cameras were placed. A vixen and cub were observed multiple times in the vicinity of the badger breeding sett.

Grey squirrels were observed both during breeding bird surveys (in the northwest of the survey area on 7th June 2024) and by camera footage (badger breeding sett). Brown rats were observed on camera by both badger setts.

Plate 1: *Sow and two cubs outside entrance to breeding sett.*

Plate 2: *Boar, sow and two cubs at entrance to breeding sett.*

Plate 3: *Boar at entrance to badger sett in northeast.*

Plate 4: *Fox carrying cub outside entrance to badger sett.*

Plate 5: *Badger exiting through drainage ditch on eastern boundary*

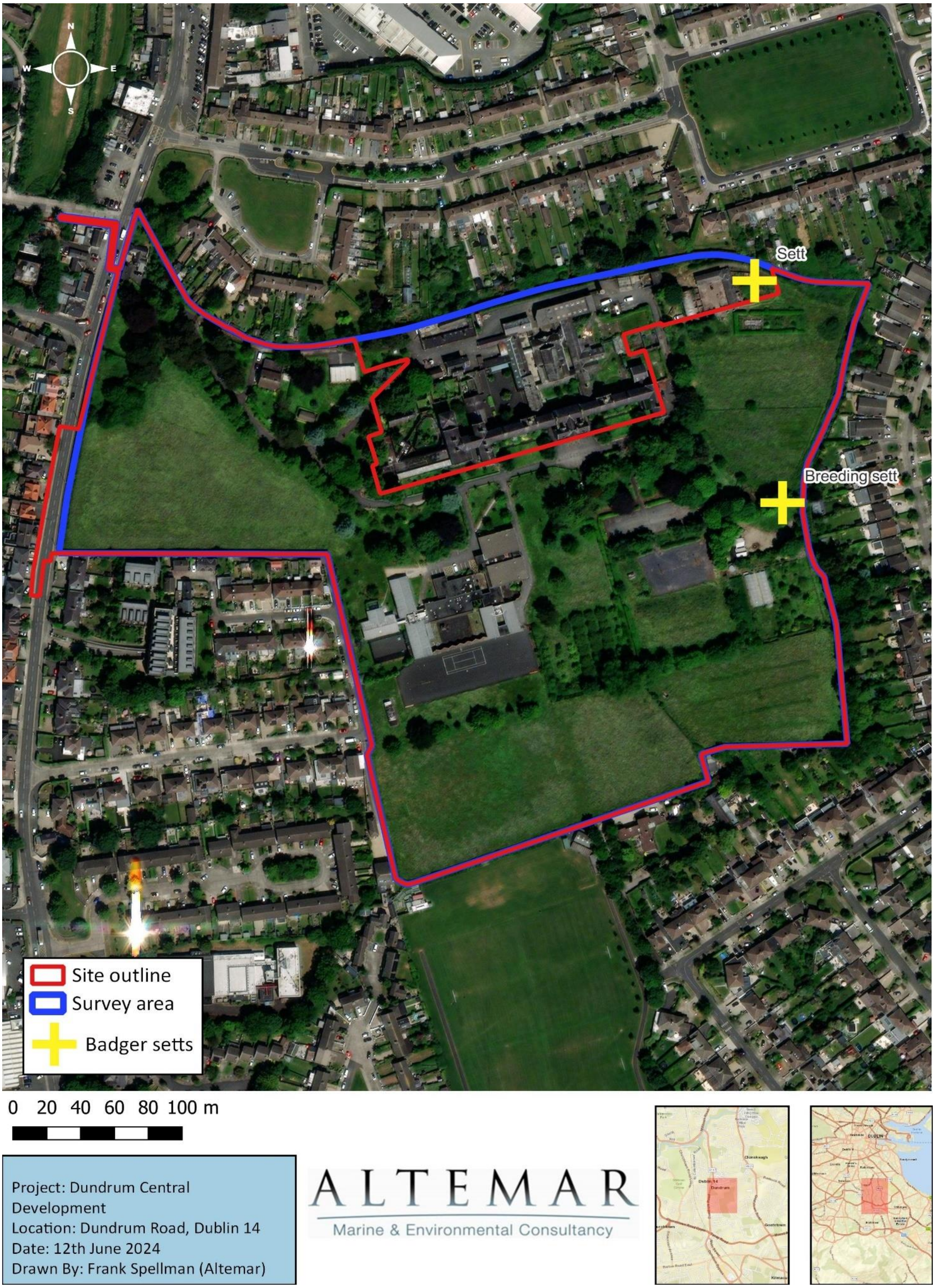

Figure 6: *Non-avian fauna activity/evidence/ observed/recorded.*

Non-avian mammal assessment findings

Review of local mammal records

The review of existing terrestrial mammal records (sourced from NBDC Database) within a 2km^2 grid (Reference grid O12U) encompassing the study area reveals that nine known Irish species have been observed locally (Table 1).

Table 1: *Status of non-avian mammal species within the 2km^2 grid (O12Z)*

Species Name	Record Count	Date of Last Record	Designation
Brown Rat (Rattus norvegicus)	4	30/09/2016	Invasive Species: Invasive Species || Invasive Species: Invasive Species >> High Impact Invasive Species || Invasive Species: Invasive Species >> Regulation S.I. 477 (Ireland)
Eastern Grey Squirrel (Sciurus carolinensis)	35	08/01/2023	Invasive Species: Invasive Species || Invasive Species: Invasive Species >> High Impact Invasive Species || Invasive Species: Invasive Species >> EU Regulation No. 1143/2014 || Invasive Species: Invasive Species >> Regulation S.I. 477 (Ireland)
Eurasian Badger (Meles meles)	5	29/09/2016	Protected Species: Wildlife Acts
European Otter (Lutra lutra)	1	09/07/2017	Protected Species: EU Habitats Directive || Protected Species: EU Habitats Directive >> Annex II || Protected Species: EU Habitats Directive >> Annex IV || Protected Species: Wildlife Acts
House Mouse (Mus musculus)	4	23/08/2013	Invasive Species: Invasive Species || Invasive Species: Invasive Species >> High Impact Invasive Species
Pine Marten (Martes martes)	1	08/05/2019	Protected Species: EU Habitats Directive || Protected Species: EU Habitats Directive >> Annex V || Protected Species: Wildlife Acts
Red Fox (Vulpes vulpes)	21	29/08/2017	
West European Hedgehog (Erinaceus europaeus)	1	02/05/2011	Protected Species: Wildlife Acts
Wood Mouse (Apodemus sylvaticus)	2	30/09/2016	

Evaluation of results

The mammal surveys comply with CIEEM guidelines.

A total of four mammal species were confirmed within the survey area by visual confirmation and behavioural evidence: badger (*Meles meles*), fox (*Vulpes vulpes*), grey squirrel (*Sciurus carolinensis*) and brown rat (*Rattus norvegicus*). An active badger sett was identified in the northeast of the survey area, under a concrete slab adjacent to an area previously used for housing livestock.

An active breeding sett was identified and confirmed by camera footage within the treeline boundary between fields in the northeast and the gravel garden in the east. Two cubs were observed regularly emerging.

The male boar was observed exiting the former Central Mental Hospital site via the stream exit under the wall in the east of the site. Foxes were also regularly recorded using this to exit the site. Monitoring is on-going to determine whether both badgers and foxes are re-entering from this point, as the original camera position may have under-recorded movements. It is considered by Dr Chris Smal that these badger setts are part of the same family group.

Grey squirrels were observed both during breeding bird surveys and by camera footage.

Brown rats were observed on camera by both badger setts.

A review of existing records revealed that five additional species, European Otter (*Lutra lutra*), House Mouse (*Mus musculus*), Wood Mouse (*Apodemus sylvaticus*), West European Hedgehog (*Erinaceus europaeus*) and Pine Marten (*Martes martes*) have been recorded in the vicinity of the survey area. No evidence of these five species was observed within the survey area.

Preliminary mammal surveys conducted in 2020- 2023 in tandem with breeding bird surveys found no badger setts on any part of the site. The areas assessed included the areas where setts were found in 2024. A deceased fox, live fox and grey squirrel were observed on these occasions.

Overall, considering the scale of the site, the survey area is of moderate importance to mammal species. An active badger sett and an active badger breeding sett are located in the northeast and east of the site respectively. The badger is a Red Data Book species. It is standard best practice to make special provisions for badgers affected by development, specifically the implementation of exclusion zones around setts.

Limitations

There were no limitations in relation to the surveys associated with this report.

Mitigation measures

A Badger Survey Assessment and Mitigation Measures for the proposed development at Central Mental Hospital, Dundrum, Dublin has been prepared by Dr Chris Smal, in consultation with NPWS and DLR biodiversity officer. The small set is not in the site outline. The breeding sett will be retained, although temporally closed during construction. Phasing of the project including the construction of an artificial sett, is designed to mitigate the potential effects on badgers in consultation with NPWS. This is seen in the Conservation Management for Badgers within the grounds of the former Central Mental Hospital which has been approved by NPWS (Appendix 8.8).

References

1. Birks, J. (2012) Pine marten. In: Cresswell, W.J., Birks, J.D.S., Dean, M., Pacheco, M., Trewhella, W.J., Wells, D. and Wray, S. (2012). UK BAP Mammals: Interim Guidance for Survey Methodologies, Impact Assessment and Mitigation. The Mammal Society, Southampton
2. Booy, O., Wade, P.M. and Roy, H. (2016) Field guide to invasive plants and animals. Bloomsbury, London
3. Chartered Institute of Ecology and Environmental Management (2018). Guidelines for Ecological Impact Assessment in the UK and Ireland: Terrestrial, Freshwater, Coastal, and Marine. Chartered Institute of Ecology and Environmental Management, Winchester.
4. Collated by the National Biodiversity Data Centre from different sources, General Biodiversity Records from Ireland, National Biodiversity Data Centre, Ireland, accessed 17 October 2023, <https://maps.biodiversityireland.ie/Dataset/7>
5. Convention on the Conservation of European Wildlife and Natural Habitats (Bern Convention) 1982
6. Cornally, A. and Lawton, C. (2016) A guide to the identification of Irish mammal hair. Irish Wildlife Manuals, No. 92. National Parks and Wildlife Service, Department of the Arts, Heritage, Regional, Rural and Gaeltacht Affairs, Ireland.
7. Department of Housing, Planning and Local Government (December 2018). Urban Development and Building Heights Guidelines for Planning Authorities.
8. EC Directive on The Conservation of Natural habitats and of Wild Fauna and Flora (Habitats Directive) 1992
9. Gurnell, J., & Lurz, P. (2012) Red Squirrel. In: Cresswell, W.J., Birks, J.D.S., Dean, M., Pacheco, M., Trewhella, W.J., Wells, D. and Wray, S. (2012). UK BAP Mammals: Interim Guidance for Survey Methodologies, Impact Assessment and Mitigation. The Mammal Society, Southampton.
10. Haigh, A., et al. (2012). "An investigation into the techniques for detecting hedgehogs in a rural landscape." Journal of Negative Results 9(1).
11. Harris S., Jefferies, D., Cheeseman, C. and Booty, C. (1994) Problems with badgers? 3rd Edition. RSPCA, Horsham
12. Harris, S., Cresswell, P. and Jefferies D. (1989) Surveying Badgers. Occasional Publication No 9, The Mammal Society, London.
13. Lawton C., Hanniffy, R., Molloy, V., Guilfoyle, C., Stinson, M. & Reilly, E. (2020) All-Ireland
14. Lucy, F.E., Caffrey, J., Dick, J.T.A., Davis, E. and Coughlan, N.E (2021) Prevention, Control and Eradication of Invasive Alien Species. EPA Research Report 368 Dublin
15. Marnell, F., Looney, D. & Lawton, C. (2019) Ireland Red List No. 12: Terrestrial Mammals. National Parks and Wildlife Service, Department of the Culture, Heritage and the Gaeltacht, Dublin, Ireland
16. Moore, L.J.; Petrovan, S.O.; Baker, P.J.; Bates, A.J.; Hicks, H.L.; Perkins, S.E.; Yarnell, R.W. Impacts and Potential Mitigation of Road Mortality for Hedgehogs in Europe. Animals 2020, 10, 1523

17. Mos, J., Hofmeester, T.R. The Mostela: an adjusted camera trapping device as a promising non-invasive tool to study and monitor small mustelids. Mamm Res 65, 843–853 (2020). https://doi.org/10.1007/s13364-020-00513-y
18. National Roads Authority (2008) Guidelines for the treatment of otters prior to the construction of national road schemes National Roads Authority (Ireland)
19. National Roads Authority () Guidelines for the treatment of otters prior to the construction of national road schemes National Roads Authority (Ireland)
20. Nelson B. et. al. (2019) Checklists of protected and threatened species in Ireland, National Parks and Wildlife Service, Department of the Culture, Heritage and the Gaeltacht, Dublin, Ireland.
21. Reid, N., Harrison, A.T. and Robb, G.N. (2009) Northern Ireland Irish hare survey 2009. Northern Ireland Environment Agency Research and Development Series No. 09/04.
22. Shuttleworth, C., Lurz, P., & Gurnell, J. (2016) The Grey Squirrel: Ecology & Management of an Invasive Species in Europe, 532 pp. European Squirrel Initiative, Stoneleigh Park, Warwickshire CV8 2LG UK.
23. Smal, C.M. 1995. The Badger & Habitat Survey of Ireland. The Stationery Office, Dawson St. Dublin 2.
24. Squirrel and Pine Marten Survey 2019. Irish Wildlife Manuals, No. 121. National Parks and Wildlife Service, Department of Culture, Heritage and the Gaeltacht, Ireland
25. Wheeler, P., Wray, S. and Yalden, D. (2012) Brown Hare and Mountain Hare. In: Cresswell, W.J., Birks, J.D.S., Dean, M., Pacheco, M., Trewhella, W.J., Wells, D. and Wray, S. (2012). UK BAP Mammals: Interim Guidance for Survey Methodologies, Impact Assessment and Mitigation. The Mammal Society, Southampton.
26. Wildlife Act 1976 and Wildlife [Amendment] Act 2000. Government of Ireland.
27. Yarnell and Pettett (2020) "Beneficial Land Management for Hedgehogs (Erinaceus europaeus) in the United Kingdom'. Animals, 10, 1566

Appendix 8.6 - Bat Fauna Impact Assessment for a proposed Part 10 Application at former Central Mental Hospital, Dundrum Road, Dublin 14.

17th September 2024

Prepared by: Bryan Deegan of Altemar Ltd.
On behalf of: Dún Laoghaire Rathdown County Council and the Land Development Agency

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Document Control Sheet			
Client	Dún Laoghaire Rathdown County Council and the Land Development Agency		
Project	Bat fauna impact assessment for a proposed Part 10 Application at former Central Mental Hospital, Dundrum Road, Dublin 14		
Report	Bat Fauna Assessment		
Date	17th September 2024		
Version	Author	Reviewed	Date
Draft 01	Bryan Deegan	NPWS	16th August 2024
Final	Bryan Deegan		17th September 2024

Summary

Structure:	The subject site consists of a number of treelines, hedgerows, open grassland, car park spaces, community garden, and structures facilitating the Central Mental Hospital. The site is currently in use. Buildings are brightly lit with security lighting.
Location:	Dundrum Road, Dublin 14.
Bat species present:	Common pipistrelle (roosting), Soprano pipistrelle & Leisler (roosting)
Proposed work:	Residential development.
Impact on bats:	Consultation within the project team has taken place in relation to the potential impact of lighting on foraging. The proposed lighting has been modified to allow for foraging activity to continue on site. A derogation licence will be required for the felling of two trees associated with the bat roosts on site. A derogation licence will be required for the lighting disturbance of a bat roost on site. The presence of new buildings on site will alter the local environment but, foraging will continue on site. A pre-construction survey of buildings and trees will be carried out. The impact is deemed to be low adverse/negative/long term/not significant. A derogation licence has been granted for the proposed development.
Survey by:	Bryan Deegan, Frank Spellman, Emma Peters & Gayle O'Farrell
Survey date:	13th August 2020, 21st August 2020, 10th August 2021 & 12th October 2021, 25th May 2023, 13th June 2023, 1st February 2024 (internal), 28th May 2024 and 8th July 2024.

Receiving Environment

Background

Dún Laoghaire Rathdown County Council, in partnership with The Land Development Agency, is seeking a ten year approval to carry out the following proposed development which is located on a total application site area of c. 9.7 ha, located on the former Central Mental Hospital, Dundrum Road, Dundrum, Dublin 14 and areas of Dundrum Road and St. Columbanus Road, Dublin 14. The subject site is in the immediate setting and curtilage of a number of protected structures, namely the 'Asylum' (RPS No. 2072), the 'Catholic Chapel' (RPS No. 2071) and the 'Hospital Building' (RPS No. 2073).
The development will consist of the construction of a residential scheme of 934 no. dwellings on an overall site of c. 9.7 ha.
The development will consist of the demolition of existing structures associated with the existing use (3,677 sq m), including:

- Single storey former swimming pool / sports hall and admissions unit (2,750 sq m);
- Two storey redbrick building (305 sq m);
- Single storey ancillary and temporary structures including portacabins (618sq m);
- Removal of existing internal sub-divisions/ fencing, including removal of security fence at Dundrum Road entrance;
- Demolition of section of porch and glazed screens at Gate Lodge building (4 sq m);
- Removal of walls adjacent to Main Hospital Building;
- Alterations and removal of section of wall to Walled Garden.

The development will also consist of alterations and partial demolition of the perimeter wall, including:

- Alterations and removal of section of perimeter wall adjacent to Rosemount Green (south);
- Formation of a new opening in perimeter wall at Annaville Grove to provide a pedestrian and cyclist access;
- Alterations and removal of sections of wall adjacent to Dundrum Road (including removal of existing gates and entrance canopy), including reduction in height of section, widening of existing vehicular access, and provision of a new vehicle, cyclist and pedestrian access;
- Alterations and removal of section of perimeter wall adjacent to Mulvey Park to provide a pedestrian and cyclist access.

The development with a total gross floor area of c. 94,058 sq m (c. 93,980 sq m excluding retained existing buildings), will consist of 934 no. residential units comprising:

- 926 no. apartments (consisting of 342 no. one bedroom units; 98 no. two bedroom (3 person) units; 352 no. two bedroom (4 person) units; and 134 no. three bedroom units) arranged in 9 blocks (Blocks 02-10) ranging between 2 and 8 storeys in height (with a lower ground floor to Blocks 02 and Block 10 and Basements in Blocks 03 and 04), together with private balconies and private terraces and communal amenity open space provision (including courtyards) and ancillary residential facilities, including an 130 sq m internal residential amenity area at the Ground Floor Level of Block 3;
- 6 no. three bedroom duplex apartments located at Block 02, together with private balconies and terraces.
- 2 no. 5 bedroom assisted living units and private rear gardens located at Block 02.

The development will also consist of 4,380 sq m of non-residential uses, comprising:

- Change of use and renovation of existing single storey Gate Lodge building (former reception/staff area) to provide a café unit (78 sq m);
- 1 no. restaurant unit (266 sq m) located at ground floor level at Block 03;
- 3 no. retail units (1,160 sq m) located at ground floor level at Blocks 03 and 07;
- 1 no. medical unit (288 sq m) located at ground floor level at Block 02;
- A new childcare facility (716 sq m) and associated outdoor play area located at lower ground and ground floor level at Block 10;
- A management suite (123 sq m) located at ground floor level at Block 10; and
- A new community centre facility, including a multi-purpose hall, changing rooms, meeting rooms, storage and associated facilities (1,749 sq m) located at ground and first floor level at Block 06.

Vehicular access to the site will be from a new signalised access off Dundrum Road to the south of the existing access and the existing access of Dundrum Road will be retained for emergency vehicle, pedestrian and cyclist access only. The development will also consist of the provision of public open space and related play areas; hard and soft landscaping including internal roads, cycle and pedestrian routes, active travel routes for cyclists and pedestrians, pathways and boundary treatments, street furniture, wetland features, part-basement, car parking (524 no. spaces in total, including car sharing and accessible spaces); motorcycle parking; electric vehicle charging points; bicycle parking (long and short stay spaces including stands); ESB substations, piped infrastructural services and connections (including connection into existing surface water sewer in St. Columbanus Road); ducting; plant (including external plant for Air Source Heat Pumps and associated internal heating plantrooms); waste management provision; SuDS measures (including green roofs, blue roofs, bio-retention areas); attenuation tanks; sustainability measures (including solar panels); signage; public lighting; any making good works to perimeter wall and all site development and excavation works above and below ground.

The proposed site outline, location, and tree constraints, impact and protection plans are demonstrated in figures 1 – 4.

Lighting

A Public Lighting Report has been prepared by EDC- Mechanical & Electrical Consulting Engineers to accompany this planning application. The Public lighting layout is demonstrated in figure 5. Discussions took place with the engineers and Altemar to provide bat foraging areas with reduced light spill and low-level light fittings and bollards. This report outlines the following proposed lighting layout report and horizontal illuminance (lux) for the subject site. Lighting is compliant with bat lighting guidelines and is set to 3000°K. As part of the design process areas of the site were purposely not lit as designed in mitigation for bats. These areas include the walled garden and other large open space areas.

Luminaires

Luminaire A Data

Supplier	Thorn
Type	PLU O LED 18L35 WST BP CL1 D76 L730
Lamp(s)	LED_PLU2_WST_1697 21W
LampFlux(klm)/Colour	1.40 3000/70
File Name	96265499_(STD).LDT
Maintenance Factor	0.83
Imax70,80,90(cd/klm)	933.3, 24.0, 0.0
No. in Project	69

Luminaire B Data

Supplier	Thorn
Type	PLU O LED 18L50 WST BP CL1 D76 L730
Lamp(s)	LED_PLU2_WST_2312 30W
LampFlux(klm)/Colour	2.31 3000/70
File Name	96265513_(STD).LDT
Maintenance Factor	0.83
Imax70,80,90(cd/klm)	933.6, 24.0, 0.0
No. in Project	45

Luminaire C Data

Supplier	Thorn
Type	PLU O 18L105 NST BPSW CL1 D60 L730
Lamp(s)	LED_PLRL_NST_4290 63W
LampFlux(klm)/Colour	4.29 3000/70
File Name	96272352_(STD).LDT
Maintenance Factor	0.83
Imax70,80,90(cd/klm)	1035.7, 26.4, 0.0
No. in Project	12

Luminaire D Data

Supplier	Thorn
Type	PLU O LED 18L35 WST BP CL1 D76 L730
Lamp(s)	LED_PLU2_WST_1697 21W
LampFlux(klm)/Colour	1.20 3000/70
File Name	96265499_(STD).LDT
Maintenance Factor	0.83
Imax70,80,90(cd/klm)	933.3, 24.0, 0.0
No. in Project	57

Results

Eav	6.13
Emin	1.40
Emax	19.28
Emin/Emax	0.07
Emin/Eav	0.23

Arborist

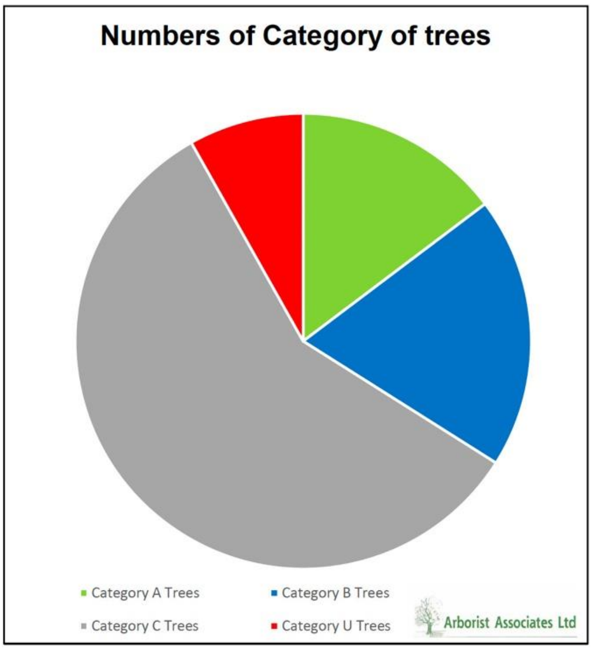
An Arboricultural Impact Assessment and Method Statements report has been prepared by Arborist Associates Ltd. to accompany this planning application. The report summarises the Arboricultural characteristics of the subject site:

'There is a good diverse mix of tree species within these grounds and these range in age from those that form part of the earlier planting which include some of the larger and more prominent tree species such as Limes, Horse Chestnut, Cedars, Wellingtonia, and Pines and a diverse mix of tree species that have been added to the open lawn areas over the years and this has helped to greatly improve the age class range and species diversity within the grounds which will help to secure the tree cover for the long-term..

Within the site area, 305 No. Trees have been tagged with reference numbers with 2No.Tree, 2 No. Tree Lines, 16 No. Hedges, 1No.Shrub Belt and 1No.Fruit Orchard numbered numerically."

Category Grade:

- Category U- 25 Trees
- Category A- 45 Trees
- Category B- 59 Trees
- Category C- 178 Trees + 2 Tree Lines + 16 Hedges + 1 Shrub Belt + 1 Fruit Orchard.



In relation to Impact Assessment, the report states the following:

"This section of the document is designed to assess the impact of the proposed development layout on the tree vegetation within this site area and to look at the necessary measures that will need to be undertaken to help retain the trees shown for retention free from adverse impacts for the duration of the construction period.
On drawing No.CMH002, I have identified the tree vegetation to be removed to facilitate this development and management with a 'Red' crown spread and those to be retained to form part of the long-term tree cover on these grounds with a 'Green' hatched crown spread.
Drawing No.CMH003 has been developed from this as a tree protection plan with the trees to be retained shown with 'Green' crown spreads and the protective fencing/ work exclusion zones shown using an 'Orange line and Hatching'. These tree protection fences and other tree protection measures will need to be put in place at the start of the works and be maintained in place until all works are completed. This fencing is to protect the root zones and crown spreads of the trees and to ensure their successful integration into the completed development of these grounds.
The comments made within this impact assessment study are based on my understanding of the proposed development and what is required to allow for its construction."

The proposed tree constraints plan, impact and protection plan, and tree removal plan are demonstrated in figures 3 – 5.

Figure 1. *Site outline*

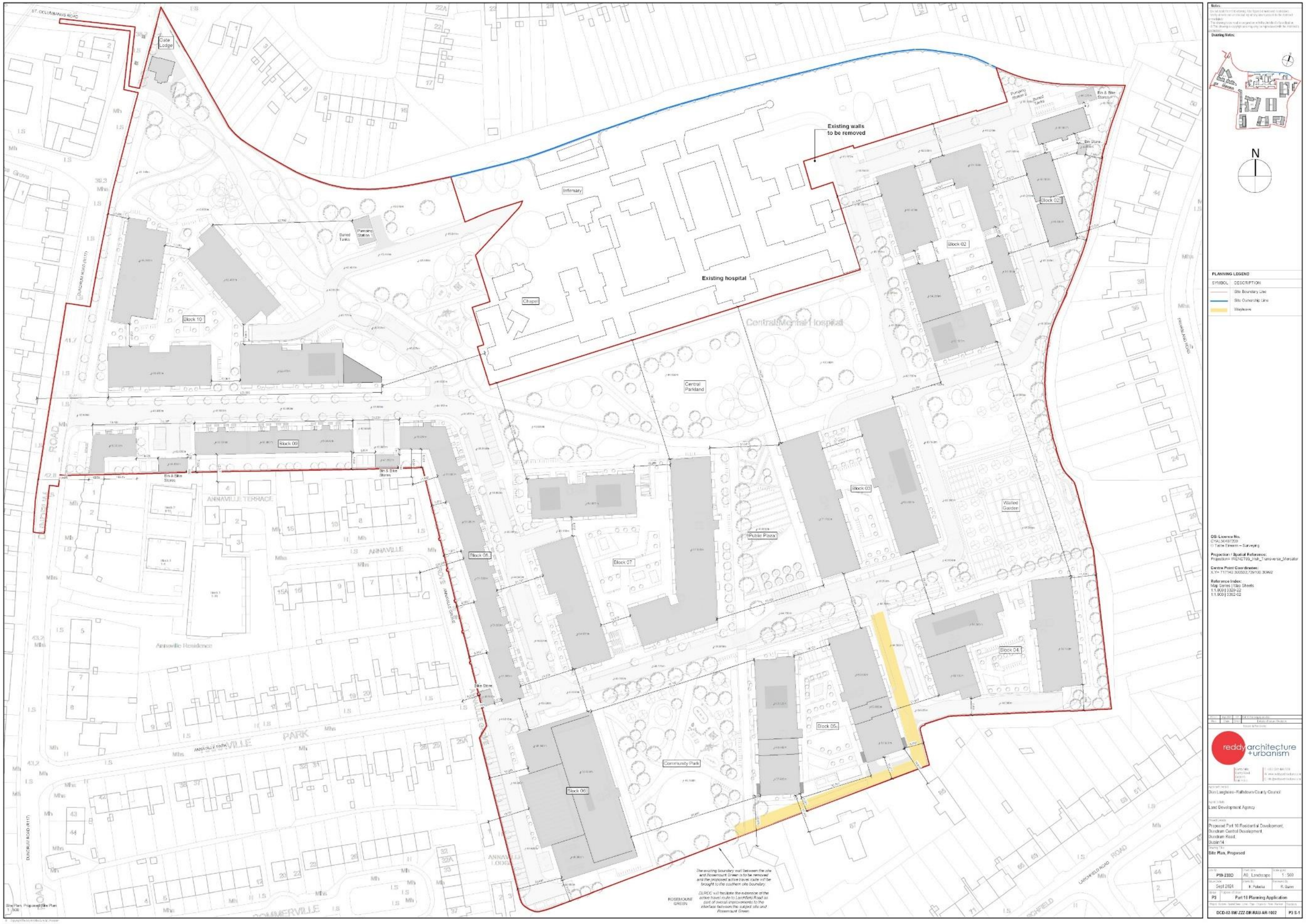


Figure 2. Proposed site outline and ownership boundary.

Figure 3. *Tree constraints plan.*

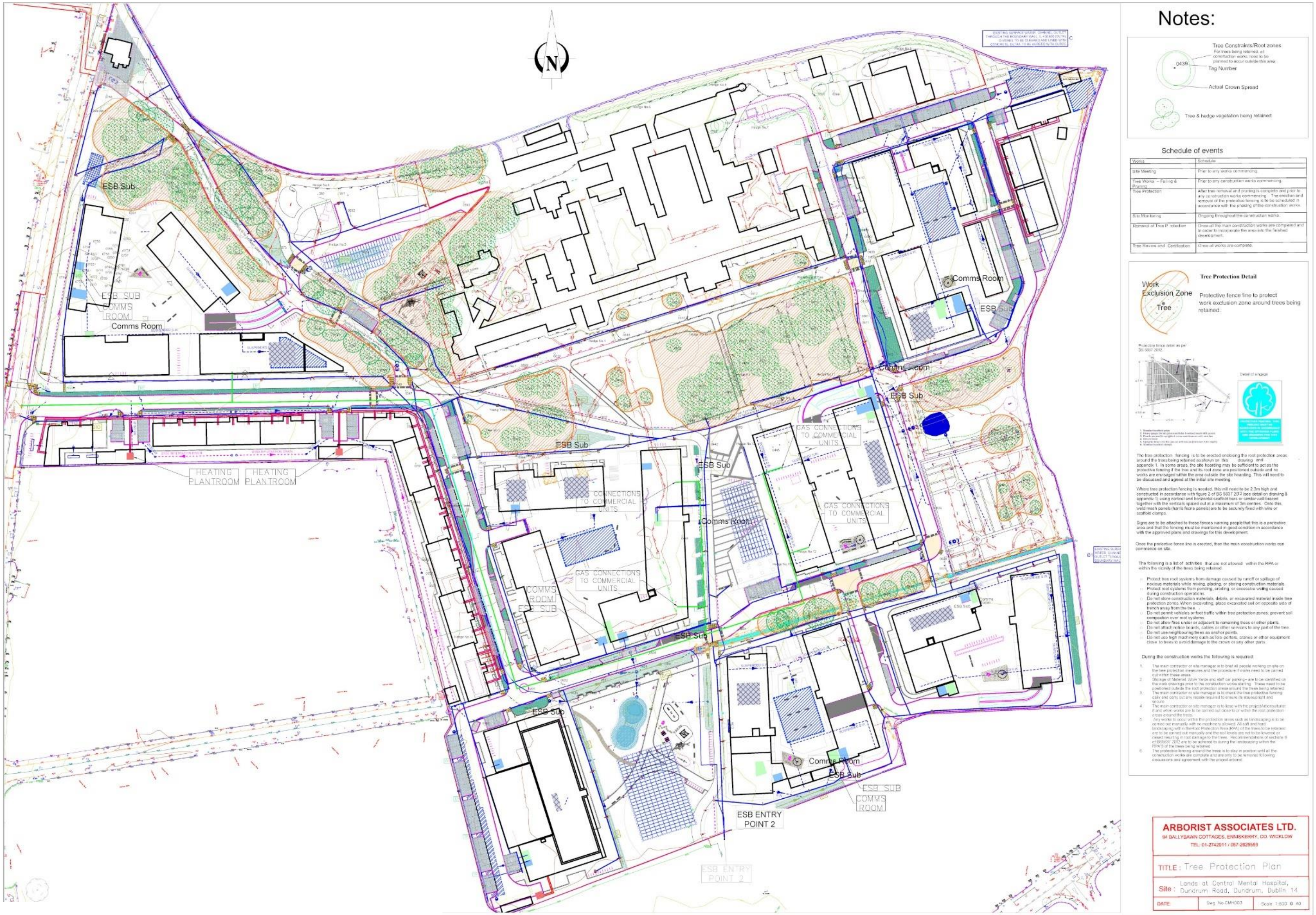


Figure 4. *Tree protection plan.*

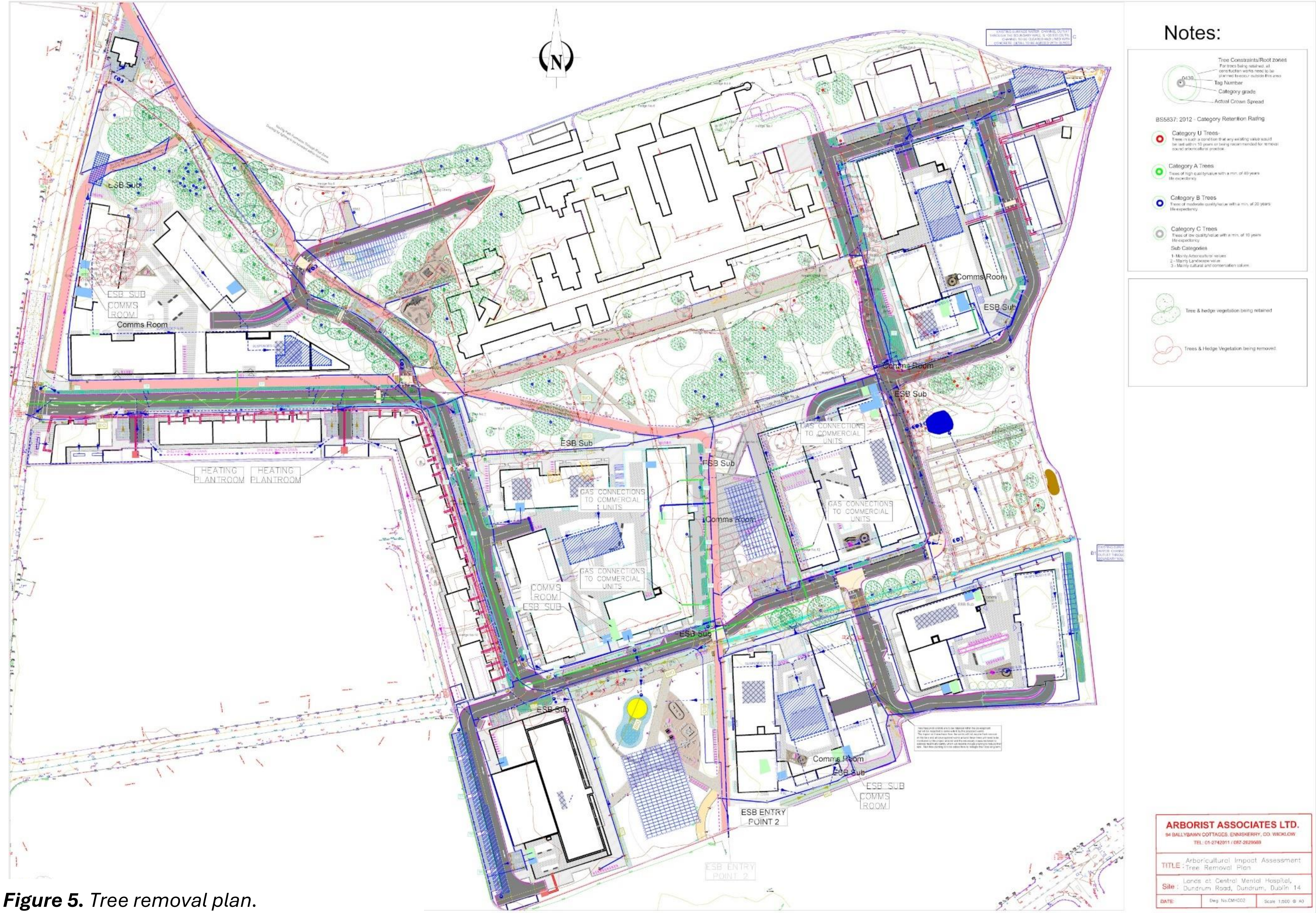


Figure 5. *Tree removal plan.*

Figure 6. *Public Lighting layout plan.*

Figure 7. *Landscape plan.*

Competency of Assessor

This report has been prepared by Bryan Deegan MSc, BSc (MCIEEM). Bryan has over 30 years of experience providing ecological consultancy services in Ireland. He has extensive experience in carrying out a wide range of bat surveys including dusk emergence, dawn re-entry and static detector surveys. He also has extensive experience reducing the potential impact of projects that involve external lighting on Bats. Bryan trained with Conor Kelleher author of the Bat Mitigation Guidelines for Ireland (Marnell et. al (2022)) and Bryan is currently providing bat ecology (impact assessment and enhancement) services to Dun Laoghaire Rathdown County Council primarily on the Shanganagh Park Masterplan. The desk and field surveys were carried out having regard to the guidance: Bat Surveys for Professional Ecologists – Good Practice Guidelines 3rd Edition (Collins, J. (Ed.) 2016) and Marnell *et al.* (2022), Bat Mitigation Guidelines for Ireland.

Legislative Context

Wildlife Act 1976 (as amended by, inter alia, the Wildlife (Amendment) Act 2000).

Bats in Ireland are protected by the Wildlife (Amendment) Act 2000. Based on this legislation it is an offence to wilfully interfere with or destroy the breeding or resting place of any species of bat. Under this legislation it is an offence to "*Intentionally kill, injure or take a bat, possess or control any live or dead specimen or anything derived from a bat, wilfully interfere with any structure or place used for breeding or resting by a bat, wilfully interfere with a bat while it is occupying a structure or place which it uses for that purpose. "*

Habitats Directive- Council Directive 92/43/EEC 1992 on the conservation of natural habitats and of wild fauna and flora has been transposed into Irish Law, including, via, *inter alia*, the European Communities (Birds and Natural Habitats) Regulations 2011 (as amended). See Art.73 of the 2011 Regulations which revokes the 1997 Regulations.

Annex II of the Council Directive 92/43/EEC 1992 on the conservation of natural habitats and of wild fauna and flora (EC Habitats Directive) lists animal and plant species of Community interest, the conservation of which requires the designation of Special Areas of Conservation (SACs); Annex IV lists animal and plant species of Community interest in need of strict protection. All bat species in Ireland are listed on Annex IV of the Directive, while the Lesser Horseshoe Bat (*Rhinolophus hipposideros*) is protected under Annex II which related to the designation of Special Areas of Conservation for a species.

Under the European Communities (Birds and Natural Habitats) Regulations 2011 (as amended), all bat species are listed under the First Schedule and, pursuant to, *inter alia*, Part 6 and Regulation 51, it is an offence to:

- Deliberately capture or kill a bat;
- Deliberately disturb a bat particularly during the period of breeding, hibernating or migrating;
- Damage or destroy a breeding site or resting place of a bat;
- Keep, sell, transport, exchange, offer for sale or offer for exchange any bat taken in the wild.

Bat survey

This report presents the results of handheld emergent and detector surveys (13th August 2020, 21st August 2020, 10th August 2021, 12th October 2021), three static detector surveys and building inspection surveys undertaken by Bryan Deegan (MCIEEM) over 2020 and 2021. Three static detector surveys were also carried out. Surveys were also carried out on the 25th of May 2023, 13th June 2023, 1st February 2024 (internal), 28th May 2024 and 8th July 2024. Each of the buildings present on site in addition to the main former Central Mental Hospital building were examined for signs of bat roosting and foraging. Bat detector and emergent detector survey used an Echo Meter Touch 2 Pro in addition to a *Batbox Duet* heterodyne/frequency division detector to determine bat activity. In addition, an Anabat Express Passive Bat Detector was used for the static detector surveys.

Survey methodology

As outlined in Marnell et al. 2022 '*The presence of a large maternity roost can normally be determined on a single visit at any time of year, provided that the entire structure is accessible and that any signs of bats have not been removed by others. However, most roosts are less obvious. A visit during the summer or autumn has the advantage that bats may be seen or heard. Buildings (which for this definition exclude cellars and other underground structures) are rarely used for hibernation alone, so droppings deposited by active bats provide the best clues. Roosts of species which habitually enter roof voids are probably the easiest to detect as the droppings will normally be readily visible. Roosts of crevice-dwelling species may require careful searching and, in some situations, the opening up of otherwise inaccessible areas. If this is not possible, best judgement might have to be used and a precautionary approach adopted. Roosts used by a small number of bats, as opposed to large maternity sites, can be particularly difficult to detect and may require extensive searching backed up by bat detector surveys (including static detectors) or emergence counts.'* In relation to the factors influencing survey results the guidelines outlines the following *'During the winter, bats will move around to find sites that present the optimum environmental conditions for their age, sex and bodyweight and some species will only be found in underground sites when the weather is particularly cold. During the summer, bats may be reluctant to leave their roost during heavy rain or when the temperature is unseasonably low, so exit counts should record the conditions under which they were made. Similarly, there may be times when females with young do not emerge at all or emerge only briefly and return while other bats are still emerging thus confusing the count. Within roosts, bats will move around according to the temperature and may or may not be visible on any particular visit. Bats also react to disturbance, so a survey the day after a disturbance event, may give a misleading picture of roost usage.'*

The survey involved the methodologies outlined in Collins (2016) which included the roost inspection methodologies i.e. external methodology outlined in section 5.2.4.1 and the internal survey outlines in section 5.2.4.2 of the guidelines. In addition, the methodologies for Presence absence surveys (Section 7) was carried out for dust emergent surveys.'

As outlined in Collins (2016) 'The bat active period is generally considered to be between April and October inclusive (although the season is likely to be shorter in northern latitudes). However, because bats wake up during mild conditions, bat activity can also be recorded during winter months.'

Survey Results

Trees as potential bat roosts.

The survey on 21st August 2020 and 8th July 2024 highlighted trees utilised by bats as roosts were noted on site. In relation to bat roosting potential, the site comprised of buildings, large fields surrounded by mature hedgerows and treelines. Two bat roosts for individual bats were noted in two separate Horse Chestnut Trees. Both of these trees are to be felled as part of the proposal.

Emergent/detector surveys.

Emergent /detector surveys were carried out on the 13th August 2020, 21st August 2020, 10th August 2021, 12th October 2021), three static detector surveys and building inspection surveys undertaken by Bryan Deegan (MCIEEM) over 2020 and 2021. Surveys were also carried out on the 25th May 2023, 13th June 2023, 28th May 2024 and 8th July 2024. The survey on the 8th July 2024 involved four ecologists.

The detector surveys were undertaken within the active bat season and the transects covered the entire site multiple times during the night. Weather conditions were optimal with temperatures greater than $10^{O}C$.

As outlined in Collins (2016) in relation to weather conditions '*The aim should be to carry out surveys in conditions that are close to optimal (sunset temperature 10°C or above, no rain or strong wind.), particularly when only one survey is planned…. Where surveys are carried out when the temperature at sunset is below 10°C should be justified by the ecologist and the effect on bat behaviour considered.*' There were no constraints in relation to the survey carried out. All areas of the site were accessible. Weather conditions were optimal for the emergent surveys.

At dusk, a bat detector survey was carried out onsite using a*n Echo meter touch 2 Pro* detector to determine bat activity. Bats were identified by their ultrasonic calls coupled with behavioural and flight observations. The weather conditions were ideal for bat surveying for the emergent survey.

Detector survey

Bat activity was relatively low in 2020 & 2021 (Figure 7) and was concentrated in the darker areas of the site away from the brightly lit buildings. It should be noted that during these surveys the Central Mental Hospital was a fully operational facility with lights on all buildings and in car parking areas. However, in 2023 and in 2024 (Figure 8) lighting was on the main buildings on site with the exception of the Gardner's compound in the northeast corner (outside the proposed development area). Lighting also ceased in the main car park area. As a result of reduced lighting and potentially a lack of management on site bat activity on site appeared to increase in 2023 and 2024. Three species were noted foraging on site:

- Common pipistrelle (*Pipistrellus pipistrellus*)
- Soprano pipistrelle (*Pipistrellus pygmaeus*)
- Lesser Noctule (*Nyctalus leisleri*)

No evidence of bat activity was noted in the main buildings on site during the internal inspections. In 2024, during two emergent surveys, three bats were noted emerging from the Gardener's compound building to the north of the site; however, this is not within the proposed development site. Prior to 2024 this part of the site was brightly lit with night time security lighting. A single Leisler's bat was observed bat was emerging from a Horse Chestnut (Tree 0401) on the eastern section of the site in 2020 and a single common pipistrelle was observed emerging from an adjacent Horse Chestnut (Tree 0457) in 2024. Foraging activity Common pipistrelle (*Pipistrellus pipistrellus*), Soprano pipistrelle (*Pipistrellus pygmaeus*), Lesser Noctule (*Nyctalus leisleri*) were also noted on site. The removal of the trees on site will result in a loss of foraging areas and a potential loss in two bat roosts.

Derogation Licence

In relation to trees on site, a single Leisler's bat was observed bat was emerging from a Horse Chestnut (Tree 0401) on the eastern section of the site in 2020 and a single common pipistrelle was noted emerging from an adjacent Horse Chestnut (Tree 0457) in 2024. The removal of the trees on site will result in a loss of foraging areas and two bat roosts. Removal of Tree 0401 is necessary as its root protection area will be negatively impacted by one of the main blocks. Tree 0457 is within a treeline, which is being retained. However, the tree is in poor condition. As outlined in the Arborist report the tree "*is in decline and its size has been reduced in line with the surrounding trees and it has not responded well to this pruning with further decline evident. It is infected by 'Bleeding Canker' of Horse Chestnut up along the main trunk with strips of dead bark and decay developing into the underlying timber. It is infected up along the main trunk by the fungus 'Dryad's Saddle'*. As a result it is required to remove the tree due to its poor condition. A derogation licence is therefore required for the removal of these trees. Light spill from the site could potentially impact on the bat roost in the Gardener's compound building Despite the lighting complying with bat lighting guidelines out of precaution, it is felt that there is potential for the development to impact on the bat roost within the Gardener's compound as emergence of the bats was towards the proposed lighting in the location of the new building proximate to the roost. A derogation licence is required for this roost. Failure to comply with the acquisition of the Derogation Licence, the carrying out of the mitigation measures and any conditions listed in the Derogation licence could result in the impact negative impact on bats or bat roost.

Figure 8. Bat activity on site (2020-2022). Location of static defectors (circle). Orange circle (bat roost), Yellow line- Sorprano pipistrelle, orange line-common pipistrelle and blue line Leisler's bat.

Figure 9. Bat activity on site (2023-2024). Location of static defectors (circle). Orange circle (bat roost), Yellow line- Sorpano pipistrelle, orange line-common pipistrelle and blue line Leisler's bat

Bat Assessment Findings

Review of local bat records

The review of existing bat records (sourced from Bat Conservation Ireland's National Bat Records Database) within a 2km^2 grid (Reference grid O12U) encompassing the study area reveals that three of the nine known Irish species have been observed locally (Table 1). The National Biodiversity Data Centre's online viewer was consulted in order to determine whether there have been recorded bat sightings in the wider area. This is visually represented in Figures 8 - 11. The following species were noted in the wider area: Brown Long-eared Bat (*Plecotus auritus*), Daubenton's Bat (Myotis daubentonii), Natterer's Bat (*Myotis nattereri*), Whiskered Bat (*Myotis mystacinus*), Lesser Noctule (*Nyctalus leisleri)*, Soprano Pipistrelle (*Pipistrellus pygmaeus*), and Pipistrelle (*Pipistrellus pipstrellus sensu lato*) (Soprano and common pipistrelle aggregate) (Figures 6 - 9).

Table 1. *Bat species recorded within Reference Grid O12U*

Species name	Record count	Date of last record
Lesser Noctule (*Nyctalus leisleri*)	2	04/09/2003
Pipistrelle (*Pipistrellus pipistrellus sensu lato*)	3	15/04/2011
Soprano Pipistrelle (*Pipistrellus pygmaeus*)	3	15/04/2011

Figure 10. Daubenton's Bat (*Myotis daubentonii*) (purple), Brown Long-eared Bat (*Plecotus auritus*), and both Daubenton's Bat and Brown Long-eared Bat (orange) (Source NBDC) (Site – red circle)

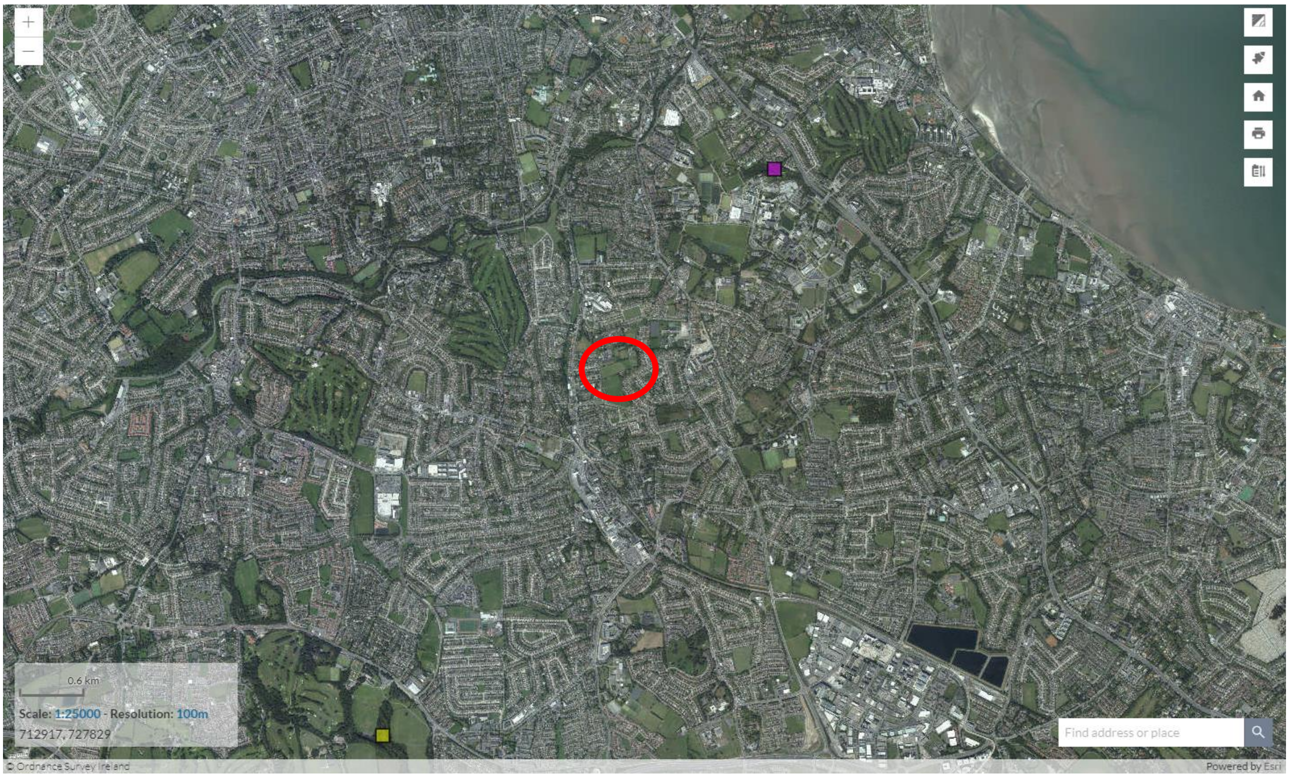


Figure 11. Natterer's Bat (*Myotis nattereri*) (purple) and Whiskered Bat (*Myotis mystacinus*) (yellow) (Source NBDC) (Site- Red circle)

Figure 12. Lesser Noctule (*Nyctalus leisleri*) (yellow) (Source NBDC) (Site – Red circle)

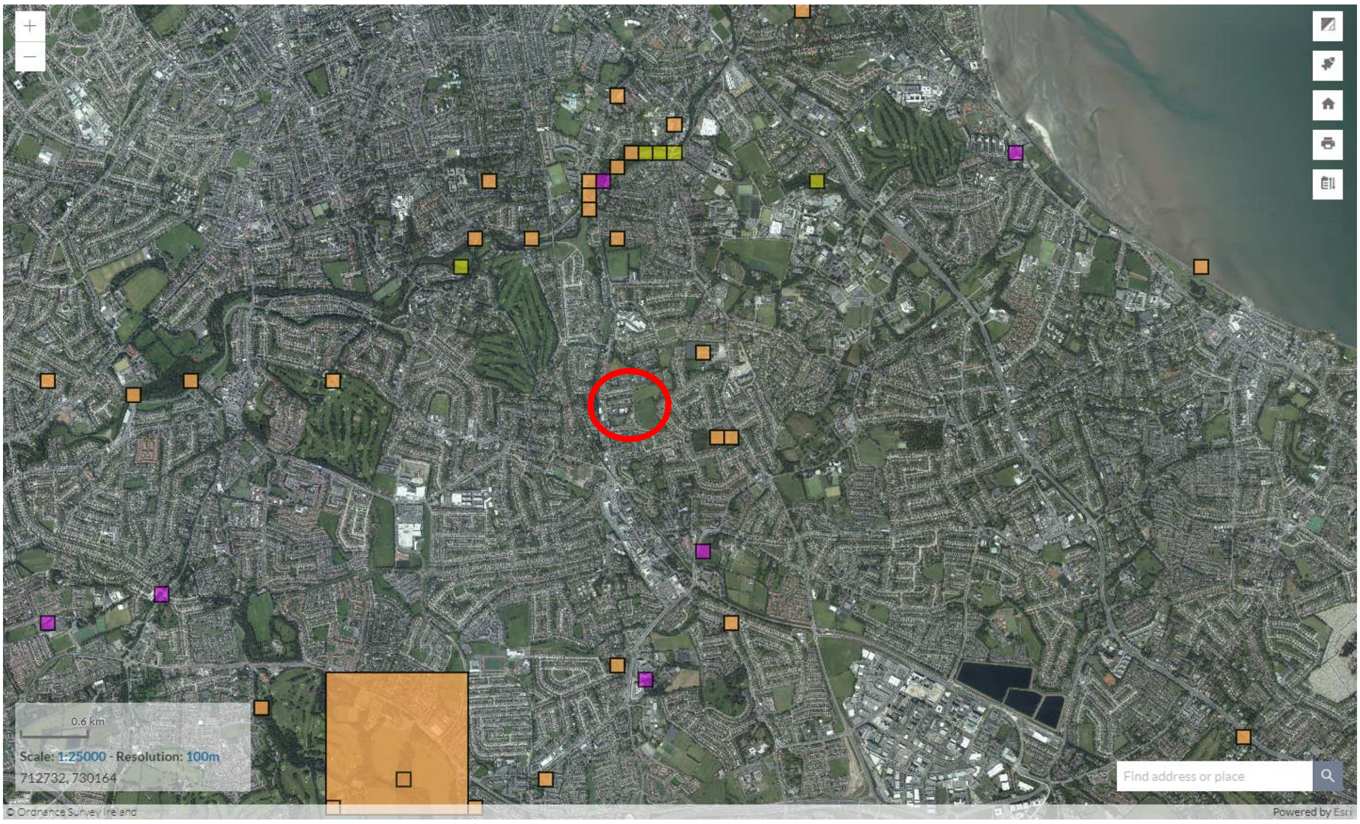


Figure 13. Pipistrelle (*Pipistrellus pipistrellus sensu lato*) (yellow) (Species aggregate), Soprano Pipistrelle (*Pipistrellus pygmaeus*) (purple), and both Pipistrelle and Soprano Pipistrelle (orange) (Source NBDC) (Site – red circle

Specifically, NBDC records show sightings of bat species in locations that are in close proximity to the subject site:

1. Soprano Pipistrelle (*Pipistrellus pygmaeus)* in grid reference O176292. Recorded on 15/04/2011 and located 160m East of the subject site.
2. Pipistrelle (*Pipistrellus pipistrellus sensu lato)* in grid reference O176292. Recorded on 15/04/2011 and located 160m East of the subject site.

Potential Impact of the development on Bats

No bats emerging from onsite main hospital buildings were observed. A bat root of three common pipistrelles is located in the Gardener's compound buildings (outside of the proposed development site). Foraging activity was relatively low across the site. The site is brightly lit with security lighting. However, construction lighting could reduce foraging on site. Trees on site have the potential for bat roosting and two bat roosts were noted within two separate Horse Chestnut trees. The removal of large trees on site will result in the loss of two confirmed bat roosts in addition to reducing the sites foraging potential. However, in proximity to the existing buildings on site lighting will be reduced from current levels of floodlighting and it would be expected that bats would continue to forage on site particularly in the darker open space areas including the walled garden area where no lighting is proposed and a detention basin is located would attract insects and form a strong foraging area.

Mitigation Measures

A pre-construction inspection of trees to be felled will be carried out. A derogation licence will be acquired for the Horse Chestnut trees (Tree 0401 and Tree 0457) (Application Attached in Appendix 8.6.1 and Derogation licence is seen in Appendix 8.6.2). The derogation licence is required due to potential disturbance of the bat roost from lighting proximate to the Gardener's compound buildings. Light spill from the public lighting has been designed to be sensitive to bats and bat foraging and will follow the Bat Conservation Ireland "Bats & Lighting Guidance Notes for: Planners, engineers, architects and developers (December 2010).

- Landscaping has also been designed to include bat friendly plants including trees and climbers to attract insects.
- In relation to the two trees to be removed under the Derogation Licence the following methodology will be utilised:
  - Felling of the two bat roost trees will take place from November to February when bats are in hibernation.
  - A pre felling inspection of the trees will be carried out by a bat specialist. If no bats are present during the inspection the tree will be felled in sections and lowered to the ground, where the sections will remain for 24 hours. If a bat is, or bats are, found a specialist, licenced in manual handling of bats. will oversee the removal of the bat from the tree and the safe relocation of the bat to a suitable site within the site outline. This may include the placing or the bat in a cardboard box for release at night or placing the bat in a safe suitable temporary roosting location, depending on weather conditions.
- An orchard will be planted on site to offset the loss of the existing orchard. The project ecologist will ensure that lighting during construction is not directed towards trees on site.
- A panel blocking an existing opening on the darkside of the gardener's compound will be modified to allow bats to enter/exit the building A post construction assessment of the light spill on site will be carried to ensure conformity with the low light levels predicted from the light spill analysis.
- Ten bat boxes (1FF Schwegler Bat Box With Built-in Wooden Rear Panel) will be placed on site.
- Post construction monitoring will involve initially ensuring that lighting is compliant with Bat Lighting Guidelines and has been developed in line with the lighting drawings submitted. Monitoring will include an onsite post construction assessment of light spill on site and overseeing any remedial action to ensure compliance with lighting plans. Monitoring of the use of the site by bats will be carried out annually for 5 years. This will involve annual surveys of bat boxes, foraging activity and potential roosting areas. The results of the monitoring will be provided to the Biodiversity Officer of DLR County Council.

Predicted Residual Impact of Planned Development on Bats

No bats were roosting in any main hospital buildings on site. Two bat roosts within two different Horse Chestnut trees will be lost. Lighting could potentially impact on an existing roost adjacent to the site. A derogation licence is seen in Appendix II. Foraging activity within the darker areas of the site may be reduced due to the presence new buildings and lighting. It would be expected that with a sensitive light strategy foraging activity in the vicinity of the existing buildings on site would increase, due to the reduction in harsh the security lighting. A pre-construction, inspection will be carried out on onsite trees with bat roosting potential, that are to be removed. The proposed development will result in a long term/low adverse/not significant/negative impacts on bats.

The actions permitted by a derogation licence will not be detrimental to the maintenance of the bat population on site. Following the implementation of the works, including the removal of two bat roosts, in a sensitive and controlled manner under licence, additional mitigation measures will be in place to ensure the long term viability of the site for bats. These measures include the provision of additional bat roosting sites and a sensitive lighting and landscaping strategy, with monitoring for 5 years. Bats would be expected to continue to roost and forage on site and no significant long term impact on bats on site would be expected.

References

Collins, J. (ed.) (2016). *Bat Surveys for Professional Ecologists: Good Practice Guidelines* (3rd edn). The Bat Conservation Trust, London. ISBN-13 978-1-872745-96-1

Marnell, F., Kelleher, C. & Mullen, E. (2022). *Bat mitigation guidelines for Ireland V2. Irish Wildlife Manuals, No. 134*. National Parks and Wildlife Service, Department of Housing, Local Government and Heritage, Ireland.

Chartered Institute of Ecology and Environmental Management (2021). *Bat Mitigation Guidelines: A guide to impact assessment, mitigation and compensation for developments affecting bats. Beta version.* Chartered Institute of Ecology and Environmental Management, Winchester.

Chartered Institute of Ecology and Environmental Management (2018). *Guidelines for Ecological Impact Assessment in the UK and Ireland: Terrestrial, Freshwater, Coastal, and Marine.* Chartered Institute of Ecology and Environmental Management, Winchester.

Institution of Lighting Professionals (2018). *Bats and Artificial Lighting in the UK – Bats and the Built Environment Series: Guidance Note 08/18.* Institution of Lighting Professionals and the Bat Conservation Trust.

Department of Housing, Planning and Local Government (December, 2018). *Urban Development and Building Heights Guidelines for Planning Authorities***.**

Bat Conservation Trust (May 2022). *Interim Guidance Note: Use of night vision aids for bat emergence surveys and further comment on dawn surveys.* The Bat Conservation Trust, London.

Bat Conservation Ireland 2004 on-going, *National Bat Record Database.* Virginia, Co. Cavan

Boyd, I. and Stebbings, R.E. 1989 Population changes in brown long-eared bats (*Plecotus auritus*) in Bat Boxes at Thetford Forest. *Journal of Applied Ecology* **26**: 101 - 112

Convention on the Conservation of European Wildlife and Natural Habitats (Bern Convention) 1982

Convention on the Conservation of Migratory Species of Wild Animals (Bonn Convention) 1979

EC Directive on The Conservation of Natural habitats and of Wild Fauna and Flora (Habitats Directive) 1992

Jefferies, D.J. 1972 Organochlorine insecticide residues in British bats and their significance. *Journal of Zoology*, London **166**: 245 - 263

Kelleher, C. 2004, Thirty years, six counties, one species – an update on the lesser horseshoe bat *Rhinolophus hipposideros* (Bechstein) in Ireland – *Irish Naturalists' Journal* **27**, No. 10, 387 – 392

Kelleher, C. 2015 *Proposed Residential Development, Church Road, Killiney, Dublin: Bat Fauna Study*. Report prepared for Altemar Marine and Environmental Consultants

Marnell, F., Kingston, N. and Looney, D. 2009 *Ireland Red List No. 3: Terrestrial Mammals.* National Parks and Wildlife Service, Department of the Environment, Heritage and Local Government, Dublin

Marnell, F., Kelleher, C., & Mullen, E. (2022), BAT MITIGATION GUIDELINES FOR IRELAND – V2 https://www.npws.ie/sites/default/files/publications/pdf/IWM134.pdf

Racey, P.A. and Swift, S.M. 1986 The residual effects of remedial timber treatments on bats. *Biological Conservation* **35**: 205 – 214

Wildlife Act 1976 and Wildlife [Amendment] Act 2000. Government of Ireland.

Appendix 1. Application for Derogation Licence NPWS

An Roinn Tithíochta,
Rialtais Áitiúil agus Oidhreachta
Department of Housing,
Local Government and Heritage

Application for Derogation Licence

Under the European Communities (Birds and Natural Habitats) Regulations 2011 – 2021

- This form is to be used by any person applying for a derogation licence under Regulation 54 or by the Minister under Regulation 54(A)
- Please ensure that you answer questions fully in order to avoid delays
- If you experience any problems filling in this form, please contact the Wildlife Licensing Unit;
- Please note – applications/reports received and licences issued under this derogation may be published on the NPWS website and/or the Department's Open Data website

Wildlife Licensing Unit,

Department of Housing, Local Government and Heritage

National Parks and Wildlife Service

Wildlife Licensing Unit, R. 2.03

90 North King Street

Smithfield

Dublin 7 D07 N7CV

Email: wildlifelicence@npws.gov.ie

Part A. The Applicant: Personal Details

These questions relate to the person responsible for any proposed works and who will be the **named licensee**. As the licensee you will be responsible for ensuring compliance with the licence and its conditions, even though you may employ another person to act on your behalf.

If this application is being submitted on behalf of a third party please also complete Part B below.

1. (a) Name of Applicant

Title (Mr/Mrs/Miss/Ms/Dr)	Forename(s)	Surname
Ms	Helen	Finlay
(b) Address Line 1	The Land Development Agency	
Address Line 2	4th Floor, Ashford House,	
Town	Tara Street, Dublin 2	
County	Dublin	
Eircode	D02 VX67	
(c) Contact number	01 9103400	
(d) Email address	info@LDA.ie	
(e) Address where works are to be carried out if different from (b) above.		
Address Line 1	Former Central Mental Hospital	
Address Line 2	Dundrum Road	
Town	Dublin 14	
County	Dublin	
Eircode	D14 W0V6	

Part B. Details of Person Submitting Application on Behalf of Applicant/Licensee

Information relating to the person (e.g. ecologist) responsible for submitting the application on behalf of the applicant/licensee should be entered below:

1. (a) Name of Person/Ecologist

Title (**Mr**/Mrs/Miss/Ms/Dr)	Forename(s)	Surname
Mr	Bryan	Deegan (MCIEEM)
(b) Company Name	Altemar Environmental Consultants	
Address Line 1	50 Templecarrig Upper	
Address Line 2		
Town	Greystones	
County	Wicklow	
Eircode	A63F902	
(c) Contact number	086-8366641	
(d) Email address	bryan@altemar.ie	
(e) Relationship to Applicant	None	

Part C. The Application

1. **Species of Animal:** Please indicate which species is affected by the proposed works:

- Bat ☒
- Otter ☐
- Kerry Slug ☐
- Natterjack Toad ☐
- Dolphin ☐
- Whale ☐
- Turtle ☐
- Porpoise ☐

2. Please detail the exact species (scientific name): Nyctalus leisleri & *Pipistrellus pipistrellus*)

3. Please provide the maximum number of individuals affected* 1 & 4

4. Please provide the maximum number of breeding or resting sites affected* 3

5. Please provide the maximum number of eggs to be taken* N/A

6. Please provide the maximum number of eggs to be destroyed* N/A

   *If no figures can be provided for the maximum number of individuals, breeding sites, resting places and eggs to be covered by the derogation please provide reasons why.

   In 2024 three common pipistrelle bats were noted emerging from the Gardner's compound (outside the proposed development site but will potentially be impacted by lighting). A single Leisler's bat was observed bat was emerging from a Horse Chestnut (Tree 0401) on the eastern section of the site in 2020. A common pipistrelle was noted emerging from tree 0457. These two tree are to be removed.

7. **Species of Plant:** Please indicate which species is affected by the proposed works:

- Killarney Fern ☐
- Slender Naiad ☐
- Marsh Saxifrage ☐

8. If you previously received a derogation for any species of animal or plant please state licence number and confirm that you have made a return to NPWS on the numbers actually affected by that licence

   Licence No. C 158/2021 translocation of frogs. We have also been involved in the translocation of 7 badgers at the Glass Bottle site in Ringsend (Dr Chris Smal)

   Licence No.: DER/BAT 2023 – 126- Removal of bats in Greenore Co. Co. Louth.

9. **Proposed Dates for Works:** Please indicate the timeframe that you propose to carry out works. Dates set by NPWS may differ from dates proposed here.

Start Date:	Planning Dependant Q3-2025 (approx.)
End Date:	Planning Dependant Q3-2027 (approx.)

10. Please tick which reason below explains How this Application Qualifies under Regulation 54(2)(A-E) of the European Communities (Birds and Natural Habitats) Regulations:

a.	In the interests of protecting wild flora and fauna and conserving natural habitats	☐
b.	To prevent serious damage, in particular to crops, livestock, forests, fisheries and water and other types of property	☐
c.	In the interests of public health and public safety, or for other imperative reasons of overriding public interest, including those of a social or economic nature and beneficial consequences of primary importance for the environment	☒
d.	For the purpose of research and education, of re-populating and re-introducing these species and for the breeding operations necessary for these purposes, including artificial propagation of plants	☐
e.	To allow, under strictly supervised conditions, on a selective basis and to a limited extent, the taking or keeping of certain specimens of the species to the extent specified therein, which are referred to in the First Schedule	☐

11. Report Checklist: Please append a detailed report to support this application and ensure that it contains the following information:

11.1	Explanation as to why the derogation licence sought is the only available option for works and no suitable alternative exists as per Regulation 54 of the European Communities (Birds and Natural Habitats) Regulations.	☒
11.2	Evidence that actions permitted by a derogation licence will not be detrimental to the maintenance of the populations of the species to which the Habitats Directive relates at a favourable conservation status in their natural range as is required under Section 54(2) of the European Communities (Birds and Natural Habitats) Regulations.	☒
11.3	Details of any mitigation measures planned for the species affected by the derogation at the location, along with evidence that such mitigation has been successful elsewhere.	☒
11.4	As much information as possible to allow a decision to be made on this application.	☒

Part D. Declaration

I declare that all of the foregoing particulars are, to the best of my knowledge and belief, true and correct. I understand that the deliberate killing, injuring, capturing or disturbing of protected species, or damage or destruction of their breeding sites or resting places or the deliberate taking or destroying of eggs is an offence without a licence and that it is a legal requirement to comply with the conditions of any licence I may be granted following this application. I understand that NPWS may visit to check compliance with a licence.

Please note that under Regulation 5 of the European Communities (Birds and Natural Habitats) Regulations 2011-2021 an authorised officer may enter and inspect any land or premises for the purposes of performing any of his or her functions under these Regulations or for obtaining any information which he or she may require for such purposes.

Signature of the Applicant [signature] **Date** 17/09/24

Name in BLOCK LETTERS Bryan Deegan

PRIVACY STATEMENT

Please note that under Data Protection legislation Wildlife Licencing Unit staff may only discuss licence applications with the applicant, and not with any third party. See Privacy Statement at www.npws.ie/licences

Department of Housing, Local Government and Heritage

An Roinn Tithíochta,
Rialtais Áitiúil agus Oidhreachta
Department of Housing,
Local Government and Heritage

Appendix 2. Derogation Licence NPWS

An tSeirbhís Páirceanna Náisiúnta agus Fiadhúlra
National Parks and Wildlife Service

Licence Number
DER-BAT-2025-03

EUROPEAN COMMUNITIES (BIRDS AND NATURAL HABITATS) REGULATIONS, 2011 (S.I. No 477 of 2011)

DEROGATION LICENCE

Granted under Regulation 54 of the European Communities (Birds and Natural Habitats) Regulations 2011, hereinafter referred to as "the Habitats Regulations".

The Minister for Housing, Local Government & Heritage, in exercise of the powers conferred on him by Regulation 54 of the Habitats Regulations hereby grants to **Helen Finlay** of **The Land Development Agency, 4th Floor, Ashford House, Tara Street, Dublin 2** a licence. It is stated that this licence is issued:

A. In the interests of public health and public safety, or for other imperative reasons of overriding public interest, including those of a social or economic nature and beneficial consequences of primary importance for the environment

B. As there is no satisfactory alternative, and the action authorised by this licence will not be detrimental to the maintenance of the population of **bats** referred to below at a favourable conservation status in their natural range.

This licence authorises the following:

1. Roost disturbance
2. Actions authorised within the licence

The licence is issued in respect of the following **bat species**:

- **Common Pipistrelle** **Pipistrellus Pipistrellus**
- **Leisler's Bat** **Nycatalus Leisler**

Terms and Conditions

1. This licence is granted solely to allow the activities specified in connection with the works located at **Former Central Mental Hospital, Dundrum Road, Dublin 14**, for **Helen Finlay.**
2. All activities authorised by this licence, and all equipment used in connection herewith, shall be carried out, constructed and maintained (as the case may be) so as to avoid unnecessary injury or distress to any species of **BAT**. Anything done other than in accordance with the terms of this licence may constitute an offence
3. This licence may be modified or revoked, for stated reasons, at any time.
4. The mitigation measures outlined in the application report (**Bat Fauna Impact Assessment for a Proposed Residential Development at Former Central Mental Hospital, Dundrum Road, Dublin 14.**), together with any changes or clarification agreed in correspondence between NPWS and the agent or applicant, are to be carried out. Strict adherence must be paid to all the proposed measures in the application.
5. The actions which this licence authorise shall be completed between **1st January – 31st December 2025, inclusive**
6. The works will be supervised by bat ecologist **Bryan Deegan**
7. If this licence addresses works that are subject of a planning application, no such works permitted under this licence can occur until planning permission is granted.
8. If this licence expires prior to works permitted under this licence commencing, a new application must be sought in advance, including the provision of any updated data or reports.
9. This licence shall be produced for inspection on a request being made on that behalf by a member of An Garda Síochána or an authorised NPWS officer appointed under Regulation 4 of the Habitats Regulations.
10. The local **NPWS Conservation Ranger,** sean.meehan@npws.gov.ie, must be contacted prior to the commencement of any activity, and if bats are detected on site during the course of the work, under the terms of this licence.
11. On completion of the actions which this licence authorises, all recordings of bat species affected will be made using the standardised data form provided below and must be submitted to the NPWS **within four weeks of the expiry date of this licence**. Included with the below returns form, a report will also be submitted to wildlife.reports@npws.gov.ie detailing results of works and success of mitigation. **Both documents must be submitted to constitute a licence return.**

For the Minister for Housing, Local Government & Heritage

Claire Crowley

(an officer authorised by the Minister to sign on his behalf)

23 September 2024

Any query in relation to this licence should be sent to wildlifelicence@npws.gov.ie

National Parks & Wildlife Services
LICENCE

Article 16 (Habitats Directive) - Returns Form

This returns form is for use in respect of:

Regulation 54 – Derogation Licence to protect wild fauna and conserving natural habitats

1st January to 31st December 2025, inclusive

Licence Number: DER-BAT-2025-03
Licence Holder: Helen Finlay

Species (English & Scientific)	No. of Individuals Affected	No. of Breeding Places	No. of Resting Places

Licence Holder Signature: ________________________ Date: ___________

Returns must be emailed to the following email address:

wildlife.reports@npws.gov.ie

Appendix 8.7. Badger Survey Assessment and Mitigation Measures for the proposed development at Central Mental Hospital, Dundrum, Dublin.

Report prepared for

ALTEMAR LTD.

by

Dr. Chris Smal B.Sc. Ph.D. MIEEM

3rd September 2024

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1 Introduction

A residential development has been proposed on the grounds of the former Central Mental Hospital in Dundrum, Co. Dublin. The location is shown in Figure 1 below. Details of the development are described in the document prepared by Altemar Ltd: *"Badger Conservation Management Plan for a proposed residential development at former Central Mental Hospital, Dundrum Road, Dublin 14"*, dated 9th July 2024.

Altemar reported a number of signs of badgers on the site and two badger setts were also found.

A series of badger mitigation measures were included in Altemar's report. Meetings had been held with NPWS staff including Mr. Terry Doherty and Conservation Officer Mr. Sean Meehan.

In order to clarify the situation and advise on mitigation measures for badgers, I was requested to visit the site, assess the badger activity on site, and to make appropriate recommendations for the badgers present on site.

The site was surveyed by myself on the 22nd of July 2024 along with Mr. Frank Spellman of Altemar. Following this visit, a site meeting was held (on the 25th of July) with Helen Finlay (Land Development Agency) and Mr. Ross Quinn (Reddy Architecture). This was to discuss the findings of my survey and my recommendations for mitigation measures. These recommendations were agreed in principle on site, subject to my report and any further consultations with NPWS personnel that might be required.

Dr. Smal is an acknowledged badger and faunal expert in Ireland. He prepared the "Guidelines for the treatment of badgers prior to the construction of National Road schemes" (NRA 2005) and "Guidelines for the treatment of otters prior to the construction of National road schemes" (NRA 2006). He conducted "The Badger & Habitat Survey of Ireland" (1995) and he has carried out substantial research on badgers for the Department of Agriculture and the National Parks and Wildlife Service (1989 to c. 2005) – these involved sett surveys, sett classification, and badger territory studies by means of bait marking. He conducted wildlife surveys for a large proportion of Ireland's motorway network in 1990 to 2000s, and directed the excavation of over 150 badger setts in the way of road developments over that time.

The development proposal

The proposed development is described in some detail in the Altemar report. In brief, the proposal will include preservation of most existing buildings on site, demolition of others, the construction of c. 934 residential units, along with retail units, restaurants, childcare facilities etc. The development will include open spaces, play areas, as well as the road infrastructure etc.

The overall site is 9.7 ha in extent.

The development area is shown in Figure 2.

The proposed site outline and overall layout are shown in Figure 3.

The survey area is shown in Figure 4 further below, along with faunal signs observed in survey.

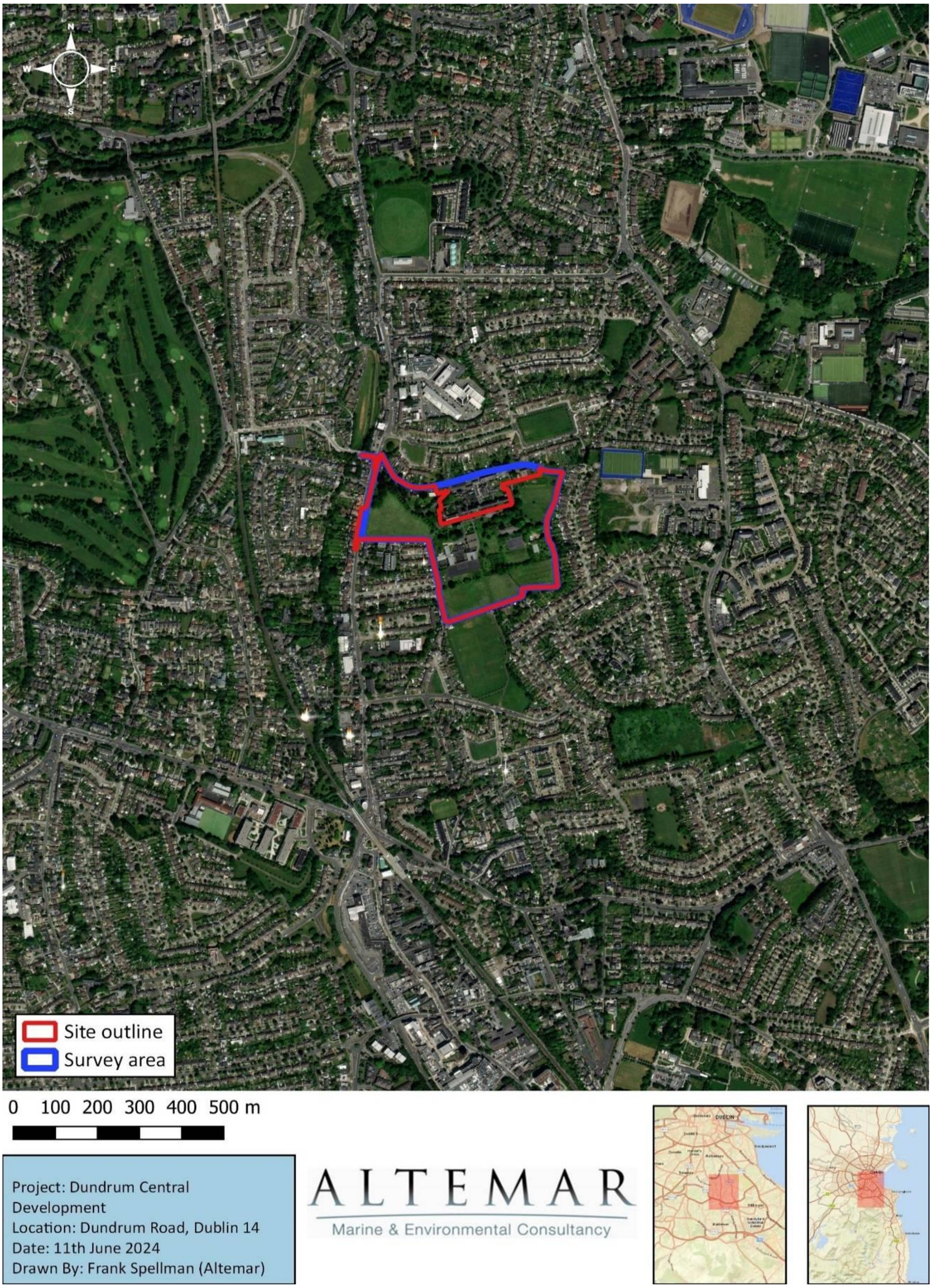

Figure 1. Site location (from Altemar Ltd.).

Figure 2. Proposed development area (from Altemar Ltd.).

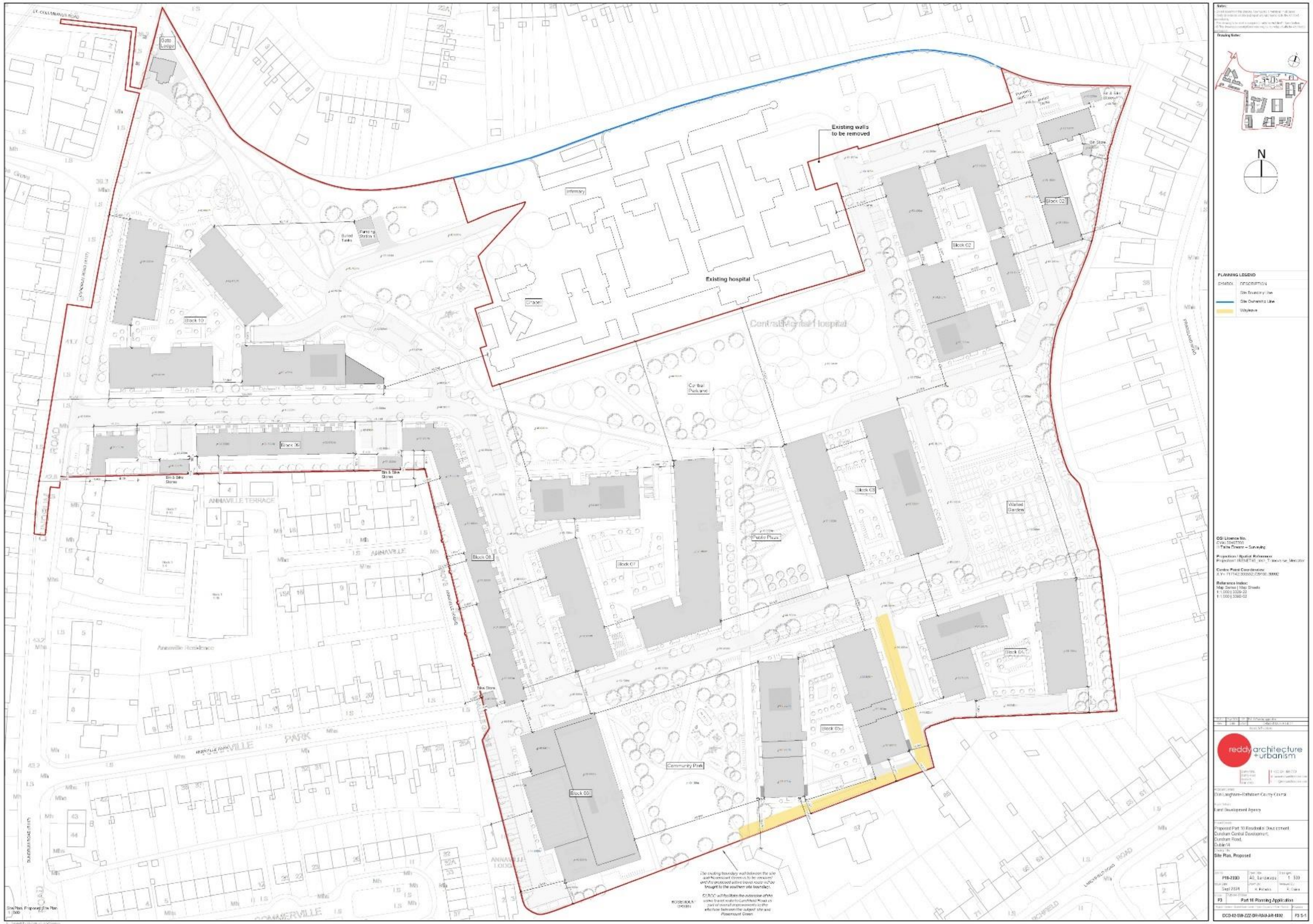

Figure 3. Proposed overall layout.

Site survey

This report presents the results of a badger survey conducted in July 2024. Mammal surveys are best conducted in winter months when vegetation has died back and before scrub cover re-grows in spring.

The survey was conducted on the 22nd of July 2024 and I was accompanied by Mr. Frank Spellman of Altemar who was familiar with and has carried out previous surveys of the site. Weather conditions were good: very warm, mostly sunny and dry.

The site area was searched for badger setts and badger signs. The entire site was surveyed as best as possible, but this excluded all buildings and also certain grassland areas (off limits due to proximity to accommodation in use on site – at the far south-west).

Presence of mammals is indicated principally by their signs, such as dwellings, paths, feeding signs or droppings - though direct observations are also occasionally made.

Altemar had placed trail cameras at various locations over recent months. Three cameras were placed during my visit at the locations shown on Figure 4.

Survey constraints

Badger survey is best conducted in late winter when vegetation has died back. This survey was carried out in summer when there is significant vegetation and scrub that would obscure mammal burrows and signs. Tall grass and scrub obscures badger paths, makes finding latrine sites difficult or impossible, and also obscures smaller setts that might be present on site. There are considerable lengths of hedgerow and treeline on site – again, it was not possible to search these adequately at this season.

However, Altemar had visited the site on several occasions earlier in the year within the optimal survey period, and had found two badger setts on site.

Badgers are territorial and mark their territories with latrines, which, again, can be difficult to find in summer. Badger marking of their territories is somewhat seasonal and is more pronounced in winter months (breeding season) or, to a lesser extent, in autumn. Badgers usually have latrine sites adjacent to their setts (if active) and also on the periphery of their ranges: such latrines are used to mark the badger group's territory and also allow each badger to ascertain the presence of others (badgers can identify each individual by the scent of their droppings).

No adjacent urban (residential) areas and their gardens were searched. Survey in such areas is usually impractical, unfeasible, or simply unnecessary (for evaluation of mitigation measures).

This survey was limited to badgers on site, but presence of other species was noted. None of these were of special interest and are only referred to incidentally in this report.

Brief description of area and habitats

The survey area is indicated on Figure 2 above and Figure 4 below.

The site consists of the area of the former Central Mental Hospital, which has not been in use for some years and most buildings are no longer in use. The site is bounded by a high wall all the way around (see note later). Vehicular access to the site is via one gated entrance (manned by security guards).

The complex of buildings on site include the former Mental Hospital, temporary accommodation for asylum seekers, a number of former farm buildings and other outbuildings and areas that may have been used as piggeries or similar in the past. Whilst these constitute substantial areas within the site, the bulk of the site consists of ungrazed/unmanaged grasslands, an orchard and a 'walled' garden – with various ornamentals but now overgrown. Areas of woodland are limited; one wooded area is present at the far north-west of the site. There are also some areas of tall mature deciduous trees that would have formed amenity for the hospital grounds.

No pools, ponds, streams or rivers occur on site. There is one small drain that flows west to east at the south-east of the site. It exits the site via a small culvert under the high boundary wall of the site; bars are in place at this culvert.

Fauna

The various badger signs observed on site are shown in Figure 4 below. The survey did not reveal numerous signs of other fauna. No rabbit *Oryctolagus cuniculus* signs or Irish hare *Lepus timidus hibernicus* signs were seen on site. I was informed by security staff that grey squirrels *Sciurus carolinensis* occur on site. No signs of deer of any species were observed. Foxes *Vulpes vulpes* have been observed by trail cameras on site.

A number of other mammalian species are likely or certain to be present in the area. These will include brown rat *Rattus norvegicus,* fieldmouse *Apodemus sylvaticus,* hedgehog *Erinaceus europaeus,* and pygmy shrew *Sorex minutus*. There were no pools or ponds on site so common frogs *Rana temporaria* and smooth newts *Lissotriton vulgaris* are likely to be absent on site.

Badgers

The two setts found by Altemar were inspected. No other setts were found on site during this survey.

The setts, latrines and badger feeding (rooting and 'snuffle' holes) signs have been mapped on Figure 4. One rooting was of a bee's nest – badgers are known to feed on bees when available. The camera observations (by Altemar) confirm that sett S2 is a Main sett (i.e. breeding sett) with one boar, one sow and 2 cubs present. Whilst this sett has only one entrance, the spoil heap there is very large and indicative of a fairly substantial tunnel system below ground that would include several chambers. No entrances in the adjacent grassland could be seen, but the tunnel system may well extend into the grassland area to some extent.

Badger presence (a boar) was confirmed by trail camera at sett S1; subsequently, cubs were seen near that sett also. This sett was considered to be a Subsidiary sett: i.e. a sett within the territory of a social group in use by badgers on occasion but not a breeding sett. The spoil heap was overgrown but of medium size. The tunnel system there would be quite short but will include one or more chambers below ground.

Another camera placed at the culvert under the high wall revealed a boar utilising the drain/culvert to access lands off-site to the east – which are gardens and residential areas. This culvert is not far from the Main sett (S2).

Generally, few badger paths were seen during survey but such will have largely been obscured by high grass growth and scrub cover at this season.

The rooting signs were well distributed throughout the survey area. These, along with the latrine sites, suggest that this badger group is foraging throughout the site. Also they exit the site into adjoining areas via the drain culvert (whilst this access is very poor given the narrow bars). Badgers may cross the road at the main entrance (but security staff reported no badgers having been seen there). Badgers do feed on fruits and feeding signs were seen within the apple orchard.

It was concluded that there was one badger social group utilising the entire site.

KEY

- **R** badger rooting
- **L1** badger latrine
- **S1** badger sett
- **C1** camera locations
- mammal path
- drain

Figure 4. Aerial image of the site, with fauna signs shown. All locations shown are approximate.

Table of badger setts and badger latrines on site.

Reference on Figures	Grid reference (all GPS locations approximate).	description	comments
S1	O 17381 29270	Burrow with single entrance, under concrete ledge. Within an old piggery. Medium spoil. Some bedding.	Badger sett, active. Subsidiary. Camera revealed boar uses this sett on occasion and other badgers observed at sett also.
S2	O 17411 29139	Single entrance sett, with very large spoil heap(s). Several latrines close to the sett, fresh and older. Older bedding, some fresh spoil.	Main sett, active. Camera revealed boar, sow ands 2 cubs present.
L1	O 17390 29139 (poor GPS).	Close to main sett. Fresh and older dung. Several pits.	Latrine at sett
L2	O 17401 29132	Near main sett, c. 11m. Next to fenceline of hedgerow/field. One vey fresh, large, others older, quite fresh.	Latrine at sett
L3	O 16986 29176	Single pit, fresh dung. By high wall.	Boundary latrine
L4	O 17142 29239	Fresh dung, single pit, near to high wall but in a ‘drainage’ channel.	Boundary latrine

Species of conservation interest

Common species

Observed or expected on site are protected species such as hedgehog *Erinaceous europaeus*, pygmy shrew *Sorex minutus,* and possibly common lizard *Lacerta vivipara*. These species are common and generally ubiquitous in Irish agricultural landscapes, grassed or wooded areas. It is an offence to intentionally interfere with or destroy the breeding or resting place of these species, though there are certain exemptions under the Wildlife Acts for road and housing developments and other construction works.

Fox presence was noted on trail cameras but few signs were seen. Species such as badger, otter, Irish stoat, Irish hare, hedgehog, pygmy shrew, common frog, smooth newt, and common lizard, are protected by the Wildlife Acts (1976 to 2012). Red and Sika deer are also protected (though may be hunted under licence). Fox and grey squirrel are not protected species.

Badgers

Badgers are relatively common in many urban areas in Dublin. They will forage in residential gardens, open amenity areas, and may build setts in gardens (e.g. under sheds) as well as in scrub areas in parks or areas of waste/neglected land.

No badgers have been recorded in the area close to the Central Mental Hospital on the National Biodiversity Data Centre (NBDC) database, but there are several older records at Ballyboden, Dublin, at c. 0.6 km distance away. Recent survey at Mount Anville School also found badger presence in that area c. 1.2 or more km distance.

Legal status and conservation issues - badgers

A number of mammalian species are protected under the Wildlife Act (1976) and Wildlife [Amendment] Acts (2000, 2012).[1]. These include the badger (which is also a Red Data Book species). The Wildlife [Amendment] Act (2000) protects all setts (as resting or breeding places). However, the badger is a relatively common species and ubiquitous through much of the Irish countryside (Smal, 1995).

It is standard best practice to make special provisions for badgers affected by development. Whilst the species is common in much of the Irish landscape, badgers are notable for their practice of constructing large underground tunnel and chamber systems (setts). Provisions are made for their humane removal or for their conservation on site where feasible or practicable.

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[1] Note that the Wildlife Act (1976) and the Wildlife Amendment Act (2000) allow exemptions for certain types of development [page 32, 2000 Act: "it shall not be an offence for a person - ...while constructing a road, or building operation or work of engineering construction, or while constructing or carrying on such other operation or work as may be prescribed, *unintentionally* to kill or injure such an animal or *unintentionally* to destroy or injure the breeding place or resting place of such an animal..."]

Assessment

This survey was conducted in summer (July 2024) and there were significant constraints as to badger survey in this season, as noted earlier. Nevertheless, the survey results, assisted by prior trail cameras, observations etc., were **clear**:

1 There is **one** badger social group on site.

2 The Main sett (= breeding sett = focal point of the badger group) is at sett S2, a large sett with one entrance. Trail cameras suggest a group of 4 badgers (= one sow, one boar and 2 cubs). This would not be atypical at all.

3 The sett S1 (a Subsidiary sett) is within the territory of this social group and will be utilised on occasion by badgers of the group (as evidenced by trail camera photographs). It is **not** an Annexe sett. Badgers typically have several setts of varying size within their territory.

4 This group forages over the entire site as evidenced by latrines and foraging signs.

5 These badgers forage outside of the site, via the drain culvert nearby (to sett S2). Other points of access outside of the site are possible – but these are very few given the high walls that enclose the site. There was no evidence that badgers exit onto the adjoining main road via the one access road to the site (but they may well do so). Another access point may exist at the south-east but this was not found or inspected. Note that these badgers will need to forage outside of the site itself, not only for suitable foraging habitat but also for mating opportunities etc.

Comments

1 The site of 9.7 ha is relatively small and probably does not provide adequate foraging territory for this social group (whilst it is a small group). Badger territories in the Irish countryside are variable in size but would generally be between 40 and 100 ha. Territory size in urban areas is not well studied. The badgers on site here are able to forage over the site itself and then in adjoining gardens also. Occasional mortality on larger local roads is likely if they exit the site.

2 There *is no need to ascertain the movements of the badgers present in this social group outside of the site area*. Such study will not add any useful information to the mitigation measures necessary for the badger group on site and its setts. There is a Main breeding sett on site, which is the focal point for this badger group. They may indeed have some smaller setts on adjoining lands (gardens, under sheds etc.) but knowledge of such would not affect mitigation measures required for the setts on site.

3 Similarly, territorial studies using bait marking (coloured pellets fed to badgers *only* at a Main sett) would *not* assist in the provision of mitigation measures for the setts on site.In any case, such studies are impossible in urban areas given difficulty of access to garden areas adjoining etc.: latrines have to be found to allow for such studies to be yield any useful results.

4 Badgers are relatively common in urban areas, and I have studied badgers at several urban areas in locations such as Clontarf in Dublin. Badgers can continue to co-exist with developments as long as their setts are protected and that they have access to foraging grounds/areas be it gardens or football fields, amenity grassland, or other grassed areas.

Comments on setts on site and construction works

1 The Subsidiary sett S1 was adjudged to be just outside of the area being considered for planning approval. It is not appropriate to consider mitigation or works affecting this sett as it appears to be outside of the planning application area. This sett is a Subsidiary sett in occasional use by badgers of the one badger social group on site.
2 It was considered that this sett's tunnels would be relatively short, c. 5 - 8m or so, and would not be affected by construction works nearby.
3 The Main sett S2 is a large sett with what is likely to be a fairly extensive tunnel system below ground with several chambers. It appears that these tunnels might be confined within the treeline area but could well extend into the adjoining grassland field. The tunnel system could be 30m or more in length below ground. [Note that Main (breeding) setts with just one entrance are not unusual].
4 Any construction works close to the Main sett could cause collapse of the sett tunnels not only through direct impact on the sett tunnels but also by virtue of vibration of nearby machinery, and this is a serious concern.
5 Hence, the Guidelines recommend a minimum distance of 30m as a protected zone near such large setts, 50m in the breeding season and 150m if piling works are entertained:

> Badger sett tunnel systems can extend up to c. 20m from sett entrances. Therefore, no heavy machinery should be used within 30m of badger setts lighter machinery (generally wheeled vehicles) should not be used within 20m of a sett entrance; light work, such as digging by hand or scrub clearance should not take place within 10m of sett entrances.
> During the breeding season (December to June inclusive), none of the above works should be undertaken within 50m of active setts nor blasting or pile driving within 150m of active setts. No piling works are proposed within 150m of the badger setts.
> Following consultation with the NPWS and badger experts, works closer to active setts may take place during the breeding season provided appropriate mitigation measures are in place, e.g. sett screening.

6 A Ground Penetrating Radar study may be useful to ascertain if sett tunnels (at the Main sett S2) extend into the grassland area. Again, such vegetation removal should be carried out by hand and not by machinery, so as to avoid risk of vibration affecting the sett tunnel system. (Altemar Note: Subsequent results from the Ground Penetrating Radar study carried out by Murphy Surveys revealed that the tunnel network did not extent beyond the treeline into adjacent grassland habitats.)

Mitigation measures and recommendations

Standard mitigation measures, as would apply to any large scale development, should be adopted in the construction of this development. These include habitat retention where feasible, limiting season of disturbance so as to reduce impacts on breeding species, to provide for habitat replacement and enhancement, and measures to reduce pollution and sedimentation into watercourses during construction and operation phases.

Summary of principal objectives and recommendations

There is one badger social group within the site. With adequate mitigation measures, it should be possible to maintain the group on site.

1 maintain badgers on site/in area.
2 retain sett S1 (Subsidiary sett).
3 create an artificial sett to 'relocate' badgers so that construction works can be conducted close to sett S2 Main sett.
4 once the artificial sett is in place, the existing sett S2 can be re-opened for use by badgers.

Principal recommendations – badger setts

Sett S1

1. Retain on site. Sett will be retained on site This sett is outside of the development area. Refer to notes above in this regard.
2. GPR studies near sett S1 may be conducted, but this should not be necessary as the sett is situated some distance from the site boundary (red line).
3. There is absolutely no necessity to trap and translocate the badger(s) using this sett. All badgers at this sett are part of the **one** social group present on the site.

Sett S2 Main sett

1 Retain sett S2 on site.
2 No unsupervised works to be permitted within 30m of the sett, or 50m during breeding season, 150m distance from any piling works (No piling works are proposed) A mammal specialist is required to oversee works within this zone in consultation with NPWS .
3 Continue trail camera monitoring throughout project.
4 Construct artificial sett nearby, at location suggested on site, between Main sett and the culvert – see below.
5 The Main sett can then be closed off, with one-way gates, to ensure no badgers are within the sett when construction works are being conducted adjacent/nearby (re paths and roadway, and also the wetland/pond).
6 After construction works are completed, the sett S2 can be re-opened.
7 These operations must be supervised by a qualified badger expert
8

Construct an artificial sett

1 Create an artificial sett between existing Main sett and the culvert. Location appropriate as considered on site during the latest meeting - within the former 'walled' garden' next to high boundary wall. The location of such artificial sett will be c. 50-70m from the Main sett S2. The new sett can be positioned c. 1 m or so away from the high boundary wall.
2 Suitable designs are shown in the Appendices. The size and layout of the sett can be adjusted.

3 Encourage badgers to move to artificial sett. Feeding on a regular basis over several months.
4 Monitor both these setts with trail cameras.
5 At a later stage, the new artificial sett should be fenced off to prevent human access. 2m high chain link mesh will suffice, with badger access via openings or gates.
6 No lighting should be erected within the vicinity of the artificial sett (e.g. 40m).
7 The artificial sett's chambers and tunnels are to be mounded over with earth (see photos in Appendices). This mound needs to be landscaped and planted with suitable shrub and scrub species immediately following its construction.

Schedule

8 Create artificial sett in autumn 2024: e.g. September/October/November (*no later*).
9 Allow minimum 6 months for badgers of the social group to commence using the artificial sett. Due to the badger breeding season, this will bring the schedule of these operations to 1st July 2025.
10 After 1st July 2025, the former sett (S2) can be closed down (using one-way gates) to exclude badgers from the sett.
11 This allows for construction works to commence for the proposed adjacent roadway and footpath and wetland/pond etc. without risk to badgers within the sett S2.
12 Once construction works have been completed (roads, paths, pond etc. in the vicinity), the sett S2 may then be re-opened for use by badgers again.
13 It is recommended that the sett S2 be protected from human disturbance e.g. by chain link mesh (not badger proof), but with access points for badgers into the sett.

Culvert/drain

1 Cut bars at culvert to provide at least 25cms wide access for badgers.
2 Ensure that the culvert cannot be entered by children or others; some additional fencing may be required to ensure this but such will still need to allow badger access to the culvert.

Others

1 There is no need for badger proof fencing. Construction of badger proof fencing (near sett S2) (badger proof fencing needs to be buried) could cause collapse of sett tunnels at sett S2 by virtue of vibration and impact on potential tunnels. Instead a fence is proposed to deter human interference, the base of which would not be buried.
2 The badgers in the social group should be allowed to access all new green or open areas in the development area and there is certainly no need to confine them in a limited area with fencing.
3 The proposal includes demolition of parts of the boundary wall to create additional traffic access points to the new development. These new breaks in the high boundary wall will be favourable to badgers in allowing them easier access to adjoining gardens etc., whilst there is a risk of increased mortality of badgers on local roads that carry heavy traffic.
4 Speed bumps can be included as part of traffic control measures on site but speed bumps on site are not considered necessary .

Construction works – working hours and trenches, wooden hoarding

1 Ground works within 50m of the Main sett S2 are to be conducted during daylight hours only, c. 8am to 7pm in summer months.

2 No lighting should be directed towards the Main sett (S2) at night.
3 Temporary wooden hoarding at c. 15 to 20m north of the Main sett in the grassland area would serve to reduce noise and light disturbance – during the badger breeding season (Dec to June inclusive).
4 Badgers may fall or enter into open trenches on site. Escape ramps must be provided in all open trenches: these may be simple planks allowing animals (badgers, foxes etc.) to climb out.
5 Similarly, badgers may enter open pipes during construction works (sewage and drainage pipes). These entrances *must* be closed off at the end of each working day – *everywhere* on site (as badgers forage across the entire site).
6 No construction of the proposed wetland/pond can be permitted during the badger breeding season; the proposed wetland/pond near the existing sett (S2) and the new artificial sett should only be carried out under supervision of the mammal specialist and in consultation with NPWS so that works do not impact on these setts.

General recommendations re. protection of badgers

1 Prior to any development on site commencing, the subject site area should be checked for badger setts again (by a badger expert), as badgers may create new setts in the intervening period between this survey/report and development proceeding. NB this requirement is considered as essential because this present survey was conducted outside the appropriate season for badger surveys. A re-survey should, therefore, be preferably conducted in the months from December to early April.

2 Any areas of scrub or scrubby woodland (including shrubby amenity planting) that require felling/clearing (and not due to be retention on site) should be checked for badger setts prior to such operations commencing. Monitoring of scrub clearance is recommended – with a badger/faunal expert on site during any scrub clearance operations. Reason as above.

3 If a lengthy period of time elapses prior to construction activities commencing (e.g. 18 months) a repeat full badger survey is recommended – as badgers may create new setts in the study area in the interim period, and may alter their use of the site area and their use of the foraging areas there.

4 Should any new setts be identified in the site area, , or mitigation measures similar to those outlined for setts above. Again, it may be possible to retain such 'new' badger setts on site if appropriate mitigation measures are taken.

Monitoring

1 The success of the artificial sett, and also badger use of sett S2 once re-opened - should be monitored for a period of minimum 3 years (when works are completed), principally by use of trail cameras.
2 Additional measures may be necessary e.g. improvement of fencing, improve restrictions on any observed or likely human interference etc. These would be determined by the badger specialist in consultation with NPWS.
3 Onsite continuous monitoring of the badger setts and the grounds of the CMH will be carried out by an ecologist. During the works particular attention will be carried out on the area surrounding the temporarily closed breeding sett and the active subsidiary sett. Supervision will include camera traps (minimum of 4 remotely viewed 4G cameras) and site visits will be

carried out (frequency of visits schedule will be subject to the approval of NPWS). An Ecological Clerk of Works will be in place for the duration of the project and will oversee all works.

4 There is a reasonable probability that the badgers will be retained on site with best possible methodology in circumstances overseen by a badger specialist. Monitoring and subsequent reporting may lead to improved methodology in dealing with badgers on a site such as this and, more generally, in other urban areas in Dublin.

Timelines

Should the proposed development be granted without delay, it has been outlined by the project team that no construction works would commence in the vicinity of the badger breeding sett until Q4 2025. As a result the likely schedule would be as follows;

- In Q4 2024 build artificial sett in walled garden and commence placing food in the sett.
- December 2024-July 2025 No works can be done in the vicinity of the sett as it is badger breeding season.
- August 2025 commence the badger mitigation plan with the temporary closure of the breeding sett.

In the worst case scenario and works did not commence until 2026 the proposed mitigation will be adjusted accordingly in discussion with and to the satisfaction of NPWS.

References and Bibliography

Bang, P., Dahlstrom, P & Vevers, G. 1974 *Collins guide to Animal tracks and signs*. Collins, UK.

Carden, R.F., Carlin, C.M., Marnell, F., Mcelholm, D., Hetherington, J. & Gammell, M.P. 2011. Distribution and range expansion of deer in Ireland. *Mammal Rev*. **41**(4): 313-325.

Carey, M., Hamilton, G., Poole, A. & Lawton, C. 2007. *The Irish Squirrel Survey*. COFORD, Dublin, Ireland.

Corbet, G.B. & Harris, S. 1991 *The Handbook of British Mammals*. 3rd edition. Blackwell Scientific Publications, Oxford.

Cornally, A., Lawton, C. & Marnell, F. 2016 *'A guide to the identification of Irish mammal hair',* National Parks and Wildlife Service, 2016, Irish Wildlife manuals, No.92.

Cox, P.R. 1993 *Badgers on site: a guide for developers and planners*. Berkshire County Council.

English Nature. 2002 *Badgers and development*. English Nature, Peterborough, UK.

Environmental Protection Agency 1995 *Advice notes on current practice in the preparation of Environmental Impact Statements*. EPA, Wexford, Ireland.

Environmental Protection Agency 1997 *Draft guidelines on the information to be contained in Environmental Impact Statements*. EPA, Wexford, Ireland.

Environmental Protection Agency 2002 *Guidelines on the information to be contained in Environmental Impact Statements*. EPA, Wexford, Ireland.

Fossitt, J. 2000 *A Guide to Habitats in Ireland*. The Heritage Council, Kilkenny.

Gent, A.H. & Gibson, S.D. (eds.) 1998 *Herpetofauna workers' manual*. Peterborough, Joint Nature Conservation Committee.

Harris, S., Jeffries, D., Cheeseman, C. & Booty, C. 1994 *Problems with badgers?* 3rd edition. RSPCA, UK.

Harris, S. & Yalden, D. 2008. *Mammals of the British Isles, Handbook*, 4th edition. The Mammal Society, UK.

Hayden, T. & Harrington, R. 2000 *Exploring Irish mammals*. Duchas. Town House, Dublin.

Highways Agency 2001 *Design Manual for Roads and Bridges. Vol. 10 Environmental design and management. Section 4. Nature Conservation. Part 2. Mitigating against effects on badgers; HA 59/92.*

Institute of Environmental Assessment. 1995 *Guidelines for Baseline Ecological Assessment*. E&FN Spon, London.

King, J.L., Marnell, F., Kingston, N., Rosell, R., Boylan, P., Caffrey, J.M., FitzPatrick, Ú., Gargan, P.G., Kelly, F.L., O'Grady, M.F., Poole, R., Roche, W.K. & Cassidy, D. 2011 *Ireland Red List No. 5: Amphibians, Reptiles & Freshwater Fish*. National Parks and Wildlife Service, Department of Arts, Heritage and the Gaeltacht, Dublin, Ireland.

Lawrence, M.J. & Brown, R.W. 1973 Mammals of Britain: their tracks, trails and signs. Blandford Press, Dorset, UK.

Lysaght, L. & Marnell, F (eds.) 2016 *Atlas of Mammals in Ireland 2010-2015*. National Biodiversity Centre, Waterford.

Marnell, F., Kingston, N. and Looney, D. 2009 *Ireland Red List No. 3: Terrestrial Mammals*. National Parks and Wildlife Service, Department of the Environment, Heritage and Local Government, Dublin

Marnell F., Looney, D. & Lawton, C. 2019 *Ireland Red List No. 12:* Terrestrial Mammals. National Parks and Wildlife Service, Department of the Environment, Heritage and Local Government, Dublin.

National Roads Authority 2005 *Guidelines for the treatment of badgers prior to the construction of national roads schemes*. NRA, Dublin. www.nra.ie

Natural England. 2007 Badgers and development – a guide to best practice and licensing, Interim guidance document. Natural England, UK.

NPWS 2013 The status of protected EU habitats and species in Ireland. DoEHLG, Dublin, Ireland.

Regini, K. 2000 Guidelines for ecological evaluation and impact assessment. *In Practice*, Bulletin of the Institute of Ecology and Environmental Management no. 29: 1-7.

Reid, N., Dingerkus, S.K., Stone, R.E., Pietravalle, S., Kelly, R., Buckley, J., Beebee, T.J.C. & Wilkinson, J.W. 2013 *National Frog Survey of Ireland 2010/11. Irish Wildlife Manuals, No. 58*. National Parks and Wildlife Service, Department of Arts, Heritage and the Gaeltacht, Dublin, Ireland.

Smal, C.M. & Fairley, J.S. 1978 The spread of the bank vole since 1970. *Ir. Nat. J.* **19**: 237-239.

Smal, C.M. & Fairley, J.S. 1984 The spread of the bank vole Clethrionomys glareolus in Ireland. *Mammal Review* **14**: 71-78.

Smal, C.M. 1988 The American mink in Ireland. *Mammal Rev*. 18(4): 201-208.

Smal, C. M. 1991 *Feral mink in Ireland: a guide to the biology, ecology, pest status and control of feral American mink* Mustela vison. Occasional Publication, National Parks & Wildlife Service, Dublin.

Smal, C.M. 1995. *The Badger & Habitat Survey of Ireland*. The Stationery Office, Dawson St. Dublin 2.

Smal, C.M. 2005 *Guidelines for the treatment of badgers prior to the construction of National Road schemes*. National Roads Authority, Dublin.

Smal, C.M. 2006 *Guidelines for the treatment of otters prior to the construction of National road schemes*. National Roads Authority, Dublin.

Smiddy, P. & Sleeman, P. 2016 *Irish Wild Mammals – a guide to the literature*. Cork. ISBN: 978-1-906642-88-4.

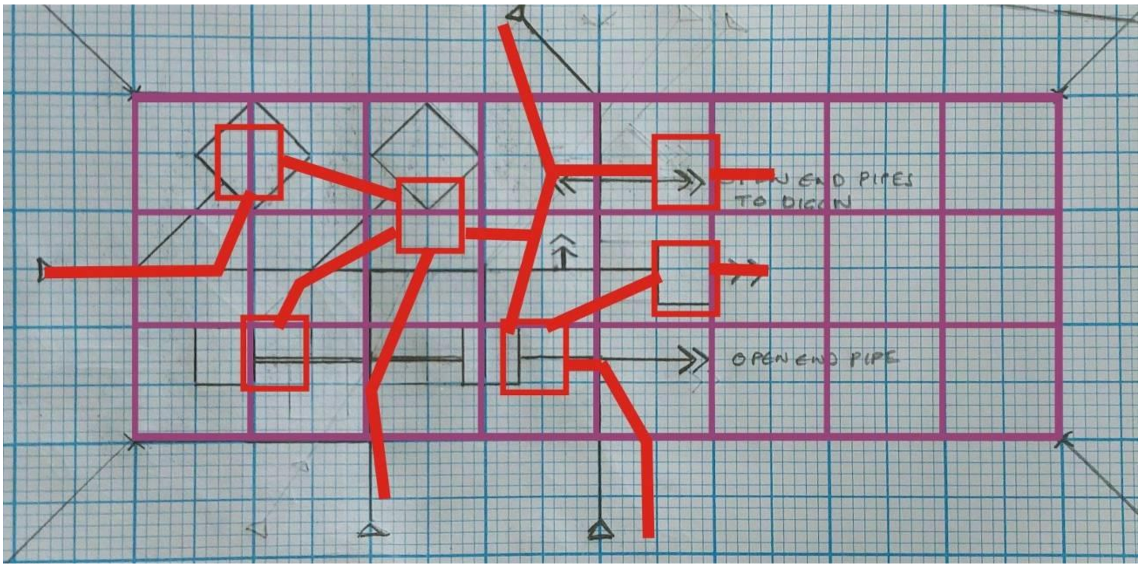
Teangana, D.Ó. *et al*. 2000 Distribution and status of the Red Squirrel (*Sciurus vulgaris*) and Grey Squirrel (*Sciurus carolinensis*) in Ireland. *Mammal Rev.* **30**(1): 45-56.

Whilde, A. 1993 *Threatened mammals, birds, amphibians and fish in Ireland. Irish Red Data Book 2: Vertebrates*. Belfast: HMSO.

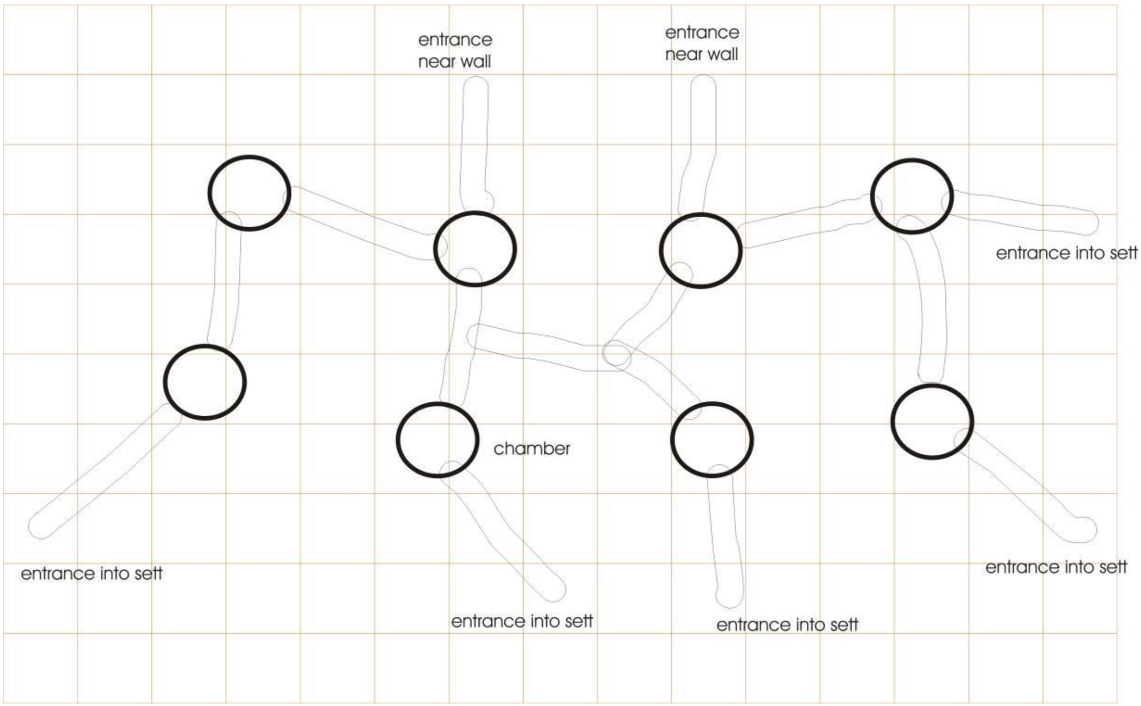
Wildlife Act 1976 and Wildlife [Amendment Acts] 2000 to 2012. Government of Ireland.

Sample designs for an artificial sett

Below is a suggested design for an earlier artificial sett project in Clontarf, Dublin. Each blue lined square = 1m.



Example of another artificial sett that was built in Dublin, and a similar design is now suggested for the CMH site. This sett design can be reduced in size and adjusted to suit circumstance on the ground. This sett has 8 chambers and 7 entrances.



The tunnel system is composed of 300mm polypipe. The sett chambers are built with half cut timber posts, topped with a Marine ply board.

The overall area of the sett is c. 15m x 10m. This can be adjusted on site or educed to suit the circumstances on site.

A minimum 20 ton digger will be required to create the 'platform' for the sett and then to create the mound over the artificial sett.

Any excavated soil will need to be put to one side. This will be used to overlay the sett when the sett is completed. At CMH, additional soil **will be** required to be brought into the site to complete the profiling and landscaping.

Chambers

Each chamber should be c. 700mm to 900mm in width, and may be round or square.
The height of each chamber should be 350 to 450mm.

The simplest method for construction is to use half round stakes (*untreated timber*), c. 4" or 5" in width. They can be hammered into the ground to create the shape and the tops then cut to the required height.

About 15 to 20 stakes will be required for each chamber; part of the circumference will be left open to accommodate the polypipe tunnels that enter each chamber (1 to 3 pipes will enter each chamber – see suggested design above).

Each chamber is then topped with a sheet of marine ply to form the roof. The material thickness should be adequate to support c. 1.5 m of soil above.

Copious bedding (hay) must be placed into each chamber before it is capped.

Figure. An example of a sett under construction

Tunnel system

Polypipe is the most suitable material for the tunnel system. It should be ribbed on the inside – not smooth. [NB ribbed pipes are no difficult to source]. Smooth pipes can be used provided the pipes are fairly level or lined with wire to assist badgers moving through them.

The diameter should be 300mm. The junctions of pipes need to be reinforced.

The design suggested above will require c. 40 to 50m of pipe.

Figure. Example of partly completed sett, showing polypipe from one chamber to another.

Profiling/landscaping

When the chambers and tunnel system have been completed, the area of the sett is covered with the soil excavated earlier and additional soil brought in from outside of the site. The sett should be covered with a minimum of 1.5m of topsoil.

Figure. Each entrance needs to be profiled into the surrounding area

Planting

Figure. Planting of deciduous trees and scrub after the sett is completed.

Appendix: Photographic record

Plate 1. Location of Subsidiary sett S1. Overgrown with thistles etc, but a medium sized spoil heap and some older bedding is present. The entrance is open and a male badger was observed entering the sett (trail camera) and cubs observed by the sett also.

Plate 2. Scratch marks on wall next to sett S1: badgers appear to be crossing the wall here.

Plate 3. The single entrance at Main sett S2. The spoil heap is extensive and very large indicating a substantial tunnel system below ground. Active, some bedding, and badgers (boar, sow, 2 cubs) observed at the sett (trail camera). Fresh latrines nearby.

Plate 4 (right). Entrance to the Main Sett S2.

Plate 5. Latrine with fresh and older dung next to the Main sett.

Plate 6. Stream/drain culvert under the high boundary wall, some distance to south of the Main sett S2. An adult badger was observed passing through these bars – very tight! – on trail camera.

Plate 7. Apple orchard on site.

Plate 8. Large grassland field at the north-west of the site.

Plate 9 (left). Rooting in gravelly ground near the Main sett S2.

Plate 10 (right). Fresh latrine next to high boundary wall at north-west of site.

Plate 11. Stream/drain at centre/south-east of the site.

Appendix 8.8. Badger Conservation Management Plan for a proposed Part 10 development at the former Central Mental Hospital, Dundrum Road, Dublin 14.

17th September 2024

Prepared by: Bryan Deegan
On behalf of: Dun Laoghaire Rathdown County Council in Partnership with the Land Development Agency

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Document Control Sheet			
Client	Dun Laoghaire Rathdown County Council in Partnership with the Land Development Agency		
Report	Badger Conservation Management Plan for a proposed Part 10 development at the former Central Mental Hospital, Dundrum Road, Dublin 14.		
Date	17th September 2024		
Version	Author	Reviewed	Date
Draft 01	Bryan Deegan		9th July 2024
Draft 02	Bryan Deegan	LDA/TPA	5th September 2024
Final	Bryan Deegan		17th September 2024

Summary

Structure/features:	The following Badger Conservation Management Plan for a proposed residential development at former Central Mental Hospital, Dundrum Road, Dublin 14 has been developed by Altemar Limited, in discussion with Dr Chris Smal (mammal ecologist) and the National Parks and Wildlife Service. It outlines current status of badgers on site, the proposed development and the conservation management and mitigation measures that will be in place to protect and retain badgers on site within the grounds of the former Central Mental Hospital. These measures will be put in place for the proposed project and have been developed in consultation with Dr Chris Smal (Mammal Ecologist) and the NPWS.
Location:	Dundrum Road, Dublin 14.
Fauna species:	Badger (*Meles meles*).
Proposed work:	Residential development.
Survey by:	Bryan Deegan MSc BSc MCIEEM, Frank Spellman MSc BSc & Dr Chris Smal (Mammal ecologist and badger specialist)

Receiving environment

Background

The redevelopment of the Central Mental Hospital was granted permission under a Strategic Housing Development in 2023. The granted development will consist of a 10 year permission for a Strategic Housing Development with a total application site area of c.9.6 ha, on lands at the Central Mental Hospital, Dundrum Road, Dundrum, Dublin 14.

The granted development can be described as:

"*The development consists of the demolition of existing structures (3,736 sq m), including:*

- *Single storey Former swimming pool / sports hall and admissions unit (2,750 sq m);*
- *Two storey redbrick building (305 sq m);*
- *Temporary structures including single storey portacabins (677 sq m);*
- *Removal of security fence at Dundrum Road entrance;*
- *Demolition of element of Gatelodge (4 sq m).*

The development will also consist of alterations and partial demolition of the perimeter wall, including:

- *Removal of section of perimeter wall adjacent to Rosemount Green (south);*
- *Formation of a new opening in perimeter wall at Annaville Grove to provide a pedestrian and cyclist access and associated gate;*
- *Removal of section of perimeter wall at the existing Dundrum Road access;*
- *Alterations and removal of sections of wall adjacent to Dundrum Road, including the provision of a new vehicular, cyclist and pedestrian access;*
- *Alterations and removal of section of perimeter wall adjacent to Mulvey Park to provide a pedestrian and cyclist access; and*
- *Removal of walls adjacent to Main Hospital Building.*

The development with a total gross floor area of c. 106,770 sq m (c. 106,692 sq m excluding retained existing buildings), will consist of 977 no. residential units comprising:

- *940 no. apartments (consisting of 53 no. studio units; 423 no. one bedroom units; 37 no. two bedroom (3 person) units; 317 no. two bedroom (4 person) units; and 110 no. 3 bedroom units) arranged in 9 blocks (Blocks 02-10) ranging between 2 and 6 storeys (excluding plant) in height, together with private (balconies and private terraces) and communal amenity open space provision (including courtyards and roof gardens) and ancillary residential facilities;*
- *17 no. duplex apartments (consisting of 3 no. 2 bedroom units and 14 no. 3 bedrooms units located at Block 02, 08 and 09), together with private balconies and terraces.*
- *20 no. two and three storey houses (consisting of 7 no. three bedroom units and 13 no. 4 bedrooms units) and private rear gardens located at Block 02, 08 and 09).*

The development will also consist of 3,889 sq m of non-residential uses, comprising:

- *Change of use and renovation of existing single storey Gate Lodge building to provide a café unit (78 sq m);*
- *1 no restaurant unit (307 sq m) located at ground floor level at Block 03;*
- *6 no. retail units (1,112 sq m) located at ground floor level at Blocks 03, 06 and 07;*
- *1 no. medical unit (245 sq m) located at ground floor level at Block 02;*
- *A new childcare facility (463 sq m) and associated outdoor play area located at ground floor level at Block 10; and*
- *A new community centre facility, including a multi-purpose hall, changing rooms, meeting rooms, storage and associated facilities (1,684 sq m) located at ground and first floor level at Block 06.*

The development will also consist of the provision of public open space and related play areas; hard and soft landscaping including internal roads, pathways and boundary treatments, wetland feature, part-basement, car parking (547 no. spaces in total, including car sharing and accessible spaces); motorcycle parking; electric vehicle charging points; bicycle parking (long and short stay spaces including stands); ESB substations, piped infrastructural services and connections; plant (including external plant for district heating and pumping station); waste management provision; SuDS measures; sustainability measures (including green roofs and solar panels); signage; public lighting; any making good works to perimeter wall and all site development and excavation works above and below ground."

Permission was granted subject to Conditions, including requirements to *inter alia* revise the unit mix, and vehicular access to the site. The decision is currently subject to a Judicial Review by a Third Party, which is due to be heard in court once a hearing date is set.

Proposed Development

A Part 10 Application is now proposed by Dún Laoghaire Rathdown County Council, in partnership with The Land Development Agency, which proposes a revised scheme at the subject site, consisting of:

"*a ten year approval to carry out the following proposed development which is located on a total application site area of c. 9.7 ha, located on the former Central Mental Hospital, Dundrum Road, Dundrum, Dublin 14 and areas of Dundrum Road and St. Columbanus Road, Dublin 14. The subject site is in the immediate setting and curtilage of a number of protected structures, namely the 'Asylum' (RPS No. 2072), the 'Catholic Chapel' (RPS No. 2071) and the 'Hospital Building' (RPS No. 2073).*
The development will consist of the construction of a residential scheme of 934 no. dwellings on an overall site of c. 9.7 ha.
The development will consist of the demolition of existing structures associated with the existing use (3,677 sq m), including:

- *Single storey former swimming pool / sports hall and admissions unit (2,750 sq m);*
- *Two storey redbrick building (305 sq m);*
- *Single storey ancillary and temporary structures including portacabins (618sq m);*
- *Removal of existing internal sub-divisions/ fencing, including removal of security fence at Dundrum Road entrance;*
- *Demolition of section of porch and glazed screens at Gate Lodge building (4 sq m);*
- *Removal of walls adjacent to Main Hospital Building;*
- *Alterations and removal of section of wall to Walled Garden.*

The development will also consist of alterations and partial demolition of the perimeter wall, including:

- *Alterations and removal of section of perimeter wall adjacent to Rosemount Green (south);*
- *Formation of a new opening in perimeter wall at Annaville Grove to provide a pedestrian and cyclist access;*
- *Alterations and removal of sections of wall adjacent to Dundrum Road (including removal of existing gates and entrance canopy), including reduction in height of section, widening of existing vehicular access, and provision of a new vehicle, cyclist and pedestrian access;*
- *Alterations and removal of section of perimeter wall adjacent to Mulvey Park to provide a pedestrian and cyclist access.*

The development with a total gross floor area of c. 94,058 sq m (c. 93,980 sq m excluding retained existing buildings), will consist of 934 no. residential units comprising:

- *926 no. apartments (consisting of 342 no. one bedroom units; 98 no. two bedroom (3 person) units; 352 no. two bedroom (4 person) units; and 134 no. three bedroom units) arranged in 9 blocks (Blocks 02-10) ranging between 2 and 8 storeys in height (with a lower ground floor to Blocks 02 and Block 10 and Basements in Blocks 03 and 04), together with private balconies and private terraces and communal amenity open space provision (including courtyards) and ancillary residential facilities, including an 130 sq m internal residential amenity area at the Ground Floor Level of Block 3;*
- *6 no. three bedroom duplex apartments located at Block 02, together with private balconies and terraces.*

- *2 no. 5 bedroom assisted living units and private rear gardens located at Block 02.*

The development will also consist of 4,380 sq m of non-residential uses, comprising:

- *Change of use and renovation of existing single storey Gate Lodge building (former reception/staff area) to provide a café unit (78 sq m);*
- *1 no. restaurant unit (266 sq m) located at ground floor level at Block 03;*
- *3 no. retail units (1,160 sq m) located at ground floor level at Blocks 03 and 07;*
- *1 no. medical unit (288 sq m) located at ground floor level at Block 02;*
- *A new childcare facility (716 sq m) and associated outdoor play area located at lower ground and ground floor level at Block 10;*
- *A management suite (123 sq m) located at ground floor level at Block 10; and*
- *A new community centre facility, including a multi-purpose hall, changing rooms, meeting rooms, storage and associated facilities (1,749 sq m) located at ground and first floor level at Block 06.*

Vehicular access to the site will be from a new signalised access off Dundrum Road to the south of the existing access and the existing access of Dundrum Road will be retained for emergency vehicle, pedestrian and cyclist access only. The development will also consist of the provision of public open space and related play areas; hard and soft landscaping including internal roads, cycle and pedestrian routes, active travel routes for cyclists and pedestrians, pathways and boundary treatments, street furniture, wetland features, part-basement, car parking (524 no. spaces in total, including car sharing and accessible spaces); motorcycle parking; electric vehicle charging points; bicycle parking (long and short stay spaces including stands); ESB substations, piped infrastructural services and connections (including connection into existing surface water sewer in St. Columbanus Road); ducting; plant (including external plant for Air Source Heat Pumps and associated internal heating plantrooms); waste management provision; SuDS measures (including green roofs, blue roofs, bio-retention areas); attenuation tanks; sustainability measures (including solar panels); signage; public lighting; any making good works to perimeter wall and all site development and excavation works above and below ground.

The proposed site outline, location, and landscape plan are demonstrated in figures 1-5. The Planning Application has been prepared in partnership with Dún Laoghaire Rathdown County Council as it is a Part 10 Application where DLR are the Applicant and the Land Development Agency (LDA) acts as the Agent. The Application will be lodged with An Bord Pleanála for a decision in September 2024.

Landscape

The landscape strategy for the proposed development has been prepared by AECOM Ireland Limited to accompany this planning application.

The proposed landscape plan is demonstrated in figure 5.

Figure 1. *Proposed site outline and survey area.*

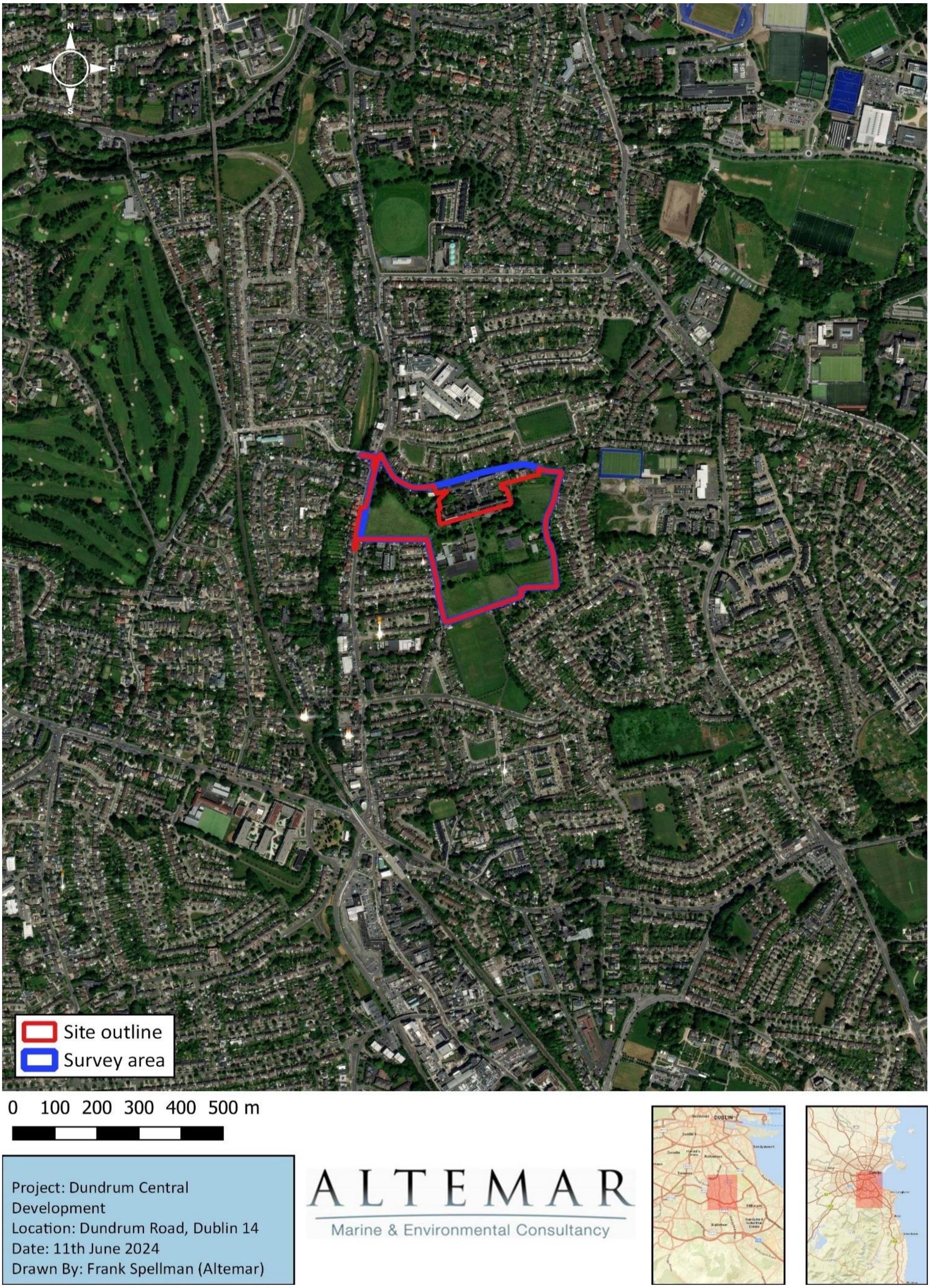


Figure 2. *Proposed site and survey area location*

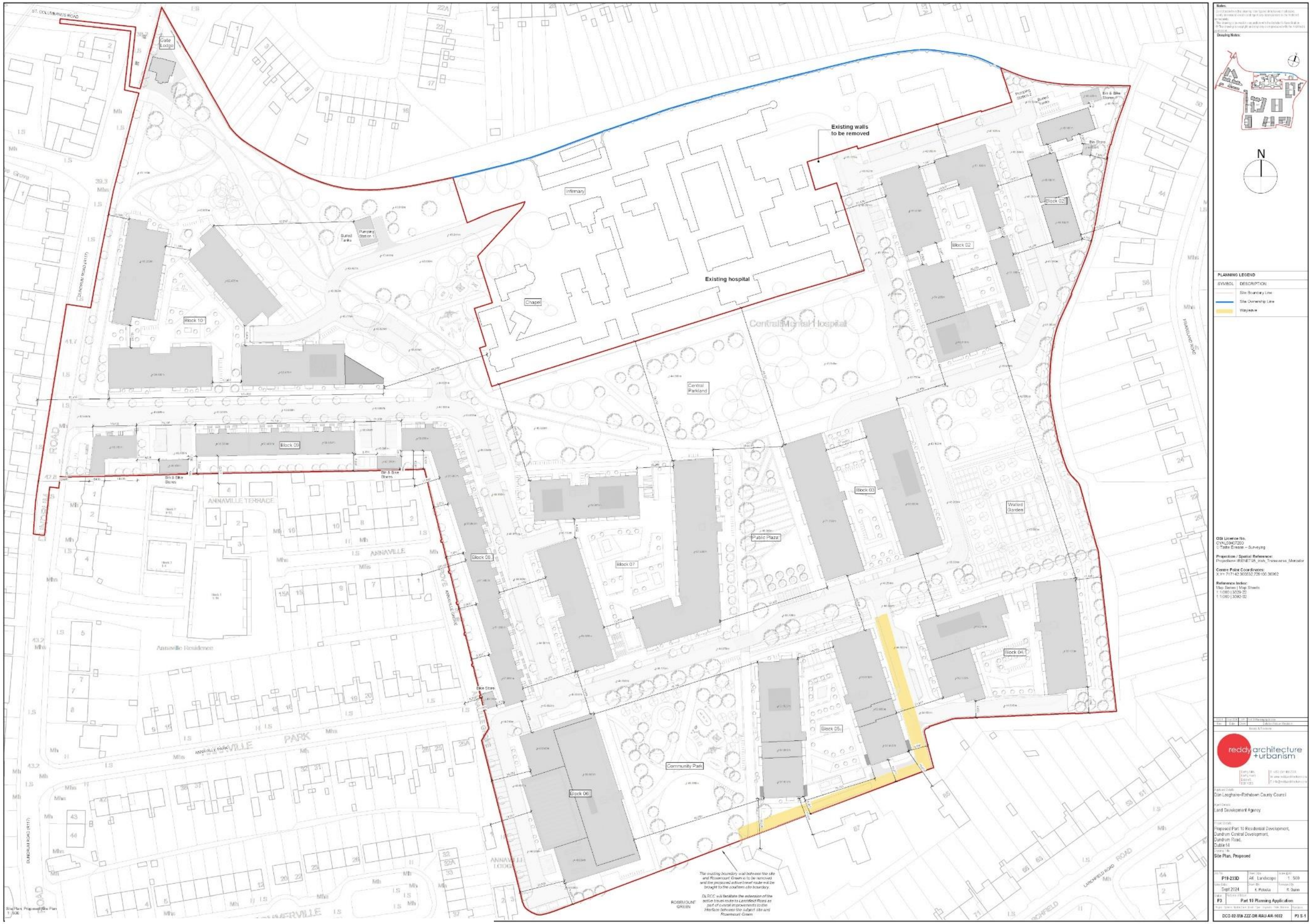


Figure 3. *Proposed site outline*

C

Figure 4. *Proposed landscape plan*

Competency of assessor

Since its inception in 2001, Altemar has been delivering ecological and environmental services to a broad range of clients. Operational areas include: residential; infrastructural; renewable; oil & gas; private industry; Local Authorities; EC projects; and, State/semi-State Departments.

Bryan Deegan (MCIEEM, BSc Applied Marine Biology, MSc Environmental Science)

Bryan Deegan, the managing director of Altemar, is an Environmental Scientist and Marine Biologist with 30 years' experience working in Irish terrestrial and aquatic environments, providing services to the State, Semi-State and industry. He is currently lead project ecologist for Dundrum Central and was contracted to Inland Fisheries Ireland as the sole "External Expert" to environmentally assess internal and external projects. He is also chair of an internal IFI working group on environmental assessment. Bryan Deegan (MCIEEM) holds a MSc in Environmental Science, BSc (Hons.) in Applied Marine Biology, NCEA National Diploma in Applied Aquatic Science and a NCEA National Certificate in Science (Aquaculture). Bryan has been the lead ecologist on the Central Mental Hospital site since 2020.

Chris Smal (MCIEEM, Phd Zoology, BSc Zoology)

Dr. Smal is an acknowledged badger and faunal expert in Ireland. He prepared the "Guidelines for the treatment of badgers prior to the construction of National Road schemes" (NRA 2005) and "Guidelines for the treatment of otters prior to the construction of National road schemes" (NRA 2006). He conducted "The Badger & Habitat Survey of Ireland" (1995) and he has carried out substantial research on badgers for the Department of Agriculture and the National Parks and Wildlife Service (1989 to c. 2005) – these involved sett surveys, sett classification, and badger territory studies by means of bait marking. He conducted wildlife surveys for a large proportion of Ireland's motorway network in 1990 to 2000s, and directed the excavation of over 150 badger setts in the way of road developments over that time.

Frank Spellman (BSc Zoology, MSc Zoology).

Frank has extensive experience in carrying out a wide range of fauna surveys as both a sub-contractor and employee for environmental consultancies and organisations in Ireland and the US. These include both roving and static acoustic bat surveys, terrestrial non-avian mammal surveys, breeding/wintering bird surveys, and freshwater ecology surveys. Frank has been lead surveyor on numerous development projects within Ireland carrying out full mammal assessments.

Legislative context

A number of non-avian terrestrial mammal species are protected under the Wildlife Act (1976), Wildlife [Amendment] Acts (2000 to 2012), and Annex IV of the Habitats Directive (transposed into Irish law by the European Communities (Birds and Natural Habitats) Regulations, 2011-2021. These include species such as badger, Irish stoat, Irish hare, brown hare, pine marten, red squirrel, otter, hedgehog, all deer species, and pygmy shrew.
The badger is also a Red Data Book species, but it is a relatively common species and ubiquitous through much of the Irish countryside (Smal, 1995).
It is standard best practice to make special provisions for badgers affected by development. Whilst the species is common in much of the Irish landscape, badgers are notable for their practice of constructing large underground tunnel and chamber systems (setts). Provisions are made for their humane removal or for their conservation on site where feasible or practicable. The Wildlife [Amendment] Act (2000-2012) protects all resting places of protected species.

Mammal surveys

Site surveys have been carried out on the Central Mental Hospital site since 2020. No evidence of badger activity was noted on site until early 2024 since the site had been disused as the Central Mental Hospital. Prior to 2024, the

HSE was operating the existing Hospital and had groundskeeping staff, carried out landscaping works and a maintenance regime in place for the green open space at this location. In addition, patrols were carried out on site with numerous nightly perimeter checks by security staff.

Currently, the Office of Public Works (OPW) is the legal owner of the site and there is minimal maintenance on site. As a result, the site has become considerably overgrown.

As well as site assessments, interviews had been carried out with permanent gardeners and security staff on site. No evidence of badger activity was noted on site until 2024. Five mammal specific surveys were carried out by Bryan Deegan on 1st, 2nd, 14th and 22nd February, and 16th April 2024. A badger/mammal transect survey was carried out on each occasion. Mammal observations recorded from April to June 2024 by Frank Spellman were included in this assessment. A site assessment was also carried out by Dr Chris Smal on 22nd of July 2024.

Survey methodology

These non-avian mammal surveys were carried out based on techniques approved and recommended by CIEEM. Surveys were undertaken throughout the survey area which consisted of artificial buildings/surfaces, scrub, grassland, treelines, mature trees, hedgerows and ornamental gardens. Due to the small but complex nature of the survey area, a single roving transect following the full perimeter and circumnavigating all habitats and features within the survey area was carried out on each visit. Trail cameras were places on areas and burrows showing evidence of recent mammal activity.

Movements were carried out slowly, with pauses to observe open spaces, further following trails to determine their direction and investigate recipient areas for potential dens/setts/scatt/prints/scrapes/latrines etc. Camera traps were brought to place in areas where high evidence of mammal activity and/or an active den/sett was likely. Two camera traps were set on suspected badger setts by Bryan Deegan, one in the northeast and another in the east on 2nd February 2024 (A derogation application was submitted to NPWS to place cameras in discussion with Sean Meehan NPWS Ranger).

Survey results

Non-volant terrestrial fauna surveys.

An active badger sett was identified in the northeast of the survey area, under a concrete slab adjacent to an area previously used for housing livestock. Camera footage identified an individual boar utilising this sett. The areas in the vicinity of this sett are foraged extensively as evidenced by the high number of snuffle holes and trails. An active breeding sett was identified and confirmed by camera footage within the treeline boundary between fields in the northeast and the gravel garden in the east. These are visually represented in Figure 6.

A large spoil heap and high amounts of bedding in the vicinity suggests extensive excavation and activity. Two cubs and a sow were observed almost daily by camera footage entering/exiting the sett and playing/resting around the sett entrance. The nearby boar was occasionally observed in this area alone, as well as accompanying the sow and the cubs in the presence of the sow. The boar also entered this sett with the sow on at least one occasion. It is suspected that the boar in video footage of the breeding sett is the same individual residing in the sett in the northeast of the site based on its physical characteristics (colouring, size etc.). It is likely based on the behaviour around the sett and with the sow and cubs that this boar is the father of the cubs.

The male boar was observed exiting the former Central Mental Hospital site via the drain stream exit under the wall in the east of the site. Camera footage also detected the sow and cubs in the vicinity of this exit. Regular footage of foxes exiting the site through this drain stream, but not returning, suggests a delay in motion detection triggering the camera between mammals coming through the exit and exiting the frame. The lower profile of badgers compared to foxes in relation to vegetation may have resulted in an under-detection of badgers in this area. The camera was repositioned on 7th June 2024 and outlines the regular use of this access point by the badgers to exit and enter the site. The female badger and cubs were observed multiple times in the vicinity of the badger breeding sett during site visits including the most recent visit on the 8th July 2024. Foxes were also observed on camera proximate to both badger setts. Ground penetrating radar surveys were carried out in August 2024. No tunnels or chambers were noted extending into adjacent grassland habitats proximate to the breeding sett. These surveys indicate that the sett tunnel system is solely within the treeline.

Plate 1: *Sow and two cubs outside entrance to breeding sett.*

Plate 2: *Boar, sow and two cubs at entrance to breeding sett.*

Plate 3: *Boar at entrance to badger sett in northeast.*

Plate 4: *Fox carrying cub outside entrance to badger sett.*

Plate 5: *Badger boar exiting through culvert*

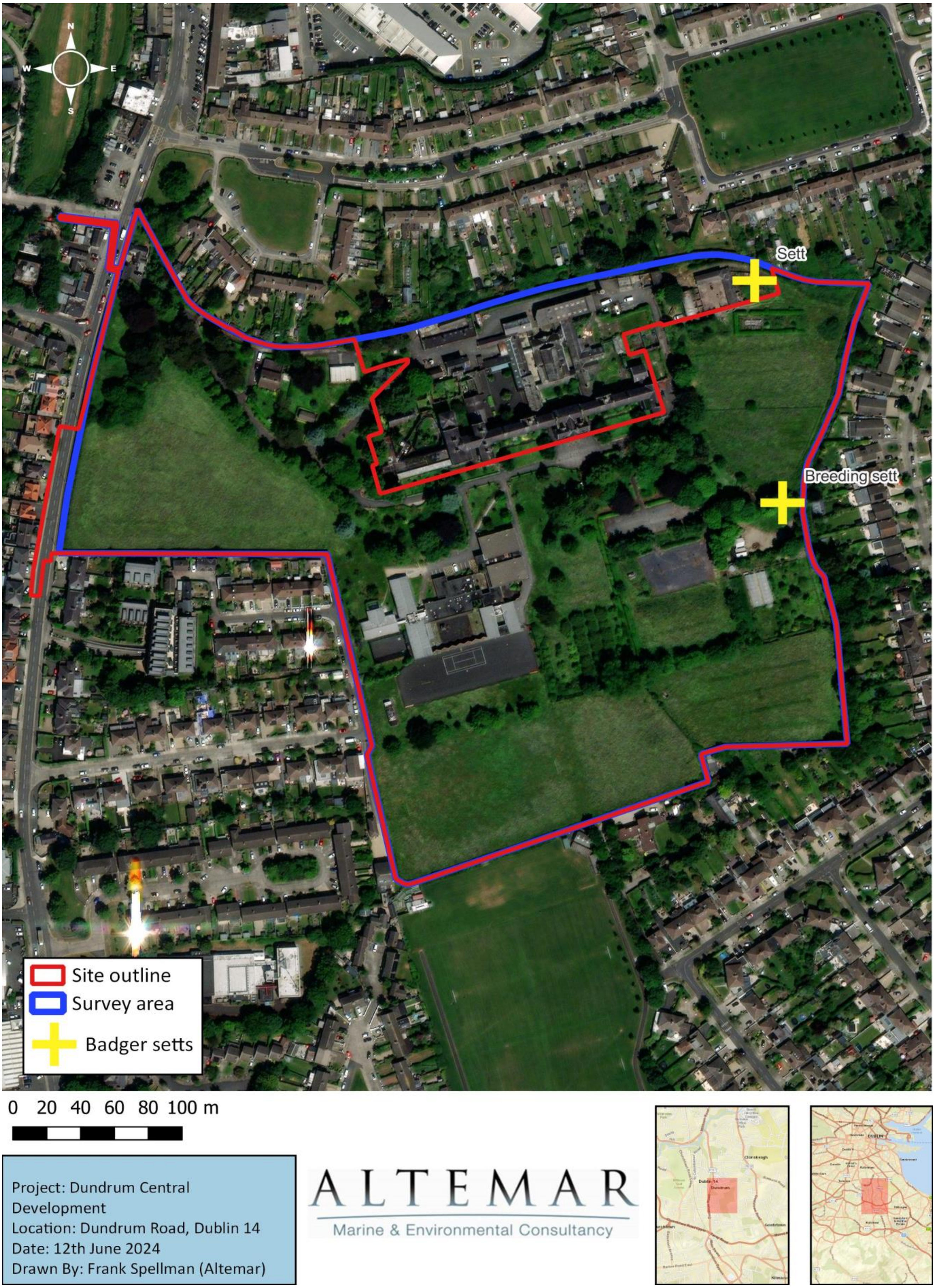


Figure 6: *Location of badger setts on site.*

Appendix I-Conservation Management for Badgers within the grounds of the former Central Mental Hospital.

On site meetings have been carried out between NPWS (Terry Doherty (1 meeting) Sean Meehan (3 meetings), Dun Laoghaire Rathdown County Council Biodiversity Officer (Anne Murray) (2 visits), Altemar (Bryan Deegan), Dr Chris Smal (1 meeting) and the Land Development Agency to specifically discuss the conservation management of the badgers on site. The conservation management on the badgers was discussed in detail on the 25th June 2024. It was stated by NPWS at this meeting that the preference of NPWS is to retain the badgers on site and develop a Conservation Management Plan to outline the proposed measures that will be in place to ensure the protection of badgers on site during construction and operation of the development.

Dr Chris Smal was commissioned to carry out a badger survey, in addition to developing an assessment and mitigation report. This specialist knowledge was deemed essential to facilitate a better understanding of the required measures to be adopted to retain the badgers on site in the long term.

The following measures were prepared by Altemar as a result of Dr Smal's report in addition to consultation with NPWS (Terry Doherty) which was done following a request for consultation with NPWS through the Development Applications Unit, and the project team including the Land Development Agency, architects, landscape architects and engineers.

This Badger Conservation Management Plan outlines the commitments of the project team and both Dún Laoghaire Rathdown County Council and the Land Development Agency to the conservation of badgers on site and outlines the measures that will be in place during construction and post construction phases of the project. These measures are in line with the recommendations outlined by Dr. Chris Smal (Mammal ecologist).

Outline of the approach to the protection of badgers on site.

It is proposed to retain the active breeding sett on site during the construction and operational phases of the development. The smaller sett is outside the site development area and will be monitored throughout the works. The site plan, drainage and landscape plan has been modified to provide additional space in the vicinity of the badger breeding sett and further protection measures have been added by including landscaping features to ensure long term protection of the badgers on site. These layouts have also been modified to take into account the NPWS comments in Appendix II and in paticulat the following stated by NPWS:

"*Having considered the Badger Conservation Management Plan for the proposed residential development on the former Central Mental Hospital site at Dundrum, the Department is satisfied that the approach detailed in this plan with regards to the treatment of the badger social group living on the site and the setts which they are inhabiting should, if implemented in full and diligently, minimise as far as possible the risk of injury to the individual badgers present, and maximise the chances of the badger social group concerned being able to survive into the future on the site during the operational phase of the residential development.*

In evaluating the Badger Conservation Management Plan and its likely efficacy in ensuring the long term survival of the badger social group on the former Central Mental Hospital site the Department has taken into account your notification to it on behalf of the applicant in an email of the 10/9/2024 that it is now intended to modify the design of the lined wetland to be installed in the immediate vicinity and to the south west of Sett 2 (the breeding sett) reducing the size of the wetland by 75%. This modification of the landscape design for the proposed development should, as you have suggested, benefit the badgers inhabiting this sett by making a greater area of foraging habitat immediately available to them."

Protection by Design

1) Modifications to the site layout

- The footpath to the north of the treeline has been omitted.
- The footpath to the east of the badger sett (that was to transverse through the treeline proximate to the badger sett) has been removed.
- Wetland areas have been moved away from Sett 2 (breeding sett) and reduced by 75% as requested by NPWS in Appendix II.
- Surface Water connections have been moved away from the proposed artificial sett to allow for construction of the sett in 2024.

2) Modifications to the landscape masterplan

The landscape plan in the vicinity of the badger breeding sett has been altered to provide:

- A fence (not badger proof) will be placed on the southern side of the treeline which will terminate 60cm short of the perimeter wall of the CMH to the east. This will provide an entry/exit point for the badgers to the unlit walled garden area. This will be supplemented by the planting of a dense hedgerow mis of blackthorn.
- A native hedgerow (blackthorn) will be placed parallel to the boundary wall from the entire length of the badger sett to the culvert. This will be set back a minimum of 1m to provide a corridor along the eastern boundary to the culvert. The artificial sett will be placed in line with this hedgerow.
- The treeline will be thickened with native hedgerow species to prevent human/canine access. Principal species will be blackthorn.
- A wetland area is proposed to the south of the treeline with the breeding sett. This has been relocated to this area to provide an additional layer of protection to the badger sett from human and canine interference. Badgers will have free and unimpeded access to the east of the wetland area behind the new hedgerow.
- Access to the walled garden has been contained to a singular entrance, to omit the entrance to the north and minimise human activity in proximity to the main Badger Sett (S2)

3) Modifications to the Lighting

- All lighting to the south of the treeline including the Breeding Sett will be omitted including in the walled garden and proximate to the culvert under the wall. Essentially this provides an area of darkness from the treeline where the breeding sett is located to the culvert under the wall.
- All lighting provided on site will be warm lighting (<3000°K)

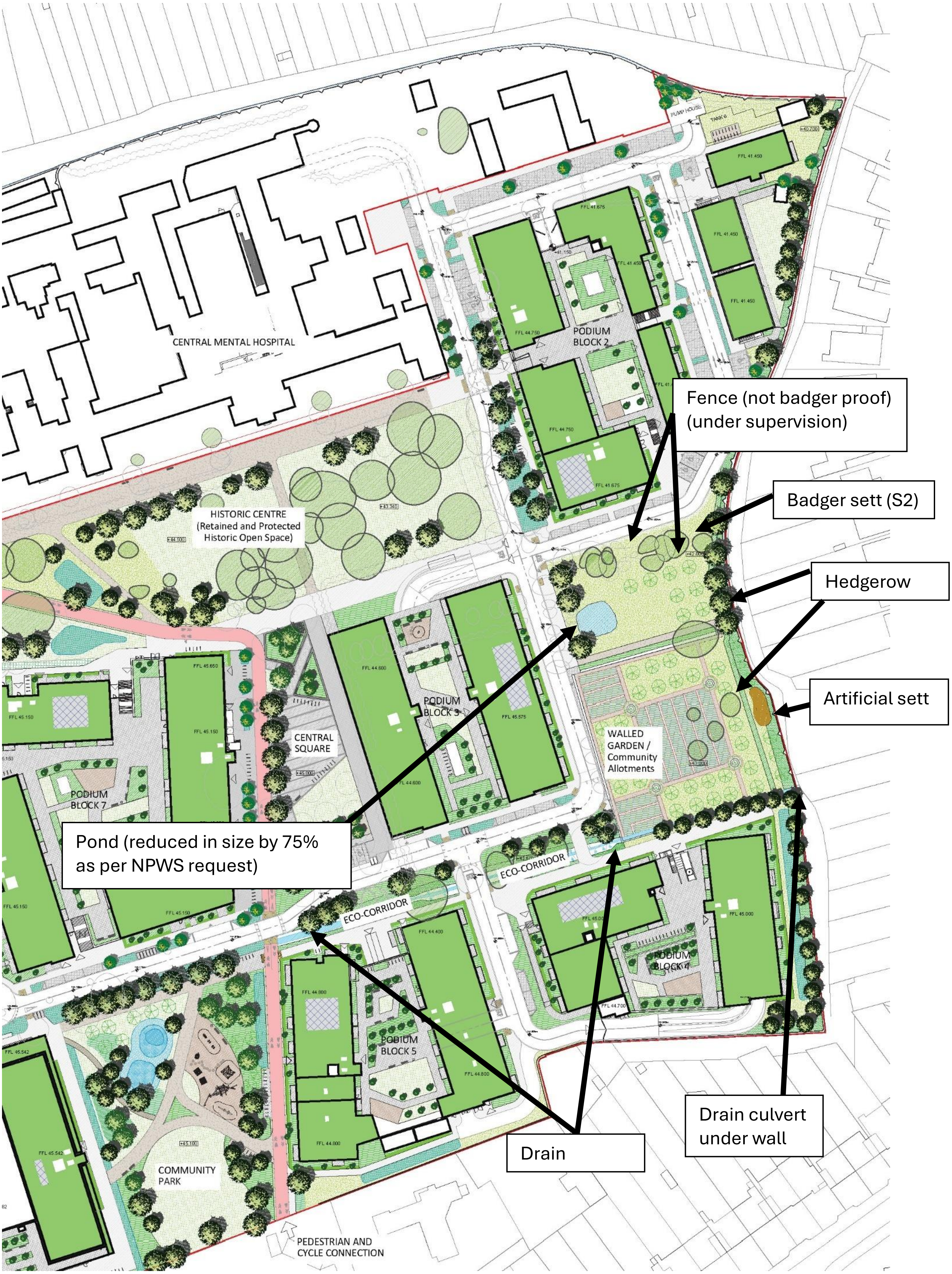

CENTRAL MENTAL HOSPITAL
HISTORIC CENTRE
(Retained and Protected
Historic Open Space)
PODIUM
BLOCK 2
Fence (not badger proof)
(under supervision)
Badger sett (S2)
Hedgerow
Artificial sett
PODIUM
BLOCK 3
CENTRAL
SQUARE
WALLED
GARDEN /
Community
Allotments
PODIUM
BLOCK 7
Pond (reduced in size by 75%
as per NPWS request)
ECO-CORRIDOR
ECO-CORRIDOR
PODIUM
BLOCK 4
PODIUM
BLOCK 5
COMMUNITY
PARK
PEDESTRIAN AND
CYCLE CONNECTION
Drain
Drain culvert
under wall
PUMP HOUSE

Figure 7. Landscape Plan

Mitigation measures

The following mitigation measures have been prepared in consultation with Dr Chris Smal and are based on the report prepared by Dr Smal. Discussions have taken place with NPWS, LDA, DLR County Council and the project team to outline the confirmed mitigation that will be in place for the proposed project. This conservation management plan provides the confirmed mitigation that will be in place for the proposed project. It should be noted that the proposed wetland has been redesigned to be 75% smaller and all drawings have been updated to take into account the request by NPWS in appendix II. These drawings have been updated across the project prior to submission. Therefore the project is complying with the NPWS request to reduce the wetland size.

Principal mitigation – badger setts

Sett S1 (Annex Sett)

4. Retain on site. Sett will be retained on site. This sett is outside of the development area, at present but will be included in an additional planning application to be lodged in the future.
5. Prior to site clearance and construction an exclusion zone of 30m will be put in place to protect this sett. No works will take place within 30m of this sett without consultation with the Ecological Clerk of Works. No unauthorised staff will be allowed within the exclusion zone without prior consultation with the EcoW.
6. Monitoring of the sett will be carried out during works. This will include full time remote camera monitoring (Sim card notifications) and monitoring by the ecological clerk of works in addition to the mammal specialist.

Sett S2 Main sett

9 Sett S2 will be protected and retained on site.

10 No unsupervised works will be permitted within 30m of the sett, or 50m during breeding season. No piling works are proposed in the project. If piling works are proposed on site the mammal specialist will be consulted. No pilling works will take place without approval of the mammal specialist and EcOW. A mammal specialist is required to oversee works within this zone in consultation with NPWS .

11 Monitoring of the sett will be carried out during works. This will include full time remote camera monitoring (Sim card notifications) and monitoring by the ecological clerk of works in addition to the mammal specialist.

12 The artificial sett will be constructed in the walled garden and its construction will be supervised by the mammal specialist in consultation with NPWS and the EcoW.

13 Following establishment of the artificial sett (min 8 months) which will involve providing food within the artificial sett, the main sett (S2) will be closed off, with one-way gates, to ensure no badgers are within the sett when construction works are being conducted adjacent/nearby (re paths and roadway, and also the wetland/pond).

14 After construction works are completed, the sett S2 will be re-opened.

15 These operations will be supervised by a qualified badger expert.

Construct an artificial sett

14 The artificial sett will be constructed in the walled garden between existing Main sett (S2) and the culvert. The location of such artificial sett will be c. 50-70m from the Main sett S2. The new sett can be positioned c. 1 m or so away from the high boundary wall., with sample designs shown in the Appendix 1

15 Badgers will be encouraged to use and to move to artificial sett. Feeding of the badgers will be carried out on a regular basis over several months.

16 Both the artificial sett and Sett 2 will be monitored using trail cameras with site visits carried out

on a regular basis by the EcoW and mammal specialist.

17 The new artificial sett will be fenced off to prevent human access. Landscaping of the sett and surrounding areas will be supplemented with blackthorn scrub.

18 No lighting will be erected within the vicinity of the artificial sett (e.g. 40m) or walled garden.

19 The artificial sett's chambers and tunnels will be mounded over with earth. This mound will be landscaped and planted with suitable shrub and scrub species immediately following its construction.

Schedule

1 It should be noted that the final timelines are dependant on planning and will be adjusted in consultation with NPWS if required.

2 The intention is that the artificial sett will be created in autumn 2024: e.g. September/October/November and outside the breeding season. This will be arranged by the Land Development Agency and will be installed by a specialist contractor engaged by the OPW, under the supervision of a mammal ecologist.

3 A minimum 6 months will be given for badgers of the social group to commence using the artificial sett prior to the closing or setts. Due to the badger breeding season, this will bring the schedule of these operations to 1st July 2025 (or in consultation with NPWS).

4 After 1st July 2025, the former sett (S2) will be closed down (using one-way gates) to exclude badgers from the sett.

5 This will allow for construction works to commence for the proposed adjacent roadway and footpath and wetland/pond etc. without risk to badgers within the sett S2.

6 When construction works have been completed (roads, paths, pond etc. in the vicinity), the sett S2 will be re-opened for use by badgers again.

7 Sett S2 will be protected from human disturbance e.g. by chain link mesh (not badger proof), but with access points for badgers into the sett.

Culvert/drain

1 Bars will be cut at the culvert to provide at least 25cms wide access for badgers.

2 Additional fencing of the culvert if required will allow badger access to the culvert.

Others

1 Badger proof fencing will not be required in the vicinity of sett 2. A standard fence will be in place (in consultation with mammal specialist) to deter human interference, the base of which would not be buried. This will be supplemented with dense scrub planting.

2 The badgers in the social group will be allowed to access all new green or open areas in the development area and there is certainly no need to confine them in a limited area with fencing.

3 Speed bumps can be included as part of traffic control measures on site but speed bumps on site are not considered necessary.

Construction works – working hours and trenches, wooden hoarding

1 Ground works within 50m of the Main sett S2 will be conducted during daylight hours only, c. 8am to 7pm in summer months.

2 No lighting will be directed towards the Main sett (S2) at night.

3 Temporary wooden hoarding at c. 15 to 20m north of the Main sett in the grassland area will be in place to reduce noise and light disturbance – during the badger breeding season (Dec to June inclusive).

4 Badgers may fall or enter into open trenches on site. Escape ramps will be provided in all open trenches: these may be simple planks allowing animals (badgers, foxes etc.) to climb out.

5 Similarly, badgers may enter open pipes during construction works (sewage and drainage pipes). These entrances will be closed off at the end of each working day – *everywhere* on site (as badgers forage across the entire site).

6 No construction of the proposed wetland/pond will be permitted during the badger breeding season; the proposed wetland/pond near the existing sett (S2) and the new artificial sett will only be carried out under supervision of the mammal specialist and in consultation with NPWS so that works do not impact on these setts.

7 The Main Contractor engaged for the project will work in close collaboration with Altemar and the Land Development Agency who will ensure that all necessary procedures and protocols are adhered to during the Construction stage.

General mitigation re. protection of badgers

1 Prior to any development on site commencing, the subject site area will be checked for badger setts again (by a badger expert), as badgers may create new setts in the intervening period between this survey/report and development proceeding.

2 N.B. this requirement is considered as essential because this most recent survey was conducted outside the appropriate season for badger surveys. A re-survey will be conducted in the months from December to early April.

3 Any areas of scrub or scrubby woodland (including shrubby amenity planting) that require felling/clearing (and not due to be retention on site) will be checked for badger setts prior to such operations commencing. Monitoring of scrub clearance will be with a badger/faunal expert on site during any scrub clearance operations.

4 If a lengthy period of time elapses prior to construction activities commencing (e.g. 18 months) a repeat full badger survey will be carried out – as badgers may create new setts in the study area in the interim period, and may alter their use of the site area and their use of the foraging areas there.

5 Should any new setts be identified in the site area, or mitigation measures similar to those outlined for setts above in consultation with the mammal specialist and NPWS.

Monitoring

1. The success of the artificial sett, and also badger use of sett S2 once re-opened - will be monitored for a period of minimum 3 years (when works are completed), principally by use of trail cameras.
2. Additional measures may be necessary e.g. improvement of fencing, improve restrictions on any observed or likely human interference etc. These will be determined by the badger specialist in consultation with NPWS.
3. Onsite continuous monitoring of the badger setts and the grounds of the CMH will be carried out by an ecologist. During the works particular attention will be carried out on the area surrounding the temporarily closed breeding sett and the active subsidiary sett. Supervision will include camera traps (minimum of 4 remotely viewed 4G cameras) and site visits will be carried out (frequency of visits schedule will be subject to the approval of NPWS). An Ecological Clerk of Works will be in place for the duration of the project and will oversee all works.
4. A EcoW and Badger specialist report will be provided to NPWS upon completion of the artificial sett and completion of the project. This will include the details of ongoing monitoring that will be in place.

Timelines

Should the proposed development be granted without delay, it has been outlined by the project team that no construction works would commence in the vicinity of the badger breeding sett until Q4 2025. As a result the likely schedule would be as follows;

- In Q4 2024 build artificial sett in walled garden and commence placing food in the sett.
- December 2024-July 2025 No works can be done in the vicinity of the sett as it is badger breeding

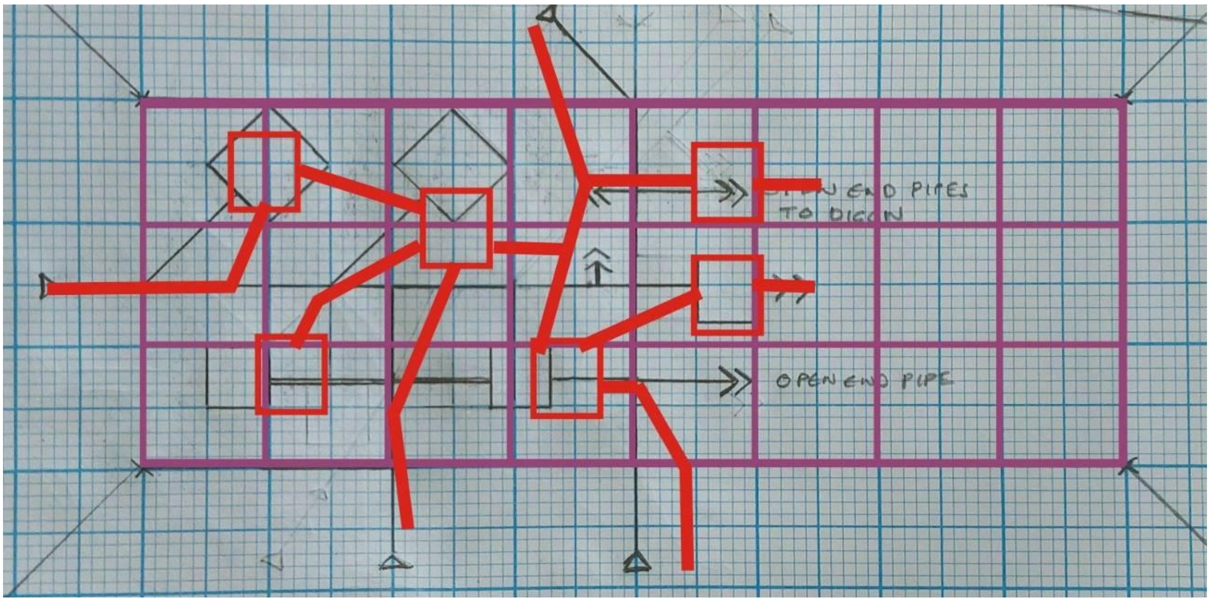
season.

- August 2025 commence the badger mitigation plan with the temporary closure of the breeding sett.

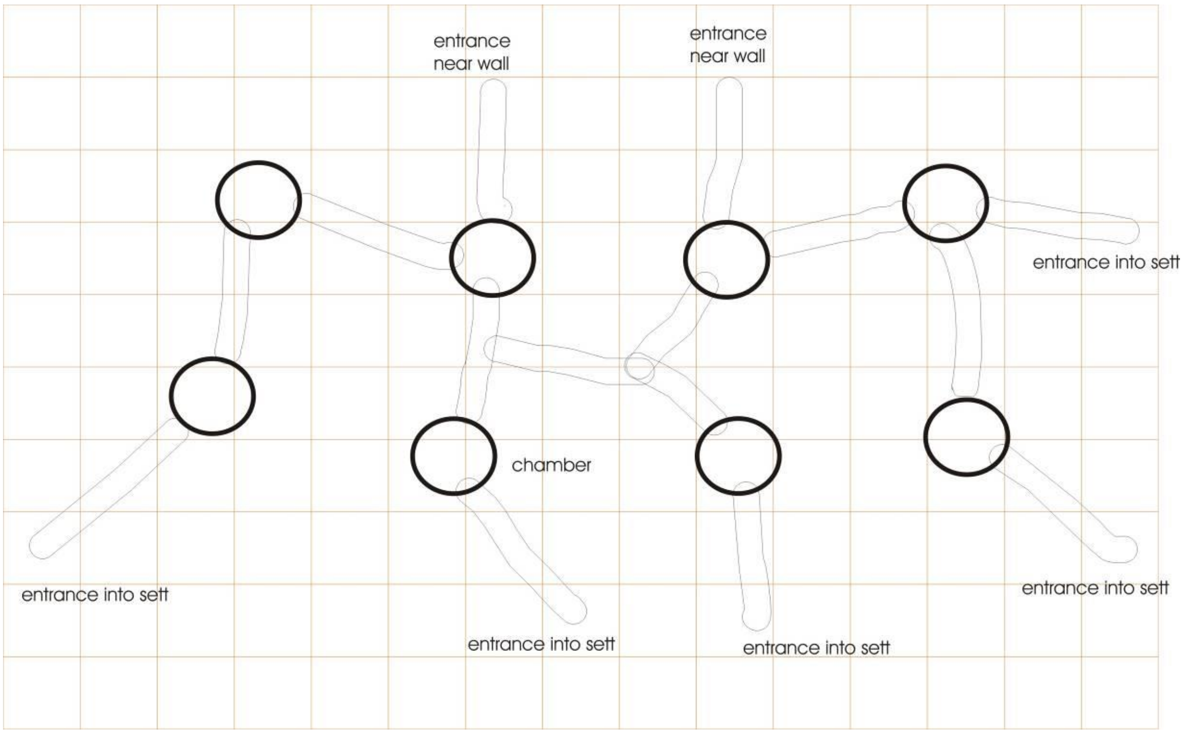
In the worst case scenario and works did not commence until 2026 the proposed mitigation will be adjusted accordingly in discussion with and to the satisfaction of NPWS, as the outcome of the second planning application is yet to be determined. Should the Court Case proceed in early 2024 and this is resolved in favour of the Land Development Agency, the development will commence during the same time period no sooner than Q4 2025, and the same steps as outlined above will be undertaken.

Appendix I Sample designs for an artificial sett

Below is a suggested design for an earlier artificial sett project in Clontarf, Dublin. Each blue lined square = 1m.



Example of another artificial sett that was built in Dublin, and a similar design is now suggested for the CMH site. This sett design can be reduced in size and adjusted to suit circumstance on the ground. This sett has 8 chambers and 7 entrances.



The tunnel system is composed of 300mm polypipe. The sett chambers are built with half cut timber posts, topped with a Marine ply board.

The overall area of the sett is c. 15m x 10m. This can be adjusted on site or educed to suit the circumstances on site.

A minimum 20 ton digger will be required to create the 'platform' for the sett and then to create the mound over the artificial sett.

Any excavated soil will need to be put to one side. This will be used to overlay the sett when the sett is completed. At CMH, additional soil **will be** required to be brought into the site to complete the profiling and landscaping.

Chambers

Each chamber should be c. 700mm to 900mm in width, and may be round or square.
The height of each chamber should be 350 to 450mm.

The simplest method for construction is to use half round stakes (*untreated timber*), c. 4" or 5" in width. They can be hammered into the ground to create the shape and the tops then cut to the required height.

About 15 to 20 stakes will be required for each chamber; part of the circumference will be left open to accommodate the polypipe tunnels that enter each chamber (1 to 3 pipes will enter each chamber – see suggested design above).

Each chamber is then topped with a sheet of marine ply to form the roof. The material thickness should be adequate to support c. 1.5 m of soil above.

Copious bedding (hay) must be placed into each chamber before it is capped.

Figure. An example of a sett under construction

Tunnel system

Polypipe is the most suitable material for the tunnel system. It should be ribbed on the inside – not smooth. [NB ribbed pipes are no difficult to source]. Smooth pipes can be used provided the pipes are fairly level or lined with wire to assist badgers moving through them.

The diameter should be 300mm. The junctions of pipes need to be reinforced.

The design suggested above will require c. 40 to 50m of pipe.

Figure. Example of partly completed sett, showing polypipe from one chamber to another.

Profiling/landscaping

When the chambers and tunnel system have been completed, the area of the sett is covered with the soil excavated earlier and additional soil brought in from outside of the site. The sett should be covered with a minimum of 1.5m of topsoil.

Appendix II NPWS Approval of works.

An Roinn Tithíochta,
Rialtais Áitiúil agus Oidhreachta
Department of Housing,
Local Government and Heritage

Our Ref: **G Pre00215/2024**
(Please quote in all related correspondence)

11 September 2024

Bryan Deegan
Managing Director
Altemar Ltd.
Marine and Environmental Consultants
Greystones
Co Wicklow

Via email: bryan@altemar.ie

Re: Preplanning Part 10 consultation regarding the Dundrum Central Mental Hospital redevelopment project on the lands at the Central Mental Hospital, Dundrum Road, Dundrum, Dublin 14

A Chara

I refer to correspondence received on 9/09/2024 in connection with the above.

Outlined below are nature conservation observations/recommendations of the Department with regards to the Badger Conservation Management Plan that is to be included in a Planning Application by the Land Development Agency on behalf of Dún Laoghaire-Rathdown County Council for a proposed residential development on the former Central Mental Hospital site in Dundrum, Dublin 14.

Having considered the Badger Conservation Management Plan for the proposed residential development on the former Central Mental Hospital site at Dundrum, the Department is satisfied that the approach detailed in this plan with regards to the treatment of the badger social group living on the site and the setts which they are inhabiting should, if implemented in full and diligently, minimise as far as possible the risk of injury to the individual badgers present, and maximise the chances of the badger social group concerned being able to survive into the future on the site during the operational phase of the residential development.

In evaluating the Badger Conservation Management Plan and its likely efficacy in ensuring the long term survival of the badger social group on the former Central Mental Hospital site the Department has taken into account your notification to it on behalf of the applicant in an email of the 10/9/2024 that it is now intended to modify the design of the lined wetland to be installed in the immediate vicinity and to the south west of Sett 2 (the breeding sett) reducing the size of the wetland by 75%. This modification of the landscape design for the proposed development should, as you have suggested, benefit the badgers inhabiting this sett by making a greater area of foraging habitat immediately available to them.

Aonad na nIarratas ar Fhorbairt, Oifigí an Rialtais, Bóthair an Bhaile Nua, Loch Garman, Y35 AP90
Development Applications Unit, Government Offices, Newtown Road, Wexford, Y35 AP90
manager.dau@npws.gov.ie
www.gov.ie/housing

The above observations/recommendations are based on the papers submitted to this Department on a pre-planning basis and are made without prejudice to any observations that the Minister may make in the context of any consultation arising on foot of any development application referred to the Minister, by the planning authority, in his role as statutory consultee under the Planning and Development Act, 2000, as amended.

You are requested to send any further communications to this Department's Development Applications Unit (DAU) at manager.dau@npws.gov.ie, or to the following address:

The Manager
Development Applications Unit (DAU)
Government Offices
Newtown Road
Wexford
Y35 AP90

Is mise, le meas

Sinéad O' Brien
Development Applications Unit
Administration

Appendix 8.9. Habitat Management Plan for a proposed Part 10 development at the former Central Mental Hospital, Dundrum Road, Dublin 14.

16TH SEPTEMBER 2024

Prepared by: Bryan Deegan (MCIEEM) of Altemar Ltd.

On behalf of: Dun Laoghaire Rathdown County Council in Partnership with the Land Development Agency.

Altemar Ltd., 50 Templecarrig Upper, Delgany, Co. Wicklow. 00-353-1-2010713. info@altemar.ie
Directors: Bryan Deegan and Sara Corcoran
Company No.427560 VAT No. 9649832U
www.altemar.ie

Document Control Sheet			
Client	Dún Laoghaire Rathdown County Council and the Land Development Agency		
Project	Habitat Management Plan for a proposed Part 10 development at the former Central Mental Hospital, Dundrum Road, Dublin 14.		
Report	Habitat Management Plan		
Date	16th September 2024		
Version	Author	Reviewed	Date
Final	Bryan Deegan		16th September 2024

Introduction

The Habitat Management Plan

The Habitat Management Plan is primarily the result of consultation between the ecologists (Altemar) and the landscape architects (AECOM) of the proposed development project as well as the wider team. The Habitat Management Plan cross-references both landscape and biodiversity elements. It initially describes the proposed development and outlines a series of mitigation measures to protect important biodiversity/habitats on site during construction and operation. The landscape elements of the proposed development have involved extensive consultation and reiterations of the landscape masterplan, to enhance biodiversity across all landscape components on site. These biodiversity enhancement measures are outlined and will be implemented. Of significant importance to the long-term enhancement of the site for biodiversity are the habitat and biodiversity protection and maintenance measures that will be in place during operation. This includes the maintenance of the existing badger setts within the former Central Mental Hospital site. These measures are also outlined and will ensure the long-term biodiversity enhancement of the proposed development within the grounds of the former Central Mental Hospital. The Baseline Environment-Terrestrial Habitats, Fauna, Flora and Avian Ecology of the proposed development site are set out in Appendix I. The Conservation Value of Species and Habitats on-site is set out in Appendix II.

Description of the Proposed Project

Dún Laoghaire Rathdown County Council, in partnership with The Land Development Agency, is seeking a ten year approval to carry out the following proposed development which is located on a total application site area of c. 9.7 ha, located on the former Central Mental Hospital, Dundrum Road, Dundrum, Dublin 14 and areas of Dundrum Road and St. Columbanus Road, Dublin 14. The subject site is in the immediate setting and curtilage of a number of protected structures, namely the 'Asylum' (RPS No. 2072), the 'Catholic Chapel' (RPS No. 2071) and the 'Hospital Building' (RPS No. 2073).

The development will consist of the construction of a residential scheme of 934 no. dwellings on an overall site of c. 9.7 ha.

The development will consist of the demolition of existing structures associated with the existing use (3,677 sq m), including:

- Single storey former swimming pool / sports hall and admissions unit (2,750 sq m);
- Two storey redbrick building (305 sq m);
- Single storey ancillary and temporary structures including portacabins (618sq m);
- Removal of existing internal sub-divisions/ fencing, including removal of security fence at Dundrum Road entrance;
- Demolition of section of porch and glazed screens at Gate Lodge building (4 sq m);
- Removal of walls adjacent to Main Hospital Building;
- Alterations and removal of section of wall to Walled Garden.

The development will also consist of alterations and partial demolition of the perimeter wall, including:

- Alterations and removal of section of perimeter wall adjacent to Rosemount Green (south);
- Formation of a new opening in perimeter wall at Annaville Grove to provide a pedestrian and cyclist access;
- Alterations and removal of sections of wall adjacent to Dundrum Road (including removal of existing gates and entrance canopy), including reduction in height of section, widening of existing vehicular access, and provision of a new vehicle, cyclist and pedestrian access;
- Alterations and removal of section of perimeter wall adjacent to Mulvey Park to provide a pedestrian and cyclist access.

The development with a total gross floor area of c. 94,058 sq m (c. 93,980 sq m excluding retained existing buildings), will consist of 934 no. residential units comprising:

- 926 no. apartments (consisting of 342 no. one bedroom units; 98 no. two bedroom (3 person) units; 352 no. two bedroom (4 person) units; and 134 no. three bedroom units) arranged in 9 blocks (Blocks 02-10) ranging between 2 and 8 storeys in height (with a lower ground floor to Blocks 02 and Block 10 and Basements in Blocks 03 and 04), together with private balconies and private terraces and communal amenity open space provision (including courtyards) and ancillary residential facilities, including an 130 sq m internal residential amenity area at the Ground Floor Level of Block 3;

- 6 no. three bedroom duplex apartments located at Block 02, together with private balconies and terraces.
- 2 no. 5 bedroom assisted living units and private rear gardens located at Block 02.

The development will also consist of 4,380 sq m of non-residential uses, comprising:

- Change of use and renovation of existing single storey Gate Lodge building (former reception/staff area) to provide a café unit (78 sq m);
- 1 no. restaurant unit (266 sq m) located at ground floor level at Block 03;
- 3 no. retail units (1,160 sq m) located at ground floor level at Blocks 03 and 07;
- 1 no. medical unit (288 sq m) located at ground floor level at Block 02;
- A new childcare facility (716 sq m) and associated outdoor play area located at lower ground and ground floor level at Block 10;
- A management suite (123 sq m) located at ground floor level at Block 10; and
- A new community centre facility, including a multi-purpose hall, changing rooms, meeting rooms, storage and associated facilities (1,749 sq m) located at ground and first floor level at Block 06.

Vehicular access to the site will be from a new signalised access off Dundrum Road to the south of the existing access and the existing access of Dundrum Road will be retained for emergency vehicle, pedestrian and cyclist access only. The development will also consist of the provision of public open space and related play areas; hard and soft landscaping including internal roads, cycle and pedestrian routes, active travel routes for cyclists and pedestrians, pathways and boundary treatments, street furniture, wetland features, part-basement, car parking (524 no. spaces in total, including car sharing and accessible spaces); motorcycle parking; electric vehicle charging points; bicycle parking (long and short stay spaces including stands); ESB substations, piped infrastructural services and connections (including connection into existing surface water sewer in St. Columbanus Road); ducting; plant (including external plant for Air Source Heat Pumps and associated internal heating plantrooms); waste management provision; SuDS measures (including green roofs, blue roofs, bio-retention areas); attenuation tanks; sustainability measures (including solar panels); signage; public lighting; any making good works to perimeter wall and all site development and excavation works above and below ground.

The proposed site outline, location, and site plan are demonstrated in Figures 1 – 3.

0 0.4 0.8 1.2 1.6 km

Project: Dundrum Central
Location: Dundrum, Dublin 14
Date: 13th June 2024
Drawn By: Gayle O'Farrell (Altemar)

ALTEMAR
Marine & Environmental Consultancy

Figure 1. Proposed site outline and location

Figure 2. Proposed site outline

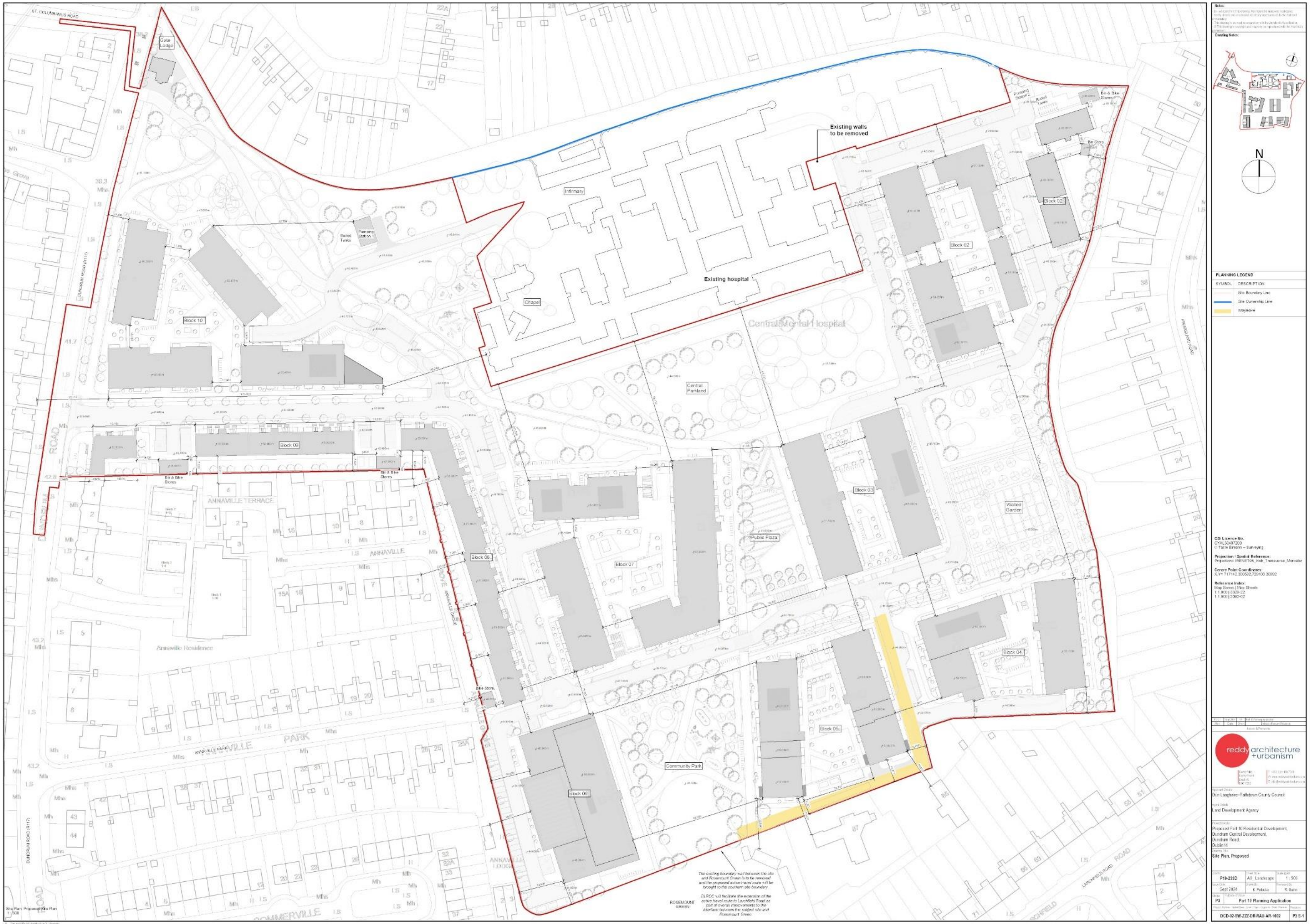


Figure 3. Site Layout plan

Overall Landscape Masterplan

The Dundrum Central Landscape Design Report has been prepared by AECOM to accompany this planning application. The proposed landscape layout plan is demonstrated in Figures 4-8. This report outlines the following Environment Strategy for the proposed landscaping plan:

'*Habitat creation has been a key contribution to the landscape development proposal. The differing SuDs components have helped form a variety of inviting habitats through the development. Waters bodies and ponds are vital habitats for frogs, newts and a variety of insects including dragonflies.*

The public open spaces through the development have native meadow planting as per the All Ireland National Pollinator Plan. Species rich grasslands provide habitats and food for insects and bees. Other habitats that will be created through the open space will include:

- *Open bonded brickwork within detailing of infrastructure buildings allowing for bat roosting,*
- *Bird and Mammalian nest boxes throughout the open public space,*
- *Log piles simulate fallen trees, and are valuable habitat for mosses, lichens and fungi, as well as many insects through the wetlands;*
- *Crushed aggregate pathways along secondary pathways allows water to permeate naturally through the soil, without the need for drainage channels and associated infrastructure.*'

This report also outlines the following in relation to the soft landscaping plan:

'*The overall planting approach is focused on creating a rich and biodiverse planting footprint in the context of a significant re-development of the site. The removal of existing hedgerows and grassland is offset by the addition of pollinator friendly wildflower meadows, tree planting and mixed native woodland along the Eco Corridor and in the community park south of the site. All retained tree and hedgerow protection measures will be in accordance with the mitigation recommendations prescribed in the ecologists and arborist report.*'

In addition: '*All open spaces will be multi-functional, catering for the needs of people, as well as the natural environment, supporting habitat creation, the growing of trees, plants and food. A strong SuDs management Train with collection, conveyance and storing components will not only provide a key blue infrastructure on site but establish new habitats and enhance biodiversity throughout the development. These key components include Green Roofs, Bio retention systems/raingardens, permeable paving, drainage ditches, tree planting and the formation of a integrated constructed wetland in the community park of the development. The integration of these elements in the scheme will not only improve the surface water drainage of the site but improve the surrounding environment and aid climate change mitigation.' 'Dundrum Central contains existing natural assets such as the parkland entrance of mature trees, the walled garden. Other assets and future landscape such as wetland areas can become important educational tools for local children visiting the site, learning about the natural environment, nature and local heritage .*'

There are numerous strategies to enhance biodiversity on site including the 'Elm Park Eco-Corridor', which '*will provide an important habitat corridor on site. The area already contains some semi-mature trees which will be retained, a ditch and some wet grassland areas. The area can be significantly improved, and the areas of wetland habitat increased which will benefit a wide variety of plant and animal species including bats. It will also be designed to provide educational tools/information which can be used by local school children as well as adults, to gain greater understanding of the natural world*.'

Figure 4. Landscape layout – overall plan

Figure 5. Landscape layout – northwestern section

Figure 6: Landscape layout – northeastern section (updated following NPWS comments in Appendix II)

Figure 7. Landscape layout – southwestern section

Figure 8. Landscape layout – southeastern section

Habitat Enhancement- Habitats and Overall Implementation

Significant consultation has been carried out between the ecologists (Altemar) and the Landscape Architects (Aecom) in relation to providing biodiversity enhancement measures across the site and these measures are outlined in the Landscape Design Report. This report states that '*The landscape architecture proposal aims to create a diverse planting scheme that contributes to the overall biodiversity within the development and the wider area. Plant species have been selected with direct reference to the 'All-Ireland Pollinator Plan 2021 - 2025' and the approach aims to align with the specific policies and objectives as set out in both the Dún Laoghaire- Rathdown Development Plan 2016-2022 and development plan 2022-2028.'*

The overall planting approach is focused on creating a rich and biodiverse planting footprint in the context of a significant re-development of the site. The removal of existing hedgerows and grassland is offset by the addition of pollinator friendly wildflower meadows, tree planting and mixed native woodland along the Eco Corridor and in the community park south of the site. All retained tree and hedgerow protection measures will be in accordance with the mitigation recommendations prescribed in the ecologists and arborist report.'

Intensive Green Roofs

As seen in Figure 9, intensive green roofs are proposed onsite. These are shared spaces and will be used for amenity and have a higher capacity to retain water. As outlined in Figure 10 meadow mats will also be introduced. These areas will include larger plant specimens as outlined in Figure 12.

Integrated Constructed Wetlands

An Integrated Constructed Wetland is also proposed and will incorporate native woodland planting as a backdrop. The species proposed are outlined in Figure 13, the wetland benches and section of the ponds are outlined in Figure 14. In addition, the construction method for the wetland is outlined in Figure 15.

Additional biodiversity enhancement measures.

Additional biodiversity enhancement measures are outlined in the Landscape Design Report:

'***Meadows and Wild Areas***

Wild areas and verges which are left to grow are increasingly popular aesthetically but importantly due to their benefits to biodiversity and lower maintenance costs. These areas will be located through the open spaces, transitioning from amenity lawn verges along pathway edges to meadow areas in passive open space zones.'

'Wetland Areas

There are a number of wet areas and ditches on site, and proposals for a integrated constructed wetland at the community park. These areas have the potential to form important habitats for local wildlife, and educational tools for local children.'

'Shrubs and Underplanting

A distinctive palette of underplanting will be proposed on site. Structured planting in front of proposed dwellings and ground floor apartments will provide a soft transition from public to private space. Species have been chosen to enhance biodiversity whilst providing structure and being easily maintainable.'

'Bioretention Systems / Raingardens

Bioretention systems will be collect excess surface run off whilst providing a key biodiversity to the streetscape and open space. Species proposed will be tolerate fluctuating soil moisture.'

'Tree Strategy

The general planting strategy throughout the scheme is for significant structure tree planting with 2 metre clear stems to provide a leafy canopy layer, softening the proposed buildings and a base layer of low shrub/ groundcover and hedge planting to create low level seasonal interest and colour softening the hard surfaced *areas and car parking. Eye level between the two planting types is kept clear to maintain sight lines throughout the scheme.*

Native and naturalised tree species are to be planted within the public open space to increase opportunities for native wildlife. These will ultimately be large scale trees to designate a parkland character.

Street tree planting will consist of species with fastigiate or neat forms suitable to the scale of the streetscape and those which will thrive in a streetscape environment. Street tree planting is located to avoid impacts with street lighting. Street trees will be planted into a minimum of 7cu.m. topsoil, with the use of urban tree soils, root barriers to protect water utilities and topsoil loaded rootcells to increase rooting areas outside the main tree pit area as necessary.

Courtyard/Podium trees have been chosen for seasonal diversity and small form. They will be planted in raised beds in the podium developments. Private garden dwellings have a fruit tree planting in the gardens to enhance overall biodiversity and habitat creation on site.'

'Climbers

Native/adaptive climbers have been proposed through the scheme along the existing boundary wall. Species are chosen for robustness, seasonality, and biodiversity. Habitats will be formed along this boundary edge to the development public realm providing both visual and ecological rewards.'

'Shrub and Groundcover

Low level shrub and groundcover planting will be in single species blocks taken from an overall palette of species throughout the scheme with flowers and fruits attractive to wildlife such as bees and butterflies. Species will be of maximum 1m height at maturity to maintain clear sight lines.

The principal objective of the landscape proposals is to provide a high quality public realm, which is accessible, safe and distinctive. Planting and landscape works will be carried out in accordance with BS4428. Trees will be advanced/semi-mature rootballed stock, in accordance with BS 8545.

Low level, low maintenance shrub planting will be used in planting beds containerised with a minimum size of 2 litre pots, Climbers will have 1 litre pots, all with a 75mm well composted fine bark mulch.'

'Native Woodland Mix

A woodland mix is proposed in the community park and northern edge of the Eco Corridor the enhance biodiversity and strengthen existing habitats. Species are a mix of sizes and species providing a seasonal interest and strengthen biodiversity.'

'Seeding

The landscape development allows for a variety of self-collected DLR seeding mixes and native Irish wildflower (Wildflower seed collection to be discussed with DLR biodiversity officer). In the development to aid habitat creation and enhance biodiversity on site. A 1.5m amenity lawn verge will outline the edges of pathway through the development. Natural meadow planting is to occur through the open space in drifts forming fragmented corridors through the development. Amenity lawn will be placed in passive zones in the open space to allow for passive recreation areas. Meadow seeding to be 100% native sourced Irish provenance wildflower seeds. Amenity lawn seed shall conform in all respects to the European Communities (Seed of Fodder Plants) Regulations, 2002.'

Terrestrial Habitats, Flora and Avian Ecology

The proposed development area was surveyed 13th August 2020, 21st August 2020, 23rd February 2021, 10th August 2021, 15th September 2021, 12th October 2021, 14th June 2023 and 14th May 2024. Additional surveys were carried out for wintering and breeding birds in 2020, 2021, 2022, 2023 and 2024. Habitats encountered were classified according to Fossitt (2000) and are seen in Figure 8.11, based on the site visit in May 2024. Distinct habitats were noted, and species detailed. The following habitats were noted:

Intensive Green Roofs

Green Roof Fuctions:

- Stormwater Management
- Recreation Opportunity
- Improved Biodiversity
- Aesthetic Improvement

The following sources have been used in the development of a Green Roof strategy that provides biodiversity and amenity spaces:

- The SUDS Manual, Ch 12: Green Roofs
- The GRO Green Roof Code (2021), UK
- Building Greener. Guidance on the use of green roofs, green walls and complementary features on buildings
- Green Roof Guidelines - Guidelines for the Planning, Construction and Maintenance of Green Roofs (2018).
- Creating Green Roofs for Invertebrates, Best Practice Guide
- Green Roofs Over Dublin
- Biodiversity: Climate Change Sectoral Adaption Plan. Prepared under the National Adaption Framework' (2019).

Environmental Benefits

Green roofs provide a social and environmental benefits to development projects. Green roofs assist in reducing the building's energy consumption providing additional insulation when used in conjunction with traditional insulation. Additionally, green roofs the heat island effect that takes place within cities.

Green roofs to architect and civils details

Figure 9. Intensive Green Roofs

Intensive Green Roof-Proposed Meadow Mat

The Green Roof typology is focused on biodiversity as such there will be different species mixes for different conditions and follow the GRO Code by containing 15 species and a range of flowering species;

Wildflower meadow mat (100mm soil depth)
Species
Anchillea millefolium
Anthemis arvenis
Centaurea cyanus
Centaurea nigra
Galium verum
Leontodon autumnalis
Linaria vulgaris
Lotus corniculatus
Rhinanthus minor
Rumex acetosella
Saponaria officinalis
Scorzoneroides autumnalis
Silene flos-cuculi
Thymus polytrichus
Veronica officinalis
Vicia sativa segetalis
Viola tricolour

Figure 10. intensive Green Roof: Proposed Meadow Mat

Intensive Green Roof: Substrate and Structure

Blue roofs on this project are intensive green roofs, these shared spaces will be used for amenity and will therefore have a higher capacity to retain water contributing to the SUDS network onsite and reducing flood risk. SUDS also improves the water quality of water by allowing contaminants in surface water to be broken down, absorbed and their movement restricted by plants. SUDS methodology for reducing surface run off, the lag time between peak rainfall and peak discharge and removal of pollution is supported by the Water Framework Directive (2000).

Substrate and Structure

Structure

Green roof structure must adhere to thec criteria set out in BS EN 1990:2002 'Eurocode - Basis of Structural Design' particularly 'EN 1991 - Eurocode 1:Additions on structures.'

The flat roof will act as a roof garden having a mixture of hardscape and softscape. A concrete deck will allow for higher loading, a greater depth of soil to be used for shrub and tree planting in planters on the roof podiums.

Origin and compostion of soils/compost to be used:

- Green roof substrates must be tested according to BS8616:2019 or equivalent.
- The upper substrate will be 350-400mm thick and intensive roofs require a higher amount of nutrients to support larger plants.
- The lower substrate will be at least 250mm thick and acts as a drainage layer, less organic matter is needed.

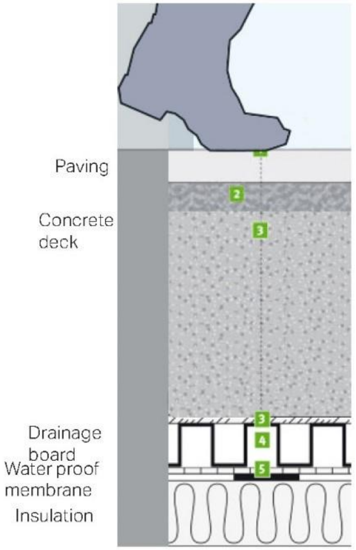


Figure 11. Intensive Green Roof: Substrate and Structure

Intensive green roof- Magneten sensory garden green roof

Intensive green roof - Dickens Yard apartments roof garden

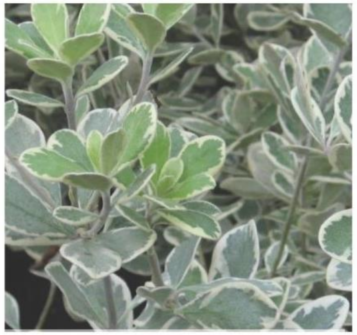
Intensive Green Roof: Biodiverse Habitat Creation-Planting Schedule

Courtyard/Podium Trees				
Species		**Girth**	**Clear Stem**	**Height**
Amelanchier lamarckii 'Robin Hill'		18-20 cm	2.0m	min. 450cm
Acer palmatum 'Osakasuki'		18-20 cm	2.0m	min. 450cm
Malus 'Evereste'		18-20 cm	2.0m	min. 450cm
Shrub and Ground Cover Mix 2 (Intensive Green Roof Planting)				
Species	**Designation**	**Root Type**	**Height mm**	**Spread mm**
Pennisetum hamelin	Container Grown	2l	200-300	200-300
Ilex crenata	Container Grown	2l	200-300	200-300
Fatsis japonica	Container Grown	2l	300-500	300-500
Euonymus fortunei 'Emerald Gaiety	Container Grown	2l	300-500	300-500
Sarococcocca hookeriana	Container Grown	2l	100-200	200-300
Pittosporum setiferum	Container Grown	2l	200-300	200-300
Tiarella cordifolia	Container Grown	2l	200-300	200-300
Carex oshimensis 'Everest'	Container Grown	2l	200-300	300-500
Allium Sensation	Bulbs handsown planting 9 per m2			
Muscari	Bulb handsown, planting 9 per m2.			

Pennisetum hameln

Iberis sempervirens

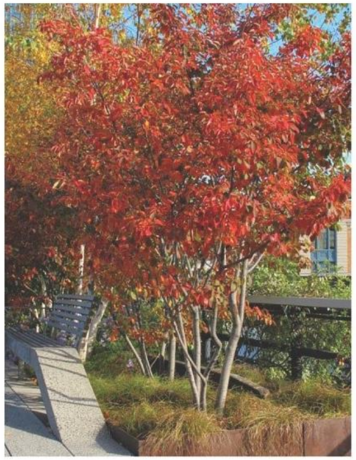
Ilex crenata



Pittosporum

Carex oshimensis everest

Allium



Amelanchier lamarckii 'Robin Hill'

Malus 'Evereste'

Acer palmatum

Figure 12. Intensive Green Roof: Biodiverse Habitat Creation – Planting Schedule

Intergrated Constructed Wetland

Integrated Constructed Wetland (ICW)

An 'Integrated Constructed Wetland' (ICW) is a series of shallow, interconnected, emergent-vegetated, surface-flow wetland compartments that receive/intercept waterflows from a variety of sources. ICW systems are distinguished from traditional 'treatment wetlands' by the integration of water flow and quality management with that of landscape-fit and biodiversity enhancement

Design features should include a safe exceedance route, maintenance access to all areas of the pond, a flat safety bench around the perimeter of the pond.

The ICWs (Integrated Constructed Wetlands) proposed in the Dundrum scheme aims to create a biodiverse habitat on site. Native woodland planting will be the backdrop of the wetland in the community park and the walled garden. This comprises of a native mix of transplants, standards and semi mature trees and marks a continuation of the Eco Corridor east of the community park. A mix of bird boxes will be placed on the semi mature trees to encourage biodiversity Adaptive/Native plug and seeding for the wetlands will provide a rich biodiversity when developed. These locations will be wildlife havens for the whole community to enjoy.

The following pages outline the proposed creation and formation of the wetlands for Dundrum.

Native tree planting

Bird Boxes

Lythrum salicaria

iris pseudacorus

Sparganium erectum

Schoenplectus lacutris

Glyceria maxima

Butomus umbellatus

Carex paniculata

Figure 13. Integrated Constructed Wetland

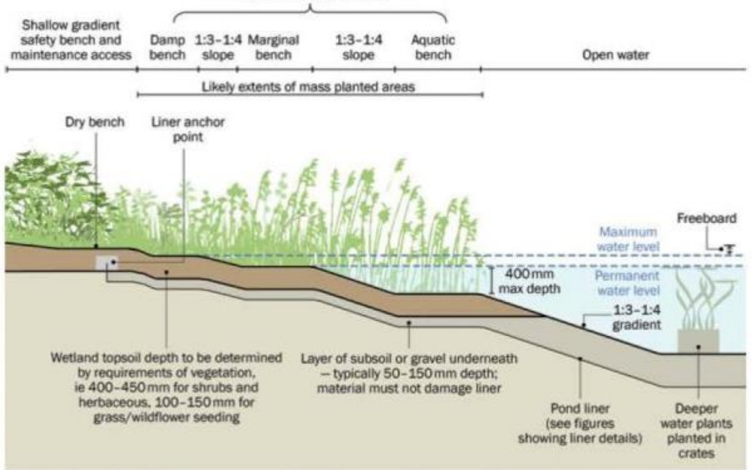
Wetland Benches: Enhanced Biodiversity Habitat Creation

Habitat , Formation & Planting

Habitat and Formation

The design of wetlands should consider the inclusion of several zones:

- Permanent pool - This is the permanent volume of water that will remain in the pond/wetland throughout the year (less any evaporation and infiltration during extended periods of dry weather). The pool acts as the main treatment zone and helps to protect fine deposited sediments from re-suspension.
- Aquatic bench - This is the zone of shallow water along the edge of the permanent pool that supports wetland planting, acting as a biological filter and providing ecology, amenity, and safety benefits. Where the proportion of planting is increased (ie to create wetland features), there may be other "islands" (zones of shallow, vegetated areas) within the permanent pool.
- Attenuation storage volume/Emergent zone - This is the temporary storage volume above the permanent pool that fills as water levels rise during rainfall events, providing the required flow attenuation.



Notes: Width, surfacing and extent etc of safety bench and maintenance access all dependent on site, size of pond, maintenance requirements etc

Figure 23.5 Typical planted pond edge details

Planting

Native/adaptive planting have been specified for the three differing benches in the wetland. Invasive species such as Typha spp. have been omitted from the proposal.

A wetland native seed mix is to be sown alongside the proposed plug planting providing a matrix of diverse plants for the area.

Wetland planting should take place between early April and mid-June, so the plants have a full growing season to develop root reserves they need to survive the winter. Vegetation ideally needs to be established as soon as possible to prevent bankside erosion.

The soils of a pond buffer are often severely compacted during constructions. To mitigate this, it is advisable to excavate large and deep holes around the proposed planting areas and backfill these will uncompacted topsoil. 300mm depth of good quality topsoil is acceptable for proposed plug planting of the wetland.

Wetland Planting			
Species	**Type**	**Plants per sq. m**	**Mix %**
Emergent Aquatic Planting			
Glyceria Maxima	Plug, P9	7	50
Sparganium erectum	Plug, P9	7	30
Schoenplectus lacutris	Plug, P9	9	20
Emergent Planting			
Lythrum salicaria	Plug, P9	13	40
Iris pseudocarus	Plug, P10	13	40
Butomus umbellatus	Plug, P9	13	20
Dry Meadow			
Carex panuiculata	Plug, P9	13	50
Filipendula ulmaria	Plug, P9	13	50
Seeding			
Native Wetland/Pond Edge Seed Mix Reference Code: EC05 -Design by Nature			

Figure 14. Wetland Benches: Enhanced Biodiversity Habitat Creation

Intergrated Constructed Wetland: Formation

A membrane and geotextile shall be laid underneath the wetland to form ponding. Refer to CIRIA, SuDs Manual 2015 figure adjacent and below requirements.

Liner/Membrane & Geotextile:

Single layer robust welded flexible membrane, suitable for waterproofing to structures and for water containment.

Before laying check that substrate surfaces are : -

a) Structurally sound.

b) Free from ridges and undulations.

c) Surface dry.

d) Cleaned of loose and extraneous material.

Before laying check that construction allows membrane continuity to be maintained.

Membrane to be installed by qualified operatives recommended by membrane manufacturer and/or prefabricated into panels where appropriate to suit site requirements. Laid strictly in accordance with manufacturers' recommendations.

All penetrations through the membrane shall be sealed with proprietary water-resistant preformed cloaks. The cloaks shall be compatible with the membrane and approved by The Engineer.

A geotextile will be used in the system to protect liners and act as filters. It shall be laid continuously and have overlaps of a minimum 300mm.

Wetland construction details to engineers design *(typical pond example adjacent)*

Saftey

A 1.1m timber post and panel fence will be erected along the emergent bench of the wetland protecting against anyone submerging into the pond whilst planting is establishing. Once planting has formed this fence will not be visible

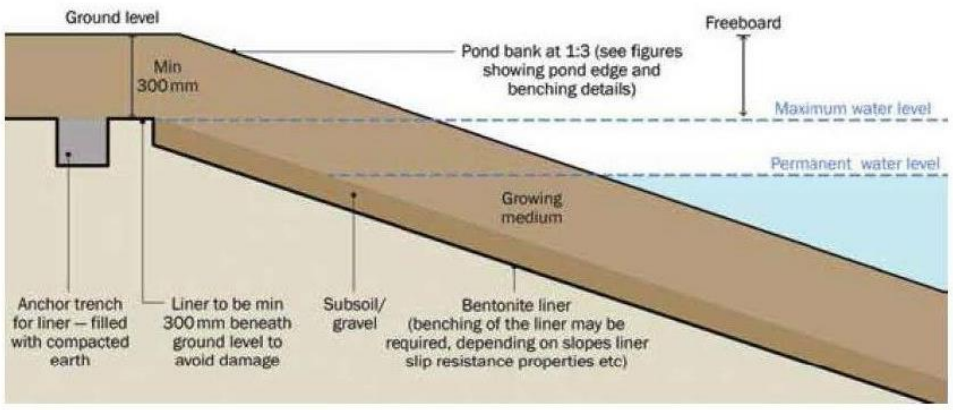


Figure 23.13 Details for a typical geosynthetic liner

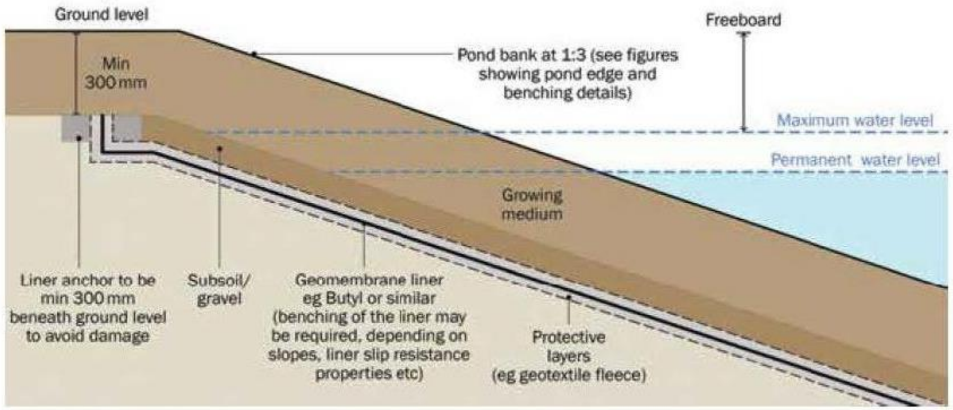


Figure 23.14 Details for a typical geomembrane liner

Figure 15. Integrated Constructed Wetland: Formation

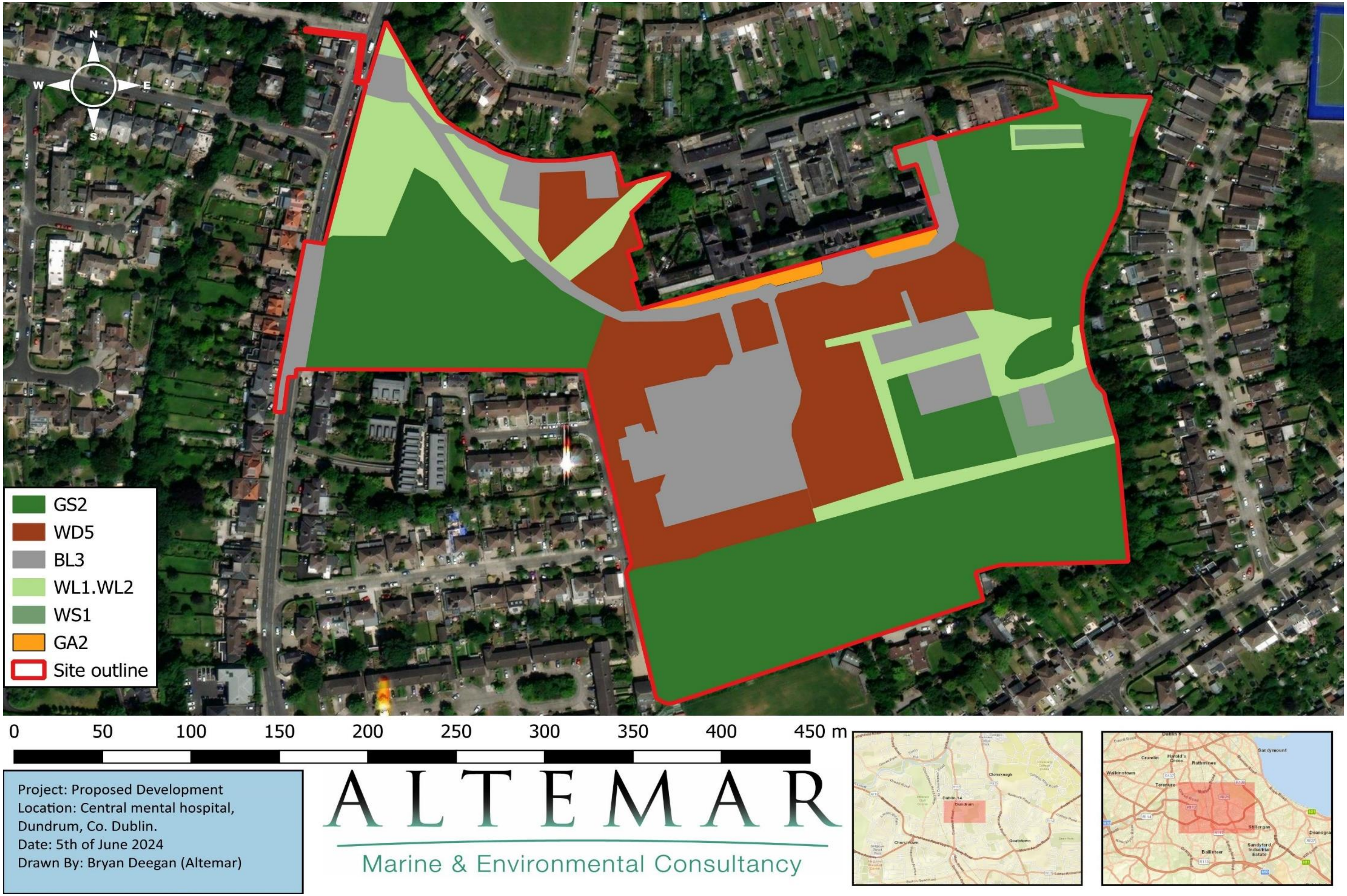


Figure 16. Fossitt (2000) habitat map

GA2- Amenity grassland (improved).

A small amount of the open space on site consists of mown amenity grassland. The managed area of this habitat is to the south of the main treelined entrance. This habitat was managed in previous years however as most grassland areas have been left unmown, they have gathered species diversity into a dry meadow. Species included clovers (*Trifolium spp*.), plantains (*Plantago spp*.), thistles (*Cirsium arvense & C. vulgare*), creeping buttercup (*Ranunculus repens*), ivy (*Hedera helix*), common birds-foot-trefoil (*Lotus corniculatus*), docks (*Rumex spp*.), bramble *(Rubus fruticosus agg*.), daisy (*Bellis perennis*), sun spurge (*Euphorbia helioscopia*), creeping cinquefoil *(Potentilla reptans),* yarrow (*Achillea millefolium*), nipplewort (*Lapsana communis*), field forget-me-not (*Myosotis arvensis*), snapdragon (*Antirrhinum majus*), tree echium (*Echium pininana*), coltsfoot (*Tussilago farfara*), and nettle (*Urtica dioica*). The invasive three-cornered leek (*Allium triquetrum*) was noted within this habitat.

Plate 1. GA2- Amenity grassland (improved).

WD5-Scattered Trees and Parkland.

The grassland extends into significant areas of the site where scattered trees are noted. Similar flora are noted in these areas as was noted in the Amenity Grassland areas. However, tree species included Copper Beech (Fagus sylvatica 'Purpurea'), Norway Maple (Acer platanoides), Atlas Cedar (Cedrus atlantica), Atlas Cedar (*Cedrus atlantica*), Holly cv. (Ilex aquifolium), Sycamore cv. *(Acer pseudoplatanus*), White Flowering Cherry (*Prunus Sp*.), rowan (*Sorbus aucuparia*), Monkey Puzzle (*Araucaria Araucana*), Douglas Fir (Pseudotsuga menziesii), Deodar Cedar (*Cedrus deodara*), Monterey Pine (*Pinus radiata*). Of note is the orchard on site which is located on the central area of the site proximate to the drainage ditch. Here the grass has been left unmanaged giving rise to species such as white clover (*Trifolium repens*), red clover (*Trifolium pratense*), daisy (*Bellis perennis*), plantains (*Plantago spp*.), thistles (*Cirsium* sp.), creeping buttercup (*Ranunculus repens*), docks (*Rumex spp*.), cat's-ear (*Hypochaeris radicata*), nettle (*Urtica dioica*), dandelion (*Taraxacum spp*.), cow parsley (*Anthriscus sylvestris*), lesser trefoil (*Trifolium dubium*, bramble (*Rubus fruticosus*), hedge bindweed (*Calystegia sepium*), red valerian (*Centranthus ruber*), Cyclamen (*Cyclamen hederifolium*), wallflower *(Erysimum cheiri / Cheiranthus cheiri),* ramsons (*Allium ursinum*), cotoneaster (*Cotoneaster spp.*), and ground-elder (*Aegopodium podagraria*).

Plate 2. WD5-Scattered Trees and Parkland.

GS2- Dry meadows and Grassy Verges

Much of the site was dominated by Dry meadows and grassy verges in areas where the grass was left unmown. Species included meadow buttercup (*Ranunculus acris*), ragwort (*Senecio jacobaea*), thistles (*Cirsium* sp.), wild carrot (*Daucus carota*), rape (*Brassica napus*), kidney vetch (*Anthyllis vulnerary*), field bindweed (*Convolvulus arvensis*), cow parsley (*Anthriscus sylvestris*), clovers (*Trifolium spp*.), cleavers (*Galium aparine*), creeping cinquefoil (*Potentilla reptans*, smooth sow-thistle (*Sonchus oleraceus*), broad-leafed dock (*Rumex obtusifolius*), germander speedwell (*Veronica chamaedrys*), teasel (*Dipsacus fullonum*), herb Robert (Geranium *roberianum*), holly (*Ilex aquifolium*), Cuckoo-flower (*Cardamine pratensis*), Canadian fleabane (*Erigeron canadensis*),), garlic mustard *(Alliaria petiolata),* Lily-of-Nile (*Agapanthus africanus*), buddleja (*Buddleja davidii*), foxglove (*Digitalis purpurea*), great willowherb (*Epilobium hirsutum*), long-headed poppy (*Polygonum arenastrum*), and nettle (*Urtica dioica*).

Plate 4. Dry meadows and grassy verges.

WS1- Scrub

Several areas on site were unmaintained and were let "go wild". This was particularly evident on the northeast corner of the site along the boundary wall. Species in this area included thistles (*Cirsium sp*.), creeping buttercup (*Ranunculus repens*), common ragwort (*Senecio jacobaea*), colt's Foot (*Tussilago farfara*), winter heliotrope (*Petasites pyrenaicus*), hoary willowherb (*Epilobium parviflorum*), blackcurrant (*Ribes nigrum*), wild teasel (*Dipsacus fullonum*), butterfly-bush (*Buddleja davidii*), rosebay willowherb (*Chamaenerion angustifolium*), hedge bindweed (*Calystegia sepium*), ivy (Hedera helix), honeysuckle (*Lonicera periclymenum*), cleavers (*Galium aparine*), great willowherb (*Epilobium hirsutum*), common vetch (*Vicia sativa ssp. Segetalis*), bramble (*Rubus fruticosus agg*.), field forget-me-not (*Myosotis arvensis*), rape (*Brassica napus*), meadowsweet (*Filipendula ulmaria*), common mallow (*Malva sylvestris*), great mullein (*Verbascum thapsus*) and traveller's-joy (*Clematis vitalba*). It is important to note that an area of Indian Balsam (*Impatiens glandulifera*) was noted in a small area of damp ground in the northeast corner of the site. This is an invasive species that is listed on the Third Schedule of the European Communities (Birds and Natural Habitats) Regulations, 2011 (S.I. No. 477 of 2011) which makes it an offence under Regulation 49 to plant, disperse, allow or cause to grow this plant.

Plate 5. WS1- Scrub

WL2- Treelines & Hedgerows WL1

Large mature treelines dominate the site particularly along the entrance driveway and to the south east of the main building. Combined with the scattered trees and parkland they provide a mature sylvian dominated landscape. Species include Corsican pine (*Pinus nigra sub sp*.), ash (*Fraxinus excelsior*), sycamore (*Acer pseudoplatanus*), red oak (*Quercus rubra*), lime (*Tilia sp*.), birch (*Betula sp*.), blue cedar (*Cedrus Atlantica* 'Glauca'), copper beech (*Fagus sylvatica 'Purpurea'*), horse chestnut (*Aesculus hippocastanum*).

Hedgerows are present on site but these are made up primarily of non native ornamental species including Leyland Cypress (*Cupressocyparis x leylandii*), Contoneaster sp., Griselinia (*Griselinia littoral*s), privet (*Ligustrum sp.*), Pittosporum sp., laurel (*Laurus nobilis*) and cherry laurel (*Prunus laurocerasu*s). However, some native species were noted including Hawthorn (*Crataegus monogyna*), Holly (Ilex aquifolium), yew (*Taxus baccata*), and elder (*Sambucus nigra*).

Plate 6. WS1 hedgerow.

BL3-Built Land

The subject site has a history of high herbicide use, however, management of the site has reduced for over a year. As seen in Appendix 8.6 of the EIAR, the buildings on site were inspected for bat presence and use. As stated in Appendix 8.6 of the EIAR, no evidence of bat use was noted within the main hospital buildings on site. It should be noted that the main buildings on site are still brightly lit with halogen lamps overnight and this would deter bats from using the main buildings on site. Lighting has been reduced in perimeter areas of the site including the farm buildings in the north east of the former CMH. In the 2024 bat surveys it was noted that two common pipistrelle bats had commenced utilising one of these buildings (upper floor of the former gardener's building). This building (Plate 9) is considered to be a bat roost. No works are proposed on this building.

Plate 7. Central mental hospital main building.

Plate 8. Tarmac driveway.

Plate 9. Disused farm buildings onsite.

Plate 10. WD5-Scattered Trees and Parkland (Orchard).

Evaluation of Habitats

The site was previously highly maintained and has increased biodiversity value due to the lack of management. Wildflowers are blooming from the seed bank, longer vegetation and encroaching scrub has provided a larger resource for birds to nest. No rare or protected habitats were noted. However, the treelines and mature trees within the scattered trees and parkland habitats would be deemed to be of local biodiversity importance primarily as a result of being a foraging and roosting habitat for both birds and bats.

Plant Species

The plant species encountered at the various locations on-site are detailed above. No protected species were noted. Records of rare and threatened species from NPWS were examined. No rare or threatened plant species were recorded in the vicinity of the Site. A small stand of Himalayan balsam (invasive species listed under S.I. 477) is noted on site.

Fauna

As outlined in the Mammal survey (Appendix 8.5 of the EIAR- Non-avian terrestrial mammal impact assessment for a proposed development at former Central Mental Hospital, Dundrum Road, Dublin 14.) *''A total of four mammal species were confirmed within the survey area by visual confirmation and behavioural evidence: badger (Meles meles), fox (Vulpes vulpes), grey squirrel (Sciurus carolinensis) and brown rat (Rattus norvegicus). An active badger sett was identified in the northeast of the survey area, under a concrete slab adjacent to an area previously used for housing livestock. An active breeding sett was also identified and confirmed by camera footage within the treeline boundary between fields in the northeast and the gravel garden in the east. Two cubs were observed regularly emerging. The male boar was observed exiting the former Central Mental Hospital site via the stream exit under the wall in the east of the site. Foxes were also regularly recorded using this to exit the site. Monitoring is on-going to determine whether both badgers and foxes are re-entering from this point. A desk based review of existing records revealed that five additional species, European Otter (Lutra lutra), House Mouse (Mus musculus), Wood Mouse (Apodemus sylvaticus), West European Hedgehog (Erinaceus europaeus) and Pine Marten (Martes martes) have been recorded in the vicinity of the survey area. No evidence of these five species was observed within the survey area*.''

As outlined in Appendix 8.5 of the EIAR "*Overall, considering the scale of the site, the survey area is of moderate importance to mammal species. An active badger sett and an active badger breeding sett are located in the northeast and east of the site respectively. The badger is a Red Data Book species. It is standard best practice to make special provisions for badgers affected by development, specifically the implementation of exclusion zones around setts*."

A badger survey and mitigation plan has been prepared by Dr Chris Smal (mammal ecologist) is seen in Appendix 8.7 of the EIAR. This report was prepared in consultation with the NPWS staff and the Development Applications Unit of NPWS. As outlined in this report "*The setts, latrines and badger feeding (rooting and 'snuffle' holes) signs have been mapped on Figure 4. One rooting was of a bee's nest – badgers are known to feed on bees when available. The camera observations (by Altemar) confirm that sett S2 is a Main sett (i.e. breeding sett) with one boar, one sow and 2 cubs present. Whilst this sett has only one entrance, the spoil heap there is very large and indicative of a fairly substantial tunnel system below ground that would include several chambers. No entrances in the adjacent grassland could be seen, but the tunnel system may well extend into the grassland area to some extent.*

Badger presence (a boar) was confirmed by trail camera at sett S1; subsequently, cubs were seen near that sett also. This sett was considered to be a Subsidiary sett: i.e. a sett within the territory of a social group in use by badgers on occasion but not a breeding sett. The spoil heap was overgrown but of medium size. The tunnel system there would be quite short but will include one or more chambers below ground.

Another camera placed at the culvert under the high wall revealed a boar utilising the drain/culvert to access lands off-site to the east – which are gardens and residential areas. This culvert is not far from the Main sett (S2).

Generally, few badger paths were seen during survey but such will have largely been obscured by high grass growth and scrub cover at this season.

The rooting signs were well distributed throughout the survey area. These, along with the latrine sites, suggest that this badger group is foraging throughout the site. Also they exit the site into adjoining areas via the drain culvert (whilst this access is very poor given the narrow bars). Badgers may cross the road at the main entrance (but security staff reported no badgers having been seen there). Badgers do feed on fruits and feeding signs were seen within the apple orchard."

Bat fauna

Bat surveys were carried out onsite which included bat emergent and detector surveys (Appendix 8.6). The survey also included an inspection of the buildings on site and static detectors were placed on site. As outlined in Appendix 8.6. '*No evidence of bat activity was noted in the buildings on site and no bats were noted emerging from onsite buildings in 2020, 2021 and 2023. However, in 2024 three common pipistrelle bats were noted emerging from the Gardner's compound (outside the proposed development site). In relation to trees on site, a single Leisler's bat was observed emerging from a Horse Chestnut (Tree 0401) on the eastern section of the site in 2020 and a single common pipistrelle was noted emerging from an adjacent Horse Chestnut in 2024. Foraging activity Common pipistrelle (Pipistrellus pipistrellus), Soprano pipistrelle (Pipistrellus pygmaeus), Lesser Noctule (Nyctalus leisleri) were also noted on site. The removal of the trees on site will result in a loss of foraging areas and two bat roosts*.'

The buildings where the three common pipistrelle bats are located will not be altered by the proposed development. However, this area could potentially be impacted by increased lighting as a result of the proposed development.

Avian Fauna

Wintering bird assessments are included in Appendices 8.1, 8.2, and 8.3 of the EIAR. As outlined in Appendix 8.1 of the EIAR Black-headed gull and Herring Gull were observed regularly commuting over the proposed development site}. Curlew and brent geese were observed commuting over the proposed development site infrequently. The wintering bird assessment relating to the 2021/2022 season (Appendix 8.2) noted that "*Of the target species of the bird survey, only one SCI species listed for the Special Protection Areas within the ZOI of the proposed development was recorded. This was Black-headed Gull. This species was also recorded in the previous survey by MKO (2021). Two other SCI species recorded in the previous survey (Curlew and Brent Goose) were not recorded within the survey period of this present survey*." Similarly, the wintering bird assessment relating to the 2023/2024 season (Appendix 8.3) noted that two of the target species were recorded foraging and/or roosting onsite, one of which being the Black-headed Gull. The other target species recorded was Herring Gull. The updated survey results are consistent with the previous surveys carried out by MKO in 2020/2021 and Flynn Furney in 2021/2022. The findings of the bird surveys would indicate that there is only limited potential for disturbance or displacement of the SCI species of the SPAs within the ZOI arising from the proposed development. It is not predicted that the proposed development would result in any habitat loss of any significance to any SCI species. In addition to the birds noted in Appendices 8.1, 8.2, 8.3 of the EIAR, the following birds were noted on site during the wintering bird surveys:

Table 8.5. *Bird species noted on site*

Common Name	*Scientific Name*
Woodpigeon	*Columba palumbus*
Wren	*Troglodytes troglodytes*
Robin	*Erithacus rubecula*
Blackbird	*Turdus merula*
Blue tit	*Parus caeruleus*
Starling	*Sturnus vulgaris*

Great tit	*Parus major*
Rook	*Corvus frugilegus*
Song Thrush	*Turdus philomelos*
Dunnock	*Prunella modularis*
Goldfinch	*Carduelis carduelis*
Hooded Crow	*Corvus cornix*
Herring gull (on roof possibly nesting)	*Larus argentatus*
Magpie	*Pica pica*
Great tit	*Corvus monedula*
Black-headed Gull	*Chroicocephalus ridibundus*

As outlined in the conclusion of the 2021/2022 Flynn Furney wintering bird survey (Appendix 8.2) *"Of the target species of the bird survey, only one SCI species listed for the Special Protection Areas within the ZOI of the proposed development was recorded. This was Black-headed Gull. This species was also recorded in the previous survey by MKO (2021). Two other SCI species recorded in the previous survey (Curlew and Brent Goose) were not recorded within the survey period of this present survey.*
No direct impacts to any of the SPAs within the ZOI may be expected. This is given the remove of these sites from the area proposed for development and the lack of connectivity between this and the protected sites. Indirect effects on the SPAs (e.g. on water quality) are considered unlikely given the nature of the proposed development and the lack of connectivity to these designated sites. As described in the MKO report, best practice design and site practice would prevent such impacts from arising.
While some disturbance and displacement impacts may occur to the SCI species recorded, this would not be deemed to be of potential significance. This is due to the habituation of this species to anthropogenic disturbance within the site and wider urban area and its likely habitation to any disturbance resulting from the proposed development.
Some loss of foraging habitat for this species will occur. However, this is not considered significant given the relative abundance of this habitat type (amenity grassland) within both the immediate and wider areas surrounding the site."

As outlined in the conclusion of the 2023/2024 Flynn Furney wintering bird survey (Appendix 8.3 of the EIAR) *"Of the target species of the bird survey, only one SCI species listed for the Special Protection Areas within the ZOI of the proposed development was recorded. This was Black-headed Gull. This species was also recorded in the previous surveys by MKO (2021) and FFEC (2022). Two other SCI species recorded in the 2021 survey (Curlew and Brent Goose) were not recorded within the survey period of this present survey.*
No direct impacts to any of the SPAs within the ZOI may be expected. This is given the remove of these sites from the area proposed for development and the lack of connectivity between this and the protected sites. Indirect effects on the SPAs (e.g. on water quality) are considered unlikely given the nature of the proposed development and the lack of connectivity to these designated sites. As described in the MKO report (2021), best practice design and site practices would prevent such impacts from arising.
While some disturbance and displacement impacts may occur to the SCI species recorded, this would not be deemed to be of potential significance. This is due to the habituation of this species to anthropogenic disturbance within the site and wider urban area and its likely habitation to any disturbance resulting from the proposed development. Some loss of foraging habitat for these species will occur. However, this is not considered significant given the relative abundance of this habitat type (amenity grassland) within both the immediate and wider areas surrounding the site."

The 2023 and 2024 breeding bird assessments are included in Appendix 8.4. As outlined in this report *"A total of 25 species in 2023 and 23 species in 2024 were recorded within the overall survey area. Seven species in 2023 and ten species (six within the proposed site outline) in 2024 were recorded breeding or displaying behaviour indicative of breeding.*
In 2023, four green-listed species (blackcap, feral pigeon, magpie and wren) and three amber-listed species (goldcrest, herring gull, swallow) were confirmed breeding within the survey area.

In 2024, six green-listed bird species of conservation concern were recorded breeding within the proposed site outline; blackbird, magpie, robin, rook, woodpigeon and wren. No amber-listed bird species of conservation concern were recorded breeding within the proposed site outline.
A hotspot of breeding activity observed within the proposed site outline consists of a mature coniferous canopy and a deciduous (mostly ash) stand with a scrub understory, in the west of the survey area south of the main entrance. Another hotspot outside of the proposed site outline exists in an area of old stone buildings/sheds in the northeast of the site, where nests of swallow (amber BoCCI) were confirmed. Although no other specific areas of high breeding value for birds exists, standalone mature trees (coniferous and deciduous) throughout the site provide valuable breeding habitat for corvid species."

Invasive Species
Himalayan balsam (*Impatiens glandulifera*) was noted on site. No other invasive plant or animal species listed under the European Communities (Birds and Natural Habitats) Regulations 2011 (S.I. 477 of 2011) Section 49, the Third Schedule: Part 1 Plants, Third Schedule: Part 2A Animals were noted on site. The distribution of this invasive species was restricted to a small area in the north east corner of the site.

Habitat & Biodiversity protection during construction.

As outlined in the Biodiversity Chapter of the EIAR, mitigation measures will be incorporated into the proposed development to minimise the potential for negative impacts on the ecology within the site. It should be noted that a project ecologist will be in place and will discuss the proposed project, HMP, and biodiversity mitigation with the DLRCC Biodiversity Officer prior to construction commencing on site. In addition, mitigation will be in place to protect the biodiversity within the watercourses and downstream of the watercourses.

Construction Phase

Mitigation measures as outlined in the CEMP include:

General Mitigation Measures

- '*Demolition and Construction methods used will be tailored to reduce, as much as possible, dust and noise pollution. Mitigation & control measures in relation to hazardous material spillages, plant & equipment emissions, noise, dust, vibration, disturbance to trees & wildlife set out in preceding sections of this report and in the EIAR document, shall be adhered to for the duration of the construction works*.
- *The location and size of stockpile areas for sands and gravel will be specified and identified on the maps*.
- *Sediment runoff will be minimised by standard engineering measures including sediment skirts around soil stockpiles, sediment retention barriers in surface water drains and the use of adequate construction roads*.'

Surface Water Drainage & Ground Water Control

'A method statement will be prepared by the contractor and agreed with Dún Laoghaire-Rathdown County Council prior to commencement of the works, detailing the measures to be taken to ensure that no water run-off from the site occurs during the construction period This method statement must comply with this CEMP document. Any run-off will be intercepted on site, where the ground falls towards adjoining properties or public roads/footpaths. This will be achieved with open drains or French drains and collected for treatment based on the conditions of a DLRCC and/or Uisce Éireann licence, prior to pumping to the surface sewer network. There is a drainage ditch running through the site. Direct uncontrolled run-off into this will not be allowed.

Run-off control measures to include the following:

- *Dewatering measures should only be employed where necessary.*
- *For groundwater encountered during construction phase, mitigation measures will include;*
    - *Dewatering by pumping to an appropriate treatment facility or settlement tanks in order to allow sediment to settle from solution prior to discharge.*
    - *Excluding contaminating materials such as fuels and hydrocarbons from sensitive parts of the site i.e. highly vulnerable groundwater areas.*
- *If concrete mixing is carried out on site, the mixing plant will be situated in a designated area with an impervious surface.*
- *Existing surface drainage channels within the site that serve adjacent lands are to be retained where possible to prevent causing increased flooding impacts.*
- *All surface water sewer connections will be made under the supervision of the Local Authority/Uisce Éireann and checked prior to commissioning.*
- *All onsite surface water drains* will be tested and *surveyed prior to connection to the public sewer to prevent any possibility of ingress of ground water.*
- *All surface water manholes and drains will be inspected and where necessary sealed to ensure that uncontrolled ground water inflow does not occur.*
- *Filters and silt traps will be used to prevent rain washing silts and other materials into the surface water network and creating blockages.*
- *Areas surrounding the site will be protected from sedimentation and erosion due to direct surface water runoff generated onsite during the demolition and construction phase. To prevent this from occurring, surface water discharge from the site will be managed and controlled for the duration of the construction works, as noted in the points above, until the permanently attenuated surface water drainage system of the proposed site is complete.*
- *Regular inspections of settlement tanks are to be carried out and additional treatment used if settlement is not adequate.*
- *Bunded areas will be created for the storage or use of any fuels, oils, greases, cement, etc.*
- *Emergency spill kits will be kept close to works.'*

Dust

'The Contractor's proposals will include dust control measures in accordance with best practice and with reference to the following:

- *Air Pollution Act 1987*
- *BS 6187: Code of Practice for Demolition*

A dust minimisation plan will be formulated for the construction phase of the project. The Contactor will put in place a regime for monitoring dust deposition rates in the vicinity of the site during the works using the Bergerhoff Method. The amount of dust deposited anywhere outside the proposed development, when averaged over a 30-day period, will not exceed the values below:

- *130mg/m2 per day when measured according to the BS method which takes account of insoluble components only or,*
- *350mg/m2 per day when measured according to TA Luft, which includes both so soluble and insoluble matter. (EPA compliance monitoring is based on the TA Luft method).*

Refer to Part 10 of this report for the proposed dust monitoring regime. Dust mitigation & control measures will include the items listed below. Dust generating activities will cease if limits are exceeded until appropriate mitigation measures are put in place by the contractor.

- *Spraying: During dry periods, dust emissions from heavily trafficked locations (on and off site) will be controlled by spraying surfaces with water. Stockpiles of excavated material, demolition rubble, sand etc shall be covered with tarpaulins or if this is impracticable should be sprayed with water from a bowser.*
- *A road sweeper is to be used to keep hard surfaced roads inside the site and in it's vicinity, clean.*
- *Use of rubble chutes and receptor skips during construction activities.*
- *Construction vehicle speeds are to be restricted to less than 15 kph to avoid raising dust. The overloading of tipper trucks exiting the site shall not be permitted and such trucks shall be covered. Skips containing dust generating material should also be covered.*
- *Vehicles & construction plant/equipment are to be regularly serviced to ensure that exhaust emissions are within permissible limits. Idling of vehicles to be avoided.*
- *For concrete cutting or stone cutting operations, dust emissions controls are to be in place.*
- *Dust netting on scaffolds and along boundaries shall be installed as necessary to avoid escaping dust emissions from the site falling on third party lands and existing residential areas.*
- *As per Section 8.11 of this report, a Liaison Manager appointed from the contractor's senior staff on site shall deal with complaints and liaise with the local community, the Local Authority and other stakeholders as necessary in relation to dust issues, out-of-hours work etc. All complaints are to be recorded and responded to. Appropriate actions to be taken to avoid similar future causes for complaint.'*

Soil

- *'If un-contaminated, any existing topsoil will be retained on site if possible to be used for the proposed development. Topsoil will be stored in an appropriate manner on site for the duration of the construction works and protected for re-use on completion of the main site works.*
- *During the demolition and construction phase, all excavations and exposed sub-soils in open cuts will be blinded and protected with clean broken stone as soon as possible after exposing the subsoil in order to prevent erosion.'*

Storage of Hazardous Materials

'To minimise environmental risks the following requirements shall be adhered to:

- *Hazardous liquid materials or materials shall be stored in the site compound in a bunded area (for liquids). All oils, fuels and other hazardous liquid materials will be clearly labelled and stored in an upright position. The capacity of the bunded area shall conform with EPA Guidelines e.g. hold 110% of the contents or 110% of the largest container whichever is greater.*
- *Fuel may also be stored in fuel bowsers located in the proposed compound location. Fuel bowsers shall have certificates of conformity or shall be integrity tested.*
- *Smaller quantities of fuel may be carried/stored in clearly labelled metal jerry cans. These cans shall be in good condition, have secure lockable lids and be stored in an appropriate manner i.e. over drip trays. Contents of drip trays to be suitably disposed by a licensed waste disposal contractor.*
- *Inductions and regular toolbox talk to be carried out for all operatives in relation to the material storage arrangements and actions to be taken in the event of an accidental spillage.'*

Reinstatement/Road cleaning

'Prior to the works commencing, detailed photograph surveys (condition schedules) of adjoining walls, roads, footpaths, grass verges etc. is to be prepared. Copies of the relevant parts are to be made available to adjoining owners and Dún Laoghaire-Rathdown County Council. This record will form the basis of assessing repairs to adjoining areas in the future should a dispute arise as to their cause. Roadways are to be kept clean of muck and other debris. A road sweeping truck is to be provided if necessary to ensure that this is so.

Reinstatement at completion of the works will involve:

- *The cleaning of the existing sewers in the vicinity of the development as required.*
- *Testing and cleaning of all watermains in the development to the requirements of the Local Authority prior to connection to the public watermain. This will reduce the risk of contamination to the public water supply when the new network is connected to the system.*
- *Repair of any damage to any adjacent public roadways, kerbs, grass verges etc. in accordance with Dún Laoghaire-Rathdown County Council requirements.*
- *Reinstatement of all excavations to the requirements of Dún Laoghaire-Rathdown County Council*
- *Leaving the area in a neat and clean condition, removing all deleterious materials that may have been deposited during construction works.'*

Plant & Equipment

'To minimise environmental risks the following requirements shall be adhered to

- *Plant and equipment to be used during works, will be in good working order & regularly maintained with no evidence of leaks or damaged exhausts. Equipment will be parked in areas remote from any environmentally sensitive locations at the end of each day i.e. the open channel drainage ditch crossing the site.*
- *Exhaust silencers to be fitted to plant and machinery that is likely to cause a noise nuisance. Construction plant used on site will comply with the relevant Irish regulations in relation to noise and vibration requirements.*
- *The contractor will have a re-fuelling protocol in place. Re-fuelling to be carried out inside the site compound area in a designated area.*
- *Toolbox talks are also to be held with all operatives to highlight environment risk areas or works. Environmental control measures are also to be highlighted.'*

Noise

'Some impact of noise is likely to occur as a result of the construction activity. Construction work is of a temporary nature and the resulting noise levels are usually acceptable, subject to typical management and time control procedures which are common to most urban based development projects.

Attention should be paid to the recommendations given in BS 5228. 'Noise Control on construction & Open Sites' & BS 6187 Code of Practice for Demolition (latest editions).

The noise limits to be applied for the duration of the infrastructure works are those specified below.

- *Daytime (07:00 to 19:00 hrs) – 55dB Laeq, 15 m ins.*
- *Evening (19:00 to 23.00 hrs) – 50dB Laeq, 15 mins*
- *Night-time (23:00 to 07:00 hrs) – 45Db Laeq, 15 mins*

Refer to Part 10 of this report for the proposed noise monitoring regime.

The following shall be implemented to mitigate & control construction noise impacts in order to avoid unacceptable impact on sensitive receptors in particular local residents:

- *Noise Management Procedures: Prior to the start, strictly enforced noise management procedures shall be put in place by the contractor and communicated to staff via an induction and follow-on toolbox talks.*
- *Noisy operation shall be avoided where possible or replaced with a lower noise alternative if possible.*
- *Noise shall be controlled at source in accordance with BS 5228 (latest edition). Measures used should include the use of exhaust silencers on vehicles and machinery that have the potential to cause a nuisance, the use of rubber wheeled/tracked vehicles where possible, the use of low noise generators and other machinery with manufacturer approved acoustics covers or linings. Electrically powered equipment to be used in preference to diesel/petrol powered equipment. Pneumatic percussive tools will be fitted with manufacturer approved mufflers or silencers. All excavator mounted pneumatic breakers used for demolition and concrete/rock breaking activities shall be fitted with effective dampeners. Where breaking out work is likely to be prolonged, the work area should be enclosed within a noise absorbing blanket structure to ensure noise emissions are within the defined limits. Such enclosures should also be considered for other static noise generating operations or machinery as necessary.*
- *Idling and rev'ving of machinery & vehicles is to be avoided. Vehicles and machinery not in use should be shut down.*
- *Noisy operations should be staggered to ensure that any receptor is not exposed to unacceptably high levels of noise over extended periods.*
- *Dragging of materials such as steel covers, plant or excavated materials along ground surfaces shall not be permitted.*
- *Plant Reversing Alarms: Where reasonably practicable and deemed safe by risk assessment, tonal reversing alarms on construction vehicles shall be replaced with broadband alarms.*
- *As per Section 8.11 of this report, a Liaison Manager appointed from the contractor's senior staff on site, shall deal with complaints and liaise with the local community, the Local Authority and other stakeholders as necessary in relation to noise issues. All complaints are to be recorded and responded to. Appropriate actions to be taken to avoid similar future causes for complaint.'*

Additional measures to be carried out to prevent impacts on Habitats, Botany and Avian Ecology

Construction Phase

8.5.1 Construction Phase

B_1 An Ecological Clerk of Works will oversee the project and will operate in consultation with NPWS and the DLR biodiversity officer.

B_2 A pre-construction inspection for terrestrial mammals will be carried out.

B_3 An Ecological Clerk of Works (ECoW) will be appointed to oversee the construction phase and to oversee the implementation of all mitigation including compliance with Wildlife Acts and Water Pollution Acts and ensure that biodiversity in neighbouring areas including birds will not be impacted.

B_4 Relevant guidelines and legislation (Section 40 of the Wildlife Acts, 1976 to 2012) in relation to the removal of trees and timing of nesting birds will be followed e.g. do not remove trees or shrubs during the nesting season (1st March to 31st August). If removal is required during this season the removal of woody material will be carried out under the supervision of an ecologist. If nesting birds are present NPWS will be contacted and removal will be subject to conditions outlined by NPWS.

B_5 Lighting during construction will be carried out in consultation with the project ecologist.

B_6 Removal of deciduous trees. Should any mature broadleaved tree be scheduled for removal as part of the development plans, it will first be surveyed for bat presence by a suitably experienced specialist. If bats are found, an application for a derogation licence should be made to the National Parks and Wildlife Service to allow its legal removal. Such trees will be felled in the period late August to late October, or early November, in order to avoid disturbance of any roosting bats as per National Roads Authority guidelines (NRA 2006a and 2006b) and also to avoid the bird breeding seasons. Any tree felling will be completed by mid-November at the latest as bats roosting in trees are very vulnerable to disturbance during their hibernation period (November – April). Trees may be removed at other times but the likelihood of encountering bats during works will be higher. Trees with ivy-cover, once felled, will be left intact onsite for 24 hours prior to disposal to allow any bats beneath foliage to escape overnight. A derogation licence for bats for bat roosts on site is seen in Appendix 2 of Appendix 8.6.

B_7 Trees to be retained. Several species of bats roost in trees. Where possible, treelines and mature trees that are located immediately adjacent to planned construction areas or are not directly impacted will be avoided and retained intact. Retained trees will be protected from root damage by machinery by an exclusion zone of at least 5 metres or equivalent to canopy height. Such protected trees will be fenced off by adequate temporary fencing prior to other works commencing.

B_8 A pre-construction bat assessment will be carried out on all buildings to be demolished.

B_9 Native species will be chosen in all landscaping schemes. Planting schemes will attempt to link in with existing wildlife corridors (hedgerows and treelines), both onsite and off, to provide continuity of wildlife corridors. Retention of boundary hedgerows and treelines will also serve to screen the development.

B_10 Lighting restrictions. In general, artificial light creates a barrier to bats so lighting will be avoided where possible. Where lighting is required, directional lighting (i.e. lighting which only shines on work areas and not nearby countryside) will be used to prevent overspill during construction. This can be achieved by the design of the luminaire and by using accessories such as hoods, cowls, louvers and shields to direct the light to the intended area only. Mature trees will not be directly lit during construction or operation of the proposed development.

B_11 45 bird boxes and 10 bat boxes will be placed on site as an enhancement and mitigation measure. The position of these boxes will be carried out in consultation with an ecologist.

B_12 Control measures will be carried out on the Himalayan balsam on site as outlined in the CEMP.

B_13 Measures and recommendations outlined in Appendix 8.7. Badger Survey Assessment and Mitigation Measures will be followed in consultation with NPWS. Mitigation measures outlined in the Badger Conservation Management Plan (Appendix 8.8) will be carried out.

8.5.2 Operational Phase

B_14 A post construction bat survey will be carried out and lighting on site will be assessed by an ecologist post construction.

B_15 A post construction inspection of drainage connections to the onsite drain will be carried out by the project ecologist to ensure that the petrochemical interceptor is in place and working.

B_16 A Habitat Management Plan will be in place and monitored by the project ecologist. The Habitat Management Plan (Appendix 8.9) has been prepared by Altemar with the support of AECOM Ireland Ltd. It involves the implementation of significant Habitat Management measures in line with the Dun Laoghaire Rathdown County Council Development Plan 2022-2028.

Habitat & Biodiversity protection and maintenance during Operation.

Following the completion of the proposed development, including planting, the main objective for the HMP is to preserve the ecological diversity of the areas which have been developed and to ensure that adjacent areas are not impacted negatively. Specifically in relation to the proposed development, the objectives are:

A. Maintain and enhance the landscape elements.
B. Prevent the introduction of invasive species
C. Maintain biodiversity elements of the core biodiversity habitats
D. Prevent deterioration of the habitats
E. Monitor the impacts of the Habitat Management practices.

A) Landscape

Of specific importance will be the management of the habitats for the first 5 years so that that the habitats and maintenance methodologies on site can be refined with the assistance of an ecologist. Following the first 5 years of maintenance, a refined HMP will be provided to the DLRCC biodiversity officer outlining the ongoing maintenance on site that will be carried out into the future. Initial planting and layout will be as per AECOM landscaping guidelines with follow up maintenance as follows:

Table 1. *All Areas*

ITEM	ACTIVITIES	SUGGESTED FREQUENCY
Watering	Young plants post planting are particularly prone to desiccation. All areas of grass, perennials, shrub, and tree planting will be sufficiently watered during the establishment period.	Once a week, or for first year (more, or less, frequent depending on weather.)
Plant replacements	All plants that have been removed will be replaced as soon as practical. If necessary, the cause of death will be established if specific areas are prone to plant deaths.	As required
Maintenance of infrastructure	Plants and in particular climbers can have a tendency to block areas that are important to the running of the building e.g. gutters, ventilation inlets or exhausts, drains, paths etc. Maintenance will be required.	Once a month

ITEM	ACTIVITIES	SUGGESTED FREQUENCY
Litter	Litter can be unsightly and, in some cases, e.g. food waste, attract vermin. Litter will be removed from the landscaped area.	Each week
Weed Control	Particularly when young plants are establishing it is important to keep weeds under control and remove nuisance weeds.	Every two weeks
Digging Over	All planting beds, will be lightly forked over to maintain health soil condition to a depth of 75mm.	Once a year in Spring
Invasives/Habitats	Ecologist inspection of habitats on site during summer months and assessment of site for invasive species. Modification to HMP if required.	Annual

Trees

ITEM	ACTIVITIES	SUGGESTED FREQUENCY
Establishment	All newly planted trees will be inspected to ensure strong growth. Replace any dead or dying trees. Watering will be supplemented in periods of dry weather.	Twice a year Spring and Autumn for first 3 years
Assessment	All trees will be inspected by a qualified arborist to ensure longevity of trees.	Once every 5 Years
Pruning Young trees up to 4m	Type and timing to suit species. Do not prune during late winter/ early spring sap flow period. Remove duplicated branches and potential weak forks. Pruning waste will be used to make piles and areas for biodiversity.	Once a year late spring or early autumn
Annual Maintenance	Check tree ties, stakes and loosen as required. Replace broken stakes or damaged ties.	Twice a year March and August
Annual Maintenance Year 5 onwards	Remove dead or decaying trees or branches. Material will be used as log piles or other features to enhance biodiversity.	Remove tree ties and stakes

Herbaceous Perennials and Ornamental Grasses

ITEM	ACTIVITIES	SUGGESTED FREQUENCY
Deciduous Species	Prune to remove dead and remaining foliage in late November to 150mm. Material will be used features to enhance biodiversity.	Once a year in Winter
Evergreen Species	Trim down foliage to 150 mm above ground	Once every two years in Spring

Wildflower Meadow

ITEM	ACTIVITIES	SUGGESTED FREQUENCY
Watering	Watering will be required during initial germination, meadow establishment and prolonged dry weather.	As required
Weeding	Weeding is essential during the establishment phase to ensure that the mix is given sufficient light and space to establish.	As required
Cutting	Mow to top grass (50-75mm) in first year	September or October
	Additional cutting will only be needed once a year. However, the cuttings will be left in situ for at least two weeks for the seed heads to dry and loose seeds.	Once a year in October

Green Roof

ITEM	ACTIVITIES	SUGGESTED FREQUENCY
Watering	Watering may be required during initial establishment in prolonged dry weather.	As required
Fertiliser	Fertiliser may be required for the first few years it is establishing in its new environment. Guidelines for the specific mixes will be acquired during installation.	As required
Weeding	Weeding is essential during the establishment phase to ensure that the Green roof is given sufficient light and space to establish.	As required
Diseases	Green roof plants need to be inspected for fungal diseases and insect problems on a regular basis.	Once a year in October
Drainage	The drainage system on the roof, underneath the green roof modules needs to be inspected regularly to make sure there are no backups that could cause puddling or pooling.	Once a year in October

Native Hedgerows

ITEM	ACTIVITIES	SUGGESTED FREQUENCY
Broken or dead matter	In autumn all hedges will be checked for broken or dead material, which will be removed.	Once a year in late Autumn
Pruning	Hedge trimming will be carried out in winter when birds are not nesting.	Once or twice a year depending on species

Monitoring

Planting on the site will commence with the completion of each stage of the works and, as a result, the programme is closely tied to construction. Ground preparation will precede planting and will include weed clearance and amelioration where necessary. Planting of species will be carried out in the dormant period from November – March, with grass seeding carried out from April – September. This will unsure ample opportunity for planting to establish properly and reduce casualties during the maintenance period. It should be noted that a post construction lighting and bat assessment will also be carried out.

Intensive landscape aftercare for each area will run for 12 months from the practical completion date using contact herbicides and hand weeding. There will be a period of 12 months defects liability on all planting with plant failures being replaced in the following planting season.

The landscaping of the proposed development will be regularly monitored to ensure that the elements and mitigation measures outlined in this report and the Habitat Management Plan are maintained and as per proposals. This would include the monitoring of key habitat areas on site. However, it should also be noted that annual ecological monitoring will be required. This will include a site visit by the project ecologist to examine the habitats on site to ensure that their integrity is maintained or enhanced. This will require the monitoring of specific ecological parameters to measure the success of certain aspects of the HMP and the overall ecological 'health' of the site. The monitoring for badgers, birds, bats, flora and amphibians in particular will take place annually for the first 3 years and biennially thereafter. Monitoring will focus on the diversity and abundance of these species. Following the 5th year, a revised HMP will be prepared and submitted to the DLRCC Biodiversity Officer. This HMP will outline a summary of the successes and failures of the first 5 years and outline the long-term maintenance strategy and monitoring proposed for the site.

Monitoring of the badgers on site will be as follows:

1 The success of the artificial sett, and also badger use of sett S2 once re-opened – will be monitored for a minimum period of 2 years, principally by use of trail cameras.

2 Additional measures may be necessary e.g. improvement of fencing, improve restrictions on any observed or likely human interference etc.

3 Onsite continuous monitoring of the badger setts and the grounds of the CMH will be carried out by an ecologist. During the works particular attention will be carried out on the area surrounding the temporarily closed breeding sett and the active subsidiary sett. Supervision will include camera traps (minimum of 4 remotely viewed 4G cameras) and site visits will be carried out (frequency of visits schedule will be subject to the approval of NPWS). An Ecological Clerk of Works will be in place for the duration construction phase of the development and will oversee all works.

Conclusion

The Habitat Management Plan has been prepared by Altemar with the support of AECOM Ireland Ltd. It involves the implementation of significant Habitat Management measures in line with the Dun Laoghaire Rathdown County Council Development Plan 2022-2028 Biodiversity Objectives which are set out in Appendix III. The proposed planting schedule outlines the heavy reliance on native and pollinator friendly species.

The landscape elements of the proposed development have involved extensive consultation and reiterations of the landscape masterplan, to enhance biodiversity across all landscape components on site. These biodiversity enhancement measures are outlined and will be implemented. Of significant importance to the long term enhancement of the site for biodiversity are the habitat & biodiversity protection and maintenance measures that will be in place during operation. These measures are also outlined and will ensure the long term biodiversity enhancement of the proposed development within the grounds of the former Central Mental Hospital. The works in relation to the Habitat Management plan will be overseen by a project ecologist to ensure that the specifications outlined will be carried out.

Appendix I- Dun Laoghaire Rathdown Development Plan 2022-2028 Biodiversity Objectives.

As outlined in the Biodiversity section of the DLR Development Plan 2022-2028 '*The natural heritage of DLR includes our flora, fauna, geology, and the landscape that surrounds us. In simple terms biodiversity includes all the variety of life on Earth. It is the diversity of nature, of our habitats, plants, and animals (including us), and their interconnections with each other. We are a part of nature and everything in nature is connected. Biodiversity forms part of the overall Green Infrastructure of the County*.'

Policy GIB18: Protection of Natural Heritage and the Environment*

It is a Policy Objective to protect and conserve the environment including, in particular, the natural heritage of the County and to conserve and manage Nationally and Internationally important and EU designated sites - such as Special Protection Areas (SPAs), Special Areas of Conservations (SACs), proposed Natural Heritage Areas (pNHAs) and Ramsar sites (wetlands) - as well as non-designated areas of high nature conservation value known as locally important areas which also serve as 'Stepping Stones' for the purposes of Article 10 of the Habitats Directive.

Policy GIB19: Habitats Directive

It is a Policy Objective to ensure the protection of natural heritage and biodiversity, including European Sites that form part of the Natura 2000 network, in accordance with relevant EU Environmental Directives and applicable National Legislation, Policies, Plans and Guidelines.

Policy GIB20: Biodiversity Plan

It is a Policy Objective to support the provisions of the forthcoming DLR County Biodiversity Action Plan, 2021-2025.

Policy GIB21: Designated Sites

It is a Policy Objective to protect and preserve areas designated as proposed Natural Heritage Areas, Special Areas of Conservation, and Special Protection Areas. It is Council policy to promote the maintenance and as appropriate, delivery of 'favourable' conservation status of habitats and species within these areas.

Policy GIB22: Non-Designated Areas of Biodiversity Importance

It is a Policy Objective to protect and promote the conservation of biodiversity in areas of natural heritage importance outside Designated Areas and to ensure that notable sites, habitats and features of biodiversity importance - including species protected under the Wildlife Acts 1976 and 2000, the Birds Directive 1979, the Habitats Directive 1992, Birds and Habitats Regulations 2011, Flora (Protection) Order, 2015, Annex I habitats, local important areas, wildlife corridors and rare species - are adequately protected. Ecological assessments will be carried out for all developments in areas that support, or have potential to support, features of biodiversity importance or rare and protected species and appropriate mitigation/ avoidance measures will be implemented. In implementing this policy, regard shall be had to the Ecological Network, including the forthcoming DLR Wildlife Corridor Plan, and the recommendations and objectives of the Green City Guidelines (2008) and 'Ecological Guidance Notes for Local Authorities and Developers' (Dún Laoghaire-Rathdown Version 2014).

Policy GIB23: County-Wide Ecological Network

It is a Policy Objective to protect the Ecological Network which will be integrated into the updated Green Infrastructure Strategy and will align with the DLR County Biodiversity Action Plan. Creating this network throughout the County will also improve the ecological coherence of the Natura 2000 network in accordance with Article 10 of the Habitats Directive. The network will also include nondesignated sites.

Policy GIB24: Rivers and Waterways

It is a Policy Objective to maintain and protect the natural character and ecological value of the river and stream corridors in the County and where possible to enhance existing channels and to encourage diversity of habitat and nature-based solutions that incorporate biodiversity features. It is also policy (subject to the sensitivity of the riverside habitat), to provide public access to riparian corridors, to promote improved passive recreational activities.

Policy GIB25: Hedgerows

It is a Policy Objective to retain and protect hedgerows in the County from development, which would impact adversely upon them. In addition, the Council will promote the protection of existing site boundary hedgerows and where feasible require the retention of these when considering a grant of planning permission for all developments. The Council will promote the County's hedgerows by increasing coverage, where possible, using locally native species and to develop an appropriate code of practice for road hedgerow maintenance. The Council will promote the protection of existing hedgerows when considering a grant of planning permission for all developments.

Policy GIB26: Geological Sites

It is a Policy Objective to protect, promote and preserve sites of Geological and Geomorphological importance, in particular the proposed Natural Heritage Areas (NHAs), and any County Geological Sites (CGS), that become designated during the lifetime of the Plan.

Policy GIB27: Green Belts

It is a Policy Objective to retain the individual physical character of towns and development areas by the designation of green belt areas, where appropriate.

Policy GIB28: Invasive Species

It is a Policy Objective to prepare an 'Invasive Alien Species Action Plan' for the County which will include actions in relation to Invasive Alien Species (IAS) surveys, management and treatment and to also ensure that proposals for development do not lead to the spread or introduction of invasive species. If developments are proposed on sites where invasive species are or were previously present, the applicants will be required to submit a control and management program for the particular invasive species as part of the planning process and to comply with the provisions of the European Communities Birds and Habitats Regulations 2011 (S.I. 477/2011).

Policy GIB29: Nature Based Solutions

It is a Policy Objective to increase the use of Nature Based Solutions (NBS) within the County, and to promote and apply adaption and mitigation actions that favour NBS, which can have multiple benefits to the environment and communities. NBS has a role not only to meet certain infrastructure related needs (e.g. flooding management), and development needs, but also to maintain or benefit the quality of ecosystems, habitats, and species.

Policy GIB30: Promoting Biodiversity by avoiding Widespread Use of Herbicides and Pesticides

It is a Policy Objective to promote biodiversity by avoiding the widespread use of chemical weedkillers, herbicides and pesticides such as glyphosate for routine road and park maintenance.

Appendix 8.10. Invasive Species Management Plan for a proposed Part 10 development on the lands at the Central Mental Hospital, Dundrum Road, Dundrum, Dublin 14.

17th September 2024

PREPARED BY:
Bryan Deegan MSc., BSc..(MCIEEM) of Altemar Ltd.

On behalf of:
Dun Laoghaire Rathdown County Council in Partnership with the Land Development Agency

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Document Control Sheet			
Client	Dun Laoghaire Rathdown County Council in Partnership with the Land Development Agency		
Project	Proposed Part 10 development on the lands at the Central Mental Hospital, Dundrum Road, Dundrum, Dublin 14.		
Report	Invasive Species Survey and Management Plan		
Date	16th September 2024		
Version	Author	Reviewed	Date
Draft 01	Bryan Deegan	Jack Doyle	16th September 2024
Final	Bryan Deegan	Jack Doyle	16th September 2024

Introduction

Dún Laoghaire Rathdown County Council, in partnership with The Land Development Agency, is seeking a ten year approval to carry out the following proposed development which is located on a total application site area of c. 9.7 ha, located on the former Central Mental Hospital, Dundrum Road, Dundrum, Dublin 14 and areas of Dundrum Road and St. Columbanus Road, Dublin 14. The subject site is in the immediate setting and curtilage of a number of protected structures, namely the 'Asylum' (RPS No. 2072), the 'Catholic Chapel' (RPS No. 2071) and the 'Hospital Building' (RPS No. 2073).

The development will consist of the construction of a residential scheme of 934 no. dwellings on an overall site of c. 9.7 ha.

The development will consist of the demolition of existing structures associated with the existing use (3,677 sq m), including:

- Single storey former swimming pool / sports hall and admissions unit (2,750 sq m);
- Two storey redbrick building (305 sq m);
- Single storey ancillary and temporary structures including portacabins (618sq m);
- Removal of existing internal sub-divisions/ fencing, including removal of security fence at Dundrum Road entrance;
- Demolition of section of porch and glazed screens at Gate Lodge building (4 sq m);
- Removal of walls adjacent to Main Hospital Building;
- Alterations and removal of section of wall to Walled Garden.

The development will also consist of alterations and partial demolition of the perimeter wall, including:

- Alterations and removal of section of perimeter wall adjacent to Rosemount Green (south);
- Formation of a new opening in perimeter wall at Annaville Grove to provide a pedestrian and cyclist access;
- Alterations and removal of sections of wall adjacent to Dundrum Road (including removal of existing gates and entrance canopy), including reduction in height of section, widening of existing vehicular access, and provision of a new vehicle, cyclist and pedestrian access;
- Alterations and removal of section of perimeter wall adjacent to Mulvey Park to provide a pedestrian and cyclist access.

The development with a total gross floor area of c. 94,058 sq m (c. 93,980 sq m excluding retained existing buildings), will consist of 934 no. residential units comprising:

- 926 no. apartments (consisting of 342 no. one bedroom units; 98 no. two bedroom (3 person) units; 352 no. two bedroom (4 person) units; and 134 no. three bedroom units) arranged in 9 blocks (Blocks 02-10) ranging between 2 and 8 storeys in height (with a lower ground floor to Blocks 02 and Block 10 and Basements in Blocks 03 and 04), together with private balconies and private terraces and communal amenity open space provision (including courtyards) and ancillary residential facilities, including an 130 sq m internal residential amenity area at the Ground Floor Level of Block 3;
- 6 no. three bedroom duplex apartments located at Block 02, together with private balconies and terraces.
- 2 no. 5 bedroom assisted living units and private rear gardens located at Block 02.

The development will also consist of 4,380 sq m of non-residential uses, comprising:

- Change of use and renovation of existing single storey Gate Lodge building (former reception/staff area) to provide a café unit (78 sq m);
- 1 no. restaurant unit (266 sq m) located at ground floor level at Block 03;
- 3 no. retail units (1,160 sq m) located at ground floor level at Blocks 03 and 07;
- 1 no. medical unit (288 sq m) located at ground floor level at Block 02;
- A new childcare facility (716 sq m) and associated outdoor play area located at lower ground and ground floor level at Block 10;
- A management suite (123 sq m) located at ground floor level at Block 10; and

- A new community centre facility, including a multi-purpose hall, changing rooms, meeting rooms, storage and associated facilities (1,749 sq m) located at ground and first floor level at Block 06.

Vehicular access to the site will be from a new signalised access off Dundrum Road to the south of the existing access and the existing access of Dundrum Road will be retained for emergency vehicle, pedestrian and cyclist access only. The development will also consist of the provision of public open space and related play areas; hard and soft landscaping including internal roads, cycle and pedestrian routes, active travel routes for cyclists and pedestrians, pathways and boundary treatments, street furniture, wetland features, part-basement, car parking (524 no. spaces in total, including car sharing and accessible spaces); motorcycle parking; electric vehicle charging points; bicycle parking (long and short stay spaces including stands); ESB substations, piped infrastructural services and connections (including connection into existing surface water sewer in St. Columbanus Road); ducting; plant (including external plant for Air Source Heat Pumps and associated internal heating plantrooms); waste management provision; SuDS measures (including green roofs, blue roofs, bio-retention areas); attenuation tanks; sustainability measures (including solar panels); signage; public lighting; any making good works to perimeter wall and all site development and excavation works above and below ground.

During the field assessment a small area of Himalayan balsam (*Impatiens glandulifera*) was noted on site. This is an invasive species that is noted under the Birds and Natural Habitats Regulations 2011 (SI 477 of 2011).

Invasive Species

The following survey and management plan was compiled by Bryan Deegan MCIEEM of Altemar Ltd.. Bryan is an ecologist with over 30 years survey experience and former project manager for the EU LIFE project CAISIE on invasive species. This was a €1.5 million EU project that carried out surveys and developed control tools for aquatic and riparian invasive species in Ireland.

The control of invasive species in Ireland comes under the Wildlife (Amendment) Act 2000 where it states that
'*Any person who— [...] plants or otherwise causes to grow in a wild state in any place in the State any species of flora, or the flowers, roots, seeds or spores of flora,['refers only to exotic species thereof'][...] otherwise than under and in accordance with a licence granted in that behalf by the Minister shall be guilty of an offence*.'

Under the European legislation, the Birds and Natural Habitats Regulations 2011 (SI 477 of 2011) , Section 49(2) prohibit the introduction and dispersal of species listed in the Third Schedule whereby "*any person who plants, disperses, allows or causes to disperse, spreads or otherwise causes to grow [....] shall be guilty of an offence.*"

Relevant species within this legislation include but, are not limited to (See Appendix I):

Giant hogweed	*Heracleum mantegazzianum*	Throughout the State
Giant knotweed	*Fallopia sachalinensis*	Throughout the State
Giant-rhubarb	*Gunnera tinctoria*	Throughout the State
Himalayan balsam	*Impatiens glandulifera*	Throughout the State
Himalayan knotweed	*Persicaria wallichii*	Throughout the State
Japanese knotweed	*Fallopia japonica*	Throughout the State
Rhododendron	*Rhododendron ponticum*	Throughout the State
Hottentot-fig	Carpobrotus edulis	Throughout the State

This report applies the most relevant and current guidance in relation to non-native invasive plant species in construction projects. The following literature was referred to in preparation of this report.

- S.I. No. 477/2011 - European Communities (Birds and Natural Habitats) Regulations 2011. http://www.irishstatutebook.ie/eli/2011/si/477/made/en/pdf
- NRA Guidelines on The Management of Noxious Weeds and Non-Native
- Invasive Plant Species on National Roads
- Best Practice Management Guidelines (Inland Fisheries Ireland).

Site Survey

Site surveys were carried out by Bryan Deegan on the 13th August 2020, 15th September 2021, 10th August 2021, 12th October 2021, 14th June 2023 and 14th May 2024 (with Emma Peters) within the site outline seen in Figure 1.

Figure 1. Proposed development site and location of Himalayan balsam and three-cornered leek.

A comprehensive walkover assessment of the development site and garden was carried out. All areas were examined for invasive species during the optimal survey season. A small cluster of Himalayan balsam (*Impatiens glandulifera*) (approx. $6m^2$) was located in the north east corner of the site (Plate 1) theough out the surveys. This species is a Third Schedule listed species under Regulations 49 & 50 in the European Communities (Birds and Natural Habitats) Regulations 2011. (Note: Regulation 50 not yet enacted).

Three-cornered leek was also noted sporadically in low numbers on site. This species was present within the perimeter of the grassland habitats within the centre of the site. This species is a Third Schedule listed species under Regulations 49 & 50 in the European Communities (Birds and Natural Habitats) Regulations 2011. (Note: Regulation 50 not yet enacted).

Plate I. Himalayan balsam (*Impatiens glandulifera*) in the northern eastern section of the site.

Table 1. Plant species listed in the Third Schedule of SI 411 of 2011

Common Name	Species	Location	Present on site
American skunk-cabbage	*Lysichiton americanus*	Throughout the State	Not observed
A red alga	*Grateloupia doryphora*	Throughout the State	Not observed
Brazilian giant-rhubarb	*Gunnera manicata*	Throughout the State	Not observed
Broad-leaved rush	*Juncus planifolius*	Throughout the State	Not observed
Cape pondweed	*Aponogeton distachyos*	Throughout the State	Not observed
Cord-grasses Spartina	*(all species and hybrids)*	Throughout the State	Not observed
Curly waterweed	*Lagarosiphon major*	Throughout the State	Not observed
Dwarf eel-grass	*Zostera japonica*	Throughout the State	Not observed
Fanwort	*Cabomba caroliniana*	Throughout the State	Not observed
Floating pennywort	*Hydrocotyle ranunculoides*	Throughout the State	Not observed
Fringed water-lily	*Nymphoides peltata*	Throughout the State	Not observed
Giant hogweed	*Heracleum mantegazzianum*	Throughout the State	Not observed
Giant knotweed	*Fallopia sachalinensis*	Throughout the State	Not observed
Giant-rhubarb	*Gunnera tinctoria*	Throughout the State	Not observed
Giant salvinia	*Salvinia molesta*	Throughout the State	Not observed
Himalayan balsam	***Impatiens glandulifera***	**Throughout the State**	**Not** observed
Himalayan knotweed	*Persicaria wallichii*	Throughout the State	Not observed
Hottentot-fig	*Carpobrotus edulis*	Throughout the State	Not observed
Japanese knotweed	*Fallopia japonica*	Throughout the State	Not observed
Large-flowered waterweed	*Egeria densa*	Throughout the State	Not observed
Mile-a-minute weed	*Persicaria perfoliata*	Throughout the State	Not observed
New Zealand pigmyweed	*Crassula helmsii*	Throughout the State	Not observed
Parrot's feather	*Myriophyllum aquaticum*	Throughout the State	Not observed
Rhododendron	*Rhododendron ponticum*	Throughout the State	Not observed
Salmonberry	*Rubus spectabilis*	Throughout the State	Not observed
Sea-buckthorn	*Hippophae rhamnoides*	Throughout the State	Not observed
Spanish bluebell	*Hyacinthoides hispanica*	Throughout the State	Not observed
Three-cornered leek	***Allium triquetrum***	**Throughout the State**	**Not** observed
Wakame	*Undaria pinnatifida*	Throughout the State	Not observed
Water chestnut	*Trapa natans*	Throughout the State	Not observed
Water fern	*Azolla filiculoides*	Throughout the State	Not observed
Water lettuce	*Pistia stratiotes*	Throughout the State	Not observed
Water-primrose	*Ludwigia* (all species)	Throughout the State	Not observed
Waterweeds	*Elodea* (all species)	Throughout the State	Not observed
Wireweed	*Sargassum muticum*	Throughout the State	Not observed

Table 2. Animal species listed in the Third Schedule of SI 411 of 2011

Common Name	Species	Location	Present on site
A colonial seasquirt	*Didemnum spp.*	Throughout the State	Not observed
A colonial seasquirt	Perophora japonica	Throughout the State	Not observed
All freshwater crayfish except *Austropotamobius pallipes*	All Freshwater crayfish except *Austropotamobius pallipes*	Throughout the State	Not observed
American bullfrog	*Rana catesbeiana*	Throughout the State	Not observed
American mink	*Neovison vison*	Throughout the State	Not observed
American oyster drill	*Urosalpinx cinerea*	Throughout the State	Not observed
Asian oyster drill	*Ceratostoma inornatum*	Throughout the State	Not observed
Asian rapa whelk	*Rapana venosa*	Throughout the State	Not observed
Asian river clam	*Corbicula fluminea*	Throughout the State	Not observed
Bay barnacle	*Balanus improvisus*	Throughout the State	Not observed
Black rat	*Rattus rattus*	Offshore islands only	N/A
Brown hare	*Lepus europaeus*	Throughout the State	Not observed
Brown rat	*Rattus norvegicus*	Offshore islands only	N/A
Canada goose	*Branta canadensis*	Throughout the State	Not observed
Carp	*Cyprinus carpio*	Throughout the State	Not observed
Chinese mitten crab	*Eriocheir sinensis*	Throughout the State	Not observed
Chinese water deer	*Hydropotes inermis*	Throughout the State	Not observed
Chub	*Leuciscus cephalus*	Throughout the State	Not observed
Common toad	*Bufo bufo*	Throughout the State	Not observed
Coypu	*Myocastor coypus*	Throughout the State	Not observed
Dace	*Leuciscus leuciscus*	Throughout the State	Not observed
Freshwater shrimp	*Dikerogammarus villosus*	Throughout the State	Not observed
Fox	*Vulpes vulpes*	Offshore islands only	N/A
Grey squirrel	*Sciurus carolinensis*	Throughout the State	Not observed
Greylag goose	*Anser anser*	Throughout the State	Not observed
Harlequin Ladybird	*Harmonia axyridis*	Throughout the State	Not observed
Hedgehog	*Erinaceus europaeus*	Offshore islands only	N/A
Irish stoat	*Mustela erminea hibernicus*	Offshore islands only	N/A
Japanese skeleton shrimp	*Caprella mutica*	Throughout the State	Not observed
Muntjac deer	*Muntiacus reevesi*	Throughout the State	Not observed
Muskrat	*Ondatra zibethicus*	Throughout the State	Not observed
Quagga Mussel	*Dreissena rostriformis*	Throughout the State	Not observed
Roach	*Rutilus rutilus*	Throughout the State	Not observed
Roe deer	*Capreolus capreolus*	Throughout the State	Not observed
Ruddy duck	*Oxyura jamaicensis*	Throughout the State	Not observed
Siberian chipmunk	*Tamias sibiricus*	Throughout the State	Not observed
Slipper limpet	*Crepidula fornicata*	Throughout the State	Not observed
Stalked sea squirt	*Styela clava*	Throughout the State	Not observed
Tawny owl	*Strix aluco*	Throughout the State	Not observed
Wild boar	*Sus scrofa*	Throughout the State	Not observed
Zebra mussel	*Dreissena polymorpha*	Throughout the State	Not observed

Background to Himalayan balsam (*Impatiens glandulifera*)

Indian or Himalayan balsam (*Impatiens glandulifera*) is a member of the Busy lizzie family (Balsaminaceae) that was introduced into Ireland as a garden plant. Quite often it is associated with damp ground along drains or watercourses. It is an annual plant, forming dense stands up to 3m tall, which effectively shade out and competitively exclude native herbs and grasses. During winter when it dies back it can leave areas of watercourse bank exposed with no binding roosts, resulting in increased erosion. Germination commences in February and first young plants are normally apparent in early April. Flowering commences in June and can extend into October.

Proposed Management

An invasive species survey will be carried out prior to the commencement of works and if identified, the following management works implemented. It should be noted that this survey is best carried out midway in the growing season (e.g. May). This allows for the plants to be identified but prior to the seed heads ripening. Himalayan balsam (*Impatiens glandulifera*) is best managed using a combination of chemical and mechanical methods. Control measures for Himalayan balsam should aim to prevent flowering and should, therefore, be undertaken before June.

Physical control

Prior to seed pods ripening plants can be pulled by hand. The pulled plants should be broken to discourage flowering, which can occur even with plants that have been removed from the ground. The broken plants can be placed in piles to rot naturally. Where flower production can be prevented, through the removal of flowers or plants, eradication may be possible over two years with rigorous treatment, however, close monitoring is required to ensure that regrowth does not occur due to viable seeds remaining in the soil.

Because seeds from the previous season will germinate and produce new plants following hand pulling in April or May, the exercise will need to be repeated later in the season, probably in August. As with herbicide spraying, hand pulling will be required the following year to account for the fact that seeds are capable of surviving for at least one year. Monitoring and localised hand pulling should be conducted for the following two years or as monitoring dictates.

Chemical control

Chemical control of Himalayan balsam is possible and the use of glyphosate-based products can provide a very successful outcome. As the plant is an annual and the roots are extremely short, it is not necessary to hold off spraying until after flowering, as with deep rooted, rhizomatous and perennial species. Treatment in late May or early June will provide a good kill of treated plants but seeds from the previous season will germinate to replace the treated individuals and further spraying will be required in August or September. Since the seeds can remain dormant for more than one year, spraying, as in the first year will be required in the subsequent season. In Years 3 and 4, if no seeds have been deposited in the area, few plants should survive but monitoring and localised retreatment will be required.

Background to Three-cornered leek

The Three-cornered leek (*Allium triquetrum*) is a member of the Lily family. It is native to the Mediterranean basin and has become widely established in the east and south-east of Ireland. Three-cornered leek is a bulbous perennial herb with a strong garlic scent. It has narrow, green, strongly keeled and hairless leaves. The flowers are bell-shaped and white, and flowering occurs from April to June. It is often found on roadsides, waste grounds, forests, and riparian and shaded areas in Ireland. Although no impacts of this species have been documented to date, it is known to rapidly colonise and dominate waste ground, outcompeting native vegetation[2].

Proposed Management

Three-cornered leek is best managed using a combination of chemical and mechanical methods. An invasive species survey will be carried out prior to the commencement of works and if identified, the following management works implemented. It should be noted that this survey is best carried out early in the growing season (e.g. April).

If three-cornered leek is identified on the site, the first phase of management works will be carried out as soon as is practicable and must be completed at least one month before commencement of construction on site. Foliar herbicide treatment will be carried out using a glyphosate-based product (Round-up Biactive) at a rate of 5l/ha. Herbicide application will be carried out to the manufacturer's guidelines and by staff wearing suitable PPE and in possession of the relevant qualifications.

Records of herbicide use will be kept in accordance with relevant legislation and be retained after the treatment. Herbicide application will consider the proximity of the nearby greenfield environment and will only take place outside the boundaries of nearby sites of conservational interest. The application will be carried out on an overcast day, during calm conditions.

Herbicide application will be concentrated on the Three-cornered leek infestation. Foliar herbicide application will be carried out when above ground vegetation has emerged. This is usually throughout spring depending on weather conditions. Manual removal of all vegetation will then be carried out three weeks after the herbicide application. A designated bund area will be created on-site using a propriety root barrier membrane (HyTex). The bulbs will be excavated to a depth of 300mm and removed to the prepared bund. Any subsequent regrowth will be treated with glyphosate over a two-year period, until complete eradication is achieved.

An overall eradication programme will be activated, comprising of manual removal and spot spraying of plants that have dispersed throughout the site. It will be necessary to inspect the excavation site and any other possible areas of infestation for Three-cornered leek regrowth in the years following the control works to ensure that all of the infestation has been removed. Strict biosecurity protocols will be adhered to during herbicide and manual removal works and in all follow up surveys and treatments.

Conclusion

An invasive species management plan will be put in place for the proposed development at the former Central Mental Hospital. Himalayan balsam (*Impatiens glandulifera*) and Three-cornered leek (Allium triquetrum) will be controlled as outlined above. This will be overseen by the Ecological Clerk of Works. This plan will result in the full eradication of the invasive species identified on site.

[2] Booy, O., Wade, M., and Roy, H. (2015) *A Field guide to Invasive Plants & Animals in Britain*. s.l.: Bloomsbury.

S.I. Ltd Contract No: 5811

Client:	Land Development Agency
Engineer:	Barrett Mahony
Contractor:	Site Investigations Ltd

Dundrum Central Development
Dundrum, Dublin 14
Site Investigation Report

Prepared by:

Sletch

....

Stephen Letch

Issue Date:	09/11/2021
Status	Final
Revision	1

Contents: Page No.

Appendices:

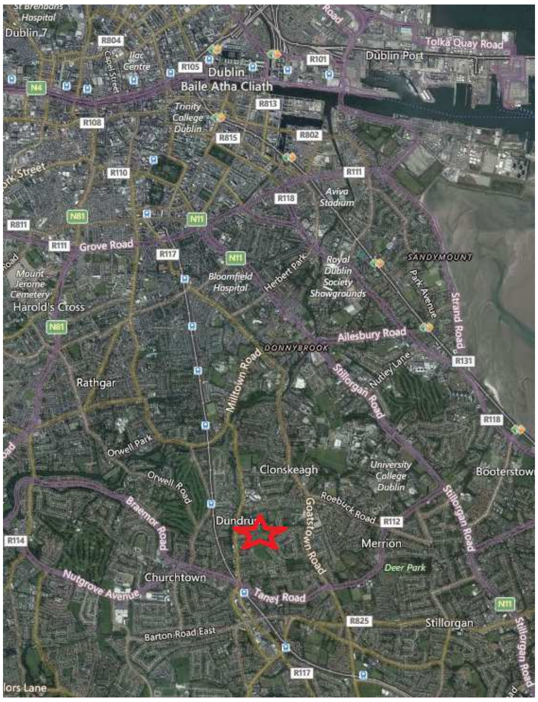
1. Introduction

On the instructions of Barrett Mahony, Site Investigations Ltd (SIL) was appointed to complete a ground investigation at the former Central Mental Hospital site in Dundrum, Dublin 14. The investigation was for a residential development on the site and was completed on behalf of the Client, Land Development Agency. Due to supervision issues, the fieldworks were initially started in March 2021 and then postponed until August and completed in September 2021.

This report presents the factual geotechnical data obtained from the field and laboratory testing with interpretation of the ground conditions discussed.

2. Site Location

The site is located in to the north of Dundrum town centre, which is to the south of Dublin city centre. The first map below shows the location of the site to the south of the city centre and the second map shows the location of the site to the north of Dundrum town centre.



3. Fieldwork

The fieldworks comprised a programme of cable percussive boreholes, trial pits, soakaway tests, foundation pits, slit trenches and California Bearing Ratio tests. All fieldwork was carried out in accordance with BS 5930:2015, Engineers Ireland GI Specification and Related Document 2nd Edition 2016 and Eurocode 7: Geotechnical Design.

The fieldworks comprised of the following:

- 16 No. cable percussive boreholes
- 35 No. trial pits
- 4 No. soakaway tests
- 7 No. foundation inspection pits
- 3 No. slit trenches
- 6 No. California Bearing Ratio tests

3.1. Cable Percussive Boreholes

Cable percussion boring was undertaken at 16 No. locations using a Dando 150 rig and constructed 200mm diameter boreholes. Hand dug inspection pits were excavated to check for underground services at each borehole location. The boreholes terminated at depths ranging from 4.50mbgl (BH12) to 8.60mbgl (BH11). It was not possible to collect undisturbed samples due to the granular soils encountered so bulk disturbed samples were recovered at regular intervals.

To test the strength of the stratum, Standard Penetration Tests (SPT's) were performed at 1.00m intervals in accordance with BS 1377 (1990). In soils with high gravel and cobble content it is appropriate to use a solid cone (60°) (CPT) instead of the split spoon and this was used throughout the testing. The test is completed over 450mm and the cone is driven 150mm into the stratum to ensure that the test is conducted over an undisturbed zone. The cone is then driven the remaining 300mm and the blows recorded to report the N-Value. The report shows the N-Value with the 75mm incremental blows listed in brackets (e.g., BH01 at 1.00mbgl where N=12-(2,2/2,4,3,3)). Where refusal of 50 blows across the test zone was encountered was achieved during testing, the penetration depth is also reported (e.g., BH01 at 7.60mbgl where N=50-(25 for 5mm/50 for 5mm)).

At 5 No. locations, standpipes to allow for long term groundwater monitoring were installed. These were slotted pipes with a gravel response zone to allow for the groundwater to equalise within the standpipe.

The logs are presented in Appendix 1.

3.2. Trial Pits

35 No. trial pits were excavated using a wheeled excavator with TP21 cancelled due to access issues. The pits were logged and photographed by SIL geotechnical engineer and representative disturbed bulk samples were recovered as the pits were excavated, which were returned to the laboratory for geotechnical testing.

The trial pit logs and photographs are presented in Appendix 2.

3.3. Soakaway Tests

At 4 No. locations, soakaway tests were completed and logged by SIL geotechnical engineer. BRE Special Digest 365 stipulates that the pit should be filled three times and that the final cycle is used to provide the infiltration rate. The time taken for the water level to fall from 75% volume to 25% volume is required to calculate the rate of infiltration. However, if the water level does not fall at a steady rate, then the test is deemed to have failed and the area is unsuitable for storm water drainage.

The soakaway test results and photographs are presented in Appendix 3.

3.4. Foundation Pits

At seven locations, foundation pits were excavated to investigate the depths of the foundations of the existing structure. FI02 was cancelled due to issues accessing the proposed location. The pits included hand excavating around the foundation to measure the depth to the top, extension out from the wall and the thickness of the foundation. The pits were then photographed, backfilled with arisings and reinstated.

The foundation pit logs are presented in Appendix 4.

3.5. Slit Trenches

Slit trenching was completed at 3 No. locations by hand digging with machine assistance where possible. The trenches were completed to check for any underground services at the selected locations. The trenches were logged and photographed before they were backfilled with the arisings.

The slit trench logs with photographs are presented in Appendix 5.

3.6. California Bearing Ratio Tests

At 6 No. locations, undisturbed cylindrical mould samples were recovered to complete California Bearing Ratio tests in the laboratory. The results facilitate the designing of the access roads and associated areas and are completed to BS1377: 1990: Part 4, Clause 7 ‘Determination of California Bearing Ratio’. The results are presented as part of Appendix 6 with the geotechnical laboratory test data.

3.7. Surveying

Following completion of all the fieldworks, a survey of the exploratory hole locations was completed using a GeoMax GPS Rover. The data is supplied on each individual log and along with a site plan in Appendix 9.

4. Laboratory Testing

Geotechnical laboratory testing was completed on representative soil samples in accordance with BS 1377 (1990). Testing included:

- 65 No. Moisture contents
- 12 No. Atterberg limits
- 25 No. Particle size gradings with 12 No. hydrometers
- 3 No. shear boxes
- 10 No. pH and sulphate content

Environmental testing was completed by Eurofins Chemtest Ltd and this allows for a Waste Classification report to be produced. The environmental testing consists of the following:

- 70 No. Suite I analysis

The geotechnical laboratory test results are presented in Appendix 6 with the environmental test results and Waste Classification report in Appendix 7 and 8 respectively.

5. Ground Conditions

5.1. MADE GROUND

MADE GROUND was encountered at most locations across the site generally to 1.10mbgl or shallower although it did extend deeper at 6 No. locations with TP02 recording fill material to 2.20mbgl. The fill material is dominated by consists of granular sand and gravel fill although some cohesive clay soils were also recorded. The foreign material recorded in these soils include concrete, timber, tarmacadam, pottery, bone, ash, slag, plastic bags and red brick fragments.

5.2. Overburden

The natural ground conditions are consistent with cohesive soils encountered across the site. This includes brown and brown grey overlying black slightly sandy gravelly silty CLAY with high cobble and low boulder content soils. The black CLAY was recorded at depths ranging from 1.80mbgl to 3.20mbgl. At the trial pit locations, some layers of granular GRAVEL were also recorded towards the north of the site. The boreholes terminated at depths ranging from 4.50mbgl to 8.60mbgl on boulder obstructions.

The SPT N-values in the natural ground at 1.00mbgl range from 4 to 19 indicating soft to stiff soils. The N-values then increase to 11 to 33 at 2.00mbgl and steadily increase with depth as the boreholes progress.

Laboratory tests of the shallow cohesive soils confirm that CLAY soils dominate the site with low to intermediate plasticity indexes of 14% to 16% recorded. The particle size distribution curves were poorly sorted straight-line curves with 22% to 53% fines content.

5.3. Groundwater

Groundwater details in the boreholes and trial pits during the fieldworks are noted on the logs in Appendix 1 and 2. Groundwater ingresses were recorded in 13 No. boreholes with initial water strikes between 0.80mbgl and 3.20mbgl. At four of the boreholes, BH11, BH13, BH15 and BH16, the initial strike was sealed off by the borehole casings and then groundwater re-entered the borehole between 3.50mbgl and 4.50mbgl.

Groundwater was recorded in 12 of the trial pits at depths ranging from 1.30mbgl to 2.10mbgl with ingress rates recorded as seepages to slow.

6. Recommendations and Conclusions

Please note the following caveats:

The recommendations given, and opinions expressed in this report are based on the findings as detailed in the exploratory hole records. Where an opinion is expressed on the material between the exploratory hole locations or below the final level of excavation, this is for guidance only and no liability can be accepted for its accuracy. No responsibility can be accepted for adjacent unexpected conditions that have not been revealed by the exploratory holes. It is further recommended that all bearing surfaces when excavated should be inspected by a suitably qualified Engineer to verify the information given in this report.

Excavated surfaces in clay strata should be kept dry to avoid softening prior to foundation placement. Foundations should always be taken to a minimum depth of 0.50mBGL to avoid the effects of frost action and possible seasonal shrinkage/swelling.

If it is intended that on-site materials are to be used as fill, then the necessary laboratory testing should be specified by the Client to confirm the suitability. Also, relevant lab testing should be specified where stability of side slopes to excavations is a concern, or where contamination may be an issue.

6.1. Shallow Foundations

Due to the unknown depth of foundation and no longer-term groundwater information, this analysis assumes the groundwater will not influence the construction or performance of these foundations.

As stated previously, man-made soils were recorded across the site to a maximum depth of 2.20mbgl. SIL do not recommend that narrow shallow foundations are placed on fill material due to the unknown compaction methods used during laying of man-made material. This unknown could result in softer spots and differential settlement once construction is completed. If shallow foundations are to be used and man-made soils are encountered below foundation level, then the soil should be removed and replaced with engineered fill which is compacted to the required standard.

Beneath the fill material the boreholes recorded cohesive CLAY soils. Using a correlation proposed by Stroud and Butler, the SPT N-values and plasticity indices can be used to calculate the undrained shear strength. With the low to intermediate plasticity indexes recorded in the laboratory for the soils encountered on site, this correlation is C_u=6N. This value can then be used to calculate the ultimate bearing capacity (UBC), and finally, a factor of safety is applied to get the allowable bearing capacity, with a factor of 3 chosen for this project.

BH:	1.20m				2.00m				3.00m			
	SPT	C_u	UBC	ABC	SPT	C_u	UBC	ABC	SPT	C_u	UBC	ABC
01	-	-	-	**-**	33	198	1045	**350**	32	192	1033	**345**
02	7	42	235	**80**	13	78	434	**145**	21	126	695	**230**
03	-	-	-	**-**	18	108	587	**195**	29	174	942	**315**
04	-	-	-	**-**	20	120	648	**215**	30	180	972	**325**
05	15	90	480	**160**	14	84	465	**155**	20	120	666	**220**
06	7	42	235	**80**	17	102	556	**185**	21	126	695	**230**
07	-	-	-	**-**	22	132	710	**235**	24	144	788	**265**
08	11	66	358	**120**	14	84	465	**155**	31	156	1000	**335**
09	19	114	603	**200**	19	114	617	**205**	31	156	1000	**335**
10	14	84	450	**150**	31	156	985	**330**	31	156	1000	**335**
11	10	60	328	**110**	19	114	617	**205**	35	210	1125	**375**
12	4	24	144	**50**	17	102	556	**185**	22	132	727	**245**
13	11	66	358	**120**	11	66	372	**125**	26	156	850	**285**
14	11	66	358	**120**	25	150	800	**265**	30	180	972	**325**
15	9	54	297	**100**	15	90	495	**165**	32	192	1033	**345**
16	14	84	450	**150**	33	198	1045	**350**	39	234	1247	**415**

All values are in kN/m^2.

The following assumptions were made as part of these analyses. If any of these assumptions are not in accordance with detailed design or observations made during construction these recommendations should be re-evaluated.

- Foundations are to be constructed on a level formation of uniform material type (described above).
- The bulk unit weight of the material in this stratum has a minimum density of $19kN/m^3$.
- All bearing capacity calculations allow for a settlement of 25mm.

The trial pit walls remained stable during excavation. However, it would still be recommended that all excavations should be checked immediately and regular inspection of temporary excavations should be completed during construction to ensure that all slopes are stable. Temporary support should be used on any excavation that will be left open for an extended period.

6.2. Groundwater

The caveats below relating to interpretation of groundwater levels should be noted:

There is always considerable uncertainty as to the likely rates of water ingress into excavations in clayey soil sites due to the possibility of localised unforeseen sand and gravel lenses acting as permeable conduits for unknown volumes of water.

Furthermore, water levels noted on the borehole and trial pit logs do not generally give an accurate indication of the actual groundwater conditions as the borehole or trial pit is rarely left open for sufficient time for the water level to reach equilibrium.

Also, during boring procedures, a permeable stratum may have been sealed off by the borehole casing, or water may have been added to aid drilling. Therefore, an extended period of groundwater monitoring using any constructed standpipes is required to provide more accurate information regarding groundwater conditions. Finally, groundwater levels vary with time of year, rainfall, nearby construction and tides.

Pumping tests would be required to determine likely seepage rates and persistence into excavations taken below the groundwater level. Deep trial pits also aid estimation of seepage rates.

As discussed previously, groundwater was recorded in 13 No. boreholes and 12 No. trial pits during the fieldworks. There is always considerable uncertainty as to the likely rates of water ingress into excavations in cohesive soil sites due to the possibility of localised unforeseen sand and gravel lenses acting as permeable conduits for unknown volumes of water. Based on this information at the exploratory hole locations to date, it is considered likely that any shallow ingress (less than 2.00mbgl) into excavations of the CLAY will be slow to medium. If granular soils are encountered in shallow excavations, then the possibility of water ingressing into an excavation increases.

If groundwater is encountered during excavations then mechanical pumps will be required to remove the groundwater from sumps. Sumps should be carefully located and constructed to ensure that groundwater is efficiently removed from excavations and trenches.

6.3. Soakaway Test

SA02 and SA03 passed the BRE specification with the water draining from the trial pit. SA02 was completed in fill material, which may not have been compacted as much as the natural soils and SA03 was completed in granular SAND and GRAVEL soils. The f-values were calculated as **7.36×10^{-5}m/s** and **2.20×10^{-4}m/s.** It would be recommended that any soakaway is placed in the natural granular soils.

The soakaway tests, SA01 and SA04, failed the specification as the water level did not fall sufficiently enough to complete the test. The BRE Digest stipulates that the pit should half empty within 24hrs, and extrapolation indicates this condition would not be satisfied. The tests were terminated at the end of the first (of a possible three) fill/empty cycle since further testing would give even slower fall rates due to increased soil saturation.

6.4. Pavement Design

The CBR test results in Appendix 6 indicate CBR values ranging from 6.4% to 8.9%.

The CBR samples were recovered at 0.40mbgl and inspection of the formation strata should be completed prior to construction of the pavement. Once the exact formation levels are finalised then additional in-situ testing could be completed to assist with the detailed pavement design.

6.5. Contamination

Environmental testing was carried out on seventy samples from the investigation and the results are shown in Appendix 7. For material to be removed from site, Suite I testing was carried out to determine if the material is hazardous or non-hazardous and then the leachate results were compared with the published waste acceptance limits of BS EN 12457-2 to determine whether the material on the site could be accepted as 'inert material' by an Irish landfill.

The Waste Classification report in Appendix 8, created using HazWasteOnline™ software, shows that the material tested can be classified as non-hazardous material.

Following this analysis of the solid test results, the leachate disposal suite results showed 36 No. samples remained within the Inert waste thresholds. 23 No. samples recorded determinands that exceed the Inert threshold but remain below the non-hazardous waste landfill levels whereas 11 samples exceeded these upper levels. It would be recommended that an Environmental Engineer is consulted prior to any earthworks commencing on site.

Seventy samples were tested for analysis but it cannot be discounted that any localised contamination may have been missed. Any MADE GROUND excavated on site should be stockpiled separately to natural soils to avoid any potential cross contamination of the soils. Additional testing of these soils may be requested by the individual landfill before acceptance and a testing regime designed by an environmental engineer would be recommended to satisfy the landfill.

6.6. Aggressive Ground Conditions

The chemical test results in Appendix 6 indicate a general pH value between 7.32 and 8.11, which is close to neutral and below the level of 9, therefore no special precautions are required.

The maximum value obtained for water soluble sulphate was 127mg/l as SO_3. The BRE Special Digest 1:2005 – '*Concrete in Aggressive Ground'* guidelines require SO_4 values and after conversion ($SO_4 = SO_3 \times 1.2$), the maximum value of 152mg/l shows Class 1 conditions and no special precautions are required.

Appendix 1

Cable Percussive Borehole Logs

Cable Percussion Borehole Log

Contract No:	5811	Borehole No:	BH01

Contract:	Dundrum Central Development	Easting:	716933.200	Date Started:	22/03/2021
Location:	Dundrum, Dublin 14	Northing:	729245.309	Date Completed:	22/03/2021
Client:	Land Development Agency	Elevation:	41.09	Drilled By:	G. Macken
Engineer:	Barrett Mahony	Borehole Diameter:	200mm	Status:	FINAL

Depth (m)	Stratum Description	Level (mOD)	Sample Depth	Type	Result	Water Strike	Backfill
0.20	TOPSOIL.	40.89					
1.30	MADE GROUND: brown sandy slightly gravelly silty clay with medium cobble content.	39.79	1.00 1.20	B C	CMH001 N=12 (2,2/2,4,3,3)		
2.00	MADE GROUND: light brown sandy slightly gravelly silty clay.	39.09					
2.90	Stiff brown sandy slightly gravelly silty CLAY with low cobble content.	38.19	2.00 2.00	B C	CMH002 N=33 (6,8/7,8,8,10)		
7.50	Stiff black sandy slightly gravelly silty CLAY with low cobble content.	33.59	3.00 3.00 4.00 4.00 5.00 5.00 6.00 6.00 7.00 7.00	B C B C B C B C B C	CMH003 N=32 (5,7/8,8,7,9) CMH004 N=19 (6,5/4,4,6,5) CMH005 N=42 (8,8/11,10,11,10) CMH006 N=26 (6,4/4,7,7,8) CMH007 N=25 (5,5/7,6,6,6)		
7.60	Obstruction - possible boulders.	33.49	7.60	C	50 (25 for 5mm/50 for 5mm)		

End of Borehole at 7.60m

Chiselling: From:	To:	Time:	Water Strikes: Strike:	Rose:	Depth Sealed	Water Details: Date:	Hole Depth:	Water Depth:	Installation: From:	To:	Pipe:	Backfill: From:	To:	Type:	Remarks:
7.50	7.60	01:00				22/03	7.60	Dry				0.00	7.60	Arisings	Borehole terminated due to obstruction.

Legend:
B: Bulk
D: Disturbed
U: Undisturbed
ES: Environmental
W: Water
C: Cone SPT
S: Split spoon SPT

Cable Percussion Borehole Log

Contract No: 5811					Borehole No: BH02
Contract:	Dundrum Central Development	Easting:	716986.720	Date Started:	03/09/2021
Location:	Dundrum, Dublin 14	Northing:	729198.826	Date Completed:	03/09/2021
Client:	Land Development Agency	Elevation:	43.22	Drilled By:	D. MacEoin
Engineer:	Barrett Mahony	Borehole Diameter:	200mm	Status:	FINAL

Depth (m)	Stratum Description	Level (mOD)	Sample Depth	Type	Result	Water Strike	Backfill
0.50	TOPSOIL.	42.72					
2.80	Soft becoming firm brown sandy slightly gravelly silty CLAY with low cobble content.	40.42	1.00	B	CMH042		
			1.20	C	N=7 (1,1/2,1,2,2)		
			2.00	B	CMH043		
			2.00	C	N=13 (2,2/3,4,3,3)		
7.70	Stiff becoming very stiff black sandy slightly gravelly silty CLAY with low cobble content.	35.52	3.00	B	CMH044		
			3.00	C	N=21 (3,3/4,5,6,6)		
			4.00	B	CMH045		
			4.00	C	N=26 (4,5/6,6,6,8)		
			5.00	B	CMH046		
			5.00	C	N=33 (4,4/7,8,9,9)		
			6.00	B	CMH047		
			6.00	C	N=38 (5,7/9,9,10,10)		
			7.00	B	CMH048		
			7.00	C	N=43 (5,6/9,10,11,13)		
7.80	Obstruction - possible boulders.	35.42	7.80	C	50 (25 for 5mm/50 for 0mm)		

End of Borehole at 7.80m

Scale (m): 0.5, 1.0, 1.5, 2.0, 2.5, 3.0, 3.5, 4.0, 4.5, 5.0, 5.5, 6.0, 6.5, 7.0, 7.5, 8.0, 8.5, 9.0, 9.5

Level scale (mOD): 43.0, 42.5, 42.0, 41.5, 41.0, 40.5, 40.0, 39.5, 39.0, 38.5, 38.0, 37.5, 37.0, 36.5, 36.0, 35.5, 35.0, 34.5, 34.0, 33.5

Chiselling: From:	To:	Time:	Water Strikes: Strike:	Rose:	Depth Sealed	Water Details: Date:	Hole Depth:	Water Depth:	Installation: From:	To:	Pipe:	Backfill: From:	To:	Type:	Remarks:
1.80	2.00	01:00	2.00	1.70	2.5	03/09	7.80	Dry				0.00	7.80	Arisings	Borehole terminated due to obstruction.
7.70	7.80	01:00													

Legend:
B: Bulk
D: Disturbed
U: Undisturbed
ES: Environmental
W: Water
C: Cone SPT
S: Split spoon SPT

Cable Percussion Borehole Log

Contract No: 5811				Borehole No: BH03	
Contract:	Dundrum Central Development	Easting:	717144.080	Date Started:	15/09/2021
Location:	Dundrum, Dublin 14	Northing:	729269.977	Date Completed:	15/09/2021
Client:	Land Development Agency	Elevation:	44.80	Drilled By:	D. MacEoin
Engineer:	Barrett Mahony	Borehole Diameter:	200mm	Status:	FINAL

Depth (m)	Stratum Description	Level (mOD)	Samples Depth	Type	Result	Water Strike	Backfill
0.10	MADE GROUND: tarmacadam.	44.70					
0.30	MADE GROUND: grey silty sandy gravel.	44.50					
	MADE GROUND: brown sandy gravelly silty clay.		1.00	B	CMH093		
			1.20	C	N=19 (2,3/5,4,4,6)		
1.40	Stiff brown grey sandy slightly gravelly silty CLAY with low cobble content.	43.40	2.00	B	CMH094		
			2.00	C	N=18 (2,4/5,4,4,5)		
			3.00	B	CMH095		
3.20	Very stiff black sandy slightly gravelly silty CLAY with low cobble content.	41.60	3.00	C	N=29 (5,5/7,8,7,7)		
			4.00	B	CMH096		
			4.00	C	N=31 (5,6/7,7,9,8)		
			5.00	B	CMH097		
			5.00	C	N=41 (7,9/10,11,10,10)		
			6.00	B	CMH098		
			6.00	C	N=43 (7,8/9,10,11,13)		
			7.00	B	CMH099		
			7.00	C	N=50 (9,9/50 for 275mm)		
7.50	Obstruction - possible boulders.	37.30					
7.70	End of Borehole at 7.70m	37.10	7.70	C	50 (25 for 5mm/50 for 0mm)		

Chiselling: From:	To:	Time:	Water Strikes: Strike:	Rose:	Depth Sealed	Water Details: Date:	Hole Depth:	Water Depth:	Installation: From:	To:	Pipe:	Backfill: From:	To:	Type:	Remarks:
7.50	7.70	01:00				15/09	7.70	Dry				0.00	7.70	Arisings	Borehole terminated due to obstruction.

Legend:
B: Bulk
D: Disturbed
U: Undisturbed
ES: Environmental
W: Water
C: Cone SPT
S: Split spoon SPT

Cable Percussion Borehole Log

Contract No: 5811				Borehole No: BH04	
Contract:	Dundrum Central Development	Easting:	717285.890	Date Started:	09/09/2021
Location:	Dundrum, Dublin 14	Northing:	729232.584	Date Completed:	09/09/2021
Client:	Land Development Agency	Elevation:	43.11	Drilled By:	D. MacEoin
Engineer:	Barrett Mahony	Borehole Diameter:	200mm	Status:	FINAL

Depth (m)	Stratum Description	Level (mOD)	Samples Depth	Type	Result	Water Strike	Backfill
	TOPSOIL.						
0.30	MADE GROUND: brown silty sandy gravel.	42.81	1.00 1.20	B C	CMH071 N=10 (1,2/2,3,2,3)		
1.80	Stiff brown grey sandy slightly gravelly silty CLAY with low cobble content.	41.31	2.00 2.00	B C	CMH072 N=20 (3,4/4,7,5,4)		
2.50	Stiff grey sandy slightly gravelly silty CLAY with low cobble content.	40.61	3.00	B	CMH073		
3.20	Very stiff black sandy slightly gravelly silty CLAY with low cobble content.	39.91	3.00 4.00 4.00 5.00 5.00	C B C B C	N=30 (4,5/5,7,9,9) CMH074 N=36 (4,4/7,8,10,11) CMH075 N=40 (7,8/40 for 275mm)		
5.60	Obstruction - possible boulders.	37.51					
5.70	End of Borehole at 5.70m	37.41	5.70	C	50 (25 for 5mm/50 for 0mm)		

Chiselling: From:	To:	Time:	Water Strikes: Strike:	Rose:	Depth Sealed	Water Details: Date:	Hole Depth:	Water Depth:	Installation: From:	To:	Pipe:	Backfill: From:	To:	Type:	Remarks:
5.60	5.70	01:00				09/09	5.70	Dry				0.00	5.70	Arisings	Borehole terminated due to obstruction.

Legend:
B: Bulk
D: Disturbed
U: Undisturbed
ES: Environmental
W: Water
C: Cone SPT
S: Split spoon SPT

Cable Percussion Borehole Log

Contract No: 5811				Borehole No:	BH05
Contract:	Dundrum Central Development	Easting:	717343.690	Date Started:	23/03/2021
Location:	Dundrum, Dublin 14	Northing:	729264.246	Date Completed:	23/03/2021
Client:	Land Development Agency	Elevation:	41.44	Drilled By:	G. Macken
Engineer:	Barrett Mahony	Borehole Diameter:	200mm	Status:	FINAL

Depth (m)	Stratum Description	Level (mOD)	Sample Depth	Type	Result	Water Strike
0.20	TOPSOIL.	41.24				
0.80	MADE GROUND: brown sandy slightly gravelly silty clay with medium cobble content and some red brick fragments.	40.64				
2.60	Firm brown sandy slightly gravelly silty CLAY with low cobble content.	38.84	1.00	B	CMH008	
			1.20	C	N=15 (3,3/5,4,3,3)	
			2.00	B	CMH009	
			2.00	C	N=14 (4,4/3,3,3,5)	
3.20	Very soft black sandy slightly gravelly silty CLAY with low cobble content.	38.24	3.00	B	CMH010	
			3.00	C	N=20 (4,5/5,4,6,5)	
4.80	Stiff black sandy slightly gravelly silty CLAY with low cobble content.	36.64	4.00	B	CMH011	
			4.00	C	N=22 (6,5/6,6,5,5)	
4.90	Obstruction - possible boulders.	36.54	4.90	C	50 (25 for 5mm/50 for 5mm)	

End of Borehole at 4.90m

Chiselling: From	To	Time	Water Strikes: Strike	Rose	Depth Sealed	Water Details: Date	Hole Depth	Water Depth	Installation: From	To	Pipe	Backfill: From	To	Type	Remarks
4.80	4.90	01:00	2.60	2.40	3.2	23/03	4.90	Dry				0.00	4.90	Arisings	Borehole terminated due to obstruction.

Legend:
B: Bulk
D: Disturbed
U: Undisturbed
ES: Environmental
W: Water
C: Cone SPT
S: Split spoon SPT

Cable Percussion Borehole Log

Contract No: 5811					Borehole No: **BH06**
Contract:	Dundrum Central Development	Easting:	716933.110	Date Started:	01/09/2021
Location:	Dundrum, Dublin 14	Northing:	729145.958	Date Completed:	01/09/2021
Client:	Land Development Agency	Elevation:	43.98	Drilled By:	D. MacEoin
Engineer:	Barrett Mahony	Borehole Diameter:	200mm	Status:	FINAL

Depth (m)	Stratum Description	Level (mOD) Depth	Sample Depth	Type	Result
	TOPSOIL.				
0.40	Soft grey grey sandy slightly gravelly silty CLAY with low cobble content.	43.58	1.00	B	CMH035
			1.20	C	N=7 (2,2/2,1,2,2)
1.70	Stiff brown sandy slightly gravelly silty CLAY with low cobble content.	42.28	2.00	B	CMH036
			2.00	C	N=17 (2,3/3,5,4,5)
2.80	Stiff becoming very stiff black sandy slightly gravelly silty CLAY with low cobble content.	41.18	3.00	B	CMH037
			3.00	C	N=21 (3,4/4,5,6,6)
			4.00	B	CMH038
			4.00	C	N=35 (4,4/8,9,9,9)
			5.00	B	CMH039
			5.00	C	N=37 (5,5/9,10,9,9)
			6.00	B	CMH040
			6.00	C	N=38 (4,5/8,10,10,10)
			7.00	B	CMH041
			7.00	C	N=42 (3,5/10,11,11,10)
7.80	Obstruction - possible boulders.	36.18			
8.00	End of Borehole at 8.00m	35.98	8.00	C	50 (25 for 5mm/50 for 5mm)

Chiselling: From:	To:	Time:	Water Strikes: Strike:	Rose:	Depth Sealed	Water Details: Date:	Hole Depth:	Water Depth:	Installation: From:	To:	Pipe:	Backfill: From:	To:	Type:	Remarks:
7.80	8.00	01:00	2.00	1.80	2.5	01/09	8.00	Dry	0.00	1.50	Solid	0.00	1.00	Bentonite	Borehole terminated due to obstruction.
									1.50	7.00	Slotted	1.00	8.00	Gravel	

Legend:
B: Bulk
D: Disturbed
U: Undisturbed
ES: Environmental
W: Water
C: Cone SPT
S: Split spoon SPT

Cable Percussion Borehole Log

Contract No: 5811				Borehole No: BH07	
Contract:	Dundrum Central Development	Easting:	717074.690	Date Started:	24/03/2021
Location:	Dundrum, Dublin 14	Northing:	729141.537	Date Completed:	24/03/2021
Client:	Land Development Agency	Elevation:	45.20	Drilled By:	G. Macken
Engineer:	Barrett Mahony	Borehole Diameter:	200mm	Status:	FINAL

Depth (m)	Stratum Description	Level (mOD)	Sample Depth	Type	Result
	TOPSOIL.	45.20			
0.20	MADE GROUND: brown sandy slightly gravelly silty clay with medium cobble content and some red brick fragments.	45.00			
			1.00	B	CMH016
			1.20	C	N=9 (2,2/3,2,2,2)
1.50	Stiff brown sandy slightly gravelly silty clay with medium cobble content.	43.70			
			2.00	B	CMH017
			2.00	C	N=22 (2,4/4,9,6,3)
			3.00	B	CMH018
			3.00	C	N=24 (3,5/7,5,5,7)
3.20	Stiff black sandy slightly gravelly silty CLAY with low cobble content.	42.00			
3.70	Stiff black sandy slightly gravelly silty CLAY with low cobble content.	41.50			
			4.00	B	CMH019
			4.00	C	N=22 (5,7/7,4,6,5)
			5.00	B	CMH020
			5.00	C	50 (25 for 125mm/50 for 5mm)
5.10	Obstruction - possible boulders.	40.10			
5.20	End of Borehole at 5.20m	40.00	5.20	C	50 (25 for 10mm/50 for 5mm)

Chiselling:

From:	To:	Time:
5.10	5.20	01:00

Water Strikes:

Strike:	Rose:	Depth Sealed
3.20	2.90	3.7

Water Details:

Date:	Hole Depth:	Water Depth:
24/03	5.20	Dry

Installation:

From:	To:	Pipe:

Backfill:

From:	To:	Type:
0.00	5.20	Arisings

Remarks: Borehole terminated due to obstruction.

Legend:
B: Bulk
D: Disturbed
U: Undisturbed
ES: Environmental
W: Water
C: Cone SPT
S: Split spoon SPT

Cable Percussion Borehole Log

Contract No: 5811	Borehole No: BH08

Contract:	Dundrum Central Development	Easting:	717225.400	Date Started:	14/09/2021
Location:	Dundrum, Dublin 14	Northing:	729148.228	Date Completed:	14/09/2021
Client:	Land Development Agency	Elevation:	43.24	Drilled By:	D. MacEoin
Engineer:	Barrett Mahony	Borehole Diameter:	200mm	Status:	FINAL

Depth (m)	Stratum Description	Level (mOD) Depth	Samples Depth	Type	Result	Water Strike
0.10	MADE GROUND: tarmacadam.	43.14				
0.30	MADE GROUND: grey silty sandy gravel.	42.94				
	Firm brown sandy slightly gravelly silty CLAY with low cobble content.		1.00	B	CMH087	
			1.20	C	N=11 (2,2/3,2,3,3)	
			2.00	B	CMH088	2.20 (rose to 2.00)
			2.00	C	N=14 (3,3/3,4,4,3)	
2.50	Very stiff black sandy slightly gravelly silty CLAY with low cobble content.	40.74				
			3.00	B	CMH089	
			3.00	C	N=31 (3,5/7,7,8,9)	
			4.00	B	CMH090	
			4.00	C	N=34 (5,4/8,8,9,9)	
			5.00	B	CMH091	
			5.00	C	N=36 (6,7/7,8,10,11)	
			6.00	B	CMH092	
			6.00	C	N=44 (7,9/10,11,12,11)	
6.70	Obstruction - possible boulders.	36.54				
6.90	End of Borehole at 6.90m	36.34	6.90	C	50 (25 for 5mm/50 for 0mm)	

Chiselling:

From:	To:	Time:
6.70	6.90	01:00

Water Strikes:

Strike:	Rose:	Depth Sealed
2.20	2.00	NS

Water Details:

Date:	Hole Depth:	Water Depth:
14/09	6.90	3

Installation:

From:	To:	Pipe:
0.00	1.50	Solid
1.50	4.70	Slotted

Backfill:

From:	To:	Type:
0.00	1.00	Bentonite
1.00	6.90	Gravel

Remarks: Borehole terminated due to obstruction.

Legend:
B: Bulk
D: Disturbed
U: Undisturbed
ES: Environmental
W: Water
C: Cone SPT
S: Split spoon SPT

Cable Percussion Borehole Log

Contract No:	Cable Percussion Borehole Log				Borehole No:
5811					BH09
Contract:	Dundrum Central Development	Easting:	717318.050	Date Started:	10/09/2021
Location:	Dundrum, Dublin 14	Northing:	729168.875	Date Completed:	10/09/2021
Client:	Land Development Agency	Elevation:	42.05	Drilled By:	D. MacEoin
Engineer:	Barrett Mahony	Borehole Diameter:	200mm	Status:	FINAL

Depth (m)	Stratum Description	Level (mOD)	Samples and Insitu Tests Depth	Type	Result	Water Strike
0.20	TOPSOIL.	41.85				
0.90	MADE GROUND: brown silty gravelly sand.	41.15				
2.20	Stiff brown grey sandy slightly gravelly silty CLAY with low cobble content.	39.85	1.00	B	CMH076	
			1.20	C	N=19 (2,3/5,4,5,5)	
			2.00	B	CMH077	
			2.00	C	N=19 (3,2/5,5,4,5)	
5.70	Stiff becoming very stiff black sandy slightly gravelly silty CLAY with low cobble content.	36.35	3.00	B	CMH078	3.00
			3.00	C	N=31 (5,5/7,8,8,8)	
			4.00	B	CMH079	
			4.00	C	N=34 (4,5/8,9,8,9)	
			5.00	B	CMH080	
			5.00	C	N=33 (5,6/6,9,9,9)	
5.90	Obstruction - possible boulders.	36.15	5.90	C	50 (25 for 5mm/50 for 0mm)	

End of Borehole at 5.90m

Chiselling From:	To:	Time:	Water Strikes Strike:	Rose:	Depth Sealed	Water Details Date:	Hole Depth:	Water Depth:	Installation From:	To:	Pipe:	Backfill From:	To:	Type:	Remarks:
5.70	5.90	01:00	3.00		NS	10/09	5.90	4.5	0.00	1.50	Solid	0.00	1.00	Bentonite	Borehole terminated due to obstruction.
									1.50	5.50	Slotted	1.00	5.90	Gravel	

Legend:
B: Bulk
D: Disturbed
U: Undisturbed
ES: Environmental
W: Water
C: Cone SPT
S: Split spoon SPT

Cable Percussion Borehole Log

Contract No:	5811	Borehole No:	BH10
Contract:	Dundrum Central Development	Easting:	717262.520
Date Started:	13/09/2021		
Location:	Dundrum, Dublin 14	Northing:	729108.428
Date Completed:	13/09/2021		
Client:	Land Development Agency	Elevation:	43.35
Drilled By:	D. MacEoin		
Engineer:	Barrett Mahony	Borehole Diameter:	200mm
Status:	FINAL		

Depth (m)	Stratum Description	Level (mOD)	Sample Depth	Type	Result	Water Strike
0.10	MADE GROUND: tarmacadam.	43.25				
0.30	MADE GROUND: grey silty sandy gravel.	43.05				
	Firm brown sandy slightly gravelly silty CLAY with low cobble content.		1.00	B	CMH081	
			1.20	C	N=14 (1,2/3,4,4,3)	
2.00	Very stiff black sandy slightly gravelly silty CLAY with low cobble content.	41.35	2.00	B	CMH082	
			2.00	C	N=31 (3,3/5,8,9,9)	
			3.00	B	CMH083	
			3.00	C	N=31 (4,5/5,7,9,10)	
			4.00	B	CMH084	
			4.00	C	N=37 (5,5/8,9,9,11)	
			5.00	B	CMH085	
			5.00	C	N=43 (6,7/10,11,11,11)	
			6.00	B	CMH086	
			6.00	C	N=41 (7,6/9,9,12,11)	
6.70	Obstruction - possible boulders.	36.65				
6.80	End of Borehole at 6.80m	36.55	6.80	C	50 (25 for 5mm/50 for 5mm)	

Chiselling: From:	To:	Time:	Water Strikes: Strike:	Rose:	Depth Sealed	Water Details: Date:	Hole Depth:	Water Depth:	Installation: From:	To:	Pipe:	Backfill: From:	To:	Type:	Remarks:
6.70	6.80	01:00	2.50	2.10	NS	13/09	6.80	5.5	0.00	1.50	Solid	0.00	1.00	Bentonite	Borehole terminated due to obstruction.
									1.50	6.10	Slotted	1.00	6.80	Gravel	

Legend:
B: Bulk
D: Disturbed
U: Undisturbed
ES: Environmental
W: Water
C: Cone SPT
S: Split spoon SPT

Contract No: 5811	Cable Percussion Borehole Log	Borehole No: BH11

Contract:	Dundrum Central Development	Easting:	717138.430	Date Started:	08/09/2021
Location:	Dundrum, Dublin 14	Northing:	729040.155	Date Completed:	08/09/2021
Client:	Land Development Agency	Elevation:	45.15	Drilled By:	D. MacEoin
Engineer:	Barrett Mahony	Borehole Diameter:	200mm	Status:	FINAL

Depth (m)	Stratum Description	Level (mOD)	Sample Depth	Type	Result	Water Strike
	TOPSOIL.					
0.30	MADE GROUND: brown silty gravelly sand.	44.85				
1.00	Firm brown sandy slightly gravelly silty CLAY with low cobble content.	44.15	1.00 1.20	B C	CMH063 N=10 (2,2/3,2,2,3)	
1.80	Stiff brown grey sandy slightly gravelly silty CLAY with low cobble content.	43.35	2.00 2.00	B C	CMH064 N=19 (3,3/5,4,5,5)	▼
2.60	Very stiff black sandy slightly gravelly silty CLAY with low cobble content.	42.55	3.00 3.00	B C	CMH065 N=35 (4,4/7,9,9,10)	
			4.00 4.00	B C	CMH066 N=44 (5,6/9,12,11,12)	▼
			5.00 5.00	B C	CMH067 N=47 (7,8/10,10,13,14)	
			6.00 6.00	B C	CMH068 N=47 (7,7/11,12,12,12)	
			7.00 7.00	B C	CMH069 N=50 (8,9/12,12,13,13)	
			8.00 8.00	B C	CMH070 N=50 (9,9/50 for 250mm)	
8.50 8.60	Obstruction - possible boulders. End of Borehole at 8.60m	36.65 36.55	8.60	C	50 (25 for 5mm/50 for 0mm)	

Chiselling: From:	To:	Time:	Water Strikes: Strike:	Rose:	Depth Sealed	Water Details: Date:	Hole Depth:	Water Depth:	Installation: From:	To:	Pipe:	Backfill: From:	To:	Type:	Remarks:
8.50	8.60	01:00	2.40	2.20	3	08/09	8.60	Dry	0.00	1.50	Solid	0.00	1.00	Bentonite	Borehole terminated due to obstruction.
			4.50	4.10	5				1.50	8.30	Slotted	1.00	8.60	Gravel	

Legend:
B: Bulk
D: Disturbed
U: Undisturbed
ES: Environmental
W: Water
C: Cone SPT
S: Split spoon SPT

Cable Percussion Borehole Log

Contract No: 5811		Borehole No: BH12

Contract:	Dundrum Central Development	Easting:	717237.100	Date Started:	24/03/2021
Location:	Dundrum, Dublin 14	Northing:	729035.114	Date Completed:	24/03/2021
Client:	Land Development Agency	Elevation:	44.05	Drilled By:	G. Macken
Engineer:	Barrett Mahony	Borehole Diameter:	200mm	Status:	FINAL

Depth (m)	Stratum Description	Level (mOD) Depth	Samples Depth	Type	Result	Water Strike	Backfill
0.20	TOPSOIL.	43.85					
0.80	MADE GROUND: brown sandy slightly gravelly silty clay with medium cobble content.	43.25				0.80	
2.20	Soft brown sandy slightly gravelly silty CLAY with low cobble content.	41.85	1.00	B	CMH012		
			1.20	C	N=4 (1,0/1,1,0,2)		
			2.00	B	CMH013		
			2.00	C	N=17 (1,1/2,5,4,6)		
4.40	Stiff black sandy slightly gravelly silty CLAY with low cobble content.	39.65	3.00	B	CMH014		
			3.00	C	N=22 (5,4/4,6,5,7)		
			4.00	B	CMH015		
			4.00	C	N=29 (4,6/8,8,6,7)		
4.50	Obstruction - possible boulders.	39.55	4.50	C	50 (25 for 10mm/50 for 5mm)		

End of Borehole at 4.50m

Chiselling: From:	To:	Time:	Water Strikes: Strike:	Rose:	Depth Sealed	Water Details: Date:	Hole Depth:	Water Depth:	Installation: From:	To:	Pipe:	Backfill: From:	To:	Type:	Remarks:
4.40	4.50	01:00	0.80	0.70	1.2	24/03	4.50	Dry				0.00	4.50	Arisings	Borehole terminated due to obstruction.

Legend:
B: Bulk
D: Disturbed
U: Undisturbed
ES: Environmental
W: Water
C: Cone SPT
S: Split spoon SPT

Cable Percussion Borehole Log

Contract No: 5811					Borehole No: BH13
Contract:	Dundrum Central Development	Easting:	717291.630	Date Started:	31/08/2021
Location:	Dundrum, Dublin 14	Northing:	729059.971	Date Completed:	31/08/2021
Client:	Land Development Agency	Elevation:	43.64	Drilled By:	D. MacEoin
Engineer:	Barrett Mahony	Borehole Diameter:	200mm	Status:	FINAL

Depth (m)	Stratum Description	Level (mOD) Depth	Samples Depth	Type	Result	Water Strike
	TOPSOIL.					
0.30	Firm brown sandy slightly gravelly silty CLAY with low cobble content.	43.34				
			1.00	B	CMH028	
			1.20	C	N=11 (2,2/3,2,3,3)	1.80
2.00	Firm brown grey sandy slightly gravelly silty CLAY with low cobble content.	41.64	2.00	B	CMH029	
			2.00	C	N=11 (2,3/2,3,3,3)	
2.30	Stiff becoming very stiff black sandy slightly gravelly silty CLAY with low cobble content.	41.34				
			3.00	B	CMH030	
			3.00	C	N=26 (3,4/5,7,7,7)	3.50
			4.00	B	CMH031	
			4.00	C	N=28 (3,5/6,7,7,8)	
			5.00	B	CMH032	
			5.00	C	N=32 (4,4/7,8,8,9)	
			6.00	B	CMH033	
			6.00	C	N=35 (4,5/8,8,10,9)	
			7.00	B	CMH034	
			7.00	C	N=34 (4,4/7,9,9,9)	
7.60	Obstruction - possible boulders.	36.04				
7.70	End of Borehole at 7.70m	35.94	7.70	C	50 (25 for 5mm/50 for 0mm)	

Backfill: 0.00–7.70 Arisings

Chiselling: From:	To:	Time:	Water Strikes: Strike:	Rose:	Depth Sealed	Water Details: Date:	Hole Depth:	Water Depth:	Installation: From:	To:	Pipe:	Backfill: From:	To:	Type:	Remarks:
7.60	7.70	01:00	1.80	1.50	2	31/08	7.70	Dry				0.00	7.70	Arisings	Borehole terminated due to obstruction.
			3.50	3.30	3.7										

Legend:
B: Bulk
D: Disturbed
U: Undisturbed
ES: Environmental
W: Water
C: Cone SPT
S: Split spoon SPT

Cable Percussion Borehole Log

Contract No: 5811	Cable Percussion Borehole Log				Borehole No: BH14
Contract:	Dundrum Central Development	Easting:	717342.430	Date Started:	27/08/2021
Location:	Dundrum, Dublin 14	Northing:	729045.867	Date Completed:	30/08/2021
Client:	Land Development Agency	Elevation:	43.50	Drilled By:	D. MacEoin
Engineer:	Barrett Mahony	Borehole Diameter:	200mm	Status:	FINAL

Depth (m)	Stratum Description	Level (mOD)	Sample Depth	Type	Result
0.20	TOPSOIL.	43.30			
1.90	Firm brown sandy slightly gravelly silty CLAY with low cobble content.	41.60	1.00 1.20	B C	CMH021 N=11 (1,1/2,3,3,3)
7.40	Stiff becoming very stiff black sandy slightly gravelly silty CLAY with low cobble content.	36.10	2.00 2.00	B C	CMH022 N=25 (2,3/5,6,7,7)
			3.00 3.00	B C	CMH023 N=30 (4,4/7,7,8,8)
			4.00 4.00	B C	CMH024 N=29 (4,5/7,7,7,8)
			5.00 5.00	B C	CMH025 N=28 (5,5/6,6,8,8)
			6.00 6.00	B C	CMH026 N=35 (5,7/8,8,9,10)
			7.00 7.00	B C	CMH027 50 (6,6/50 for 200mm)
7.50	Obstruction - possible boulders.	36.00	7.50	C	50 (25 for 5mm/50 for 5mm)

End of Borehole at 7.50m

Chiselling:

From:	To:	Time:

Water Strikes:

Strike:	Rose:	Depth Sealed
2.20	2.00	2.5
4.20	4.50	4.5

Water Details:

Date:	Hole Depth:	Water Depth:
30/08	7.50	Dry

Installation:

From:	To:	Pipe:

Backfill:

From:	To:	Type:
0.00	7.50	Arisings

Remarks: Borehole terminated due to obstruction.

Legend:
B: Bulk
D: Disturbed
U: Undisturbed
ES: Environmental
W: Water
C: Cone SPT
S: Split spoon SPT

Cable Percussion Borehole Log

Contract No: 5811					Borehole No: **BH15**
Contract:	Dundrum Central Development	Easting:	717190.830	Date Started:	06/09/2021
Location:	Dundrum, Dublin 14	Northing:	728984.102	Date Completed:	06/09/2021
Client:	Land Development Agency	Elevation:	44.51	Drilled By:	D. MacEoin
Engineer:	Barrett Mahony	Borehole Diameter:	200mm	Status:	FINAL

Depth (m)	Stratum Description	Level (mOD)	Sample Depth	Type	Result	Water Strike	Backfill
	TOPSOIL.						
0.30	Firm brown sandy slightly gravelly silty CLAY with low cobble content.	44.21					
			1.00	B	CMH049		
			1.20	C	N=9 (1,1/2,2,2,3)		
1.50	Firm brown grey sandy slightly gravelly silty CLAY with low cobble content.	43.01					
			2.00	B	CMH050		
			2.00	C	N=15 (2,3/3,4,4,4)		
2.20	Stiff becoming very stiff black sandy slightly gravelly silty CLAY with low cobble content.	42.31					
			3.00	B	CMH051		
			3.00	C	N=32 (3,5/7,8,8,9)		
			4.00	B	CMH052		
			4.00	C	N=33 (4,4/7,7,9,10)		
			5.00	B	CMH053		
			5.00	C	N=37 (5,6/8,9,10,10)		
			6.00	B	CMH054		
			6.00	C	N=37 (4,6/9,9,9,10)		
			7.00	B	CMH055		
			7.00	C	N=47 (6,7/10,12,13,12)		
7.80	Obstruction - possible boulders.	36.71					
7.90	End of Borehole at 7.90m	36.61	7.90	C	50 (25 for 5mm/50 for 5mm)		

Chiselling: From:	To:	Time:	Water Strikes: Strike:	Rose:	Depth Sealed	Water Details: Date:	Hole Depth:	Water Depth:	Installation: From:	To:	Pipe:	Backfill: From:	To:	Type:	Remarks:
7.80	7.90	01:00	2.50	2.30	3	06/09	7.90	Dry				0.00	7.90	Arisings	Borehole terminated due to obstruction.

Legend:
B: Bulk
D: Disturbed
U: Undisturbed
ES: Environmental
W: Water
C: Cone SPT
S: Split spoon SPT

Cable Percussion Borehole Log

Contract No: 5811				Borehole No: **BH16**	
Contract:	Dundrum Central Development	Easting:	717118.130	Date Started:	07/09/2021
Location:	Dundrum, Dublin 14	Northing:	728960.452	Date Completed:	07/09/2021
Client:	Land Development Agency	Elevation:	45.00	Drilled By:	D. MacEoin
Engineer:	Barrett Mahony	Borehole Diameter:	200mm	Status:	FINAL

Depth (m)	Stratum Description	Level (mOD) Depth	Samples Depth	Type	Result	Water Strike	Backfill
	TOPSOIL.						
0.40	Firm brown sandy slightly gravelly silty CLAY with low cobble content.	44.60	1.00	B	CMH056		
			1.20	C	N=14 (2,2/3,2,4,5)		
1.80	Very stiff black sandy slightly gravelly silty CLAY with low cobble content.	43.20	2.00	B	CMH057		
			2.00	C	N=33 (3,4/7,7,9,10)		
			3.00	B	CMH058		
			3.00	C	N=39 (4,4/8,9,11,11)		
			4.00	B	CMH059		
			4.00	C	N=45 (5,7/10,11,12,12)		
			5.00	B	CMH060		
			5.00	C	N=43 (5,5/8,10,12,13)		
			6.00	B	CMH061		
			6.00	C	N=44 (6,5/9,11,12,12)		
			7.00	B	CMH062		
			7.00	C	N=47 (5,7/11,11,13,12)		
7.80	Obstruction - possible boulders.	37.20	7.90	C	50 (25 for 5mm/50 for 0mm)		
7.90	End of Borehole at 7.90m	37.10					

Chiselling From:	To:	Time:	Water Strikes Strike:	Rose:	Depth Sealed	Water Details Date:	Hole Depth:	Water Depth:	Installation From:	To:	Pipe:	Backfill From:	To:	Type:	Remarks
7.80	7.90	01:00	2.00	1.80	2.2	07/09	7.90	Dry				0.00	7.90	Arisings	Borehole terminated due to obstruction.
			4.50	4.10	5										

Legend:
B: Bulk
D: Disturbed
U: Undisturbed
ES: Environmental
W: Water
C: Cone SPT
S: Split spoon SPT

Appendix 2

Trial Pit Logs and Photographs

Trial Pit Log

Contract No: 5811					Trial Pit No: **TP01**
Contract:	Dundrum Central Development	Easting:	717085.526	Date:	30/08/2021
Location:	Dundrum, Dublin 14	Northing:	729239.061	Excavator:	JCB 3CX
Client:	Land Development Agency	Elevation:	44.25	Logged By:	M. Kaliski
Engineer:	Barrett Mahony	Dimensions (LxWxD) (m):	3.30 x 0.70 x 2.50	Status:	FINAL

Level (mbgl) Depth	Stratum Description	Level (mOD) Depth	Samples / Field Tests Depth	Type	Result	Water Strike
	TOPSOIL.					
0.20	MADE GROUND: dark grey slightly silty gravelly sand with some bone, pottery, timber and red bricks fragments.	44.05	0.30	ES	MK01	
0.90	Light grey silty very sandy fine to coarse, angular to subrounded GRAVEL of various lithologies with high cobble content. Sand is fine to coarse. Cobbles are angular to subrounded of various lithologies.	43.35	1.00	ES	MK02	
			1.50	B	MK03	
2.50	**Pit terminated at 2.50m**	41.75				

Scale (mbgl): 0.5, 1.0, 1.5, 2.0, 2.5, 3.0
Scale (mOD): 44.0, 43.5, 43.0, 42.5, 42.0, 41.5

Termination:	Pit Wall Stability:	Groundwater Rate:	Remarks:	Key:
Scheduled depth	Pit walls stable.	Dry	-	B = Bulk disturbed D = Small disturbed CBR = Undisturbed CBR ES = Environmental

Trial Pit Log

Contract No:	5811	Trial Pit No:	TP02

Contract:	Dundrum Central Development	Easting:	717251.172	Date:	31/08/2021
Location:	Dundrum, Dublin 14	Northing:	729280.658	Excavator:	JCB 3CX
Client:	Land Development Agency	Elevation:	43.99	Logged By:	M. Kaliski
Engineer:	Barrett Mahony	Dimensions (LxWxD) (m):	3.20 x 0.70 x 2.50	Status:	FINAL

Level (mbgl) Depth	Stratum Description	Level (mOD) Depth	Samples / Field Tests Depth	Type	Result	Water Strike
0.05	TOPSOIL.	43.94				
	MADE GROUND: dark grey gravelly sand with low cobble content and some coal fragments.		0.20	ES	MK04	
1.10	MADE GROUND: light grey very gravelly sand with low cobble content and some coal, concrete, glass and red brick fragments	42.89	1.40	ES	MK05	
2.20	Grey silty gravelly fine to coarse SAND with low cobble content. Gravel is fine to coarse, angular to subrounded of various lithologies. Cobbles are angular to subrounded of various lithologies.	41.79				
2.50	**Pit terminated at 2.50m**	41.49				

Scale (mbgl): 0.5, 1.0, 1.5, 2.0, 2.5, 3.0
Scale (mOD): 43.5, 43.0, 42.5, 42.0, 41.5, 41.0

Termination:	Pit Wall Stability:	Groundwater Rate:	Remarks:	Key:
Scheduled depth	Pit walls stable.	Dry	-	B = Bulk disturbed D = Small disturbed CBR = Undisturbed CBR ES = Environmental

Trial Pit Log

Contract No: 5811	Trial Pit Log				Trial Pit No: **TP03**
Contract:	Dundrum Central Development	Easting:	717329.636	Date:	23/08/2021
Location:	Dundrum, Dublin 14	Northing:	729286.170	Excavator:	JCB 3CX
Client:	Land Development Agency	Elevation:	41.57	Logged By:	M. Kaliski
Engineer:	Barrett Mahony	Dimensions (LxWxD) (m):	3.90 x 0.70 x 2.10	Status:	FINAL

Level (mbgl) Depth	Stratum Description	Legend	Level (mOD) Depth	Samples / Field Tests Depth	Type	Result	Water Strike
0.05	TOPSOIL.		41.52				
	MADE GROUND: black slightly silty gravelly sand with high cobble and low boulder content and some bone, concrete and red brick fragments.			0.30	ES	MK06	
1.00	Soft becoming firm sandy slightly gravelly silty CLAY with low cobble content. Sand is fine to coarse. Gravel is fine to coarse, angular to subrounded of various lithologies. Cobbles are angular to subrounded of various lithologies.		40.57	1.20	ES	MK07	
				1.50	B	MK08	
1.70	Firm grey brown slightly sandy slightly gravelly silty CLAY with high cobble and low boulder content. Sand is fine to coarse. Gravel is fine to coarse, angular to subrounded of various lithologies. Cobbles and boulders are angular to subrounded of various lithologies (up to 400mm diameter).		39.87				
2.10	Obstruction - boulders.		39.47				

Pit terminated at 2.10m

Termination:	Pit Wall Stability:	Groundwater Rate:	Remarks:	Key:
Obstruction - boulders.	Pit walls stable.	Dry	-	B = Bulk disturbed D = Small disturbed CBR = Undisturbed CBR ES = Environmental

Trial Pit Log

Contract No: 5811	Trial Pit No: TP04

Contract:	Dundrum Central Development	Easting:	716953.047	Date:	17/08/2021
Location:	Dundrum, Dublin 14	Northing:	729241.320	Excavator:	JCB 3CX
Client:	Land Development Agency	Elevation:	41.79	Logged By:	M. Kaliski
Engineer:	Barrett Mahony	Dimensions (LxWxD) (m):	3.60 x 0.55 x 2.50	Status:	FINAL

Level (mbgl) Depth	Stratum Description	Level (mOD) Depth	Samples / Field Tests Depth	Type	Result	Water Strike
	TOPSOIL.					
0.10	MADE GROUND: grey brown very sandy graves with high cobble content and some sea shells, glass and red bricks fragments.	41.69	0.40	ES	MK09	
0.70	Brown very silty sandy fine to coarse, angular to subrounded GRAVEL of various lithologies with high cobble content. Sand is fine to coarse. Cobbles are angular to subrounded of various lithologies.	41.09	1.00	B	MK10	
1.50	Grey brown silty very sandy fine to coarse, angular to subrounded GRAVEL of various lithologies with high cobble and low boulder content. Sand is fine to coarse. Cobbles and boulders are angular to subrounded of various lithologies (up to 400mm diameter).	40.29	1.50	ES	MK11	
			2.00	B	MK12	
2.50	**Pit terminated at 2.50m**	39.29				

Scale (mbgl): 0.5, 1.0, 1.5, 2.0, 2.5, 3.0

Scale (mOD): 41.5, 41.0, 40.5, 40.0, 39.5, 39.0

Termination:	Pit Wall Stability:	Groundwater Rate:	Remarks:	Key:
Scheduled depth	Pit walls stable.	Dry	-	B = Bulk disturbed D = Small disturbed CBR = Undisturbed CBR ES = Environmental

Trial Pit Log

Contract No:	Trial Pit Log	Trial Pit No:
5811		TP05

Contract:	Dundrum Central Development	Easting:	716922.392	Date:	21/09/2021
Location:	Dundrum, Dublin 14	Northing:	729191.442	Excavator:	JCB 3CX
Client:	Land Development Agency	Elevation:	43.63	Logged By:	M. Kaliski
Engineer:	Barrett Mahony	Dimensions (LxWxD) (m):	3.10 x 0.60 x 2.50	Status:	FINAL

Level (mbgl) Depth	Stratum Description	Level (mOD) Depth	Samples Depth	Type	Result	Water Strike
	TOPSOIL.					
0.10	MADE GROUND: light brown silty gravelly sand with low cobble content and some pottery fragments.	43.53	0.30	ES	MK13	
0.40	Light grey light brown slightly silty sandy fine to coarse, angular to subrounded GRAVEL of various lithologies with high cobble content. Sand is fine to coarse. Cobbles are angular to subrounded of various lithologies.	43.23	0.50 1.00 1.00	ES B ES	MK14 MK15 MK16	
1.80	Firm grey brown sandy slightly gravelly silty CLAY with high cobble content. Sand is fine to coarse. Gravel is fine to coarse, angular to subrounded of various lithologies. Cobbles are angular to subrounded of various lithologies.	41.83				
2.50	**Pit terminated at 2.50m**	41.13				

Termination:	Pit Wall Stability:	Groundwater Rate:	Remarks:	Key:
Scheduled depth	Pit walls stable.	Dry	-	B = Bulk disturbed D = Small disturbed CBR = Undisturbed CBR ES = Environmental

Trial Pit Log

Contract No: 5811	Trial Pit Log				Trial Pit No: TP06
Contract:	Dundrum Central Development	Easting:	716961.576	Date:	21/09/2021
Location:	Dundrum, Dublin 14	Northing:	729197.572	Excavator:	JCB 3CX
Client:	Land Development Agency	Elevation:	42.92	Logged By:	M. Kaliski
Engineer:	Barrett Mahony	Dimensions (LxWxD) (m):	3.40 x 0.60 x 2.50	Status:	FINAL

Level (mbgl) Depth	Stratum Description	Legend	Level (mOD) Depth	Samples / Field Tests Depth	Type	Result	Water Strike
0.20	TOPSOIL.		42.72				
2.10	Grey brown silty very sandy fine to coarse, angular to subrounded GRAVEL of various lithologies with high cobble content and occasional clay bands. Sand is fine to coarse. Cobbles are angular to subrounded of various lithologies.		40.82	0.30 1.00 1.00	ES B ES	MK17 MK18 MK19	2.10 ▼
2.50	Firm light grey sandy slightly gravelly silty CLAY with high cobble content. Sand is fine to coarse. Gravel is fine to coarse, angular to subrounded of various lithologies. Cobbles are angular to subrounded of various lithologies.		40.42				
	Pit terminated at 2.50m						

Termination:	Pit Wall Stability:	Groundwater Rate:	Remarks:	Key:
Scheduled depth	Pit walls stable.	2.10 Slow	-	B = Bulk disturbed D = Small disturbed CBR = Undisturbed CBR ES = Environmental

Trial Pit Log

Contract No:	5811			Trial Pit No:	TP07
Contract:	Dundrum Central Development	Easting:	717300.745	Date:	23/08/2021
Location:	Dundrum, Dublin 14	Northing:	729245.984	Excavator:	JCB 3CX
Client:	Land Development Agency	Elevation:	42.50	Logged By:	M. Kaliski
Engineer:	Barrett Mahony	Dimensions (LxWxD) (m):	3.40 x 0.70 x 2.50	Status:	FINAL

Level (mbgl) Depth	Stratum Description	Legend	Level (mOD) Depth	Samples / Field Tests Depth	Type	Result	Water Strike
	TOPSOIL.						
0.10	MADE GROUND: black silty gravelly sand with some bone and scrap metal fragments		42.40	0.30	ES	MK20	
0.40	MADE GROUND: brown sandy slightly gravelly silty clay with medium cobble content and occasional mortar fragments.		42.10	1.00	ES	MK21	
1.10	Firm grey brown sandy gravelly silty CLAY with medium cobble content. Sand is fine to coarse. Gravel is fine to coarse, angular to subrounded of various lithologies. Cobbles are angular to subrounded of various lithologies.		41.40	1.50	B	MK22	
2.50	**Pit terminated at 2.50m**		40.00				

Scale (mbgl): 0.5, 1.0, 1.5, 2.0, 2.5, 3.0
Scale (mOD): 42.0, 41.5, 41.0, 40.5, 40.0, 39.5

Termination:	Pit Wall Stability:	Groundwater Rate:	Remarks:	Key:
Scheduled depth	Pit walls stable.	Dry	-	B = Bulk disturbed D = Small disturbed CBR = Undisturbed CBR ES = Environmental

Trial Pit Log

Contract No: 5811				Trial Pit No:	**TP08**
Contract:	Dundrum Central Development	Easting:	717339.782	Date:	23/08/2021
Location:	Dundrum, Dublin 14	Northing:	729253.814	Excavator:	JCB 3CX
Client:	Land Development Agency	Elevation:	40.92	Logged By:	M. Kaliski
Engineer:	Barrett Mahony	Dimensions (LxWxD) (m):	3.20 x 0.70 x 2.50	Status:	FINAL

Level (mbgl) Depth	Stratum Description	Level (mOD) Depth	Samples / Field Tests Depth	Type	Result	Water Strike
	TOPSOIL.					
0.10	MADE GROUND: black silty slightly gravelly sand with some red brick fragments.	40.82	0.30	ES	MK23	
0.60	Firm grey brown slightly sandy slightly gravelly silty CLAY with high cobble content and frequent gravel laminas. Sand is fine to coarse. Gravel is fine to coarse, angular to subrounded of various lithologies. Cobbles are angular to subrounded of various lithologies.	40.32	1.00	ES	MK24	
			1.50	B	MK25	
2.20	Stiff black slightly sandy slightly gravelly silty CLAY with high cobble content. Sand is fine to coarse. Gravel is fine to coarse, angular to subrounded of various lithologies. Cobbles are angular to subrounded of various lithologies.	38.72				
2.50	**Pit terminated at 2.50m**	38.42				

Termination:	Pit Wall Stability:	Groundwater Rate:	Remarks:	Key:
Scheduled depth	Pit walls stable.	Dry	-	B = Bulk disturbed D = Small disturbed CBR = Undisturbed CBR ES = Environmental

Trial Pit Log

Contract No: 5811	Trial Pit Log				Trial Pit No: TP09
Contract:	Dundrum Central Development	Easting:	716960.867	Date:	21/09/2021
Location:	Dundrum, Dublin 14	Northing:	729152.350	Excavator:	JCB 3CX
Client:	Land Development Agency	Elevation:	43.95	Logged By:	M. Kaliski
Engineer:	Barrett Mahony	Dimensions (LxWxD) (m):	3.50 x 0.60 x 2.10	Status:	FINAL

Level (mbgl) Depth	Stratum Description	Legend	Level (mOD) Depth	Samples / Field Tests Depth	Type	Result	Water Strike
	TOPSOIL.						
0.20	Brown silty very sandy fine to coarse, angular to subrounded GRAVEL of various lithologies with high cobble and low boulder content. Sand is fine to coarse. Cobbles and boulders are angular to subrounded of various lithologies (up to 400mm diameter).		43.75	0.30	ES	MK26	
				1.00	B	MK27	
				1.00	ES	MK28	
				1.50	ES	MK29	
1.80	Firm grey brown slightly sandy slightly gravelly silty CLAY with high cobble and low boulder content. Sand is fine to coarse. Gravel is fine to coarse, angular to subrounded of various lithologies. Cobbles and boulders are angular to subrounded of various lithologies (up to 400mm diameter).		42.15				
2.10	Obstruction - boulders.		41.85				

Pit terminated at 2.10m

Termination:	Pit Wall Stability:	Groundwater Rate:	Remarks:	Key:
Obstruction - boulders.	Pit walls stable.	Dry	-	B = Bulk disturbed D = Small disturbed CBR = Undisturbed CBR ES = Environmental

Trial Pit Log

Contract No: 5811				Trial Pit No:	**TP10**
Contract:	Dundrum Central Development	Easting:	717000.196	Date:	21/09/2021
Location:	Dundrum, Dublin 14	Northing:	729150.369	Excavator:	JCB 3CX
Client:	Land Development Agency	Elevation:	44.08	Logged By:	M. Kaliski
Engineer:	Barrett Mahony	Dimensions (LxWxD) (m):	3.50 x 0.60 x 1.40	Status:	FINAL

Level (mbgl) Depth	Stratum Description	Legend	Level (mOD) Depth	Samples / Field Tests Depth	Type	Result	Water Strike
	TOPSOIL.						
0.20	MADE GROUND: grey brown silty very gravelly sand with some concrete blocks (1.20m long), red brick, timber, plastic bags and scrap metal fragments..		43.88	0.30	ES	MK30	
1.40	Refusal on concrete blocks		42.68	1.40	ES	MK31	

Pit terminated at 1.40m

Termination:	Pit Wall Stability:	Groundwater Rate:	Remarks:	Key:
Obstruction - boulders.	Pit walls stable.	Dry	-	B = Bulk disturbed D = Small disturbed CBR = Undisturbed CBR ES = Environmental

Trial Pit Log

Contract No: 5811					Trial Pit No: **TP11**
Contract:	Dundrum Central Development	Easting:	717039.859	Date:	21/09/2021
Location:	Dundrum, Dublin 14	Northing:	729149.313	Excavator:	JCB 3CX
Client:	Land Development Agency	Elevation:	44.70	Logged By:	M. Kaliski
Engineer:	Barrett Mahony	Dimensions (LxWxD) (m):	3.60 x 0.60 x 2.50	Status:	FINAL

Level (mbgl) Depth	Stratum Description	Level (mOD) Depth	Samples / Field Tests Depth	Type	Result	Water Strike
	TOPSOIL.					
0.10	MADE GROUND: dark grey slightly silty gravelly sand with some rags and red bricks fragments.	44.60	0.30	ES	MK32	
0.60	Firm brown slightly sandy slightly gravelly silty CLAY with low cobble content. Sand is fine to coarse. Gravel is fine to coarse, angular to subrounded of various lithologies. Cobbles are angular to subrounded of various lithologies.	44.10	1.00	ES	MK33	
1.10	Firm light brown sandy slightly gravelly silty CLAY. Sand is fine to coarse. Gravel is fine to coarse, angular to subrounded of various lithologies.	43.60	1.20	B	MK34	
1.60	Firm dark brown slightly sandy gravelly silty CLAY with medium cobble content. Sand is fine to coarse. Gravel is fine to coarse, angular to subrounded of various lithologies. Cobbles are angular to subrounded of various lithologies.	43.10				
1.80	Grey brown slightly silty gravelly fine to coarse SAND with high cobble content. Gravel is fine to coarse, angular to subrounded of various lithologies. Cobbles are angular to subrounded of various lithologies.	42.90				
2.50	**Pit terminated at 2.50m**	42.20				

Termination:	Pit Wall Stability:	Groundwater Rate:	Remarks:	Key:
Scheduled depth	Pit walls stable.	Dry	-	B = Bulk disturbed D = Small disturbed CBR = Undisturbed CBR ES = Environmental

Trial Pit Log

Contract No: 5811	Trial Pit Log	Trial Pit No: TP12

Contract:	Dundrum Central Development	Easting:	717073.856	Date:	21/09/2021
Location:	Dundrum, Dublin 14	Northing:	729116.202	Excavator:	JCB 3CX
Client:	Land Development Agency	Elevation:	45.63	Logged By:	M. Kaliski
Engineer:	Barrett Mahony	Dimensions (LxWxD) (m):	3.90 x 0.60 x 1.80	Status:	FINAL

Level (mbgl) Depth	Stratum Description	Level (mOD) Depth	Samples / Field Tests Depth	Type	Result	Water Strike
	TOPSOIL.					
0.10	MADE GROUND: grey brown very sandy gravel with high cobble content and some concrete and red brick fragments.	45.53	0.30	ES	MK35	
0.50	Grey brown silty sandy fine to coarse, angular to subrounded GRAVEL of various lithologies with high cobble and low boulder content. Sand is fine to coarse. Cobbles and boulders are angular to subrounded of various lithologies (up to 400mm diameter).	45.13	1.00 1.00	B ES	MK36 MK37	
1.80	Obstruction - boulders.	43.83				

Pit terminated at 1.80m

Termination:	Pit Wall Stability:	Groundwater Rate:	Remarks:	Key:
Obstruction - boulders.	Pit walls stable.	Dry	-	B = Bulk disturbed D = Small disturbed CBR = Undisturbed CBR ES = Environmental

Trial Pit Log

Contract No: 5811	Trial Pit Log				Trial Pit No: TP13
Contract:	Dundrum Central Development	Easting:	717131.226	Date:	31/08/2021
Location:	Dundrum, Dublin 14	Northing:	729149.861	Excavator:	JCB 3CX
Client:	Land Development Agency	Elevation:	44.70	Logged By:	M. Kaliski
Engineer:	Barrett Mahony	Dimensions (LxWxD) (m):	3.90 x 0.70 x 2.50	Status:	FINAL

Level (mbgl) Depth	Stratum Description	Level (mOD) Depth	Samples / Field Tests Depth	Type	Result	Water Strike
0.05	TOPSOIL.	44.65				
0.20	MADE GROUND: grey slightly silty gravelly sand with low cobble content and some red bricks fragments.	44.50				
0.90	Light brown slightly silty gravelly fine to coarse SAND with low cobble content. Gravel is fine to coarse, angular to subrounded of various lithologies. Cobbles are angular to subrounded of various lithologies.	43.80	0.30	ES	MK38	
2.50	Grey brown silty sandy fine to coarse, angular to subrounded GRAVEL of various lithologies with high cobble content. Sand is fine to coarse. Cobbles are angular to subrounded of various lithologies.	42.20	1.00	ES	MK39	
			1.50	B	MK40	
	Pit terminated at 2.50m					

Termination:	Pit Wall Stability:	Groundwater Rate:	Remarks:	Key:
Scheduled depth	Pit walls stable.	Dry	-	B = Bulk disturbed D = Small disturbed CBR = Undisturbed CBR ES = Environmental

Trial Pit Log

Contract No: 5811	Trial Pit Log			Trial Pit No: TP14
Contract:	Dundrum Central Development	Easting: 717202.755	Date:	31/08/2021
Location:	Dundrum, Dublin 14	Northing: 729166.921	Excavator:	JCB 3CX
Client:	Land Development Agency	Elevation: 44.28	Logged By:	M. Kaliski
Engineer:	Barrett Mahony	Dimensions (LxWxD) (m): 3.20 x 0.70 x 2.50	Status:	FINAL

Level (mbgl) Depth	Stratum Description	Level (mOD) Depth	Samples / Field Tests Depth	Type	Result	Water Strike
	TOPSOIL.					
0.10	MADE GROUND: grey brown slightly silty gravelly sand with some bone fragments.	44.18	0.30	ES	MK41	
0.50	Grey brown silty very sandy fine to coarse, angular to subrounded GRAVEL of various lithologies with high cobble content. Sand is fine to coarse. Cobbles are angular to subrounded of various lithologies.	43.78	1.00	ES	MK42	
			1.50	B	MK43	
2.50	**Pit terminated at 2.50m**	41.78				

Termination:	Pit Wall Stability:	Groundwater Rate:	Remarks:	Key:
Scheduled depth	Pit walls stable.	Dry	-	B = Bulk disturbed D = Small disturbed CBR = Undisturbed CBR ES = Environmental

Trial Pit Log

Contract No: 5811					Trial Pit No: TP15
Contract:	Dundrum Central Development	Easting:	717288.936	Date:	30/08/2021
Location:	Dundrum, Dublin 14	Northing:	729191.894	Excavator:	JCB 3CX
Client:	Land Development Agency	Elevation:	42.38	Logged By:	M. Kaliski
Engineer:	Barrett Mahony	Dimensions (LxWxD) (m):	3.10 x 0.70 x 2.50	Status:	FINAL

Level (mbgl) Depth	Stratum Description	Legend	Level (mOD) Depth	Samples / Field Tests Depth	Type	Result	Water Strike
0.05	TOPSOIL.		42.33				
0.30	MADE GROUND: grey slightly silty gravelly sand with some pottery fragments.		42.08	0.30	ES	MK44	
0.60	Soft light brown slightly sandy gravelly silty CLAY with medium cobble content. Sand is fine to coarse. Gravel is fine to coarse, angular to subrounded of various lithologies. Cobbles are angular to subrounded of various lithologies.		41.78				
1.10	Soft light brown slightly sandy gravelly silty CLAY with medium cobble content. Sand is fine to coarse. Gravel is fine to coarse, angular to subrounded of various lithologies. Cobbles are angular to subrounded of various lithologies.		41.28	0.70	B	MK45	
				1.00	ES	MK46	
2.30	Grey brown silty very sandy fine to coarse, angular to subrounded GRAVEL of various lithologies with high cobble content and low boulder content interbeded with very gravelly clay. Sand is fine to coarse. Cobbles and boulders are angular to subrounded of various lithologies (up to 400mm diameter).		40.08				
2.30	Grey brown silty sandy fine to coarse, angular to subrounded GRAVEL of various lithologies with high cobble content and low boulder content interbeded with very gravelly clay. Sand is fine to coarse. Cobbles and boulders are angular to subrounded of various lithologies (up to 400mm diameter).		40.08				
2.50	Stiff black slightly sandy slightly gravelly silty CLAY with high cobble content. Sand is fine to coarse. Gravel is fine to coarse, angular to subangular of limestone. Cobbles are angular to subangular of limestone.		39.88				

Pit terminated at 2.50m

Termination:	Pit Wall Stability:	Groundwater Rate:	Remarks:	Key:
Scheduled depth	Pit walls stable.	Dry	-	B = Bulk disturbed D = Small disturbed CBR = Undisturbed CBR ES = Environmental

Trial Pit Log

Contract No: 5811					Trial Pit No: **TP16**
Contract:	Dundrum Central Development	Easting:	717317.117	Date:	23/08/2021
Location:	Dundrum, Dublin 14	Northing:	729219.440	Excavator:	JCB 3CX
Client:	Land Development Agency	Elevation:	41.56	Logged By:	M. Kaliski
Engineer:	Barrett Mahony	Dimensions (LxWxD) (m):	3.30 x 0.70 x 2.50	Status:	FINAL

Level (mbgl) Depth	Stratum Description	Level (mOD) Depth	Samples Depth	Type	Result	Water Strike
	TOPSOIL.					
0.10	MADE GROUND: black silty slightly gravelly sand with some bone fragments.	41.46				
0.30	Soft brown sandy slightly gravelly silty CLAY with medium cobble and low boulder content. Sand is fine to coarse. Gravel is fine to coarse, angular to subrounded of various lithologies. Cobbles and boulders are angular to subrounded of various lithologies (up to 400mm diameter).	41.26	0.30	ES	MK47	
			0.60	ES	MK48	
1.00	Firm grey brown slightly sandy slightly gravelly silty CLAY with medium cobble content. Sand is fine to coarse. Gravel is fine to coarse, angular to subrounded of various lithologies. Cobbles are angular to subrounded of various lithologies.	40.56				
1.20	Firm becoming stiff grey brown sandy slightly gravelly silty CLAY with low cobble and boulder content and frequent gravel laminas. Sand is fine to coarse. Gravel is fine to coarse, angular to subrounded of various lithologies. Cobbles and boulders are angular to subrounded of various lithologies (up to 400mm diameter).	40.36				
			1.30	B	MK49	
						▼ (1.70)
1.90	Stiff black slightly sandy slightly gravelly silty CLAY with high cobble and low boulder content. Sand is fine to coarse. Gravel is fine to coarse, angular to subangular of limestone. Cobbles and boulders are angular to subangular of limestone (up to 400mm diameter).	39.66				
2.50	**Pit terminated at 2.50m**	39.06	2.50	B	MK50	

Termination:	Pit Wall Stability:	Groundwater Rate:	Remarks:	Key:
Scheduled depth	Pit walls stable.	1.70 Seepage	-	B = Bulk disturbed D = Small disturbed CBR = Undisturbed CBR ES = Environmental

Trial Pit Log

Contract No: 5811	Trial Pit Log				Trial Pit No: TP17
Contract:	Dundrum Central Development	Easting:	717200.401	Date:	30/08/2021
Location:	Dundrum, Dublin 14	Northing:	729124.677	Excavator:	JCB 3CX
Client:	Land Development Agency	Elevation:	43.46	Logged By:	M. Kaliski
Engineer:	Barrett Mahony	Dimensions (LxWxD) (m):	3.40 x 0.70 x 2.50	Status:	FINAL

Level (mbgl) Depth	Stratum Description	Level (mOD) Depth	Samples / Field Tests Depth	Type	Result	Water Strike
	TOPSOIL.					
0.20	MADE GROUND: black slightly silty gravelly sand with low cobble content and some pottery fragments.	43.26	0.30	ES	MK51	
0.50	Soft light brown sandy slightly gravelly silty CLAY with low cobble content. Sand is fine to coarse. Gravel is fine to coarse, angular to subrounded of various lithologies. Cobbles are angular to subrounded of various lithologies.	42.96	0.60	ES	MK52	
0.70	Soft becoming firm grey brown slightly sandy gravelly silty CLAY with low cobble content. Sand is fine to coarse. Gravel is fine to coarse, angular to subrounded of various lithologies. Cobbles are angular to subrounded of various lithologies.	42.76				
1.10	Grey brown very silty sandy fine to coarse, angular to subrounded GRAVEL of various lithologies with medium cobble content and frequent clay bands. Sand is fine to coarse. Cobbles are angular to subrounded of various lithologies.	42.36	1.50	B	MK53	1.80 ▼
1.90	Firm grey brown slightly sandy gravelly silty CLAY with high cobble and low boulder content. Sand is fine to coarse. Gravel is fine to coarse, angular to subrounded of various lithologies. Cobbles and boulders are angular to subrounded of various lithologies (up to 400mm diameter).	41.56				
2.40	Stiff black slightly sandy slightly gravelly silty CLAY with high cobble and low boulder content. Sand is fine to coarse. Gravel is fine to coarse, angular to subangular of limestone. Cobbles and boulders are angular to subangular of limestone (up to 400mm diameter).	41.06				
2.50	**Pit terminated at 2.50m**	40.96				

Termination:	Pit Wall Stability:	Groundwater Rate:	Remarks:	Key:
Scheduled depth	Pit walls stable.	1.80 Seepage	-	B = Bulk disturbed D = Small disturbed CBR = Undisturbed CBR ES = Environmental

Trial Pit Log

Contract No: 5811	Trial Pit No: TP18				
Contract:	Dundrum Central Development	Easting:	717217.891	Date:	30/08/2021
Location:	Dundrum, Dublin 14	Northing:	729130.297	Excavator:	JCB 3CX
Client:	Land Development Agency	Elevation:	43.22	Logged By:	M. Kaliski
Engineer:	Barrett Mahony	Dimensions (LxWxD) (m):	4.10 x 1.90 x 1.90	Status:	FINAL

Depth (mbgl)	Stratum Description	Level (mOD)
0.15	TOPSOIL.	43.07
0.45	MADE GROUND: grey slightly silty gravelly sand with low cobble content and some bone, pottery and red brick fragments.	42.77
0.60	Soft light brown slightly sandy gravelly silty CLAY with low cobble content. Sand is fine to coarse. Gravel is fine to coarse, angular to subrounded of various lithologies. Cobbles are angular to subrounded of various lithologies.	42.62
1.70	Soft becoming firm grey brown slightly sandy slightly gravelly silty CLAY with medium cobble content. Sand is fine to coarse. Gravel is fine to coarse, angular to subrounded of various lithologies. Cobbles are angular to subrounded of various lithologies.	41.52
1.90	Firm becoming stiff grey brown slightly sandy slightly gravelly silty CLAY with medium cobble and low boulder content. Sand is fine to coarse. Gravel is fine to coarse, angular to subrounded of various lithologies. Cobbles and boulders are angular to subrounded of various lithologies (up to 400mm diameter).	41.32
	Obstruction - boulders.	

Pit terminated at 1.90m

Samples / Field Tests

Depth	Type	Result
0.30	ES	MK54
1.00	ES	MK55
1.50	B	MK56

Water Strike: -

Termination:	Pit Wall Stability:	Groundwater Rate:	Remarks:	Key:
Obstruction - boulders.	Pit walls stable.	Dry	-	B = Bulk disturbed D = Small disturbed CBR = Undisturbed CBR ES = Environmental

Trial Pit Log

Contract No:	Trial Pit Log	Trial Pit No:
5811		TP19

Contract:	Dundrum Central Development	Easting:	717253.959	Date:	30/08/2021
Location:	Dundrum, Dublin 14	Northing:	729136.456	Excavator:	JCB 3CX
Client:	Land Development Agency	Elevation:	42.93	Logged By:	M. Kaliski
Engineer:	Barrett Mahony	Dimensions (LxWxD) (m):	3.30 x 0.70 x 2.50	Status:	FINAL

Level (mbgl) Depth	Stratum Description	Legend	Level (mOD) Depth	Samples / Field Tests Depth	Type	Result	Water Strike
	TOPSOIL.						
0.30	MADE GROUND: dark grey slightly silty gravelly sand with low cobble content and some bone, plastic bags and red brick fragments.		42.63	0.30	ES	MK57	
0.70	Soft light brown slightly sandy gravelly silty CLAY with low cobble content. Sand is fine to coarse. Gravel is fine to coarse, angular to subrounded of various lithologies. Cobbles are angular to subrounded of various lithologies.		42.23	0.80	ES	MK58	
0.90	Grey brown silty very sandy fine to coarse, angular to subrounded GRAVEL of various lithologies with high cobble content and low boulder content interbeded with very gravelly clay. Sand is fine to coarse. Cobbles and boulders are angular to subrounded of various lithologies (up to 400mm diameter).		42.03	1.50	B	MK59	2.10
2.20	Stiff black slightly sandy slightly gravelly silty CLAY with medium cobble content. Sand is fine to coarse. Gravel is fine to coarse, angular to subangular of limestone. Cobbles are angular to subangular of limestone.		40.73				
2.50	**Pit terminated at 2.50m**		40.43				

Termination:	Pit Wall Stability:	Groundwater Rate:	Remarks:	Key:
Scheduled depth	Pit walls stable.	2.10 Seepage	-	B = Bulk disturbed D = Small disturbed CBR = Undisturbed CBR ES = Environmental

Trial Pit Log

Contract No: 5811	Trial Pit No: TP20

Contract:	Dundrum Central Development	Easting:	717097.828	Date:	31/08/2021
Location:	Dundrum, Dublin 14	Northing:	729043.115	Excavator:	JCB 3CX
Client:	Land Development Agency	Elevation:	45.17	Logged By:	M. Kaliski
Engineer:	Barrett Mahony	Dimensions (LxWxD) (m):	3.40 x 0.70 x 2.50	Status:	FINAL

Level (mbgl) Depth	Stratum Description	Level (mOD) Depth	Sample Depth	Type	Result	Water Strike
0.05	TOPSOIL.	45.12				
	MADE GROUND: grey gravelly angular cobbles.					
0.40	MADE GROUND: grey brown sandy slightly gravelly silty clay with low cobble content and some red brick fragments.	44.77	0.40	ES	MK60	
0.70	Firm brown slightly sandy gravelly silty CLAY with high cobble content. Sand is fine to coarse. Gravel is fine to coarse, angular to subrounded of various lithologies. Cobbles are angular to subrounded of various lithologies.	44.47	0.80	ES	MK61	
1.00	Firm becoming stiff grey brown slightly sandy gravelly silty CLAY with medium cobble content. Sand is fine to coarse. Gravel is fine to coarse, angular to subrounded of various lithologies. Cobbles are angular to subrounded of various lithologies.	44.17	1.50	B	MK62	
1.90	Stiff black slightly sandy slightly gravelly silty CLAY with high cobble and low boulder content. Sand is fine to coarse. Gravel is fine to coarse, angular to subangular of limestone. Cobbles and boulders are angular to subangular of limestone (up to 400mm diamater).	43.27				
2.50	**Pit terminated at 2.50m**	42.67				

Termination:	Pit Wall Stability:	Groundwater Rate:	Remarks:	Key:
Scheduled depth	Pit walls stable.	Dry	-	B = Bulk disturbed D = Small disturbed CBR = Undisturbed CBR ES = Environmental

Trial Pit Log

Contract No: 5811	Trial Pit Log				Trial Pit No: TP22
Contract:	Dundrum Central Development	Easting:	717191.571	Date:	30/08/2021
Location:	Dundrum, Dublin 14	Northing:	729077.467	Excavator:	JCB 3CX
Client:	Land Development Agency	Elevation:	43.94	Logged By:	M. Kaliski
Engineer:	Barrett Mahony	Dimensions (LxWxD) (m):	3.50 x 0.65 x 2.50	Status:	FINAL

Level (mbgl) Depth	Stratum Description	Level (mOD) Depth	Samples Depth	Type	Result	Water Strike
	TOPSOIL.					
0.20	MADE GROUND: grey brown sandy slightly gravelly silty clay with low cobble content and some red brick and pottery fragments.	43.74	0.30	ES	MK63	
0.70	Soft brown sandy slightly gravelly silty CLAY with low cobble content. Sand is fine to coarse. Gravel is fine to coarse, angular to subrounded of various lithologies. Cobbles are angular to subrounded of various lithologies.	43.24				
0.90	Firm grey brown slightly sandy gravelly silty CLAY with low cobble content and occasional gravel laminas. Sand is fine to coarse. Gravel is fine to coarse, angular to subrounded of various lithologies. Cobbles are angular to subrounded of various lithologies.	43.04	1.00	ES	MK64	
			1.50	B	MK65	▼
2.20	Stiff black slightly sandy slightly gravelly silty CLAY with medium cobble and low boulder content. Sand is fine to coarse. Gravel is fine to coarse, angular to subangular of limestone. Cobbles and boulders are angular to subangular of limestone (up to 400mm diameter).	41.74				
2.50	**Pit terminated at 2.50m**	41.44				

Termination:	Pit Wall Stability:	Groundwater Rate:	Remarks:	Key:
Scheduled depth	Pit walls stable.	1.50 Seepage	-	B = Bulk disturbed D = Small disturbed CBR = Undisturbed CBR ES = Environmental

Trial Pit Log

Contract No: 5811	Trial Pit No: TP23

Contract:	Dundrum Central Development	Easting:	717249.227	Date:	23/08/2021
Location:	Dundrum, Dublin 14	Northing:	729086.732	Excavator:	JCB 3CX
Client:	Land Development Agency	Elevation:	43.57	Logged By:	M. Kaliski
Engineer:	Barrett Mahony	Dimensions (LxWxD) (m):	3.70 x 0.70 x 2.50	Status:	FINAL

Level (mbgl) Depth	Stratum Description	Level (mOD) Depth	Samples / Field Tests Depth	Type	Result	Water Strike
	TOPSOIL.					
0.10	MADE GROUND: grey brown silty gravelly sand with low cobble content and some red brick, pottery and bone fragments.	43.47	0.30	ES	MK66	
0.50	Soft light brown sandy slightly gravelly silty CLAY with medium cobble content. Sand is fine to coarse. Gravel is fine to coarse, angular to subrounded of various lithologies. Cobbles are angular to subrounded of various lithologies.	43.07	0.80	ES	MK67	
1.00	Firm grey brown slightly sandy slightly gravelly silty CLAY with high cobble content and occasional sand laminas. Sand is fine to coarse. Gravel is fine to coarse, angular to subrounded of various lithologies. Cobbles are angular to subrounded of various lithologies.	42.57	1.50	B	MK68	
2.10	Stiff black slightly sandy slightly gravelly silty CLAY with high cobble and low boulder content. Sand is fine to coarse. Gravel is fine to coarse, angular to subangular of limestone. Cobbles and boulders are angular to subangular of limestone (up to 400mm diameter).	41.47				
2.50	**Pit terminated at 2.50m**	41.07				

Termination:	Pit Wall Stability:	Groundwater Rate:	Remarks:	Key:
Scheduled depth	Pit walls stable.	Dry	-	B = Bulk disturbed D = Small disturbed CBR = Undisturbed CBR ES = Environmental

Contract No: 5811	Trial Pit Log	Trial Pit No: **TP24**

Contract:	Dundrum Central Development	Easting:	717267.340	Date:	23/08/2021
Location:	Dundrum, Dublin 14	Northing:	729099.545	Excavator:	JCB 3CX
Client:	Land Development Agency	Elevation:	43.92	Logged By:	M. Kaliski
Engineer:	Barrett Mahony	Dimensions (LxWxD) (m):	3.50 x 0.70 x 2.60	Status:	FINAL

Level (mbgl) Depth	Stratum Description	Level (mOD) Depth	Samples Depth	Type	Result	Water Strike
0.05	TOPSOIL.	43.87				
	MADE GROUND: grey silty gravelly sand with high cobble content and some concrete and stone brick fragments.		0.30	ES	MK69	
0.40	MADE GROUND: grey brown silty gravelly sand with high cobble content and some pottery fragments.	43.52				
0.90	MADE GROUND: grey brown sandy slightly gravelly silty clay with low cobble content and some red brick and pottery fragments.	43.02	1.00	ES	MK70	
1.10	Soft light brown sandy slightly gravelly silty CLAY with medium cobble content. Sand is fine to coarse. Gravel is fine to coarse, angular to subrounded of various lithologies. Cobbles are angular to subrounded of various lithologies.	42.82				
1.40	Firm grey brown sandy slightly gravelly silty CLAY with high cobble content and occasional sand laminas. Sand is fine to coarse. Gravel is fine to coarse, angular to subrounded of various lithologies. Cobbles are angular to subrounded of various lithologies.	42.52	1.50	B	MK71	
2.60	**Pit terminated at 2.60m**	41.32				

Termination:	Pit Wall Stability:	Groundwater Rate:	Remarks:	Key:
Scheduled depth	Pit walls stable.	Dry	-	B = Bulk disturbed D = Small disturbed CBR = Undisturbed CBR ES = Environmental

Trial Pit Log

Contract No: 5811	Trial Pit Log				Trial Pit No: TP25
Contract:	Dundrum Central Development	Easting:	717124.211	Date:	19/08/2021
Location:	Dundrum, Dublin 14	Northing:	729009.977	Excavator:	JCB 3CX
Client:	Land Development Agency	Elevation:	44.91	Logged By:	M. Kaliski
Engineer:	Barrett Mahony	Dimensions (LxWxD) (m):	3.60 x 0.70 x 2.50	Status:	FINAL

Level (mbgl) Depth	Stratum Description	Level (mOD) Depth	Samples Depth	Type	Result	Water Strike
	TOPSOIL.					
0.10	MADE GROUND: grey brown silty gravelly sand with low cobble content and some red brick and pottery fragments.	44.81	0.30	ES	MK72	
0.70	Soft light brown sandy slightly gravelly silty CLAY with high cobble content. Sand is fine to coarse. Gravel is fine to coarse, angular to subrounded of various lithologies. Cobbles are angular to subrounded of various lithologies.	44.21	1.00	ES	MK73	
1.30	Firm grey brown slightly sandy slightly gravelly silty CLAY with high cobble and low boulder content and some sand laminas. Sand is fine to coarse. Gravel is fine to coarse, angular to subrounded of various lithologies. Cobbles and boulders are angular to subrounded of various lithologies (up to 300mm diameter).	43.61	1.50	B	MK74	2.10 ▼
2.40	Stiff black slightly sandy slightly gravelly silty CLAY with high cobble and low boulder content. Sand is fine to coarse. Gravel is fine to coarse, angular to subangular of limestone. Cobbles and boulders are angular to subangular of limestone (up to 400mm diameter).	42.51				
2.50		42.41	2.50	B	MK75	

Pit terminated at 2.50m

Termination:	Pit Wall Stability:	Groundwater Rate:	Remarks:	Key:
Scheduled depth	Pit walls stable.	2.10 Seepage	-	B = Bulk disturbed D = Small disturbed CBR = Undisturbed CBR ES = Environmental

Trial Pit Log

Contract No: 5811	Trial Pit Log	Trial Pit No: **TP26**

Contract:	Dundrum Central Development	Easting:	717162.543	Date:	19/08/2021
Location:	Dundrum, Dublin 14	Northing:	729028.032	Excavator:	JCB 3CX
Client:	Land Development Agency	Elevation:	44.86	Logged By:	M. Kaliski
Engineer:	Barrett Mahony	Dimensions (LxWxD) (m):	3.40 x 0.70 x 2.50	Status:	FINAL

Depth (mbgl)	Stratum Description	Level (mOD)	Samples Depth	Type	Result	Water Strike
	TOPSOIL.					
0.10	MADE GROUND: grey brown silty gravelly sand with low cobble content and some red brick and pottery fragments.	44.76	0.30	ES	MK76	
1.10	Soft light brown sandy slightly gravelly silty CLAY with low cobble content. Sand is fine to coarse. Gravel is fine to coarse, angular to subrounded of various lithologies. Cobbles are angular to subrounded of various lithologies.	43.76	1.20	ES	MK77	
1.30	Firm grey brown slightly sandy gravelly silty CLAY with high cobble content and frequent gravel laminas. Sand is fine to coarse. Gravel is fine to coarse, angular to subrounded of various lithologies. Cobbles are angular to subrounded of various lithologies.	43.56	1.50	B	MK78	▼ (1.90)
2.50	**Pit terminated at 2.50m**	42.36				

Termination:	Pit Wall Stability:	Groundwater Rate:	Remarks:	Key:
Scheduled depth	Pit walls stable.	1.90 Seepage	-	B = Bulk disturbed D = Small disturbed CBR = Undisturbed CBR ES = Environmental

Trial Pit Log

Contract No: 5811	Trial Pit No: TP27

Contract:	Dundrum Central Development	Easting:	717196.339	Date:	30/08/2021
Location:	Dundrum, Dublin 14	Northing:	729050.889	Excavator:	JCB 3CX
Client:	Land Development Agency	Elevation:	43.80	Logged By:	M. Kaliski
Engineer:	Barrett Mahony	Dimensions (LxWxD) (m):	3.60 x 0.70 x 2.50	Status:	FINAL

Level (mbgl) Depth	Stratum Description	Level (mOD) Depth	Samples / Field Tests Depth	Type	Result	Water Strike
	TOPSOIL.					
0.20	MADE GROUND: grey brown sandy slightly gravelly silty clay with low cobble content and some bone fragments.	43.60	0.30	ES	MK79	
0.50	Firm grey brown slightly sandy slightly gravelly silty CLAY with high cobble and low boulder content and occasional gravel laminas. Sand is fine to coarse. Gravel is fine to coarse, angular to subrounded of various lithologies. Cobbles and boulders are angular to subrounded of various lithologies (up to 300mm diameter).	43.30	1.00	ES	MK80	
			1.50	B	MK81	
						1.80
2.10	Stiff black slightly sandy slightly gravelly silty CLAY with medium cobble and low boulder content. Sand is fine to coarse. Gravel is fine to coarse, angular to subangular of limestone. Cobbles and boulders are angular to subangular of limestone (up to 400mm diameter).	41.70				
2.50	**Pit terminated at 2.50m**	41.30				

Termination:	Pit Wall Stability:	Groundwater Rate:	Remarks:	Key:
Scheduled depth	Pit walls stable.	1.80 Slow	-	B = Bulk disturbed D = Small disturbed CBR = Undisturbed CBR ES = Environmental

Trial Pit Log

Contract No: 5811				Trial Pit No:	**TP28**
Contract:	Dundrum Central Development	Easting:	717273.304	Date:	20/08/2021
Location:	Dundrum, Dublin 14	Northing:	729052.714	Excavator:	JCB 3CX
Client:	Land Development Agency	Elevation:	43.86	Logged By:	M. Kaliski
Engineer:	Barrett Mahony	Dimensions (LxWxD) (m):	3.40 x 0.70 x 2.50	Status:	FINAL

Level (mbgl) Depth	Stratum Description	Level (mOD) Depth	Samples / Field Tests Depth	Type	Result	Water Strike
	TOPSOIL.					
0.15	MADE GROUND: grey brown silty gravelly sand with low cobble content and some red brick and pottery fragments.	43.71	0.30	ES	MK82	
0.45	Soft light brown sandy slightly gravelly silty CLAY with medium cobble content. Sand is fine to coarse. Gravel is fine to coarse, angular to subrounded of various lithologies. Cobbles are angular to subrounded of various lithologies.	43.41				
0.80	Firm grey brown slightly sandy slightly gravelly silty CLAY with high cobble and low boulder content and occasional sand laminas. Sand is fine to coarse. Gravel is fine to coarse, angular to subrounded of various lithologies. Cobbles and boulders are angular to subrounded of various lithologies (up to 300mm diameter).	43.06	1.00	ES	MK83	
			1.50	B	MK84	
2.20	Stiff black slightly sandy slightly gravelly silty CLAY with high cobble and low boulder content. Sand is fine to coarse. Gravel is fine to coarse, angular to subangular of limestone. Cobbles and boulders are angular to subangular of limestone (up to 400mm diameter).	41.66				
2.50	**Pit terminated at 2.50m**	41.36				

Termination:	Pit Wall Stability:	Groundwater Rate:	Remarks:	Key:
Scheduled depth	Pit walls stable.	Dry	-	B = Bulk disturbed D = Small disturbed CBR = Undisturbed CBR ES = Environmental

Contract No: 5811	# Trial Pit Log	Trial Pit No: **TP29**

Contract:	Dundrum Central Development	Easting:	717324.760	Date:	20/08/2021
Location:	Dundrum, Dublin 14	Northing:	729067.262	Excavator:	JCB 3CX
Client:	Land Development Agency	Elevation:	43.40	Logged By:	M. Kaliski
Engineer:	Barrett Mahony	Dimensions (LxWxD) (m):	3.50 x 0.70 x 2.40	Status:	FINAL

Level (mbgl) Depth	Stratum Description	Level (mOD) Depth	Samples / Field Tests Depth	Type	Result	Water Strike
	TOPSOIL.					
0.10	MADE GROUND: grey brown sandy slightly gravelly silty clay with medium cobble content and some red brick and bone fragments.	43.30	0.30	ES	MK85	
0.60	Soft light brown sandy slightly gravelly silty CLAY with medium cobble content. Sand is fine to coarse. Gravel is fine to coarse, angular to subrounded of various lithologies. Cobbles are angular to subrounded of various lithologies.	42.80				
0.70	Firm grey brown slightly sandy gravelly silty CLAY with medium cobble and low boulder content and occasional sand laminas. Sand is fine to coarse. Gravel is fine to coarse, angular to subrounded of various lithologies. Cobbles and boulders are angular to subrounded of various lithologies (up to 300mm diameter).	42.70	1.00	ES	MK86	
			1.50	B	MK87	
2.10	Stiff black slightly sandy slightly gravelly silty CLAY with high cobble and low boulder content. Sand is fine to coarse. Gravel is fine to coarse, angular to subangular of limestone. Cobbles and boulders are angular to subangular of limestone (up to 400mm diameter).	41.30				
2.40	Obstruction - boulders.	41.00				

Pit terminated at 2.40m

Termination:	Pit Wall Stability:	Groundwater Rate:	Remarks:	Key:
Obstruction - boulders.	Pit walls stable.	Dry	Ceramic drainage pipe at 1.00mbgl.	B = Bulk disturbed D = Small disturbed CBR = Undisturbed CBR ES = Environmental

Trial Pit Log

Contract No:	Trial Pit Log	Trial Pit No:
5811		TP30

Contract:	Dundrum Central Development	Easting:	717136.958	Date:	19/08/2021
Location:	Dundrum, Dublin 14	Northing:	728977.260	Excavator:	JCB 3CX
Client:	Land Development Agency	Elevation:	44.78	Logged By:	M. Kaliski
Engineer:	Barrett Mahony	Dimensions (LxWxD) (m):	3.30 x 0.70 x 2.50	Status:	FINAL

Level (mbgl) Depth	Stratum Description	Level (mOD) Depth	Samples / Field Tests Depth	Type	Result	Water Strike
0.05	TOPSOIL.	44.73				
0.50	MADE GROUND: grey brown silty gravelly sand with low cobble content and some pottery fragments.	44.28	0.30	ES	MK88	
1.10	Soft light brown slightly sandy slightly gravelly silty CLAY with medium cobble content. Sand is fine to coarse. Gravel is fine to coarse, angular to subrounded of various lithologies. Cobbles are angular to subrounded of various lithologies.	43.68	0.60	B	MK89	
			0.90	ES	MK90	
2.00	Firm grey brown slightly sandy gravelly silty CLAY with high cobble content and occasional sand laminas. Sand is fine to coarse. Gravel is fine to coarse, angular to subrounded of various lithologies. Cobbles are angular to subrounded of various lithologies.	42.78				▼ (1.30)
2.50	Stiff black slightly sandy slightly gravelly silty CLAY with high cobble and medium boulder content. Sand is fine to coarse. Gravel is fine to coarse, angular to subangular of limestone. Cobbles and boulders are angular to subangular of limestone (up to 400mm diameter).	42.28				

Pit terminated at 2.50m

Termination:	Pit Wall Stability:	Groundwater Rate:	Remarks:	Key:
Scheduled depth	Pit walls stable.	1.30 Seepage	-	B = Bulk disturbed D = Small disturbed CBR = Undisturbed CBR ES = Environmental

Trial Pit Log

Contract No: 5811					Trial Pit No: **TP31**
Contract:	Dundrum Central Development	Easting:	717176.242	Date:	19/08/2021
Location:	Dundrum, Dublin 14	Northing:	728991.286	Excavator:	JCB 3CX
Client:	Land Development Agency	Elevation:	44.56	Logged By:	M. Kaliski
Engineer:	Barrett Mahony	Dimensions (LxWxD) (m):	3.00 x 0.70 x 2.60	Status:	FINAL

Level (mbgl) Depth	Stratum Description	Level (mOD) Depth	Samples / Field Tests Depth	Type	Result	Water Strike
	TOPSOIL.					
0.15	MADE GROUND: grey brown silty gravelly sand with low cobble content and some red brick and pottery fragments.	44.41	0.30	ES	MK91	
0.50	Soft light brown sandy slightly gravelly silty CLAY with low cobble content. Sand is fine to coarse. Gravel is fine to coarse, angular to subrounded of various lithologies. Cobbles are angular to subrounded of various lithologies.	44.06	0.80	B	MK92	
1.10	Firm grey brown slightly sandy slightly gravelly silty CLAY with high cobble content and some sand laminas. Sand is fine to coarse. Gravel is fine to coarse, angular to subrounded of various lithologies. Cobbles are angular to subrounded of various lithologies.	43.46	1.50	ES	MK93	
						▼ (1.80)
			1.90	B	MK94	
2.30	Stiff black slightly sandy slightly gravelly silty CLAY with high cobble and low boulder content. Sand is fine to coarse. Gravel is fine to coarse, angular to subangular of limestone. Cobbles and boulders are angular to subangular of limestone (up to 400mm diameter).	42.26				
2.60	**Pit terminated at 2.60m**	41.96				

Termination:	Pit Wall Stability:	Groundwater Rate:	Remarks:	Key:
Scheduled depth	Pit walls stable.	1.80 Seepage	-	B = Bulk disturbed D = Small disturbed CBR = Undisturbed CBR ES = Environmental

Trial Pit Log

Contract No:	5811			Trial Pit No:	TP32
Contract:	Dundrum Central Development	Easting:	717215.982	Date:	19/08/2021
Location:	Dundrum, Dublin 14	Northing:	729002.741	Excavator:	JCB 3CX
Client:	Land Development Agency	Elevation:	44.27	Logged By:	M. Kaliski
Engineer:	Barrett Mahony	Dimensions (LxWxD) (m):	3.60 x 0.60 x 2.50	Status:	FINAL

Level (mbgl) Depth	Stratum Description	Level (mOD) Depth	Samples / Field Tests Depth	Type	Result	Water Strike
	TOPSOIL.					
0.10	MADE GROUND: grey brown silty gravelly sand with low cobble content and some red brick, pottery and bone fragments.	44.17	0.30	ES	MK95	
0.50	Soft light brown sandy slightly gravelly silty CLAY with medium cobble content. Sand is fine to coarse. Gravel is fine to coarse, angular to subrounded of various lithologies. Cobbles are angular to subrounded of various lithologies.	43.77	0.80	B	MK96	
0.90	Firm grey brown slightly sandy gravelly silty CLAY with high cobble content and occasional sand laminas. Sand is fine to coarse. Gravel is fine to coarse, angular to subrounded of various lithologies. Cobbles are angular to subrounded of various lithologies.	43.37	1.00	ES	MK97	▼ (approx. 1.60)
2.20	Stiff black slightly sandy slightly gravelly silty CLAY with high cobble and medium boulder content. Sand is fine to coarse. Gravel is fine to coarse, angular to subangular of limestone. Cobbles and boulders are angular to subangular of limestone (up to 400mm diameter).	42.07				
2.50	**Pit terminated at 2.50m**	41.77	2.50	B	MK98	

Termination:	Pit Wall Stability:	Groundwater Rate:	Remarks:	Key:
Scheduled depth	Pit walls stable.	1.60 Seepage	-	B = Bulk disturbed D = Small disturbed CBR = Undisturbed CBR ES = Environmental

Trial Pit Log

Contract No: 5811	Trial Pit Log	Trial Pit No: **TP33**

Contract:	Dundrum Central Development	Easting:	717251.879	Date:	19/08/2021
Location:	Dundrum, Dublin 14	Northing:	729014.955	Excavator:	JCB 3CX
Client:	Land Development Agency	Elevation:	44.29	Logged By:	M. Kaliski
Engineer:	Barrett Mahony	Dimensions (LxWxD) (m):	3.50 x 0.60 x 2.50	Status:	FINAL

Depth (mbgl)	Stratum Description	Level (mOD)	Sample Depth	Type	Result	Water Strike
0.00	TOPSOIL.	44.29				
	MADE GROUND: grey brown silty gravelly sand with low cobble content and some red brick and bone fragments.		0.30	ES	MK99	
0.60	MADE GROUND: grey brown sandy gravelly silty clay with medium cobble content and some red brick fragments.	43.69	1.00	ES	MK100	
1.10	Firm grey brown slightly sandy slightly gravelly silty CLAY with high cobble content. Sand is fine to coarse. Gravel is fine to coarse, angular to subrounded of various lithologies. Cobbles are angular to subrounded of various lithologies.	43.19	1.50	B	MK101	
2.20	Stiff black slightly sandy slightly gravelly silty CLAY with high cobble and medium boulder content. Sand is fine to coarse. Gravel is fine to coarse, angular to subangular of limestone. Cobbles and boulders are angular to subangular of limestone (up to 400mm diameter).	42.09				
2.50	**Pit terminated at 2.50m**	41.79				

Termination:	Pit Wall Stability:	Groundwater Rate:	Remarks:	Key:
Scheduled depth	Pit walls stable.	Dry	-	B = Bulk disturbed D = Small disturbed CBR = Undisturbed CBR ES = Environmental

Trial Pit Log

Contract No:	5811	Trial Pit No:	TP34

Contract:	Dundrum Central Development	Easting:	717290.009	Date:	20/08/2021
Location:	Dundrum, Dublin 14	Northing:	729024.903	Excavator:	JCB 3CX
Client:	Land Development Agency	Elevation:	44.02	Logged By:	M. Kaliski
Engineer:	Barrett Mahony	Dimensions (LxWxD) (m):	3.10 x 0.70 x 2.50	Status:	FINAL

Level (mbgl) Depth	Stratum Description	Level (mOD) Depth	Samples / Field Tests Depth	Type	Result	Water Strike
	TOPSOIL.					
0.15	MADE GROUND: grey brown silty gravelly sand with high cobble content and some red brick, pottery and bone fragments.	43.87	0.30	ES	MK102	
0.60	Soft light brown sandy slightly gravelly silty CLAY with medium cobble content. Sand is fine to coarse. Gravel is fine to coarse, angular to subrounded of various lithologies. Cobbles are angular to subrounded of various lithologies.	43.42	0.80 0.80	B ES	MK103 MK104	
1.00	Firm grey brown slightly sandy gravelly silty CLAY with high cobble and low boulder content and occasional sand laminas. Sand is fine to coarse. Gravel is fine to coarse, angular to subrounded of various lithologies. Cobbles and boulders are angular to subrounded of various lithologies (up to 300mm diameter).	43.02				▼ (1.50)
2.20	Stiff black slightly sandy slightly gravelly silty CLAY with high cobble and low boulder content. Sand is fine to coarse. Gravel is fine to coarse, angular to subangular of limestone. Cobbles and boulders are angular to subangular of limestone (up to 400mm diameter).	41.82	2.20	B	MK105	
2.50	**Pit terminated at 2.50m**	41.52				

Termination:	Pit Wall Stability:	Groundwater Rate:	Remarks:	Key:
Scheduled depth	Pit walls stable.	1.50 Seepage	-	B = Bulk disturbed D = Small disturbed CBR = Undisturbed CBR ES = Environmental

Trial Pit Log

Contract No: 5811					Trial Pit No: TP35
Contract:	Dundrum Central Development	Easting:	717329.846	Date:	20/08/2021
Location:	Dundrum, Dublin 14	Northing:	729039.443	Excavator:	JCB 3CX
Client:	Land Development Agency	Elevation:	43.64	Logged By:	M. Kaliski
Engineer:	Barrett Mahony	Dimensions (LxWxD) (m):	3.50 x 0.70 x 2.50	Status:	FINAL

Level (mbgl) Depth	Stratum Description	Level (mOD) Depth	Samples / Field Tests Depth	Type	Result	Water Strike
	TOPSOIL.					
0.20	MADE GROUND: grey brown silty gravelly sand with medium cobble content and some red brick, pottery and bone fragments.	43.44	0.30	ES	MK106	
0.50	Firm grey brown slightly sandy slightly gravelly silty CLAY with high cobble content and occasional sand laminas. Sand is fine to coarse. Gravel is fine to coarse, angular to subrounded of various lithologies. Cobbles are angular to subrounded of various lithologies.	43.14	1.00 1.00	B ES	MK107 MK108	
2.10	Stiff black slightly sandy slightly gravelly silty CLAY with high cobble and low boulder content. Sand is fine to coarse. Gravel is fine to coarse, angular to subangular of limestone. Cobbles and boulders are angular to subangular of limestone (up to 400mm diameter).	41.54				
2.50	**Pit terminated at 2.50m**	41.14	2.50	B	MK109	

Termination:	Pit Wall Stability:	Groundwater Rate:	Remarks:	Key:
Scheduled depth	Pit walls stable.	Dry	Ceramic drainage pipe at 1.10mbgl.	B = Bulk disturbed D = Small disturbed CBR = Undisturbed CBR ES = Environmental

Trial Pit Log

Contract No: 5811	Trial Pit Log				Trial Pit No: TP36
Contract:	Dundrum Central Development	Easting:	717307.779	Date:	23/08/2021
Location:	Dundrum, Dublin 14	Northing:	729278.564	Excavator:	JCB 3CX
Client:	Land Development Agency	Elevation:	41.83	Logged By:	M. Kaliski
Engineer:	Barrett Mahony	Dimensions (LxWxD) (m):	3.20 x 0.70 x 2.00	Status:	FINAL

Level (mbgl) Depth	Stratum Description	Legend	Level (mOD) Depth	Samples / Field Tests Depth	Type	Result	Water Strike
0.05	TOPSOIL.		41.78				
0.50	MADE GROUND: black silty gravelly sand with medium cobble content and some red brick, ash and plastic bag fragments.		41.33	0.30	ES	MK110	
1.10	MADE GROUND: brown sandy gravelly silty clay with low cobble content and some red brick and pottery fragments.		40.73	0.80	ES	MK111	
1.50	Grey brown silty gravelly fine to coarse SAND with low cobble content and occasional clay bands and gravel laminas. Gravel is fine to coarse, angular to subrounded of various lithologies. Cobbles are angular to subrounded of various lithologies.		40.33	1.30	B	MK112	
2.00	Firm grey brown slightly sandy gravelly silty CLAY with medium cobble content and occasional sand laminas. Sand is fine to coarse. Gravel is fine to coarse, angular to subrounded of various lithologies. Cobbles are angular to subrounded of various lithologies.		39.83				
	Obstruction - boulders.						

Pit terminated at 2.00m

Scale (mbgl): 0.5, 1.0, 1.5, 2.0, 2.5, 3.0

Scale (mOD): 41.5, 41.0, 40.5, 40.0, 39.5, 39.0

Termination:	Pit Wall Stability:	Groundwater Rate:	Remarks:	Key:
Obstruction - boulders.	Pit walls stable.	Dry		B = Bulk disturbed D = Small disturbed CBR = Undisturbed CBR ES = Environmental

TP01 Sidewall

TP01 Spoil

TP02 Sidewall

TP02 Spoil

TP03 Sidewall

TP03 Spoil

TP04 Sidewall

TP04 Spoil

TP05 Sidewall

TP05 Spoil

TP06 Sidewall

TP06 Spoil

TP07 Sidewall

TP07 Spoil

TP08 Sidewall

TP08 Spoil

TP09 Sidewall

TP09 Spoil

TP10 Sidewall

TP10 Spoil

TP11 Sidewall

TP11 Spoil

TP12 Sidewall

TP12 Spoil

TP13 Sidewall

TP13 Spoil

TP14 Sidewall

TP14 Spoil

TP15 Sidewall

TP15 Spoil

TP16 Sidewall

TP16 Spoil

TP17 Sidewall

TP17 Spoil

TP18 Sidewall

TP18 Spoil

TP19 Sidewall

TP19 Spoil

TP20 Sidewall

TP20 Spoil

TP22 Sidewall

TP22 Spoil

TP23 Sidewall

TP23 Spoil

TP24 Sidewall

TP24 Spoil

TP25 Sidewall

TP25 Spoil

TP26 Sidewall

TP26 Spoil

TP27 Sidewall

TP27 Spoil

TP28 Sidewall

TP28 Spoil

TP29 Sidewall

TP29 Spoil

TP30 Sidewall

TP30 Spoil

TP31 Sidewall

TP31 Spoil

TP32 Sidewall

TP32 Spoil

TP33 Sidewall

TP33 Spoil

TP34 Sidewall

TP34 Spoil

TP35 Sidewall

TP35 Spoil

TP36 Sidewall

TP36 Spoil

Appendix 3

Soakaway Test Results and Photographs

SOAKAWAY TEST

Project Reference:	5811
Contract name:	Dundrum Central Development
Location:	Drundrum, Dublin 14
Test No:	SA01
Date:	17/08/2021

Ground Conditions

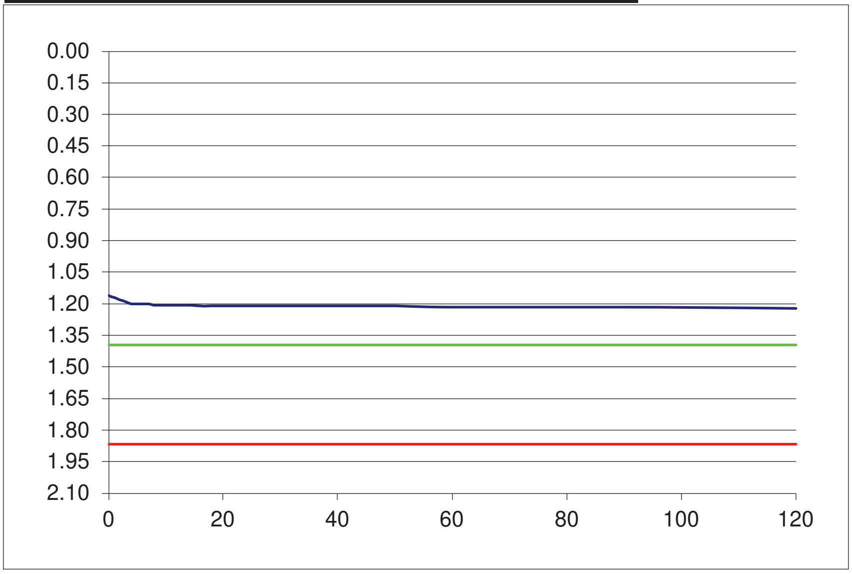
From	To	
0.00	0.10	TOPSOIL.
0.10	0.80	MADE GROUND: brown silty gravelly sand with high cobble content, shell fragments and some red brick and glass fragments.
0.80	1.90	Grey silty sandy GRAVEL with high cobble content.
1.90	2.10	Stiff black sandy slightly gravelly silty CLAY with high cobble content.

Remarks:

-

Elapsed Time (mins)	Fall of Water (m)
0	1.16
0.5	1.17
1	1.17
1.5	1.18
2	1.18
2.5	1.19
3	1.19
3.5	1.20
4	1.20
4.5	1.20
5	1.20
6	1.20
7	1.20
8	1.21
9	1.21
10	1.21
12	1.21
14	1.21
16	1.21
18	1.21
20	1.21
25	1.21
30	1.21
40	1.21
50	1.21
60	1.22
75	1.22
90	1.22
120	1.22

Pit Dimensions (m)		
Length (m)	2.60	m
Width (m)	0.60	m
Depth	2.10	m
Water		
Start Depth of Water	1.16	m
Depth of Water	0.94	m
75% Full	1.40	m
25% Full	1.87	m
75%-25%	0.47	m
Volume of water (75%-25%)	**0.73**	m3
Area of Drainage	**13.44**	m2
Area of Drainage (75%-25%)	**4.57**	m2
Time		
75% Full	N/A	min
25% Full	N/A	min
Time 75% to 25%	**N/A**	min
Time 75% to 25% (sec)	**N/A**	sec



f = **Fail** m/min or **Fail** m/s

SOAKAWAY TEST

Project Reference:	5811
Contract name:	Dundrum Central Development
Location:	Drundrum, Dublin 14
Test No:	SA02
Date:	17/08/2021

Ground Conditions

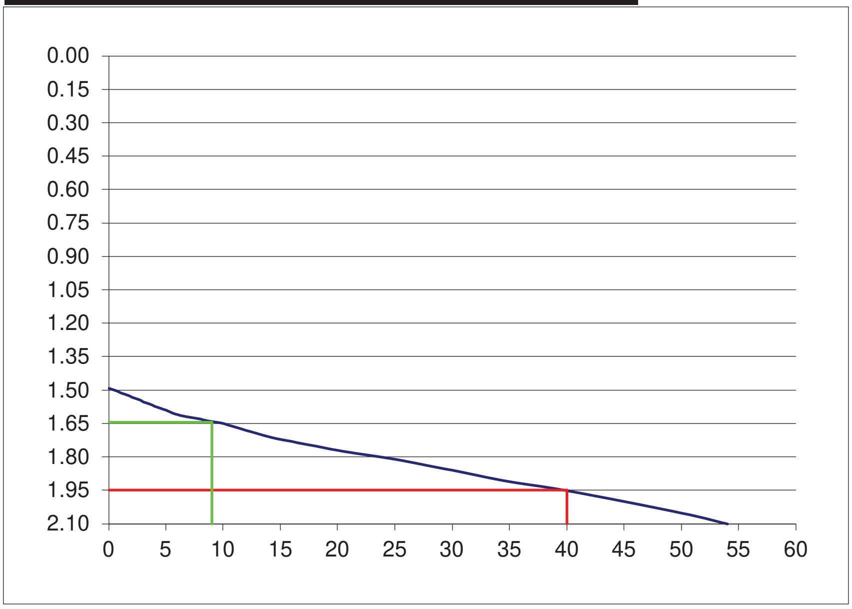
From	To	
0.00	0.30	TOPSOIL.
0.30	2.10	MADE GROUND: grey silty gravelly sand with medium cobble content and some ceramic pipe, concrete, red brick, mortar, glass, ash and pottery fragments.

Remarks:

-

Elapsed Time (mins)	Fall of Water (m)
0	1.49
0.5	1.50
1	1.51
1.5	1.52
2	1.53
2.5	1.54
3	1.55
3.5	1.56
4	1.57
4.5	1.58
5	1.59
6	1.61
7	1.62
8	1.63
9	1.64
10	1.65
12	1.68
14	1.71
16	1.73
18	1.75
20	1.77
25	1.81
30	1.86
35	1.91
40	1.95
50	2.05
54	2.10

Pit Dimensions (m)		
Length (m)	2.90	m
Width (m)	0.60	m
Depth	2.10	m
Water		
Start Depth of Water	1.49	m
Depth of Water	0.61	m
75% Full	1.64	m
25% Full	1.95	m
75%-25%	0.31	m
Volume of water (75%-25%)	**0.53**	m3
Area of Drainage	**14.70**	m2
Area of Drainage (75%-25%)	**3.88**	m2
Time		
75% Full	9	min
25% Full	40	min
Time 75% to 25%	**31**	min
Time 75% to 25% (sec)	**1860**	sec



f = 0.00442 or **7.36E-05**

m/min **m/s**

SOAKAWAY TEST

Project Reference:	5811
Contract name:	Dundrum Central Development
Location:	Drundrum, Dublin 14
Test No:	SA03
Date:	17/08/2021

Ground Conditions

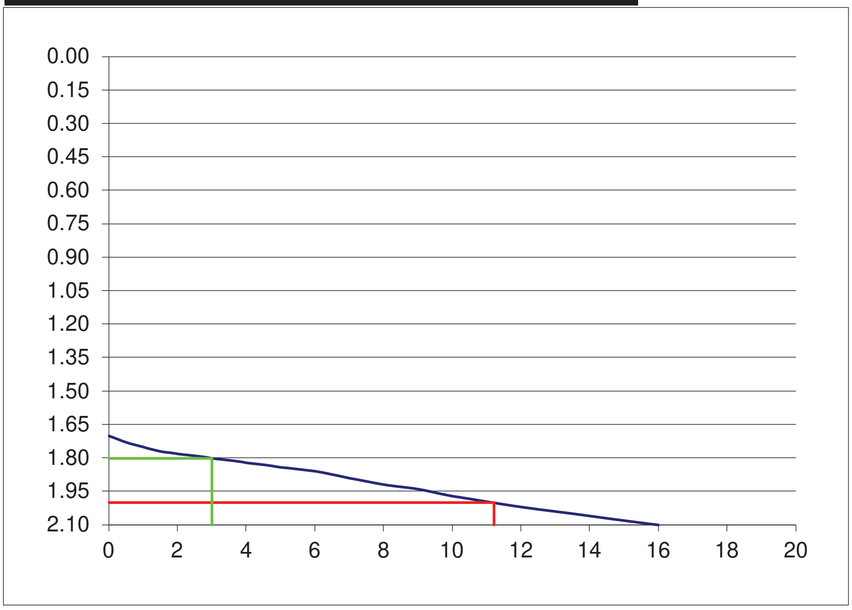
From	To	
0.00	0.20	TOPSOIL.
0.20	0.50	Brown silty gravelly SAND with medium cobble content.
0.50	1.10	Brown silty sandy GRAVEL with high cobble content.
1.10	2.10	Grey silty very gravelly SAND with high cobble content.

Remarks:

1000l added to pit and water level only rose to 1.70mbgl.

Elapsed Time (mins)	Fall of Water (m)
0	1.70
0.5	1.73
1	1.75
1.5	1.77
2	1.78
2.5	1.79
3	1.80
3.5	1.81
4	1.82
4.5	1.83
5	1.84
6	1.86
7	1.89
8	1.92
9	1.94
10	1.97
12	2.02
14	2.06
16	2.10

Pit Dimensions (m)		
Length (m)	2.20	m
Width (m)	0.60	m
Depth	2.10	m
Water		
Start Depth of Water	1.70	m
Depth of Water	0.40	m
75% Full	1.80	m
25% Full	2.00	m
75%-25%	0.20	m
Volume of water (75%-25%)	**0.26**	m3
Area of Drainage	**11.76**	m2
Area of Drainage (75%-25%)	**2.44**	m2
Time		
75% Full	3	min
25% Full	11.2	min
Time 75% to 25%	**8.2**	min
Time 75% to 25% (sec)	**492**	sec



f = **0.01319** or **2.20E-04**

m/min m/s

SOAKAWAY TEST

Project Reference:	5811
Contract name:	Dundrum Central Development
Location:	Drundrum, Dublin 14
Test No:	SA04
Date:	17/08/2021

Ground Conditions

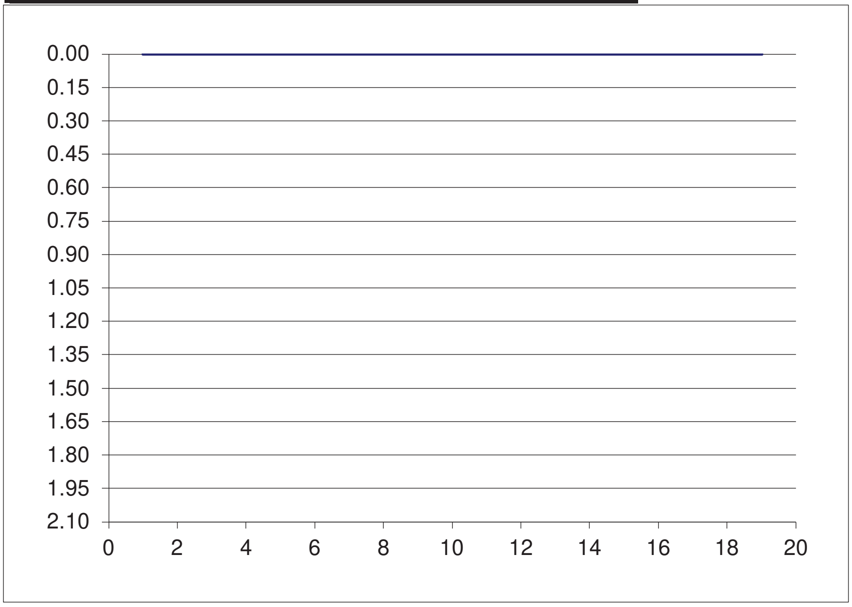
From	To	
0.00	0.35	TOPSOIL.
0.35	0.60	Soft brown slightly sandy slightly gravelly silty CLAY.
0.60	2.10	Firm grey brown slightly sandy slightly gravelly silty CLAY with medium cobble and low boulder content with occasional sandy gravel laminas.

Remarks:

Water ingresses at 1.90mbgl - soils already saturated and unsuitable for soakaway design.

Elapsed Time (mins)	Fall of Water (m)
-	-
-	-
-	-
-	-
-	-
-	-
-	-
-	-
-	-
-	-
-	-
-	-
-	-
-	-
-	-
-	-
-	-
-	-
-	-

Pit Dimensions (m)		
Length (m)	2.30	m
Width (m)	0.60	m
Depth	2.10	m
Water		
Start Depth of Water	-	m
Depth of Water	-	m
75% Full	-	m
25% Full	-	m
75%-25%	-	m
Volume of water (75%-25%)	-	m3
Area of Drainage	-	m2
Area of Drainage (75%-25%)	-	m2
Time		
75% Full	-	min
25% Full	-	min
Time 75% to 25%	-	min
Time 75% to 25% (sec)	-	sec



f = **Fail** or **Fail**

m/min **m/s**

SA01 Sidewall

SA01 Spoil

SA02 Sidewall

SA02 Spoil

SA03 Sidewall

SA03 Spoil

SA04 Sidewall

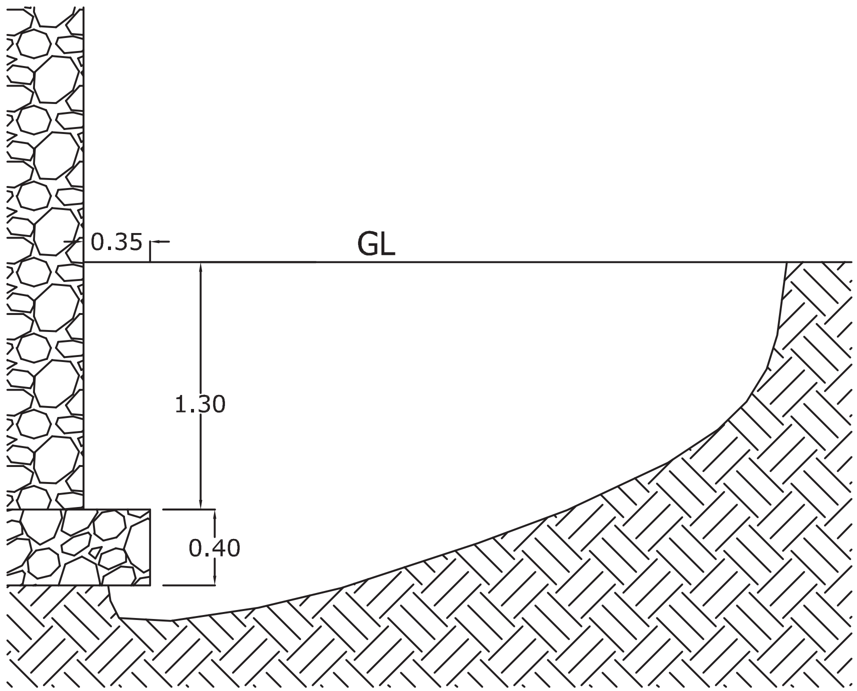
SA04 Spoil

Appendix 4

Foundation Pit Logs

FI01

Cross Section



Length:	Width:	Depth:
3.70m	0.70m	2.10m

Trench Dimensions

Point:	Easting:	Northing:	Level:
Start	716910.225	729174.568	43.93

Ground Conditions:

Depth:	Description:
0.00-0.10	TOPSOIL.
0.10-0.80	MADE GROUND: grey brown silty gravelly sand with low cobble content and some glass, bones and red brick fragments.
0.80-1.70	MADE GROUND: grey silty sandy gravel with low cobble and boulder content and some pottery fragments.
1.70-2.10	Stiff grey brown slightly sandy gravelly silty CLAY with high cobble content.

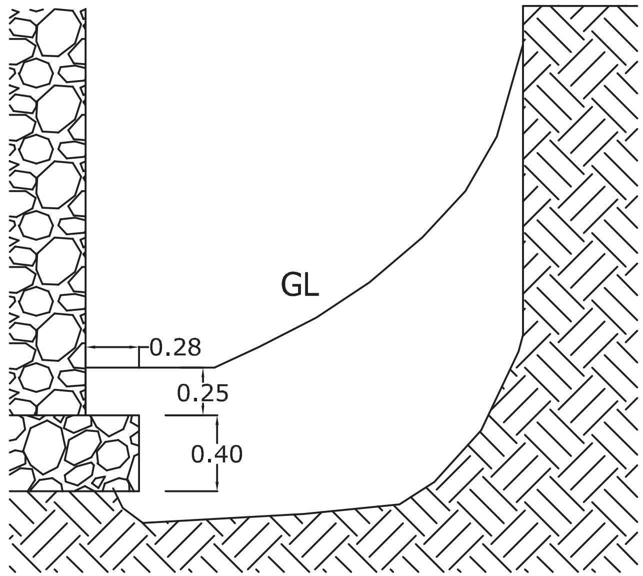
Photograph:

SITE INVESTIGATIONS LTD

Project: Dundrum Central Development	Logged by: M. Kaliski	Excavation Started: 18/08/2021	Excavation Finished: 18/08/2021	CONTRACT NUMBER
Client: Land Development Agency	Scale: NOT TO SCALE, ALL DISTANCES IN m			5811
Consultant: Barrett Mahony	DEPTH ARE TO THE TOP OF SERVICES			

FI03

Cross Section



Length:	Width:	Depth:
2.30m	0.70m	0.80m

Trench Dimensions

Point:	Easting:	Northing:	Level:
Start	717262.068	729304.529	42.86

Ground Conditions:

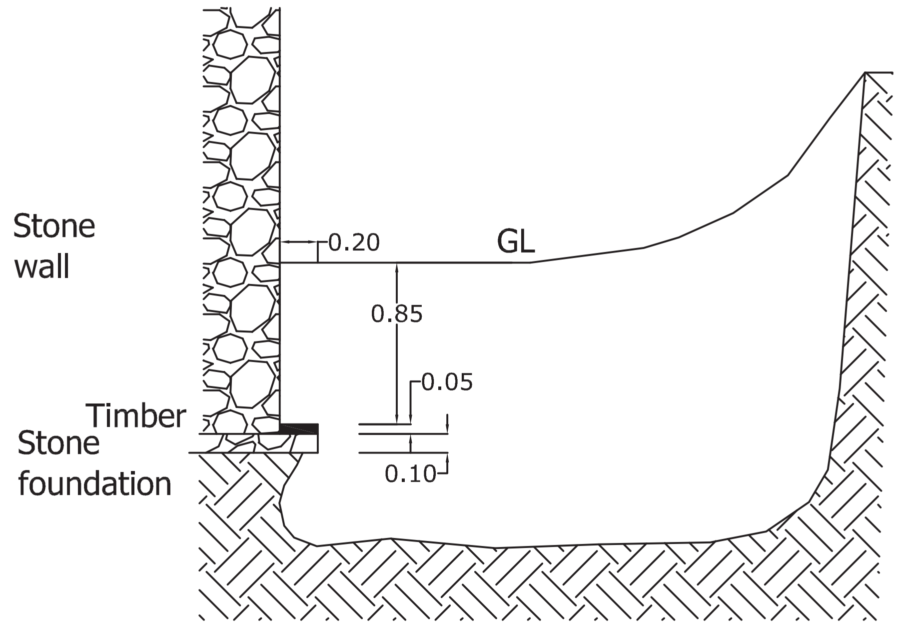
Depth:	Description:
0.00-0.10	TOPSOIL.
0.10-0.80	MADE GROUND: black slightly silty gravelly gravelly sand with low cobble content and some plastic bag, red brick and bone fragments.
	Strong anaerobic smell

Photograph:

SITE INVESTIGATIONS LTD	Project: Dundrum Central Development	Logged by: M. Kaliski	Excavation Started: 27/08/2021	Excavation Finished: 27/08/2021
	Client: Land Development Agency	Scale: NOT TO SCALE, ALL DISTANCES IN m		CONTRACT NUMBER 5811
	Consultant: Barrett Mahony	DEPTH ARE TO THE TOP OF SERVICES		

FI04

Cross Section



Length:	Width:	Depth:
3.00m	0.75m	1.50m

Trench Dimensions

Point:	Easting:	Northing:	Level:
Start	717351.212	729223.666	40.78

Ground Conditions:

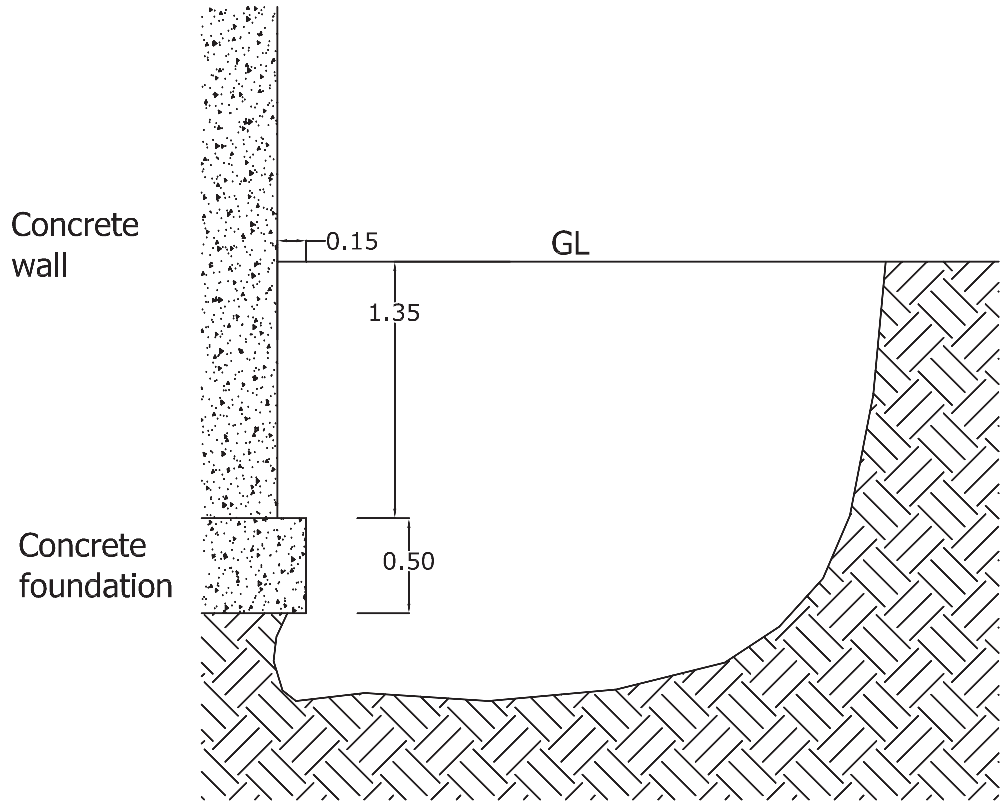
Depth:	Description:
0.00-0.20	TOPSOIL.
0.20-0.40	MADE GROUND: black silty gravelly sand with some rag, plastic and glass fragments.
0.40-1.50	Grey slightly silty very sandy GRAVEL with medium cobble content.
1.00	Slow water ingress.

Photograph:

SITE INVESTIGATIONS LTD	Project: Dundrum Central Development	Logged by: M. Kaliski	Excavation Started: 27/08/2021
	Client: Land Development Agency	Scale: NOT TO SCALE, ALL DISTANCES IN m	Excavation Finished: 27/08/2021
	Consultant: Barrett Mahony	DEPTH ARE TO THE TOP OF SERVICES	CONTRACT NUMBER 5811

FI05

Cross Section



Length:	Width:	Depth:
3.20m	0.80m	2.30m

Trench Dimensions

Point:	Easting:	Northing:	Level:
Start	717356.448	729080.664	43.13

Ground Conditions:

Depth:	Description:
0.00-0.30	TOPSOIL.
0.30-0.60	MADE GROUND: black silty gravelly sand with with some red brick, bone, pottery and glass fragments.
0.60-0.80	MADE GROUND: grey sandy gravelly silty clay with low cobble content and some red brick fragments.
0.80-2.30	Firm light grey slightly sandy gravelly silty CLAY with medium cobble content.
1.00	Strong water inflow from drainage pipe

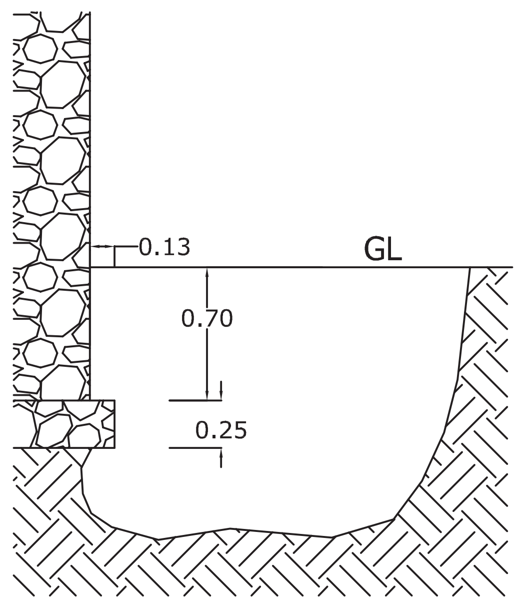
Photograph:

SITE INVESTIGATIONS LTD

Project: Dundrum Central Development	Logged by: M. Kaliski	Excavation Started: 20/08/2021	Excavation Finished: 20/08/2021	CONTRACT NUMBER
Client: Land Development Agency	Scale: NOT TO SCALE, ALL DISTANCES IN m			5811
Consultant: Barrett Mahony	DEPTH ARE TO THE TOP OF SERVICES			

FI06

Cross Section



Length:	Width:	Depth:
2.00m	0.70m	1.40m

Trench Dimensions

Point:	Easting:	Northing:	Level:
Start	717192.237	728958.320	44.56

Ground Conditions:

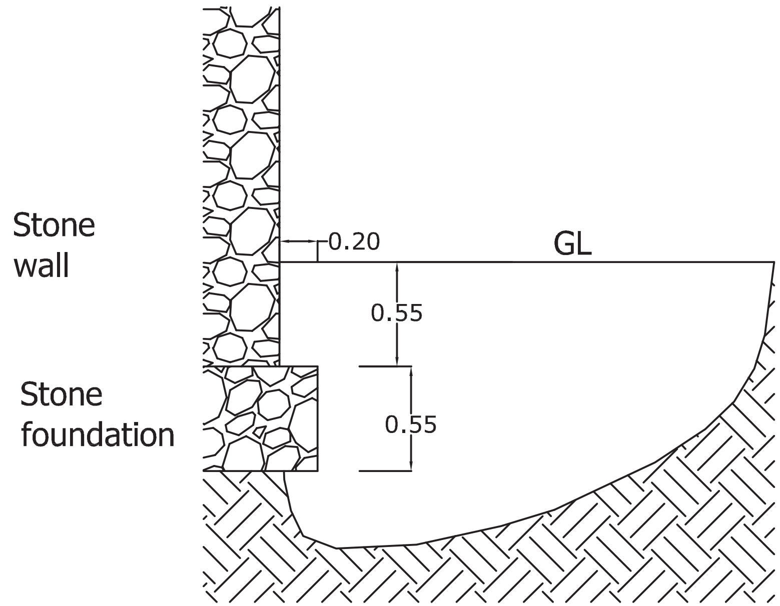
Depth:	Description:
0.00-0.10	TOPSOIL.
0.10-1.20	MADE GROUND: light grey brown sandy gravelly silty clay with medium cobble content and some red brick and plastic bag fragments.
1.20-1.40	Firm grey brown slightly sandy gravelly silty CLAY with medium cobble content.
0.80	Seepage

Photograph:

SITE INVESTIGATIONS LTD	Project: Dundrum Central Development	Logged by: M. Kaliski	Excavation Started: 18/08/2021	Excavation Finished: 18/08/2021
	Client: Land Development Agency	Scale: NOT TO SCALE, ALL DISTANCES IN m		CONTRACT NUMBER 5811
	Consultant: Barrett Mahony	DEPTH ARE TO THE TOP OF SERVICES		

FI07

Cross Section



Length:	Width:	Depth:
2.60m	0.70m	1.50m

Trench Dimensions

Point:	Easting:	Northing:	Level:
Start	717092.842	728976.654	44.97

Ground Conditions:

Depth:	Description:
0.00-0.05	TOPSOIL.
0.05-0.50	MADE GROUND: black silty sandy gravel with low cobble content and some ashes.
0.50-1.50	Grey silty sandy GRAVEL with high cobble content.
0.60	Seepage.

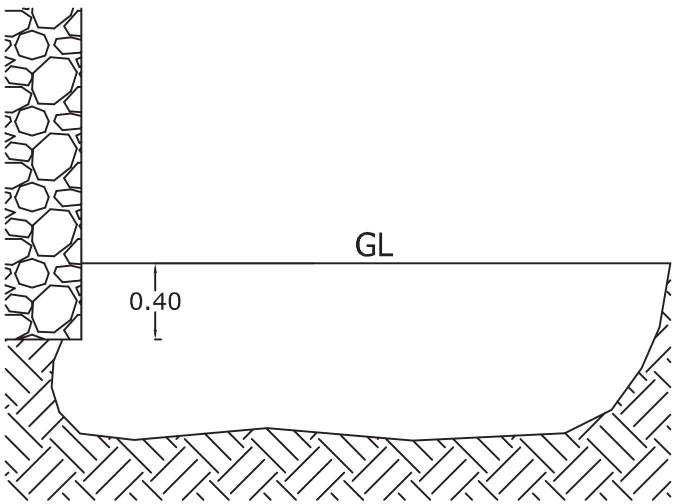
Photograph:

SITE INVESTIGATIONS LTD

Project:	Dundrum Central Development	Logged by: M. Kaliski	Excavation Started: 18/08/2021	Excavation Finished: 18/08/2021	CONTRACT NUMBER
Client:	Land Development Agency	Scale: NOT TO SCALE, ALL DISTANCES IN m			5811
Consultant:	Barrett Mahony	DEPTH ARE TO THE TOP OF SERVICES			

FI08

Cross Section



Length:	Width:	Depth:
3.10m	0.70m	0.90m

Trench Dimensions

Point:	Easting:	Northing:	Level:
Start	717065.834	719097.195	45.25

Ground Conditions:

Depth:	Description:
0.00-0.05	TOPSOIL.
0.05-0.20	MADE GROUND: black very sandy gravel with some slag, ashes and red brick fragments.
0.20-0.60	MADE GROUND: grey brown silty sandy gravel with high cobble content and some red brick fragments.
0.60-0.90	Grey brown silty sandy GRAVEL with high cobble content.

Photograph:

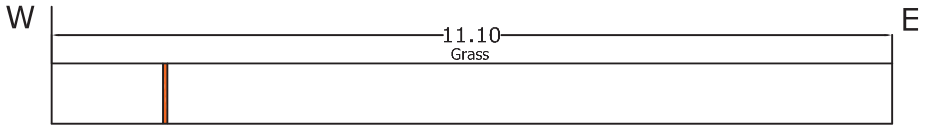
SITE INVESTIGATIONS LTD	Project: Dundrum Central Development	Logged by: M. Kaliski	Excavation Started: 18/08/2021	Excavation Finished: 18/08/2021	CONTRACT NUMBER
	Client: Land Development Agency	Scale: NOT TO SCALE, ALL DISTANCES IN m			5811
	Consultant: Barrett Mahony	DEPTH ARE TO THE TOP OF SERVICES			

Appendix 5

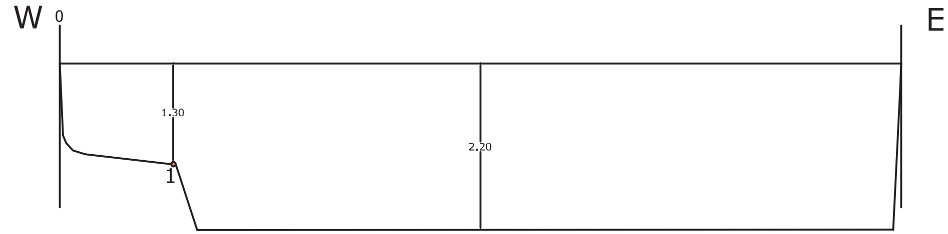
Slit Trench Logs

ST01

Plan



Cross Section



Point:	Easting:	Northing:	Level:
Pipe	717223.751	729038.943	44.03
End	717233.063	729044.609	43.89

Length:	Width:	Depth:
11.10m	0.80m	2.20m

Services

No:	Diameter:	Colour:	Utility:	Distance:	Depth:	Alignment:
1	60mm	Ceramic	Land	1.50m*	1.30m	90°

*Exact distance not measured - distance used is guide.

Ground Conditions

From:	To:	Description:
0.00m	0.20m	TOPSOIL.
0.20m	0.40m	MADE GROUND: grey brown slightly sandy slightly gravelly silty clay with some red brick and glass fragments.
0.40m	0.80m	Firm light brown slightly sandy slightly gravelly silty CLAY with low cobble content.
0.80m	2.10m	Firm grey brown slightly sandy slightly gravelly silty CLAY with medium cobble content.
2.10m	2.20m	Stiff black slightly sandy slightly gravelly silty CLAY with high cobble content.

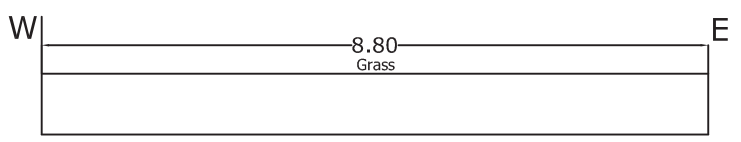
Photographs

SITE INVESTIGATIONS LTD

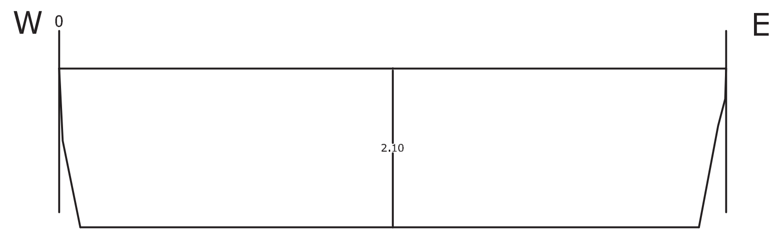
Project: Dundrum Central Development	Logged by: M. Kaliski	Excavation Started: 18/08/2021	Excavation Finished: 18/08/2021
Client: Land Development Agency	Scale: NOT TO SCALE, ALL DISTANCES IN m		CONTRACT NUMBER 5811
Consultant: Barrett Mahony	DEPTH ARE TO THE TOP OF SERVICES		

ST02

Plan



Cross Section



Point:	Easting:	Northing:	Level:
Pipe	717249.249	729028.909	44.06
End	717256.341	729035.083	44.14

Length:	Width:	Depth:
8.80m	0.80m	2.10m

Services

No:	Diameter:	Colour:	Utility:	Distance:	Depth:	Alignment:
No Services Encountered.						

Ground Conditions

From:	To:	Description:
0.00m	0.30m	TOPSOIL.
0.30m	0.70m	MADE GROUND: brown slightly sandy slightly gravelly silty clay with low cobble content and some red brick fragments.
0.70m	0.90m	Firm brown slightly sandy slightly gravelly silty CLAY with low cobble content.
0.90m	2.10m	Firm grey brown slightly sandy slightly gravelly silty clay with high cobble and low boulder content.

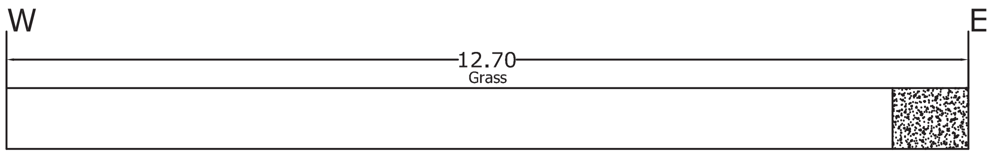
Photographs

SITE INVESTIGATIONS LTD

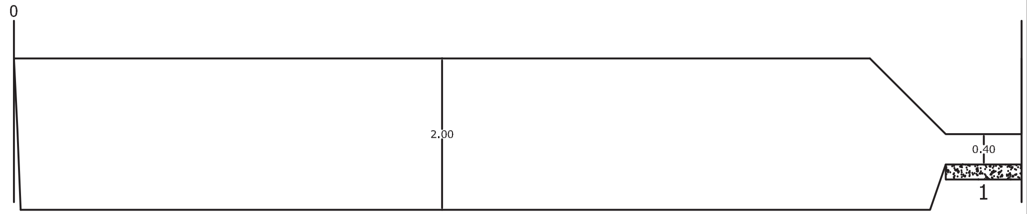
Project: Dundrum Central Development	Logged by: M. Kaliski	Excavation Started: 18/08/2021	Excavation Finished: 18/08/2021
Client: Land Development Agency	Scale: NOT TO SCALE, ALL DISTANCES IN m		CONTRACT NUMBER 5811
Consultant: Barrett Mahony	DEPTH ARE TO THE TOP OF SERVICES		

ST03

Plan



Cross Section



Point:	Easting:	Northing:	Level:
Start (0)	717270.538	729000.305	44.46
End	717279.130	729007.121	43.24

Length:	Width:	Depth:
12.70m	0.80m	2.00m

Services

No:	Diameter:	Colour:	Utility:	Distance:	Depth:	Alignment:
1	-	Concrete	Unknown	11.70-12.70m	0.40m	90°

Ground Conditions

From:	To:	Description:
0.00m	0.10m	TOPSOIL.
0.10m	0.40m	MADE GROUND: grey brown slightly sandy slightly gravelly silty clay with low cobble content and some red brick fragments.
0.40m	0.80m	Firm light brown slightly sandy slightly gravelly silty CLAY with low cobble content.
0.80m	2.00m	Firm brown grey slightly sandy slightly gravelly silty CLAY with high cobble content.

Photographs

SITE INVESTIGATIONS LTD

Project: Dundrum Central Development	Logged by: M. Kaliski	Excavation Started: 18/08/2021	Excavation Finished: 18/08/2021
Client: Land Development Agency	Scale: NOT TO SCALE, ALL DISTANCES IN m		CONTRACT NUMBER 5811
Consultant: Barrett Mahony	DEPTH ARE TO THE TOP OF SERVICES		

Appendix 6

Geotechnical Laboratory Test Results

Classification Tests in accordance with BS1377: Part 4

Client	Land Development Agency
Site	Dundrum Central Development
S.I. File No	5811 / 21
Test Lab	Site Investigations Ltd., Carhugar The Grange, 12th Lock Rd., Lucan Co. Dublin. Tel (01) 6108768 Email info@siteinvestigations.ie
Report Date	6th October 2021

Hole ID	Depth	Sample No	Lab Ref No.	Sample Type	Natural Moisture Content %	Liquid Limit %	Plastic Limit %	Plastic Index %	Min. Dry Density Mg/m^3	Particle Density Mg/m^3	% passing 425um	Comments	**Remarks** **C**=Clay; **M**=Silt **Plasticity**: **L**=Low; **I**=Intermediate; **H**=High; **V**=Very High; **E**=Extremely High
TP03	1.50	MK08	21/1049	B	21.4	35	20	15			64.0		CL/CI
TP07	1.50	MK22	21/1052	B	10.5	33	19	14			38.5		CL
TP08	1.50	MK25	21/1053	B	11.0	35	20	15			55.3		CL/CI
TP11	1.20	MK34	21/1054	B	16.4	32	18	14			83.9		CL
TP15	0.70	MK45	21/1056	B	16.6								
TP16	1.30	MK49	21/1057	B	17.6	37	21	16			51.3		CI
TP16	2.50	MK50	21/1058	B	9.5								
TP18	1.50	MK56	21/1059	B	13.5	34	19	15			53.6		CL
TP19	1.50	MK59	21/1060	B	6.8								
TP20	1.50	MK62	21/1061	B	9.8	32	18	14			52.4		CL
TP22	1.50	MK65	21/1062	B	9.2	33	19	14			51.4		CL
TP23	1.50	MK68	21/1063	B	13.2								
TP24	1.50	MK71	21/1064	B	22.3	36	20	16			49.7		CI
TP25	1.50	MK74	21/1065	B	14.1								
TP25	2.50	MK75	21/1066	B	10.9								
TP26	1.50	MK78	21/1067	B	15.5	32	18	14			42.4		CL
TP27	1.50	MK81	21/1068	B	16.7								
TP28	1.50	MK84	21/1069	B	13.1	37	21	16			61.1		CI
TP29	1.50	MK87	21/1070	B	12.8								
TP30	0.60	MK89	21/1071	B	20.3								
TP31	0.80	MK92	21/1072	B	31.1								
TP31	1.90	MK94	21/1073	B	15.1								
TP32	0.80	MK96	21/1074	B	25.3								
TP32	2.50	MK98	21/1075	B	12.2								
TP33	1.50	MK101	21/1076	B	16.1	37	23	14			55.5		CL
TP34	0.80	MK104	21/1077	B	13.5								

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Classification Tests in accordance with BS1377: Part 4

Client	Land Development Agency
Site	Dundrum Central Development
S.I. File No	5811 / 21
Test Lab	Site Investigations Ltd., Carhugar The Grange, 12th Lock Rd., Lucan Co. Dublin. Tel (01) 6108768 Email info@siteinvestigations.ie
Report Date	6th October 2021

Hole ID	Depth	Sample No	Lab Ref No.	Sample Type	Natural Moisture Content %	Liquid Limit %	Plastic Limit %	Plastic Index %	Min. Dry Density Mg/m^3	Particle Density Mg/m^3	% passing 425um	Comments	**Remarks** **C**=Clay; **M**=Silt **Plasticity**: **L**=Low; **I**=Intermediate; **H**=High; **V**=Very High; **E**=Extremely High
TP34	2.20	MK105	21/1078	B	13.8								
TP35	1.00	MK108	21/1079	B	11.9								
TP35	2.50	MK109	21/1080	B	10.5								
BH01	3.00	CMH003	21/1081	B	15.4								
BH02	2.00	CMH043	21/1082	B	25.0								
BH02	3.00	CMH044	21/1083	B	8.7								
BH03	4.00	CMH096	21/1084	B	10.6								
BH04	3.00	CMH073	21/1085	B	12.7								
BH05	1.00	CMH008	21/1086	B	18.1								
BH05	2.00	CMH009	21/1087	B	15.0								
BH05	4.00	CMH011	21/1088	B	10.2								
BH06	1.00	CMH035	21/1089	B	19.3								
BH06	2.00	CMH036	21/1090	B	9.5								
BH06	3.00	CMH037	21/1091	B	11.6								
BH06	4.00	CMH019	21/1092	B	8.8								
BH08	1.00	CMH087	21/1093	B	24.3								
BH08	3.00	CMH089	21/1094	B	11.6								
BH09	1.00	CMH076	21/1095	B	18.6								
BH09	3.00	CMH078	21/1096	B	10.3								
BH10	1.00	CMH081	21/1097	B	12.5								
BH10	2.00	CMH082	21/1098	B	10.4								
BH11	1.00	CMH063	21/1099	B	12.4								
BH11	2.00	CMH064	21/1100	B	13.0								
BH11	3.00	CMH065	21/1101	B	16.7								
BH12	1.00	CMH012	21/1102	B	34.9								
BH12	3.00	CMH014	21/1103	B	6.9								

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Classification Tests in accordance with BS1377: Part 4

Client	Land Development Agency
Site	Dundrum Central Development
S.I. File No	5811 / 21
Test Lab	Site Investigations Ltd., Carhugar The Grange, 12th Lock Rd., Lucan Co. Dublin. Tel (01) 6108768 Email info@siteinvestigations.ie
Report Date	6th October 2021

Hole ID	Depth	Sample No	Lab Ref No.	Sample Type	Natural Moisture Content %	Liquid Limit %	Plastic Limit %	Plastic Index %	Min. Dry Density Mg/m^3	Particle Density Mg/m^3	% passing 425um	Comments	**Remarks** C=Clay; **M**=Silt **Plasticity**: **L**=Low; **I**=Intermediate; **H**=High; **V**=Very High; **E**=Extremely High
BH13	1.00	CMH028	21/1104	B	15.7								
BH13	3.00	CMH030	21/1105	B	12.4								
BH14	1.00	CMH021	21/1106	B	16.3								
BH14	2.00	CMH022	21/1107	B	9.1								
BH15	1.00	CMH049	21/1108	B	11.5								
BH15	2.00	CMH050	21/1109	B	17.6								

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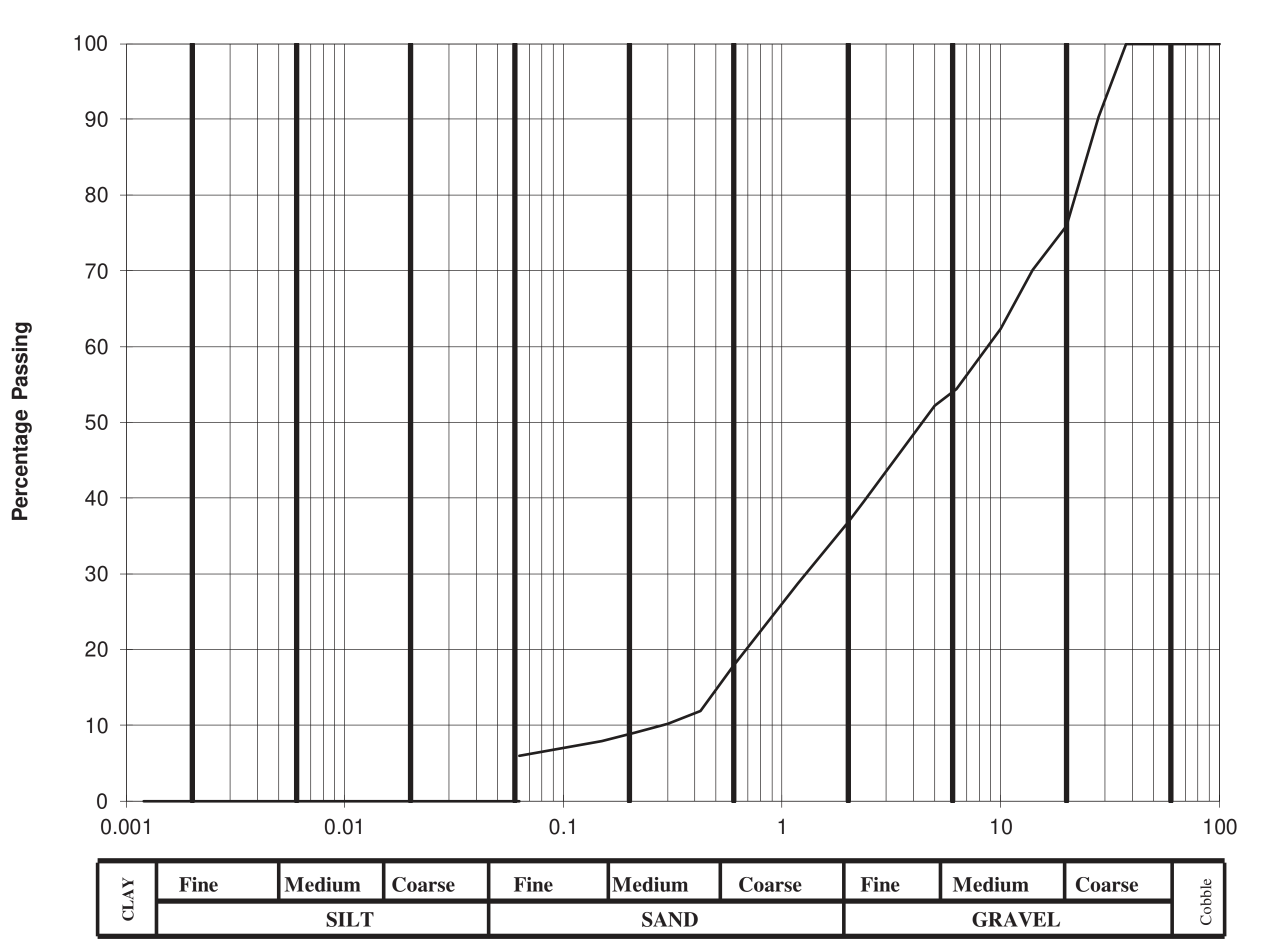
BS 1377 Particle Size Analysis

Site Investigations Limited

BS Sieve size, mm	Percent passing	Hydrometer analysis Diameter, mm	% passing
100	100	**0.0630**	
90	100	**0.0200**	
75	100	**0.0060**	
63	100	**0.0020**	
50	100		
37.5	100		
28	90.3		
20	75.9		
14	70.1		
10	62.3		
6.3	54.4		
5.0	52.2		
2.36	39.5		
2.00	36.7		
1.18	28.7		
0.600	17.8		
0.425	11.9		
0.300	10.2		
0.212	9		
0.150	7.9		
0.063	6		

Cobbles, %	0
Gravel, %	63
Sand, %	31
Clay / Silt, %	6



Client :	Land Development Agency	Lab. No :	21/1048	Hole ID :	TP 01
Project :	Dundrum Central Development	Sample No :	MK03	Depth, m :	1.50

Material description :	silty very sandy GRAVEL
Remarks :	Soils with clay or silt content between 15% - 35% can be classified as clay or silt depending on the field Engineers assessment of in-situ behaviour. Where material is for re-use and therefore disturbed, only soils with clay or silt >35% are classified as clay or silt

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BS 1377 Particle Size Analysis

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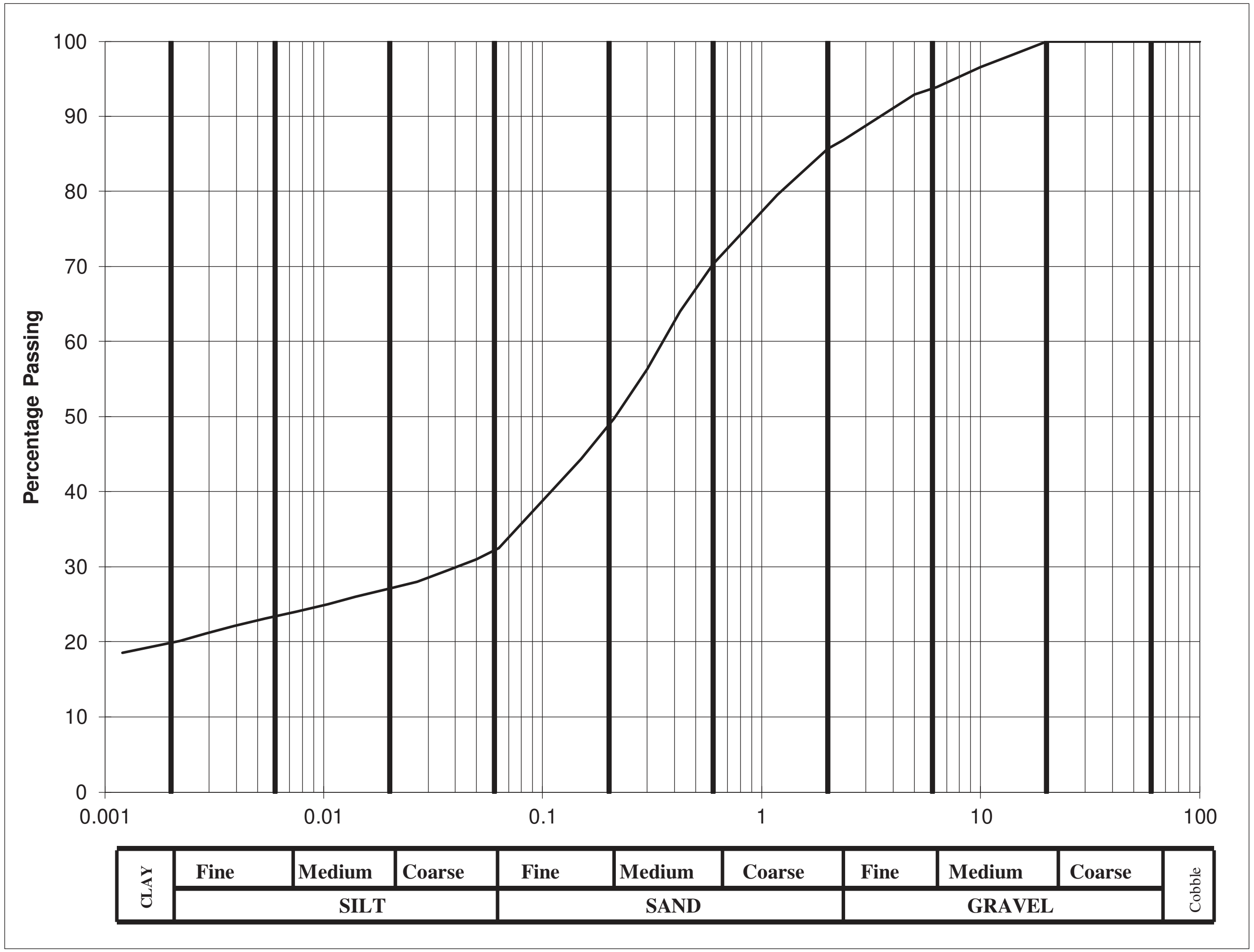
BS Sieve size, mm	Percent passing	Hydrometer analysis Diameter, mm	% passing
100	100	**0.0630**	33
90	100	**0.0200**	27
75	100	**0.0060**	23
63	100	**0.0020**	20
50	100		
37.5	100		
28	100		
20	100		
14	98.2		
10	96.5		
6.3	93.9		
5.0	92.9		
2.36	86.8		
2.00	85.7		
1.18	79.5		
0.600	70.3		
0.425	64		
0.300	56.3		
0.212	49.7		
0.150	44.3		
0.063	33		

Cobbles, %	0
Gravel, %	14
Sand, %	53
Silt, %	13
Clay, %	20



Client :	Land Development Agency	Lab. No :	21/1049	Hole ID :	TP 03
Project :	Dundrum Central Development	Sample No :	MK08	Depth, m :	1.50

Material description :	sandy slightly gravelly silty CLAY
Remarks :	Soils with clay or silt content between 15% - 35% can be classified as clay or silt depending on the field Engineers assessment of in-situ behaviour. Where material is for re-use and therefore disturbed, only soils with clay or silt >35% are classified as clay or silt

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BS 1377 Particle Size Analysis

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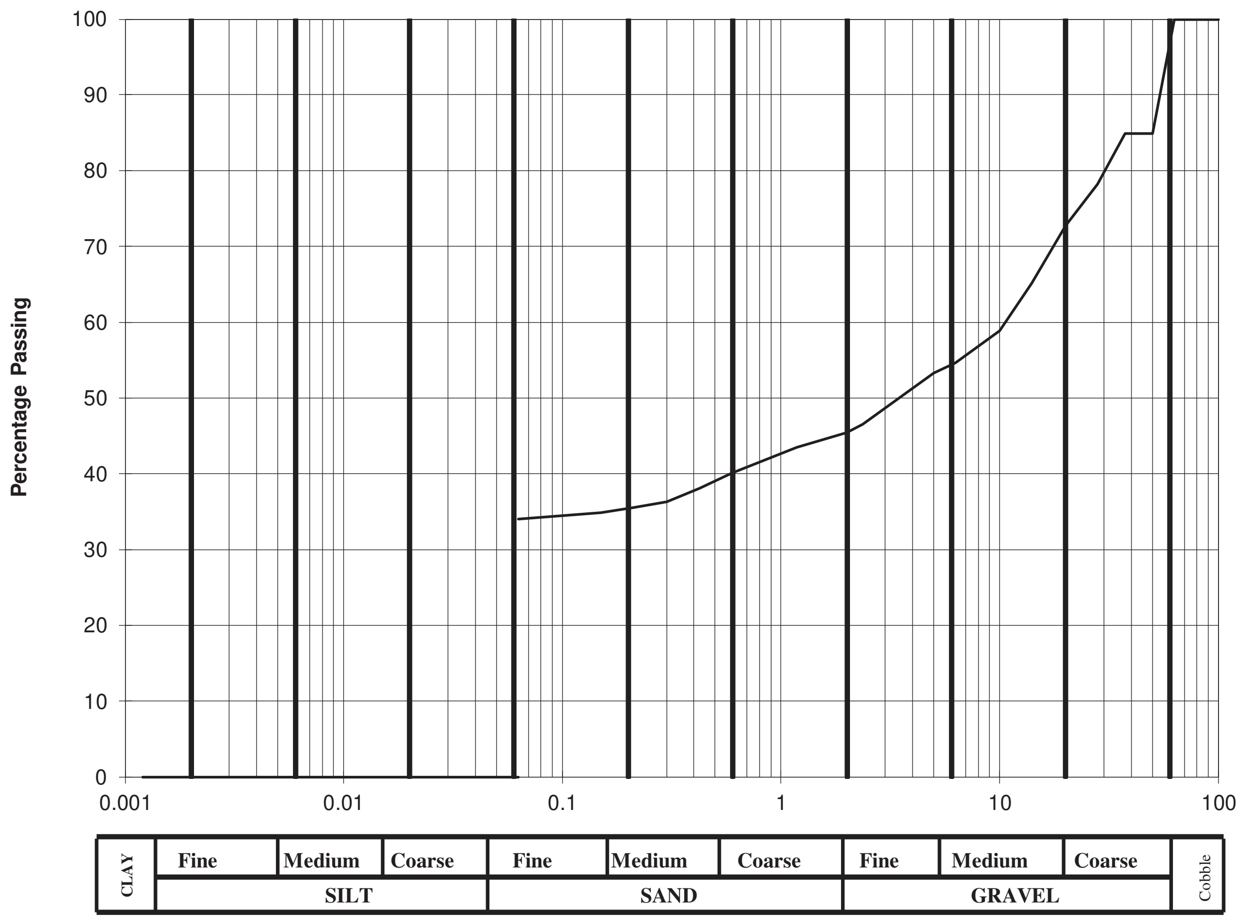
BS Sieve size, mm	Percent passing	Hydrometer analysis	
		Diameter, mm	% passing
100	100	**0.0630**	
90	100	**0.0200**	
75	100	**0.0060**	
63	100	**0.0020**	
50	84.9		
37.5	84.9		
28	78.2		
20	72.7		
14	65.1		
10	58.9		
6.3	54.6		
5.0	53.3		
2.36	46.5		
2.00	45.4		
1.18	43.5		
0.600	40.1		
0.425	38.1		
0.300	36.3		
0.212	35.5		
0.150	34.9		
0.063	34		

Cobbles, %	0
Gravel, %	55
Sand, %	11
Clay / Silt, %	34



Client :	Land Development Agency	Lab. No :	21/1050	Hole ID :	TP 04
Project :	Dundrum Central Development	Sample No :	MK10	Depth, m :	1.00

Material description :	very silty sandy GRAVEL
Remarks :	Soils with clay or silt content between 15% - 35% can be classified as clay or silt depending on the field Engineers assessment of in-situ behaviour. Where material is for re-use and therefore disturbed, only soils with clay or silt >35% are classified as clay or silt

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BS 1377 Particle Size Analysis

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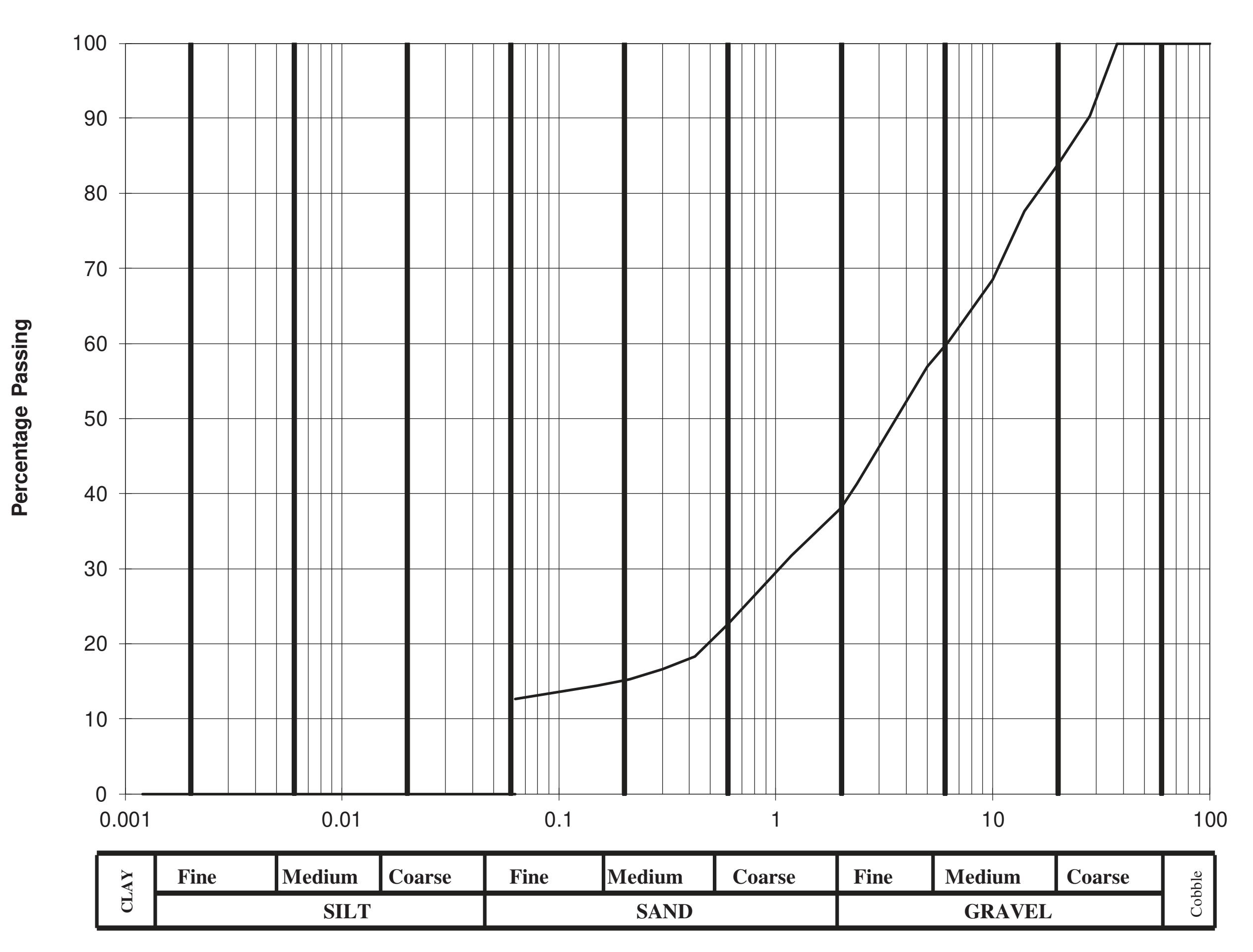
BS Sieve size, mm	Percent passing	Hydrometer analysis	
		Diameter, mm	% passing
100	100	**0.0630**	
90	100	**0.0200**	
75	100	**0.0060**	
63	100	**0.0020**	
50	100		
37.5	100		
28	90.3		
20	83.9		
14	77.6		
10	68.5		
6.3	60.3		
5.0	56.9		
2.36	41.3		
2.00	38.1		
1.18	31.7		
0.600	22.5		
0.425	18.3		
0.300	16.6		
0.212	15.3		
0.150	14.4		
0.063	13		

Cobbles, %	0
Gravel, %	62
Sand, %	25
Clay / Silt, %	13



Client :	Land Development Agency	Lab. No :	21/1051	Hole ID :	TP 06
Project :	Dundrum Central Development	Sample No :	MK19	Depth, m :	1.00

Material description :	silty very sandy GRAVEL
Remarks :	Soils with clay or silt content between 15% - 35% can be classified as clay or silt depending on the field Engineers assessment of in-situ behaviour. Where material is for re-use and therefore disturbed, only soils with clay or silt >35% are classified as clay or silt

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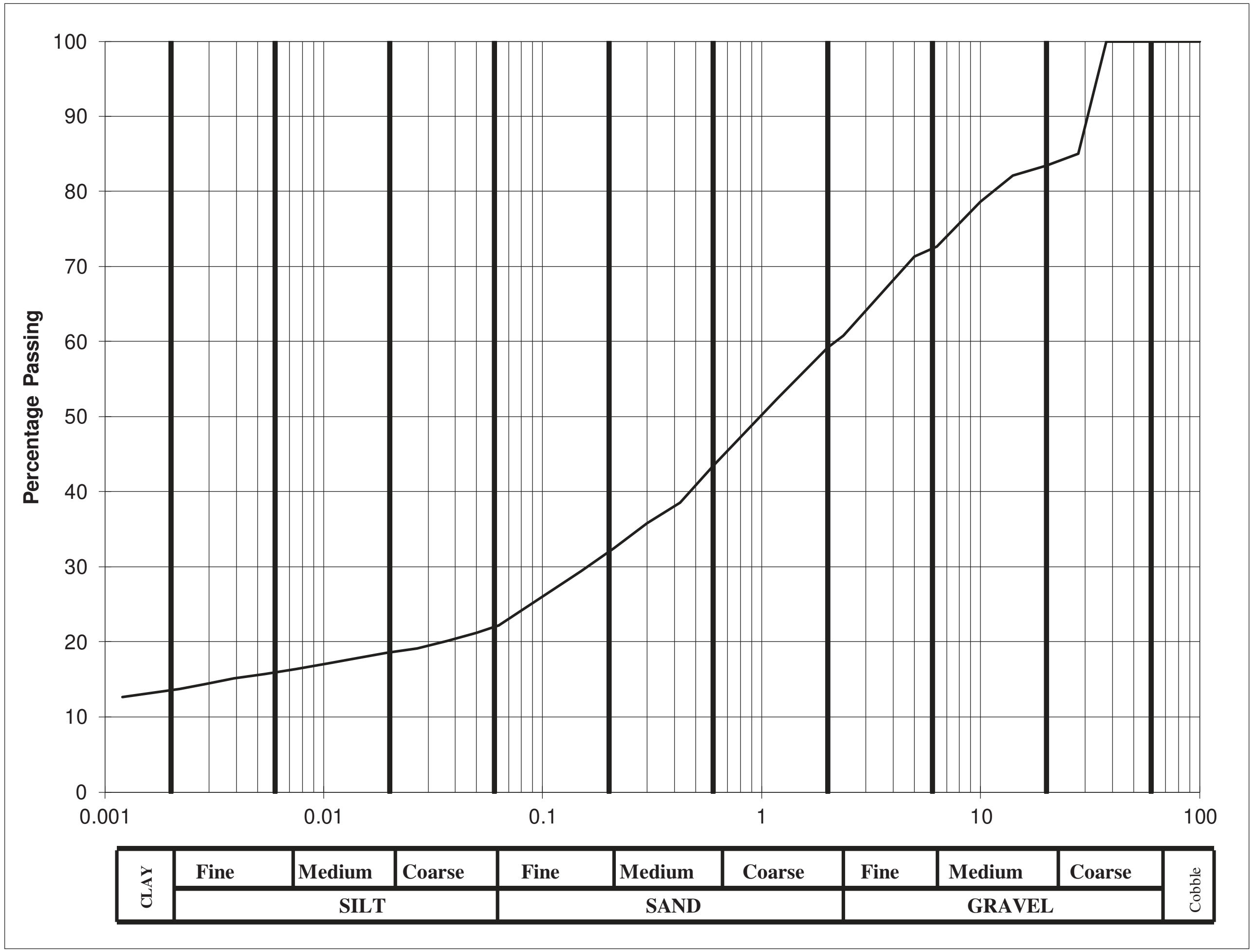
BS 1377 Particle Size Analysis

Site Investigations Limited

BS Sieve size, mm	Percent passing	Hydrometer analysis Diameter, mm	% passing
100	100	**0.0630**	22
90	100	**0.0200**	18
75	100	**0.0060**	16
63	100	**0.0020**	14
50	100		
37.5	100		
28	85		
20	83.4		
14	82.1		
10	78.6		
6.3	72.6		
5.0	71.3		
2.36	60.8		
2.00	59.2		
1.18	52.4		
0.600	43.4		
0.425	38.5		
0.300	35.8		
0.212	32.5		
0.150	29.4		
0.063	22		

Cobbles, %	0
Gravel, %	41
Sand, %	37
Silt, %	8
Clay, %	14



Client :	Land Development Agency
Project :	Dundrum Central Development

Lab. No :	21/1052
Sample No :	MK22

Hole ID :	TP 07
Depth, m :	1.50

Material description :	sandy gravelly silty CLAY
Remarks :	Soils with clay or silt content between 15% - 35% can be classified as clay or silt depending on the field Engineers assessment of in-situ behaviour. Where material is for re-use and therefore disturbed, only soils with clay or silt >35% are classified as clay or silt

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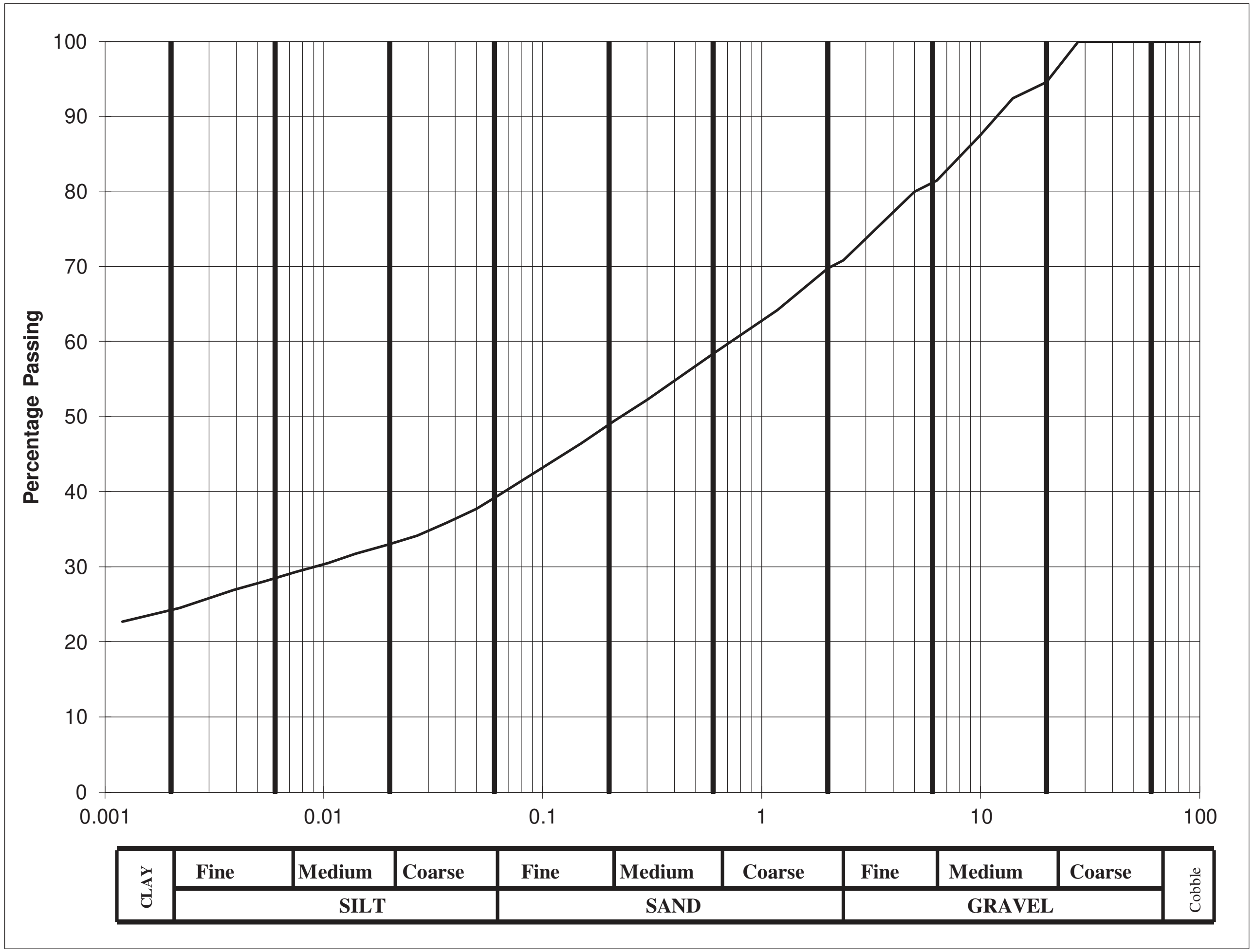
BS 1377 Particle Size Analysis

Site Investigations Limited

BS Sieve size, mm	Percent passing	Hydrometer analysis Diameter, mm	% passing
100	100	**0.0630**	40
90	100	**0.0200**	33
75	100	**0.0060**	28
63	100	**0.0020**	24
50	100		
37.5	100		
28	100		
20	94.5		
14	92.4		
10	87.5		
6.3	81.4		
5.0	79.9		
2.36	70.8		
2.00	69.7		
1.18	64.2		
0.600	58.4		
0.425	55.3		
0.300	52.2		
0.212	49.4		
0.150	46.4		
0.063	40		

Cobbles, %	0
Gravel, %	30
Sand, %	30
Silt, %	16
Clay, %	24



Client :	Land Development Agency	Lab. No :	21/1053	Hole ID :	TP 08
Project :	Dundrum Central Development	Sample No :	MK25	Depth, m :	1.50

Material description :	slightly sandy slightly gravelly silty CLAY
Remarks :	Soils with clay or silt content between 15% - 35% can be classified as clay or silt depending on the field Engineers assessment of in-situ behaviour. Where material is for re-use and therefore disturbed, only soils with clay or silt >35% are classified as clay or silt

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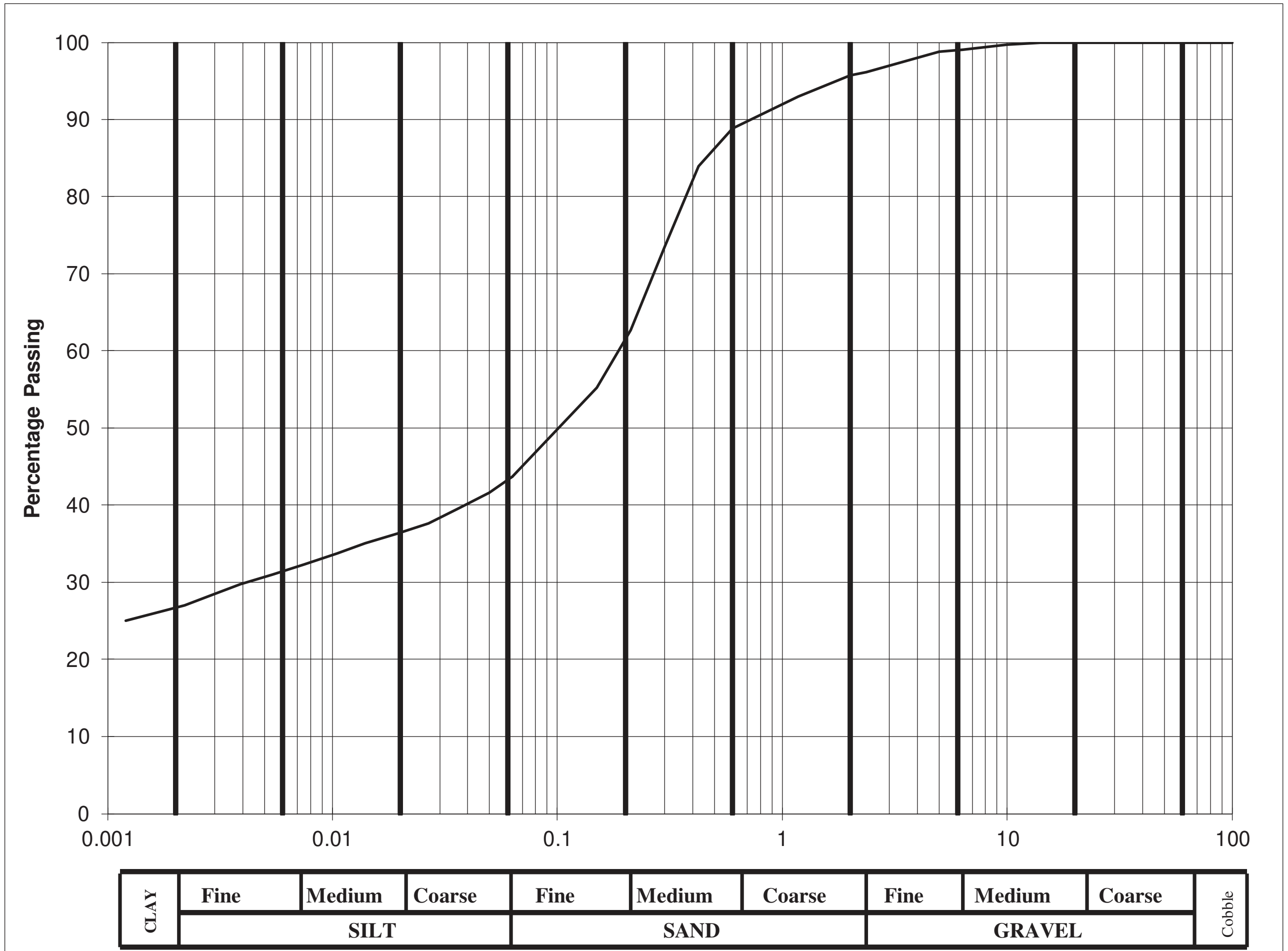
Site Investigations Ltd

BS 1377 Particle Size Analysis

Site Investigations Limited

BS Sieve size, mm	Percent passing	Hydrometer analysis	
		Diameter, mm	% passing
100	100	**0.0630**	44
90	100	**0.0200**	36
75	100	**0.0060**	32
63	100	**0.0020**	27
50	100		
37.5	100		
28	100		
20	100		
14	100		
10	99.7		
6.3	99		
5.0	98.8		
2.36	96.1		
2.00	95.7		
1.18	93		
0.600	88.8		
0.425	83.9		
0.300	73.5		
0.212	62.7		
0.150	55.2		
0.063	44		

Cobbles, %	0
Gravel, %	4
Sand, %	52
Silt, %	17
Clay, %	27



Client :	Land Development Agency	Lab. No :	21/1054		Hole ID :	TP 11
Project :	Dundrum Central Development	Sample No :	MK34		Depth, m :	1.20

Material description :	sandy slightly gravelly silty CLAY
Remarks :	Soils with clay or silt content between 15% - 35% can be classified as clay or silt depending on the field Engineers assessment of in-situ behaviour. Where material is for re-use and therefore disturbed, only soils with clay or silt >35% are classified as clay or silt

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BS 1377 Particle Size Analysis

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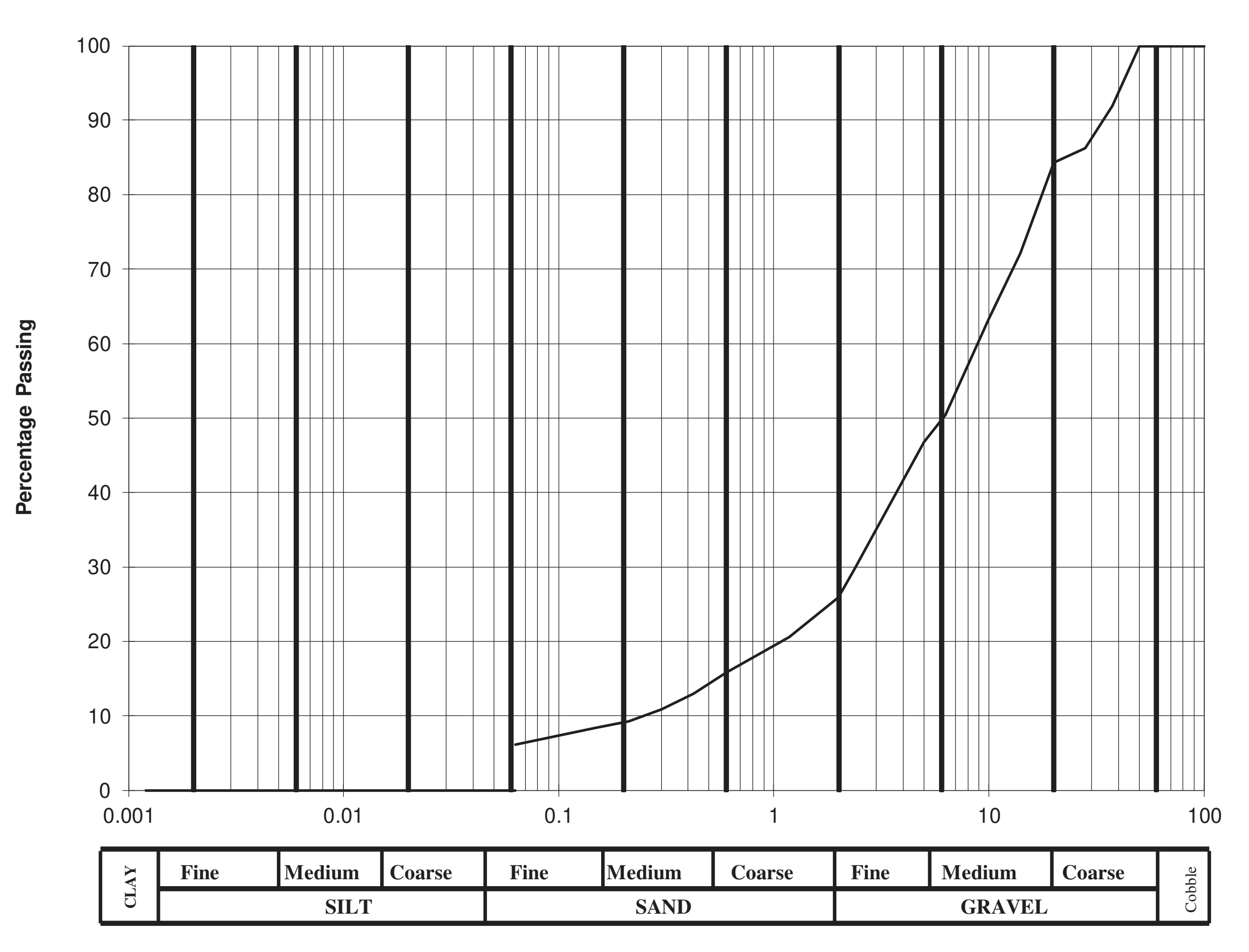
BS Sieve size, mm	Percent passing	Hydrometer analysis Diameter, mm	% passing
100	100	**0.0630**	
90	100	**0.0200**	
75	100	**0.0060**	
63	100	**0.0020**	
50	100		
37.5	91.9		
28	86.2		
20	84.3		
14	72.1		
10	63.3		
6.3	50.4		
5.0	46.8		
2.36	29.6		
2.00	25.9		
1.18	20.6		
0.600	15.8		
0.425	13		
0.300	10.9		
0.212	9.3		
0.150	8.4		
0.063	6		

Cobbles, %	0
Gravel, %	74
Sand, %	20
Clay / Silt, %	6



Client :	Land Development Agency	Lab. No :	21/1055	Hole ID :	TP 14
Project :	Dundrum Central Development	Sample No :	MK43	Depth, m :	1.50

Material description :	silty very sandy GRAVEL
Remarks :	Soils with clay or silt content between 15% - 35% can be classified as clay or silt depending on the field Engineers assessment of in-situ behaviour. Where material is for re-use and therefore disturbed, only soils with clay or silt >35% are classified as clay or silt

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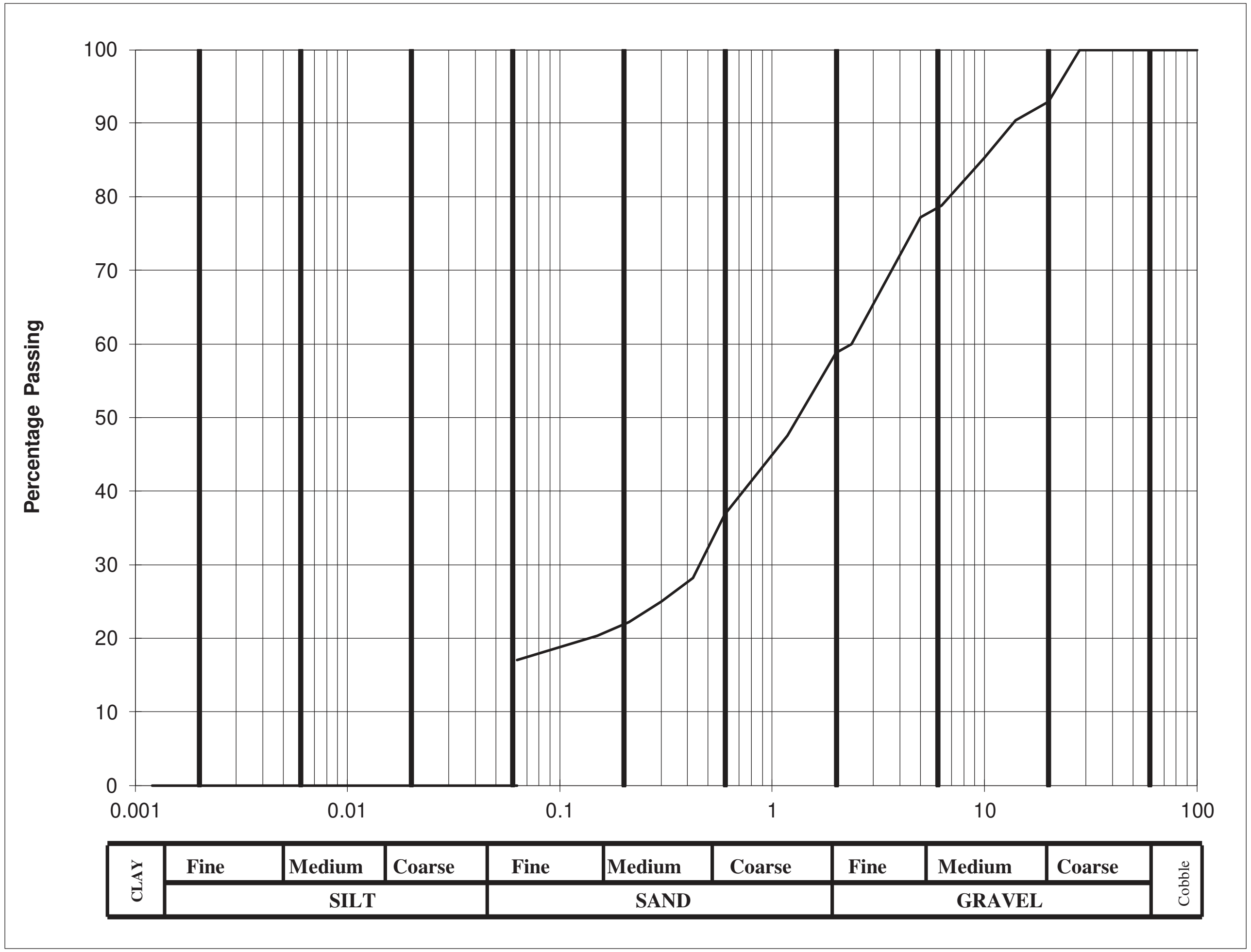
BS Sieve size, mm	Percent passing	Hydrometer analysis	
		Diameter, mm	% passing
100	100	**0.0630**	
90	100	**0.0200**	
75	100	**0.0060**	
63	100	**0.0020**	
50	100		
37.5	100		
28	100		
20	92.9		
14	90.4		
10	85.3		
6.3	78.8		
5.0	77.2		
2.36	60		
2.00	58.8		
1.18	47.5		
0.600	36.8		
0.425	28.2		
0.300	25		
0.212	22.2		
0.150	20.3		
0.063	17		

Cobbles, %	0
Gravel, %	41
Sand, %	42
Clay / Silt, %	17



Client :	Land Development Agency	Lab. No :	21/1056	Hole ID :	TP 15
Project :	Dundrum Central Development	Sample No :	MK45	Depth, m :	0.70

Material description :	silty very sandy GRAVEL
Remarks :	Soils with clay or silt content between 15% - 35% can be classified as clay or silt depending on the field Engineers assessment of in-situ behaviour. Where material is for re-use and therefore disturbed, only soils with clay or silt >35% are classified as clay or silt

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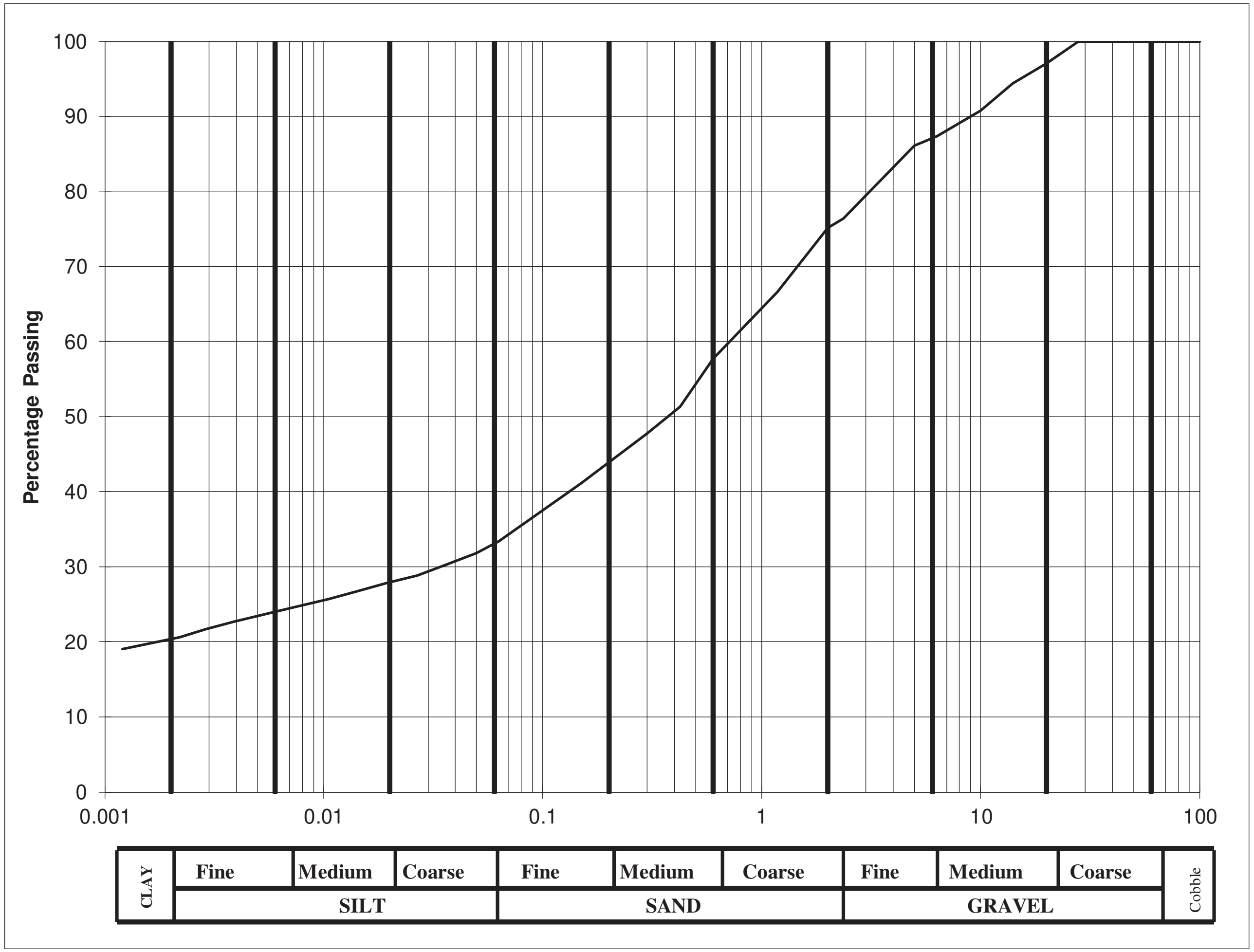
BS Sieve size, mm	Percent passing	Hydrometer analysis Diameter, mm	% passing
100	100	**0.0630**	33
90	100	**0.0200**	28
75	100	**0.0060**	24
63	100	**0.0020**	21
50	100		
37.5	100		
28	100		
20	97		
14	94.4		
10	90.7		
6.3	87.3		
5.0	86.1		
2.36	76.4		
2.00	75.1		
1.18	66.6		
0.600	57.7		
0.425	51.3		
0.300	47.7		
0.212	44.4		
0.150	41.1		
0.063	33		

Cobbles, %	0
Gravel, %	25
Sand, %	42
Silt, %	12
Clay, %	21



Client :	Land Development Agency	Lab. No :	21/1057	Hole ID :	TP 16
Project :	Dundrum Central Development	Sample No :	MK49	Depth, m :	1.30

Material description :	sandy slightly gravelly silty CLAY
Remarks :	Soils with clay or silt content between 15% - 35% can be classified as clay or silt depending on the field Engineers assessment of in-situ behaviour. Where material is for re-use and therefore disturbed, only soils with clay or silt >35% are classified as clay or silt

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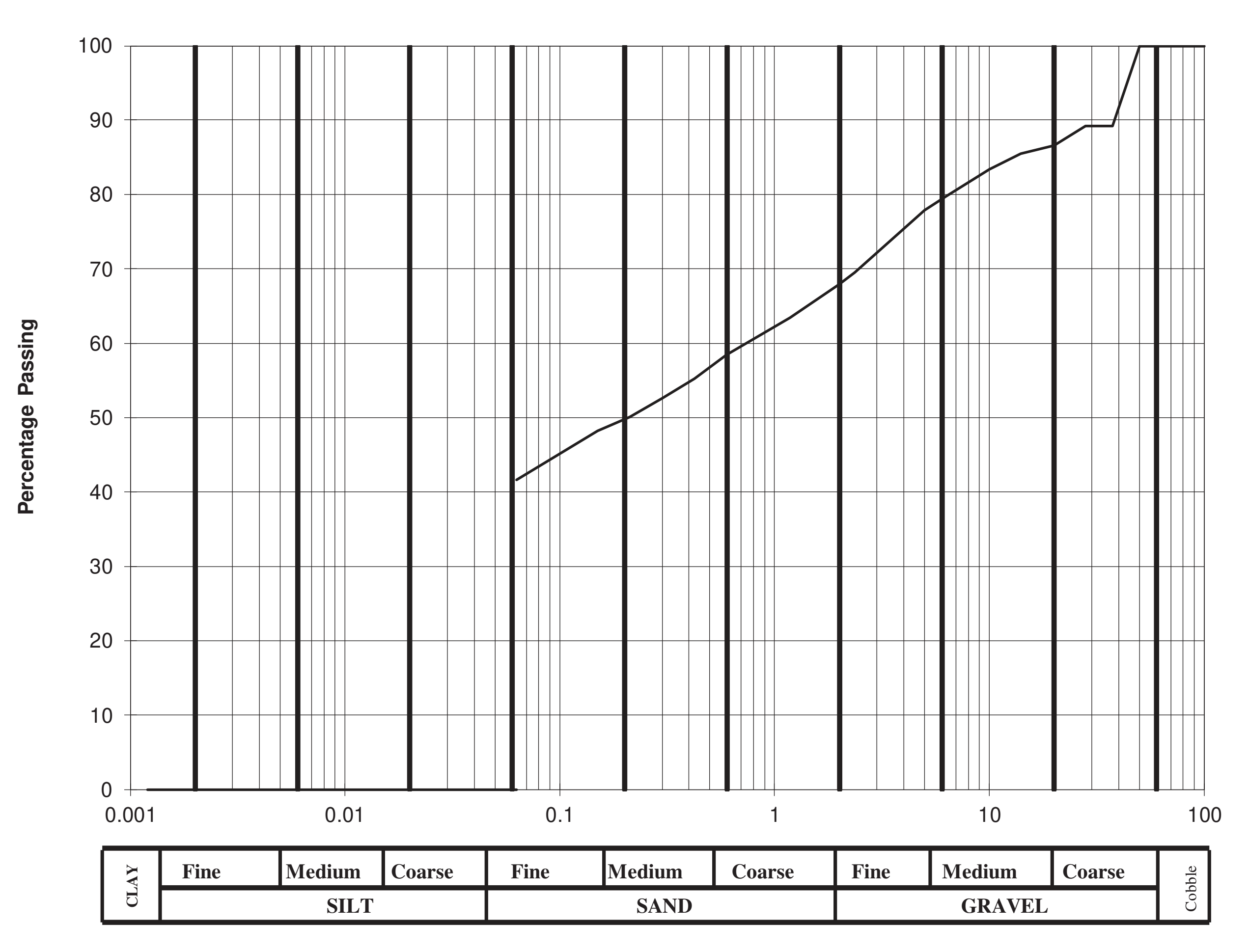
BS Sieve size, mm	Percent passing	Hydrometer analysis	
		Diameter, mm	% passing
100	100	**0.0630**	
90	100	**0.0200**	
75	100	**0.0060**	
63	100	**0.0020**	
50	100		
37.5	89.2		
28	89.2		
20	86.6		
14	85.5		
10	83.4		
6.3	79.7		
5.0	77.9		
2.36	69.5		
2.00	67.9		
1.18	63.4		
0.600	58.4		
0.425	55.2		
0.300	52.6		
0.212	50.1		
0.150	48.2		
0.063	42		

Cobbles, %	0
Gravel, %	32
Sand, %	26
Clay / Silt, %	42



Client :	Land Development Agency	Lab. No :	21/1058	Hole ID :	TP 16
Project :	Dundrum Central Development	Sample No :	MK50	Depth, m :	2.50

Material description :	slightly sandy slightly gravelly silty CLAY
Remarks :	Soils with clay or silt content between 15% - 35% can be classified as clay or silt depending on the field Engineers assessment of in-situ behaviour. Where material is for re-use and therefore disturbed, only soils with clay or silt >35% are classified as clay or silt

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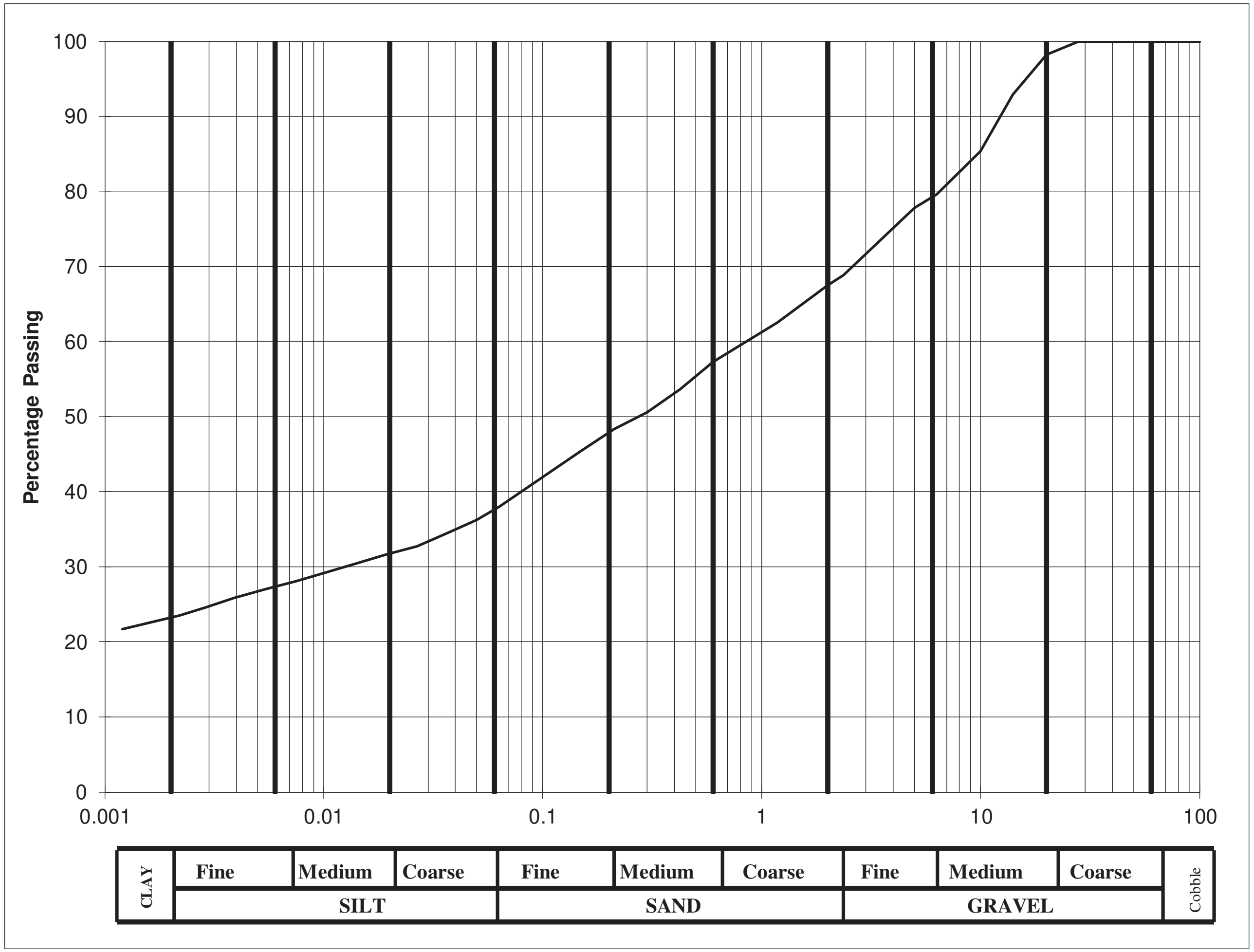
BS Sieve size, mm	Percent passing	Hydrometer analysis	
		Diameter, mm	% passing
100	100	**0.0630**	38
90	100	**0.0200**	32
75	100	**0.0060**	27
63	100	**0.0020**	23
50	100		
37.5	100		
28	100		
20	98.2		
14	92.9		
10	85.3		
6.3	79.6		
5.0	77.8		
2.36	68.8		
2.00	67.5		
1.18	62.5		
0.600	57.3		
0.425	53.6		
0.300	50.6		
0.212	48.3		
0.150	45.4		
0.063	38		

Cobbles, %	0
Gravel, %	33
Sand, %	30
Silt, %	15
Clay, %	23



Client :	Land Development Agency	Lab. No :	21/1059	Hole ID :	TP 18
Project :	Dundrum Central Development	Sample No :	MK56	Depth, m :	1.50

Material description :	slightly sandy slightly gravelly silty CLAY
Remarks :	Soils with clay or silt content between 15% - 35% can be classified as clay or silt depending on the field Engineers assessment of in-situ behaviour. Where material is for re-use and therefore disturbed, only soils with clay or silt >35% are classified as clay or silt

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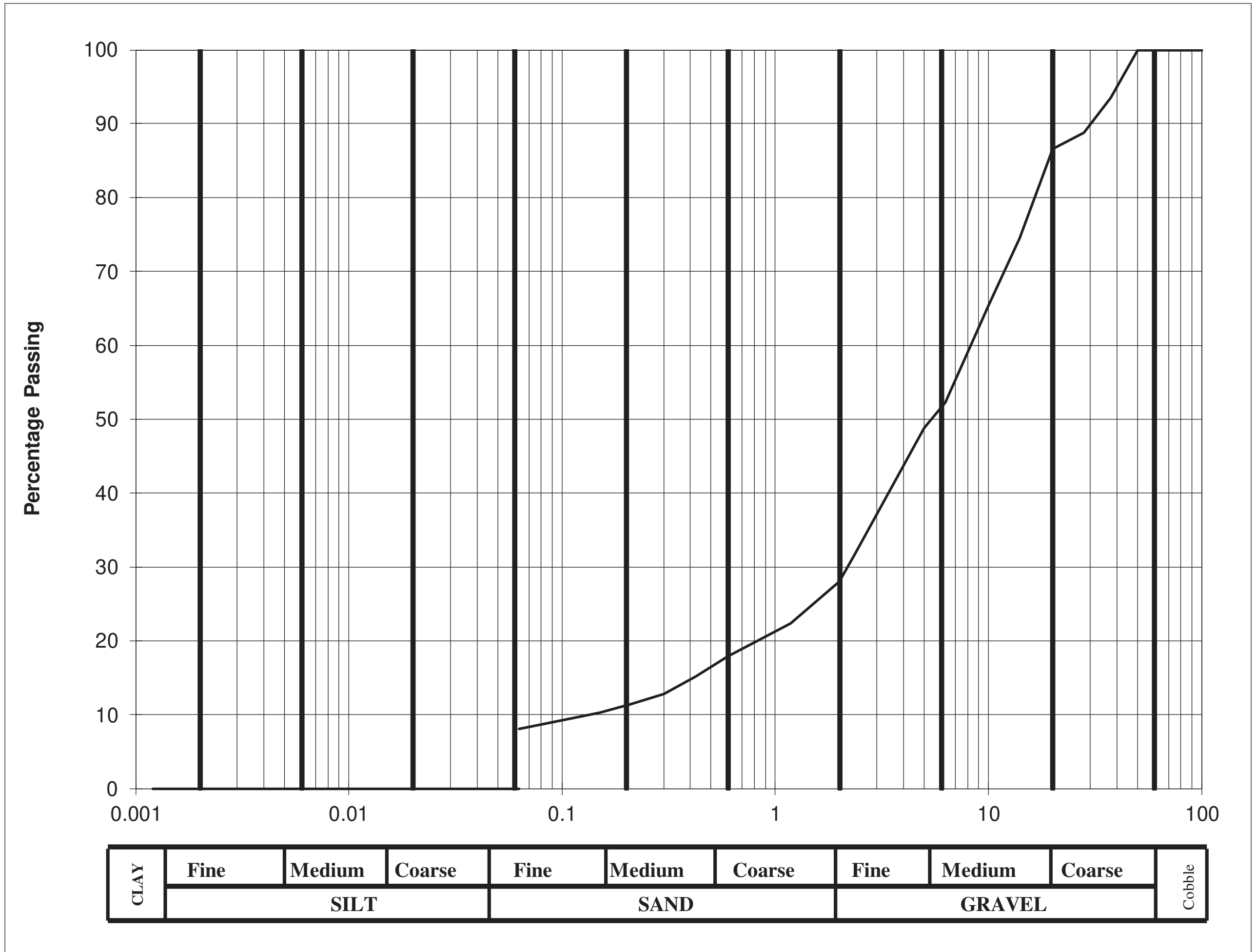
BS Sieve size, mm	Percent passing	Hydrometer analysis Diameter, mm	% passing
100	100	**0.0630**	
90	100	**0.0200**	
75	100	**0.0060**	
63	100	**0.0020**	
50	100		
37.5	93.5		
28	88.8		
20	86.6		
14	74.5		
10	65.4		
6.3	52.3		
5.0	48.8		
2.36	31.7		
2.00	28		
1.18	22.4		
0.600	17.9		
0.425	15.2		
0.300	12.8		
0.212	11.5		
0.150	10.3		
0.063	8		

Cobbles, %	0
Gravel, %	72
Sand, %	20
Clay / Silt, %	8



Client :	Land Development Agency	Lab. No :	21/1060	Hole ID :	TP 19
Project :	Dundrum Central Development	Sample No :	MK59	Depth, m :	1.50

Material description :	silty very sandy GRAVEL
Remarks :	Soils with clay or silt content between 15% - 35% can be classified as clay or silt depending on the field Engineers assessment of in-situ behaviour. Where material is for re-use and therefore disturbed, only soils with clay or silt >35% are classified as clay or silt

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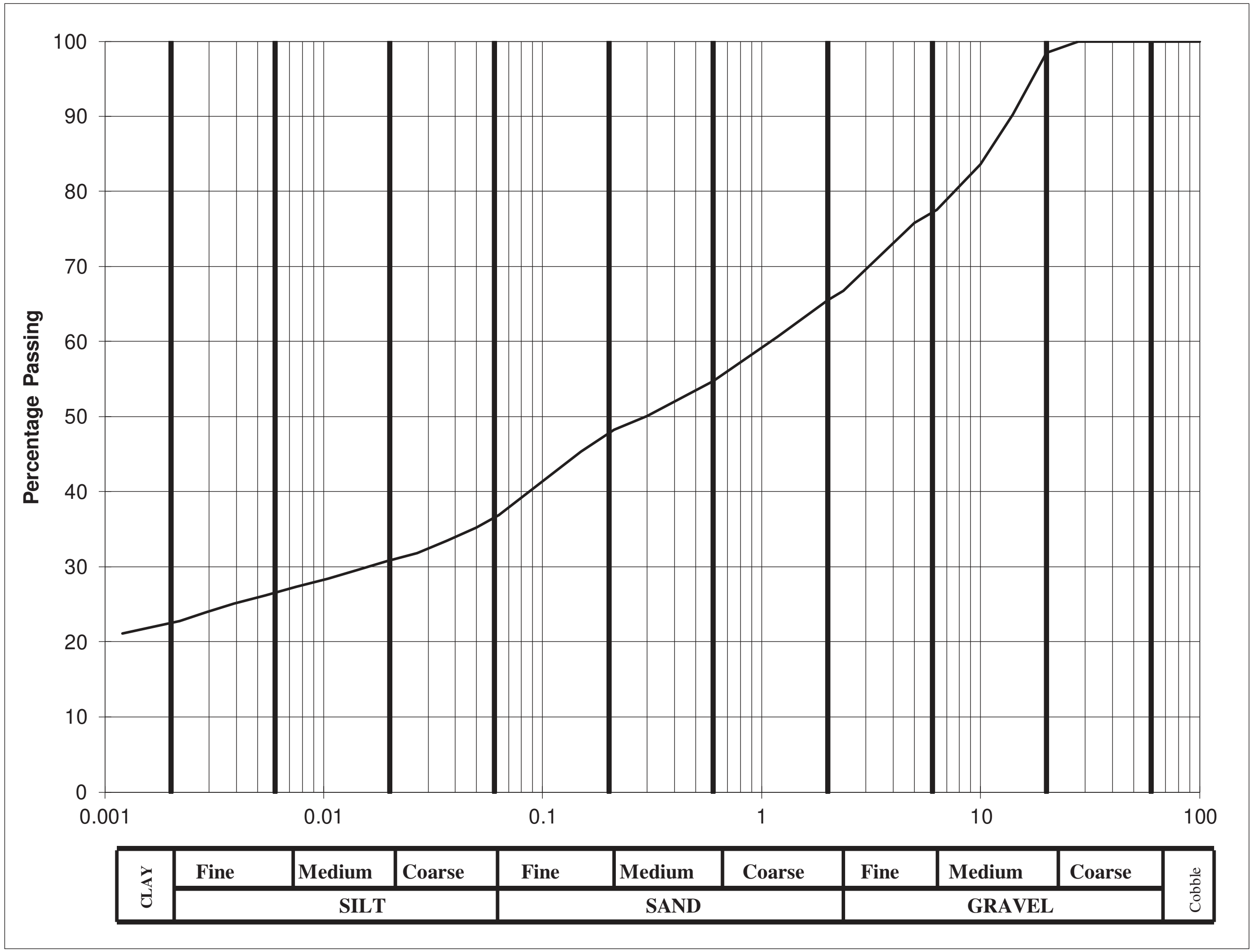
BS Sieve size, mm	Percent passing	Hydrometer analysis Diameter, mm	% passing
100	100	**0.0630**	37
90	100	**0.0200**	31
75	100	**0.0060**	27
63	100	**0.0020**	23
50	100		
37.5	100		
28	100		
20	98.4		
14	90.2		
10	83.6		
6.3	77.5		
5.0	75.8		
2.36	66.7		
2.00	65.5		
1.18	60.6		
0.600	54.7		
0.425	52.4		
0.300	50.1		
0.212	48.2		
0.150	45.3		
0.063	37		

Cobbles, %	0
Gravel, %	35
Sand, %	29
Silt, %	14
Clay, %	23



Client :	Land Development Agency	Lab. No :	21/1061	Hole ID :	TP 20
Project :	Dundrum Central Development	Sample No :	MK62	Depth, m :	1.50

Material description :	slightly sandy gravelly silty CLAY
Remarks :	Soils with clay or silt content between 15% - 35% can be classified as clay or silt depending on the field Engineers assessment of in-situ behaviour. Where material is for re-use and therefore disturbed, only soils with clay or silt >35% are classified as clay or silt

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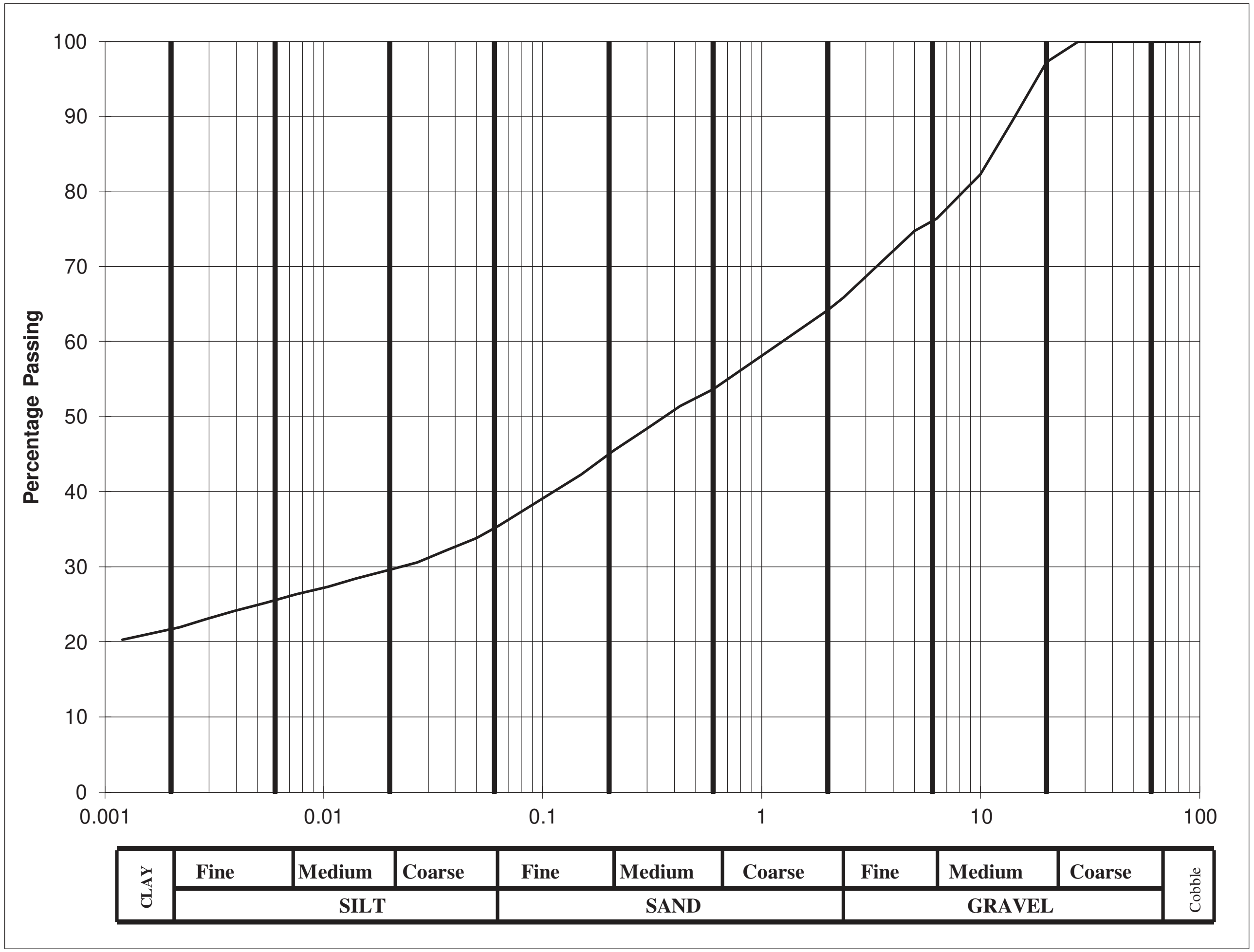
BS Sieve size, mm	Percent passing	Hydrometer analysis Diameter, mm	% passing
100	100	**0.0630**	36
90	100	**0.0200**	29
75	100	**0.0060**	26
63	100	**0.0020**	22
50	100		
37.5	100		
28	100		
20	97.2		
14	89.5		
10	82.3		
6.3	76.4		
5.0	74.7		
2.36	65.8		
2.00	64.2		
1.18	59.5		
0.600	53.6		
0.425	51.4		
0.300	48.4		
0.212	45.5		
0.150	42.3		
0.063	36		

Cobbles, %	0
Gravel, %	36
Sand, %	28
Silt, %	14
Clay, %	22



Client :	Land Development Agency	Lab. No :	21/1062	Hole ID :	TP 22
Project :	Dundrum Central Development	Sample No :	MK65	Depth, m :	1.50

Material description :	slightly sandy gravelly silty CLAY
Remarks :	Soils with clay or silt content between 15% - 35% can be classified as clay or silt depending on the field Engineers assessment of in-situ behaviour. Where material is for re-use and therefore disturbed, only soils with clay or silt >35% are classified as clay or silt

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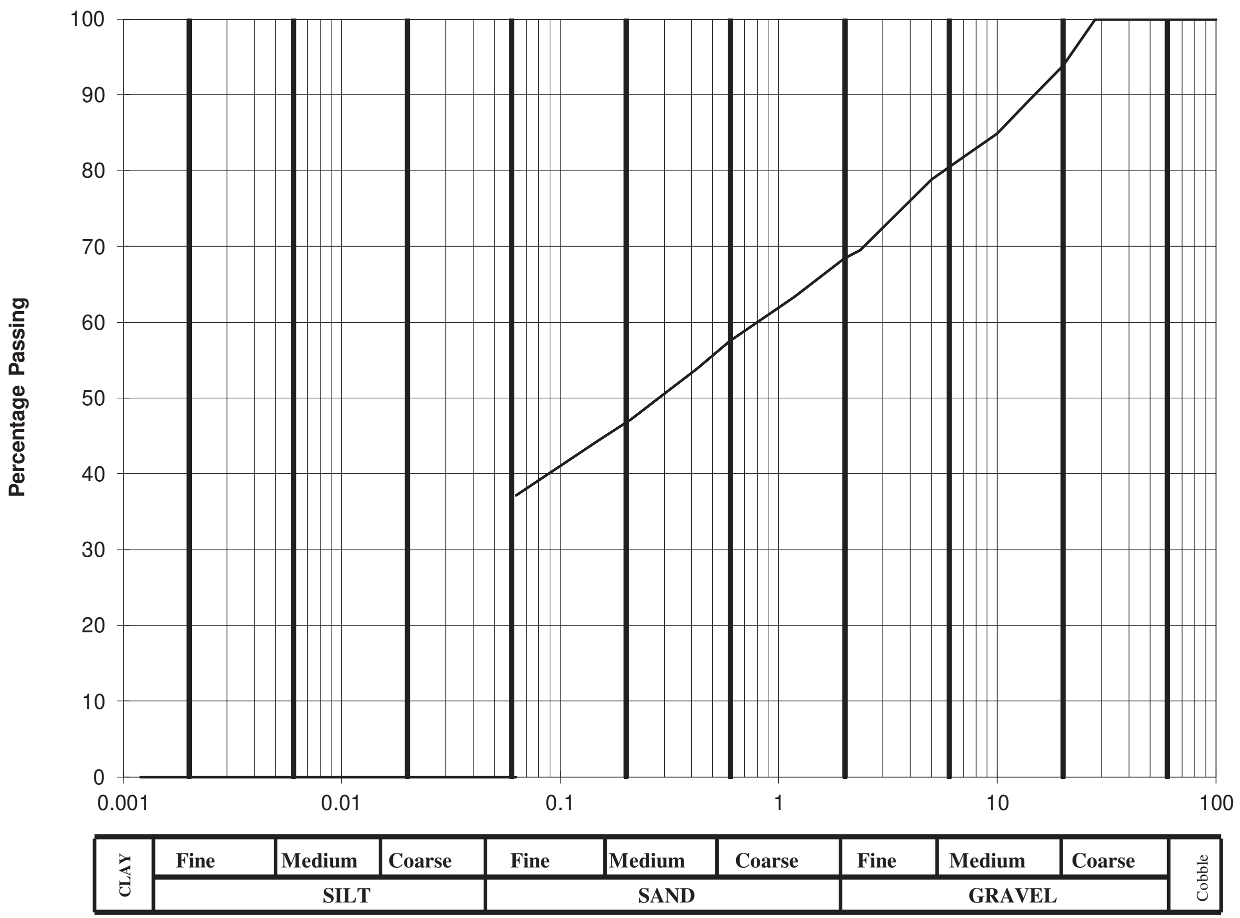
BS Sieve size, mm	Percent passing	Hydrometer analysis Diameter, mm	% passing
100	100	**0.0630**	
90	100	**0.0200**	
75	100	**0.0060**	
63	100	**0.0020**	
50	100		
37.5	100		
28	100		
20	93.8		
14	89.3		
10	84.9		
6.3	80.8		
5.0	78.8		
2.36	69.5		
2.00	68.4		
1.18	63.3		
0.600	57.5		
0.425	53.9		
0.300	50.6		
0.212	47.2		
0.150	44.4		
0.063	37		

Cobbles, %	0
Gravel, %	32
Sand, %	31
Clay / Silt, %	37



Client :	Land Development Agency	Lab. No :	21/1063	Hole ID :	TP 23
Project :	Dundrum Central Development	Sample No :	MK68	Depth, m :	1.50

Material description :	slightly sandy slightly gravelly silty CLAY
Remarks :	Soils with clay or silt content between 15% - 35% can be classified as clay or silt depending on the field Engineers assessment of in-situ behaviour. Where material is for re-use and therefore disturbed, only soils with clay or silt >35% are classified as clay or silt

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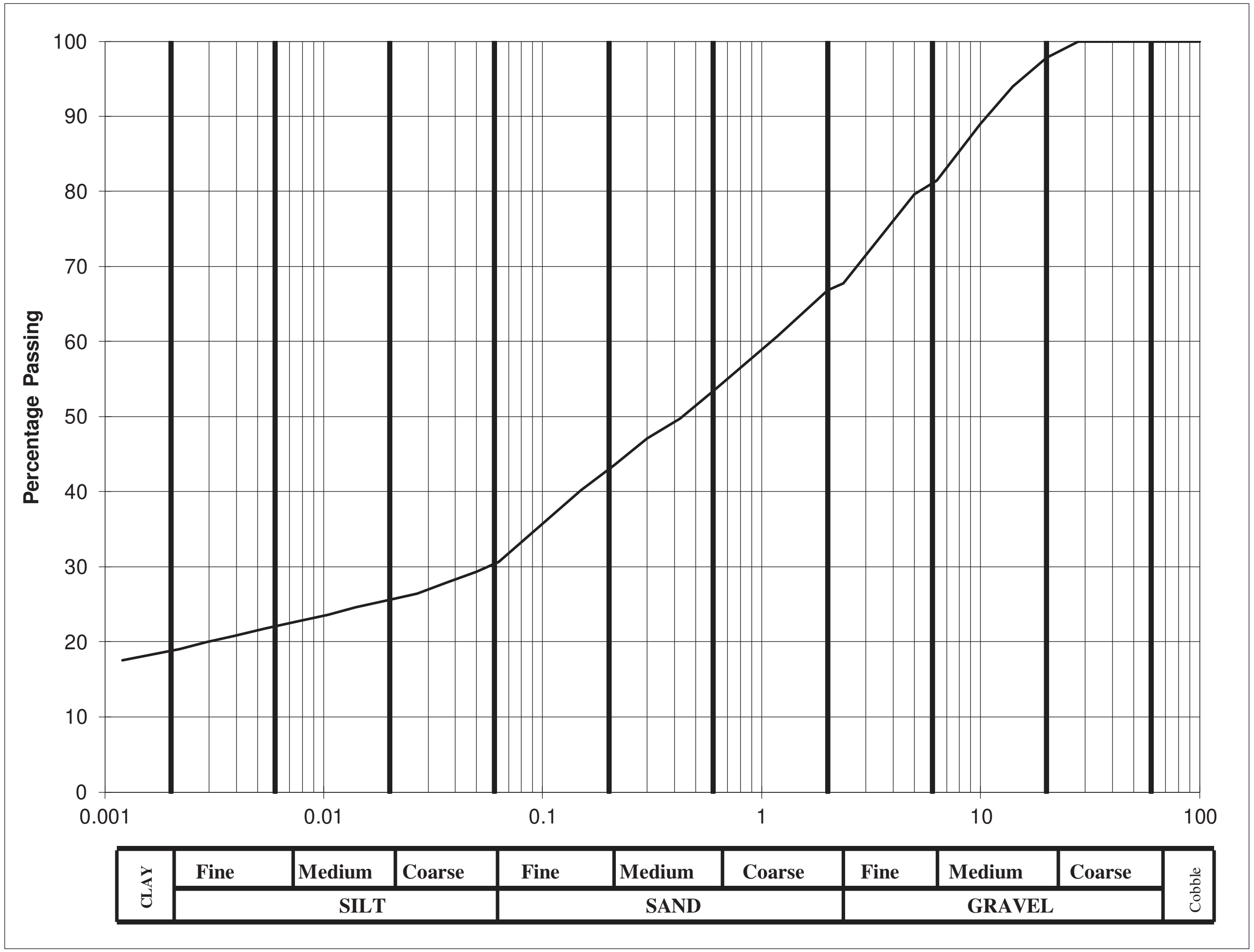
BS Sieve size, mm	Percent passing	Hydrometer analysis Diameter, mm	% passing
100	100	**0.0630**	31
90	100	**0.0200**	26
75	100	**0.0060**	22
63	100	**0.0020**	18
50	100		
37.5	100		
28	100		
20	97.8		
14	94		
10	89		
6.3	81.4		
5.0	79.6		
2.36	67.7		
2.00	66.8		
1.18	60.7		
0.600	53.4		
0.425	49.7		
0.300	47.1		
0.212	43.5		
0.150	40.2		
0.063	31		

Cobbles, %	0
Gravel, %	33
Sand, %	36
Silt, %	13
Clay, %	18



Client :	Land Development Agency	Lab. No :	21/1064	Hole ID :	TP 24
Project :	Dundrum Central Development	Sample No :	MK71	Depth, m :	1.50

Material description :	sandy slightly gravelly silty CLAY
Remarks :	Soils with clay or silt content between 15% - 35% can be classified as clay or silt depending on the field Engineers assessment of in-situ behaviour. Where material is for re-use and therefore disturbed, only soils with clay or silt >35% are classified as clay or silt

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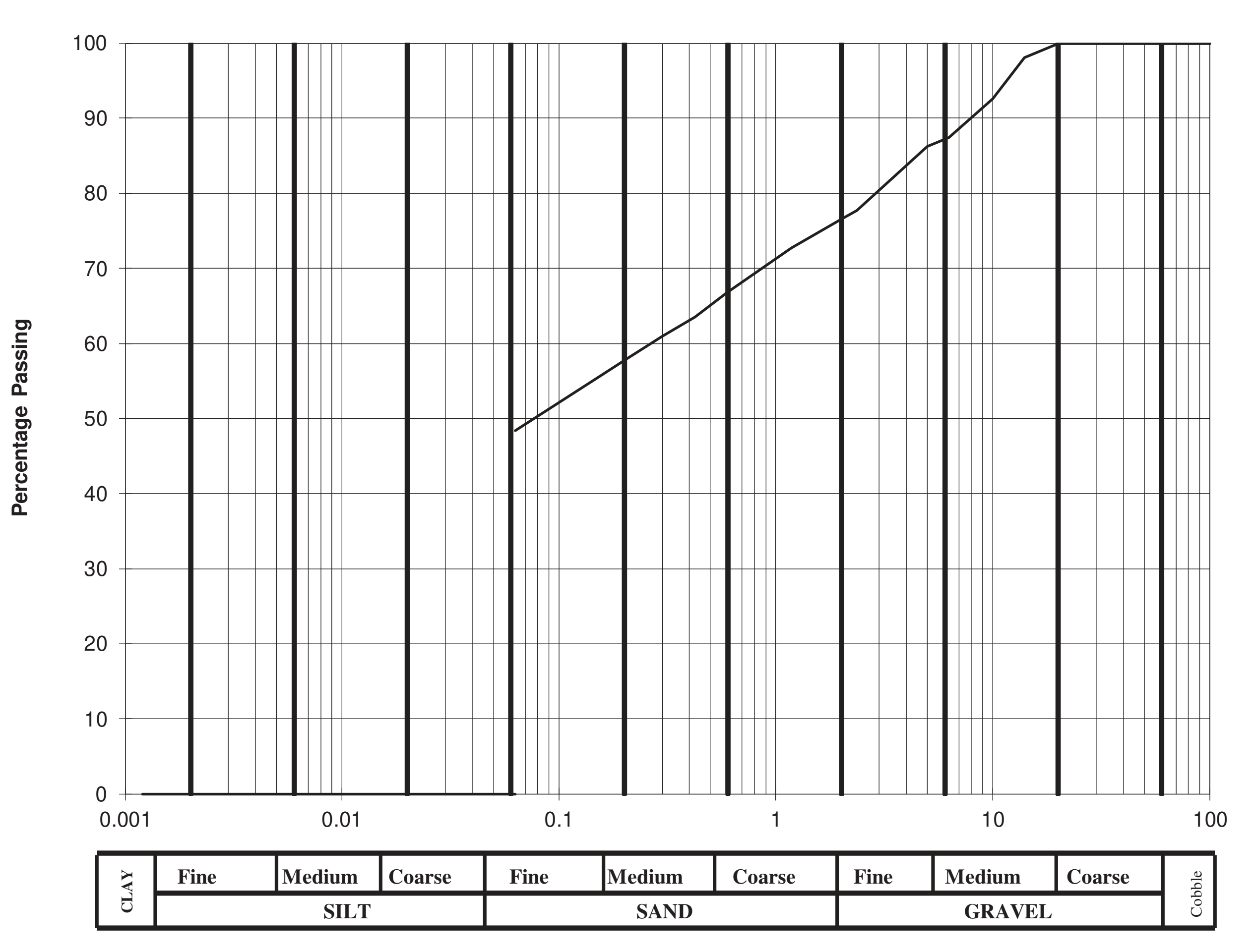
BS Sieve size, mm	Percent passing	Hydrometer analysis	
		Diameter, mm	% passing
100	100	**0.0630**	
90	100	**0.0200**	
75	100	**0.0060**	
63	100	**0.0020**	
50	100		
37.5	100		
28	100		
20	100		
14	98.1		
10	92.6		
6.3	87.4		
5.0	86.2		
2.36	77.7		
2.00	76.5		
1.18	72.7		
0.600	66.8		
0.425	63.5		
0.300	61		
0.212	58.2		
0.150	55.4		
0.063	48		

Cobbles, %	0
Gravel, %	24
Sand, %	29
Clay / Silt, %	48



Client :	Land Development Agency	Lab. No :	21/1065	Hole ID :	TP 25
Project :	Dundrum Central Development	Sample No :	MK74	Depth, m :	1.50

Material description :	slightly sandy slightly gravelly silty CLAY
Remarks :	Soils with clay or silt content between 15% - 35% can be classified as clay or silt depending on the field Engineers assessment of in-situ behaviour. Where material is for re-use and therefore disturbed, only soils with clay or silt >35% are classified as clay or silt

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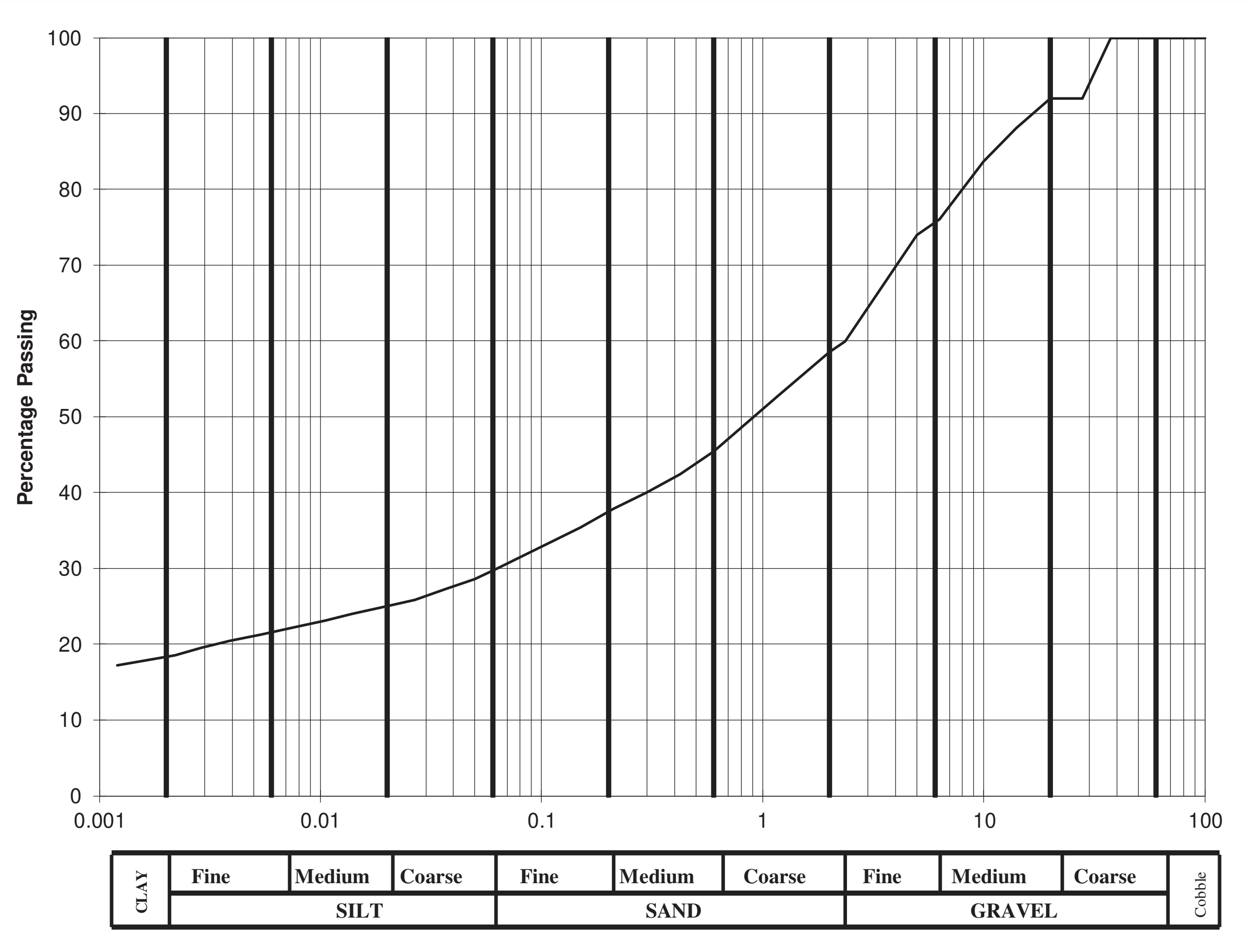
BS Sieve size, mm	Percent passing	Hydrometer analysis Diameter, mm	% passing
100	100	**0.0630**	30
90	100	**0.0200**	25
75	100	**0.0060**	22
63	100	**0.0020**	18
50	100		
37.5	100		
28	92		
20	92		
14	88.1		
10	83.7		
6.3	76		
5.0	74		
2.36	59.9		
2.00	58.5		
1.18	52.8		
0.600	45.4		
0.425	42.4		
0.300	40		
0.212	37.9		
0.150	35.4		
0.063	30		

Cobbles, %	0
Gravel, %	42
Sand, %	29
Silt, %	12
Clay, %	18



Client :	Land Development Agency	Lab. No :	21/1067	Hole ID :	TP 26
Project :	Dundrum Central Development	Sample No :	MK78	Depth, m :	1.50

Material description :	slightly sandy gravelly silty CLAY
Remarks :	Soils with clay or silt content between 15% - 35% can be classified as clay or silt depending on the field Engineers assessment of in-situ behaviour. Where material is for re-use and therefore disturbed, only soils with clay or silt >35% are classified as clay or silt

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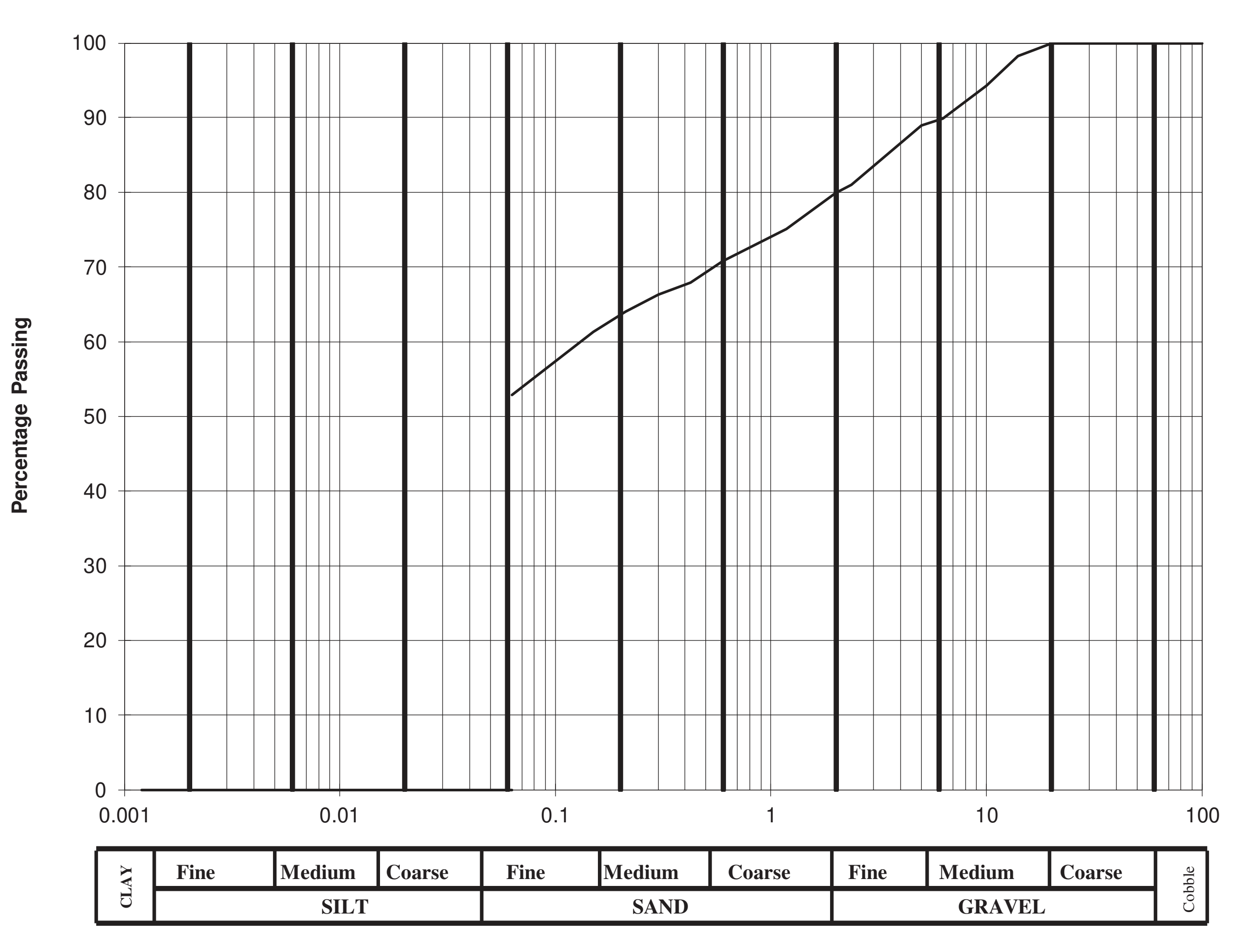
BS Sieve size, mm	Percent passing	Hydrometer analysis Diameter, mm	% passing
100	100	**0.0630**	
90	100	**0.0200**	
75	100	**0.0060**	
63	100	**0.0020**	
50	100		
37.5	100		
28	100		
20	100		
14	98.2		
10	94.3		
6.3	89.9		
5.0	88.9		
2.36	81		
2.00	79.9		
1.18	75.1		
0.600	70.8		
0.425	67.9		
0.300	66.3		
0.212	64		
0.150	61.3		
0.063	53		

Cobbles, %	0
Gravel, %	20
Sand, %	27
Clay / Silt, %	53



Client :	Land Development Agency	Lab. No :	21/1068	Hole ID :	TP 27
Project :	Dundrum Central Development	Sample No :	MK81	Depth, m :	1.50

Material description :	slightly sandy slightly gravelly silty CLAY
Remarks :	Soils with clay or silt content between 15% - 35% can be classified as clay or silt depending on the field Engineers assessment of in-situ behaviour. Where material is for re-use and therefore disturbed, only soils with clay or silt >35% are classified as clay or silt

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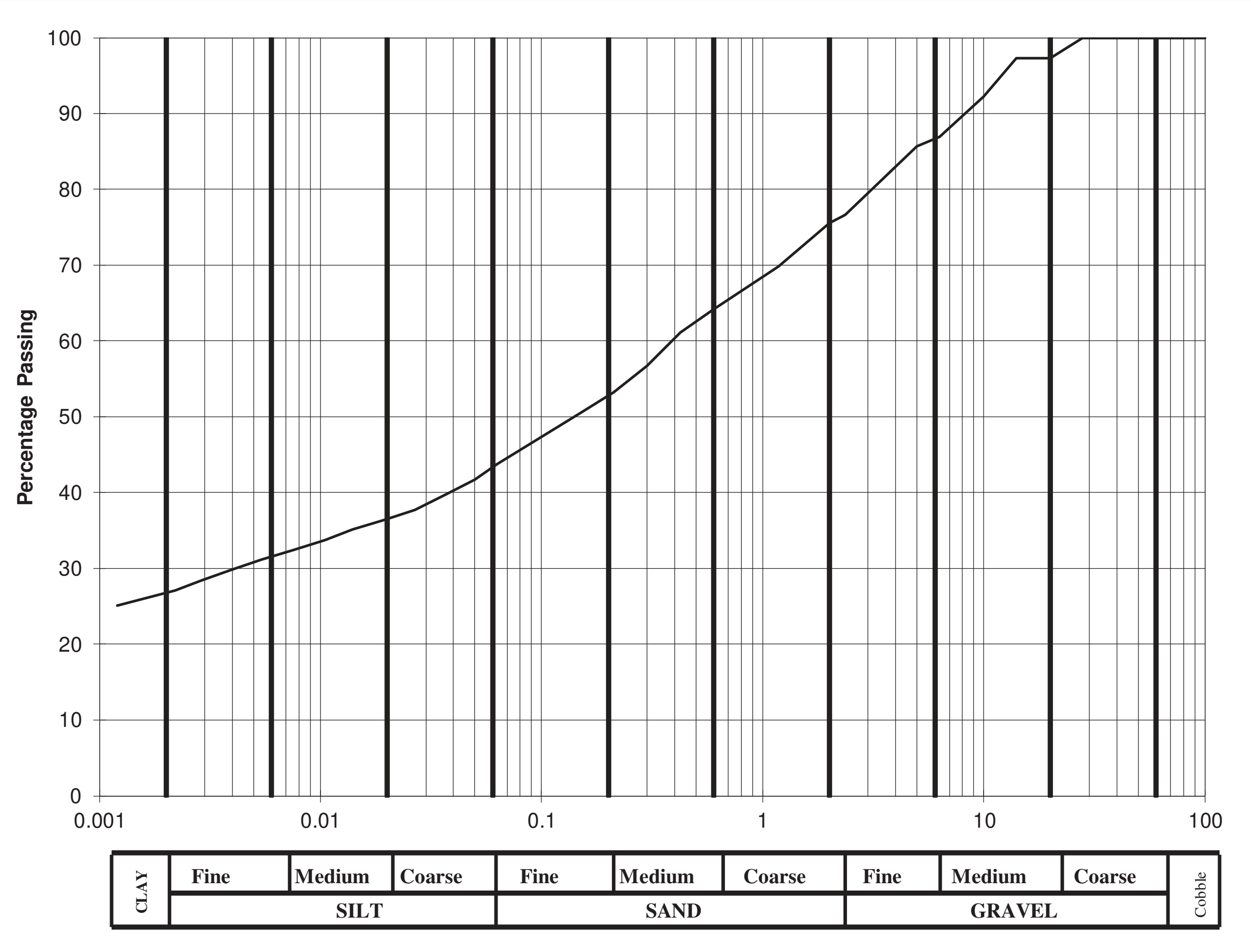
BS Sieve size, mm	Percent passing	Hydrometer analysis	
		Diameter, mm	% passing
100	100	**0.0630**	44
90	100	**0.0200**	37
75	100	**0.0060**	32
63	100	**0.0020**	27
50	100		
37.5	100		
28	100		
20	97.3		
14	97.3		
10	92.2		
6.3	86.9		
5.0	85.7		
2.36	76.6		
2.00	75.5		
1.18	69.8		
0.600	64.2		
0.425	61.1		
0.300	56.7		
0.212	53.2		
0.150	50.5		
0.063	44		



Cobbles, %	0
Gravel, %	25
Sand, %	32
Silt, %	17
Clay, %	27

Client :	Land Development Agency
Project :	Dundrum Central Development

Lab. No :	21/1069
Sample No :	MK84

Hole ID :	TP 28
Depth, m :	1.50

Material description :	slightly sandy slightly gravelly silty CLAY
Remarks :	Soils with clay or silt content between 15% - 35% can be classified as clay or silt depending on the field Engineers assessment of in-situ behaviour. Where material is for re-use and therefore disturbed, only soils with clay or silt >35% are classified as clay or silt

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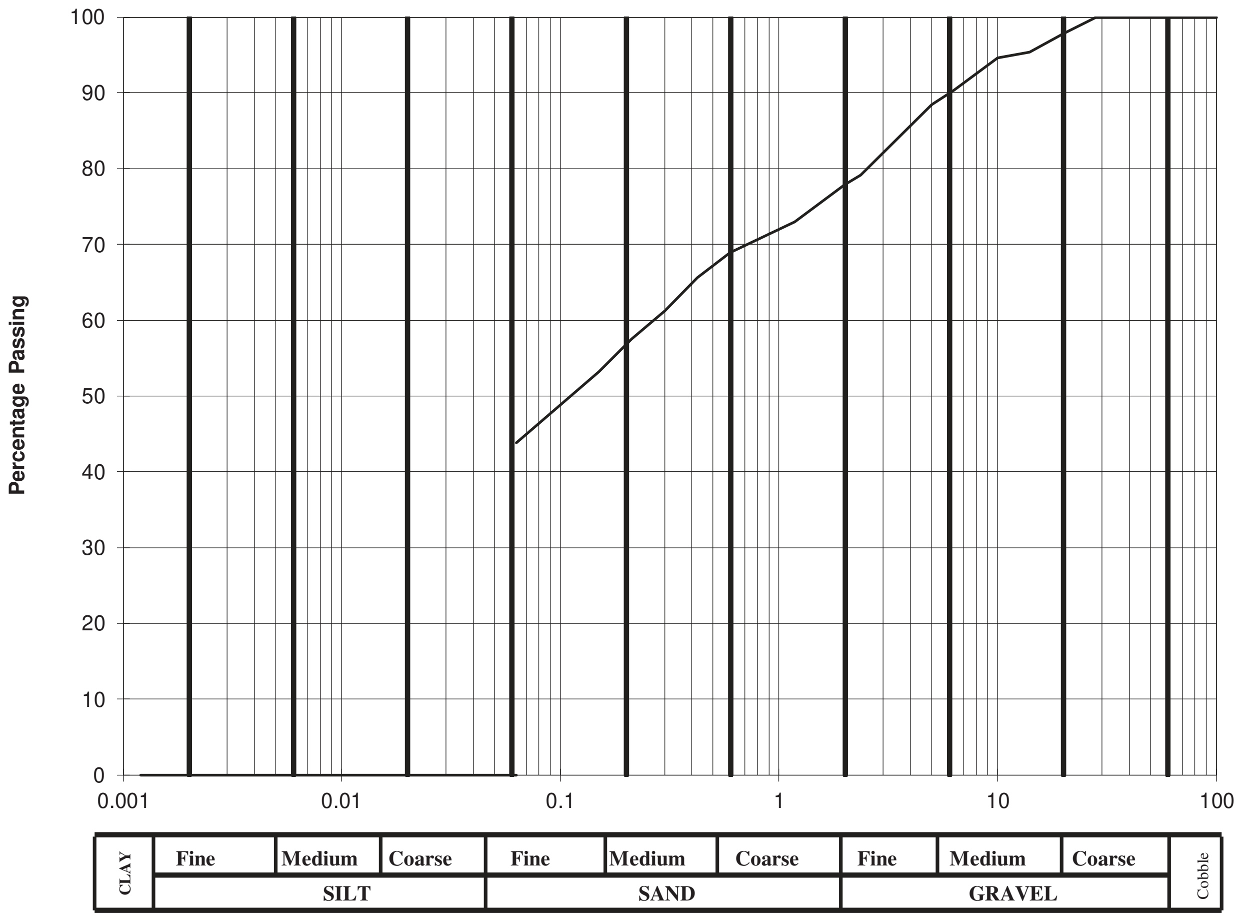
BS Sieve size, mm	Percent passing	Hydrometer analysis Diameter, mm	% passing
100	100	**0.0630**	
90	100	**0.0200**	
75	100	**0.0060**	
63	100	**0.0020**	
50	100		
37.5	100		
28	100		
20	97.8		
14	95.4		
10	94.6		
6.3	90.3		
5.0	88.4		
2.36	79.1		
2.00	77.9		
1.18	73		
0.600	68.9		
0.425	65.6		
0.300	61.2		
0.212	57.5		
0.150	53.2		
0.063	44		

Cobbles, %	0
Gravel, %	22
Sand, %	34
Clay / Silt, %	44



Client :	Land Development Agency	Lab. No :	21/1071	Hole ID :	TP 30
Project :	Dundrum Central Development	Sample No :	MK89	Depth, m :	0.60

Material description :	slightly sandy slightly gravelly silty CLAY
Remarks :	Soils with clay or silt content between 15% - 35% can be classified as clay or silt depending on the field Engineers assessment of in-situ behaviour. Where material is for re-use and therefore disturbed, only soils with clay or silt >35% are classified as clay or silt

__________________________Paddy McGonagle
Site Investigations Ltd

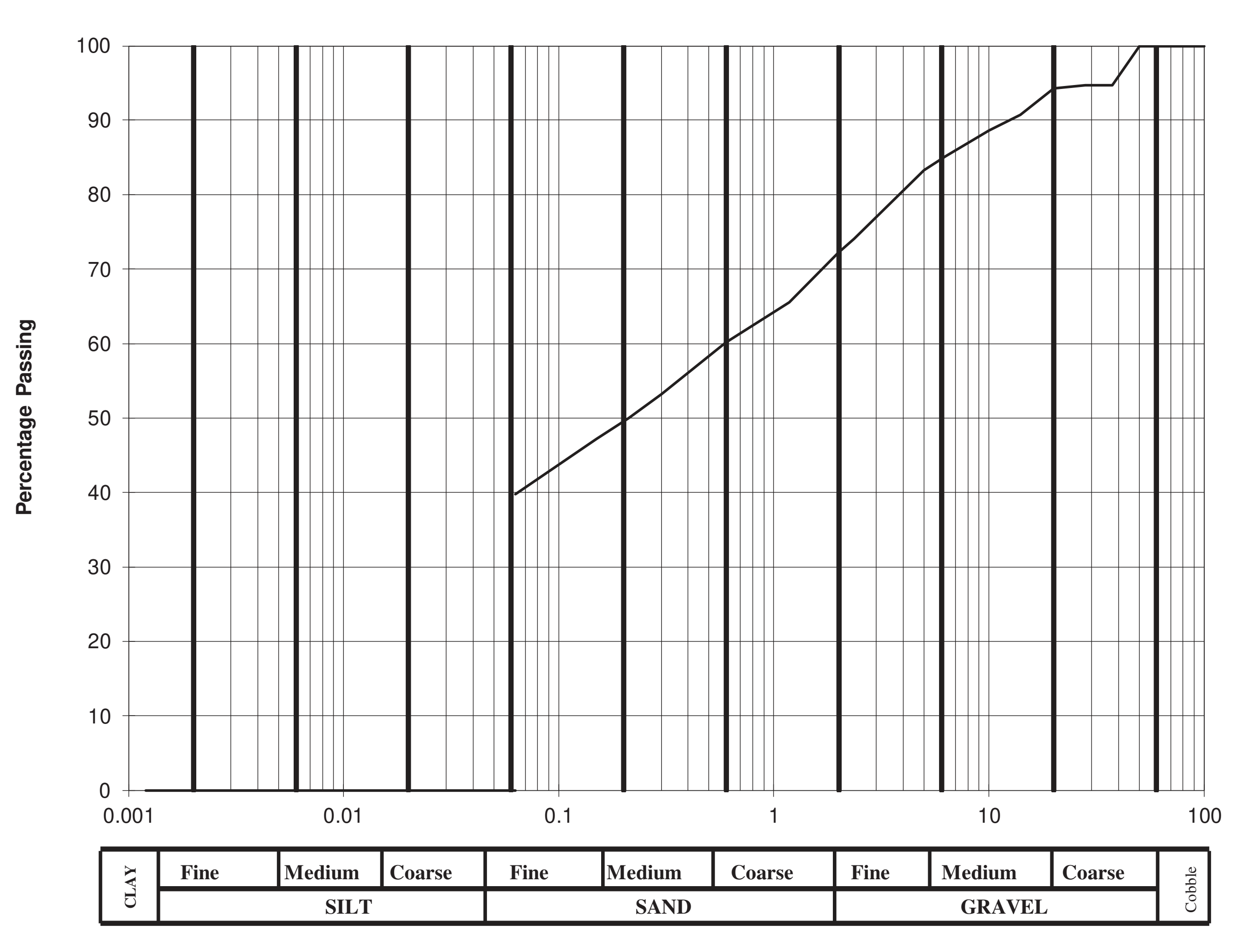
Printed 08/11/2021

BS 1377 Particle Size Analysis

Site Investigations Limited

BS Sieve size, mm	Percent passing	Hydrometer analysis	
		Diameter, mm	% passing
100	100	**0.0630**	
90	100	**0.0200**	
75	100	**0.0060**	
63	100	**0.0020**	
50	100		
37.5	94.7		
28	94.7		
20	94.3		
14	90.7		
10	88.6		
6.3	85.1		
5.0	83.3		
2.36	74.1		
2.00	72.2		
1.18	65.5		
0.600	60.1		
0.425	56.7		
0.300	53.2		
0.212	50		
0.150	47.2		
0.063	40		

Cobbles, %	0
Gravel, %	28
Sand, %	32
Clay / Silt, %	40



Client :	Land Development Agency	Lab. No :	21/1073	Hole ID :	TP 31
Project :	Dundrum Central Development	Sample No :	MK894	Depth, m :	1.90

Material description :	slightly sandy slightly gravelly silty CLAY
Remarks :	Soils with clay or silt content between 15% - 35% can be classified as clay or silt depending on the field Engineers assessment of in-situ behaviour. Where material is for re-use and therefore disturbed, only soils with clay or silt >35% are classified as clay or silt

Printed 08/11/2021

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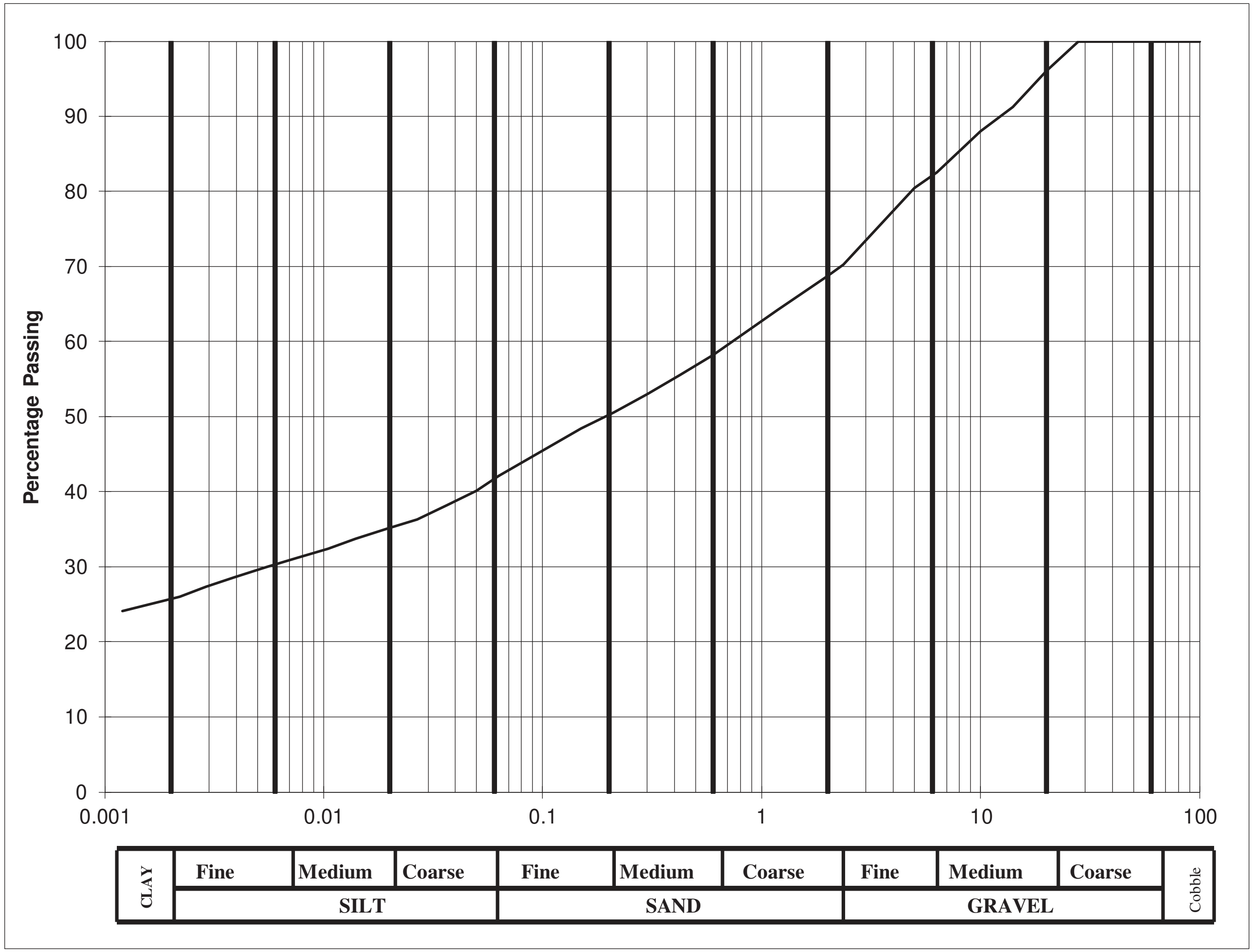
Site Investigations Ltd

BS 1377 Particle Size Analysis

Site Investigations Limited

BS Sieve size, mm	Percent passing	Hydrometer analysis Diameter, mm	% passing
100	100	**0.0630**	42
90	100	**0.0200**	35
75	100	**0.0060**	31
63	100	**0.0020**	26
50	100		
37.5	100		
28	100		
20	96		
14	91.2		
10	88		
6.3	82.5		
5.0	80.4		
2.36	70.2		
2.00	68.7		
1.18	64.2		
0.600	58.2		
0.425	55.5		
0.300	53		
0.212	50.6		
0.150	48.4		
0.063	42		

Cobbles, %	0
Gravel, %	31
Sand, %	27
Silt, %	16
Clay, %	26



Client :	Land Development Agency	Lab. No :	21/1076	Hole ID :	TP 33
Project :	Dundrum Central Development	Sample No :	MK101	Depth, m :	1.50

Material description :	slightly sandy slightly gravelly silty CLAY
Remarks :	Soils with clay or silt content between 15% - 35% can be classified as clay or silt depending on the field Engineers assessment of in-situ behaviour. Where material is for re-use and therefore disturbed, only soils with clay or silt >35% are classified as clay or silt

Printed 08/11/2021

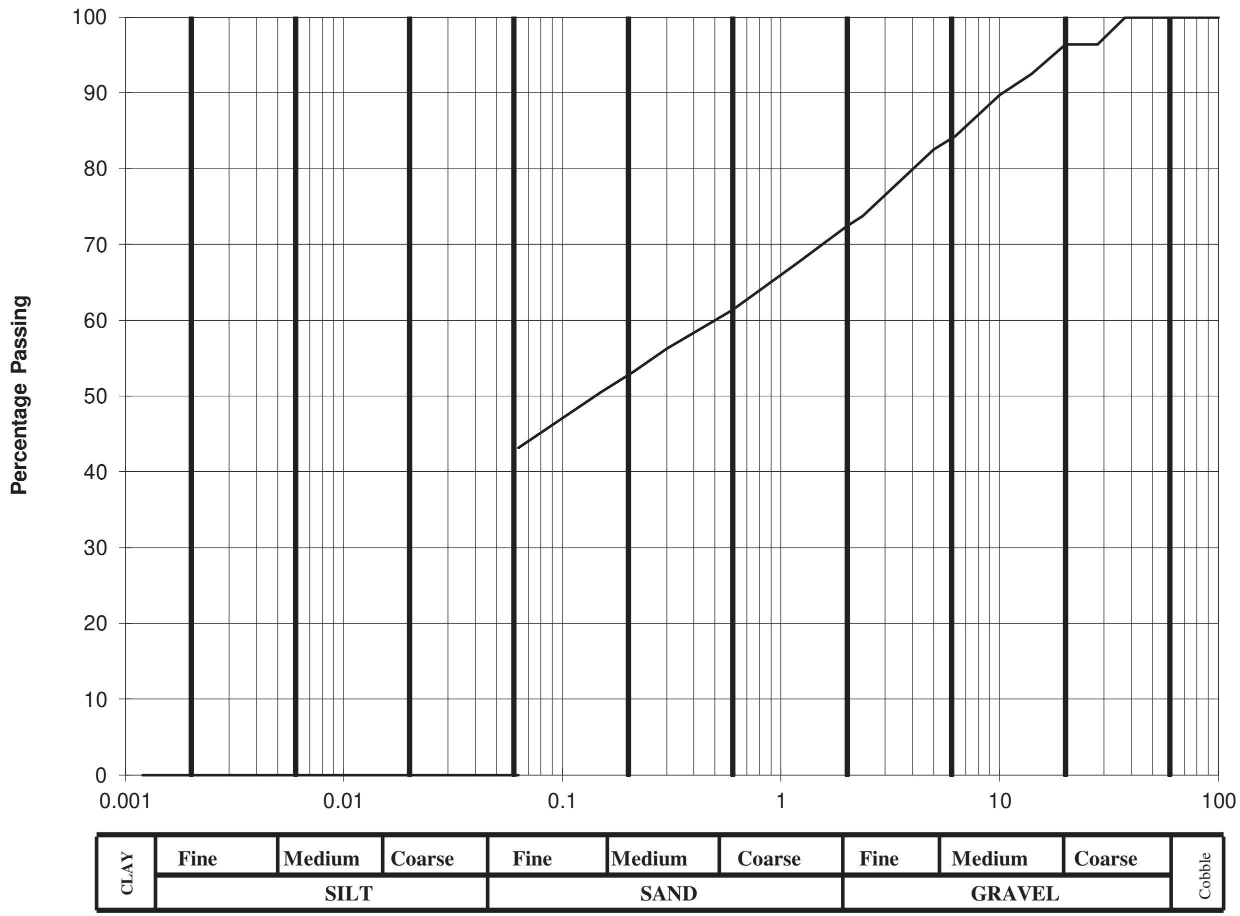
________________________Paddy McGonagle
Site Investigations Ltd

BS 1377 Particle Size Analysis

Site Investigations Limited

BS Sieve size, mm	Percent passing	Hydrometer analysis Diameter, mm	% passing
100	100	**0.0630**	
90	100	**0.0200**	
75	100	**0.0060**	
63	100	**0.0020**	
50	100		
37.5	100		
28	96.4		
20	96.4		
14	92.5		
10	89.7		
6.3	84.3		
5.0	82.5		
2.36	73.7		
2.00	72.4		
1.18	67.5		
0.600	61.3		
0.425	58.8		
0.300	56.2		
0.212	53.2		
0.150	50.5		
0.063	43		

Cobbles, %	0
Gravel, %	28
Sand, %	29
Clay / Silt, %	43



Client :	Land Development Agency	Lab. No :	21/1079	Hole ID :	TP 35
Project :	Dundrum Central Development	Sample No :	MK108	Depth, m :	1.00

Material description :	slightly sandy slightly gravelly silty CLAY
Remarks :	Soils with clay or silt content between 15% - 35% can be classified as clay or silt depending on the field Engineers assessment of in-situ behaviour. Where material is for re-use and therefore disturbed, only soils with clay or silt >35% are classified as clay or silt

Printed 08/11/2021

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Site Investigations Ltd

California Bearing Ratio (CBR) In accordance with BS1377: Part 4: Method 7

Client	Land Development Agency
Site	Dundrum Central Development
S.I. File No	5811 / 21
Test Lab	Site Investigations Ltd., Carhugar The Grange, 12th Lock Rd., Lucan Co. Dublin. Tel (01) 6108768 Email info@siteinvestigations.ie
Report Date	7th October 2021

CBR No	Depth (mBGL)	Sample No	Sample Type	Lab Ref	Moisture Content (%)	CBR Value (%)	Location / Remarks
CBR01	0.40	MK200	CBR	21/1120	8.3	8.9	
CBR02	0.40	MK201	CBR	21/1121	8.5	6.7	
CBR03	0.40	MK202	CBR	21/1122	9.5	7.1	
CBR04	0.40	MK203	CBR	21/1123	13.0	6.4	
CBR05	0.40	MK204	CBR	21/1124	18.5	7.7	
CBR06	0.40	MK205	CBR	21/1125	10.8	7.5	
CBR07	0.40	MK206	CBR	21/1126	18.7	8.1	

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Printed 08/11/2021

SHEAR BOX TEST

Test Method **BS 1377 : Part 7 : 1990 : Method 4**

Preparation procedure **Specimens prepared from intact block within sample bag**

Description **Grey/brown slightly sandy slightly gravelly SILT/CLAY**

Weighings		**Stage 1**	**Stage 2**	**Stage 3**
Wet soil	gms	342.8	342.3	342.8
Dry soil	gms	160.2	160.2	160.1
Wet soil	gms	188.1	187.6	188.2
Dry soil	gms	160.2	160.2	160.1
Water	gms	27.9	27.4	28.0
Moisture Content (%)		17.4	17.1	17.5
Bulk Density (Mg/m3)		2.13	2.13	2.13
Dry density (Mg/m3)		1.82	1.82	1.82
Voids ratio e		0.4869	0.4866	0.4873
Degree of saturation (%)		96.7	94.9	97.0

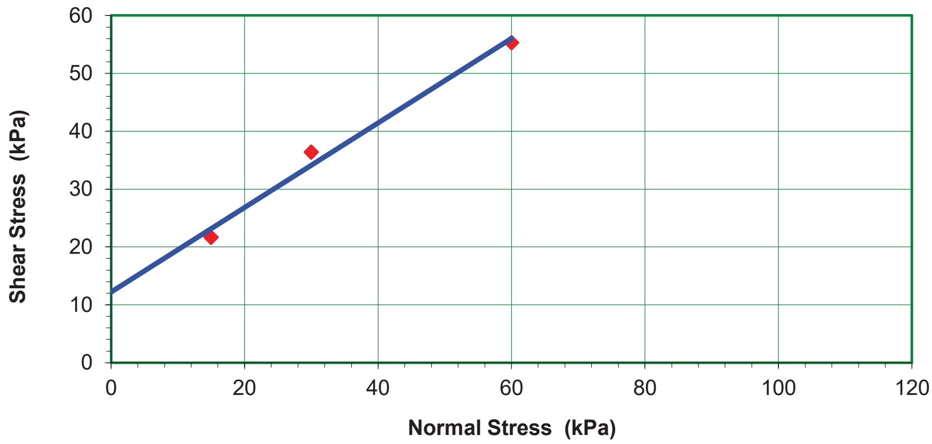
Nominal Dimensions		
Length	L1 mm	60
	L2 mm	60
Area	A mm2	3600
Height	H mm	24.5
Volume	V cm3	88.2
Particle density	Mg/m3	2.70

Final Details

	Stage 1	**Stage 2**	**Stage 3**
Normal Loads(kPa)	15	30	60
Shear stress (kPa)	21.7	36.4	55.3
Horizontal Displacement (mm)	6.944	4.627	5.869
Vertical displacement (mm)	-0.654	-0.471	0.086
Rate of displacement (mm/min)		0.5000	

Date sampled	n/a		Peak
Date received	30/09/2021	Cohesion c' (kPa)	12.2
Date tested	20/10/2021	Friction angle phi'	36.1°

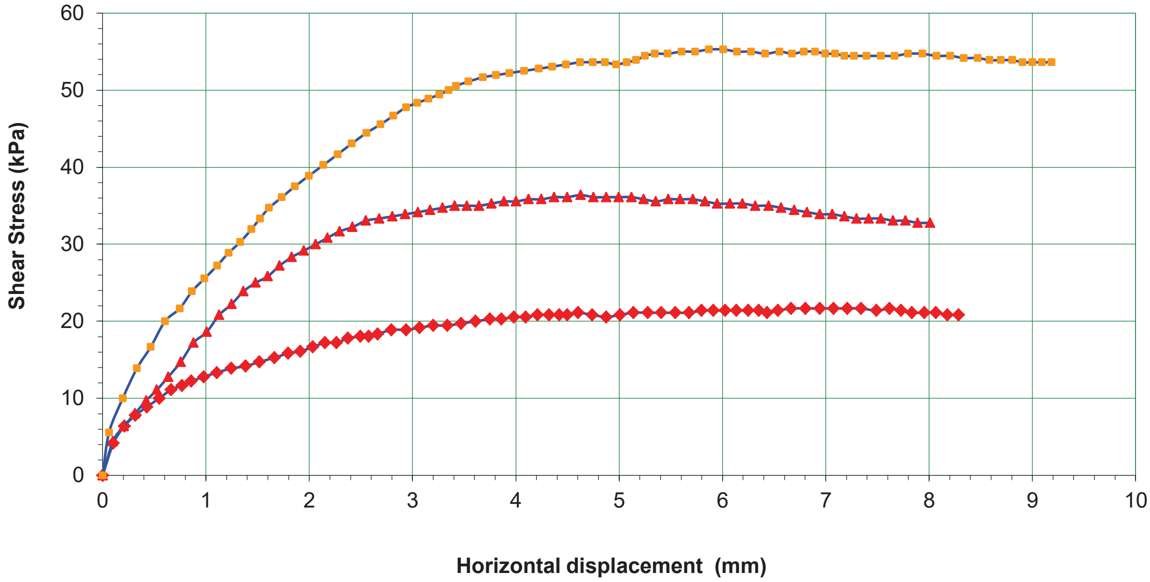
Mohr Envelope

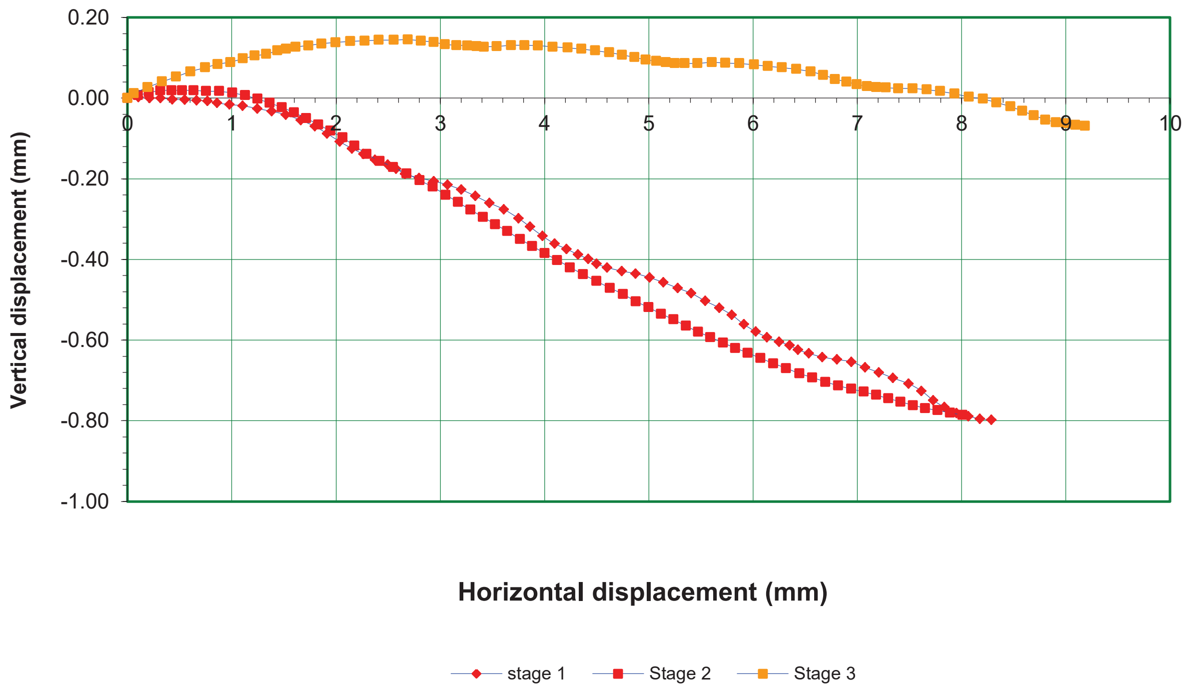


SIL PROJECT ID: 5811/21

NM T L Ltd	**Quick drained shear box in 60mm square shear box**		Job No. NMTL_3448 Borehole No. TP08
	Project Dundrum Central Development		Sample No. MK25
Operator Sb	Checked Nc	Approved Bc	Depth. 1.50m

SHEAR STAGE





SIL PROJECT ID: 5811/21

NM T L Ltd	**Quick drained shear box in 60mm square shear box**		Job No. NMTL_3448 Borehole No. TP08
	Project Dundrum Central Development		Sample No. MK25
Operator Sb	Checked Nc	Approved Bc	Depth. 1.50m

SHEAR BOX TEST

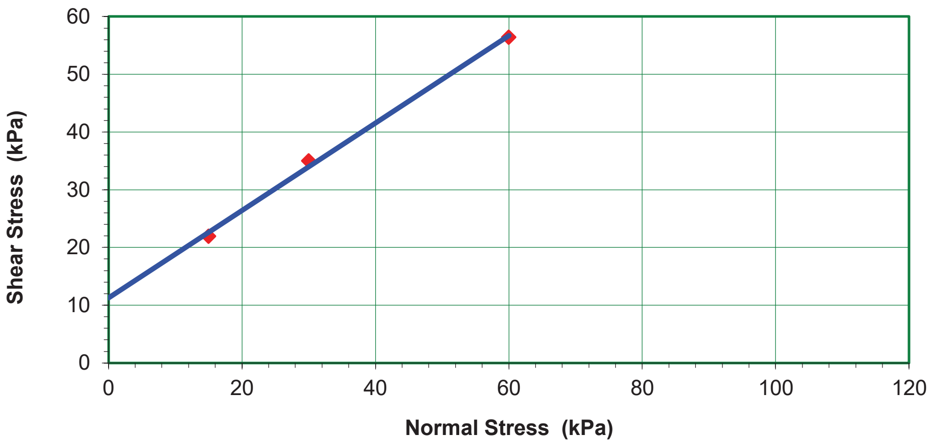
Test Method		**BS 1377 : Part 7 : 1990 : Method 4**						
Preparation procedure		**Remoulded with 2.5kg rammer at natural moisture content**						
Description		**Red/brown slightly gravelly slightly sandy clayey SILT.**						
Weighings		**Stage 1**	**Stage 2**	**Stage 3**	**Nominal Dimensions**			
Wet soil	gms	332.6	332.9	332.8		Length	L1 mm	60
Dry soil	gms	148.5	149.1	148.9			L2 mm	60
						Area	A mm2	3600
Wet soil	gms	178.0	178.4	178.2		Height	H mm	24.5
Dry soil	gms	148.5	149.1	148.9		Volume	V cm3	88.2
Water	gms	29.5	29.2	29.3		Particle density	Mg/m3	2.70
Moisture Content (%)		19.8	19.6	19.7				
Bulk Density (Mg/m3)		2.02	2.02	2.02				
Dry density (Mg/m3)		1.68	1.69	1.69				
Voids ratio e		0.6035	0.5970	0.5993				
Degree of saturation (%)		88.8	88.7	88.7				

Final Details

	Stage 1	Stage 2	Stage 3
Normal Loads(kPa)	15	30	60
Shear stress (kPa)	21.9	35.0	56.4
Horizontal Displacement (mm)	3.170	3.009	3.400
Vertical displacement (mm)	-0.294	-0.261	-0.072
Rate of displacement (mm/min)		0.5000	

Date sampled	n/a		Peak
Date received	30/09/2021	Cohesion c' (kPa)	11.3
Date tested	20/10/2021	Friction angle phi'	37.2°

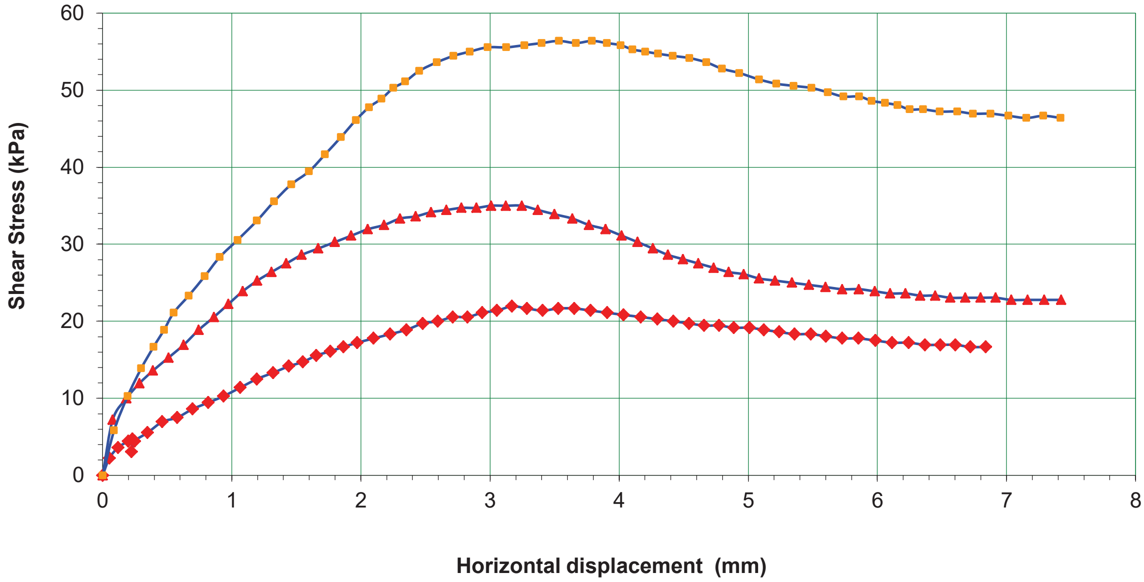
Mohr Envelope

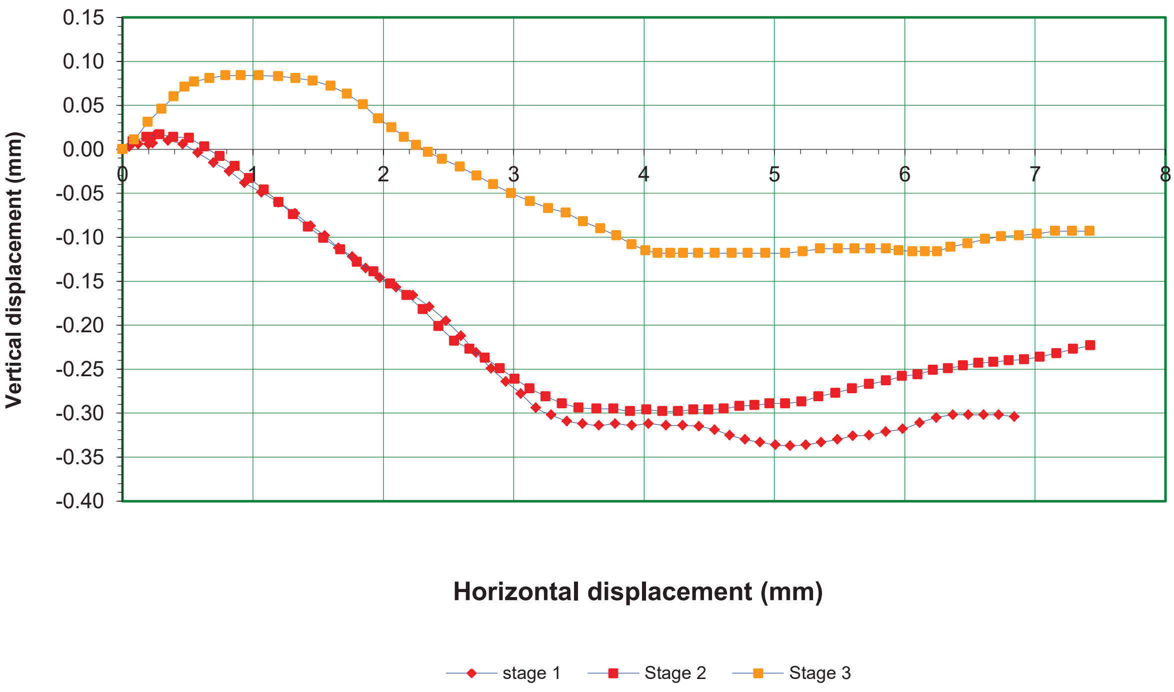


SIL PROJECT ID: 5811/21

NM T L Ltd	**Quick drained shear box in 60mm square shear box**		Job No. NMTL_3448 / Borehole No. TP11
	Project	Dundrum Central Development	Sample No. MK34
Operator Sb	Checked Nc	Approved Bc	Depth. 1.20m

SHEAR STAGE





SIL PROJECT ID: 5811/21

NM T L Ltd	**Quick drained shear box in 60mm square shear box**		Job No. NMTL_3448 Borehole No. TP11
	Project	Dundrum Central Development	Sample No. MK34
Operator Sb	Checked Nc	Approved Bc	Depth. 1.20m

SHEAR BOX TEST

Test Method **BS 1377 : Part 7 : 1990 : Method 4**

Preparation procedure **Specimen prepared from intack block within the sample bag.**

Description **Brown slightly sandy slightly gravelly SILT/CLAY**

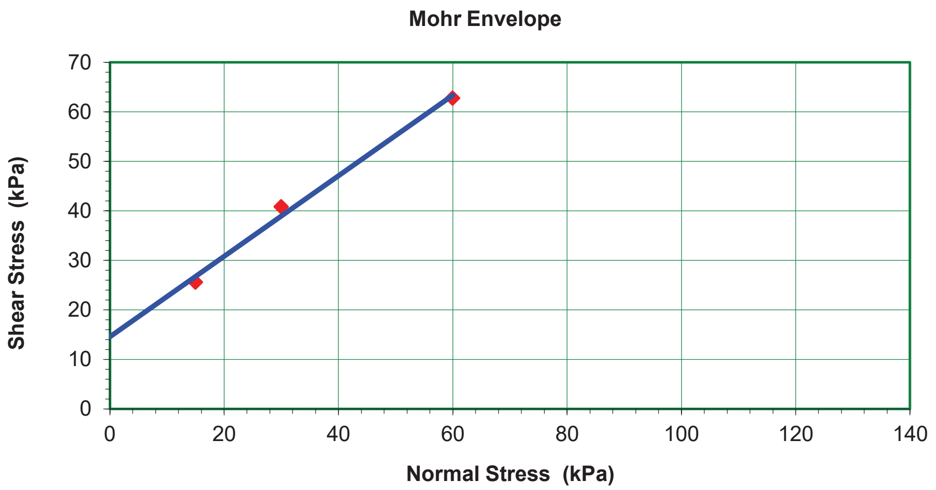
Weighings		**Stage 1**	**Stage 2**	**Stage 3**
Wet soil	gms	349.7	349.7	349.7
Dry soil	gms	170.1	170.1	170.2
Wet soil	gms	195.2	195.0	195.2
Dry soil	gms	170.1	170.1	170.2
Water	gms	25.1	24.9	25.0
Moisture Content (%)		14.7	14.6	14.7
Bulk Density (Mg/m3)		2.21	2.21	2.21
Dry density (Mg/m3)		1.93	1.93	1.93
Voids ratio e		0.3998	0.3998	0.3990
Degree of saturation (%)		99.5	98.7	99.3

Nominal Dimensions		
Length	L1 mm	60
	L2 mm	60
Area	A mm2	3600
Height	H mm	24.5
Volume	V cm3	88.2
Particle density	Mg/m3	2.70

Final Details

	Stage 1	**Stage 2**	**Stage 3**
Normal Loads(kPa)	15	30	60
Shear stress (kPa)	25.6	40.8	62.8
Horizontal Displacement (mm)	4.717	6.489	5.975
Vertical displacement (mm)	-0.663	-0.720	-0.235
Rate of displacement (mm/min)		0.5000	

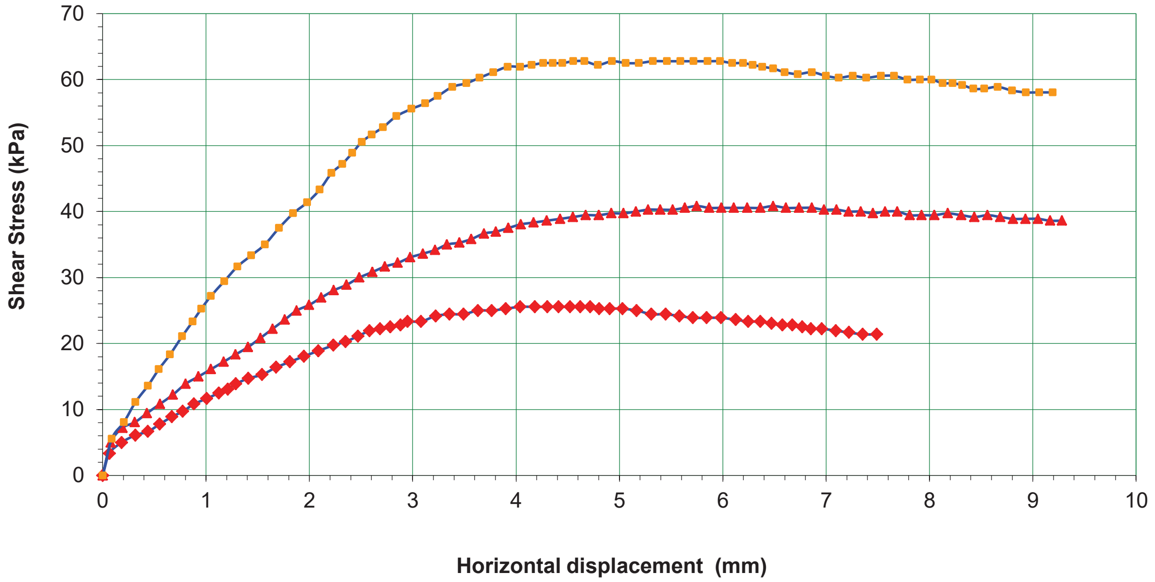
Date sampled	n/a		Peak
Date received	30/09/2021	Cohesion c' (kPa)	11.3
Date tested	20/10/2021	Friction angle phi'	39.1°

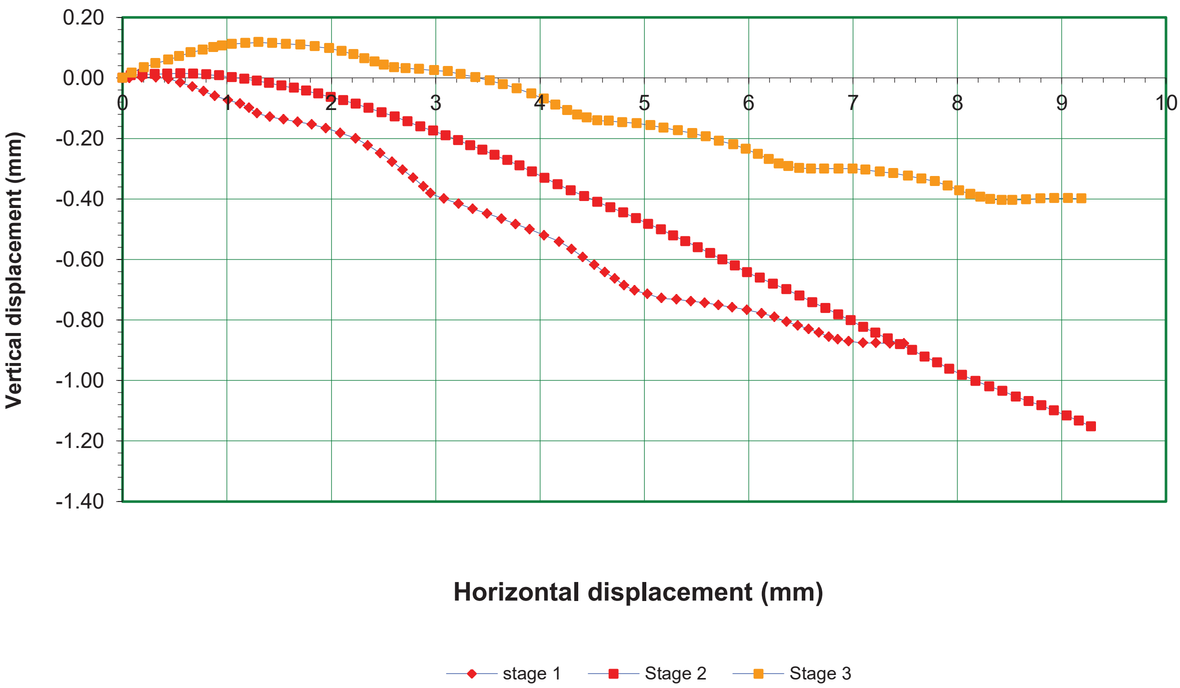


SIL PROJECT ID: 5811/21

NM T L Ltd	Quick drained shear box in 60mm square shear box		Job No. NMTL_3448 Borehole No. TP28
	Project Dundrum Central Development		Sample No. MK84
Operator Sb	Checked Nc	Approved Bc	Depth. 1.50m

SHEAR STAGE





SIL PROJECT ID: 5811/21

NM T L Ltd	Quick drained shear box in 60mm square shear box		Job No. NMTL_3448 Borehole No. TP28
	Project Dundrum Central Development		Sample No. MK84
Operator Sb	Checked Nc	Approved Bc	Depth. 1.50m

Chemical Testing
In accordance with BS 1377: Part 3

Client	Land Development Agency
Site	Dundrum Central Development
S.I. File No	5811 / 21
Test Lab	Site Investigations Ltd., Carhugar The Grange, 12th Lock Rd., Lucan Co. Dublin. Tel (01) 6108768 Email:info@siteinvestigations.ie
Report Date	6th October 2021

Hole Id	Depth (mBGL)	Sample No	Lab Ref	pH Value	Water Soluble Sulphate Content (2:1 Water-soil extract) (SO_3) g/L	Water Soluble Sulphate Content (2:1 Water-soil extract) (SO_3) %	Loss on Ignition (Organic Content) %	Chloride ion Content (water:soil ratio 2:1) %	% passing 2mm	Remarks
TP03	1.50	MK08	21/1049	7.92	0.126	0.108			85.7	
TP07	1.50	MK22	21/1052	7.95	0.122	0.072			59.2	
TP08	1.50	MK25	21/1053	7.69	0.122	0.085			69.7	
TP16	1.30	MK49	21/1057	7.32	0.122	0.091			75.1	
TP20	1.50	MK62	21/1061	7.33	0.119	0.078			65.5	
TP24	1.50	MK71	21/1064	8.11	0.127	0.085			66.8	
TP26	1.50	MK78	21/1067	7.39	0.120	0.070			58.5	
TP28	1.50	MK84	21/1069	7.59	0.123	0.093			75.5	
TP30	0.60	MK89	21/1071	7.59	0.120	0.094			77.9	
TP33	1.50	MK101	21/1076	7.52	0.119	0.082			68.7	

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________________________Paddy McGonagle
Site Investigations Ltd.

Appendix 7

Environmental Laboratory Test Results

Eurofins Chemtest Ltd
Depot Road
Newmarket
CB8 0AL
Tel: 01638 606070
Email: info@chemtest.com

Amended Report

Report No.:	21-33474-2		
Initial Date of Issue:	05-Oct-2021	**Date of Re-Issue:**	08-Oct-2021
Client	Site Investigations Ltd		
Client Address:	The Grange12th, Lock Road Lucan Co Dublin IRELAND		
Contact(s):	Stephen Letch		
Project	5811		
Quotation No.:		**Date Received:**	27-Sep-2021
Order No.:	60/A/21	**Date Instructed:**	27-Sep-2021
No. of Samples:	8		
Turnaround (Wkdays):	7	**Results Due:**	05-Oct-2021
Date Approved:	05-Oct-2021		

Approved By:

Details: Glynn Harvey, Technical Manager

Chemtest
Eurofins Chemtest Ltd
Depot Road
Newmarket
CB8 0AL
Tel: 01638 606070
Email: info@chemtest.com

Final Report

Report No.:	21-33476-1
Initial Date of Issue:	04-Oct-2021
Client	Site Investigations Ltd
Client Address:	The Grange12th, Lock Road Lucan Co Dublin IRELAND
Contact(s):	Stephen Letch
Project	5811

Quotation No.:		**Date Received:**	27-Sep-2021
Order No.:	60/A/21	**Date Instructed:**	27-Sep-2021
No. of Samples:	10		
Turnaround (Wkdays):	7	**Results Due:**	05-Oct-2021
Date Approved:	04-Oct-2021		

Approved By:

Details: Glynn Harvey, Technical Manager

Eurofins Chemtest Ltd
Depot Road
Newmarket
CB8 0AL
Tel: 01638 606070
Email: info@chemtest.com

Final Report

Report No.:	21-33480-1
Initial Date of Issue:	04-Oct-2021
Client	Site Investigations Ltd
Client Address:	The Grange12th, Lock Road Lucan Co Dublin IRELAND
Contact(s):	Stephen Letch
Project	5811

Quotation No.:		**Date Received:**	
Order No.:	60/A/21	**Date Instructed:**	27-Sep-2021
No. of Samples:	4		
Turnaround (Wkdays):	7	**Results Due:**	05-Oct-2021
Date Approved:	04-Oct-2021		

Approved By:

Details: Glynn Harvey, Technical Manager

eurofins
Chemtest
Eurofins Chemtest Ltd
Depot Road
Newmarket
CB8 0AL
Tel: 01638 606070
Email: info@chemtest.com

Final Report

Report No.:	21-33504-1		
Initial Date of Issue:	07-Oct-2021		
Client	Site Investigations Ltd		
Client Address:	Main Street Newcastle County Dublin Ireland		
Contact(s):	Stephen Letch		
Project	5811		
Quotation No.:		**Date Received:**	27-Sep-2021
Order No.:	60/A/21	**Date Instructed:**	27-Sep-2021
No. of Samples:	48		
Turnaround (Wkdays):	7	**Results Due:**	05-Oct-2021
Date Approved:	07-Oct-2021		
Approved By:			
Details:	Glynn Harvey, Technical Manager		

Results - Leachate

Project: 5811

Client: Site Investigations Ltd					Chemtest Job No.:	21-33474	21-33474	21-33474	21-33474	21-33474	21-33474	21-33474	21-33474	21-33476	21-33476	21-33476
Quotation No.:					Chemtest Sample ID.:	1286930	1286931	1286932	1286933	1286934	1286935	1286936	1286937	1286943	1286944	1286945
Order No.: 60/A/21					Client Sample Ref.:	ES49	ES50	ES51	ES52	ES53	ES54	ES55	ES56	ES57	ES58	ES59
					Client Sample ID.:	1	2	1	2	1	2	1	2	1	2	3
					Sample Location:	TP33	TP33	TP34	TP34	TP35	TP35	TP36	TP36	TP05	TP05	TP05
					Sample Type:	SOIL	SOIL	SOIL	SOIL	SOIL	SOIL	SOIL	SOIL	SOIL	SOIL	SOIL
					Top Depth (m):	0.30	1.00	0.30	0.80	0.30	1.00	0.30	0.80	0.30	0.50	1.00
					Bottom Depth (m):	0.30	1.00	0.30	0.80	0.30	1.00	0.30	0.80	0.30	0.50	1.00
Determinand	**Accred.**	**SOP**	**Type**	**Units**	**LOD**											
Ammonium	U	1220	10:1	mg/l	0.050	< 0.050	< 0.050	0.056	< 0.050	0.12	< 0.050	0.065	0.054	< 0.050	0.070	0.054
Ammonium	N	1220	10:1	mg/kg	0.10	0.53	0.44	0.68	0.33	1.4	0.28	0.76	0.66	0.31	0.84	0.76

Results - Leachate

Project: 5811

Client: Site Investigations Ltd					**Chemtest Job No.:**	21-33476	21-33476	21-33476	21-33476	21-33476	21-33476	21-33476	21-33480	21-33480	21-33480	21-33480
Quotation No.:					**Chemtest Sample ID.:**	1286946	1286947	1286948	1286949	1286950	1286951	1286952	1286961	1286962	1286963	1286964
Order No.: 60/A/21					Client Sample Ref.:	ES60	ES61	ES62	ES63	ES64	ES65	ES66	ES67	ES68	ES69	ES70
					Client Sample ID.:	1	2	1	2	3	1	2	1	2	1	2
					Sample Location:	TP06	TP06	TP09	TP09	TP09	TP10	TP10	TP11	TP11	TP12	TP12
					Sample Type:	SOIL	SOIL	SOIL	SOIL	SOIL	SOIL	SOIL	SOIL	SOIL	SOIL	SOIL
					Top Depth (m):	0.30	1.00	0.30	1.00	1.50	0.30	1.40	0.30	1.00	0.30	1.00
					Bottom Depth (m):	0.30	1.00	0.30	1.00	1.50	0.30	1.40	0.30	1.00	0.30	1.00
Determinand	**Accred.**	**SOP**	**Type**	**Units**	**LOD**											
Ammonium	U	1220	10:1	mg/l	0.050	0.073	< 0.050	< 0.050	< 0.050	< 0.050	0.16	0.055	0.061	< 0.050	0.066	0.059
Ammonium	N	1220	10:1	mg/kg	0.10	0.91	0.52	0.43	0.56	0.58	1.8	0.63	0.65	0.41	0.74	0.70

Results - Leachate

Project: 5811

Client: Site Investigations Ltd					**Chemtest Job No.:**	21-33504	21-33504	21-33504	21-33504	21-33504	21-33504	21-33504	21-33504	21-33504	21-33504	21-33504
Quotation No.:					**Chemtest Sample ID.:**	1287123	1287124	1287125	1287126	1287127	1287128	1287129	1287130	1287131	1287132	1287133
Order No.: 60/A/21					Client Sample Ref.:	ES1	ES2	ES3	ES4	ES5	ES6	ES7	ES8	ES9	ES10	ES11
					Client Sample ID.:	1	2	1	2	1	2	1	2	1	2	1
					Sample Location:	TP1	TP1	TP2	TP2	TP3	TP3	TP4	TP4	TP7	TP7	TP8
					Sample Type:	SOIL	SOIL	SOIL	SOIL	SOIL	SOIL	SOIL	SOIL	SOIL	SOIL	SOIL
					Top Depth (m):	0.30	1.00	0.20	1.40	0.30	1.20	0.40	1.50	0.30	1.00	0.30
					Bottom Depth (m):	0.30	1.00	0.20	1.40	0.30	1.20	0.40	1.50	0.30	1.00	0.30
Determinand	**Accred.**	**SOP**	**Type**	**Units**	**LOD**											
Ammonium	U	1220	10:1	mg/l	0.050	< 0.050	< 0.050	< 0.050	< 0.050	0.061	< 0.050	< 0.050	< 0.050	< 0.050	< 0.050	< 0.050
Ammonium	N	1220	10:1	mg/kg	0.10	0.32	0.16	0.54	2.1	1.2	0.58	0.60	0.19	0.23	< 0.10	< 0.10

Results - Leachate

Project: 5811

Client: Site Investigations Ltd	**Chemtest Job No.:**					21-33504	21-33504	21-33504	21-33504	21-33504	21-33504	21-33504	21-33504	21-33504	21-33504	21-33504
Quotation No.:	**Chemtest Sample ID.:**					1287134	1287135	1287136	1287137	1287138	1287139	1287140	1287141	1287142	1287143	1287144
Order No.: 60/A/21	Client Sample Ref.:					ES12	ES13	ES14	ES15	ES16	ES17	ES18	ES19	ES20	ES21	ES22
	Client Sample ID.:					2	1	2	1	2	1	2	1	2	1	2
	Sample Location:					TP8	TP13	TP13	TP14	TP14	TP15	TP15	TP16	TP16	TP17	TP17
	Sample Type:					SOIL	SOIL	SOIL	SOIL	SOIL	SOIL	SOIL	SOIL	SOIL	SOIL	SOIL
	Top Depth (m):					1.00	0.30	1.00	0.30	1.00	0.30	1.00	0.30	0.60	0.30	0.60
	Bottom Depth (m):					1.00	0.30	1.00	0.30	1.00	0.30	1.00	0.30	0.60	0.30	0.60
Determinand	**Accred.**	**SOP**	**Type**	**Units**	**LOD**											
Ammonium	U	1220	10:1	mg/l	0.050	< 0.050	< 0.050	< 0.050	< 0.050	0.072	0.064	0.061	0.076	0.068	0.058	0.054
Ammonium	N	1220	10:1	mg/kg	0.10	0.51	0.19	0.61	0.27	1.0	0.68	0.63	0.81	0.75	0.62	0.58

Results - Leachate

Project: 5811

Client: Site Investigations Ltd					**Chemtest Job No.:**	21-33504	21-33504	21-33504	21-33504	21-33504	21-33504	21-33504	21-33504	21-33504	21-33504	21-33504
Quotation No.:					**Chemtest Sample ID.:**	1287145	1287146	1287147	1287148	1287149	1287150	1287151	1287152	1287153	1287154	1287155
Order No.: 60/A/21					Client Sample Ref.:	ES23	ES24	ES25	ES26	ES27	ES28	ES29	ES30	ES31	ES32	ES33
					Client Sample ID.:	1	2	1	2	1	2	1	2	1	2	1
					Sample Location:	TP18	TP18	TP19	TP19	TP20	TP20	TP22	TP22	TP23	TP23	TP24
					Sample Type:	SOIL	SOIL	SOIL	SOIL	SOIL	SOIL	SOIL	SOIL	SOIL	SOIL	SOIL
					Top Depth (m):	0.30	1.00	0.30	0.80	0.40	0.80	0.30	1.00	0.30	0.80	0.30
					Bottom Depth (m):	0.30	1.00	0.30	0.80	0.40	0.80	0.30	1.00	0.30	0.80	0.30
Determinand	**Accred.**	**SOP**	**Type**	**Units**	**LOD**											
Ammonium	U	1220	10:1	mg/l	0.050	0.056	0.065	< 0.050	0.051	< 0.050	< 0.050	0.061	0.12	0.078	0.064	0.082
Ammonium	N	1220	10:1	mg/kg	0.10	0.59	0.72	0.15	0.54	0.53	0.25	0.65	1.3	0.86	0.70	0.86

Results - Leachate

Project: 5811

Client: Site Investigations Ltd					**Chemtest Job No.:**	21-33504	21-33504	21-33504	21-33504	21-33504	21-33504	21-33504	21-33504	21-33504	21-33504	21-33504
Quotation No.:					**Chemtest Sample ID.:**	1287156	1287157	1287158	1287159	1287160	1287161	1287162	1287163	1287164	1287165	1287166
Order No.: 60/A/21					Client Sample Ref.:	ES34	ES35	ES36	ES37	ES38	ES39	ES40	ES41	ES42	ES43	ES44
					Client Sample ID.:	2	1	2	1	2	1	2	1	2	1	2
					Sample Location:	TP24	TP25	TP25	TP26	TP26	TP27	TP27	TP28	TP28	TP30	TP30
					Sample Type:	SOIL	SOIL	SOIL	SOIL	SOIL	SOIL	SOIL	SOIL	SOIL	SOIL	SOIL
					Top Depth (m):	1.00	0.30	1.00	0.30	1.20	0.30	1.00	0.20	1.00	0.30	0.90
					Bottom Depth (m):	1.00	0.30	1.00	0.30	1.20	0.30	1.00	0.30	1.00	0.30	0.90
Determinand	**Accred.**	**SOP**	**Type**	**Units**	**LOD**											
Ammonium	U	1220	10:1	mg/l	0.050	< 0.050	0.062	0.064	0.058	< 0.050	0.065	0.064	0.055	0.076	0.082	< 0.050
Ammonium	N	1220	10:1	mg/kg	0.10	0.48	0.66	0.70	0.63	0.41	0.68	0.72	0.60	0.90	0.88	0.51

Results - Leachate

Project: 5811

Client: Site Investigations Ltd					**Chemtest Job No.:**	21-33504	21-33504	21-33504	21-33504
Quotation No.:					**Chemtest Sample ID.:**	1287167	1287168	1287169	1287170
Order No.: 60/A/21					Client Sample Ref.:	ES45	ES46	ES47	ES48
					Client Sample ID.:	1	2	1	2
					Sample Location:	TP31	TP31	TP32	TP32
					Sample Type:	SOIL	SOIL	SOIL	SOIL
					Top Depth (m):	0.30	1.50	0.30	1.00
					Bottom Depth (m):	0.30	1.50	0.30	1.00
Determinand	**Accred.**	**SOP**	**Type**	**Units**	**LOD**				
Ammonium	U	1220	10:1	mg/l	0.050	0.065	< 0.050	0.061	< 0.050
Ammonium	N	1220	10:1	mg/kg	0.10	0.69	0.52	0.67	0.55

Results - Soil

Project: 5811

Client: Site Investigations Ltd				Chemtest Job No.:	21-33474	21-33474	21-33474	21-33474	21-33474	21-33474	21-33474	21-33474	21-33476
Quotation No.:				Chemtest Sample ID.:	1286930	1286931	1286932	1286933	1286934	1286935	1286936	1286937	1286943
Order No.: 60/A/21				Client Sample Ref.:	ES49	ES50	ES51	ES52	ES53	ES54	ES55	ES56	ES57
				Client Sample ID.:	1	2	1	2	1	2	1	2	1
				Sample Location:	TP33	TP33	TP34	TP34	TP35	TP35	TP36	TP36	TP05
				Sample Type:	SOIL	SOIL	SOIL	SOIL	SOIL	SOIL	SOIL	SOIL	SOIL
				Top Depth (m):	0.30	1.00	0.30	0.80	0.30	1.00	0.30	0.80	0.30
				Bottom Depth (m):	0.30	1.00	0.30	0.80	0.30	1.00	0.30	0.80	0.30
				Asbestos Lab:	DURHAM	DURHAM	DURHAM	DURHAM	DURHAM	DURHAM	DURHAM	DURHAM	DURHAM
Determinand	**Accred.**	**SOP**	**Units**	**LOD**									
ACM Type	U	2192		N/A	-	-	-	-	-	-	-	-	-
Asbestos Identification	U	2192		N/A	No Asbestos Detected	No Asbestos Detected	No Asbestos Detected	No Asbestos Detected	No Asbestos Detected	No Asbestos Detected	No Asbestos Detected	No Asbestos Detected	No Asbestos Detected
Moisture	N	2030	%	0.020	13	12	13	15	12	11	15	12	5.0
pH	M	2010		4.0	[A] 8.5	[A] 8.5	[A] 8.3	[A] 8.6	[A] 8.3	[A] 8.6	[A] 8.2	[A] 8.5	[A] 8.3
Boron (Hot Water Soluble)	M	2120	mg/kg	0.40	[A] < 0.40	[A] 0.59	[A] 0.63	[A] < 0.40	[A] 1.2	[A] < 0.40	[A] 0.90	[A] < 0.40	[A] < 0.40
Sulphur (Elemental)	M	2180	mg/kg	1.0	[A] 20	[A] 3.2	[A] 13	[A] < 1.0	[A] 8.2	[A] < 1.0	[A] 12	[A] 2.7	[A] 16
Cyanide (Total)	M	2300	mg/kg	0.50	[A] < 0.50	[A] < 0.50	[A] < 0.50	[A] < 0.50	[A] < 0.50	[A] < 0.50	[A] < 0.50	[A] < 0.50	[A] < 0.50
Sulphide (Easily Liberatable)	N	2325	mg/kg	0.50	[A] 9.6	[A] 15	[A] 3.2	[A] 4.9	[A] 2.5	[A] 6.5	[A] 2.4	[A] 4.5	[A] 3.9
Sulphate (Total)	M	2430	%	0.010	[A] 0.16	[A] 0.093	[A] 0.12	[A] 0.053	[A] 0.16	[A] 0.086	[A] 0.21	[A] 0.042	[A] 0.15
Arsenic	M	2450	mg/kg	1.0	28	25	30	31	39	26	32	27	60
Barium	M	2450	mg/kg	10	140	89	150	110	220	99	430	58	160
Cadmium	M	2450	mg/kg	0.10	1.6	2.8	1.7	3.3	2.8	3.2	1.3	3.1	2.9
Chromium	M	2450	mg/kg	1.0	29	22	33	34	35	22	30	25	32
Molybdenum	M	2450	mg/kg	2.0	3.8	4.5	3.8	4.9	4.7	6.1	7.0	5.2	4.5
Antimony	N	2450	mg/kg	2.0	3.0	2.5	3.1	2.9	4.8	2.6	4.6	2.3	3.6
Copper	M	2450	mg/kg	0.50	92	70	93	48	130	72	180	39	120
Mercury	M	2450	mg/kg	0.10	0.81	0.19	0.74	< 0.10	0.86	0.12	0.84	0.11	0.58
Nickel	M	2450	mg/kg	0.50	54	61	57	85	69	71	97	54	63
Lead	M	2450	mg/kg	0.50	190	48	200	41	280	42	680	55	180
Selenium	M	2450	mg/kg	0.20	0.78	0.21	0.78	0.22	0.78	0.21	1.2	0.37	1.1
Zinc	M	2450	mg/kg	0.50	180	96	180	110	280	96	320	110	170
Chromium (Trivalent)	N	2490	mg/kg	1.0	29	22	33	34	35	22	30	25	32
Chromium (Hexavalent)	N	2490	mg/kg	0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50
Total Organic Carbon	M	2625	%	0.20	[A] 4.6	[A] 0.81	[A] 5.9	[A] 0.30	[A] 3.1	[A] 0.86	[A] 16	[A] 0.59	[A] 3.6
Mineral Oil (TPH Calculation)	N	2670	mg/kg	10	< 10	< 10	< 10	< 10	< 10	< 10	< 10	< 10	< 10
Aliphatic TPH >C5-C6	N	2680	mg/kg	1.0	[A] < 1.0	[A] < 1.0	[A] < 1.0	[A] < 1.0	[A] < 1.0	[A] < 1.0	[A] < 1.0	[A] < 1.0	[A] < 1.0
Aliphatic TPH >C6-C8	N	2680	mg/kg	1.0	[A] < 1.0	[A] < 1.0	[A] < 1.0	[A] < 1.0	[A] < 1.0	[A] < 1.0	[A] < 1.0	[A] < 1.0	[A] < 1.0
Aliphatic TPH >C8-C10	M	2680	mg/kg	1.0	[A] < 1.0	[A] < 1.0	[A] < 1.0	[A] < 1.0	[A] < 1.0	[A] < 1.0	[A] < 1.0	[A] < 1.0	[A] < 1.0
Aliphatic TPH >C10-C12	M	2680	mg/kg	1.0	[A] < 1.0	[A] < 1.0	[A] < 1.0	[A] < 1.0	[A] < 1.0	[A] < 1.0	[A] < 1.0	[A] < 1.0	[A] < 1.0
Aliphatic TPH >C12-C16	M	2680	mg/kg	1.0	[A] < 1.0	[A] < 1.0	[A] < 1.0	[A] < 1.0	[A] < 1.0	[A] < 1.0	[A] < 1.0	[A] < 1.0	[A] < 1.0
Aliphatic TPH >C16-C21	M	2680	mg/kg	1.0	[A] < 1.0	[A] < 1.0	[A] < 1.0	[A] < 1.0	[A] < 1.0	[A] < 1.0	[A] < 1.0	[A] < 1.0	[A] < 1.0
Aliphatic TPH >C21-C35	M	2680	mg/kg	1.0	[A] < 1.0	[A] < 1.0	[A] < 1.0	[A] < 1.0	[A] < 1.0	[A] < 1.0	[A] < 1.0	[A] < 1.0	[A] < 1.0
Aliphatic TPH >C35-C44	N	2680	mg/kg	1.0	[A] < 1.0	[A] < 1.0	[A] < 1.0	[A] < 1.0	[A] < 1.0	[A] < 1.0	[A] < 1.0	[A] < 1.0	[A] < 1.0
Total Aliphatic Hydrocarbons	N	2680	mg/kg	5.0	[A] < 5.0	[A] < 5.0	[A] < 5.0	[A] < 5.0	[A] < 5.0	[A] < 5.0	[A] < 5.0	[A] < 5.0	[A] < 5.0
Aromatic TPH >C5-C7	N	2680	mg/kg	1.0	[A] < 1.0	[A] < 1.0	[A] < 1.0	[A] < 1.0	[A] < 1.0	[A] < 1.0	[A] < 1.0	[A] < 1.0	[A] < 1.0
Aromatic TPH >C7-C8	N	2680	mg/kg	1.0	[A] < 1.0	[A] < 1.0	[A] < 1.0	[A] < 1.0	[A] < 1.0	[A] < 1.0	[A] < 1.0	[A] < 1.0	[A] < 1.0

Results - Soil

Project: 5811

Client: Site Investigations Ltd				**Chemtest Job No.:**	21-33474	21-33474	21-33474	21-33474	21-33474	21-33474	21-33474	21-33474	21-33476
Quotation No.:				**Chemtest Sample ID.:**	1286930	1286931	1286932	1286933	1286934	1286935	1286936	1286937	1286943
Order No.: 60/A/21				Client Sample Ref.:	ES49	ES50	ES51	ES52	ES53	ES54	ES55	ES56	ES57
				Client Sample ID.:	1	2	1	2	1	2	1	2	1
				Sample Location:	TP33	TP33	TP34	TP34	TP35	TP35	TP36	TP36	TP05
				Sample Type:	SOIL	SOIL	SOIL	SOIL	SOIL	SOIL	SOIL	SOIL	SOIL
				Top Depth (m):	0.30	1.00	0.30	0.80	0.30	1.00	0.30	0.80	0.30
				Bottom Depth (m):	0.30	1.00	0.30	0.80	0.30	1.00	0.30	0.80	0.30
				Asbestos Lab:	DURHAM	DURHAM	DURHAM	DURHAM	DURHAM	DURHAM	DURHAM	DURHAM	DURHAM
Determinand	**Accred.**	**SOP**	**Units**	**LOD**									
Aromatic TPH >C8-C10	M	2680	mg/kg	1.0	[A] < 1.0	[A] < 1.0	[A] < 1.0	[A] < 1.0	[A] < 1.0	[A] < 1.0	[A] < 1.0	[A] < 1.0	[A] < 1.0
Aromatic TPH >C10-C12	M	2680	mg/kg	1.0	[A] < 1.0	[A] < 1.0	[A] < 1.0	[A] < 1.0	[A] < 1.0	[A] < 1.0	[A] < 1.0	[A] < 1.0	[A] < 1.0
Aromatic TPH >C12-C16	M	2680	mg/kg	1.0	[A] < 1.0	[A] < 1.0	[A] < 1.0	[A] < 1.0	[A] < 1.0	[A] < 1.0	[A] < 1.0	[A] < 1.0	[A] < 1.0
Aromatic TPH >C16-C21	U	2680	mg/kg	1.0	[A] < 1.0	[A] < 1.0	[A] < 1.0	[A] < 1.0	[A] < 1.0	[A] < 1.0	[A] < 1.0	[A] < 1.0	[A] < 1.0
Aromatic TPH >C21-C35	M	2680	mg/kg	1.0	[A] < 1.0	[A] < 1.0	[A] < 1.0	[A] < 1.0	[A] < 1.0	[A] < 1.0	[A] < 1.0	[A] < 1.0	[A] < 1.0
Aromatic TPH >C35-C44	N	2680	mg/kg	1.0	[A] < 1.0	[A] < 1.0	[A] < 1.0	[A] < 1.0	[A] < 1.0	[A] < 1.0	[A] < 1.0	[A] < 1.0	[A] < 1.0
Total Aromatic Hydrocarbons	N	2680	mg/kg	5.0	[A] < 5.0	[A] < 5.0	[A] < 5.0	[A] < 5.0	[A] < 5.0	[A] < 5.0	[A] < 5.0	[A] < 5.0	[A] < 5.0
Total Petroleum Hydrocarbons	N	2680	mg/kg	10.0	[A] < 10	[A] < 10	[A] < 10	[A] < 10	[A] < 10	[A] < 10	[A] < 10	[A] < 10	[A] < 10
Benzene	M	2760	µg/kg	1.0	[A] < 1.0	[A] < 1.0	[A] < 1.0	[A] < 1.0	[A] < 1.0	[A] < 1.0	[A] < 1.0	[A] < 1.0	[A] < 1.0
Toluene	M	2760	µg/kg	1.0	[A] < 1.0	[A] < 1.0	[A] < 1.0	[A] < 1.0	[A] < 1.0	[A] < 1.0	[A] < 1.0	[A] < 1.0	[A] < 1.0
Ethylbenzene	M	2760	µg/kg	1.0	[A] < 1.0	[A] < 1.0	[A] < 1.0	[A] < 1.0	[A] < 1.0	[A] < 1.0	[A] < 1.0	[A] < 1.0	[A] < 1.0
m & p-Xylene	M	2760	µg/kg	1.0	[A] < 1.0	[A] < 1.0	[A] < 1.0	[A] < 1.0	[A] < 1.0	[A] < 1.0	[A] < 1.0	[A] < 1.0	[A] < 1.0
o-Xylene	M	2760	µg/kg	1.0	[A] < 1.0	[A] < 1.0	[A] < 1.0	[A] < 1.0	[A] < 1.0	[A] < 1.0	[A] < 1.0	[A] < 1.0	[A] < 1.0
Methyl Tert-Butyl Ether	M	2760	µg/kg	1.0	[A] < 1.0	[A] < 1.0	[A] < 1.0	[A] < 1.0	[A] < 1.0	[A] < 1.0	[A] < 1.0	[A] < 1.0	[A] < 1.0
Naphthalene	M	2800	mg/kg	0.10	0.44	< 0.10	< 0.10	< 0.10	< 0.10	< 0.10	0.31	< 0.10	0.22
Acenaphthylene	N	2800	mg/kg	0.10	0.10	< 0.10	< 0.10	< 0.10	< 0.10	< 0.10	< 0.10	< 0.10	< 0.10
Acenaphthene	M	2800	mg/kg	0.10	0.26	< 0.10	< 0.10	< 0.10	< 0.10	< 0.10	< 0.10	< 0.10	0.48
Fluorene	M	2800	mg/kg	0.10	0.23	< 0.10	< 0.10	< 0.10	< 0.10	< 0.10	< 0.10	< 0.10	0.39
Phenanthrene	M	2800	mg/kg	0.10	2.0	< 0.10	3.0	< 0.10	7.3	< 0.10	0.71	< 0.10	3.8
Anthracene	M	2800	mg/kg	0.10	0.33	< 0.10	0.48	< 0.10	1.0	< 0.10	0.15	< 0.10	0.58
Fluoranthene	M	2800	mg/kg	0.10	2.6	0.15	3.0	< 0.10	6.2	< 0.10	1.0	0.14	4.4
Pyrene	M	2800	mg/kg	0.10	2.4	0.17	2.7	< 0.10	5.5	< 0.10	1.0	0.12	3.8
Benzo[a]anthracene	M	2800	mg/kg	0.10	1.5	< 0.10	1.3	< 0.10	2.4	< 0.10	0.67	< 0.10	2.0
Chrysene	M	2800	mg/kg	0.10	1.6	< 0.10	1.6	< 0.10	2.9	< 0.10	0.83	< 0.10	2.5
Benzo[b]fluoranthene	M	2800	mg/kg	0.10	1.8	< 0.10	1.5	< 0.10	2.9	< 0.10	0.95	< 0.10	2.6
Benzo[k]fluoranthene	M	2800	mg/kg	0.10	0.65	< 0.10	0.45	< 0.10	1.1	< 0.10	0.37	< 0.10	0.84
Benzo[a]pyrene	M	2800	mg/kg	0.10	1.3	< 0.10	1.1	< 0.10	2.0	< 0.10	0.65	< 0.10	1.7
Indeno(1,2,3-c,d)Pyrene	M	2800	mg/kg	0.10	0.87	< 0.10	0.64	< 0.10	1.2	< 0.10	0.46	< 0.10	1.2
Dibenz(a,h)Anthracene	N	2800	mg/kg	0.10	0.25	< 0.10	0.20	< 0.10	0.37	< 0.10	0.12	< 0.10	0.33
Benzo[g,h,i]perylene	M	2800	mg/kg	0.10	0.91	< 0.10	0.75	< 0.10	1.5	< 0.10	0.57	< 0.10	1.2
Coronene	N	2800	mg/kg	0.10	< 0.10	< 0.10	< 0.10	< 0.10	< 0.10	< 0.10	< 0.10	< 0.10	< 0.10
Total Of 17 PAH's	N	2800	mg/kg	2.0	17	< 2.0	17	< 2.0	34	< 2.0	7.8	< 2.0	26
PCB 28	U	2815	mg/kg	0.010	[A] < 0.010	[A] < 0.010	[A] < 0.010	[A] < 0.010	[A] < 0.010	[A] < 0.010	[A] < 0.010	[A] < 0.010	[A] < 0.010
PCB 52	U	2815	mg/kg	0.010	[A] < 0.010	[A] < 0.010	[A] < 0.010	[A] < 0.010	[A] < 0.010	[A] < 0.010	[A] < 0.010	[A] < 0.010	[A] < 0.010
PCB 90+101	U	2815	mg/kg	0.010	[A] < 0.010	[A] < 0.010	[A] < 0.010	[A] < 0.010	[A] < 0.010	[A] < 0.010	[A] < 0.010	[A] < 0.010	[A] < 0.010
PCB 118	U	2815	mg/kg	0.010	[A] < 0.010	[A] < 0.010	[A] < 0.010	[A] < 0.010	[A] < 0.010	[A] < 0.010	[A] < 0.010	[A] < 0.010	[A] < 0.010
PCB 153	U	2815	mg/kg	0.010	[A] < 0.010	[A] < 0.010	[A] < 0.010	[A] < 0.010	[A] < 0.010	[A] < 0.010	[A] < 0.010	[A] < 0.010	[A] < 0.010

Results - Soil

Project: 5811

Client: Site Investigations Ltd	Chemtest Job No.:				21-33474	21-33474	21-33474	21-33474	21-33474	21-33474	21-33474	21-33474	21-33476
Quotation No.:	Chemtest Sample ID.:				1286930	1286931	1286932	1286933	1286934	1286935	1286936	1286937	1286943
Order No.: 60/A/21	Client Sample Ref.:				ES49	ES50	ES51	ES52	ES53	ES54	ES55	ES56	ES57
	Client Sample ID.:				1	2	1	2	1	2	1	2	1
	Sample Location:				TP33	TP33	TP34	TP34	TP35	TP35	TP36	TP36	TP05
	Sample Type:				SOIL	SOIL	SOIL	SOIL	SOIL	SOIL	SOIL	SOIL	SOIL
	Top Depth (m):				0.30	1.00	0.30	0.80	0.30	1.00	0.30	0.80	0.30
	Bottom Depth (m):				0.30	1.00	0.30	0.80	0.30	1.00	0.30	0.80	0.30
	Asbestos Lab:				DURHAM	DURHAM	DURHAM	DURHAM	DURHAM	DURHAM	DURHAM	DURHAM	DURHAM
Determinand	**Accred.**	**SOP**	**Units**	**LOD**									
PCB 138	U	2815	mg/kg	0.010	[A] < 0.010	[A] < 0.010	[A] < 0.010	[A] < 0.010	[A] < 0.010	[A] < 0.010	[A] < 0.010	[A] < 0.010	[A] < 0.010
PCB 180	U	2815	mg/kg	0.010	[A] < 0.010	[A] < 0.010	[A] < 0.010	[A] < 0.010	[A] < 0.010	[A] < 0.010	[A] < 0.010	[A] < 0.010	[A] < 0.010
Total PCBs (7 Congeners)	U	2815	mg/kg	0.10	[A] < 0.10	[A] < 0.10	[A] < 0.10	[A] < 0.10	[A] < 0.10	[A] < 0.10	[A] < 0.10	[A] < 0.10	[A] < 0.10
Total Phenols	M	2920	mg/kg	0.10	< 0.10	< 0.10	< 0.10	< 0.10	< 0.10	< 0.10	< 0.10	< 0.10	< 0.10

Results - Soil

Project: 5811

Client: Site Investigations Ltd				**Chemtest Job No.:**	21-33476	21-33476	21-33476	21-33476	21-33476	21-33476	21-33476	21-33476	21-33476
Quotation No.:				**Chemtest Sample ID.:**	1286944	1286945	1286946	1286947	1286948	1286949	1286950	1286951	1286952
Order No.: 60/A/21				Client Sample Ref.:	ES58	ES59	ES60	ES61	ES62	ES63	ES64	ES65	ES66
				Client Sample ID.:	2	3	1	2	1	2	3	1	2
				Sample Location:	TP05	TP05	TP06	TP06	TP09	TP09	TP09	TP10	TP10
				Sample Type:	SOIL	SOIL	SOIL	SOIL	SOIL	SOIL	SOIL	SOIL	SOIL
				Top Depth (m):	0.50	1.00	0.30	1.00	0.30	1.00	1.50	0.30	1.40
				Bottom Depth (m):	0.50	1.00	0.30	1.00	0.30	1.00	1.50	0.30	1.40
				Asbestos Lab:	DURHAM	DURHAM	DURHAM	DURHAM	DURHAM	DURHAM	DURHAM	DURHAM	DURHAM
Determinand	**Accred.**	**SOP**	**Units**	**LOD**									
ACM Type	U	2192		N/A	-	-	-	-	-	-	-	-	-
Asbestos Identification	U	2192		N/A	No Asbestos Detected	No Asbestos Detected	No Asbestos Detected	No Asbestos Detected	No Asbestos Detected	No Asbestos Detected	No Asbestos Detected	No Asbestos Detected	No Asbestos Detected
Moisture	N	2030	%	0.020	3.6	4.1	8.3	4.5	9.2	3.8	9.5	6.5	6.8
pH	M	2010		4.0	[A] 8.3	[A] 8.2	[A] 8.2	[A] 8.8	[A] 8.3	[A] 8.5	[A] 8.6	[A] 8.5	[A] 8.6
Boron (Hot Water Soluble)	M	2120	mg/kg	0.40	[A] 1.1	[A] 1.1	[A] 0.86	[A] < 0.40	[A] 1.0	[A] 0.46	[A] < 0.40	[A] 0.93	[A] 1.0
Sulphur (Elemental)	M	2180	mg/kg	1.0	[A] 8.0	[A] 11	[A] 7.4	[A] 1.5	[A] 1.2	[A] 1.9	[A] < 1.0	[A] 8.8	[A] 18
Cyanide (Total)	M	2300	mg/kg	0.50	[A] < 0.50	[A] < 0.50	[A] < 0.50	[A] < 0.50	[A] < 0.50	[A] < 0.50	[A] < 0.50	[A] < 0.50	[A] < 0.50
Sulphide (Easily Liberatable)	N	2325	mg/kg	0.50	[A] 4.5	[A] 4.4	[A] 3.9	[A] 6.0	[A] 1.5	[A] 1.2	[A] 7.8	[A] 5.3	[A] 3.0
Sulphate (Total)	M	2430	%	0.010	[A] 0.14	[A] 0.15	[A] 0.13	[A] 0.12	[A] 0.085	[A] 0.14	[A] 0.19	[A] 0.12	[A] 0.15
Arsenic	M	2450	mg/kg	1.0	31	35	31	39	30	28	60	32	46
Barium	M	2450	mg/kg	10	130	150	140	120	120	98	95	160	190
Cadmium	M	2450	mg/kg	0.10	2.7	3.0	2.2	3.4	2.9	2.8	2.7	2.2	2.7
Chromium	M	2450	mg/kg	1.0	32	32	29	23	29	31	29	63	45
Molybdenum	M	2450	mg/kg	2.0	4.9	4.9	3.5	4.9	5.5	4.7	5.0	4.3	5.6
Antimony	N	2450	mg/kg	2.0	2.9	3.0	3.5	2.4	2.9	2.1	4.0	2.8	3.6
Copper	M	2450	mg/kg	0.50	110	100	100	62	75	110	53	120	350
Mercury	M	2450	mg/kg	0.10	0.40	0.66	0.41	0.10	0.41	0.21	0.15	0.56	0.74
Nickel	M	2450	mg/kg	0.50	61	65	48	57	60	59	57	65	68
Lead	M	2450	mg/kg	0.50	130	140	140	48	96	59	220	210	310
Selenium	M	2450	mg/kg	0.20	1.2	0.95	0.76	0.28	0.93	0.53	0.46	0.78	0.75
Zinc	M	2450	mg/kg	0.50	140	140	160	90	150	90	290	200	240
Chromium (Trivalent)	N	2490	mg/kg	1.0	32	32	29	23	29	31	29	63	45
Chromium (Hexavalent)	N	2490	mg/kg	0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50
Total Organic Carbon	M	2625	%	0.20	[A] 2.1	[A] 2.9	[A] 3.9	[A] 2.3	[A] 2.5	[A] 1.3	[A] 1.2	[A] 3.1	[A] 2.5
Mineral Oil (TPH Calculation)	N	2670	mg/kg	10	< 10	< 10	< 10	< 10	< 10	< 10	< 10	< 10	< 10
Aliphatic TPH >C5-C6	N	2680	mg/kg	1.0	[A] < 1.0	[A] < 1.0	[A] < 1.0	[A] < 1.0	[A] < 1.0	[A] < 1.0	[A] < 1.0	[A] < 1.0	[A] < 1.0
Aliphatic TPH >C6-C8	N	2680	mg/kg	1.0	[A] < 1.0	[A] < 1.0	[A] < 1.0	[A] < 1.0	[A] < 1.0	[A] < 1.0	[A] < 1.0	[A] < 1.0	[A] < 1.0
Aliphatic TPH >C8-C10	M	2680	mg/kg	1.0	[A] < 1.0	[A] < 1.0	[A] < 1.0	[A] < 1.0	[A] < 1.0	[A] < 1.0	[A] < 1.0	[A] < 1.0	[A] < 1.0
Aliphatic TPH >C10-C12	M	2680	mg/kg	1.0	[A] < 1.0	[A] < 1.0	[A] < 1.0	[A] < 1.0	[A] < 1.0	[A] < 1.0	[A] < 1.0	[A] < 1.0	[A] < 1.0
Aliphatic TPH >C12-C16	M	2680	mg/kg	1.0	[A] < 1.0	[A] < 1.0	[A] < 1.0	[A] < 1.0	[A] < 1.0	[A] < 1.0	[A] < 1.0	[A] < 1.0	[A] < 1.0
Aliphatic TPH >C16-C21	M	2680	mg/kg	1.0	[A] < 1.0	[A] < 1.0	[A] < 1.0	[A] < 1.0	[A] < 1.0	[A] < 1.0	[A] < 1.0	[A] < 1.0	[A] < 1.0
Aliphatic TPH >C21-C35	M	2680	mg/kg	1.0	[A] < 1.0	[A] < 1.0	[A] < 1.0	[A] < 1.0	[A] < 1.0	[A] < 1.0	[A] < 1.0	[A] < 1.0	[A] < 1.0
Aliphatic TPH >C35-C44	N	2680	mg/kg	1.0	[A] < 1.0	[A] < 1.0	[A] < 1.0	[A] < 1.0	[A] < 1.0	[A] < 1.0	[A] < 1.0	[A] < 1.0	[A] < 1.0
Total Aliphatic Hydrocarbons	N	2680	mg/kg	5.0	[A] < 5.0	[A] < 5.0	[A] < 5.0	[A] < 5.0	[A] < 5.0	[A] < 5.0	[A] < 5.0	[A] < 5.0	[A] < 5.0
Aromatic TPH >C5-C7	N	2680	mg/kg	1.0	[A] < 1.0	[A] < 1.0	[A] < 1.0	[A] < 1.0	[A] < 1.0	[A] < 1.0	[A] < 1.0	[A] < 1.0	[A] < 1.0
Aromatic TPH >C7-C8	N	2680	mg/kg	1.0	[A] < 1.0	[A] < 1.0	[A] < 1.0	[A] < 1.0	[A] < 1.0	[A] < 1.0	[A] < 1.0	[A] < 1.0	[A] < 1.0

Results - Soil

Project: 5811

Client: Site Investigations Ltd				**Chemtest Job No.:**	21-33476	21-33476	21-33476	21-33476	21-33476	21-33476	21-33476	21-33476	21-33476
Quotation No.:				**Chemtest Sample ID.:**	1286944	1286945	1286946	1286947	1286948	1286949	1286950	1286951	1286952
Order No.: 60/A/21				Client Sample Ref.:	ES58	ES59	ES60	ES61	ES62	ES63	ES64	ES65	ES66
				Client Sample ID.:	2	3	1	2	1	2	3	1	2
				Sample Location:	TP05	TP05	TP06	TP06	TP09	TP09	TP09	TP10	TP10
				Sample Type:	SOIL	SOIL	SOIL	SOIL	SOIL	SOIL	SOIL	SOIL	SOIL
				Top Depth (m):	0.50	1.00	0.30	1.00	0.30	1.00	1.50	0.30	1.40
				Bottom Depth (m):	0.50	1.00	0.30	1.00	0.30	1.00	1.50	0.30	1.40
				Asbestos Lab:	DURHAM	DURHAM	DURHAM	DURHAM	DURHAM	DURHAM	DURHAM	DURHAM	DURHAM
Determinand	**Accred.**	**SOP**	**Units**	**LOD**									
Aromatic TPH >C8-C10	M	2680	mg/kg	1.0	[A] < 1.0	[A] < 1.0	[A] < 1.0	[A] < 1.0	[A] < 1.0	[A] < 1.0	[A] < 1.0	[A] < 1.0	[A] < 1.0
Aromatic TPH >C10-C12	M	2680	mg/kg	1.0	[A] < 1.0	[A] < 1.0	[A] < 1.0	[A] < 1.0	[A] < 1.0	[A] < 1.0	[A] < 1.0	[A] < 1.0	[A] < 1.0
Aromatic TPH >C12-C16	M	2680	mg/kg	1.0	[A] < 1.0	[A] < 1.0	[A] < 1.0	[A] < 1.0	[A] < 1.0	[A] < 1.0	[A] < 1.0	[A] < 1.0	[A] < 1.0
Aromatic TPH >C16-C21	U	2680	mg/kg	1.0	[A] < 1.0	[A] < 1.0	[A] < 1.0	[A] < 1.0	[A] < 1.0	[A] < 1.0	[A] < 1.0	[A] < 1.0	[A] < 1.0
Aromatic TPH >C21-C35	M	2680	mg/kg	1.0	[A] < 1.0	[A] < 1.0	[A] < 1.0	[A] < 1.0	[A] < 1.0	[A] < 1.0	[A] < 1.0	[A] 29	[A] < 1.0
Aromatic TPH >C35-C44	N	2680	mg/kg	1.0	[A] < 1.0	[A] < 1.0	[A] < 1.0	[A] < 1.0	[A] < 1.0	[A] < 1.0	[A] < 1.0	[A] < 1.0	[A] < 1.0
Total Aromatic Hydrocarbons	N	2680	mg/kg	5.0	[A] < 5.0	[A] < 5.0	[A] < 5.0	[A] < 5.0	[A] < 5.0	[A] < 5.0	[A] < 5.0	[A] 29	[A] < 5.0
Total Petroleum Hydrocarbons	N	2680	mg/kg	10.0	[A] < 10	[A] < 10	[A] < 10	[A] < 10	[A] < 10	[A] < 10	[A] < 10	[A] 29	[A] < 10
Benzene	M	2760	µg/kg	1.0	[A] < 1.0	[A] < 1.0	[A] < 1.0	[A] < 1.0	[A] < 1.0	[A] < 1.0	[A] < 1.0	[A] < 1.0	[A] < 1.0
Toluene	M	2760	µg/kg	1.0	[A] < 1.0	[A] < 1.0	[A] < 1.0	[A] < 1.0	[A] < 1.0	[A] < 1.0	[A] < 1.0	[A] < 1.0	[A] < 1.0
Ethylbenzene	M	2760	µg/kg	1.0	[A] < 1.0	[A] < 1.0	[A] < 1.0	[A] < 1.0	[A] < 1.0	[A] < 1.0	[A] < 1.0	[A] < 1.0	[A] < 1.0
m & p-Xylene	M	2760	µg/kg	1.0	[A] < 1.0	[A] < 1.0	[A] < 1.0	[A] < 1.0	[A] < 1.0	[A] < 1.0	[A] < 1.0	[A] < 1.0	[A] < 1.0
o-Xylene	M	2760	µg/kg	1.0	[A] < 1.0	[A] < 1.0	[A] < 1.0	[A] < 1.0	[A] < 1.0	[A] < 1.0	[A] < 1.0	[A] < 1.0	[A] < 1.0
Methyl Tert-Butyl Ether	M	2760	µg/kg	1.0	[A] < 1.0	[A] < 1.0	[A] < 1.0	[A] < 1.0	[A] < 1.0	[A] < 1.0	[A] < 1.0	[A] < 1.0	[A] < 1.0
Naphthalene	M	2800	mg/kg	0.10	0.17	< 0.10	< 0.10	< 0.10	< 0.10	< 0.10	< 0.10	0.19	0.18
Acenaphthylene	N	2800	mg/kg	0.10	0.11	< 0.10	< 0.10	< 0.10	< 0.10	< 0.10	< 0.10	< 0.10	0.10
Acenaphthene	M	2800	mg/kg	0.10	0.18	< 0.10	< 0.10	< 0.10	< 0.10	< 0.10	< 0.10	0.27	0.39
Fluorene	M	2800	mg/kg	0.10	0.13	< 0.10	< 0.10	< 0.10	< 0.10	< 0.10	< 0.10	0.20	0.19
Phenanthrene	M	2800	mg/kg	0.10	1.1	1.6	< 0.10	< 0.10	< 0.10	< 0.10	< 0.10	2.7	2.5
Anthracene	M	2800	mg/kg	0.10	0.27	0.22	< 0.10	< 0.10	< 0.10	< 0.10	< 0.10	0.54	0.74
Fluoranthene	M	2800	mg/kg	0.10	2.1	1.9	0.67	< 0.10	0.15	0.12	< 0.10	4.4	9.4
Pyrene	M	2800	mg/kg	0.10	1.8	1.8	0.55	< 0.10	0.16	0.13	< 0.10	3.9	9.5
Benzo[a]anthracene	M	2800	mg/kg	0.10	0.97	0.93	0.33	< 0.10	< 0.10	< 0.10	< 0.10	2.2	5.3
Chrysene	M	2800	mg/kg	0.10	1.1	1.1	0.40	< 0.10	< 0.10	< 0.10	< 0.10	2.5	5.1
Benzo[b]fluoranthene	M	2800	mg/kg	0.10	1.4	1.5	0.40	< 0.10	< 0.10	< 0.10	< 0.10	3.0	8.6
Benzo[k]fluoranthene	M	2800	mg/kg	0.10	0.49	0.44	0.13	< 0.10	< 0.10	< 0.10	< 0.10	1.1	2.7
Benzo[a]pyrene	M	2800	mg/kg	0.10	0.87	0.95	0.29	< 0.10	< 0.10	< 0.10	< 0.10	2.1	6.9
Indeno(1,2,3-c,d)Pyrene	M	2800	mg/kg	0.10	0.62	0.54	< 0.10	< 0.10	< 0.10	< 0.10	< 0.10	1.4	5.1
Dibenz(a,h)Anthracene	N	2800	mg/kg	0.10	0.13	0.10	< 0.10	< 0.10	< 0.10	< 0.10	< 0.10	0.19	0.79
Benzo[g,h,i]perylene	M	2800	mg/kg	0.10	0.69	0.72	< 0.10	< 0.10	< 0.10	< 0.10	< 0.10	1.6	4.6
Coronene	N	2800	mg/kg	0.10	< 0.10	< 0.10	< 0.10	< 0.10	< 0.10	< 0.10	< 0.10	< 0.10	< 0.10
Total Of 17 PAH's	N	2800	mg/kg	2.0	12	12	2.8	< 2.0	< 2.0	< 2.0	< 2.0	26	62
PCB 28	U	2815	mg/kg	0.010	[A] < 0.010	[A] < 0.010	[A] < 0.010	[A] < 0.010	[A] < 0.010	[A] < 0.010	[A] < 0.010	[A] < 0.010	[A] < 0.010
PCB 52	U	2815	mg/kg	0.010	[A] < 0.010	[A] < 0.010	[A] < 0.010	[A] < 0.010	[A] < 0.010	[A] < 0.010	[A] < 0.010	[A] < 0.010	[A] < 0.010
PCB 90+101	U	2815	mg/kg	0.010	[A] < 0.010	[A] < 0.010	[A] < 0.010	[A] < 0.010	[A] < 0.010	[A] < 0.010	[A] < 0.010	[A] < 0.010	[A] < 0.010
PCB 118	U	2815	mg/kg	0.010	[A] < 0.010	[A] < 0.010	[A] < 0.010	[A] < 0.010	[A] < 0.010	[A] < 0.010	[A] < 0.010	[A] < 0.010	[A] < 0.010
PCB 153	U	2815	mg/kg	0.010	[A] < 0.010	[A] < 0.010	[A] < 0.010	[A] < 0.010	[A] < 0.010	[A] < 0.010	[A] < 0.010	[A] < 0.010	[A] < 0.010

Results - Soil

Project: 5811

Client: Site Investigations Ltd	Chemtest Job No.:				21-33476	21-33476	21-33476	21-33476	21-33476	21-33476	21-33476	21-33476	21-33476
Quotation No.:	Chemtest Sample ID.:				1286944	1286945	1286946	1286947	1286948	1286949	1286950	1286951	1286952
Order No.: 60/A/21	Client Sample Ref.:				ES58	ES59	ES60	ES61	ES62	ES63	ES64	ES65	ES66
	Client Sample ID.:				2	3	1	2	1	2	3	1	2
	Sample Location:				TP05	TP05	TP06	TP06	TP09	TP09	TP09	TP10	TP10
	Sample Type:				SOIL	SOIL	SOIL	SOIL	SOIL	SOIL	SOIL	SOIL	SOIL
	Top Depth (m):				0.50	1.00	0.30	1.00	0.30	1.00	1.50	0.30	1.40
	Bottom Depth (m):				0.50	1.00	0.30	1.00	0.30	1.00	1.50	0.30	1.40
	Asbestos Lab:				DURHAM	DURHAM	DURHAM	DURHAM	DURHAM	DURHAM	DURHAM	DURHAM	DURHAM
Determinand	**Accred.**	**SOP**	**Units**	**LOD**									
PCB 138	U	2815	mg/kg	0.010	[A] < 0.010	[A] < 0.010	[A] < 0.010	[A] < 0.010	[A] < 0.010	[A] < 0.010	[A] < 0.010	[A] < 0.010	[A] < 0.010
PCB 180	U	2815	mg/kg	0.010	[A] < 0.010	[A] < 0.010	[A] < 0.010	[A] < 0.010	[A] < 0.010	[A] < 0.010	[A] < 0.010	[A] < 0.010	[A] < 0.010
Total PCBs (7 Congeners)	U	2815	mg/kg	0.10	[A] < 0.10	[A] < 0.10	[A] < 0.10	[A] < 0.10	[A] < 0.10	[A] < 0.10	[A] < 0.10	[A] < 0.10	[A] < 0.10
Total Phenols	M	2920	mg/kg	0.10	< 0.10	< 0.10	< 0.10	< 0.10	< 0.10	< 0.10	< 0.10	< 0.10	< 0.10

Results - Soil

Project: 5811

Client: Site Investigations Ltd				**Chemtest Job No.:**	21-33480	21-33480	21-33480	21-33480	21-33504	21-33504	21-33504	21-33504	21-33504
Quotation No.:				**Chemtest Sample ID.:**	1286961	1286962	1286963	1286964	1287123	1287124	1287125	1287126	1287127
Order No.: 60/A/21				Client Sample Ref.:	ES67	ES68	ES69	ES70	ES1	ES2	ES3	ES4	ES5
				Client Sample ID.:	1	2	1	2	1	2	1	2	1
				Sample Location:	TP11	TP11	TP12	TP12	TP1	TP1	TP2	TP2	TP3
				Sample Type:	SOIL	SOIL	SOIL	SOIL	SOIL	SOIL	SOIL	SOIL	SOIL
				Top Depth (m):	0.30	1.00	0.30	1.00	0.30	1.00	0.20	1.40	0.30
				Bottom Depth (m):	0.30	1.00	0.30	1.00	0.30	1.00	0.20	1.40	0.30
				Asbestos Lab:	DURHAM	DURHAM	DURHAM	DURHAM	COVENTRY	COVENTRY	COVENTRY	COVENTRY	COVENTRY
Determinand	**Accred.**	**SOP**	**Units**	**LOD**									
ACM Type	U	2192		N/A	-	-	-	-	-	-	-	-	-
Asbestos Identification	U	2192		N/A	No Asbestos Detected	No Asbestos Detected	No Asbestos Detected	No Asbestos Detected	No Asbestos Detected	No Asbestos Detected	No Asbestos Detected	No Asbestos Detected	No Asbestos Detected
Moisture	N	2030	%	0.020	6.5	11	6.6	5.9	7.9	3.9	4.5	6.9	7.2
pH	M	2010		4.0	[A] 8.4	[A] 8.5	[A] 8.2	[A] 8.6	[A] 8.2	[A] 8.3	[A] 8.3	[A] 8.6	[A] 8.4
Boron (Hot Water Soluble)	M	2120	mg/kg	0.40	[A] 0.95	[A] 0.44	[A] 1.4	[A] < 0.40	[A] 1.0	[A] 0.98	[A] 1.0	[A] 0.94	[A] 1.4
Sulphur (Elemental)	M	2180	mg/kg	1.0	[A] 5.5	[A] < 1.0	[A] 8.3	[A] 1.9	[A] 6.3	[A] 2.6	[A] 120	[A] 9.1	[A] 9.4
Cyanide (Total)	M	2300	mg/kg	0.50	[A] < 0.50	[A] < 0.50	[A] 0.50	[A] < 0.50	[A] < 0.50	[A] < 0.50	[A] 0.50	[A] 0.50	[A] < 0.50
Sulphide (Easily Liberatable)	N	2325	mg/kg	0.50	[A] 4.5	[A] 1.6	[A] 2.8	[A] 5.7	[A] 4.5	[A] 4.0	[A] 2.8	[A] 8.1	[A] 3.8
Sulphate (Total)	M	2430	%	0.010	[A] 0.13	[A] 0.037	[A] 0.13	[A] 0.12	[A] 0.14	[A] 0.12	[A] 0.20	[A] 0.32	[A] 0.16
Arsenic	M	2450	mg/kg	1.0	32	16	29	23	28	30	31	25	22
Barium	M	2450	mg/kg	10	150	110	130	79	140	120	210	100	130
Cadmium	M	2450	mg/kg	0.10	2.4	2.0	2.1	2.0	2.0	2.7	1.5	1.2	1.8
Chromium	M	2450	mg/kg	1.0	30	29	32	21	25	31	22	15	23
Molybdenum	M	2450	mg/kg	2.0	5.0	5.0	3.7	3.2	3.5	5.9	4.5	3.9	3.3
Antimony	N	2450	mg/kg	2.0	4.3	< 2.0	2.7	< 2.0	3.3	3.1	3.0	2.0	2.6
Copper	M	2450	mg/kg	0.50	120	37	91	37	89	70	86	36	64
Mercury	M	2450	mg/kg	0.10	0.54	0.14	0.43	0.16	0.72	0.76	0.43	0.20	0.53
Nickel	M	2450	mg/kg	0.50	54	37	54	41	43	57	56	36	39
Lead	M	2450	mg/kg	0.50	240	43	150	79	220	160	410	260	210
Selenium	M	2450	mg/kg	0.20	0.80	0.40	0.96	0.32	0.97	0.66	1.0	0.52	0.93
Zinc	M	2450	mg/kg	0.50	160	120	140	83	190	110	250	81	150
Chromium (Trivalent)	N	2490	mg/kg	1.0	30	29	32	21	25	31	22	15	23
Chromium (Hexavalent)	N	2490	mg/kg	0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50
Total Organic Carbon	M	2625	%	0.20	[A] 4.2	[A] 0.84	[A] 4.9	[A] 2.0	[A] 3.5	[A] 2.3	[A] 15	[A] 4.6	[A] 4.5
Mineral Oil (TPH Calculation)	N	2670	mg/kg	10	< 10	< 10	< 10	< 10	11	< 10	< 10	< 10	< 10
Aliphatic TPH >C5-C6	N	2680	mg/kg	1.0	[A] < 1.0	[A] < 1.0	[A] < 1.0	[A] < 1.0	[A] < 1.0	[A] < 1.0	[A] < 1.0	[A] < 1.0	[A] < 1.0
Aliphatic TPH >C6-C8	N	2680	mg/kg	1.0	[A] < 1.0	[A] < 1.0	[A] < 1.0	[A] < 1.0	[A] < 1.0	[A] < 1.0	[A] < 1.0	[A] < 1.0	[A] < 1.0
Aliphatic TPH >C8-C10	M	2680	mg/kg	1.0	[A] < 1.0	[A] < 1.0	[A] < 1.0	[A] < 1.0	[A] < 1.0	[A] < 1.0	[A] < 1.0	[A] < 1.0	[A] < 1.0
Aliphatic TPH >C10-C12	M	2680	mg/kg	1.0	[A] < 1.0	[A] < 1.0	[A] < 1.0	[A] < 1.0	[A] < 1.0	[A] < 1.0	[A] < 1.0	[A] < 1.0	[A] < 1.0
Aliphatic TPH >C12-C16	M	2680	mg/kg	1.0	[A] < 1.0	[A] < 1.0	[A] < 1.0	[A] < 1.0	[A] < 1.0	[A] < 1.0	[A] < 1.0	[A] < 1.0	[A] < 1.0
Aliphatic TPH >C16-C21	M	2680	mg/kg	1.0	[A] < 1.0	[A] < 1.0	[A] < 1.0	[A] < 1.0	[A] < 1.0	[A] < 1.0	[A] < 1.0	[A] < 1.0	[A] < 1.0
Aliphatic TPH >C21-C35	M	2680	mg/kg	1.0	[A] < 1.0	[A] < 1.0	[A] < 1.0	[A] < 1.0	[A] 11	[A] < 1.0	[A] < 1.0	[A] < 1.0	[A] < 1.0
Aliphatic TPH >C35-C44	N	2680	mg/kg	1.0	[A] < 1.0	[A] < 1.0	[A] < 1.0	[A] < 1.0	[A] < 1.0	[A] < 1.0	[A] < 1.0	[A] < 1.0	[A] < 1.0
Total Aliphatic Hydrocarbons	N	2680	mg/kg	5.0	[A] < 5.0	[A] < 5.0	[A] < 5.0	[A] < 5.0	[A] 11	[A] < 5.0	[A] < 5.0	[A] < 5.0	[A] < 5.0
Aromatic TPH >C5-C7	N	2680	mg/kg	1.0	[A] < 1.0	[A] < 1.0	[A] < 1.0	[A] < 1.0	[A] < 1.0	[A] < 1.0	[A] < 1.0	[A] < 1.0	[A] < 1.0
Aromatic TPH >C7-C8	N	2680	mg/kg	1.0	[A] < 1.0	[A] < 1.0	[A] < 1.0	[A] < 1.0	[A] < 1.0	[A] < 1.0	[A] < 1.0	[A] < 1.0	[A] < 1.0

Results - Soil

Project: 5811

Client: Site Investigations Ltd				**Chemtest Job No.:**	21-33480	21-33480	21-33480	21-33480	21-33504	21-33504	21-33504	21-33504	21-33504
Quotation No.:				**Chemtest Sample ID.:**	1286961	1286962	1286963	1286964	1287123	1287124	1287125	1287126	1287127
Order No.: 60/A/21				Client Sample Ref.:	ES67	ES68	ES69	ES70	ES1	ES2	ES3	ES4	ES5
				Client Sample ID.:	1	2	1	2	1	2	1	2	1
				Sample Location:	TP11	TP11	TP12	TP12	TP1	TP1	TP2	TP2	TP3
				Sample Type:	SOIL	SOIL	SOIL	SOIL	SOIL	SOIL	SOIL	SOIL	SOIL
				Top Depth (m):	0.30	1.00	0.30	1.00	0.30	1.00	0.20	1.40	0.30
				Bottom Depth (m):	0.30	1.00	0.30	1.00	0.30	1.00	0.20	1.40	0.30
				Asbestos Lab:	DURHAM	DURHAM	DURHAM	DURHAM	COVENTRY	COVENTRY	COVENTRY	COVENTRY	COVENTRY
Determinand	**Accred.**	**SOP**	**Units**	**LOD**									
Aromatic TPH >C8-C10	M	2680	mg/kg	1.0	[A] < 1.0	[A] < 1.0	[A] < 1.0	[A] < 1.0	[A] < 1.0	[A] < 1.0	[A] < 1.0	[A] < 1.0	[A] < 1.0
Aromatic TPH >C10-C12	M	2680	mg/kg	1.0	[A] < 1.0	[A] < 1.0	[A] < 1.0	[A] < 1.0	[A] < 1.0	[A] < 1.0	[A] < 1.0	[A] < 1.0	[A] < 1.0
Aromatic TPH >C12-C16	M	2680	mg/kg	1.0	[A] < 1.0	[A] < 1.0	[A] < 1.0	[A] < 1.0	[A] < 1.0	[A] < 1.0	[A] < 1.0	[A] < 1.0	[A] < 1.0
Aromatic TPH >C16-C21	U	2680	mg/kg	1.0	[A] < 1.0	[A] < 1.0	[A] < 1.0	[A] < 1.0	[A] < 1.0	[A] < 1.0	[A] < 1.0	[A] < 1.0	[A] < 1.0
Aromatic TPH >C21-C35	M	2680	mg/kg	1.0	[A] < 1.0	[A] < 1.0	[A] < 1.0	[A] < 1.0	[A] 13	[A] < 1.0	[A] < 1.0	[A] < 1.0	[A] < 1.0
Aromatic TPH >C35-C44	N	2680	mg/kg	1.0	[A] < 1.0	[A] < 1.0	[A] < 1.0	[A] < 1.0	[A] < 1.0	[A] < 1.0	[A] < 1.0	[A] < 1.0	[A] < 1.0
Total Aromatic Hydrocarbons	N	2680	mg/kg	5.0	[A] < 5.0	[A] < 5.0	[A] < 5.0	[A] < 5.0	[A] 13	[A] < 5.0	[A] < 5.0	[A] < 5.0	[A] < 5.0
Total Petroleum Hydrocarbons	N	2680	mg/kg	10.0	[A] < 10	[A] < 10	[A] < 10	[A] < 10	[A] 23	[A] < 10	[A] < 10	[A] < 10	[A] < 10
Benzene	M	2760	µg/kg	1.0	[A] < 1.0	[A] < 1.0	[A] < 1.0	[A] < 1.0	[A] < 1.0	[A] < 1.0	[A] < 1.0	[A] < 1.0	[A] < 1.0
Toluene	M	2760	µg/kg	1.0	[A] < 1.0	[A] < 1.0	[A] < 1.0	[A] < 1.0	[A] < 1.0	[A] < 1.0	[A] < 1.0	[A] < 1.0	[A] < 1.0
Ethylbenzene	M	2760	µg/kg	1.0	[A] < 1.0	[A] < 1.0	[A] < 1.0	[A] < 1.0	[A] < 1.0	[A] < 1.0	[A] < 1.0	[A] < 1.0	[A] < 1.0
m & p-Xylene	M	2760	µg/kg	1.0	[A] < 1.0	[A] < 1.0	[A] < 1.0	[A] < 1.0	[A] < 1.0	[A] < 1.0	[A] < 1.0	[A] < 1.0	[A] < 1.0
o-Xylene	M	2760	µg/kg	1.0	[A] < 1.0	[A] < 1.0	[A] < 1.0	[A] < 1.0	[A] < 1.0	[A] < 1.0	[A] < 1.0	[A] < 1.0	[A] < 1.0
Methyl Tert-Butyl Ether	M	2760	µg/kg	1.0	[A] < 1.0	[A] < 1.0	[A] < 1.0	[A] < 1.0	[A] < 1.0	[A] < 1.0	[A] < 1.0	[A] < 1.0	[A] < 1.0
Naphthalene	M	2800	mg/kg	0.10	< 0.10	< 0.10	0.23	< 0.10	0.33	< 0.10	< 0.10	0.29	0.74
Acenaphthylene	N	2800	mg/kg	0.10	< 0.10	< 0.10	0.35	< 0.10	0.10	< 0.10	< 0.10	0.13	0.14
Acenaphthene	M	2800	mg/kg	0.10	< 0.10	< 0.10	0.12	< 0.10	0.23	< 0.10	< 0.10	0.84	1.6
Fluorene	M	2800	mg/kg	0.10	< 0.10	< 0.10	0.19	< 0.10	0.19	< 0.10	< 0.10	0.62	1.2
Phenanthrene	M	2800	mg/kg	0.10	0.78	< 0.10	2.8	< 0.10	2.0	< 0.10	< 0.10	5.6	11
Anthracene	M	2800	mg/kg	0.10	0.14	< 0.10	0.64	< 0.10	0.30	< 0.10	< 0.10	1.5	1.6
Fluoranthene	M	2800	mg/kg	0.10	1.2	< 0.10	4.1	0.23	2.6	0.12	0.50	7.5	11
Pyrene	M	2800	mg/kg	0.10	1.1	< 0.10	3.2	0.26	2.3	0.11	0.43	6.1	9.1
Benzo[a]anthracene	M	2800	mg/kg	0.10	0.56	< 0.10	1.8	0.13	1.3	< 0.10	< 0.10	2.5	4.1
Chrysene	M	2800	mg/kg	0.10	0.63	< 0.10	1.8	0.18	1.4	< 0.10	< 0.10	2.3	4.2
Benzo[b]fluoranthene	M	2800	mg/kg	0.10	0.85	< 0.10	2.2	0.29	1.8	< 0.10	< 0.10	2.7	5.0
Benzo[k]fluoranthene	M	2800	mg/kg	0.10	0.19	< 0.10	0.70	0.10	0.56	< 0.10	< 0.10	0.90	1.7
Benzo[a]pyrene	M	2800	mg/kg	0.10	0.59	< 0.10	1.5	0.22	1.2	< 0.10	< 0.10	2.2	3.5
Indeno(1,2,3-c,d)Pyrene	M	2800	mg/kg	0.10	0.33	< 0.10	1.1	< 0.10	0.79	< 0.10	< 0.10	2.2	2.6
Dibenz(a,h)Anthracene	N	2800	mg/kg	0.10	0.13	< 0.10	0.24	< 0.10	0.21	< 0.10	< 0.10	1.4	0.75
Benzo[g,h,i]perylene	M	2800	mg/kg	0.10	0.44	< 0.10	1.0	< 0.10	0.86	< 0.10	< 0.10	0.26	2.7
Coronene	N	2800	mg/kg	0.10	< 0.10	< 0.10	< 0.10	< 0.10	< 0.10	< 0.10	< 0.10	1.3	< 0.10
Total Of 17 PAH's	N	2800	mg/kg	2.0	6.9	< 2.0	22	< 2.0	16	< 2.0	< 2.0	38	61
PCB 28	U	2815	mg/kg	0.010	[A] < 0.010	[A] < 0.010	[A] < 0.010	[A] < 0.010	[A] < 0.010	[A] < 0.010	[A] < 0.010	[A] < 0.010	[A] < 0.010
PCB 52	U	2815	mg/kg	0.010	[A] < 0.010	[A] < 0.010	[A] < 0.010	[A] < 0.010	[A] < 0.010	[A] < 0.010	[A] < 0.010	[A] < 0.010	[A] < 0.010
PCB 90+101	U	2815	mg/kg	0.010	[A] < 0.010	[A] < 0.010	[A] < 0.010	[A] < 0.010	[A] < 0.010	[A] < 0.010	[A] < 0.010	[A] < 0.010	[A] < 0.010
PCB 118	U	2815	mg/kg	0.010	[A] < 0.010	[A] < 0.010	[A] < 0.010	[A] < 0.010	[A] < 0.010	[A] < 0.010	[A] < 0.010	[A] < 0.010	[A] < 0.010
PCB 153	U	2815	mg/kg	0.010	[A] < 0.010	[A] < 0.010	[A] < 0.010	[A] < 0.010	[A] < 0.010	[A] < 0.010	[A] < 0.010	[A] < 0.010	[A] < 0.010

Results - Soil

Project: 5811

Client: Site Investigations Ltd	Chemtest Job No.:				21-33480	21-33480	21-33480	21-33480	21-33504	21-33504	21-33504	21-33504	21-33504
Quotation No.:	Chemtest Sample ID.:				1286961	1286962	1286963	1286964	1287123	1287124	1287125	1287126	1287127
Order No.: 60/A/21	Client Sample Ref.:				ES67	ES68	ES69	ES70	ES1	ES2	ES3	ES4	ES5
	Client Sample ID.:				1	2	1	2	1	2	1	2	1
	Sample Location:				TP11	TP11	TP12	TP12	TP1	TP1	TP2	TP2	TP3
	Sample Type:				SOIL	SOIL	SOIL	SOIL	SOIL	SOIL	SOIL	SOIL	SOIL
	Top Depth (m):				0.30	1.00	0.30	1.00	0.30	1.00	0.20	1.40	0.30
	Bottom Depth (m):				0.30	1.00	0.30	1.00	0.30	1.00	0.20	1.40	0.30
	Asbestos Lab:				DURHAM	DURHAM	DURHAM	DURHAM	COVENTRY	COVENTRY	COVENTRY	COVENTRY	COVENTRY
Determinand	**Accred.**	**SOP**	**Units**	**LOD**									
PCB 138	U	2815	mg/kg	0.010	[A] < 0.010	[A] < 0.010	[A] < 0.010	[A] < 0.010	[A] < 0.010	[A] < 0.010	[A] < 0.010	[A] < 0.010	[A] < 0.010
PCB 180	U	2815	mg/kg	0.010	[A] < 0.010	[A] < 0.010	[A] < 0.010	[A] < 0.010	[A] < 0.010	[A] < 0.010	[A] < 0.010	[A] < 0.010	[A] < 0.010
Total PCBs (7 Congeners)	U	2815	mg/kg	0.10	[A] < 0.10	[A] < 0.10	[A] < 0.10	[A] < 0.10	[A] < 0.10	[A] < 0.10	[A] < 0.10	[A] < 0.10	[A] < 0.10
Total Phenols	M	2920	mg/kg	0.10	< 0.10	< 0.10	< 0.10	< 0.10	< 0.10	< 0.10	< 0.10	< 0.10	< 0.10

Results - Soil

Project: 5811

Client: Site Investigations Ltd				**Chemtest Job No.:**	21-33504	21-33504	21-33504	21-33504	21-33504	21-33504	21-33504	21-33504	21-33504
Quotation No.:				**Chemtest Sample ID.:**	1287128	1287129	1287130	1287131	1287132	1287133	1287134	1287135	1287136
Order No.: 60/A/21				Client Sample Ref.:	ES6	ES7	ES8	ES9	ES10	ES11	ES12	ES13	ES14
				Client Sample ID.:	2	1	2	1	2	1	2	1	2
				Sample Location:	TP3	TP4	TP4	TP7	TP7	TP8	TP8	TP13	TP13
				Sample Type:	SOIL	SOIL	SOIL	SOIL	SOIL	SOIL	SOIL	SOIL	SOIL
				Top Depth (m):	1.20	0.40	1.50	0.30	1.00	0.30	1.00	0.30	1.00
				Bottom Depth (m):	1.20	0.40	1.50	0.30	1.00	0.30	1.00	0.30	1.00
				Asbestos Lab:	COVENTRY	COVENTRY	COVENTRY	COVENTRY	COVENTRY	COVENTRY	COVENTRY	COVENTRY	COVENTRY
Determinand	**Accred.**	**SOP**	**Units**	**LOD**									
ACM Type	U	2192		N/A	-	-	-	-	-	-	-	-	-
Asbestos Identification	U	2192		N/A	No Asbestos Detected	No Asbestos Detected	No Asbestos Detected	No Asbestos Detected	No Asbestos Detected	No Asbestos Detected	No Asbestos Detected	No Asbestos Detected	No Asbestos Detected
Moisture	N	2030	%	0.020	6.8	3.6	2.9	7.4	8.2	8.4	12	5.1	2.4
pH	M	2010		4.0	[A] 8.4	[A] 8.5	[A] 8.6	[A] 8.3	[A] 8.6	[A] 8.3	[A] 8.4	[A] 8.6	[A] 8.8
Boron (Hot Water Soluble)	M	2120	mg/kg	0.40	[A] 0.99	[A] 0.45	[A] 0.65	[A] 1.2	[A] 0.58	[A] 1.5	[A] 0.73	[A] 0.92	[A] < 0.40
Sulphur (Elemental)	M	2180	mg/kg	1.0	[A] 19	[A] 4.0	[A] 1.8	[A] 5.1	[A] 1.8	[A] 12	[A] < 1.0	[A] < 1.0	[A] < 1.0
Cyanide (Total)	M	2300	mg/kg	0.50	[A] < 0.50	[A] < 0.50	[A] < 0.50	[A] < 0.50	[A] < 0.50	[A] < 0.50	[A] < 0.50	[A] < 0.50	[A] 0.70
Sulphide (Easily Liberatable)	N	2325	mg/kg	0.50	[A] 4.5	[A] 10	[A] 3.5	[A] 3.2	[A] 3.3	[A] 1.4	[A] 44	[A] 9.8	[A] 2.2
Sulphate (Total)	M	2430	%	0.010	[A] 0.13	[A] 0.24	[A] 0.21	[A] 0.18	[A] 0.073	[A] 0.16	[A] 0.060	[A] 0.12	[A] 0.13
Arsenic	M	2450	mg/kg	1.0	21	25	24	20	17	30	12	25	17
Barium	M	2450	mg/kg	10	110	150	94	110	67	190	56	60	84
Cadmium	M	2450	mg/kg	0.10	1.1	2.3	2.0	1.6	1.6	1.3	1.0	2.4	1.2
Chromium	M	2450	mg/kg	1.0	16	23	19	19	19	21	20	19	19
Molybdenum	M	2450	mg/kg	2.0	3.5	4.7	3.8	2.6	3.5	5.0	< 2.0	3.8	2.8
Antimony	N	2450	mg/kg	2.0	2.0	2.5	2.0	< 2.0	2.0	4.6	< 2.0	2.0	2.2
Copper	M	2450	mg/kg	0.50	61	63	85	130	53	110	34	50	54
Mercury	M	2450	mg/kg	0.10	0.36	0.33	0.19	0.40	0.26	0.84	0.25	0.13	0.71
Nickel	M	2450	mg/kg	0.50	34	54	41	35	36	48	29	44	32
Lead	M	2450	mg/kg	0.50	150	130	93	180	77	450	29	40	190
Selenium	M	2450	mg/kg	0.20	0.61	1.3	0.87	0.90	0.61	0.69	< 0.20	0.24	0.68
Zinc	M	2450	mg/kg	0.50	120	130	110	150	100	210	66	73	130
Chromium (Trivalent)	N	2490	mg/kg	1.0	16	23	19	19	19	21	20	19	19
Chromium (Hexavalent)	N	2490	mg/kg	0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50
Total Organic Carbon	M	2625	%	0.20	[A] 4.9	[A] 5.4	[A] 1.5	[A] 4.0	[A] 1.5	[A] 6.6	[A] 1.8	[A] 1.8	[A] 2.4
Mineral Oil (TPH Calculation)	N	2670	mg/kg	10	80	< 10	< 10	17	56	< 10	10	14	< 10
Aliphatic TPH >C5-C6	N	2680	mg/kg	1.0	[A] < 1.0	[A] < 1.0	[A] < 1.0	[A] < 1.0	[A] < 1.0	[A] < 1.0	[A] < 1.0	[A] < 1.0	[A] < 1.0
Aliphatic TPH >C6-C8	N	2680	mg/kg	1.0	[A] < 1.0	[A] < 1.0	[A] < 1.0	[A] < 1.0	[A] < 1.0	[A] < 1.0	[A] < 1.0	[A] < 1.0	[A] < 1.0
Aliphatic TPH >C8-C10	M	2680	mg/kg	1.0	[A] < 1.0	[A] < 1.0	[A] < 1.0	[A] < 1.0	[A] < 1.0	[A] < 1.0	[A] < 1.0	[A] < 1.0	[A] < 1.0
Aliphatic TPH >C10-C12	M	2680	mg/kg	1.0	[A] < 1.0	[A] < 1.0	[A] < 1.0	[A] < 1.0	[A] < 1.0	[A] < 1.0	[A] < 1.0	[A] < 1.0	[A] < 1.0
Aliphatic TPH >C12-C16	M	2680	mg/kg	1.0	[A] < 1.0	[A] < 1.0	[A] < 1.0	[A] < 1.0	[A] < 1.0	[A] < 1.0	[A] < 1.0	[A] < 1.0	[A] < 1.0
Aliphatic TPH >C16-C21	M	2680	mg/kg	1.0	[A] < 1.0	[A] < 1.0	[A] < 1.0	[A] < 1.0	[A] < 1.0	[A] < 1.0	[A] < 1.0	[A] < 1.0	[A] < 1.0
Aliphatic TPH >C21-C35	M	2680	mg/kg	1.0	[A] 80	[A] < 1.0	[A] < 1.0	[A] 17	[A] 56	[A] < 1.0	[A] < 1.0	[A] 14	[A] < 1.0
Aliphatic TPH >C35-C44	N	2680	mg/kg	1.0	[A] < 1.0	[A] < 1.0	[A] < 1.0	[A] < 1.0	[A] < 1.0	[A] < 1.0	[A] < 1.0	[A] < 1.0	[A] < 1.0
Total Aliphatic Hydrocarbons	N	2680	mg/kg	5.0	[A] 80	[A] < 5.0	[A] < 5.0	[A] 17	[A] 56	[A] < 5.0	[A] < 5.0	[A] 14	[A] < 5.0
Aromatic TPH >C5-C7	N	2680	mg/kg	1.0	[A] < 1.0	[A] < 1.0	[A] < 1.0	[A] < 1.0	[A] < 1.0	[A] < 1.0	[A] < 1.0	[A] < 1.0	[A] < 1.0
Aromatic TPH >C7-C8	N	2680	mg/kg	1.0	[A] < 1.0	[A] < 1.0	[A] < 1.0	[A] < 1.0	[A] < 1.0	[A] < 1.0	[A] < 1.0	[A] < 1.0	[A] < 1.0

Results - Soil

Project: 5811

Client: Site Investigations Ltd				**Chemtest Job No.:**	21-33504	21-33504	21-33504	21-33504	21-33504	21-33504	21-33504	21-33504	21-33504
Quotation No.:				**Chemtest Sample ID.:**	1287128	1287129	1287130	1287131	1287132	1287133	1287134	1287135	1287136
Order No.: 60/A/21				Client Sample Ref.:	ES6	ES7	ES8	ES9	ES10	ES11	ES12	ES13	ES14
				Client Sample ID.:	2	1	2	1	2	1	2	1	2
				Sample Location:	TP3	TP4	TP4	TP7	TP7	TP8	TP8	TP13	TP13
				Sample Type:	SOIL	SOIL	SOIL	SOIL	SOIL	SOIL	SOIL	SOIL	SOIL
				Top Depth (m):	1.20	0.40	1.50	0.30	1.00	0.30	1.00	0.30	1.00
				Bottom Depth (m):	1.20	0.40	1.50	0.30	1.00	0.30	1.00	0.30	1.00
				Asbestos Lab:	COVENTRY	COVENTRY	COVENTRY	COVENTRY	COVENTRY	COVENTRY	COVENTRY	COVENTRY	COVENTRY
Determinand	**Accred.**	**SOP**	**Units**	**LOD**									
Aromatic TPH >C8-C10	M	2680	mg/kg	1.0	[A] < 1.0	[A] < 1.0	[A] < 1.0	[A] < 1.0	[A] < 1.0	[A] < 1.0	[A] < 1.0	[A] < 1.0	[A] < 1.0
Aromatic TPH >C10-C12	M	2680	mg/kg	1.0	[A] < 1.0	[A] < 1.0	[A] < 1.0	[A] < 1.0	[A] < 1.0	[A] < 1.0	[A] < 1.0	[A] < 1.0	[A] < 1.0
Aromatic TPH >C12-C16	M	2680	mg/kg	1.0	[A] < 1.0	[A] < 1.0	[A] < 1.0	[A] < 1.0	[A] < 1.0	[A] < 1.0	[A] < 1.0	[A] < 1.0	[A] < 1.0
Aromatic TPH >C16-C21	U	2680	mg/kg	1.0	[A] < 1.0	[A] < 1.0	[A] < 1.0	[A] < 1.0	[A] < 1.0	[A] < 1.0	[A] < 1.0	[A] < 1.0	[A] < 1.0
Aromatic TPH >C21-C35	M	2680	mg/kg	1.0	[A] 77	[A] < 1.0	[A] < 1.0	[A] 71	[A] 42	[A] < 1.0	[A] < 1.0	[A] 110	[A] < 1.0
Aromatic TPH >C35-C44	N	2680	mg/kg	1.0	[A] < 1.0	[A] < 1.0	[A] < 1.0	[A] < 1.0	[A] < 1.0	[A] < 1.0	[A] < 1.0	[A] < 1.0	[A] < 1.0
Total Aromatic Hydrocarbons	N	2680	mg/kg	5.0	[A] 77	[A] < 5.0	[A] < 5.0	[A] 71	[A] 42	[A] < 5.0	[A] < 5.0	[A] 110	[A] < 5.0
Total Petroleum Hydrocarbons	N	2680	mg/kg	10.0	[A] 160	[A] < 10	[A] < 10	[A] 88	[A] 98	[A] < 10	[A] < 10	[A] 130	[A] < 10
Benzene	M	2760	µg/kg	1.0	[A] < 1.0	[A] < 1.0	[A] < 1.0	[A] < 1.0	[A] < 1.0	[A] < 1.0	[A] < 1.0	[A] < 1.0	[A] < 1.0
Toluene	M	2760	µg/kg	1.0	[A] < 1.0	[A] < 1.0	[A] < 1.0	[A] < 1.0	[A] < 1.0	[A] < 1.0	[A] < 1.0	[A] < 1.0	[A] < 1.0
Ethylbenzene	M	2760	µg/kg	1.0	[A] < 1.0	[A] < 1.0	[A] < 1.0	[A] < 1.0	[A] < 1.0	[A] < 1.0	[A] < 1.0	[A] < 1.0	[A] < 1.0
m & p-Xylene	M	2760	µg/kg	1.0	[A] < 1.0	[A] < 1.0	[A] < 1.0	[A] < 1.0	[A] < 1.0	[A] < 1.0	[A] < 1.0	[A] < 1.0	[A] < 1.0
o-Xylene	M	2760	µg/kg	1.0	[A] < 1.0	[A] < 1.0	[A] < 1.0	[A] < 1.0	[A] < 1.0	[A] < 1.0	[A] < 1.0	[A] < 1.0	[A] < 1.0
Methyl Tert-Butyl Ether	M	2760	µg/kg	1.0	[A] < 1.0	[A] < 1.0	[A] < 1.0	[A] < 1.0	[A] < 1.0	[A] < 1.0	[A] < 1.0	[A] < 1.0	[A] < 1.0
Naphthalene	M	2800	mg/kg	0.10	0.30	< 0.10	< 0.10	< 0.10	< 0.10	0.16	< 0.10	< 0.10	< 0.10
Acenaphthylene	N	2800	mg/kg	0.10	0.68	< 0.10	< 0.10	< 0.10	< 0.10	0.11	< 0.10	< 0.10	< 0.10
Acenaphthene	M	2800	mg/kg	0.10	0.59	< 0.10	< 0.10	< 0.10	< 0.10	0.10	< 0.10	< 0.10	< 0.10
Fluorene	M	2800	mg/kg	0.10	1.0	< 0.10	< 0.10	< 0.10	< 0.10	0.12	< 0.10	< 0.10	< 0.10
Phenanthrene	M	2800	mg/kg	0.10	11	< 0.10	< 0.10	1.0	< 0.10	1.1	< 0.10	< 0.10	< 0.10
Anthracene	M	2800	mg/kg	0.10	1.9	< 0.10	< 0.10	0.18	< 0.10	0.39	< 0.10	< 0.10	< 0.10
Fluoranthene	M	2800	mg/kg	0.10	16	0.42	0.34	1.7	0.14	1.8	< 0.10	< 0.10	< 0.10
Pyrene	M	2800	mg/kg	0.10	13	0.42	0.36	1.5	0.13	1.7	< 0.10	< 0.10	< 0.10
Benzo[a]anthracene	M	2800	mg/kg	0.10	6.2	0.30	0.19	0.80	< 0.10	1.0	< 0.10	< 0.10	< 0.10
Chrysene	M	2800	mg/kg	0.10	6.2	0.32	0.23	0.89	< 0.10	1.1	< 0.10	< 0.10	< 0.10
Benzo[b]fluoranthene	M	2800	mg/kg	0.10	6.8	0.38	< 0.10	0.95	< 0.10	1.3	< 0.10	< 0.10	< 0.10
Benzo[k]fluoranthene	M	2800	mg/kg	0.10	2.5	0.16	< 0.10	0.42	< 0.10	0.46	< 0.10	< 0.10	< 0.10
Benzo[a]pyrene	M	2800	mg/kg	0.10	5.5	0.20	< 0.10	0.76	< 0.10	1.1	< 0.10	< 0.10	< 0.10
Indeno(1,2,3-c,d)Pyrene	M	2800	mg/kg	0.10	3.3	< 0.10	< 0.10	0.48	< 0.10	0.65	< 0.10	< 0.10	< 0.10
Dibenz(a,h)Anthracene	N	2800	mg/kg	0.10	0.74	< 0.10	< 0.10	0.17	< 0.10	0.26	< 0.10	< 0.10	< 0.10
Benzo[g,h,i]perylene	M	2800	mg/kg	0.10	3.0	< 0.10	< 0.10	0.43	< 0.10	0.64	< 0.10	< 0.10	< 0.10
Coronene	N	2800	mg/kg	0.10	< 0.10	< 0.10	< 0.10	< 0.10	< 0.10	< 0.10	< 0.10	< 0.10	< 0.10
Total Of 17 PAH's	N	2800	mg/kg	2.0	79	2.2	< 2.0	9.3	< 2.0	12	< 2.0	< 2.0	< 2.0
PCB 28	U	2815	mg/kg	0.010	[A] < 0.010	[A] < 0.010	[A] < 0.010	[A] < 0.010	[A] < 0.010	[A] < 0.010	[A] < 0.010	[A] < 0.010	[A] < 0.010
PCB 52	U	2815	mg/kg	0.010	[A] < 0.010	[A] < 0.010	[A] < 0.010	[A] < 0.010	[A] < 0.010	[A] < 0.010	[A] < 0.010	[A] < 0.010	[A] < 0.010
PCB 90+101	U	2815	mg/kg	0.010	[A] < 0.010	[A] < 0.010	[A] < 0.010	[A] < 0.010	[A] < 0.010	[A] < 0.010	[A] < 0.010	[A] < 0.010	[A] < 0.010
PCB 118	U	2815	mg/kg	0.010	[A] < 0.010	[A] < 0.010	[A] < 0.010	[A] < 0.010	[A] < 0.010	[A] < 0.010	[A] < 0.010	[A] < 0.010	[A] < 0.010
PCB 153	U	2815	mg/kg	0.010	[A] < 0.010	[A] < 0.010	[A] < 0.010	[A] < 0.010	[A] < 0.010	[A] < 0.010	[A] < 0.010	[A] < 0.010	[A] < 0.010

Results - Soil

Project: 5811

Client: Site Investigations Ltd				**Chemtest Job No.:**	21-33504	21-33504	21-33504	21-33504	21-33504	21-33504	21-33504	21-33504	21-33504
Quotation No.:				**Chemtest Sample ID.:**	1287128	1287129	1287130	1287131	1287132	1287133	1287134	1287135	1287136
Order No.: 60/A/21				Client Sample Ref.:	ES6	ES7	ES8	ES9	ES10	ES11	ES12	ES13	ES14
				Client Sample ID.:	2	1	2	1	2	1	2	1	2
				Sample Location:	TP3	TP4	TP4	TP7	TP7	TP8	TP8	TP13	TP13
				Sample Type:	SOIL	SOIL	SOIL	SOIL	SOIL	SOIL	SOIL	SOIL	SOIL
				Top Depth (m):	1.20	0.40	1.50	0.30	1.00	0.30	1.00	0.30	1.00
				Bottom Depth (m):	1.20	0.40	1.50	0.30	1.00	0.30	1.00	0.30	1.00
				Asbestos Lab:	COVENTRY	COVENTRY	COVENTRY	COVENTRY	COVENTRY	COVENTRY	COVENTRY	COVENTRY	COVENTRY
Determinand	**Accred.**	**SOP**	**Units**	**LOD**									
PCB 138	U	2815	mg/kg	0.010	[A] < 0.010	[A] < 0.010	[A] < 0.010	[A] < 0.010	[A] < 0.010	[A] < 0.010	[A] < 0.010	[A] < 0.010	[A] < 0.010
PCB 180	U	2815	mg/kg	0.010	[A] < 0.010	[A] < 0.010	[A] < 0.010	[A] < 0.010	[A] < 0.010	[A] < 0.010	[A] < 0.010	[A] < 0.010	[A] < 0.010
Total PCBs (7 Congeners)	U	2815	mg/kg	0.10	[A] < 0.10	[A] < 0.10	[A] < 0.10	[A] < 0.10	[A] < 0.10	[A] < 0.10	[A] < 0.10	[A] < 0.10	[A] < 0.10
Total Phenols	M	2920	mg/kg	0.10	< 0.10	< 0.10	< 0.10	< 0.10	< 0.10	< 0.10	< 0.10	< 0.10	< 0.10

Results - Soil

Project: 5811

Client: Site Investigations Ltd				**Chemtest Job No.:**	21-33504	21-33504	21-33504	21-33504	21-33504	21-33504	21-33504	21-33504	21-33504
Quotation No.:				**Chemtest Sample ID.:**	1287137	1287138	1287139	1287140	1287141	1287142	1287143	1287144	1287145
Order No.: 60/A/21				Client Sample Ref.:	ES15	ES16	ES17	ES18	ES19	ES20	ES21	ES22	ES23
				Client Sample ID.:	1	2	1	2	1	2	1	2	1
				Sample Location:	TP14	TP14	TP15	TP15	TP16	TP16	TP17	TP17	TP18
				Sample Type:	SOIL	SOIL	SOIL	SOIL	SOIL	SOIL	SOIL	SOIL	SOIL
				Top Depth (m):	0.30	1.00	0.30	1.00	0.30	0.60	0.30	0.60	0.30
				Bottom Depth (m):	0.30	1.00	0.30	1.00	0.30	0.60	0.30	0.60	0.30
				Asbestos Lab:	COVENTRY	COVENTRY	COVENTRY	COVENTRY	COVENTRY	COVENTRY	COVENTRY	COVENTRY	COVENTRY
Determinand	**Accred.**	**SOP**	**Units**	**LOD**									
ACM Type	U	2192		N/A	-	-	-	-	-	-	-	-	-
Asbestos Identification	U	2192		N/A	No Asbestos Detected	No Asbestos Detected	No Asbestos Detected	No Asbestos Detected	No Asbestos Detected	No Asbestos Detected	No Asbestos Detected	No Asbestos Detected	No Asbestos Detected
Moisture	N	2030	%	0.020	9.1	2.5	7.2	8.3	10	9.7	7.7	6.7	8.9
pH	M	2010		4.0	[A] 8.6	[A] 8.7	[A] 8.4	[A] 8.6	[A] 8.2	[A] 8.6	[A] 8.3	[A] 8.3	[A] 8.2
Boron (Hot Water Soluble)	M	2120	mg/kg	0.40	[A] 1.4	[A] 0.52	[A] 1.1	[A] 0.53	[A] 0.70	[A] 0.88	[A] 1.8	[A] 0.43	[A] 1.7
Sulphur (Elemental)	M	2180	mg/kg	1.0	[A] 7.6	[A] < 1.0	[A] 5.3	[A] < 1.0	[A] 7.2	[A] < 1.0	[A] 10	[A] < 1.0	[A] 7.0
Cyanide (Total)	M	2300	mg/kg	0.50	[A] < 0.50	[A] < 0.50	[A] 8.3	[A] 10	[A] 7.9	[A] 18	[A] 1.2	[A] < 0.50	[A] < 0.50
Sulphide (Easily Liberatable)	N	2325	mg/kg	0.50	[A] 8.8	[A] 6.2	[A] 1.9	[A] 1.8	[A] 2.1	[A] 1.8	[A] 1.5	[A] 1.6	[A] 1.7
Sulphate (Total)	M	2430	%	0.010	[A] 0.15	[A] 0.075	[A] 0.081	[A] 0.020	[A] 0.13	[A] 0.031	[A] 0.096	[A] 0.020	[A] 0.091
Arsenic	M	2450	mg/kg	1.0	22	16	19	9.8	17	10	22	15	24
Barium	M	2450	mg/kg	10	76	70	87	43	85	57	87	63	110
Cadmium	M	2450	mg/kg	0.10	1.6	1.2	1.6	0.83	1.1	1.3	1.1	1.4	1.3
Chromium	M	2450	mg/kg	1.0	18	16	20	18	17	15	18	29	24
Molybdenum	M	2450	mg/kg	2.0	2.6	2.3	2.7	2.9	2.4	2.4	2.7	2.7	3.3
Antimony	N	2450	mg/kg	2.0	< 2.0	< 2.0	< 2.0	< 2.0	< 2.0	< 2.0	2.0	< 2.0	3.1
Copper	M	2450	mg/kg	0.50	46	67	85	110	110	58	110	58	72
Mercury	M	2450	mg/kg	0.10	0.16	0.26	0.28	< 0.10	0.54	0.12	0.57	0.16	0.51
Nickel	M	2450	mg/kg	0.50	34	28	33	26	29	25	34	44	40
Lead	M	2450	mg/kg	0.50	46	97	110	31	180	36	160	37	180
Selenium	M	2450	mg/kg	0.20	0.37	0.48	0.67	0.53	0.73	0.34	0.47	0.34	0.55
Zinc	M	2450	mg/kg	0.50	55	95	120	70	120	74	120	88	200
Chromium (Trivalent)	N	2490	mg/kg	1.0	18	16	20	18	17	15	18	29	24
Chromium (Hexavalent)	N	2490	mg/kg	0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50
Total Organic Carbon	M	2625	%	0.20	[A] 3.7	[A] 1.1	[A] 3.0	[A] 0.68	[A] 4.7	[A] 1.1	[A] 3.0	[A] 0.76	[A] 3.6
Mineral Oil (TPH Calculation)	N	2670	mg/kg	10	< 10	< 10	< 10	< 10	< 10	< 10	< 10	< 10	< 10
Aliphatic TPH >C5-C6	N	2680	mg/kg	1.0	[A] < 1.0	[A] < 1.0	[A] < 1.0	[A] < 1.0	[A] < 1.0	[A] < 1.0	[A] < 1.0	[A] < 1.0	[A] < 1.0
Aliphatic TPH >C6-C8	N	2680	mg/kg	1.0	[A] < 1.0	[A] < 1.0	[A] < 1.0	[A] < 1.0	[A] < 1.0	[A] < 1.0	[A] < 1.0	[A] < 1.0	[A] < 1.0
Aliphatic TPH >C8-C10	M	2680	mg/kg	1.0	[A] < 1.0	[A] < 1.0	[A] < 1.0	[A] < 1.0	[A] < 1.0	[A] < 1.0	[A] < 1.0	[A] < 1.0	[A] < 1.0
Aliphatic TPH >C10-C12	M	2680	mg/kg	1.0	[A] < 1.0	[A] < 1.0	[A] < 1.0	[A] < 1.0	[A] < 1.0	[A] < 1.0	[A] < 1.0	[A] < 1.0	[A] < 1.0
Aliphatic TPH >C12-C16	M	2680	mg/kg	1.0	[A] < 1.0	[A] < 1.0	[A] < 1.0	[A] < 1.0	[A] < 1.0	[A] < 1.0	[A] < 1.0	[A] < 1.0	[A] < 1.0
Aliphatic TPH >C16-C21	M	2680	mg/kg	1.0	[A] < 1.0	[A] < 1.0	[A] < 1.0	[A] < 1.0	[A] < 1.0	[A] < 1.0	[A] < 1.0	[A] < 1.0	[A] < 1.0
Aliphatic TPH >C21-C35	M	2680	mg/kg	1.0	[A] < 1.0	[A] < 1.0	[A] < 1.0	[A] < 1.0	[A] < 1.0	[A] < 1.0	[A] < 1.0	[A] < 1.0	[A] < 1.0
Aliphatic TPH >C35-C44	N	2680	mg/kg	1.0	[A] < 1.0	[A] < 1.0	[A] < 1.0	[A] < 1.0	[A] < 1.0	[A] < 1.0	[A] < 1.0	[A] < 1.0	[A] < 1.0
Total Aliphatic Hydrocarbons	N	2680	mg/kg	5.0	[A] < 5.0	[A] < 5.0	[A] < 5.0	[A] < 5.0	[A] < 5.0	[A] < 5.0	[A] < 5.0	[A] < 5.0	[A] < 5.0
Aromatic TPH >C5-C7	N	2680	mg/kg	1.0	[A] < 1.0	[A] < 1.0	[A] < 1.0	[A] < 1.0	[A] < 1.0	[A] < 1.0	[A] < 1.0	[A] < 1.0	[A] < 1.0
Aromatic TPH >C7-C8	N	2680	mg/kg	1.0	[A] < 1.0	[A] < 1.0	[A] < 1.0	[A] < 1.0	[A] < 1.0	[A] < 1.0	[A] < 1.0	[A] < 1.0	[A] < 1.0

Results - Soil

Project: 5811

Client: Site Investigations Ltd				Chemtest Job No.:	21-33504	21-33504	21-33504	21-33504	21-33504	21-33504	21-33504	21-33504	21-33504
Quotation No.:				Chemtest Sample ID.:	1287137	1287138	1287139	1287140	1287141	1287142	1287143	1287144	1287145
Order No.: 60/A/21				Client Sample Ref.:	ES15	ES16	ES17	ES18	ES19	ES20	ES21	ES22	ES23
				Client Sample ID.:	1	2	1	2	1	2	1	2	1
				Sample Location:	TP14	TP14	TP15	TP15	TP16	TP16	TP17	TP17	TP18
				Sample Type:	SOIL	SOIL	SOIL	SOIL	SOIL	SOIL	SOIL	SOIL	SOIL
				Top Depth (m):	0.30	1.00	0.30	1.00	0.30	0.60	0.30	0.60	0.30
				Bottom Depth (m):	0.30	1.00	0.30	1.00	0.30	0.60	0.30	0.60	0.30
				Asbestos Lab:	COVENTRY	COVENTRY	COVENTRY	COVENTRY	COVENTRY	COVENTRY	COVENTRY	COVENTRY	COVENTRY
Determinand	**Accred.**	**SOP**	**Units**	**LOD**									
Aromatic TPH >C8-C10	M	2680	mg/kg	1.0	[A] < 1.0	[A] < 1.0	[A] < 1.0	[A] < 1.0	[A] < 1.0	[A] < 1.0	[A] < 1.0	[A] < 1.0	[A] < 1.0
Aromatic TPH >C10-C12	M	2680	mg/kg	1.0	[A] < 1.0	[A] < 1.0	[A] < 1.0	[A] < 1.0	[A] < 1.0	[A] < 1.0	[A] < 1.0	[A] < 1.0	[A] < 1.0
Aromatic TPH >C12-C16	M	2680	mg/kg	1.0	[A] 18	[A] < 1.0	[A] < 1.0	[A] < 1.0	[A] < 1.0	[A] < 1.0	[A] < 1.0	[A] < 1.0	[A] 17
Aromatic TPH >C16-C21	U	2680	mg/kg	1.0	[A] 15	[A] < 1.0	[A] < 1.0	[A] < 1.0	[A] < 1.0	[A] < 1.0	[A] < 1.0	[A] < 1.0	[A] 67
Aromatic TPH >C21-C35	M	2680	mg/kg	1.0	[A] 45	[A] < 1.0	[A] < 1.0	[A] < 1.0	[A] < 1.0	[A] < 1.0	[A] < 1.0	[A] < 1.0	[A] 350
Aromatic TPH >C35-C44	N	2680	mg/kg	1.0	[A] < 1.0	[A] < 1.0	[A] < 1.0	[A] < 1.0	[A] < 1.0	[A] < 1.0	[A] < 1.0	[A] < 1.0	[A] < 1.0
Total Aromatic Hydrocarbons	N	2680	mg/kg	5.0	[A] 79	[A] < 5.0	[A] < 5.0	[A] < 5.0	[A] < 5.0	[A] < 5.0	[A] < 5.0	[A] < 5.0	[A] 430
Total Petroleum Hydrocarbons	N	2680	mg/kg	10.0	[A] 79	[A] < 10	[A] < 10	[A] < 10	[A] < 10	[A] < 10	[A] < 10	[A] < 10	[A] 430
Benzene	M	2760	µg/kg	1.0	[A] < 1.0	[A] < 1.0	[A] < 1.0	[A] < 1.0	[A] < 1.0	[A] < 1.0	[A] < 1.0	[A] < 1.0	[A] < 1.0
Toluene	M	2760	µg/kg	1.0	[A] < 1.0	[A] < 1.0	[A] < 1.0	[A] < 1.0	[A] < 1.0	[A] < 1.0	[A] < 1.0	[A] < 1.0	[A] < 1.0
Ethylbenzene	M	2760	µg/kg	1.0	[A] < 1.0	[A] < 1.0	[A] < 1.0	[A] < 1.0	[A] < 1.0	[A] < 1.0	[A] < 1.0	[A] < 1.0	[A] < 1.0
m & p-Xylene	M	2760	µg/kg	1.0	[A] < 1.0	[A] < 1.0	[A] < 1.0	[A] < 1.0	[A] < 1.0	[A] < 1.0	[A] < 1.0	[A] < 1.0	[A] < 1.0
o-Xylene	M	2760	µg/kg	1.0	[A] < 1.0	[A] < 1.0	[A] < 1.0	[A] < 1.0	[A] < 1.0	[A] < 1.0	[A] < 1.0	[A] < 1.0	[A] < 1.0
Methyl Tert-Butyl Ether	M	2760	µg/kg	1.0	[A] < 1.0	[A] < 1.0	[A] < 1.0	[A] < 1.0	[A] < 1.0	[A] < 1.0	[A] < 1.0	[A] < 1.0	[A] < 1.0
Naphthalene	M	2800	mg/kg	0.10	0.27	< 0.10	< 0.10	< 0.10	< 0.10	< 0.10	< 0.10	< 0.10	< 0.10
Acenaphthylene	N	2800	mg/kg	0.10	< 0.10	< 0.10	< 0.10	< 0.10	< 0.10	< 0.10	< 0.10	< 0.10	< 0.10
Acenaphthene	M	2800	mg/kg	0.10	0.52	< 0.10	< 0.10	< 0.10	< 0.10	< 0.10	< 0.10	< 0.10	< 0.10
Fluorene	M	2800	mg/kg	0.10	0.52	< 0.10	< 0.10	< 0.10	< 0.10	< 0.10	< 0.10	< 0.10	< 0.10
Phenanthrene	M	2800	mg/kg	0.10	4.0	< 0.10	0.52	< 0.10	0.83	< 0.10	3.4	< 0.10	3.0
Anthracene	M	2800	mg/kg	0.10	0.68	< 0.10	0.50	< 0.10	0.17	< 0.10	0.50	< 0.10	0.44
Fluoranthene	M	2800	mg/kg	0.10	4.0	0.13	1.7	< 0.10	1.0	< 0.10	4.2	< 0.10	3.7
Pyrene	M	2800	mg/kg	0.10	3.2	0.12	1.7	< 0.10	0.95	< 0.10	3.6	< 0.10	3.1
Benzo[a]anthracene	M	2800	mg/kg	0.10	1.8	< 0.10	1.3	< 0.10	0.58	< 0.10	1.8	< 0.10	1.6
Chrysene	M	2800	mg/kg	0.10	2.0	< 0.10	1.2	< 0.10	0.63	< 0.10	1.9	< 0.10	1.8
Benzo[b]fluoranthene	M	2800	mg/kg	0.10	2.0	< 0.10	1.4	< 0.10	0.72	< 0.10	1.9	< 0.10	2.0
Benzo[k]fluoranthene	M	2800	mg/kg	0.10	0.65	< 0.10	0.61	< 0.10	0.21	< 0.10	0.67	< 0.10	0.63
Benzo[a]pyrene	M	2800	mg/kg	0.10	1.7	< 0.10	1.1	< 0.10	0.63	< 0.10	1.4	< 0.10	1.5
Indeno(1,2,3-c,d)Pyrene	M	2800	mg/kg	0.10	0.97	< 0.10	0.70	< 0.10	< 0.10	< 0.10	0.87	< 0.10	0.87
Dibenz(a,h)Anthracene	N	2800	mg/kg	0.10	0.26	< 0.10	0.14	< 0.10	< 0.10	< 0.10	0.24	< 0.10	0.36
Benzo[g,h,i]perylene	M	2800	mg/kg	0.10	0.93	< 0.10	0.68	< 0.10	< 0.10	< 0.10	1.2	< 0.10	0.96
Coronene	N	2800	mg/kg	0.10	< 0.10	< 0.10	< 0.10	< 0.10	< 0.10	< 0.10	< 0.10	< 0.10	< 0.10
Total Of 17 PAH's	N	2800	mg/kg	2.0	24	< 2.0	12	< 2.0	5.7	< 2.0	22	< 2.0	20
PCB 28	U	2815	mg/kg	0.010	[A] < 0.010	[A] < 0.010	[A] < 0.010	[A] < 0.010	[A] < 0.010	[A] < 0.010	[A] < 0.010	[A] < 0.010	[A] < 0.010
PCB 52	U	2815	mg/kg	0.010	[A] < 0.010	[A] < 0.010	[A] < 0.010	[A] < 0.010	[A] < 0.010	[A] < 0.010	[A] < 0.010	[A] < 0.010	[A] < 0.010
PCB 90+101	U	2815	mg/kg	0.010	[A] < 0.010	[A] < 0.010	[A] < 0.010	[A] < 0.010	[A] < 0.010	[A] < 0.010	[A] < 0.010	[A] < 0.010	[A] < 0.010
PCB 118	U	2815	mg/kg	0.010	[A] < 0.010	[A] < 0.010	[A] < 0.010	[A] < 0.010	[A] < 0.010	[A] < 0.010	[A] < 0.010	[A] < 0.010	[A] < 0.010
PCB 153	U	2815	mg/kg	0.010	[A] < 0.010	[A] < 0.010	[A] < 0.010	[A] < 0.010	[A] < 0.010	[A] < 0.010	[A] < 0.010	[A] < 0.010	[A] < 0.010

Results - Soil

Project: 5811

Client: Site Investigations Ltd	Chemtest Job No.:				21-33504	21-33504	21-33504	21-33504	21-33504	21-33504	21-33504	21-33504	21-33504
Quotation No.:	Chemtest Sample ID.:				1287137	1287138	1287139	1287140	1287141	1287142	1287143	1287144	1287145
Order No.: 60/A/21	Client Sample Ref.:				ES15	ES16	ES17	ES18	ES19	ES20	ES21	ES22	ES23
	Client Sample ID.:				1	2	1	2	1	2	1	2	1
	Sample Location:				TP14	TP14	TP15	TP15	TP16	TP16	TP17	TP17	TP18
	Sample Type:				SOIL	SOIL	SOIL	SOIL	SOIL	SOIL	SOIL	SOIL	SOIL
	Top Depth (m):				0.30	1.00	0.30	1.00	0.30	0.60	0.30	0.60	0.30
	Bottom Depth (m):				0.30	1.00	0.30	1.00	0.30	0.60	0.30	0.60	0.30
	Asbestos Lab:				COVENTRY	COVENTRY	COVENTRY	COVENTRY	COVENTRY	COVENTRY	COVENTRY	COVENTRY	COVENTRY
Determinand	**Accred.**	**SOP**	**Units**	**LOD**									
PCB 138	U	2815	mg/kg	0.010	[A] < 0.010	[A] < 0.010	[A] < 0.010	[A] < 0.010	[A] < 0.010	[A] < 0.010	[A] < 0.010	[A] < 0.010	[A] < 0.010
PCB 180	U	2815	mg/kg	0.010	[A] < 0.010	[A] < 0.010	[A] < 0.010	[A] < 0.010	[A] < 0.010	[A] < 0.010	[A] < 0.010	[A] < 0.010	[A] < 0.010
Total PCBs (7 Congeners)	U	2815	mg/kg	0.10	[A] < 0.10	[A] < 0.10	[A] < 0.10	[A] < 0.10	[A] < 0.10	[A] < 0.10	[A] < 0.10	[A] < 0.10	[A] < 0.10
Total Phenols	M	2920	mg/kg	0.10	< 0.10	< 0.10	< 0.10	< 0.10	< 0.10	< 0.10	< 0.10	< 0.10	< 0.10

Results - Soil

Project: 5811

Client: Site Investigations Ltd	Chemtest Job No.:				21-33504	21-33504	21-33504	21-33504	21-33504	21-33504	21-33504	21-33504	21-33504
Quotation No.:	Chemtest Sample ID.:				1287146	1287147	1287148	1287149	1287150	1287151	1287152	1287153	1287154
Order No.: 60/A/21	Client Sample Ref.:				ES24	ES25	ES26	ES27	ES28	ES29	ES30	ES31	ES32
	Client Sample ID.:				2	1	2	1	2	1	2	1	2
	Sample Location:				TP18	TP19	TP19	TP20	TP20	TP22	TP22	TP23	TP23
	Sample Type:				SOIL	SOIL	SOIL	SOIL	SOIL	SOIL	SOIL	SOIL	SOIL
	Top Depth (m):				1.00	0.30	0.80	0.40	0.80	0.30	1.00	0.30	0.80
	Bottom Depth (m):				1.00	0.30	0.80	0.40	0.80	0.30	1.00	0.30	0.80
	Asbestos Lab:				COVENTRY	COVENTRY	COVENTRY	COVENTRY	COVENTRY	COVENTRY	COVENTRY	COVENTRY	COVENTRY
Determinand	**Accred.**	**SOP**	**Units**	**LOD**									
ACM Type	U	2192		N/A	-	-	-	-	-	-	-	-	-
Asbestos Identification	U	2192		N/A	No Asbestos Detected	No Asbestos Detected	No Asbestos Detected	No Asbestos Detected	No Asbestos Detected	No Asbestos Detected	No Asbestos Detected	No Asbestos Detected	No Asbestos Detected
Moisture	N	2030	%	0.020	6.7	9.1	13	6.3	14	8.1	6.9	8.1	17
pH	M	2010		4.0	[A] 8.6	[A] 8.3	[A] 8.6	[A] 8.5	[A] 8.4	[A] 8.7	[A] 8.3	[A] 8.2	[A] 8.5
Boron (Hot Water Soluble)	M	2120	mg/kg	0.40	[A] < 0.40	[A] 2.2	[A] 0.52	[A] < 0.40	[A] 0.68	[A] 1.8	[A] < 0.40	[A] 2.6	[A] 0.72
Sulphur (Elemental)	M	2180	mg/kg	1.0	[A] < 1.0	[A] 8.7	[A] 2.4	[A] 2.7	[A] < 1.0	[A] 8.2	[A] < 1.0	[A] 12	[A] 1.5
Cyanide (Total)	M	2300	mg/kg	0.50	[A] < 0.50	[A] < 0.50	[A] < 0.50	[A] < 0.50	[A] < 0.50	[A] < 0.50	[A] < 0.50	[A] < 0.50	[A] < 0.50
Sulphide (Easily Liberatable)	N	2325	mg/kg	0.50	[A] 7.2	[A] 2.1	[A] 5.3	[A] 2.6	[A] 3.3	[A] 3.1	[A] 8.8	[A] 3.5	[A] 1.6
Sulphate (Total)	M	2430	%	0.010	[A] 0.075	[A] 0.11	[A] 0.093	[A] 0.12	[A] 0.055	[A] 0.20	[A] 0.11	[A] 0.16	[A] 0.070
Arsenic	M	2450	mg/kg	1.0	22	31	15	41	13	49	23	24	12
Barium	M	2450	mg/kg	10	68	140	51	86	55	190	78	120	68
Cadmium	M	2450	mg/kg	0.10	2.9	1.4	1.4	1.5	1.0	1.8	1.7	1.1	1.3
Chromium	M	2450	mg/kg	1.0	21	23	17	23	21	25	22	17	21
Molybdenum	M	2450	mg/kg	2.0	4.0	3.7	3.6	3.0	< 2.0	5.9	3.0	3.1	3.1
Antimony	N	2450	mg/kg	2.0	2.6	3.9	2.8	2.2	< 2.0	5.2	< 2.0	2.3	< 2.0
Copper	M	2450	mg/kg	0.50	66	92	56	63	37	160	52	94	47
Mercury	M	2450	mg/kg	0.10	0.12	0.82	0.15	0.47	0.25	0.93	< 0.10	0.60	0.14
Nickel	M	2450	mg/kg	0.50	61	46	36	42	32	62	46	38	36
Lead	M	2450	mg/kg	0.50	36	260	40	140	28	360	36	460	35
Selenium	M	2450	mg/kg	0.20	0.27	0.49	0.35	0.51	< 0.20	0.73	< 0.20	0.84	0.31
Zinc	M	2450	mg/kg	0.50	94	260	75	120	75	370	63	170	90
Chromium (Trivalent)	N	2490	mg/kg	1.0	21	23	17	23	21	25	22	17	21
Chromium (Hexavalent)	N	2490	mg/kg	0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50
Total Organic Carbon	M	2625	%	0.20	[A] 0.37	[A] 4.7	[A] 3.9	[A] 1.4	[A] 1.1	[A] 6.0	[A] 1.4	[A] 7.2	[A] 1.4
Mineral Oil (TPH Calculation)	N	2670	mg/kg	10	< 10	< 10	< 10	< 10	< 10	< 10	< 10	< 10	< 10
Aliphatic TPH >C5-C6	N	2680	mg/kg	1.0	[A] < 1.0	[A] < 1.0	[A] < 1.0	[A] < 1.0	[A] < 1.0	[A] < 1.0	[A] < 1.0	[A] < 1.0	[A] < 1.0
Aliphatic TPH >C6-C8	N	2680	mg/kg	1.0	[A] < 1.0	[A] < 1.0	[A] < 1.0	[A] < 1.0	[A] < 1.0	[A] < 1.0	[A] < 1.0	[A] < 1.0	[A] < 1.0
Aliphatic TPH >C8-C10	M	2680	mg/kg	1.0	[A] < 1.0	[A] < 1.0	[A] < 1.0	[A] < 1.0	[A] < 1.0	[A] < 1.0	[A] < 1.0	[A] < 1.0	[A] < 1.0
Aliphatic TPH >C10-C12	M	2680	mg/kg	1.0	[A] < 1.0	[A] < 1.0	[A] < 1.0	[A] < 1.0	[A] < 1.0	[A] < 1.0	[A] < 1.0	[A] < 1.0	[A] < 1.0
Aliphatic TPH >C12-C16	M	2680	mg/kg	1.0	[A] < 1.0	[A] < 1.0	[A] < 1.0	[A] < 1.0	[A] < 1.0	[A] < 1.0	[A] < 1.0	[A] < 1.0	[A] < 1.0
Aliphatic TPH >C16-C21	M	2680	mg/kg	1.0	[A] < 1.0	[A] < 1.0	[A] < 1.0	[A] < 1.0	[A] < 1.0	[A] < 1.0	[A] < 1.0	[A] < 1.0	[A] < 1.0
Aliphatic TPH >C21-C35	M	2680	mg/kg	1.0	[A] < 1.0	[A] < 1.0	[A] < 1.0	[A] < 1.0	[A] < 1.0	[A] < 1.0	[A] < 1.0	[A] < 1.0	[A] < 1.0
Aliphatic TPH >C35-C44	N	2680	mg/kg	1.0	[A] < 1.0	[A] < 1.0	[A] < 1.0	[A] < 1.0	[A] < 1.0	[A] < 1.0	[A] < 1.0	[A] < 1.0	[A] < 1.0
Total Aliphatic Hydrocarbons	N	2680	mg/kg	5.0	[A] < 5.0	[A] < 5.0	[A] < 5.0	[A] < 5.0	[A] < 5.0	[A] < 5.0	[A] < 5.0	[A] < 5.0	[A] < 5.0
Aromatic TPH >C5-C7	N	2680	mg/kg	1.0	[A] < 1.0	[A] < 1.0	[A] < 1.0	[A] < 1.0	[A] < 1.0	[A] < 1.0	[A] < 1.0	[A] < 1.0	[A] < 1.0
Aromatic TPH >C7-C8	N	2680	mg/kg	1.0	[A] < 1.0	[A] < 1.0	[A] < 1.0	[A] < 1.0	[A] < 1.0	[A] < 1.0	[A] < 1.0	[A] < 1.0	[A] < 1.0

Results - Soil

Project: 5811

Client: Site Investigations Ltd				**Chemtest Job No.:**	21-33504	21-33504	21-33504	21-33504	21-33504	21-33504	21-33504	21-33504	21-33504
Quotation No.:				**Chemtest Sample ID.:**	1287146	1287147	1287148	1287149	1287150	1287151	1287152	1287153	1287154
Order No.: 60/A/21				Client Sample Ref.:	ES24	ES25	ES26	ES27	ES28	ES29	ES30	ES31	ES32
				Client Sample ID.:	2	1	2	1	2	1	2	1	2
				Sample Location:	TP18	TP19	TP19	TP20	TP20	TP22	TP22	TP23	TP23
				Sample Type:	SOIL	SOIL	SOIL	SOIL	SOIL	SOIL	SOIL	SOIL	SOIL
				Top Depth (m):	1.00	0.30	0.80	0.40	0.80	0.30	1.00	0.30	0.80
				Bottom Depth (m):	1.00	0.30	0.80	0.40	0.80	0.30	1.00	0.30	0.80
				Asbestos Lab:	COVENTRY	COVENTRY	COVENTRY	COVENTRY	COVENTRY	COVENTRY	COVENTRY	COVENTRY	COVENTRY
Determinand	**Accred.**	**SOP**	**Units**	**LOD**									
Aromatic TPH >C8-C10	M	2680	mg/kg	1.0	[A] < 1.0	[A] < 1.0	[A] < 1.0	[A] < 1.0	[A] < 1.0	[A] < 1.0	[A] < 1.0	[A] < 1.0	[A] < 1.0
Aromatic TPH >C10-C12	M	2680	mg/kg	1.0	[A] < 1.0	[A] < 1.0	[A] < 1.0	[A] < 1.0	[A] < 1.0	[A] < 1.0	[A] < 1.0	[A] < 1.0	[A] < 1.0
Aromatic TPH >C12-C16	M	2680	mg/kg	1.0	[A] < 1.0	[A] < 1.0	[A] < 1.0	[A] < 1.0	[A] < 1.0	[A] < 1.0	[A] < 1.0	[A] 27	[A] < 1.0
Aromatic TPH >C16-C21	U	2680	mg/kg	1.0	[A] < 1.0	[A] < 1.0	[A] < 1.0	[A] < 1.0	[A] < 1.0	[A] < 1.0	[A] < 1.0	[A] 8.5	[A] < 1.0
Aromatic TPH >C21-C35	M	2680	mg/kg	1.0	[A] < 1.0	[A] < 1.0	[A] < 1.0	[A] < 1.0	[A] < 1.0	[A] < 1.0	[A] < 1.0	[A] 68	[A] < 1.0
Aromatic TPH >C35-C44	N	2680	mg/kg	1.0	[A] < 1.0	[A] < 1.0	[A] < 1.0	[A] < 1.0	[A] < 1.0	[A] < 1.0	[A] < 1.0	[A] < 1.0	[A] < 1.0
Total Aromatic Hydrocarbons	N	2680	mg/kg	5.0	[A] < 5.0	[A] < 5.0	[A] < 5.0	[A] < 5.0	[A] < 5.0	[A] < 5.0	[A] < 5.0	[A] 100	[A] < 5.0
Total Petroleum Hydrocarbons	N	2680	mg/kg	10.0	[A] < 10	[A] < 10	[A] < 10	[A] < 10	[A] < 10	[A] < 10	[A] < 10	[A] 100	[A] < 10
Benzene	M	2760	µg/kg	1.0	[A] < 1.0	[A] < 1.0	[A] < 1.0	[A] < 1.0	[A] < 1.0	[A] < 1.0	[A] < 1.0	[A] < 1.0	[A] < 1.0
Toluene	M	2760	µg/kg	1.0	[A] < 1.0	[A] < 1.0	[A] < 1.0	[A] < 1.0	[A] < 1.0	[A] < 1.0	[A] < 1.0	[A] < 1.0	[A] < 1.0
Ethylbenzene	M	2760	µg/kg	1.0	[A] < 1.0	[A] < 1.0	[A] < 1.0	[A] < 1.0	[A] < 1.0	[A] < 1.0	[A] < 1.0	[A] < 1.0	[A] < 1.0
m & p-Xylene	M	2760	µg/kg	1.0	[A] < 1.0	[A] < 1.0	[A] < 1.0	[A] < 1.0	[A] < 1.0	[A] < 1.0	[A] < 1.0	[A] < 1.0	[A] < 1.0
o-Xylene	M	2760	µg/kg	1.0	[A] < 1.0	[A] < 1.0	[A] < 1.0	[A] < 1.0	[A] < 1.0	[A] < 1.0	[A] < 1.0	[A] < 1.0	[A] < 1.0
Methyl Tert-Butyl Ether	M	2760	µg/kg	1.0	[A] < 1.0	[A] < 1.0	[A] < 1.0	[A] < 1.0	[A] < 1.0	[A] < 1.0	[A] < 1.0	[A] < 1.0	[A] < 1.0
Naphthalene	M	2800	mg/kg	0.10	< 0.10	< 0.10	< 0.10	< 0.10	< 0.10	0.19	< 0.10	0.19	< 0.10
Acenaphthylene	N	2800	mg/kg	0.10	< 0.10	< 0.10	< 0.10	< 0.10	< 0.10	< 0.10	< 0.10	0.11	< 0.10
Acenaphthene	M	2800	mg/kg	0.10	< 0.10	< 0.10	< 0.10	< 0.10	< 0.10	0.15	< 0.10	0.39	< 0.10
Fluorene	M	2800	mg/kg	0.10	< 0.10	< 0.10	< 0.10	< 0.10	< 0.10	0.12	< 0.10	0.28	< 0.10
Phenanthrene	M	2800	mg/kg	0.10	< 0.10	1.5	< 0.10	< 0.10	< 0.10	1.4	< 0.10	3.6	< 0.10
Anthracene	M	2800	mg/kg	0.10	< 0.10	0.24	< 0.10	< 0.10	< 0.10	0.22	< 0.10	0.44	< 0.10
Fluoranthene	M	2800	mg/kg	0.10	0.26	1.8	0.26	< 0.10	< 0.10	1.8	< 0.10	4.9	0.50
Pyrene	M	2800	mg/kg	0.10	0.24	1.6	0.24	< 0.10	< 0.10	1.7	< 0.10	4.3	0.41
Benzo[a]anthracene	M	2800	mg/kg	0.10	< 0.10	0.83	0.14	< 0.10	< 0.10	0.93	< 0.10	2.1	0.19
Chrysene	M	2800	mg/kg	0.10	< 0.10	0.96	0.15	< 0.10	< 0.10	1.0	< 0.10	2.4	0.13
Benzo[b]fluoranthene	M	2800	mg/kg	0.10	< 0.10	1.0	< 0.10	< 0.10	< 0.10	1.2	< 0.10	2.7	< 0.10
Benzo[k]fluoranthene	M	2800	mg/kg	0.10	< 0.10	0.45	< 0.10	< 0.10	< 0.10	0.38	< 0.10	0.88	< 0.10
Benzo[a]pyrene	M	2800	mg/kg	0.10	< 0.10	0.89	< 0.10	< 0.10	< 0.10	0.88	< 0.10	2.0	< 0.10
Indeno(1,2,3-c,d)Pyrene	M	2800	mg/kg	0.10	< 0.10	0.58	< 0.10	< 0.10	< 0.10	0.56	< 0.10	1.3	< 0.10
Dibenz(a,h)Anthracene	N	2800	mg/kg	0.10	< 0.10	0.24	< 0.10	< 0.10	< 0.10	0.18	< 0.10	0.31	< 0.10
Benzo[g,h,i]perylene	M	2800	mg/kg	0.10	< 0.10	0.62	< 0.10	< 0.10	< 0.10	0.61	< 0.10	1.4	< 0.10
Coronene	N	2800	mg/kg	0.10	< 0.10	< 0.10	< 0.10	< 0.10	< 0.10	< 0.10	< 0.10	< 0.10	< 0.10
Total Of 17 PAH's	N	2800	mg/kg	2.0	< 2.0	11	< 2.0	< 2.0	< 2.0	11	< 2.0	27	< 2.0
PCB 28	U	2815	mg/kg	0.010	[A] < 0.010	[A] < 0.010	[A] < 0.010	[A] < 0.010	[A] < 0.010	[A] < 0.010	[A] < 0.010	[A] < 0.010	[A] < 0.010
PCB 52	U	2815	mg/kg	0.010	[A] < 0.010	[A] < 0.010	[A] < 0.010	[A] < 0.010	[A] < 0.010	[A] < 0.010	[A] < 0.010	[A] < 0.010	[A] < 0.010
PCB 90+101	U	2815	mg/kg	0.010	[A] < 0.010	[A] < 0.010	[A] < 0.010	[A] < 0.010	[A] < 0.010	[A] < 0.010	[A] < 0.010	[A] < 0.010	[A] < 0.010
PCB 118	U	2815	mg/kg	0.010	[A] < 0.010	[A] < 0.010	[A] < 0.010	[A] < 0.010	[A] < 0.010	[A] < 0.010	[A] < 0.010	[A] < 0.010	[A] < 0.010
PCB 153	U	2815	mg/kg	0.010	[A] < 0.010	[A] < 0.010	[A] < 0.010	[A] < 0.010	[A] < 0.010	[A] < 0.010	[A] < 0.010	[A] < 0.010	[A] < 0.010

Results - Soil

Project: 5811

Client: Site Investigations Ltd	**Chemtest Job No.:**				21-33504	21-33504	21-33504	21-33504	21-33504	21-33504	21-33504	21-33504	21-33504
Quotation No.:	**Chemtest Sample ID.:**				1287146	1287147	1287148	1287149	1287150	1287151	1287152	1287153	1287154
Order No.: 60/A/21	Client Sample Ref.:				ES24	ES25	ES26	ES27	ES28	ES29	ES30	ES31	ES32
	Client Sample ID.:				2	1	2	1	2	1	2	1	2
	Sample Location:				TP18	TP19	TP19	TP20	TP20	TP22	TP22	TP23	TP23
	Sample Type:				SOIL	SOIL	SOIL	SOIL	SOIL	SOIL	SOIL	SOIL	SOIL
	Top Depth (m):				1.00	0.30	0.80	0.40	0.80	0.30	1.00	0.30	0.80
	Bottom Depth (m):				1.00	0.30	0.80	0.40	0.80	0.30	1.00	0.30	0.80
	Asbestos Lab:				COVENTRY	COVENTRY	COVENTRY	COVENTRY	COVENTRY	COVENTRY	COVENTRY	COVENTRY	COVENTRY
Determinand	**Accred.**	**SOP**	**Units**	**LOD**									
PCB 138	U	2815	mg/kg	0.010	[A] < 0.010	[A] < 0.010	[A] < 0.010	[A] < 0.010	[A] < 0.010	[A] < 0.010	[A] < 0.010	[A] < 0.010	[A] < 0.010
PCB 180	U	2815	mg/kg	0.010	[A] < 0.010	[A] < 0.010	[A] < 0.010	[A] < 0.010	[A] < 0.010	[A] < 0.010	[A] < 0.010	[A] < 0.010	[A] < 0.010
Total PCBs (7 Congeners)	U	2815	mg/kg	0.10	[A] < 0.10	[A] < 0.10	[A] < 0.10	[A] < 0.10	[A] < 0.10	[A] < 0.10	[A] < 0.10	[A] < 0.10	[A] < 0.10
Total Phenols	M	2920	mg/kg	0.10	< 0.10	< 0.10	< 0.10	< 0.10	< 0.10	< 0.10	< 0.10	< 0.10	< 0.10

Results - Soil

Project: 5811

Client: Site Investigations Ltd				**Chemtest Job No.:**	21-33504	21-33504	21-33504	21-33504	21-33504	21-33504	21-33504	21-33504	21-33504
Quotation No.:				**Chemtest Sample ID.:**	1287155	1287156	1287157	1287158	1287159	1287160	1287161	1287162	1287163
Order No.: 60/A/21				Client Sample Ref.:	ES33	ES34	ES35	ES36	ES37	ES38	ES39	ES40	ES41
				Client Sample ID.:	1	2	1	2	1	2	1	2	1
				Sample Location:	TP24	TP24	TP25	TP25	TP26	TP26	TP27	TP27	TP28
				Sample Type:	SOIL	SOIL	SOIL	SOIL	SOIL	SOIL	SOIL	SOIL	SOIL
				Top Depth (m):	0.30	1.00	0.30	1.00	0.30	1.20	0.30	1.00	0.20
				Bottom Depth (m):	0.30	1.00	0.30	1.00	0.30	1.20	0.30	1.00	0.30
				Asbestos Lab:	COVENTRY	COVENTRY	COVENTRY	COVENTRY	COVENTRY	COVENTRY	COVENTRY	COVENTRY	COVENTRY
Determinand	**Accred.**	**SOP**	**Units**	**LOD**									
ACM Type	U	2192		N/A	-	-	-	-	-	-	-	-	-
Asbestos Identification	U	2192		N/A	No Asbestos Detected	No Asbestos Detected	No Asbestos Detected	No Asbestos Detected	No Asbestos Detected	No Asbestos Detected	No Asbestos Detected	No Asbestos Detected	No Asbestos Detected
Moisture	N	2030	%	0.020	8.0	5.0	3.5	4.4	6.2	9.3	20	17	8.0
pH	M	2010		4.0	[A] 8.5	[A] 8.4	[A] 8.7	[A] 8.5	[A] 8.6	[A] 8.5	[A] 8.4	[A] 8.4	[A] 8.5
Boron (Hot Water Soluble)	M	2120	mg/kg	0.40	[A] 2.0	[A] 1.2	[A] < 0.40	[A] < 0.40	[A] 0.83	[A] 1.5	[A] 1.6	[A] 0.43	[A] 0.68
Sulphur (Elemental)	M	2180	mg/kg	1.0	[A] 5.8	[A] 11	[A] 11	[A] 1.5	[A] 4.0	[A] 3.0	[A] 4.8	[A] 2.2	[A] 4.9
Cyanide (Total)	M	2300	mg/kg	0.50	[A] < 0.50	[A] < 0.50	[A] < 0.50	[A] < 0.50	[A] < 0.50	[A] < 0.50	[A] < 0.50	[A] < 0.50	[A] < 0.50
Sulphide (Easily Liberatable)	N	2325	mg/kg	0.50	[A] 3.3	[A] 5.9	[A] 3.9	[A] 4.4	[A] 7.3	[A] 4.1	[A] 2.7	[A] 6.4	[A] 3.8
Sulphate (Total)	M	2430	%	0.010	[A] 0.18	[A] 0.13	[A] 0.20	[A] 0.11	[A] 0.23	[A] 0.082	[A] 0.032	[A] 0.033	[A] 0.14
Arsenic	M	2450	mg/kg	1.0	31	19	29	26	25	13	20	11	25
Barium	M	2450	mg/kg	10	160	73	150	76	98	73	76	41	120
Cadmium	M	2450	mg/kg	0.10	1.8	1.1	1.5	1.6	1.4	1.0	1.1	0.88	1.3
Chromium	M	2450	mg/kg	1.0	20	17	26	27	19	17	22	15	23
Molybdenum	M	2450	mg/kg	2.0	3.9	2.9	4.0	3.8	2.9	2.5	3.5	3.0	3.2
Antimony	N	2450	mg/kg	2.0	5.4	2.6	3.1	2.3	< 2.0	< 2.0	2.5	< 2.0	2.4
Copper	M	2450	mg/kg	0.50	82	56	130	74	85	38	71	23	110
Mercury	M	2450	mg/kg	0.10	0.48	0.32	0.83	0.32	0.40	0.26	0.63	< 0.10	0.62
Nickel	M	2450	mg/kg	0.50	44	30	52	47	36	26	37	26	44
Lead	M	2450	mg/kg	0.50	260	110	280	84	200	57	120	18	160
Selenium	M	2450	mg/kg	0.20	0.98	0.48	0.80	0.35	0.34	0.26	0.50	< 0.20	0.51
Zinc	M	2450	mg/kg	0.50	310	110	210	140	110	64	100	58	130
Chromium (Trivalent)	N	2490	mg/kg	1.0	20	17	26	27	19	17	22	15	23
Chromium (Hexavalent)	N	2490	mg/kg	0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50
Total Organic Carbon	M	2625	%	0.20	[A] 5.4	[A] 3.7	[A] 6.3	[A] 2.7	[A] 2.8	[A] 2.6	[A] 3.1	[A] 0.40	[A] 3.9
Mineral Oil (TPH Calculation)	N	2670	mg/kg	10	< 10	< 10	< 10	< 10	< 10	< 10	< 10	< 10	< 10
Aliphatic TPH >C5-C6	N	2680	mg/kg	1.0	[A] < 1.0	[A] < 1.0	[A] < 1.0	[A] < 1.0	[A] < 1.0	[A] < 1.0	[A] < 1.0	[A] < 1.0	[A] < 1.0
Aliphatic TPH >C6-C8	N	2680	mg/kg	1.0	[A] < 1.0	[A] < 1.0	[A] < 1.0	[A] < 1.0	[A] < 1.0	[A] < 1.0	[A] < 1.0	[A] < 1.0	[A] < 1.0
Aliphatic TPH >C8-C10	M	2680	mg/kg	1.0	[A] < 1.0	[A] < 1.0	[A] < 1.0	[A] < 1.0	[A] < 1.0	[A] < 1.0	[A] < 1.0	[A] < 1.0	[A] < 1.0
Aliphatic TPH >C10-C12	M	2680	mg/kg	1.0	[A] < 1.0	[A] < 1.0	[A] < 1.0	[A] < 1.0	[A] < 1.0	[A] < 1.0	[A] < 1.0	[A] < 1.0	[A] < 1.0
Aliphatic TPH >C12-C16	M	2680	mg/kg	1.0	[A] < 1.0	[A] < 1.0	[A] < 1.0	[A] < 1.0	[A] < 1.0	[A] < 1.0	[A] < 1.0	[A] < 1.0	[A] < 1.0
Aliphatic TPH >C16-C21	M	2680	mg/kg	1.0	[A] < 1.0	[A] < 1.0	[A] < 1.0	[A] < 1.0	[A] < 1.0	[A] < 1.0	[A] < 1.0	[A] < 1.0	[A] < 1.0
Aliphatic TPH >C21-C35	M	2680	mg/kg	1.0	[A] < 1.0	[A] < 1.0	[A] < 1.0	[A] < 1.0	[A] < 1.0	[A] < 1.0	[A] < 1.0	[A] < 1.0	[A] < 1.0
Aliphatic TPH >C35-C44	N	2680	mg/kg	1.0	[A] < 1.0	[A] < 1.0	[A] < 1.0	[A] < 1.0	[A] < 1.0	[A] < 1.0	[A] < 1.0	[A] < 1.0	[A] < 1.0
Total Aliphatic Hydrocarbons	N	2680	mg/kg	5.0	[A] < 5.0	[A] < 5.0	[A] < 5.0	[A] < 5.0	[A] < 5.0	[A] < 5.0	[A] < 5.0	[A] < 5.0	[A] < 5.0
Aromatic TPH >C5-C7	N	2680	mg/kg	1.0	[A] < 1.0	[A] < 1.0	[A] < 1.0	[A] < 1.0	[A] < 1.0	[A] < 1.0	[A] < 1.0	[A] < 1.0	[A] < 1.0
Aromatic TPH >C7-C8	N	2680	mg/kg	1.0	[A] < 1.0	[A] < 1.0	[A] < 1.0	[A] < 1.0	[A] < 1.0	[A] < 1.0	[A] < 1.0	[A] < 1.0	[A] < 1.0

Results - Soil

Project: 5811

Client: Site Investigations Ltd				**Chemtest Job No.:**	21-33504	21-33504	21-33504	21-33504	21-33504	21-33504	21-33504	21-33504	21-33504
Quotation No.:				**Chemtest Sample ID.:**	1287155	1287156	1287157	1287158	1287159	1287160	1287161	1287162	1287163
Order No.: 60/A/21				Client Sample Ref.:	ES33	ES34	ES35	ES36	ES37	ES38	ES39	ES40	ES41
				Client Sample ID.:	1	2	1	2	1	2	1	2	1
				Sample Location:	TP24	TP24	TP25	TP25	TP26	TP26	TP27	TP27	TP28
				Sample Type:	SOIL	SOIL	SOIL	SOIL	SOIL	SOIL	SOIL	SOIL	SOIL
				Top Depth (m):	0.30	1.00	0.30	1.00	0.30	1.20	0.30	1.00	0.20
				Bottom Depth (m):	0.30	1.00	0.30	1.00	0.30	1.20	0.30	1.00	0.30
				Asbestos Lab:	COVENTRY	COVENTRY	COVENTRY	COVENTRY	COVENTRY	COVENTRY	COVENTRY	COVENTRY	COVENTRY
Determinand	**Accred.**	**SOP**	**Units**	**LOD**									
Aromatic TPH >C8-C10	M	2680	mg/kg	1.0	[A] < 1.0	[A] < 1.0	[A] < 1.0	[A] < 1.0	[A] < 1.0	[A] < 1.0	[A] < 1.0	[A] < 1.0	[A] < 1.0
Aromatic TPH >C10-C12	M	2680	mg/kg	1.0	[A] < 1.0	[A] < 1.0	[A] < 1.0	[A] < 1.0	[A] < 1.0	[A] < 1.0	[A] < 1.0	[A] < 1.0	[A] < 1.0
Aromatic TPH >C12-C16	M	2680	mg/kg	1.0	[A] < 1.0	[A] < 1.0	[A] < 1.0	[A] < 1.0	[A] < 1.0	[A] < 1.0	[A] < 1.0	[A] < 1.0	[A] < 1.0
Aromatic TPH >C16-C21	U	2680	mg/kg	1.0	[A] < 1.0	[A] 20	[A] < 1.0	[A] < 1.0	[A] < 1.0	[A] < 1.0	[A] < 1.0	[A] < 1.0	[A] < 1.0
Aromatic TPH >C21-C35	M	2680	mg/kg	1.0	[A] < 1.0	[A] < 1.0	[A] < 1.0	[A] < 1.0	[A] < 1.0	[A] < 1.0	[A] < 1.0	[A] < 1.0	[A] < 1.0
Aromatic TPH >C35-C44	N	2680	mg/kg	1.0	[A] < 1.0	[A] < 1.0	[A] < 1.0	[A] < 1.0	[A] < 1.0	[A] < 1.0	[A] < 1.0	[A] < 1.0	[A] < 1.0
Total Aromatic Hydrocarbons	N	2680	mg/kg	5.0	[A] < 5.0	[A] 20	[A] < 5.0	[A] < 5.0	[A] < 5.0	[A] < 5.0	[A] < 5.0	[A] < 5.0	[A] < 5.0
Total Petroleum Hydrocarbons	N	2680	mg/kg	10.0	[A] < 10	[A] 20	[A] < 10	[A] < 10	[A] < 10	[A] < 10	[A] < 10	[A] < 10	[A] < 10
Benzene	M	2760	µg/kg	1.0	[A] < 1.0	[A] < 1.0	[A] < 1.0	[A] < 1.0	[A] < 1.0	[A] < 1.0	[A] < 1.0	[A] < 1.0	[A] < 1.0
Toluene	M	2760	µg/kg	1.0	[A] < 1.0	[A] < 1.0	[A] < 1.0	[A] < 1.0	[A] < 1.0	[A] < 1.0	[A] < 1.0	[A] < 1.0	[A] < 1.0
Ethylbenzene	M	2760	µg/kg	1.0	[A] < 1.0	[A] < 1.0	[A] < 1.0	[A] < 1.0	[A] < 1.0	[A] < 1.0	[A] < 1.0	[A] < 1.0	[A] < 1.0
m & p-Xylene	M	2760	µg/kg	1.0	[A] < 1.0	[A] < 1.0	[A] < 1.0	[A] < 1.0	[A] < 1.0	[A] < 1.0	[A] < 1.0	[A] < 1.0	[A] < 1.0
o-Xylene	M	2760	µg/kg	1.0	[A] < 1.0	[A] < 1.0	[A] < 1.0	[A] < 1.0	[A] < 1.0	[A] < 1.0	[A] < 1.0	[A] < 1.0	[A] < 1.0
Methyl Tert-Butyl Ether	M	2760	µg/kg	1.0	[A] < 1.0	[A] < 1.0	[A] < 1.0	[A] < 1.0	[A] < 1.0	[A] < 1.0	[A] < 1.0	[A] < 1.0	[A] < 1.0
Naphthalene	M	2800	mg/kg	0.10	< 0.10	0.14	0.32	< 0.10	< 0.10	< 0.10	< 0.10	< 0.10	0.27
Acenaphthylene	N	2800	mg/kg	0.10	< 0.10	0.12	0.14	< 0.10	< 0.10	< 0.10	< 0.10	< 0.10	< 0.10
Acenaphthene	M	2800	mg/kg	0.10	< 0.10	0.75	0.17	< 0.10	< 0.10	< 0.10	< 0.10	< 0.10	0.42
Fluorene	M	2800	mg/kg	0.10	< 0.10	0.60	0.12	< 0.10	< 0.10	< 0.10	< 0.10	< 0.10	0.28
Phenanthrene	M	2800	mg/kg	0.10	1.2	7.4	1.7	< 0.10	0.33	0.21	< 0.10	< 0.10	3.6
Anthracene	M	2800	mg/kg	0.10	0.25	2.3	0.49	< 0.10	< 0.10	< 0.10	< 0.10	< 0.10	0.48
Fluoranthene	M	2800	mg/kg	0.10	1.7	11	3.4	0.27	0.40	0.24	0.12	< 0.10	3.7
Pyrene	M	2800	mg/kg	0.10	1.4	8.9	2.8	0.20	0.37	0.22	0.10	< 0.10	3.4
Benzo[a]anthracene	M	2800	mg/kg	0.10	0.81	4.7	1.7	0.12	0.18	0.13	< 0.10	< 0.10	1.5
Chrysene	M	2800	mg/kg	0.10	0.87	4.4	1.6	0.14	0.29	0.17	< 0.10	< 0.10	1.8
Benzo[b]fluoranthene	M	2800	mg/kg	0.10	1.1	5.0	2.2	< 0.10	0.29	< 0.10	< 0.10	< 0.10	2.0
Benzo[k]fluoranthene	M	2800	mg/kg	0.10	0.34	1.8	0.82	< 0.10	< 0.10	< 0.10	< 0.10	< 0.10	0.62
Benzo[a]pyrene	M	2800	mg/kg	0.10	0.74	4.1	1.7	< 0.10	0.22	< 0.10	< 0.10	< 0.10	1.4
Indeno(1,2,3-c,d)Pyrene	M	2800	mg/kg	0.10	0.53	2.6	1.0	< 0.10	< 0.10	< 0.10	< 0.10	< 0.10	0.80
Dibenz(a,h)Anthracene	N	2800	mg/kg	0.10	0.12	0.52	0.28	< 0.10	< 0.10	< 0.10	< 0.10	< 0.10	0.25
Benzo[g,h,i]perylene	M	2800	mg/kg	0.10	0.50	2.2	1.2	< 0.10	< 0.10	< 0.10	< 0.10	< 0.10	1.1
Coronene	N	2800	mg/kg	0.10	< 0.10	< 0.10	< 0.10	< 0.10	< 0.10	< 0.10	< 0.10	< 0.10	< 0.10
Total Of 17 PAH's	N	2800	mg/kg	2.0	9.6	57	20	< 2.0	2.1	< 2.0	< 2.0	< 2.0	22
PCB 28	U	2815	mg/kg	0.010	[A] < 0.010	[A] < 0.010	[A] < 0.010	[A] < 0.010	[A] < 0.010	[A] < 0.010	[A] < 0.010	[A] < 0.010	[A] < 0.010
PCB 52	U	2815	mg/kg	0.010	[A] < 0.010	[A] < 0.010	[A] < 0.010	[A] < 0.010	[A] < 0.010	[A] < 0.010	[A] < 0.010	[A] < 0.010	[A] < 0.010
PCB 90+101	U	2815	mg/kg	0.010	[A] < 0.010	[A] < 0.010	[A] < 0.010	[A] < 0.010	[A] < 0.010	[A] < 0.010	[A] < 0.010	[A] < 0.010	[A] < 0.010
PCB 118	U	2815	mg/kg	0.010	[A] < 0.010	[A] < 0.010	[A] < 0.010	[A] < 0.010	[A] < 0.010	[A] < 0.010	[A] < 0.010	[A] < 0.010	[A] < 0.010
PCB 153	U	2815	mg/kg	0.010	[A] < 0.010	[A] < 0.010	[A] < 0.010	[A] < 0.010	[A] < 0.010	[A] < 0.010	[A] < 0.010	[A] < 0.010	[A] < 0.010

Results - Soil

Project: 5811

Client: Site Investigations Ltd				**Chemtest Job No.:**	21-33504	21-33504	21-33504	21-33504	21-33504	21-33504	21-33504	21-33504	21-33504
Quotation No.:				**Chemtest Sample ID.:**	1287155	1287156	1287157	1287158	1287159	1287160	1287161	1287162	1287163
Order No.: 60/A/21				Client Sample Ref.:	ES33	ES34	ES35	ES36	ES37	ES38	ES39	ES40	ES41
				Client Sample ID.:	1	2	1	2	1	2	1	2	1
				Sample Location:	TP24	TP24	TP25	TP25	TP26	TP26	TP27	TP27	TP28
				Sample Type:	SOIL	SOIL	SOIL	SOIL	SOIL	SOIL	SOIL	SOIL	SOIL
				Top Depth (m):	0.30	1.00	0.30	1.00	0.30	1.20	0.30	1.00	0.20
				Bottom Depth (m):	0.30	1.00	0.30	1.00	0.30	1.20	0.30	1.00	0.30
				Asbestos Lab:	COVENTRY	COVENTRY	COVENTRY	COVENTRY	COVENTRY	COVENTRY	COVENTRY	COVENTRY	COVENTRY
Determinand	**Accred.**	**SOP**	**Units**	**LOD**									
PCB 138	U	2815	mg/kg	0.010	[A] < 0.010	[A] < 0.010	[A] < 0.010	[A] < 0.010	[A] < 0.010	[A] < 0.010	[A] < 0.010	[A] < 0.010	[A] < 0.010
PCB 180	U	2815	mg/kg	0.010	[A] < 0.010	[A] < 0.010	[A] < 0.010	[A] < 0.010	[A] < 0.010	[A] < 0.010	[A] < 0.010	[A] < 0.010	[A] < 0.010
Total PCBs (7 Congeners)	U	2815	mg/kg	0.10	[A] < 0.10	[A] < 0.10	[A] < 0.10	[A] < 0.10	[A] < 0.10	[A] < 0.10	[A] < 0.10	[A] < 0.10	[A] < 0.10
Total Phenols	M	2920	mg/kg	0.10	< 0.10	< 0.10	< 0.10	< 0.10	< 0.10	< 0.10	< 0.10	< 0.10	< 0.10

Results - Soil

Project: 5811

Client: Site Investigations Ltd	Chemtest Job No.:				21-33504	21-33504	21-33504	21-33504	21-33504	21-33504	21-33504
Quotation No.:	Chemtest Sample ID.:				1287164	1287165	1287166	1287167	1287168	1287169	1287170
Order No.: 60/A/21	Client Sample Ref.:				ES42	ES43	ES44	ES45	ES46	ES47	ES48
	Client Sample ID.:				2	1	2	1	2	1	2
	Sample Location:				TP28	TP30	TP30	TP31	TP31	TP32	TP32
	Sample Type:				SOIL	SOIL	SOIL	SOIL	SOIL	SOIL	SOIL
	Top Depth (m):				1.00	0.30	0.90	0.30	1.50	0.30	1.00
	Bottom Depth (m):				1.00	0.30	0.90	0.30	1.50	0.30	1.00
	Asbestos Lab:				COVENTRY	COVENTRY	COVENTRY	COVENTRY	COVENTRY	COVENTRY	COVENTRY
Determinand	**Accred.**	**SOP**	**Units**	**LOD**							
ACM Type	U	2192		N/A	-	-	-	-	-	-	-
Asbestos Identification	U	2192		N/A	No Asbestos Detected	No Asbestos Detected	No Asbestos Detected	No Asbestos Detected	No Asbestos Detected	No Asbestos Detected	No Asbestos Detected
Moisture	N	2030	%	0.020	9.1	8.1	10	8.7	12	10	11
pH	M	2010		4.0	[A] 8.7	[A] 8.4	[A] 8.6	[A] 8.3	[A] 8.5	[A] 8.4	[A] 8.7
Boron (Hot Water Soluble)	M	2120	mg/kg	0.40	[A] < 0.40	[A] 1.6	[A] 0.40	[A] 1.9	[A] 0.52	[A] 1.9	[A] < 0.40
Sulphur (Elemental)	M	2180	mg/kg	1.0	[A] 3.0	[A] 5.7	[A] 1.5	[A] 7.6	[A] < 1.0	[A] 7.1	[A] < 1.0
Cyanide (Total)	M	2300	mg/kg	0.50	[A] < 0.50	[A] < 0.50	[A] < 0.50	[A] < 0.50	[A] < 0.50	[A] < 0.50	[A] < 0.50
Sulphide (Easily Liberatable)	N	2325	mg/kg	0.50	[A] 10	[A] 2.2	[A] 11	[A] 2.3	[A] 1.7	[A] 3.4	[A] 10
Sulphate (Total)	M	2430	%	0.010	[A] 0.095	[A] 0.18	[A] 0.059	[A] 0.17	[A] 0.029	[A] 0.15	[A] 0.11
Arsenic	M	2450	mg/kg	1.0	19	28	14	18	8.9	43	27
Barium	M	2450	mg/kg	10	74	130	68	90	53	160	97
Cadmium	M	2450	mg/kg	0.10	2.6	1.6	1.6	1.1	0.83	1.6	2.9
Chromium	M	2450	mg/kg	1.0	19	24	17	16	23	39	26
Molybdenum	M	2450	mg/kg	2.0	4.1	3.3	2.2	2.4	2.6	4.9	5.2
Antimony	N	2450	mg/kg	2.0	2.0	2.5	< 2.0	< 2.0	< 2.0	3.9	2.5
Copper	M	2450	mg/kg	0.50	44	110	36	69	17	110	61
Mercury	M	2450	mg/kg	0.10	0.11	0.66	0.15	0.46	0.13	0.87	0.18
Nickel	M	2450	mg/kg	0.50	54	44	36	32	24	65	65
Lead	M	2450	mg/kg	0.50	29	250	41	150	28	760	52
Selenium	M	2450	mg/kg	0.20	0.28	0.76	< 0.20	0.50	< 0.20	0.62	0.42
Zinc	M	2450	mg/kg	0.50	76	180	67	130	91	210	97
Chromium (Trivalent)	N	2490	mg/kg	1.0	19	24	17	16	23	39	26
Chromium (Hexavalent)	N	2490	mg/kg	0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50
Total Organic Carbon	M	2625	%	0.20	[A] 0.70	[A] 6.2	[A] 1.4	[A] 7.5	[A] 0.66	[A] 3.7	[A] 0.73
Mineral Oil (TPH Calculation)	N	2670	mg/kg	10	< 10	< 10	< 10	< 10	< 10	< 10	< 10
Aliphatic TPH >C5-C6	N	2680	mg/kg	1.0	[A] < 1.0	[A] < 1.0	[A] < 1.0	[A] < 1.0	[A] < 1.0	[A] < 1.0	[A] < 1.0
Aliphatic TPH >C6-C8	N	2680	mg/kg	1.0	[A] < 1.0	[A] < 1.0	[A] < 1.0	[A] < 1.0	[A] < 1.0	[A] < 1.0	[A] < 1.0
Aliphatic TPH >C8-C10	M	2680	mg/kg	1.0	[A] < 1.0	[A] < 1.0	[A] < 1.0	[A] < 1.0	[A] < 1.0	[A] < 1.0	[A] < 1.0
Aliphatic TPH >C10-C12	M	2680	mg/kg	1.0	[A] < 1.0	[A] < 1.0	[A] < 1.0	[A] < 1.0	[A] < 1.0	[A] < 1.0	[A] < 1.0
Aliphatic TPH >C12-C16	M	2680	mg/kg	1.0	[A] < 1.0	[A] < 1.0	[A] < 1.0	[A] < 1.0	[A] < 1.0	[A] < 1.0	[A] < 1.0
Aliphatic TPH >C16-C21	M	2680	mg/kg	1.0	[A] < 1.0	[A] < 1.0	[A] < 1.0	[A] < 1.0	[A] < 1.0	[A] < 1.0	[A] < 1.0
Aliphatic TPH >C21-C35	M	2680	mg/kg	1.0	[A] < 1.0	[A] < 1.0	[A] < 1.0	[A] < 1.0	[A] < 1.0	[A] < 1.0	[A] 6.4
Aliphatic TPH >C35-C44	N	2680	mg/kg	1.0	[A] < 1.0	[A] < 1.0	[A] < 1.0	[A] < 1.0	[A] < 1.0	[A] < 1.0	[A] < 1.0
Total Aliphatic Hydrocarbons	N	2680	mg/kg	5.0	[A] < 5.0	[A] < 5.0	[A] < 5.0	[A] < 5.0	[A] < 5.0	[A] < 5.0	[A] 6.4
Aromatic TPH >C5-C7	N	2680	mg/kg	1.0	[A] < 1.0	[A] < 1.0	[A] < 1.0	[A] < 1.0	[A] < 1.0	[A] < 1.0	[A] < 1.0
Aromatic TPH >C7-C8	N	2680	mg/kg	1.0	[A] < 1.0	[A] < 1.0	[A] < 1.0	[A] < 1.0	[A] < 1.0	[A] < 1.0	[A] < 1.0

Results - Soil

Project: 5811

Client: Site Investigations Ltd	Chemtest Job No.:				21-33504	21-33504	21-33504	21-33504	21-33504	21-33504	21-33504
Quotation No.:	Chemtest Sample ID.:				1287164	1287165	1287166	1287167	1287168	1287169	1287170
Order No.: 60/A/21	Client Sample Ref.:				ES42	ES43	ES44	ES45	ES46	ES47	ES48
	Client Sample ID.:				2	1	2	1	2	1	2
	Sample Location:				TP28	TP30	TP30	TP31	TP31	TP32	TP32
	Sample Type:				SOIL	SOIL	SOIL	SOIL	SOIL	SOIL	SOIL
	Top Depth (m):				1.00	0.30	0.90	0.30	1.50	0.30	1.00
	Bottom Depth (m):				1.00	0.30	0.90	0.30	1.50	0.30	1.00
	Asbestos Lab:				COVENTRY	COVENTRY	COVENTRY	COVENTRY	COVENTRY	COVENTRY	COVENTRY
Determinand	**Accred.**	**SOP**	**Units**	**LOD**							
Aromatic TPH >C8-C10	M	2680	mg/kg	1.0	[A] < 1.0	[A] < 1.0	[A] < 1.0	[A] < 1.0	[A] < 1.0	[A] < 1.0	[A] < 1.0
Aromatic TPH >C10-C12	M	2680	mg/kg	1.0	[A] < 1.0	[A] < 1.0	[A] < 1.0	[A] < 1.0	[A] < 1.0	[A] < 1.0	[A] < 1.0
Aromatic TPH >C12-C16	M	2680	mg/kg	1.0	[A] < 1.0	[A] < 1.0	[A] < 1.0	[A] < 1.0	[A] < 1.0	[A] < 1.0	[A] 9.8
Aromatic TPH >C16-C21	U	2680	mg/kg	1.0	[A] < 1.0	[A] < 1.0	[A] < 1.0	[A] < 1.0	[A] < 1.0	[A] 5.4	[A] < 1.0
Aromatic TPH >C21-C35	M	2680	mg/kg	1.0	[A] < 1.0	[A] < 1.0	[A] < 1.0	[A] < 1.0	[A] < 1.0	[A] < 1.0	[A] < 1.0
Aromatic TPH >C35-C44	N	2680	mg/kg	1.0	[A] < 1.0	[A] < 1.0	[A] < 1.0	[A] < 1.0	[A] < 1.0	[A] < 1.0	[A] < 1.0
Total Aromatic Hydrocarbons	N	2680	mg/kg	5.0	[A] < 5.0	[A] < 5.0	[A] < 5.0	[A] < 5.0	[A] < 5.0	[A] 5.4	[A] 9.8
Total Petroleum Hydrocarbons	N	2680	mg/kg	10.0	[A] < 10	[A] < 10	[A] < 10	[A] < 10	[A] < 10	[A] < 10	[A] 16
Benzene	M	2760	µg/kg	1.0	[A] < 1.0	[A] < 1.0	[A] < 1.0	[A] < 1.0	[A] < 1.0	[A] < 1.0	[A] < 1.0
Toluene	M	2760	µg/kg	1.0	[A] < 1.0	[A] < 1.0	[A] < 1.0	[A] < 1.0	[A] < 1.0	[A] < 1.0	[A] < 1.0
Ethylbenzene	M	2760	µg/kg	1.0	[A] < 1.0	[A] < 1.0	[A] < 1.0	[A] < 1.0	[A] < 1.0	[A] < 1.0	[A] < 1.0
m & p-Xylene	M	2760	µg/kg	1.0	[A] < 1.0	[A] < 1.0	[A] < 1.0	[A] < 1.0	[A] < 1.0	[A] < 1.0	[A] < 1.0
o-Xylene	M	2760	µg/kg	1.0	[A] < 1.0	[A] < 1.0	[A] < 1.0	[A] < 1.0	[A] < 1.0	[A] < 1.0	[A] < 1.0
Methyl Tert-Butyl Ether	M	2760	µg/kg	1.0	[A] < 1.0	[A] < 1.0	[A] < 1.0	[A] < 1.0	[A] < 1.0	[A] < 1.0	[A] < 1.0
Naphthalene	M	2800	mg/kg	0.10	< 0.10	0.16	< 0.10	< 0.10	< 0.10	< 0.10	< 0.10
Acenaphthylene	N	2800	mg/kg	0.10	< 0.10	0.10	< 0.10	< 0.10	< 0.10	< 0.10	< 0.10
Acenaphthene	M	2800	mg/kg	0.10	< 0.10	0.13	< 0.10	< 0.10	< 0.10	< 0.10	< 0.10
Fluorene	M	2800	mg/kg	0.10	< 0.10	0.12	< 0.10	< 0.10	< 0.10	< 0.10	< 0.10
Phenanthrene	M	2800	mg/kg	0.10	< 0.10	1.4	< 0.10	1.2	< 0.10	1.3	< 0.10
Anthracene	M	2800	mg/kg	0.10	< 0.10	0.26	< 0.10	0.23	< 0.10	0.17	< 0.10
Fluoranthene	M	2800	mg/kg	0.10	< 0.10	1.7	0.36	1.7	< 0.10	1.4	0.14
Pyrene	M	2800	mg/kg	0.10	< 0.10	1.5	0.32	1.6	< 0.10	1.3	0.16
Benzo[a]anthracene	M	2800	mg/kg	0.10	< 0.10	0.83	0.16	0.81	< 0.10	0.67	< 0.10
Chrysene	M	2800	mg/kg	0.10	< 0.10	0.99	0.19	0.93	< 0.10	0.76	< 0.10
Benzo[b]fluoranthene	M	2800	mg/kg	0.10	< 0.10	1.1	< 0.10	1.1	< 0.10	0.79	< 0.10
Benzo[k]fluoranthene	M	2800	mg/kg	0.10	< 0.10	0.35	< 0.10	0.31	< 0.10	0.27	< 0.10
Benzo[a]pyrene	M	2800	mg/kg	0.10	< 0.10	0.84	< 0.10	0.78	< 0.10	0.58	< 0.10
Indeno(1,2,3-c,d)Pyrene	M	2800	mg/kg	0.10	< 0.10	0.49	< 0.10	0.54	< 0.10	0.26	< 0.10
Dibenz(a,h)Anthracene	N	2800	mg/kg	0.10	< 0.10	< 0.10	< 0.10	0.13	< 0.10	0.10	< 0.10
Benzo[g,h,i]perylene	M	2800	mg/kg	0.10	< 0.10	0.50	< 0.10	0.64	< 0.10	0.46	< 0.10
Coronene	N	2800	mg/kg	0.10	< 0.10	< 0.10	< 0.10	< 0.10	< 0.10	< 0.10	< 0.10
Total Of 17 PAH's	N	2800	mg/kg	2.0	< 2.0	11	< 2.0	10	< 2.0	8.1	< 2.0
PCB 28	U	2815	mg/kg	0.010	[A] < 0.010	[A] < 0.010	[A] < 0.010	[A] < 0.010	[A] < 0.010	[A] < 0.010	[A] < 0.010
PCB 52	U	2815	mg/kg	0.010	[A] < 0.010	[A] < 0.010	[A] < 0.010	[A] < 0.010	[A] < 0.010	[A] < 0.010	[A] < 0.010
PCB 90+101	U	2815	mg/kg	0.010	[A] < 0.010	[A] < 0.010	[A] < 0.010	[A] < 0.010	[A] < 0.010	[A] < 0.010	[A] < 0.010
PCB 118	U	2815	mg/kg	0.010	[A] < 0.010	[A] < 0.010	[A] < 0.010	[A] < 0.010	[A] < 0.010	[A] < 0.010	[A] < 0.010
PCB 153	U	2815	mg/kg	0.010	[A] < 0.010	[A] < 0.010	[A] < 0.010	[A] < 0.010	[A] < 0.010	[A] < 0.010	[A] < 0.010

Results - Soil

Project: 5811

Client: Site Investigations Ltd	Chemtest Job No.:				21-33504	21-33504	21-33504	21-33504	21-33504	21-33504	21-33504
Quotation No.:	Chemtest Sample ID.:				1287164	1287165	1287166	1287167	1287168	1287169	1287170
Order No.: 60/A/21	Client Sample Ref.:				ES42	ES43	ES44	ES45	ES46	ES47	ES48
	Client Sample ID.:				2	1	2	1	2	1	2
	Sample Location:				TP28	TP30	TP30	TP31	TP31	TP32	TP32
	Sample Type:				SOIL	SOIL	SOIL	SOIL	SOIL	SOIL	SOIL
	Top Depth (m):				1.00	0.30	0.90	0.30	1.50	0.30	1.00
	Bottom Depth (m):				1.00	0.30	0.90	0.30	1.50	0.30	1.00
	Asbestos Lab:				COVENTRY	COVENTRY	COVENTRY	COVENTRY	COVENTRY	COVENTRY	COVENTRY
Determinand	**Accred.**	**SOP**	**Units**	**LOD**							
PCB 138	U	2815	mg/kg	0.010	[A] < 0.010	[A] < 0.010	[A] < 0.010	[A] < 0.010	[A] < 0.010	[A] < 0.010	[A] < 0.010
PCB 180	U	2815	mg/kg	0.010	[A] < 0.010	[A] < 0.010	[A] < 0.010	[A] < 0.010	[A] < 0.010	[A] < 0.010	[A] < 0.010
Total PCBs (7 Congeners)	U	2815	mg/kg	0.10	[A] < 0.10	[A] < 0.10	[A] < 0.10	[A] < 0.10	[A] < 0.10	[A] < 0.10	[A] < 0.10
Total Phenols	M	2920	mg/kg	0.10	< 0.10	< 0.10	< 0.10	< 0.10	< 0.10	< 0.10	< 0.10

Results - Single Stage WAC

Project: 5811

Chemtest Job No:	21-33474				**Landfill Waste Acceptance Criteria Limits**		
Chemtest Sample ID:	1286930						
Sample Ref:	ES49				**Inert Waste Landfill**	**Stable, Non-reactive hazardous waste in non-hazardous Landfill**	**Hazardous Waste Landfill**
Sample ID:	1						
Sample Location:	TP33						
Top Depth(m):	0.30						
Bottom Depth(m):	0.30						
Sampling Date:							
Determinand	**SOP**	**Accred.**	**Units**				
Total Organic Carbon	2625	M	%	[A] 4.6	3	5	6
Loss On Ignition	2610	M	%	8.9	--	--	10
Total BTEX	2760	M	mg/kg	[A] < 0.010	6	--	--
Total PCBs (7 Congeners)	2815	M	mg/kg	< 0.10	1	--	--
TPH Total WAC	2670	M	mg/kg	[A] < 10	500	--	--
Total (Of 17) PAH's	2800	N	mg/kg	17	100	--	--
pH	2010	M		8.5	--	>6	--
Acid Neutralisation Capacity	2015	N	mol/kg	< 0.0020	--	To evaluate	To evaluate
Eluate Analysis			**10:1 Eluate mg/l**	**10:1 Eluate mg/kg**	**Limit values for compliance leaching test using BS EN 12457 at L/S 10 l/kg**		
Arsenic	1455	U	0.0079	0.079	0.5	2	25
Barium	1455	U	< 0.005	< 0.0005	20	100	300
Cadmium	1455	U	< 0.00011	< 0.00011	0.04	1	5
Chromium	1455	U	0.0021	0.021	0.5	10	70
Copper	1455	U	0.0042	0.042	2	50	100
Mercury	1455	U	< 0.00005	< 0.00005	0.01	0.2	2
Molybdenum	1455	U	0.0036	0.036	0.5	10	30
Nickel	1455	U	0.0018	0.019	0.4	10	40
Lead	1455	U	0.0008	0.0080	0.5	10	50
Antimony	1455	U	0.0011	0.011	0.06	0.7	5
Selenium	1455	U	0.0005	0.0053	0.1	0.5	7
Zinc	1455	U	0.005	0.047	4	50	200
Chloride	1220	U	< 1.0	< 10	800	15000	25000
Fluoride	1220	U	0.54	5.4	10	150	500
Sulphate	1220	U	8.6	86	1000	20000	50000
Total Dissolved Solids	1020	N	140	1400	4000	60000	100000
Phenol Index	1920	U	< 0.030	< 0.30	1	-	-
Dissolved Organic Carbon	1610	U	10	100	500	800	1000

Solid Information	
Dry mass of test portion/kg	0.090
Moisture (%)	13

Waste Acceptance Criteria

Landfill WAC analysis (specifically leaching test results) must not be used for hazardous waste classification purposes. This analysis is only applicable for hazardous waste landfill acceptance and does not give any indication as to whether a waste may be hazardous or non-hazardous.

Results - Single Stage WAC

Project: 5811

					Landfill Waste Acceptance Criteria Limits		
Chemtest Job No:	21-33474						
Chemtest Sample ID:	1286931						
Sample Ref:	ES50						
Sample ID:	2						
Sample Location:	TP33						
Top Depth(m):	1.00						
Bottom Depth(m):	1.00						
Sampling Date:					**Inert Waste Landfill**	**Stable, Non-reactive hazardous waste in non-hazardous Landfill**	**Hazardous Waste Landfill**
Determinand	**SOP**	**Accred.**	**Units**				
Total Organic Carbon	2625	M	%	[A] 0.81	3	5	6
Loss On Ignition	2610	M	%	3.0	--	--	10
Total BTEX	2760	M	mg/kg	[A] < 0.010	6	--	--
Total PCBs (7 Congeners)	2815	M	mg/kg	< 0.10	1	--	--
TPH Total WAC	2670	M	mg/kg	[A] < 10	500	--	--
Total (Of 17) PAH's	2800	N	mg/kg	< 2.0	100	--	--
pH	2010	M		8.5	--	>6	--
Acid Neutralisation Capacity	2015	N	mol/kg	< 0.0020	--	To evaluate	To evaluate
Eluate Analysis			**10:1 Eluate mg/l**	**10:1 Eluate mg/kg**	**Limit values for compliance leaching test using BS EN 12457 at L/S 10 l/kg**		
Arsenic	1455	U	0.0014	0.014	0.5	2	25
Barium	1455	U	< 0.005	< 0.0005	20	100	300
Cadmium	1455	U	< 0.00011	< 0.00011	0.04	1	5
Chromium	1455	U	0.0019	0.019	0.5	10	70
Copper	1455	U	0.0021	0.021	2	50	100
Mercury	1455	U	< 0.00005	< 0.00005	0.01	0.2	2
Molybdenum	1455	U	0.0060	0.060	0.5	10	30
Nickel	1455	U	0.0014	0.014	0.4	10	40
Lead	1455	U	0.0005	0.0054	0.5	10	50
Antimony	1455	U	0.0006	0.0058	0.06	0.7	5
Selenium	1455	U	< 0.0005	< 0.0005	0.1	0.5	7
Zinc	1455	U	0.005	0.055	4	50	200
Chloride	1220	U	< 1.0	< 10	800	15000	25000
Fluoride	1220	U	0.22	2.2	10	150	500
Sulphate	1220	U	< 1.0	< 10	1000	20000	50000
Total Dissolved Solids	1020	N	78	780	4000	60000	100000
Phenol Index	1920	U	< 0.030	< 0.30	1	-	-
Dissolved Organic Carbon	1610	U	12	120	500	800	1000

Solid Information	
Dry mass of test portion/kg	0.090
Moisture (%)	12

Waste Acceptance Criteria

Landfill WAC analysis (specifically leaching test results) must not be used for hazardous waste classification purposes. This analysis is only applicable for hazardous waste landfill acceptance and does not give any indication as to whether a waste may be hazardous or non-hazardous.

Results - Single Stage WAC

Project: 5811

					Landfill Waste Acceptance Criteria Limits		
Chemtest Job No:	21-33474						
Chemtest Sample ID:	1286932						
Sample Ref:	ES51						
Sample ID:	1						
Sample Location:	TP34						
Top Depth(m):	0.30						
Bottom Depth(m):	0.30						
Sampling Date:					**Inert Waste Landfill**	**Stable, Non-reactive hazardous waste in non-hazardous Landfill**	**Hazardous Waste Landfill**
Determinand	**SOP**	**Accred.**	**Units**				
Total Organic Carbon	2625	M	%	[A] 5.9	3	5	6
Loss On Ignition	2610	M	%	8.0	--	--	10
Total BTEX	2760	M	mg/kg	[A] < 0.010	6	--	--
Total PCBs (7 Congeners)	2815	M	mg/kg	< 0.10	1	--	--
TPH Total WAC	2670	M	mg/kg	[A] < 10	500	--	--
Total (Of 17) PAH's	2800	N	mg/kg	17	100	--	--
pH	2010	M		8.3	--	>6	--
Acid Neutralisation Capacity	2015	N	mol/kg	< 0.0020	--	To evaluate	To evaluate
Eluate Analysis			**10:1 Eluate mg/l**	**10:1 Eluate mg/kg**	**Limit values for compliance leaching test using BS EN 12457 at L/S 10 l/kg**		
Arsenic	1455	U	0.0077	0.077	0.5	2	25
Barium	1455	U	< 0.005	< 0.0005	20	100	300
Cadmium	1455	U	< 0.00011	< 0.00011	0.04	1	5
Chromium	1455	U	0.0023	0.023	0.5	10	70
Copper	1455	U	0.0044	0.044	2	50	100
Mercury	1455	U	< 0.00005	< 0.00005	0.01	0.2	2
Molybdenum	1455	U	0.0026	0.026	0.5	10	30
Nickel	1455	U	0.0018	0.018	0.4	10	40
Lead	1455	U	0.0009	0.0091	0.5	10	50
Antimony	1455	U	0.0015	0.015	0.06	0.7	5
Selenium	1455	U	< 0.0005	< 0.0005	0.1	0.5	7
Zinc	1455	U	0.008	0.075	4	50	200
Chloride	1220	U	< 1.0	< 10	800	15000	25000
Fluoride	1220	U	0.49	4.9	10	150	500
Sulphate	1220	U	< 1.0	< 10	1000	20000	50000
Total Dissolved Solids	1020	N	78	780	4000	60000	100000
Phenol Index	1920	U	< 0.030	< 0.30	1	-	-
Dissolved Organic Carbon	1610	U	21	210	500	800	1000

Solid Information	
Dry mass of test portion/kg	0.090
Moisture (%)	13

Waste Acceptance Criteria

Landfill WAC analysis (specifically leaching test results) must not be used for hazardous waste classification purposes. This analysis is only applicable for hazardous waste landfill acceptance and does not give any indication as to whether a waste may be hazardous or non-hazardous.

Results - Single Stage WAC

Project: 5811

					Landfill Waste Acceptance Criteria Limits		
Chemtest Job No:	21-33474						
Chemtest Sample ID:	1286933						
Sample Ref:	ES52						
Sample ID:	2						
Sample Location:	TP34						
Top Depth(m):	0.80						
Bottom Depth(m):	0.80						
Sampling Date:					**Inert Waste Landfill**	**Stable, Non-reactive hazardous waste in non-hazardous Landfill**	**Hazardous Waste Landfill**
Determinand	**SOP**	**Accred.**	**Units**				
Total Organic Carbon	2625	M	%	[A] 0.30	3	5	6
Loss On Ignition	2610	M	%	8.0	--	--	10
Total BTEX	2760	M	mg/kg	[A] < 0.010	6	--	--
Total PCBs (7 Congeners)	2815	M	mg/kg	< 0.10	1	--	--
TPH Total WAC	2670	M	mg/kg	[A] < 10	500	--	--
Total (Of 17) PAH's	2800	N	mg/kg	< 2.0	100	--	--
pH	2010	M		8.6	--	>6	--
Acid Neutralisation Capacity	2015	N	mol/kg	< 0.0020	--	To evaluate	To evaluate
Eluate Analysis			**10:1 Eluate mg/l**	**10:1 Eluate mg/kg**	**Limit values for compliance leaching test using BS EN 12457 at L/S 10 l/kg**		
Arsenic	1455	U	< 0.0002	< 0.0002	0.5	2	25
Barium	1455	U	< 0.005	< 0.0005	20	100	300
Cadmium	1455	U	< 0.00011	< 0.00011	0.04	1	5
Chromium	1455	U	0.0024	0.024	0.5	10	70
Copper	1455	U	0.0009	0.0086	2	50	100
Mercury	1455	U	< 0.00005	< 0.00005	0.01	0.2	2
Molybdenum	1455	U	0.0060	0.060	0.5	10	30
Nickel	1455	U	0.0011	0.011	0.4	10	40
Lead	1455	U	< 0.0005	< 0.0005	0.5	10	50
Antimony	1455	U	0.0006	0.0058	0.06	0.7	5
Selenium	1455	U	< 0.0005	< 0.0005	0.1	0.5	7
Zinc	1455	U	0.003	0.030	4	50	200
Chloride	1220	U	< 1.0	< 10	800	15000	25000
Fluoride	1220	U	0.35	3.5	10	150	500
Sulphate	1220	U	< 1.0	< 10	1000	20000	50000
Total Dissolved Solids	1020	N	65	650	4000	60000	100000
Phenol Index	1920	U	< 0.030	< 0.30	1	-	-
Dissolved Organic Carbon	1610	U	13	130	500	800	1000

Solid Information	
Dry mass of test portion/kg	0.090
Moisture (%)	15

Waste Acceptance Criteria

Landfill WAC analysis (specifically leaching test results) must not be used for hazardous waste classification purposes. This analysis is only applicable for hazardous waste landfill acceptance and does not give any indication as to whether a waste may be hazardous or non-hazardous.

Results - Single Stage WAC

Project: 5811

Chemtest Job No:	21-33474				Landfill Waste Acceptance Criteria Limits		
Chemtest Sample ID:	1286934						
Sample Ref:	ES53				Inert Waste Landfill	Stable, Non-reactive hazardous waste in non-hazardous Landfill	Hazardous Waste Landfill
Sample ID:	1						
Sample Location:	TP35						
Top Depth(m):	0.30						
Bottom Depth(m):	0.30						
Sampling Date:							
Determinand	**SOP**	**Accred.**	**Units**				
Total Organic Carbon	2625	M	%	[A] 3.1	3	5	6
Loss On Ignition	2610	M	%	7.9	--	--	10
Total BTEX	2760	M	mg/kg	[A] < 0.010	6	--	--
Total PCBs (7 Congeners)	2815	M	mg/kg	< 0.10	1	--	--
TPH Total WAC	2670	M	mg/kg	[A] < 10	500	--	--
Total (Of 17) PAH's	2800	N	mg/kg	34	100	--	--
pH	2010	M		8.3	--	>6	--
Acid Neutralisation Capacity	2015	N	mol/kg	0.010	--	To evaluate	To evaluate
Eluate Analysis			**10:1 Eluate mg/l**	**10:1 Eluate mg/kg**	**Limit values for compliance leaching test using BS EN 12457 at L/S 10 l/kg**		
Arsenic	1455	U	0.011	0.11	0.5	2	25
Barium	1455	U	< 0.005	< 0.0005	20	100	300
Cadmium	1455	U	< 0.00011	< 0.00011	0.04	1	5
Chromium	1455	U	0.0011	0.011	0.5	10	70
Copper	1455	U	0.0038	0.038	2	50	100
Mercury	1455	U	< 0.00005	< 0.00005	0.01	0.2	2
Molybdenum	1455	U	0.0052	0.052	0.5	10	30
Nickel	1455	U	0.0012	0.012	0.4	10	40
Lead	1455	U	0.0005	0.0051	0.5	10	50
Antimony	1455	U	0.0025	0.025	0.06	0.7	5
Selenium	1455	U	< 0.0005	< 0.0005	0.1	0.5	7
Zinc	1455	U	0.005	0.051	4	50	200
Chloride	1220	U	< 1.0	< 10	800	15000	25000
Fluoride	1220	U	0.50	5.0	10	150	500
Sulphate	1220	U	1.1	11	1000	20000	50000
Total Dissolved Solids	1020	N	91	910	4000	60000	100000
Phenol Index	1920	U	< 0.030	< 0.30	1	-	-
Dissolved Organic Carbon	1610	U	12	120	500	800	1000

Solid Information	
Dry mass of test portion/kg	0.090
Moisture (%)	12

Waste Acceptance Criteria

Landfill WAC analysis (specifically leaching test results) must not be used for hazardous waste classification purposes. This analysis is only applicable for hazardous waste landfill acceptance and does not give any indication as to whether a waste may be hazardous or non-hazardous.

Results - Single Stage WAC

Project: 5811

Chemtest Job No:	21-33474				**Landfill Waste Acceptance Criteria Limits**		
Chemtest Sample ID:	1286935						
Sample Ref:	ES54				**Inert Waste Landfill**	**Stable, Non-reactive hazardous waste in non-hazardous Landfill**	**Hazardous Waste Landfill**
Sample ID:	2						
Sample Location:	TP35						
Top Depth(m):	1.00						
Bottom Depth(m):	1.00						
Sampling Date:							
Determinand	**SOP**	**Accred.**	**Units**				
Total Organic Carbon	2625	M	%	[A] 0.86	3	5	6
Loss On Ignition	2610	M	%	3.2	--	--	10
Total BTEX	2760	M	mg/kg	[A] < 0.010	6	--	--
Total PCBs (7 Congeners)	2815	M	mg/kg	< 0.10	1	--	--
TPH Total WAC	2670	M	mg/kg	[A] < 10	500	--	--
Total (Of 17) PAH's	2800	N	mg/kg	< 2.0	100	--	--
pH	2010	M		8.6	--	>6	--
Acid Neutralisation Capacity	2015	N	mol/kg	0.019	--	To evaluate	To evaluate
Eluate Analysis			**10:1 Eluate mg/l**	**10:1 Eluate mg/kg**	**Limit values for compliance leaching test using BS EN 12457 at L/S 10 l/kg**		
Arsenic	1455	U	0.0003	0.0027	0.5	2	25
Barium	1455	U	< 0.005	< 0.0005	20	100	300
Cadmium	1455	U	< 0.00011	< 0.00011	0.04	1	5
Chromium	1455	U	0.0012	0.012	0.5	10	70
Copper	1455	U	0.0014	0.014	2	50	100
Mercury	1455	U	< 0.00005	< 0.00005	0.01	0.2	2
Molybdenum	1455	U	0.018	0.18	0.5	10	30
Nickel	1455	U	0.0017	0.017	0.4	10	40
Lead	1455	U	< 0.0005	< 0.0005	0.5	10	50
Antimony	1455	U	< 0.0005	< 0.0005	0.06	0.7	5
Selenium	1455	U	< 0.0005	< 0.0005	0.1	0.5	7
Zinc	1455	U	0.003	0.034	4	50	200
Chloride	1220	U	< 1.0	< 10	800	15000	25000
Fluoride	1220	U	0.30	3.0	10	150	500
Sulphate	1220	U	< 1.0	< 10	1000	20000	50000
Total Dissolved Solids	1020	N	62	620	4000	60000	100000
Phenol Index	1920	U	< 0.030	< 0.30	1	-	-
Dissolved Organic Carbon	1610	U	9.9	99	500	800	1000

Solid Information	
Dry mass of test portion/kg	0.090
Moisture (%)	11

Waste Acceptance Criteria

Landfill WAC analysis (specifically leaching test results) must not be used for hazardous waste classification purposes. This analysis is only applicable for hazardous waste landfill acceptance and does not give any indication as to whether a waste may be hazardous or non-hazardous.

Results - Single Stage WAC

Project: 5811

					Landfill Waste Acceptance Criteria Limits		
Chemtest Job No:	21-33474						
Chemtest Sample ID:	1286936						
Sample Ref:	ES55						
Sample ID:	1						
Sample Location:	TP36						
Top Depth(m):	0.30						
Bottom Depth(m):	0.30						
Sampling Date:					**Inert Waste Landfill**	**Stable, Non-reactive hazardous waste in non-hazardous Landfill**	**Hazardous Waste Landfill**
Determinand	**SOP**	**Accred.**	**Units**				
Total Organic Carbon	2625	M	%	[A] 16	3	5	6
Loss On Ignition	2610	M	%	17	--	--	10
Total BTEX	2760	M	mg/kg	[A] < 0.010	6	--	--
Total PCBs (7 Congeners)	2815	M	mg/kg	< 0.10	1	--	--
TPH Total WAC	2670	M	mg/kg	[A] < 10	500	--	--
Total (Of 17) PAH's	2800	N	mg/kg	7.8	100	--	--
pH	2010	M		8.2	--	>6	--
Acid Neutralisation Capacity	2015	N	mol/kg	0.010	--	To evaluate	To evaluate
Eluate Analysis			**10:1 Eluate mg/l**	**10:1 Eluate mg/kg**	**Limit values for compliance leaching test using BS EN 12457 at L/S 10 l/kg**		
Arsenic	1455	U	0.012	0.12	0.5	2	25
Barium	1455	U	< 0.005	< 0.0005	20	100	300
Cadmium	1455	U	< 0.00011	< 0.00011	0.04	1	5
Chromium	1455	U	0.0014	0.014	0.5	10	70
Copper	1455	U	0.0029	0.029	2	50	100
Mercury	1455	U	< 0.00005	< 0.00005	0.01	0.2	2
Molybdenum	1455	U	0.0026	0.026	0.5	10	30
Nickel	1455	U	0.0017	0.017	0.4	10	40
Lead	1455	U	0.0068	0.068	0.5	10	50
Antimony	1455	U	0.0016	0.016	0.06	0.7	5
Selenium	1455	U	< 0.0005	< 0.0005	0.1	0.5	7
Zinc	1455	U	0.007	0.073	4	50	200
Chloride	1220	U	< 1.0	< 10	800	15000	25000
Fluoride	1220	U	0.19	1.9	10	150	500
Sulphate	1220	U	< 1.0	< 10	1000	20000	50000
Total Dissolved Solids	1020	N	72	710	4000	60000	100000
Phenol Index	1920	U	< 0.030	< 0.30	1	-	-
Dissolved Organic Carbon	1610	U	6.8	68	500	800	1000

Solid Information	
Dry mass of test portion/kg	0.090
Moisture (%)	15

Waste Acceptance Criteria

Landfill WAC analysis (specifically leaching test results) must not be used for hazardous waste classification purposes. This analysis is only applicable for hazardous waste landfill acceptance and does not give any indication as to whether a waste may be hazardous or non-hazardous.

Results - Single Stage WAC

Project: 5811

Chemtest Job No:	21-33474				**Landfill Waste Acceptance Criteria Limits**		
Chemtest Sample ID:	1286937						
Sample Ref:	ES56				**Inert Waste Landfill**	**Stable, Non-reactive hazardous waste in non-hazardous Landfill**	**Hazardous Waste Landfill**
Sample ID:	2						
Sample Location:	TP36						
Top Depth(m):	0.80						
Bottom Depth(m):	0.80						
Sampling Date:							
Determinand	**SOP**	**Accred.**	**Units**				
Total Organic Carbon	2625	M	%	[A] 0.59	3	5	6
Loss On Ignition	2610	M	%	2.0	--	--	10
Total BTEX	2760	M	mg/kg	[A] < 0.010	6	--	--
Total PCBs (7 Congeners)	2815	M	mg/kg	< 0.10	1	--	--
TPH Total WAC	2670	M	mg/kg	[A] < 10	500	--	--
Total (Of 17) PAH's	2800	N	mg/kg	< 2.0	100	--	--
pH	2010	M		8.5	--	>6	--
Acid Neutralisation Capacity	2015	N	mol/kg	0.0070	--	To evaluate	To evaluate
Eluate Analysis			**10:1 Eluate mg/l**	**10:1 Eluate mg/kg**	**Limit values for compliance leaching test using BS EN 12457 at L/S 10 l/kg**		
Arsenic	1455	U	0.0066	0.067	0.5	2	25
Barium	1455	U	< 0.005	< 0.0005	20	100	300
Cadmium	1455	U	< 0.00011	< 0.00011	0.04	1	5
Chromium	1455	U	0.0019	0.019	0.5	10	70
Copper	1455	U	0.0018	0.018	2	50	100
Mercury	1455	U	< 0.00005	< 0.00005	0.01	0.2	2
Molybdenum	1455	U	0.013	0.13	0.5	10	30
Nickel	1455	U	0.0014	0.014	0.4	10	40
Lead	1455	U	< 0.0005	< 0.0005	0.5	10	50
Antimony	1455	U	0.0012	0.012	0.06	0.7	5
Selenium	1455	U	< 0.0005	< 0.0005	0.1	0.5	7
Zinc	1455	U	0.005	0.046	4	50	200
Chloride	1220	U	< 1.0	< 10	800	15000	25000
Fluoride	1220	U	0.21	2.1	10	150	500
Sulphate	1220	U	< 1.0	< 10	1000	20000	50000
Total Dissolved Solids	1020	N	59	580	4000	60000	100000
Phenol Index	1920	U	< 0.030	< 0.30	1	-	-
Dissolved Organic Carbon	1610	U	15	150	500	800	1000

Solid Information	
Dry mass of test portion/kg	0.090
Moisture (%)	12

Waste Acceptance Criteria

Landfill WAC analysis (specifically leaching test results) must not be used for hazardous waste classification purposes. This analysis is only applicable for hazardous waste landfill acceptance and does not give any indication as to whether a waste may be hazardous or non-hazardous.

Results - Single Stage WAC

Project: 5811

					Landfill Waste Acceptance Criteria Limits		
Chemtest Job No:	21-33476				**Inert Waste Landfill**	**Stable, Non-reactive hazardous waste in non-hazardous Landfill**	**Hazardous Waste Landfill**
Chemtest Sample ID:	1286943						
Sample Ref:	ES57						
Sample ID:	1						
Sample Location:	TP05						
Top Depth(m):	0.30						
Bottom Depth(m):	0.30						
Sampling Date:							
Determinand	**SOP**	**Accred.**	**Units**				
Total Organic Carbon	2625	M	%	[A] 3.6	3	5	6
Loss On Ignition	2610	M	%	7.9	--	--	10
Total BTEX	2760	M	mg/kg	[A] < 0.010	6	--	--
Total PCBs (7 Congeners)	2815	M	mg/kg	< 0.10	1	--	--
TPH Total WAC	2670	M	mg/kg	[A] < 10	500	--	--
Total (Of 17) PAH's	2800	N	mg/kg	26	100	--	--
pH	2010	M		8.3	--	>6	--
Acid Neutralisation Capacity	2015	N	mol/kg	0.0050	--	To evaluate	To evaluate
Eluate Analysis			**10:1 Eluate mg/l**	**10:1 Eluate mg/kg**	**Limit values for compliance leaching test using BS EN 12457 at L/S 10 l/kg**		
Arsenic	1455	U	0.0086	0.086	0.5	2	25
Barium	1455	U	< 0.005	< 0.0005	20	100	300
Cadmium	1455	U	< 0.00011	< 0.00011	0.04	1	5
Chromium	1455	U	< 0.0005	< 0.0005	0.5	10	70
Copper	1455	U	0.0067	0.067	2	50	100
Mercury	1455	U	< 0.00005	< 0.00005	0.01	0.2	2
Molybdenum	1455	U	0.0040	0.040	0.5	10	30
Nickel	1455	U	< 0.0005	< 0.0005	0.4	10	40
Lead	1455	U	< 0.0005	< 0.0005	0.5	10	50
Antimony	1455	U	0.0011	0.012	0.06	0.7	5
Selenium	1455	U	0.0006	0.0063	0.1	0.5	7
Zinc	1455	U	< 0.003	< 0.003	4	50	200
Chloride	1220	U	< 1.0	< 10	800	15000	25000
Fluoride	1220	U	0.44	4.4	10	150	500
Sulphate	1220	U	< 1.0	< 10	1000	20000	50000
Total Dissolved Solids	1020	N	100	1000	4000	60000	100000
Phenol Index	1920	U	< 0.030	< 0.30	1	-	-
Dissolved Organic Carbon	1610	U	7.9	79	500	800	1000

Solid Information	
Dry mass of test portion/kg	0.090
Moisture (%)	5.0

Waste Acceptance Criteria

Landfill WAC analysis (specifically leaching test results) must not be used for hazardous waste classification purposes. This analysis is only applicable for hazardous waste landfill acceptance and does not give any indication as to whether a waste may be hazardous or non-hazardous.

Results - Single Stage WAC

Project: 5811

					Landfill Waste Acceptance Criteria Limits		
Chemtest Job No:	21-33476						
Chemtest Sample ID:	1286944						
Sample Ref:	ES58						
Sample ID:	2						
Sample Location:	TP05						
Top Depth(m):	0.50						
Bottom Depth(m):	0.50						
Sampling Date:					**Inert Waste Landfill**	**Stable, Non-reactive hazardous waste in non-hazardous Landfill**	**Hazardous Waste Landfill**
Determinand	**SOP**	**Accred.**	**Units**				
Total Organic Carbon	2625	M	%	[A] 2.1	3	5	6
Loss On Ignition	2610	M	%	5.6	--	--	10
Total BTEX	2760	M	mg/kg	[A] < 0.010	6	--	--
Total PCBs (7 Congeners)	2815	M	mg/kg	< 0.10	1	--	--
TPH Total WAC	2670	M	mg/kg	[A] < 10	500	--	--
Total (Of 17) PAH's	2800	N	mg/kg	12	100	--	--
pH	2010	M		8.3	--	>6	--
Acid Neutralisation Capacity	2015	N	mol/kg	< 0.0020	--	To evaluate	To evaluate
Eluate Analysis			**10:1 Eluate mg/l**	**10:1 Eluate mg/kg**	**Limit values for compliance leaching test using BS EN 12457 at L/S 10 l/kg**		
Arsenic	1455	U	0.0043	0.043	0.5	2	25
Barium	1455	U	< 0.005	< 0.0005	20	100	300
Cadmium	1455	U	< 0.00011	< 0.00011	0.04	1	5
Chromium	1455	U	< 0.0005	< 0.0005	0.5	10	70
Copper	1455	U	0.0031	0.031	2	50	100
Mercury	1455	U	< 0.00005	< 0.00005	0.01	0.2	2
Molybdenum	1455	U	0.0036	0.036	0.5	10	30
Nickel	1455	U	< 0.0005	< 0.0005	0.4	10	40
Lead	1455	U	< 0.0005	< 0.0005	0.5	10	50
Antimony	1455	U	0.0007	0.0069	0.06	0.7	5
Selenium	1455	U	< 0.0005	< 0.0005	0.1	0.5	7
Zinc	1455	U	< 0.003	< 0.003	4	50	200
Chloride	1220	U	< 1.0	< 10	800	15000	25000
Fluoride	1220	U	0.25	2.5	10	150	500
Sulphate	1220	U	< 1.0	< 10	1000	20000	50000
Total Dissolved Solids	1020	N	85	850	4000	60000	100000
Phenol Index	1920	U	< 0.030	< 0.30	1	-	-
Dissolved Organic Carbon	1610	U	4.6	< 50	500	800	1000

Solid Information	
Dry mass of test portion/kg	0.090
Moisture (%)	3.6

Waste Acceptance Criteria

Landfill WAC analysis (specifically leaching test results) must not be used for hazardous waste classification purposes. This analysis is only applicable for hazardous waste landfill acceptance and does not give any indication as to whether a waste may be hazardous or non-hazardous.

Results - Single Stage WAC

Project: 5811

					Landfill Waste Acceptance Criteria Limits		
Chemtest Job No:	21-33476						
Chemtest Sample ID:	1286945						
Sample Ref:	ES59						
Sample ID:	3						
Sample Location:	TP05						
Top Depth(m):	1.00						
Bottom Depth(m):	1.00						
Sampling Date:					**Inert Waste Landfill**	**Stable, Non-reactive hazardous waste in non-hazardous Landfill**	**Hazardous Waste Landfill**
Determinand	**SOP**	**Accred.**	**Units**				
Total Organic Carbon	2625	M	%	[A] 2.9	3	5	6
Loss On Ignition	2610	M	%	5.8	--	--	10
Total BTEX	2760	M	mg/kg	[A] < 0.010	6	--	--
Total PCBs (7 Congeners)	2815	M	mg/kg	< 0.10	1	--	--
TPH Total WAC	2670	M	mg/kg	[A] < 10	500	--	--
Total (Of 17) PAH's	2800	N	mg/kg	12	100	--	--
pH	2010	M		8.2	--	>6	--
Acid Neutralisation Capacity	2015	N	mol/kg	0.0070	--	To evaluate	To evaluate
Eluate Analysis			**10:1 Eluate mg/l**	**10:1 Eluate mg/kg**	**Limit values for compliance leaching test using BS EN 12457 at L/S 10 l/kg**		
Arsenic	1455	U	0.0016	0.016	0.5	2	25
Barium	1455	U	< 0.005	< 0.0005	20	100	300
Cadmium	1455	U	< 0.00011	< 0.00011	0.04	1	5
Chromium	1455	U	< 0.0005	< 0.0005	0.5	10	70
Copper	1455	U	0.0016	0.016	2	50	100
Mercury	1455	U	< 0.00005	< 0.00005	0.01	0.2	2
Molybdenum	1455	U	0.0031	0.031	0.5	10	30
Nickel	1455	U	< 0.0005	< 0.0005	0.4	10	40
Lead	1455	U	< 0.0005	< 0.0005	0.5	10	50
Antimony	1455	U	0.0006	0.0059	0.06	0.7	5
Selenium	1455	U	< 0.0005	< 0.0005	0.1	0.5	7
Zinc	1455	U	< 0.003	< 0.003	4	50	200
Chloride	1220	U	< 1.0	< 10	800	15000	25000
Fluoride	1220	U	0.16	1.6	10	150	500
Sulphate	1220	U	< 1.0	< 10	1000	20000	50000
Total Dissolved Solids	1020	N	52	520	4000	60000	100000
Phenol Index	1920	U	< 0.030	< 0.30	1	-	-
Dissolved Organic Carbon	1610	U	3.3	< 50	500	800	1000

Solid Information	
Dry mass of test portion/kg	0.090
Moisture (%)	4.1

Waste Acceptance Criteria

Landfill WAC analysis (specifically leaching test results) must not be used for hazardous waste classification purposes. This analysis is only applicable for hazardous waste landfill acceptance and does not give any indication as to whether a waste may be hazardous or non-hazardous.

Results - Single Stage WAC

Project: 5811

					Landfill Waste Acceptance Criteria Limits		
Chemtest Job No:	21-33476				**Inert Waste Landfill**	**Stable, Non-reactive hazardous waste in non-hazardous Landfill**	**Hazardous Waste Landfill**
Chemtest Sample ID:	1286946						
Sample Ref:	ES60						
Sample ID:	1						
Sample Location:	TP06						
Top Depth(m):	0.30						
Bottom Depth(m):	0.30						
Sampling Date:							
Determinand	**SOP**	**Accred.**	**Units**				
Total Organic Carbon	2625	M	%	[A] 3.9	3	5	6
Loss On Ignition	2610	M	%	6.8	--	--	10
Total BTEX	2760	M	mg/kg	[A] < 0.010	6	--	--
Total PCBs (7 Congeners)	2815	M	mg/kg	< 0.10	1	--	--
TPH Total WAC	2670	M	mg/kg	[A] < 10	500	--	--
Total (Of 17) PAH's	2800	N	mg/kg	2.8	100	--	--
pH	2010	M		8.2	--	>6	--
Acid Neutralisation Capacity	2015	N	mol/kg	0.0060	--	To evaluate	To evaluate
Eluate Analysis			**10:1 Eluate mg/l**	**10:1 Eluate mg/kg**	**Limit values for compliance leaching test using BS EN 12457 at L/S 10 l/kg**		
Arsenic	1455	U	0.0061	0.061	0.5	2	25
Barium	1455	U	< 0.005	< 0.0005	20	100	300
Cadmium	1455	U	< 0.00011	< 0.00011	0.04	1	5
Chromium	1455	U	< 0.0005	< 0.0005	0.5	10	70
Copper	1455	U	0.0040	0.041	2	50	100
Mercury	1455	U	< 0.00005	< 0.00005	0.01	0.2	2
Molybdenum	1455	U	0.0025	0.025	0.5	10	30
Nickel	1455	U	< 0.0005	< 0.0005	0.4	10	40
Lead	1455	U	< 0.0005	< 0.0005	0.5	10	50
Antimony	1455	U	0.0010	0.010	0.06	0.7	5
Selenium	1455	U	< 0.0005	< 0.0005	0.1	0.5	7
Zinc	1455	U	< 0.003	< 0.003	4	50	200
Chloride	1220	U	< 1.0	< 10	800	15000	25000
Fluoride	1220	U	0.24	2.4	10	150	500
Sulphate	1220	U	< 1.0	< 10	1000	20000	50000
Total Dissolved Solids	1020	N	59	590	4000	60000	100000
Phenol Index	1920	U	< 0.030	< 0.30	1	-	-
Dissolved Organic Carbon	1610	U	5.9	59	500	800	1000

Solid Information	
Dry mass of test portion/kg	0.090
Moisture (%)	8.3

Waste Acceptance Criteria

Landfill WAC analysis (specifically leaching test results) must not be used for hazardous waste classification purposes. This analysis is only applicable for hazardous waste landfill acceptance and does not give any indication as to whether a waste may be hazardous or non-hazardous.

Results - Single Stage WAC

Project: 5811

					Landfill Waste Acceptance Criteria Limits		
Chemtest Job No:	21-33476						
Chemtest Sample ID:	1286947						
Sample Ref:	ES61						
Sample ID:	2						
Sample Location:	TP06						
Top Depth(m):	1.00						
Bottom Depth(m):	1.00						
Sampling Date:					**Inert Waste Landfill**	**Stable, Non-reactive hazardous waste in non-hazardous Landfill**	**Hazardous Waste Landfill**
Determinand	**SOP**	**Accred.**	**Units**				
Total Organic Carbon	2625	M	%	[A] 2.3	3	5	6
Loss On Ignition	2610	M	%	1.8	--	--	10
Total BTEX	2760	M	mg/kg	[A] < 0.010	6	--	--
Total PCBs (7 Congeners)	2815	M	mg/kg	< 0.10	1	--	--
TPH Total WAC	2670	M	mg/kg	[A] < 10	500	--	--
Total (Of 17) PAH's	2800	N	mg/kg	< 2.0	100	--	--
pH	2010	M		8.8	--	>6	--
Acid Neutralisation Capacity	2015	N	mol/kg	0.017	--	To evaluate	To evaluate
Eluate Analysis			**10:1 Eluate mg/l**	**10:1 Eluate mg/kg**	**Limit values for compliance leaching test using BS EN 12457 at L/S 10 l/kg**		
Arsenic	1455	U	0.0017	0.017	0.5	2	25
Barium	1455	U	< 0.005	< 0.0005	20	100	300
Cadmium	1455	U	< 0.00011	< 0.00011	0.04	1	5
Chromium	1455	U	< 0.0005	< 0.0005	0.5	10	70
Copper	1455	U	0.0008	0.0079	2	50	100
Mercury	1455	U	< 0.00005	< 0.00005	0.01	0.2	2
Molybdenum	1455	U	0.0043	0.043	0.5	10	30
Nickel	1455	U	< 0.0005	< 0.0005	0.4	10	40
Lead	1455	U	< 0.0005	< 0.0005	0.5	10	50
Antimony	1455	U	0.0005	0.0050	0.06	0.7	5
Selenium	1455	U	< 0.0005	< 0.0005	0.1	0.5	7
Zinc	1455	U	< 0.003	< 0.003	4	50	200
Chloride	1220	U	< 1.0	< 10	800	15000	25000
Fluoride	1220	U	0.14	1.4	10	150	500
Sulphate	1220	U	< 1.0	< 10	1000	20000	50000
Total Dissolved Solids	1020	N	46	460	4000	60000	100000
Phenol Index	1920	U	< 0.030	< 0.30	1	-	-
Dissolved Organic Carbon	1610	U	4.1	< 50	500	800	1000

Solid Information	
Dry mass of test portion/kg	0.090
Moisture (%)	4.5

Waste Acceptance Criteria

Landfill WAC analysis (specifically leaching test results) must not be used for hazardous waste classification purposes. This analysis is only applicable for hazardous waste landfill acceptance and does not give any indication as to whether a waste may be hazardous or non-hazardous.

Results - Single Stage WAC

Project: 5811

					Landfill Waste Acceptance Criteria Limits		
Chemtest Job No:	21-33476						
Chemtest Sample ID:	1286948						
Sample Ref:	ES62						
Sample ID:	1						
Sample Location:	TP09						
Top Depth(m):	0.30						
Bottom Depth(m):	0.30						
Sampling Date:					**Inert Waste Landfill**	**Stable, Non-reactive hazardous waste in non-hazardous Landfill**	**Hazardous Waste Landfill**
Determinand	**SOP**	**Accred.**	**Units**				
Total Organic Carbon	2625	M	%	[A] 2.5	3	5	6
Loss On Ignition	2610	M	%	6.4	--	--	10
Total BTEX	2760	M	mg/kg	[A] < 0.010	6	--	--
Total PCBs (7 Congeners)	2815	M	mg/kg	< 0.10	1	--	--
TPH Total WAC	2670	M	mg/kg	[A] < 10	500	--	--
Total (Of 17) PAH's	2800	N	mg/kg	< 2.0	100	--	--
pH	2010	M		8.3	--	>6	--
Acid Neutralisation Capacity	2015	N	mol/kg	< 0.0020	--	To evaluate	To evaluate
Eluate Analysis			**10:1 Eluate mg/l**	**10:1 Eluate mg/kg**	**Limit values for compliance leaching test using BS EN 12457 at L/S 10 l/kg**		
Arsenic	1455	U	0.0021	0.021	0.5	2	25
Barium	1455	U	< 0.005	< 0.0005	20	100	300
Cadmium	1455	U	< 0.00011	< 0.00011	0.04	1	5
Chromium	1455	U	< 0.0005	< 0.0005	0.5	10	70
Copper	1455	U	0.0027	0.027	2	50	100
Mercury	1455	U	< 0.00005	< 0.00005	0.01	0.2	2
Molybdenum	1455	U	0.012	0.12	0.5	10	30
Nickel	1455	U	< 0.0005	< 0.0005	0.4	10	40
Lead	1455	U	< 0.0005	< 0.0005	0.5	10	50
Antimony	1455	U	0.0009	0.0089	0.06	0.7	5
Selenium	1455	U	< 0.0005	< 0.0005	0.1	0.5	7
Zinc	1455	U	< 0.003	< 0.003	4	50	200
Chloride	1220	U	< 1.0	< 10	800	15000	25000
Fluoride	1220	U	0.49	4.9	10	150	500
Sulphate	1220	U	< 1.0	< 10	1000	20000	50000
Total Dissolved Solids	1020	N	85	840	4000	60000	100000
Phenol Index	1920	U	< 0.030	< 0.30	1	-	-
Dissolved Organic Carbon	1610	U	6.4	64	500	800	1000

Solid Information	
Dry mass of test portion/kg	0.090
Moisture (%)	9.2

Waste Acceptance Criteria

Landfill WAC analysis (specifically leaching test results) must not be used for hazardous waste classification purposes. This analysis is only applicable for hazardous waste landfill acceptance and does not give any indication as to whether a waste may be hazardous or non-hazardous.

Results - Single Stage WAC

Project: 5811

					Landfill Waste Acceptance Criteria Limits		
Chemtest Job No:	21-33476				**Inert Waste Landfill**	**Stable, Non-reactive hazardous waste in non-hazardous Landfill**	**Hazardous Waste Landfill**
Chemtest Sample ID:	1286949						
Sample Ref:	ES63						
Sample ID:	2						
Sample Location:	TP09						
Top Depth(m):	1.00						
Bottom Depth(m):	1.00						
Sampling Date:							
Determinand	**SOP**	**Accred.**	**Units**				
Total Organic Carbon	2625	M	%	[A] 1.3	3	5	6
Loss On Ignition	2610	M	%	2.9	--	--	10
Total BTEX	2760	M	mg/kg	[A] < 0.010	6	--	--
Total PCBs (7 Congeners)	2815	M	mg/kg	< 0.10	1	--	--
TPH Total WAC	2670	M	mg/kg	[A] < 10	500	--	--
Total (Of 17) PAH's	2800	N	mg/kg	< 2.0	100	--	--
pH	2010	M		8.5	--	>6	--
Acid Neutralisation Capacity	2015	N	mol/kg	< 0.0020	--	To evaluate	To evaluate
Eluate Analysis			**10:1 Eluate mg/l**	**10:1 Eluate mg/kg**	**Limit values for compliance leaching test using BS EN 12457 at L/S 10 l/kg**		
Arsenic	1455	U	0.0006	0.0060	0.5	2	25
Barium	1455	U	< 0.005	< 0.0005	20	100	300
Cadmium	1455	U	< 0.00011	< 0.00011	0.04	1	5
Chromium	1455	U	< 0.0005	< 0.0005	0.5	10	70
Copper	1455	U	0.0010	0.010	2	50	100
Mercury	1455	U	< 0.00005	< 0.00005	0.01	0.2	2
Molybdenum	1455	U	0.012	0.12	0.5	10	30
Nickel	1455	U	< 0.0005	< 0.0005	0.4	10	40
Lead	1455	U	< 0.0005	< 0.0005	0.5	10	50
Antimony	1455	U	< 0.0005	< 0.0005	0.06	0.7	5
Selenium	1455	U	< 0.0005	< 0.0005	0.1	0.5	7
Zinc	1455	U	< 0.003	< 0.003	4	50	200
Chloride	1220	U	< 1.0	< 10	800	15000	25000
Fluoride	1220	U	0.22	2.2	10	150	500
Sulphate	1220	U	< 1.0	< 10	1000	20000	50000
Total Dissolved Solids	1020	N	59	590	4000	60000	100000
Phenol Index	1920	U	< 0.030	< 0.30	1	-	-
Dissolved Organic Carbon	1610	U	4.1	< 50	500	800	1000

Solid Information	
Dry mass of test portion/kg	0.090
Moisture (%)	3.8

Waste Acceptance Criteria

Landfill WAC analysis (specifically leaching test results) must not be used for hazardous waste classification purposes. This analysis is only applicable for hazardous waste landfill acceptance and does not give any indication as to whether a waste may be hazardous or non-hazardous.

Results - Single Stage WAC

Project: 5811

					Landfill Waste Acceptance Criteria Limits		
Chemtest Job No:	21-33476						
Chemtest Sample ID:	1286950						
Sample Ref:	ES64						
Sample ID:	3						
Sample Location:	TP09						
Top Depth(m):	1.50						
Bottom Depth(m):	1.50						
Sampling Date:					Inert Waste Landfill	Stable, Non-reactive hazardous waste in non-hazardous Landfill	Hazardous Waste Landfill
Determinand	**SOP**	**Accred.**	**Units**				
Total Organic Carbon	2625	M	%	[A] 1.2	3	5	6
Loss On Ignition	2610	M	%	2.3	--	--	10
Total BTEX	2760	M	mg/kg	[A] < 0.010	6	--	--
Total PCBs (7 Congeners)	2815	M	mg/kg	< 0.10	1	--	--
TPH Total WAC	2670	M	mg/kg	[A] < 10	500	--	--
Total (Of 17) PAH's	2800	N	mg/kg	< 2.0	100	--	--
pH	2010	M		8.6	--	>6	--
Acid Neutralisation Capacity	2015	N	mol/kg	0.0050	--	To evaluate	To evaluate
Eluate Analysis			**10:1 Eluate mg/l**	**10:1 Eluate mg/kg**	**Limit values for compliance leaching test using BS EN 12457 at L/S 10 l/kg**		
Arsenic	1455	U	0.0004	0.0038	0.5	2	25
Barium	1455	U	< 0.005	< 0.0005	20	100	300
Cadmium	1455	U	< 0.00011	< 0.00011	0.04	1	5
Chromium	1455	U	< 0.0005	< 0.0005	0.5	10	70
Copper	1455	U	0.0007	0.0073	2	50	100
Mercury	1455	U	< 0.00005	< 0.00005	0.01	0.2	2
Molybdenum	1455	U	0.0055	0.055	0.5	10	30
Nickel	1455	U	< 0.0005	< 0.0005	0.4	10	40
Lead	1455	U	< 0.0005	< 0.0005	0.5	10	50
Antimony	1455	U	< 0.0005	< 0.0005	0.06	0.7	5
Selenium	1455	U	< 0.0005	< 0.0005	0.1	0.5	7
Zinc	1455	U	< 0.003	< 0.003	4	50	200
Chloride	1220	U	< 1.0	< 10	800	15000	25000
Fluoride	1220	U	0.18	1.8	10	150	500
Sulphate	1220	U	< 1.0	< 10	1000	20000	50000
Total Dissolved Solids	1020	N	59	580	4000	60000	100000
Phenol Index	1920	U	< 0.030	< 0.30	1	-	-
Dissolved Organic Carbon	1610	U	5.7	57	500	800	1000

Solid Information	
Dry mass of test portion/kg	0.090
Moisture (%)	9.5

Waste Acceptance Criteria

Landfill WAC analysis (specifically leaching test results) must not be used for hazardous waste classification purposes. This analysis is only applicable for hazardous waste landfill acceptance and does not give any indication as to whether a waste may be hazardous or non-hazardous.

Results - Single Stage WAC

Project: 5811

					Landfill Waste Acceptance Criteria Limits		
Chemtest Job No:	21-33476						
Chemtest Sample ID:	1286951						
Sample Ref:	ES65						
Sample ID:	1						
Sample Location:	TP10						
Top Depth(m):	0.30						
Bottom Depth(m):	0.30						
Sampling Date:					**Inert Waste Landfill**	**Stable, Non-reactive hazardous waste in non-hazardous Landfill**	**Hazardous Waste Landfill**
Determinand	**SOP**	**Accred.**	**Units**				
Total Organic Carbon	2625	M	%	[A] 3.1	3	5	6
Loss On Ignition	2610	M	%	6.8	--	--	10
Total BTEX	2760	M	mg/kg	[A] < 0.010	6	--	--
Total PCBs (7 Congeners)	2815	M	mg/kg	< 0.10	1	--	--
TPH Total WAC	2670	M	mg/kg	[A] 29	500	--	--
Total (Of 17) PAH's	2800	N	mg/kg	26	100	--	--
pH	2010	M		8.5	--	>6	--
Acid Neutralisation Capacity	2015	N	mol/kg	0.0050	--	To evaluate	To evaluate
Eluate Analysis			**10:1 Eluate mg/l**	**10:1 Eluate mg/kg**	**Limit values for compliance leaching test using BS EN 12457 at L/S 10 l/kg**		
Arsenic	1455	U	0.0075	0.075	0.5	2	25
Barium	1455	U	< 0.005	< 0.0005	20	100	300
Cadmium	1455	U	< 0.00011	< 0.00011	0.04	1	5
Chromium	1455	U	< 0.0005	< 0.0005	0.5	10	70
Copper	1455	U	0.0033	0.033	2	50	100
Mercury	1455	U	< 0.00005	< 0.00005	0.01	0.2	2
Molybdenum	1455	U	0.0053	0.053	0.5	10	30
Nickel	1455	U	< 0.0005	< 0.0005	0.4	10	40
Lead	1455	U	0.0007	0.0065	0.5	10	50
Antimony	1455	U	0.0007	0.0070	0.06	0.7	5
Selenium	1455	U	< 0.0005	< 0.0005	0.1	0.5	7
Zinc	1455	U	< 0.003	< 0.003	4	50	200
Chloride	1220	U	< 1.0	< 10	800	15000	25000
Fluoride	1220	U	0.43	4.3	10	150	500
Sulphate	1220	U	< 1.0	< 10	1000	20000	50000
Total Dissolved Solids	1020	N	72	720	4000	60000	100000
Phenol Index	1920	U	< 0.030	< 0.30	1	-	-
Dissolved Organic Carbon	1610	U	6.5	65	500	800	1000

Solid Information	
Dry mass of test portion/kg	0.090
Moisture (%)	6.5

Waste Acceptance Criteria

Landfill WAC analysis (specifically leaching test results) must not be used for hazardous waste classification purposes. This analysis is only applicable for hazardous waste landfill acceptance and does not give any indication as to whether a waste may be hazardous or non-hazardous.

Results - Single Stage WAC

Project: 5811

Chemtest Job No:	21-33476				Landfill Waste Acceptance Criteria Limits		
Chemtest Sample ID:	1286952						
Sample Ref:	ES66				Inert Waste Landfill	Stable, Non-reactive hazardous waste in non-hazardous Landfill	Hazardous Waste Landfill
Sample ID:	2						
Sample Location:	TP10						
Top Depth(m):	1.40						
Bottom Depth(m):	1.40						
Sampling Date:							
Determinand	**SOP**	**Accred.**	**Units**				
Total Organic Carbon	2625	M	%	[A] 2.5	3	5	6
Loss On Ignition	2610	M	%	6.3	--	--	10
Total BTEX	2760	M	mg/kg	[A] < 0.010	6	--	--
Total PCBs (7 Congeners)	2815	M	mg/kg	< 0.10	1	--	--
TPH Total WAC	2670	M	mg/kg	[A] < 10	500	--	--
Total (Of 17) PAH's	2800	N	mg/kg	62	100	--	--
pH	2010	M		8.6	--	>6	--
Acid Neutralisation Capacity	2015	N	mol/kg	0.0050	--	To evaluate	To evaluate
Eluate Analysis			**10:1 Eluate mg/l**	**10:1 Eluate mg/kg**	**Limit values for compliance leaching test using BS EN 12457 at L/S 10 l/kg**		
Arsenic	1455	U	0.0044	0.044	0.5	2	25
Barium	1455	U	< 0.005	< 0.0005	20	100	300
Cadmium	1455	U	< 0.00011	< 0.00011	0.04	1	5
Chromium	1455	U	< 0.0005	< 0.0005	0.5	10	70
Copper	1455	U	0.0027	0.027	2	50	100
Mercury	1455	U	< 0.00005	< 0.00005	0.01	0.2	2
Molybdenum	1455	U	0.0043	0.043	0.5	10	30
Nickel	1455	U	< 0.0005	< 0.0005	0.4	10	40
Lead	1455	U	0.0007	0.0065	0.5	10	50
Antimony	1455	U	0.0005	0.0051	0.06	0.7	5
Selenium	1455	U	< 0.0005	< 0.0005	0.1	0.5	7
Zinc	1455	U	< 0.003	< 0.003	4	50	200
Chloride	1220	U	< 1.0	< 10	800	15000	25000
Fluoride	1220	U	0.27	2.7	10	150	500
Sulphate	1220	U	< 1.0	< 10	1000	20000	50000
Total Dissolved Solids	1020	N	59	590	4000	60000	100000
Phenol Index	1920	U	< 0.030	< 0.30	1	-	-
Dissolved Organic Carbon	1610	U	6.6	66	500	800	1000

Solid Information	
Dry mass of test portion/kg	0.090
Moisture (%)	6.8

Waste Acceptance Criteria

Landfill WAC analysis (specifically leaching test results) must not be used for hazardous waste classification purposes. This analysis is only applicable for hazardous waste landfill acceptance and does not give any indication as to whether a waste may be hazardous or non-hazardous.

Results - Single Stage WAC

Project: 5811

					Landfill Waste Acceptance Criteria Limits		
Chemtest Job No:	21-33480						
Chemtest Sample ID:	1286961						
Sample Ref:	ES67						
Sample ID:	1						
Sample Location:	TP11						
Top Depth(m):	0.30						
Bottom Depth(m):	0.30						
Sampling Date:					**Inert Waste Landfill**	**Stable, Non-reactive hazardous waste in non-hazardous Landfill**	**Hazardous Waste Landfill**
Determinand	**SOP**	**Accred.**	**Units**				
Total Organic Carbon	2625	M	%	[A] 4.2	3	5	6
Loss On Ignition	2610	M	%	7.1	--	--	10
Total BTEX	2760	M	mg/kg	[A] < 0.010	6	--	--
Total PCBs (7 Congeners)	2815	M	mg/kg	< 0.10	1	--	--
TPH Total WAC	2670	M	mg/kg	[A] < 10	500	--	--
Total (Of 17) PAH's	2800	N	mg/kg	6.9	100	--	--
pH	2010	M		8.4	--	>6	--
Acid Neutralisation Capacity	2015	N	mol/kg	< 0.0020	--	To evaluate	To evaluate
Eluate Analysis			**10:1 Eluate mg/l**	**10:1 Eluate mg/kg**	**Limit values for compliance leaching test using BS EN 12457 at L/S 10 l/kg**		
Arsenic	1455	U	0.0024	0.024	0.5	2	25
Barium	1455	U	0.006	0.059	20	100	300
Cadmium	1455	U	< 0.00011	< 0.00011	0.04	1	5
Chromium	1455	U	0.0006	0.0057	0.5	10	70
Copper	1455	U	0.0042	0.042	2	50	100
Mercury	1455	U	< 0.00005	< 0.00005	0.01	0.2	2
Molybdenum	1455	U	0.0046	0.047	0.5	10	30
Nickel	1455	U	< 0.0005	< 0.0005	0.4	10	40
Lead	1455	U	< 0.0005	< 0.0005	0.5	10	50
Antimony	1455	U	0.0007	0.0073	0.06	0.7	5
Selenium	1455	U	0.0006	0.0057	0.1	0.5	7
Zinc	1455	U	< 0.003	< 0.003	4	50	200
Chloride	1220	U	< 1.0	< 10	800	15000	25000
Fluoride	1220	U	0.64	6.4	10	150	500
Sulphate	1220	U	2.8	28	1000	20000	50000
Total Dissolved Solids	1020	N	230	2300	4000	60000	100000
Phenol Index	1920	U	< 0.030	< 0.30	1	-	-
Dissolved Organic Carbon	1610	U	6.3	63	500	800	1000

Solid Information	
Dry mass of test portion/kg	0.090
Moisture (%)	6.5

Waste Acceptance Criteria

Landfill WAC analysis (specifically leaching test results) must not be used for hazardous waste classification purposes. This analysis is only applicable for hazardous waste landfill acceptance and does not give any indication as to whether a waste may be hazardous or non-hazardous.

Results - Single Stage WAC

Project: 5811

Chemtest Job No:	21-33480				**Landfill Waste Acceptance Criteria Limits**		
Chemtest Sample ID:	1286962						
Sample Ref:	ES68				**Inert Waste Landfill**	**Stable, Non-reactive hazardous waste in non-hazardous Landfill**	**Hazardous Waste Landfill**
Sample ID:	2						
Sample Location:	TP11						
Top Depth(m):	1.00						
Bottom Depth(m):	1.00						
Sampling Date:							
Determinand	**SOP**	**Accred.**	**Units**				
Total Organic Carbon	2625	M	%	[A] 0.84	3	5	6
Loss On Ignition	2610	M	%	3.1	--	--	10
Total BTEX	2760	M	mg/kg	[A] < 0.010	6	--	--
Total PCBs (7 Congeners)	2815	M	mg/kg	< 0.10	1	--	--
TPH Total WAC	2670	M	mg/kg	[A] < 10	500	--	--
Total (Of 17) PAH's	2800	N	mg/kg	< 2.0	100	--	--
pH	2010	M		8.5	--	>6	--
Acid Neutralisation Capacity	2015	N	mol/kg	< 0.0020	--	To evaluate	To evaluate
Eluate Analysis			**10:1 Eluate mg/l**	**10:1 Eluate mg/kg**	**Limit values for compliance leaching test using BS EN 12457 at L/S 10 l/kg**		
Arsenic	1455	U	0.0004	0.0042	0.5	2	25
Barium	1455	U	< 0.005	< 0.0005	20	100	300
Cadmium	1455	U	< 0.00011	< 0.00011	0.04	1	5
Chromium	1455	U	< 0.0005	< 0.0005	0.5	10	70
Copper	1455	U	0.0014	0.014	2	50	100
Mercury	1455	U	< 0.00005	< 0.00005	0.01	0.2	2
Molybdenum	1455	U	0.0095	0.095	0.5	10	30
Nickel	1455	U	< 0.0005	< 0.0005	0.4	10	40
Lead	1455	U	< 0.0005	< 0.0005	0.5	10	50
Antimony	1455	U	< 0.0005	< 0.0005	0.06	0.7	5
Selenium	1455	U	< 0.0005	< 0.0005	0.1	0.5	7
Zinc	1455	U	< 0.003	< 0.003	4	50	200
Chloride	1220	U	< 1.0	< 10	800	15000	25000
Fluoride	1220	U	0.42	4.2	10	150	500
Sulphate	1220	U	2.0	20	1000	20000	50000
Total Dissolved Solids	1020	N	72	710	4000	60000	100000
Phenol Index	1920	U	< 0.030	< 0.30	1	-	-
Dissolved Organic Carbon	1610	U	19	190	500	800	1000

Solid Information	
Dry mass of test portion/kg	0.090
Moisture (%)	11

Waste Acceptance Criteria

Landfill WAC analysis (specifically leaching test results) must not be used for hazardous waste classification purposes. This analysis is only applicable for hazardous waste landfill acceptance and does not give any indication as to whether a waste may be hazardous or non-hazardous.

Results - Single Stage WAC

Project: 5811

					Landfill Waste Acceptance Criteria Limits		
Chemtest Job No:	21-33480						
Chemtest Sample ID:	1286963						
Sample Ref:	ES69						
Sample ID:	1						
Sample Location:	TP12						
Top Depth(m):	0.30						
Bottom Depth(m):	0.30						
Sampling Date:					**Inert Waste Landfill**	**Stable, Non-reactive hazardous waste in non-hazardous Landfill**	**Hazardous Waste Landfill**
Determinand	**SOP**	**Accred.**	**Units**				
Total Organic Carbon	2625	M	%	[A] 4.9	3	5	6
Loss On Ignition	2610	M	%	8.8	--	--	10
Total BTEX	2760	M	mg/kg	[A] < 0.010	6	--	--
Total PCBs (7 Congeners)	2815	M	mg/kg	< 0.10	1	--	--
TPH Total WAC	2670	M	mg/kg	[A] < 10	500	--	--
Total (Of 17) PAH's	2800	N	mg/kg	22	100	--	--
pH	2010	M		8.2	--	>6	--
Acid Neutralisation Capacity	2015	N	mol/kg	< 0.0020	--	To evaluate	To evaluate
Eluate Analysis			**10:1 Eluate mg/l**	**10:1 Eluate mg/kg**	**Limit values for compliance leaching test using BS EN 12457 at L/S 10 l/kg**		
Arsenic	1455	U	0.0017	0.017	0.5	2	25
Barium	1455	U	< 0.005	< 0.0005	20	100	300
Cadmium	1455	U	< 0.00011	< 0.00011	0.04	1	5
Chromium	1455	U	< 0.0005	< 0.0005	0.5	10	70
Copper	1455	U	0.0033	0.033	2	50	100
Mercury	1455	U	< 0.00005	< 0.00005	0.01	0.2	2
Molybdenum	1455	U	0.0042	0.042	0.5	10	30
Nickel	1455	U	0.0006	0.0057	0.4	10	40
Lead	1455	U	< 0.0005	< 0.0005	0.5	10	50
Antimony	1455	U	< 0.0005	< 0.0005	0.06	0.7	5
Selenium	1455	U	< 0.0005	< 0.0005	0.1	0.5	7
Zinc	1455	U	< 0.003	< 0.003	4	50	200
Chloride	1220	U	< 1.0	< 10	800	15000	25000
Fluoride	1220	U	0.27	2.7	10	150	500
Sulphate	1220	U	< 1.0	< 10	1000	20000	50000
Total Dissolved Solids	1020	N	120	1200	4000	60000	100000
Phenol Index	1920	U	< 0.030	< 0.30	1	-	-
Dissolved Organic Carbon	1610	U	6.4	64	500	800	1000

Solid Information	
Dry mass of test portion/kg	0.090
Moisture (%)	6.6

Waste Acceptance Criteria

Landfill WAC analysis (specifically leaching test results) must not be used for hazardous waste classification purposes. This analysis is only applicable for hazardous waste landfill acceptance and does not give any indication as to whether a waste may be hazardous or non-hazardous.

Results - Single Stage WAC

Project: 5811

					Landfill Waste Acceptance Criteria Limits		
Chemtest Job No:	21-33480						
Chemtest Sample ID:	1286964						
Sample Ref:	ES70					Stable, Non-reactive hazardous waste in non-hazardous Landfill	
Sample ID:	2						
Sample Location:	TP12						Hazardous Waste Landfill
Top Depth(m):	1.00				Inert Waste Landfill		
Bottom Depth(m):	1.00						
Sampling Date:							
Determinand	**SOP**	**Accred.**	**Units**				
Total Organic Carbon	2625	M	%	[A] 2.0	3	5	6
Loss On Ignition	2610	M	%	3.2	--	--	10
Total BTEX	2760	M	mg/kg	[A] < 0.010	6	--	--
Total PCBs (7 Congeners)	2815	M	mg/kg	< 0.10	1	--	--
TPH Total WAC	2670	M	mg/kg	[A] < 10	500	--	--
Total (Of 17) PAH's	2800	N	mg/kg	< 2.0	100	--	--
pH	2010	M		8.6	--	>6	--
Acid Neutralisation Capacity	2015	N	mol/kg	0.014	--	To evaluate	To evaluate
Eluate Analysis			**10:1 Eluate mg/l**	**10:1 Eluate mg/kg**	**Limit values for compliance leaching test using BS EN 12457 at L/S 10 l/kg**		
Arsenic	1455	U	0.0016	0.017	0.5	2	25
Barium	1455	U	0.005	0.052	20	100	300
Cadmium	1455	U	< 0.00011	< 0.00011	0.04	1	5
Chromium	1455	U	0.0006	0.0061	0.5	10	70
Copper	1455	U	0.0018	0.018	2	50	100
Mercury	1455	U	< 0.00005	< 0.00005	0.01	0.2	2
Molybdenum	1455	U	0.0050	0.050	0.5	10	30
Nickel	1455	U	< 0.0005	< 0.0005	0.4	10	40
Lead	1455	U	< 0.0005	< 0.0005	0.5	10	50
Antimony	1455	U	0.0006	0.0055	0.06	0.7	5
Selenium	1455	U	< 0.0005	< 0.0005	0.1	0.5	7
Zinc	1455	U	< 0.003	< 0.003	4	50	200
Chloride	1220	U	< 1.0	< 10	800	15000	25000
Fluoride	1220	U	0.23	2.3	10	150	500
Sulphate	1220	U	14	140	1000	20000	50000
Total Dissolved Solids	1020	N	78	780	4000	60000	100000
Phenol Index	1920	U	< 0.030	< 0.30	1	-	-
Dissolved Organic Carbon	1610	U	6.1	61	500	800	1000

Solid Information	
Dry mass of test portion/kg	0.090
Moisture (%)	5.9

Waste Acceptance Criteria

Landfill WAC analysis (specifically leaching test results) must not be used for hazardous waste classification purposes. This analysis is only applicable for hazardous waste landfill acceptance and does not give any indication as to whether a waste may be hazardous or non-hazardous.

Results - Single Stage WAC

Project: 5811

					Landfill Waste Acceptance Criteria Limits		
Chemtest Job No:	21-33504						
Chemtest Sample ID:	1287123						
Sample Ref:	ES1						
Sample ID:	1						
Sample Location:	TP1						
Top Depth(m):	0.30						
Bottom Depth(m):	0.30						
Sampling Date:					**Inert Waste Landfill**	**Stable, Non-reactive hazardous waste in non-hazardous Landfill**	**Hazardous Waste Landfill**
Determinand	**SOP**	**Accred.**	**Units**				
Total Organic Carbon	2625	M	%	[A] 3.5	3	5	6
Loss On Ignition	2610	M	%	6.9	--	--	10
Total BTEX	2760	M	mg/kg	[A] < 0.010	6	--	--
Total PCBs (7 Congeners)	2815	M	mg/kg	< 0.10	1	--	--
TPH Total WAC	2670	M	mg/kg	[A] 23	500	--	--
Total (Of 17) PAH's	2800	N	mg/kg	16	100	--	--
pH	2010	M		8.2	--	>6	--
Acid Neutralisation Capacity	2015	N	mol/kg	0.0040	--	To evaluate	To evaluate
Eluate Analysis			**10:1 Eluate mg/l**	**10:1 Eluate mg/kg**	**Limit values for compliance leaching test using BS EN 12457 at L/S 10 l/kg**		
Arsenic	1455	U	0.011	0.11	0.5	2	25
Barium	1455	U	0.006	0.064	20	100	300
Cadmium	1455	U	0.00020	0.0020	0.04	1	5
Chromium	1455	U	0.0008	0.0085	0.5	10	70
Copper	1455	U	0.0049	0.049	2	50	100
Mercury	1455	U	< 0.00005	< 0.00005	0.01	0.2	2
Molybdenum	1455	U	0.0056	0.056	0.5	10	30
Nickel	1455	U	0.0008	0.0076	0.4	10	40
Lead	1455	U	< 0.0005	< 0.0005	0.5	10	50
Antimony	1455	U	0.0023	0.023	0.06	0.7	5
Selenium	1455	U	0.0012	0.012	0.1	0.5	7
Zinc	1455	U	< 0.003	< 0.003	4	50	200
Chloride	1220	U	< 1.0	< 10	800	15000	25000
Fluoride	1220	U	0.29	2.9	10	150	500
Sulphate	1220	U	< 1.0	< 10	1000	20000	50000
Total Dissolved Solids	1020	N	250	2500	4000	60000	100000
Phenol Index	1920	U	< 0.030	< 0.30	1	-	-
Dissolved Organic Carbon	1610	U	4.6	< 50	500	800	1000

Solid Information	
Dry mass of test portion/kg	0.090
Moisture (%)	7.9

Waste Acceptance Criteria

Landfill WAC analysis (specifically leaching test results) must not be used for hazardous waste classification purposes. This analysis is only applicable for hazardous waste landfill acceptance and does not give any indication as to whether a waste may be hazardous or non-hazardous.

Results - Single Stage WAC

Project: 5811

Chemtest Job No:	21-33504				**Landfill Waste Acceptance Criteria Limits**		
Chemtest Sample ID:	1287124						
Sample Ref:	ES2				**Inert Waste Landfill**	**Stable, Non-reactive hazardous waste in non-hazardous Landfill**	**Hazardous Waste Landfill**
Sample ID:	2						
Sample Location:	TP1						
Top Depth(m):	1.00						
Bottom Depth(m):	1.00						
Sampling Date:							
Determinand	**SOP**	**Accred.**	**Units**				
Total Organic Carbon	2625	M	%	[A] 2.3	3	5	6
Loss On Ignition	2610	M	%	4.7	--	--	10
Total BTEX	2760	M	mg/kg	[A] < 0.010	6	--	--
Total PCBs (7 Congeners)	2815	M	mg/kg	< 0.10	1	--	--
TPH Total WAC	2670	M	mg/kg	[A] < 10	500	--	--
Total (Of 17) PAH's	2800	N	mg/kg	< 2.0	100	--	--
pH	2010	M		8.3	--	>6	--
Acid Neutralisation Capacity	2015	N	mol/kg	0.0060	--	To evaluate	To evaluate
Eluate Analysis			**10:1 Eluate mg/l**	**10:1 Eluate mg/kg**	**Limit values for compliance leaching test using BS EN 12457 at L/S 10 l/kg**		
Arsenic	1455	U	0.0034	0.034	0.5	2	25
Barium	1455	U	< 0.005	< 0.0005	20	100	300
Cadmium	1455	U	0.00022	0.0022	0.04	1	5
Chromium	1455	U	0.0006	0.0056	0.5	10	70
Copper	1455	U	0.0020	0.020	2	50	100
Mercury	1455	U	< 0.00005	< 0.00005	0.01	0.2	2
Molybdenum	1455	U	0.048	0.48	0.5	10	30
Nickel	1455	U	< 0.0005	< 0.0005	0.4	10	40
Lead	1455	U	< 0.0005	< 0.0005	0.5	10	50
Antimony	1455	U	0.0018	0.018	0.06	0.7	5
Selenium	1455	U	0.0010	0.0099	0.1	0.5	7
Zinc	1455	U	< 0.003	< 0.003	4	50	200
Chloride	1220	U	< 1.0	< 10	800	15000	25000
Fluoride	1220	U	0.24	2.4	10	150	500
Sulphate	1220	U	< 1.0	< 10	1000	20000	50000
Total Dissolved Solids	1020	N	110	1100	4000	60000	100000
Phenol Index	1920	U	< 0.030	< 0.30	1	-	-
Dissolved Organic Carbon	1610	U	4.4	< 50	500	800	1000

Solid Information	
Dry mass of test portion/kg	0.090
Moisture (%)	3.9

Waste Acceptance Criteria

Landfill WAC analysis (specifically leaching test results) must not be used for hazardous waste classification purposes. This analysis is only applicable for hazardous waste landfill acceptance and does not give any indication as to whether a waste may be hazardous or non-hazardous.

Results - Single Stage WAC

Project: 5811

Chemtest Job No:	21-33504				**Landfill Waste Acceptance Criteria Limits**		
Chemtest Sample ID:	1287125						
Sample Ref:	ES3				**Inert Waste Landfill**	**Stable, Non-reactive hazardous waste in non-hazardous Landfill**	**Hazardous Waste Landfill**
Sample ID:	1						
Sample Location:	TP2						
Top Depth(m):	0.20						
Bottom Depth(m):	0.20						
Sampling Date:							
Determinand	**SOP**	**Accred.**	**Units**				
Total Organic Carbon	2625	M	%	[A] 15	3	5	6
Loss On Ignition	2610	M	%	14	--	--	10
Total BTEX	2760	M	mg/kg	[A] < 0.010	6	--	--
Total PCBs (7 Congeners)	2815	M	mg/kg	< 0.10	1	--	--
TPH Total WAC	2670	M	mg/kg	[A] < 10	500	--	--
Total (Of 17) PAH's	2800	N	mg/kg	< 2.0	100	--	--
pH	2010	M		8.3	--	>6	--
Acid Neutralisation Capacity	2015	N	mol/kg	< 0.0020	--	To evaluate	To evaluate
Eluate Analysis			**10:1 Eluate mg/l**	**10:1 Eluate mg/kg**	**Limit values for compliance leaching test using BS EN 12457 at L/S 10 l/kg**		
Arsenic	1455	U	0.010	0.10	0.5	2	25
Barium	1455	U	0.013	0.13	20	100	300
Cadmium	1455	U	0.00021	0.0021	0.04	1	5
Chromium	1455	U	0.0006	0.0056	0.5	10	70
Copper	1455	U	0.0040	0.040	2	50	100
Mercury	1455	U	< 0.00005	< 0.00005	0.01	0.2	2
Molybdenum	1455	U	0.0049	0.049	0.5	10	30
Nickel	1455	U	0.0011	0.011	0.4	10	40
Lead	1455	U	0.0019	0.019	0.5	10	50
Antimony	1455	U	0.0018	0.018	0.06	0.7	5
Selenium	1455	U	0.0011	0.012	0.1	0.5	7
Zinc	1455	U	0.003	0.034	4	50	200
Chloride	1220	U	< 1.0	< 10	800	15000	25000
Fluoride	1220	U	0.16	1.6	10	150	500
Sulphate	1220	U	< 1.0	< 10	1000	20000	50000
Total Dissolved Solids	1020	N	190	1900	4000	60000	100000
Phenol Index	1920	U	< 0.030	< 0.30	1	-	-
Dissolved Organic Carbon	1610	U	5.5	55	500	800	1000

Solid Information	
Dry mass of test portion/kg	0.090
Moisture (%)	4.5

Waste Acceptance Criteria

Landfill WAC analysis (specifically leaching test results) must not be used for hazardous waste classification purposes. This analysis is only applicable for hazardous waste landfill acceptance and does not give any indication as to whether a waste may be hazardous or non-hazardous.

Results - Single Stage WAC

Project: 5811

Chemtest Job No:	21-33504				Landfill Waste Acceptance Criteria Limits		
Chemtest Sample ID:	1287126						
Sample Ref:	ES4				Inert Waste Landfill	Stable, Non-reactive hazardous waste in non-hazardous Landfill	Hazardous Waste Landfill
Sample ID:	2						
Sample Location:	TP2						
Top Depth(m):	1.40						
Bottom Depth(m):	1.40						
Sampling Date:							
Determinand	**SOP**	**Accred.**	**Units**				
Total Organic Carbon	2625	M	%	[A] 4.6	3	5	6
Loss On Ignition	2610	M	%	5.7	--	--	10
Total BTEX	2760	M	mg/kg	[A] < 0.010	6	--	--
Total PCBs (7 Congeners)	2815	M	mg/kg	< 0.10	1	--	--
TPH Total WAC	2670	M	mg/kg	[A] < 10	500	--	--
Total (Of 17) PAH's	2800	N	mg/kg	38	100	--	--
pH	2010	M		8.6	--	>6	--
Acid Neutralisation Capacity	2015	N	mol/kg	0.0070	--	To evaluate	To evaluate
Eluate Analysis			**10:1 Eluate mg/l**	**10:1 Eluate mg/kg**	**Limit values for compliance leaching test using BS EN 12457 at L/S 10 l/kg**		
Arsenic	1455	U	0.0013	0.013	0.5	2	25
Barium	1455	U	0.013	0.13	20	100	300
Cadmium	1455	U	0.00017	0.0017	0.04	1	5
Chromium	1455	U	0.0025	0.025	0.5	10	70
Copper	1455	U	0.018	0.18	2	50	100
Mercury	1455	U	< 0.00005	< 0.00005	0.01	0.2	2
Molybdenum	1455	U	0.023	0.23	0.5	10	30
Nickel	1455	U	0.0020	0.020	0.4	10	40
Lead	1455	U	0.0005	0.0052	0.5	10	50
Antimony	1455	U	0.0011	0.011	0.06	0.7	5
Selenium	1455	U	0.0019	0.019	0.1	0.5	7
Zinc	1455	U	< 0.003	< 0.003	4	50	200
Chloride	1220	U	6.7	67	800	15000	25000
Fluoride	1220	U	0.22	2.2	10	150	500
Sulphate	1220	U	15	150	1000	20000	50000
Total Dissolved Solids	1020	N	420	4200	4000	60000	100000
Phenol Index	1920	U	< 0.030	< 0.30	1	-	-
Dissolved Organic Carbon	1610	U	5.3	53	500	800	1000

Solid Information	
Dry mass of test portion/kg	0.090
Moisture (%)	6.9

Waste Acceptance Criteria

Landfill WAC analysis (specifically leaching test results) must not be used for hazardous waste classification purposes. This analysis is only applicable for hazardous waste landfill acceptance and does not give any indication as to whether a waste may be hazardous or non-hazardous.

Results - Single Stage WAC

Project: 5811

					Landfill Waste Acceptance Criteria Limits		
Chemtest Job No:	21-33504						
Chemtest Sample ID:	1287127						
Sample Ref:	ES5						
Sample ID:	1						
Sample Location:	TP3						
Top Depth(m):	0.30						
Bottom Depth(m):	0.30						
Sampling Date:					Inert Waste Landfill	Stable, Non-reactive hazardous waste in non-hazardous Landfill	Hazardous Waste Landfill
Determinand	**SOP**	**Accred.**	**Units**				
Total Organic Carbon	2625	M	%	[A] 4.5	3	5	6
Loss On Ignition	2610	M	%	8.6	--	--	10
Total BTEX	2760	M	mg/kg	[A] < 0.010	6	--	--
Total PCBs (7 Congeners)	2815	M	mg/kg	< 0.10	1	--	--
TPH Total WAC	2670	M	mg/kg	[A] < 10	500	--	--
Total (Of 17) PAH's	2800	N	mg/kg	61	100	--	--
pH	2010	M		8.4	--	>6	--
Acid Neutralisation Capacity	2015	N	mol/kg	< 0.0020	--	To evaluate	To evaluate
Eluate Analysis			**10:1 Eluate mg/l**	**10:1 Eluate mg/kg**	**Limit values for compliance leaching test using BS EN 12457 at L/S 10 l/kg**		
Arsenic	1455	U	0.0061	0.061	0.5	2	25
Barium	1455	U	0.008	0.085	20	100	300
Cadmium	1455	U	0.00016	0.0016	0.04	1	5
Chromium	1455	U	0.0006	0.0058	0.5	10	70
Copper	1455	U	0.0043	0.043	2	50	100
Mercury	1455	U	< 0.00005	< 0.00005	0.01	0.2	2
Molybdenum	1455	U	0.0041	0.042	0.5	10	30
Nickel	1455	U	0.0008	0.0079	0.4	10	40
Lead	1455	U	< 0.0005	< 0.0005	0.5	10	50
Antimony	1455	U	0.0016	0.016	0.06	0.7	5
Selenium	1455	U	0.0009	0.0085	0.1	0.5	7
Zinc	1455	U	< 0.003	< 0.003	4	50	200
Chloride	1220	U	< 1.0	< 10	800	15000	25000
Fluoride	1220	U	0.19	1.9	10	150	500
Sulphate	1220	U	< 1.0	< 10	1000	20000	50000
Total Dissolved Solids	1020	N	140	1400	4000	60000	100000
Phenol Index	1920	U	< 0.030	< 0.30	1	-	-
Dissolved Organic Carbon	1610	U	5.7	57	500	800	1000

Solid Information	
Dry mass of test portion/kg	0.090
Moisture (%)	7.2

Waste Acceptance Criteria

Landfill WAC analysis (specifically leaching test results) must not be used for hazardous waste classification purposes. This analysis is only applicable for hazardous waste landfill acceptance and does not give any indication as to whether a waste may be hazardous or non-hazardous.

Results - Single Stage WAC

Project: 5811

					Landfill Waste Acceptance Criteria Limits		
Chemtest Job No:	21-33504						
Chemtest Sample ID:	1287128						
Sample Ref:	ES6						
Sample ID:	2						
Sample Location:	TP3						
Top Depth(m):	1.20						
Bottom Depth(m):	1.20						
Sampling Date:					**Inert Waste Landfill**	**Stable, Non-reactive hazardous waste in non-hazardous Landfill**	**Hazardous Waste Landfill**
Determinand	**SOP**	**Accred.**	**Units**				
Total Organic Carbon	2625	M	%	[A] 4.9	3	5	6
Loss On Ignition	2610	M	%	7.7	--	--	10
Total BTEX	2760	M	mg/kg	[A] < 0.010	6	--	--
Total PCBs (7 Congeners)	2815	M	mg/kg	< 0.10	1	--	--
TPH Total WAC	2670	M	mg/kg	[A] 160	500	--	--
Total (Of 17) PAH's	2800	N	mg/kg	79	100	--	--
pH	2010	M		8.4	--	>6	--
Acid Neutralisation Capacity	2015	N	mol/kg	< 0.0020	--	To evaluate	To evaluate
Eluate Analysis			**10:1 Eluate mg/l**	**10:1 Eluate mg/kg**	**Limit values for compliance leaching test using BS EN 12457 at L/S 10 l/kg**		
Arsenic	1455	U	0.0050	0.050	0.5	2	25
Barium	1455	U	< 0.005	< 0.0005	20	100	300
Cadmium	1455	U	0.00017	0.0017	0.04	1	5
Chromium	1455	U	0.0006	0.0060	0.5	10	70
Copper	1455	U	0.0045	0.045	2	50	100
Mercury	1455	U	< 0.00005	< 0.00005	0.01	0.2	2
Molybdenum	1455	U	0.018	0.18	0.5	10	30
Nickel	1455	U	0.0015	0.015	0.4	10	40
Lead	1455	U	0.0010	0.010	0.5	10	50
Antimony	1455	U	0.0022	0.022	0.06	0.7	5
Selenium	1455	U	0.0010	0.0098	0.1	0.5	7
Zinc	1455	U	0.003	0.026	4	50	200
Chloride	1220	U	< 1.0	< 10	800	15000	25000
Fluoride	1220	U	0.16	1.6	10	150	500
Sulphate	1220	U	1.4	14	1000	20000	50000
Total Dissolved Solids	1020	N	98	980	4000	60000	100000
Phenol Index	1920	U	< 0.030	< 0.30	1	-	-
Dissolved Organic Carbon	1610	U	7.9	79	500	800	1000

Solid Information	
Dry mass of test portion/kg	0.090
Moisture (%)	6.8

Waste Acceptance Criteria

Landfill WAC analysis (specifically leaching test results) must not be used for hazardous waste classification purposes. This analysis is only applicable for hazardous waste landfill acceptance and does not give any indication as to whether a waste may be hazardous or non-hazardous.

Results - Single Stage WAC

Project: 5811

					Landfill Waste Acceptance Criteria Limits		
Chemtest Job No:	21-33504						
Chemtest Sample ID:	1287129						
Sample Ref:	ES7				Inert Waste Landfill	Stable, Non-reactive hazardous waste in non-hazardous Landfill	Hazardous Waste Landfill
Sample ID:	1						
Sample Location:	TP4						
Top Depth(m):	0.40						
Bottom Depth(m):	0.40						
Sampling Date:							
Determinand	**SOP**	**Accred.**	**Units**				
Total Organic Carbon	2625	M	%	[A] 5.4	3	5	6
Loss On Ignition	2610	M	%	5.2	--	--	10
Total BTEX	2760	M	mg/kg	[A] < 0.010	6	--	--
Total PCBs (7 Congeners)	2815	M	mg/kg	< 0.10	1	--	--
TPH Total WAC	2670	M	mg/kg	[A] < 10	500	--	--
Total (Of 17) PAH's	2800	N	mg/kg	2.2	100	--	--
pH	2010	M		8.5	--	>6	--
Acid Neutralisation Capacity	2015	N	mol/kg	0.0070	--	To evaluate	To evaluate
Eluate Analysis			**10:1 Eluate mg/l**	**10:1 Eluate mg/kg**	**Limit values for compliance leaching test using BS EN 12457 at L/S 10 l/kg**		
Arsenic	1455	U	0.0007	0.0067	0.5	2	25
Barium	1455	U	0.022	0.22	20	100	300
Cadmium	1455	U	< 0.00011	< 0.00011	0.04	1	5
Chromium	1455	U	< 0.0005	< 0.0005	0.5	10	70
Copper	1455	U	0.0015	0.015	2	50	100
Mercury	1455	U	< 0.00005	< 0.00005	0.01	0.2	2
Molybdenum	1455	U	0.034	0.34	0.5	10	30
Nickel	1455	U	< 0.0005	< 0.0005	0.4	10	40
Lead	1455	U	< 0.0005	< 0.0005	0.5	10	50
Antimony	1455	U	0.0006	0.0063	0.06	0.7	5
Selenium	1455	U	0.0014	0.014	0.1	0.5	7
Zinc	1455	U	< 0.003	< 0.003	4	50	200
Chloride	1220	U	< 1.0	< 10	800	15000	25000
Fluoride	1220	U	0.43	4.3	10	150	500
Sulphate	1220	U	4.7	47	1000	20000	50000
Total Dissolved Solids	1020	N	100	1000	4000	60000	100000
Phenol Index	1920	U	< 0.030	< 0.30	1	-	-
Dissolved Organic Carbon	1610	U	5.4	54	500	800	1000

Solid Information	
Dry mass of test portion/kg	0.090
Moisture (%)	3.6

Waste Acceptance Criteria

Landfill WAC analysis (specifically leaching test results) must not be used for hazardous waste classification purposes. This analysis is only applicable for hazardous waste landfill acceptance and does not give any indication as to whether a waste may be hazardous or non-hazardous.

Results - Single Stage WAC

Project: 5811

					Landfill Waste Acceptance Criteria Limits		
Chemtest Job No:	21-33504						
Chemtest Sample ID:	1287130						
Sample Ref:	ES8						
Sample ID:	2						
Sample Location:	TP4						
Top Depth(m):	1.50						
Bottom Depth(m):	1.50						
Sampling Date:					**Inert Waste Landfill**	**Stable, Non-reactive hazardous waste in non-hazardous Landfill**	**Hazardous Waste Landfill**
Determinand	**SOP**	**Accred.**	**Units**				
Total Organic Carbon	2625	M	%	[A] 1.5	3	5	6
Loss On Ignition	2610	M	%	4.6	--	--	10
Total BTEX	2760	M	mg/kg	[A] < 0.010	6	--	--
Total PCBs (7 Congeners)	2815	M	mg/kg	< 0.10	1	--	--
TPH Total WAC	2670	M	mg/kg	[A] < 10	500	--	--
Total (Of 17) PAH's	2800	N	mg/kg	< 2.0	100	--	--
pH	2010	M		8.6	--	>6	--
Acid Neutralisation Capacity	2015	N	mol/kg	0.057	--	To evaluate	To evaluate
Eluate Analysis			**10:1 Eluate mg/l**	**10:1 Eluate mg/kg**	**Limit values for compliance leaching test using BS EN 12457 at L/S 10 l/kg**		
Arsenic	1455	U	0.0015	0.015	0.5	2	25
Barium	1455	U	0.008	0.082	20	100	300
Cadmium	1455	U	< 0.00011	< 0.00011	0.04	1	5
Chromium	1455	U	< 0.0005	< 0.0005	0.5	10	70
Copper	1455	U	0.0016	0.016	2	50	100
Mercury	1455	U	< 0.00005	< 0.00005	0.01	0.2	2
Molybdenum	1455	U	0.021	0.21	0.5	10	30
Nickel	1455	U	0.0006	0.0059	0.4	10	40
Lead	1455	U	< 0.0005	< 0.0005	0.5	10	50
Antimony	1455	U	0.0006	0.0061	0.06	0.7	5
Selenium	1455	U	0.0006	0.0057	0.1	0.5	7
Zinc	1455	U	< 0.003	< 0.003	4	50	200
Chloride	1220	U	< 1.0	< 10	800	15000	25000
Fluoride	1220	U	0.31	3.1	10	150	500
Sulphate	1220	U	3.2	32	1000	20000	50000
Total Dissolved Solids	1020	N	110	1100	4000	60000	100000
Phenol Index	1920	U	< 0.030	< 0.30	1	-	-
Dissolved Organic Carbon	1610	U	3.0	< 50	500	800	1000

Solid Information	
Dry mass of test portion/kg	0.090
Moisture (%)	2.9

Waste Acceptance Criteria

Landfill WAC analysis (specifically leaching test results) must not be used for hazardous waste classification purposes. This analysis is only applicable for hazardous waste landfill acceptance and does not give any indication as to whether a waste may be hazardous or non-hazardous.

Results - Single Stage WAC

Project: 5811

Chemtest Job No:	21-33504				Landfill Waste Acceptance Criteria Limits		
Chemtest Sample ID:	1287131						
Sample Ref:	ES9				Inert Waste Landfill	Stable, Non-reactive hazardous waste in non-hazardous Landfill	Hazardous Waste Landfill
Sample ID:	1						
Sample Location:	TP7						
Top Depth(m):	0.30						
Bottom Depth(m):	0.30						
Sampling Date:							
Determinand	**SOP**	**Accred.**	**Units**				
Total Organic Carbon	2625	M	%	[A] 4.0	3	5	6
Loss On Ignition	2610	M	%	9.0	--	--	10
Total BTEX	2760	M	mg/kg	[A] < 0.010	6	--	--
Total PCBs (7 Congeners)	2815	M	mg/kg	< 0.10	1	--	--
TPH Total WAC	2670	M	mg/kg	[A] 88	500	--	--
Total (Of 17) PAH's	2800	N	mg/kg	9.3	100	--	--
pH	2010	M		8.3	--	>6	--
Acid Neutralisation Capacity	2015	N	mol/kg	0.014	--	To evaluate	To evaluate
Eluate Analysis			**10:1 Eluate mg/l**	**10:1 Eluate mg/kg**	**Limit values for compliance leaching test using BS EN 12457 at L/S 10 l/kg**		
Arsenic	1455	U	0.0057	0.057	0.5	2	25
Barium	1455	U	0.013	0.13	20	100	300
Cadmium	1455	U	< 0.00011	< 0.00011	0.04	1	5
Chromium	1455	U	< 0.0005	< 0.0005	0.5	10	70
Copper	1455	U	0.0061	0.061	2	50	100
Mercury	1455	U	< 0.00005	< 0.00005	0.01	0.2	2
Molybdenum	1455	U	0.0050	0.050	0.5	10	30
Nickel	1455	U	0.0011	0.011	0.4	10	40
Lead	1455	U	< 0.0005	< 0.0005	0.5	10	50
Antimony	1455	U	0.0006	0.0056	0.06	0.7	5
Selenium	1455	U	0.0007	0.0072	0.1	0.5	7
Zinc	1455	U	0.003	0.034	4	50	200
Chloride	1220	U	2.0	20	800	15000	25000
Fluoride	1220	U	0.22	2.2	10	150	500
Sulphate	1220	U	< 1.0	< 10	1000	20000	50000
Total Dissolved Solids	1020	N	180	1800	4000	60000	100000
Phenol Index	1920	U	< 0.030	< 0.30	1	-	-
Dissolved Organic Carbon	1610	U	6.3	63	500	800	1000

Solid Information	
Dry mass of test portion/kg	0.090
Moisture (%)	7.4

Waste Acceptance Criteria

Landfill WAC analysis (specifically leaching test results) must not be used for hazardous waste classification purposes. This analysis is only applicable for hazardous waste landfill acceptance and does not give any indication as to whether a waste may be hazardous or non-hazardous.

Results - Single Stage WAC

Project: 5811

Chemtest Job No:	21-33504				**Landfill Waste Acceptance Criteria Limits**		
Chemtest Sample ID:	1287132						
Sample Ref:	ES10				**Inert Waste Landfill**	**Stable, Non-reactive hazardous waste in non-hazardous Landfill**	**Hazardous Waste Landfill**
Sample ID:	2						
Sample Location:	TP7						
Top Depth(m):	1.00						
Bottom Depth(m):	1.00						
Sampling Date:							
Determinand	**SOP**	**Accred.**	**Units**				
Total Organic Carbon	2625	M	%	[A] 1.5	3	5	6
Loss On Ignition	2610	M	%	12	--	--	10
Total BTEX	2760	M	mg/kg	[A] < 0.010	6	--	--
Total PCBs (7 Congeners)	2815	M	mg/kg	< 0.10	1	--	--
TPH Total WAC	2670	M	mg/kg	[A] 98	500	--	--
Total (Of 17) PAH's	2800	N	mg/kg	< 2.0	100	--	--
pH	2010	M		8.6	--	>6	--
Acid Neutralisation Capacity	2015	N	mol/kg	< 0.0020	--	To evaluate	To evaluate
Eluate Analysis			**10:1 Eluate mg/l**	**10:1 Eluate mg/kg**	**Limit values for compliance leaching test using BS EN 12457 at L/S 10 l/kg**		
Arsenic	1455	U	0.0055	0.055	0.5	2	25
Barium	1455	U	< 0.005	< 0.0005	20	100	300
Cadmium	1455	U	< 0.00011	< 0.00011	0.04	1	5
Chromium	1455	U	0.0011	0.011	0.5	10	70
Copper	1455	U	0.0028	0.028	2	50	100
Mercury	1455	U	< 0.00005	< 0.00005	0.01	0.2	2
Molybdenum	1455	U	0.020	0.20	0.5	10	30
Nickel	1455	U	< 0.0005	< 0.0005	0.4	10	40
Lead	1455	U	< 0.0005	< 0.0005	0.5	10	50
Antimony	1455	U	0.0016	0.016	0.06	0.7	5
Selenium	1455	U	0.0010	0.0097	0.1	0.5	7
Zinc	1455	U	< 0.003	< 0.003	4	50	200
Chloride	1220	U	< 1.0	< 10	800	15000	25000
Fluoride	1220	U	0.47	4.7	10	150	500
Sulphate	1220	U	< 1.0	< 10	1000	20000	50000
Total Dissolved Solids	1020	N	120	1200	4000	60000	100000
Phenol Index	1920	U	< 0.030	< 0.30	1	-	-
Dissolved Organic Carbon	1610	U	3.8	< 50	500	800	1000

Solid Information	
Dry mass of test portion/kg	0.090
Moisture (%)	8.2

Waste Acceptance Criteria

Landfill WAC analysis (specifically leaching test results) must not be used for hazardous waste classification purposes. This analysis is only applicable for hazardous waste landfill acceptance and does not give any indication as to whether a waste may be hazardous or non-hazardous.

Results - Single Stage WAC

Project: 5811

					Landfill Waste Acceptance Criteria Limits		
Chemtest Job No:	21-33504						
Chemtest Sample ID:	1287133						
Sample Ref:	ES11						
Sample ID:	1						
Sample Location:	TP8						
Top Depth(m):	0.30						
Bottom Depth(m):	0.30						
Sampling Date:					**Inert Waste Landfill**	**Stable, Non-reactive hazardous waste in non-hazardous Landfill**	**Hazardous Waste Landfill**
Determinand	**SOP**	**Accred.**	**Units**				
Total Organic Carbon	2625	M	%	[A] 6.6	3	5	6
Loss On Ignition	2610	M	%	10	--	--	10
Total BTEX	2760	M	mg/kg	[A] < 0.010	6	--	--
Total PCBs (7 Congeners)	2815	M	mg/kg	< 0.10	1	--	--
TPH Total WAC	2670	M	mg/kg	[A] < 10	500	--	--
Total (Of 17) PAH's	2800	N	mg/kg	12	100	--	--
pH	2010	M		8.3	--	>6	--
Acid Neutralisation Capacity	2015	N	mol/kg	0.0070	--	To evaluate	To evaluate
Eluate Analysis			**10:1 Eluate mg/l**	**10:1 Eluate mg/kg**	**Limit values for compliance leaching test using BS EN 12457 at L/S 10 l/kg**		
Arsenic	1455	U	0.014	0.14	0.5	2	25
Barium	1455	U	0.006	0.063	20	100	300
Cadmium	1455	U	< 0.00011	< 0.00011	0.04	1	5
Chromium	1455	U	< 0.0005	< 0.0005	0.5	10	70
Copper	1455	U	0.0030	0.030	2	50	100
Mercury	1455	U	< 0.00005	< 0.00005	0.01	0.2	2
Molybdenum	1455	U	0.011	0.11	0.5	10	30
Nickel	1455	U	0.0005	0.0054	0.4	10	40
Lead	1455	U	< 0.0005	< 0.0005	0.5	10	50
Antimony	1455	U	0.0031	0.031	0.06	0.7	5
Selenium	1455	U	0.0010	0.0097	0.1	0.5	7
Zinc	1455	U	< 0.003	< 0.003	4	50	200
Chloride	1220	U	< 1.0	< 10	800	15000	25000
Fluoride	1220	U	0.29	2.9	10	150	500
Sulphate	1220	U	< 1.0	< 10	1000	20000	50000
Total Dissolved Solids	1020	N	120	1200	4000	60000	100000
Phenol Index	1920	U	< 0.030	< 0.30	1	-	-
Dissolved Organic Carbon	1610	U	3.9	< 50	500	800	1000

Solid Information	
Dry mass of test portion/kg	0.090
Moisture (%)	8.4

Waste Acceptance Criteria

Landfill WAC analysis (specifically leaching test results) must not be used for hazardous waste classification purposes. This analysis is only applicable for hazardous waste landfill acceptance and does not give any indication as to whether a waste may be hazardous or non-hazardous.

Results - Single Stage WAC

Project: 5811

					Landfill Waste Acceptance Criteria Limits		
Chemtest Job No:	21-33504						
Chemtest Sample ID:	1287134						
Sample Ref:	ES12						
Sample ID:	2						
Sample Location:	TP8						
Top Depth(m):	1.00						
Bottom Depth(m):	1.00						
Sampling Date:					**Inert Waste Landfill**	**Stable, Non-reactive hazardous waste in non-hazardous Landfill**	**Hazardous Waste Landfill**
Determinand	**SOP**	**Accred.**	**Units**				
Total Organic Carbon	2625	M	%	[A] 1.8	3	5	6
Loss On Ignition	2610	M	%	2.9	--	--	10
Total BTEX	2760	M	mg/kg	[A] < 0.010	6	--	--
Total PCBs (7 Congeners)	2815	M	mg/kg	< 0.10	1	--	--
TPH Total WAC	2670	M	mg/kg	[A] < 10	500	--	--
Total (Of 17) PAH's	2800	N	mg/kg	< 2.0	100	--	--
pH	2010	M		8.4	--	>6	--
Acid Neutralisation Capacity	2015	N	mol/kg	0.0070	--	To evaluate	To evaluate
Eluate Analysis			**10:1 Eluate mg/l**	**10:1 Eluate mg/kg**	**Limit values for compliance leaching test using BS EN 12457 at L/S 10 l/kg**		
Arsenic	1455	U	0.0010	0.0098	0.5	2	25
Barium	1455	U	< 0.005	< 0.0005	20	100	300
Cadmium	1455	U	< 0.00011	< 0.00011	0.04	1	5
Chromium	1455	U	0.0010	0.010	0.5	10	70
Copper	1455	U	0.0010	0.010	2	50	100
Mercury	1455	U	< 0.00005	< 0.00005	0.01	0.2	2
Molybdenum	1455	U	0.018	0.18	0.5	10	30
Nickel	1455	U	< 0.0005	< 0.0005	0.4	10	40
Lead	1455	U	< 0.0005	< 0.0005	0.5	10	50
Antimony	1455	U	0.0007	0.0072	0.06	0.7	5
Selenium	1455	U	< 0.0005	< 0.0005	0.1	0.5	7
Zinc	1455	U	< 0.003	< 0.003	4	50	200
Chloride	1220	U	< 1.0	< 10	800	15000	25000
Fluoride	1220	U	0.23	2.3	10	150	500
Sulphate	1220	U	1.1	11	1000	20000	50000
Total Dissolved Solids	1020	N	78	780	4000	60000	100000
Phenol Index	1920	U	< 0.030	< 0.30	1	-	-
Dissolved Organic Carbon	1610	U	3.4	< 50	500	800	1000

Solid Information	
Dry mass of test portion/kg	0.090
Moisture (%)	12

Waste Acceptance Criteria

Landfill WAC analysis (specifically leaching test results) must not be used for hazardous waste classification purposes. This analysis is only applicable for hazardous waste landfill acceptance and does not give any indication as to whether a waste may be hazardous or non-hazardous.

Results - Single Stage WAC

Project: 5811

Chemtest Job No:	21-33504				**Landfill Waste Acceptance Criteria Limits**		
Chemtest Sample ID:	1287135						
Sample Ref:	ES13				**Inert Waste Landfill**	**Stable, Non-reactive hazardous waste in non-hazardous Landfill**	**Hazardous Waste Landfill**
Sample ID:	1						
Sample Location:	TP13						
Top Depth(m):	0.30						
Bottom Depth(m):	0.30						
Sampling Date:							
Determinand	**SOP**	**Accred.**	**Units**				
Total Organic Carbon	2625	M	%	[A] 1.8	3	5	6
Loss On Ignition	2610	M	%	4.6	--	--	10
Total BTEX	2760	M	mg/kg	[A] < 0.010	6	--	--
Total PCBs (7 Congeners)	2815	M	mg/kg	< 0.10	1	--	--
TPH Total WAC	2670	M	mg/kg	[A] 130	500	--	--
Total (Of 17) PAH's	2800	N	mg/kg	< 2.0	100	--	--
pH	2010	M		8.6	--	>6	--
Acid Neutralisation Capacity	2015	N	mol/kg	0.014	--	To evaluate	To evaluate
Eluate Analysis			**10:1 Eluate mg/l**	**10:1 Eluate mg/kg**	**Limit values for compliance leaching test using BS EN 12457 at L/S 10 l/kg**		
Arsenic	1455	U	0.0006	0.0063	0.5	2	25
Barium	1455	U	< 0.005	< 0.0005	20	100	300
Cadmium	1455	U	< 0.00011	< 0.00011	0.04	1	5
Chromium	1455	U	< 0.0005	< 0.0005	0.5	10	70
Copper	1455	U	0.0020	0.020	2	50	100
Mercury	1455	U	< 0.00005	< 0.00005	0.01	0.2	2
Molybdenum	1455	U	0.0063	0.063	0.5	10	30
Nickel	1455	U	< 0.0005	< 0.0005	0.4	10	40
Lead	1455	U	< 0.0005	< 0.0005	0.5	10	50
Antimony	1455	U	0.0005	0.0052	0.06	0.7	5
Selenium	1455	U	0.0006	0.0062	0.1	0.5	7
Zinc	1455	U	< 0.003	< 0.003	4	50	200
Chloride	1220	U	< 1.0	< 10	800	15000	25000
Fluoride	1220	U	0.32	3.2	10	150	500
Sulphate	1220	U	< 1.0	< 10	1000	20000	50000
Total Dissolved Solids	1020	N	72	720	4000	60000	100000
Phenol Index	1920	U	< 0.030	< 0.30	1	-	-
Dissolved Organic Carbon	1610	U	5.4	54	500	800	1000

Solid Information	
Dry mass of test portion/kg	0.090
Moisture (%)	5.1

Waste Acceptance Criteria

Landfill WAC analysis (specifically leaching test results) must not be used for hazardous waste classification purposes. This analysis is only applicable for hazardous waste landfill acceptance and does not give any indication as to whether a waste may be hazardous or non-hazardous.

Results - Single Stage WAC

Project: 5811

Chemtest Job No:	21-33504				**Landfill Waste Acceptance Criteria Limits**		
Chemtest Sample ID:	1287136						
Sample Ref:	ES14				**Inert Waste Landfill**	**Stable, Non-reactive hazardous waste in non-hazardous Landfill**	**Hazardous Waste Landfill**
Sample ID:	2						
Sample Location:	TP13						
Top Depth(m):	1.00						
Bottom Depth(m):	1.00						
Sampling Date:							
Determinand	**SOP**	**Accred.**	**Units**				
Total Organic Carbon	2625	M	%	[A] 2.4	3	5	6
Loss On Ignition	2610	M	%	2.2	--	--	10
Total BTEX	2760	M	mg/kg	[A] < 0.010	6	--	--
Total PCBs (7 Congeners)	2815	M	mg/kg	< 0.10	1	--	--
TPH Total WAC	2670	M	mg/kg	[A] < 10	500	--	--
Total (Of 17) PAH's	2800	N	mg/kg	< 2.0	100	--	--
pH	2010	M		8.8	--	>6	--
Acid Neutralisation Capacity	2015	N	mol/kg	0.0060	--	To evaluate	To evaluate
Eluate Analysis			**10:1 Eluate mg/l**	**10:1 Eluate mg/kg**	**Limit values for compliance leaching test using BS EN 12457 at L/S 10 l/kg**		
Arsenic	1455	U	0.0005	0.0050	0.5	2	25
Barium	1455	U	< 0.005	< 0.0005	20	100	300
Cadmium	1455	U	< 0.00011	< 0.00011	0.04	1	5
Chromium	1455	U	0.0006	0.0061	0.5	10	70
Copper	1455	U	0.0008	0.0080	2	50	100
Mercury	1455	U	< 0.00005	< 0.00005	0.01	0.2	2
Molybdenum	1455	U	0.0045	0.045	0.5	10	30
Nickel	1455	U	< 0.0005	< 0.0005	0.4	10	40
Lead	1455	U	< 0.0005	< 0.0005	0.5	10	50
Antimony	1455	U	< 0.0005	< 0.0005	0.06	0.7	5
Selenium	1455	U	0.0006	0.0058	0.1	0.5	7
Zinc	1455	U	< 0.003	< 0.003	4	50	200
Chloride	1220	U	< 1.0	< 10	800	15000	25000
Fluoride	1220	U	0.36	3.6	10	150	500
Sulphate	1220	U	2.4	24	1000	20000	50000
Total Dissolved Solids	1020	N	72	720	4000	60000	100000
Phenol Index	1920	U	< 0.030	< 0.30	1	-	-
Dissolved Organic Carbon	1610	U	2.5	< 50	500	800	1000

Solid Information	
Dry mass of test portion/kg	0.090
Moisture (%)	2.4

Waste Acceptance Criteria

Landfill WAC analysis (specifically leaching test results) must not be used for hazardous waste classification purposes. This analysis is only applicable for hazardous waste landfill acceptance and does not give any indication as to whether a waste may be hazardous or non-hazardous.

Results - Single Stage WAC

Project: 5811

					Landfill Waste Acceptance Criteria Limits		
Chemtest Job No:	21-33504						
Chemtest Sample ID:	1287137						
Sample Ref:	ES15						
Sample ID:	1						
Sample Location:	TP14						
Top Depth(m):	0.30						
Bottom Depth(m):	0.30						
Sampling Date:					**Inert Waste Landfill**	**Stable, Non-reactive hazardous waste in non-hazardous Landfill**	**Hazardous Waste Landfill**
Determinand	**SOP**	**Accred.**	**Units**				
Total Organic Carbon	2625	M	%	[A] 3.7	3	5	6
Loss On Ignition	2610	M	%	7.9	--	--	10
Total BTEX	2760	M	mg/kg	[A] < 0.010	6	--	--
Total PCBs (7 Congeners)	2815	M	mg/kg	< 0.10	1	--	--
TPH Total WAC	2670	M	mg/kg	[A] 79	500	--	--
Total (Of 17) PAH's	2800	N	mg/kg	24	100	--	--
pH	2010	M		8.6	--	>6	--
Acid Neutralisation Capacity	2015	N	mol/kg	< 0.0020	--	To evaluate	To evaluate
Eluate Analysis			**10:1 Eluate mg/l**	**10:1 Eluate mg/kg**	**Limit values for compliance leaching test using BS EN 12457 at L/S 10 l/kg**		
Arsenic	1455	U	0.0027	0.027	0.5	2	25
Barium	1455	U	0.010	0.10	20	100	300
Cadmium	1455	U	< 0.00011	< 0.00011	0.04	1	5
Chromium	1455	U	< 0.0005	< 0.0005	0.5	10	70
Copper	1455	U	0.0041	0.042	2	50	100
Mercury	1455	U	< 0.00005	< 0.00005	0.01	0.2	2
Molybdenum	1455	U	0.014	0.14	0.5	10	30
Nickel	1455	U	0.0005	0.0050	0.4	10	40
Lead	1455	U	< 0.0005	< 0.0005	0.5	10	50
Antimony	1455	U	0.0020	0.020	0.06	0.7	5
Selenium	1455	U	0.0009	0.0091	0.1	0.5	7
Zinc	1455	U	< 0.003	< 0.003	4	50	200
Chloride	1220	U	2.1	21	800	15000	25000
Fluoride	1220	U	0.37	3.7	10	150	500
Sulphate	1220	U	< 1.0	< 10	1000	20000	50000
Total Dissolved Solids	1020	N	140	1400	4000	60000	100000
Phenol Index	1920	U	< 0.030	< 0.30	1	-	-
Dissolved Organic Carbon	1610	U	6.9	69	500	800	1000

Solid Information	
Dry mass of test portion/kg	0.090
Moisture (%)	9.1

Waste Acceptance Criteria

Landfill WAC analysis (specifically leaching test results) must not be used for hazardous waste classification purposes. This analysis is only applicable for hazardous waste landfill acceptance and does not give any indication as to whether a waste may be hazardous or non-hazardous.

Results - Single Stage WAC

Project: 5811

					Landfill Waste Acceptance Criteria Limits		
Chemtest Job No:	21-33504						
Chemtest Sample ID:	1287138						
Sample Ref:	ES16						
Sample ID:	2						
Sample Location:	TP14						
Top Depth(m):	1.00						
Bottom Depth(m):	1.00						
Sampling Date:					**Inert Waste Landfill**	**Stable, Non-reactive hazardous waste in non-hazardous Landfill**	**Hazardous Waste Landfill**
Determinand	**SOP**	**Accred.**	**Units**				
Total Organic Carbon	2625	M	%	[A] 1.1	3	5	6
Loss On Ignition	2610	M	%	2.5	--	--	10
Total BTEX	2760	M	mg/kg	[A] < 0.010	6	--	--
Total PCBs (7 Congeners)	2815	M	mg/kg	< 0.10	1	--	--
TPH Total WAC	2670	M	mg/kg	[A] < 10	500	--	--
Total (Of 17) PAH's	2800	N	mg/kg	< 2.0	100	--	--
pH	2010	M		8.7	--	>6	--
Acid Neutralisation Capacity	2015	N	mol/kg	< 0.0020	--	To evaluate	To evaluate
Eluate Analysis			**10:1 Eluate mg/l**	**10:1 Eluate mg/kg**	**Limit values for compliance leaching test using BS EN 12457 at L/S 10 l/kg**		
Arsenic	1455	U	0.0005	0.0050	0.5	2	25
Barium	1455	U	0.006	0.057	20	100	300
Cadmium	1455	U	< 0.00011	< 0.00011	0.04	1	5
Chromium	1455	U	0.0011	0.011	0.5	10	70
Copper	1455	U	0.0009	0.0095	2	50	100
Mercury	1455	U	< 0.00005	< 0.00005	0.01	0.2	2
Molybdenum	1455	U	0.0045	0.045	0.5	10	30
Nickel	1455	U	< 0.0005	< 0.0005	0.4	10	40
Lead	1455	U	< 0.0005	< 0.0005	0.5	10	50
Antimony	1455	U	< 0.0005	< 0.0005	0.06	0.7	5
Selenium	1455	U	< 0.0005	< 0.0005	0.1	0.5	7
Zinc	1455	U	< 0.003	< 0.003	4	50	200
Chloride	1220	U	2.1	21	800	15000	25000
Fluoride	1220	U	0.31	3.1	10	150	500
Sulphate	1220	U	7.3	73	1000	20000	50000
Total Dissolved Solids	1020	N	150	1500	4000	60000	100000
Phenol Index	1920	U	< 0.030	< 0.30	1	-	-
Dissolved Organic Carbon	1610	U	2.5	< 50	500	800	1000

Solid Information	
Dry mass of test portion/kg	0.090
Moisture (%)	2.5

Waste Acceptance Criteria

Landfill WAC analysis (specifically leaching test results) must not be used for hazardous waste classification purposes. This analysis is only applicable for hazardous waste landfill acceptance and does not give any indication as to whether a waste may be hazardous or non-hazardous.

Results - Single Stage WAC

Project: 5811

					Landfill Waste Acceptance Criteria Limits		
Chemtest Job No:	21-33504						
Chemtest Sample ID:	1287139						
Sample Ref:	ES17					Stable, Non-reactive hazardous waste in non-hazardous Landfill	
Sample ID:	1						
Sample Location:	TP15						Hazardous Waste Landfill
Top Depth(m):	0.30				Inert Waste Landfill		
Bottom Depth(m):	0.30						
Sampling Date:							
Determinand	**SOP**	**Accred.**	**Units**				
Total Organic Carbon	2625	M	%	[A] 3.0	3	5	6
Loss On Ignition	2610	M	%	5.5	--	--	10
Total BTEX	2760	M	mg/kg	[A] < 0.010	6	--	--
Total PCBs (7 Congeners)	2815	M	mg/kg	< 0.10	1	--	--
TPH Total WAC	2670	M	mg/kg	[A] < 10	500	--	--
Total (Of 17) PAH's	2800	N	mg/kg	12	100	--	--
pH	2010	M		8.4	--	>6	--
Acid Neutralisation Capacity	2015	N	mol/kg	< 0.0020	--	To evaluate	To evaluate
Eluate Analysis			**10:1 Eluate mg/l**	**10:1 Eluate mg/kg**	**Limit values for compliance leaching test using BS EN 12457 at L/S 10 l/kg**		
Arsenic	1455	U	0.0099	0.099	0.5	2	25
Barium	1455	U	0.007	0.075	20	100	300
Cadmium	1455	U	< 0.00011	< 0.00011	0.04	1	5
Chromium	1455	U	0.0018	0.019	0.5	10	70
Copper	1455	U	0.0056	0.056	2	50	100
Mercury	1455	U	< 0.00005	< 0.00005	0.01	0.2	2
Molybdenum	1455	U	0.0070	0.070	0.5	10	30
Nickel	1455	U	0.0009	0.0086	0.4	10	40
Lead	1455	U	< 0.0005	< 0.0005	0.5	10	50
Antimony	1455	U	0.0020	0.020	0.06	0.7	5
Selenium	1455	U	0.0011	0.011	0.1	0.5	7
Zinc	1455	U	< 0.003	< 0.003	4	50	200
Chloride	1220	U	< 1.0	< 10	800	15000	25000
Fluoride	1220	U	0.34	3.4	10	150	500
Sulphate	1220	U	< 1.0	< 10	1000	20000	50000
Total Dissolved Solids	1020	N	780	7800	4000	60000	100000
Phenol Index	1920	U	< 0.030	< 0.30	1	-	-
Dissolved Organic Carbon	1610	U	5.6	56	500	800	1000

Solid Information	
Dry mass of test portion/kg	0.090
Moisture (%)	7.2

Waste Acceptance Criteria

Landfill WAC analysis (specifically leaching test results) must not be used for hazardous waste classification purposes. This analysis is only applicable for hazardous waste landfill acceptance and does not give any indication as to whether a waste may be hazardous or non-hazardous.

Results - Single Stage WAC

Project: 5811

					Landfill Waste Acceptance Criteria Limits		
Chemtest Job No:	21-33504						
Chemtest Sample ID:	1287140						
Sample Ref:	ES18						
Sample ID:	2						
Sample Location:	TP15						
Top Depth(m):	1.00						
Bottom Depth(m):	1.00						
Sampling Date:					**Inert Waste Landfill**	**Stable, Non-reactive hazardous waste in non-hazardous Landfill**	**Hazardous Waste Landfill**
Determinand	**SOP**	**Accred.**	**Units**				
Total Organic Carbon	2625	M	%	[A] 0.68	3	5	6
Loss On Ignition	2610	M	%	2.2	--	--	10
Total BTEX	2760	M	mg/kg	[A] < 0.010	6	--	--
Total PCBs (7 Congeners)	2815	M	mg/kg	< 0.10	1	--	--
TPH Total WAC	2670	M	mg/kg	[A] < 10	500	--	--
Total (Of 17) PAH's	2800	N	mg/kg	< 2.0	100	--	--
pH	2010	M		8.6	--	>6	--
Acid Neutralisation Capacity	2015	N	mol/kg	< 0.0020	--	To evaluate	To evaluate
Eluate Analysis			**10:1 Eluate mg/l**	**10:1 Eluate mg/kg**	**Limit values for compliance leaching test using BS EN 12457 at L/S 10 l/kg**		
Arsenic	1455	U	0.0008	0.0079	0.5	2	25
Barium	1455	U	< 0.005	< 0.0005	20	100	300
Cadmium	1455	U	< 0.00011	< 0.00011	0.04	1	5
Chromium	1455	U	0.0011	0.011	0.5	10	70
Copper	1455	U	0.0020	0.021	2	50	100
Mercury	1455	U	< 0.00005	< 0.00005	0.01	0.2	2
Molybdenum	1455	U	0.017	0.17	0.5	10	30
Nickel	1455	U	0.0006	0.0058	0.4	10	40
Lead	1455	U	< 0.0005	< 0.0005	0.5	10	50
Antimony	1455	U	0.0006	0.0060	0.06	0.7	5
Selenium	1455	U	< 0.0005	< 0.0005	0.1	0.5	7
Zinc	1455	U	0.003	0.025	4	50	200
Chloride	1220	U	< 1.0	< 10	800	15000	25000
Fluoride	1220	U	0.28	2.8	10	150	500
Sulphate	1220	U	< 1.0	< 10	1000	20000	50000
Total Dissolved Solids	1020	N	180	1800	4000	60000	100000
Phenol Index	1920	U	< 0.030	< 0.30	1	-	-
Dissolved Organic Carbon	1610	U	12	120	500	800	1000

Solid Information	
Dry mass of test portion/kg	0.090
Moisture (%)	8.3

Waste Acceptance Criteria

Landfill WAC analysis (specifically leaching test results) must not be used for hazardous waste classification purposes. This analysis is only applicable for hazardous waste landfill acceptance and does not give any indication as to whether a waste may be hazardous or non-hazardous.

Results - Single Stage WAC

Project: 5811

Chemtest Job No:	21-33504				**Landfill Waste Acceptance Criteria Limits**		
Chemtest Sample ID:	1287141						
Sample Ref:	ES19				**Inert Waste Landfill**	**Stable, Non-reactive hazardous waste in non-hazardous Landfill**	**Hazardous Waste Landfill**
Sample ID:	1						
Sample Location:	TP16						
Top Depth(m):	0.30						
Bottom Depth(m):	0.30						
Sampling Date:							
Determinand	**SOP**	**Accred.**	**Units**				
Total Organic Carbon	2625	M	%	[A] 4.7	3	5	6
Loss On Ignition	2610	M	%	9.0	--	--	10
Total BTEX	2760	M	mg/kg	[A] < 0.010	6	--	--
Total PCBs (7 Congeners)	2815	M	mg/kg	< 0.10	1	--	--
TPH Total WAC	2670	M	mg/kg	[A] < 10	500	--	--
Total (Of 17) PAH's	2800	N	mg/kg	5.7	100	--	--
pH	2010	M		8.2	--	>6	--
Acid Neutralisation Capacity	2015	N	mol/kg	< 0.0020	--	To evaluate	To evaluate
Eluate Analysis			**10:1 Eluate mg/l**	**10:1 Eluate mg/kg**	**Limit values for compliance leaching test using BS EN 12457 at L/S 10 l/kg**		
Arsenic	1455	U	0.0068	0.068	0.5	2	25
Barium	1455	U	0.007	0.075	20	100	300
Cadmium	1455	U	< 0.00011	< 0.00011	0.04	1	5
Chromium	1455	U	< 0.0005	< 0.0005	0.5	10	70
Copper	1455	U	0.0072	0.072	2	50	100
Mercury	1455	U	< 0.00005	< 0.00005	0.01	0.2	2
Molybdenum	1455	U	0.0046	0.046	0.5	10	30
Nickel	1455	U	0.0010	0.010	0.4	10	40
Lead	1455	U	0.0008	0.0078	0.5	10	50
Antimony	1455	U	0.0010	0.010	0.06	0.7	5
Selenium	1455	U	0.0011	0.011	0.1	0.5	7
Zinc	1455	U	< 0.003	< 0.003	4	50	200
Chloride	1220	U	< 1.0	< 10	800	15000	25000
Fluoride	1220	U	0.25	2.5	10	150	500
Sulphate	1220	U	< 1.0	< 10	1000	20000	50000
Total Dissolved Solids	1020	N	140	1400	4000	60000	100000
Phenol Index	1920	U	< 0.030	< 0.30	1	-	-
Dissolved Organic Carbon	1610	U	5.9	59	500	800	1000

Solid Information	
Dry mass of test portion/kg	0.090
Moisture (%)	10

Waste Acceptance Criteria

Landfill WAC analysis (specifically leaching test results) must not be used for hazardous waste classification purposes. This analysis is only applicable for hazardous waste landfill acceptance and does not give any indication as to whether a waste may be hazardous or non-hazardous.

Results - Single Stage WAC

Project: 5811

					Landfill Waste Acceptance Criteria Limits		
Chemtest Job No:	21-33504						
Chemtest Sample ID:	1287142						
Sample Ref:	ES20						
Sample ID:	2						
Sample Location:	TP16						
Top Depth(m):	0.60						
Bottom Depth(m):	0.60						
Sampling Date:					**Inert Waste Landfill**	**Stable, Non-reactive hazardous waste in non-hazardous Landfill**	**Hazardous Waste Landfill**
Determinand	**SOP**	**Accred.**	**Units**				
Total Organic Carbon	2625	M	%	[A] 1.1	3	5	6
Loss On Ignition	2610	M	%	3.6	--	--	10
Total BTEX	2760	M	mg/kg	[A] < 0.010	6	--	--
Total PCBs (7 Congeners)	2815	M	mg/kg	< 0.10	1	--	--
TPH Total WAC	2670	M	mg/kg	[A] < 10	500	--	--
Total (Of 17) PAH's	2800	N	mg/kg	< 2.0	100	--	--
pH	2010	M		8.6	--	>6	--
Acid Neutralisation Capacity	2015	N	mol/kg	0.011	--	To evaluate	To evaluate
Eluate Analysis			**10:1 Eluate mg/l**	**10:1 Eluate mg/kg**	**Limit values for compliance leaching test using BS EN 12457 at L/S 10 l/kg**		
Arsenic	1455	U	0.0012	0.012	0.5	2	25
Barium	1455	U	< 0.005	< 0.0005	20	100	300
Cadmium	1455	U	< 0.00011	< 0.00011	0.04	1	5
Chromium	1455	U	0.0015	0.015	0.5	10	70
Copper	1455	U	0.0017	0.017	2	50	100
Mercury	1455	U	< 0.00005	< 0.00005	0.01	0.2	2
Molybdenum	1455	U	0.023	0.23	0.5	10	30
Nickel	1455	U	< 0.0005	< 0.0005	0.4	10	40
Lead	1455	U	< 0.0005	< 0.0005	0.5	10	50
Antimony	1455	U	0.0008	0.0077	0.06	0.7	5
Selenium	1455	U	0.0006	0.0064	0.1	0.5	7
Zinc	1455	U	< 0.003	< 0.003	4	50	200
Chloride	1220	U	< 1.0	< 10	800	15000	25000
Fluoride	1220	U	0.34	3.4	10	150	500
Sulphate	1220	U	< 1.0	< 10	1000	20000	50000
Total Dissolved Solids	1020	N	130	1300	4000	60000	100000
Phenol Index	1920	U	< 0.030	< 0.30	1	-	-
Dissolved Organic Carbon	1610	U	5.3	53	500	800	1000

Solid Information	
Dry mass of test portion/kg	0.090
Moisture (%)	9.7

Waste Acceptance Criteria

Landfill WAC analysis (specifically leaching test results) must not be used for hazardous waste classification purposes. This analysis is only applicable for hazardous waste landfill acceptance and does not give any indication as to whether a waste may be hazardous or non-hazardous.

Results - Single Stage WAC

Project: 5811

					Landfill Waste Acceptance Criteria Limits		
Chemtest Job No:	21-33504						
Chemtest Sample ID:	1287143						
Sample Ref:	ES21						
Sample ID:	1						
Sample Location:	TP17						
Top Depth(m):	0.30						
Bottom Depth(m):	0.30						
Sampling Date:					**Inert Waste Landfill**	**Stable, Non-reactive hazardous waste in non-hazardous Landfill**	**Hazardous Waste Landfill**
Determinand	**SOP**	**Accred.**	**Units**				
Total Organic Carbon	2625	M	%	[A] 3.0	3	5	6
Loss On Ignition	2610	M	%	6.7	--	--	10
Total BTEX	2760	M	mg/kg	[A] < 0.010	6	--	--
Total PCBs (7 Congeners)	2815	M	mg/kg	< 0.10	1	--	--
TPH Total WAC	2670	M	mg/kg	[A] < 10	500	--	--
Total (Of 17) PAH's	2800	N	mg/kg	22	100	--	--
pH	2010	M		8.3	--	>6	--
Acid Neutralisation Capacity	2015	N	mol/kg	0.0080	--	To evaluate	To evaluate
Eluate Analysis			**10:1 Eluate mg/l**	**10:1 Eluate mg/kg**	**Limit values for compliance leaching test using BS EN 12457 at L/S 10 l/kg**		
Arsenic	1455	U	0.016	0.16	0.5	2	25
Barium	1455	U	< 0.005	< 0.0005	20	100	300
Cadmium	1455	U	< 0.00011	< 0.00011	0.04	1	5
Chromium	1455	U	< 0.0005	< 0.0005	0.5	10	70
Copper	1455	U	0.0036	0.036	2	50	100
Mercury	1455	U	< 0.00005	< 0.00005	0.01	0.2	2
Molybdenum	1455	U	0.0058	0.058	0.5	10	30
Nickel	1455	U	0.0008	0.0084	0.4	10	40
Lead	1455	U	< 0.0005	< 0.0005	0.5	10	50
Antimony	1455	U	0.0025	0.025	0.06	0.7	5
Selenium	1455	U	0.0009	0.0094	0.1	0.5	7
Zinc	1455	U	< 0.003	< 0.003	4	50	200
Chloride	1220	U	< 1.0	< 10	800	15000	25000
Fluoride	1220	U	0.31	3.1	10	150	500
Sulphate	1220	U	< 1.0	< 10	1000	20000	50000
Total Dissolved Solids	1020	N	120	1200	4000	60000	100000
Phenol Index	1920	U	< 0.030	< 0.30	1	-	-
Dissolved Organic Carbon	1610	U	7.8	78	500	800	1000

Solid Information	
Dry mass of test portion/kg	0.090
Moisture (%)	7.7

Waste Acceptance Criteria

Landfill WAC analysis (specifically leaching test results) must not be used for hazardous waste classification purposes. This analysis is only applicable for hazardous waste landfill acceptance and does not give any indication as to whether a waste may be hazardous or non-hazardous.

Results - Single Stage WAC

Project: 5811

					Landfill Waste Acceptance Criteria Limits		
Chemtest Job No:	21-33504						
Chemtest Sample ID:	1287144						
Sample Ref:	ES22						
Sample ID:	2						
Sample Location:	TP17						
Top Depth(m):	0.60						
Bottom Depth(m):	0.60						
Sampling Date:					**Inert Waste Landfill**	**Stable, Non-reactive hazardous waste in non-hazardous Landfill**	**Hazardous Waste Landfill**
Determinand	**SOP**	**Accred.**	**Units**				
Total Organic Carbon	2625	M	%	[A] 0.76	3	5	6
Loss On Ignition	2610	M	%	3.1	--	--	10
Total BTEX	2760	M	mg/kg	[A] < 0.010	6	--	--
Total PCBs (7 Congeners)	2815	M	mg/kg	< 0.10	1	--	--
TPH Total WAC	2670	M	mg/kg	[A] < 10	500	--	--
Total (Of 17) PAH's	2800	N	mg/kg	< 2.0	100	--	--
pH	2010	M		8.3	--	>6	--
Acid Neutralisation Capacity	2015	N	mol/kg	0.0060	--	To evaluate	To evaluate
Eluate Analysis			**10:1 Eluate mg/l**	**10:1 Eluate mg/kg**	**Limit values for compliance leaching test using BS EN 12457 at L/S 10 l/kg**		
Arsenic	1455	U	0.0073	0.073	0.5	2	25
Barium	1455	U	< 0.005	< 0.0005	20	100	300
Cadmium	1455	U	< 0.00011	< 0.00011	0.04	1	5
Chromium	1455	U	0.0005	0.0053	0.5	10	70
Copper	1455	U	0.0018	0.018	2	50	100
Mercury	1455	U	< 0.00005	< 0.00005	0.01	0.2	2
Molybdenum	1455	U	0.011	0.11	0.5	10	30
Nickel	1455	U	0.0006	0.0064	0.4	10	40
Lead	1455	U	< 0.0005	< 0.0005	0.5	10	50
Antimony	1455	U	0.0015	0.015	0.06	0.7	5
Selenium	1455	U	0.0006	0.0062	0.1	0.5	7
Zinc	1455	U	< 0.003	< 0.003	4	50	200
Chloride	1220	U	< 1.0	< 10	800	15000	25000
Fluoride	1220	U	0.20	2.0	10	150	500
Sulphate	1220	U	< 1.0	< 10	1000	20000	50000
Total Dissolved Solids	1020	N	41	410	4000	60000	100000
Phenol Index	1920	U	< 0.030	< 0.30	1	-	-
Dissolved Organic Carbon	1610	U	19	190	500	800	1000

Solid Information	
Dry mass of test portion/kg	0.090
Moisture (%)	6.7

Waste Acceptance Criteria

Landfill WAC analysis (specifically leaching test results) must not be used for hazardous waste classification purposes. This analysis is only applicable for hazardous waste landfill acceptance and does not give any indication as to whether a waste may be hazardous or non-hazardous.

Results - Single Stage WAC

Project: 5811

					Landfill Waste Acceptance Criteria Limits		
Chemtest Job No:	21-33504						
Chemtest Sample ID:	1287145						
Sample Ref:	ES23						
Sample ID:	1						
Sample Location:	TP18						
Top Depth(m):	0.30						
Bottom Depth(m):	0.30						
Sampling Date:					**Inert Waste Landfill**	**Stable, Non-reactive hazardous waste in non-hazardous Landfill**	**Hazardous Waste Landfill**
Determinand	**SOP**	**Accred.**	**Units**				
Total Organic Carbon	2625	M	%	[A] 3.6	3	5	6
Loss On Ignition	2610	M	%	6.5	--	--	10
Total BTEX	2760	M	mg/kg	[A] < 0.010	6	--	--
Total PCBs (7 Congeners)	2815	M	mg/kg	< 0.10	1	--	--
TPH Total WAC	2670	M	mg/kg	[A] 430	500	--	--
Total (Of 17) PAH's	2800	N	mg/kg	20	100	--	--
pH	2010	M		8.2	--	>6	--
Acid Neutralisation Capacity	2015	N	mol/kg	0.013	--	To evaluate	To evaluate
Eluate Analysis			**10:1 Eluate mg/l**	**10:1 Eluate mg/kg**	**Limit values for compliance leaching test using BS EN 12457 at L/S 10 l/kg**		
Arsenic	1455	U	0.011	0.11	0.5	2	25
Barium	1455	U	< 0.005	< 0.0005	20	100	300
Cadmium	1455	U	< 0.00011	< 0.00011	0.04	1	5
Chromium	1455	U	< 0.0005	< 0.0005	0.5	10	70
Copper	1455	U	0.0032	0.032	2	50	100
Mercury	1455	U	< 0.00005	< 0.00005	0.01	0.2	2
Molybdenum	1455	U	0.010	0.10	0.5	10	30
Nickel	1455	U	0.0005	0.0054	0.4	10	40
Lead	1455	U	< 0.0005	< 0.0005	0.5	10	50
Antimony	1455	U	0.0044	0.044	0.06	0.7	5
Selenium	1455	U	0.0008	0.0080	0.1	0.5	7
Zinc	1455	U	< 0.003	< 0.003	4	50	200
Chloride	1220	U	< 1.0	< 10	800	15000	25000
Fluoride	1220	U	0.23	2.3	10	150	500
Sulphate	1220	U	< 1.0	< 10	1000	20000	50000
Total Dissolved Solids	1020	N	120	1200	4000	60000	100000
Phenol Index	1920	U	< 0.030	< 0.30	1	-	-
Dissolved Organic Carbon	1610	U	6.2	62	500	800	1000

Solid Information	
Dry mass of test portion/kg	0.090
Moisture (%)	8.9

Waste Acceptance Criteria

Landfill WAC analysis (specifically leaching test results) must not be used for hazardous waste classification purposes. This analysis is only applicable for hazardous waste landfill acceptance and does not give any indication as to whether a waste may be hazardous or non-hazardous.

Results - Single Stage WAC

Project: 5811

					Landfill Waste Acceptance Criteria Limits		
Chemtest Job No:	21-33504						
Chemtest Sample ID:	1287146						
Sample Ref:	ES24						
Sample ID:	2						
Sample Location:	TP18				Inert Waste Landfill	Stable, Non-reactive hazardous waste in non-hazardous Landfill	Hazardous Waste Landfill
Top Depth(m):	1.00						
Bottom Depth(m):	1.00						
Sampling Date:							
Determinand	**SOP**	**Accred.**	**Units**				
Total Organic Carbon	2625	M	%	[A] 0.37	3	5	6
Loss On Ignition	2610	M	%	2.2	--	--	10
Total BTEX	2760	M	mg/kg	[A] < 0.010	6	--	--
Total PCBs (7 Congeners)	2815	M	mg/kg	< 0.10	1	--	--
TPH Total WAC	2670	M	mg/kg	[A] < 10	500	--	--
Total (Of 17) PAH's	2800	N	mg/kg	< 2.0	100	--	--
pH	2010	M		8.6	--	>6	--
Acid Neutralisation Capacity	2015	N	mol/kg	0.0080	--	To evaluate	To evaluate
Eluate Analysis			**10:1 Eluate mg/l**	**10:1 Eluate mg/kg**	**Limit values for compliance leaching test using BS EN 12457 at L/S 10 l/kg**		
Arsenic	1455	U	0.0053	0.053	0.5	2	25
Barium	1455	U	< 0.005	< 0.0005	20	100	300
Cadmium	1455	U	< 0.00011	< 0.00011	0.04	1	5
Chromium	1455	U	0.0009	0.0094	0.5	10	70
Copper	1455	U	0.0012	0.012	2	50	100
Mercury	1455	U	< 0.00005	< 0.00005	0.01	0.2	2
Molybdenum	1455	U	0.027	0.27	0.5	10	30
Nickel	1455	U	< 0.0005	< 0.0005	0.4	10	40
Lead	1455	U	< 0.0005	< 0.0005	0.5	10	50
Antimony	1455	U	0.0019	0.019	0.06	0.7	5
Selenium	1455	U	< 0.0005	< 0.0005	0.1	0.5	7
Zinc	1455	U	< 0.003	< 0.003	4	50	200
Chloride	1220	U	< 1.0	< 10	800	15000	25000
Fluoride	1220	U	0.23	2.3	10	150	500
Sulphate	1220	U	< 1.0	< 10	1000	20000	50000
Total Dissolved Solids	1020	N	98	980	4000	60000	100000
Phenol Index	1920	U	< 0.030	< 0.30	1	-	-
Dissolved Organic Carbon	1610	U	3.7	< 50	500	800	1000

Solid Information	
Dry mass of test portion/kg	0.090
Moisture (%)	6.7

Waste Acceptance Criteria

Landfill WAC analysis (specifically leaching test results) must not be used for hazardous waste classification purposes. This analysis is only applicable for hazardous waste landfill acceptance and does not give any indication as to whether a waste may be hazardous or non-hazardous.

Results - Single Stage WAC

Project: 5811

					Landfill Waste Acceptance Criteria Limits		
Chemtest Job No:	21-33504				**Inert Waste Landfill**	**Stable, Non-reactive hazardous waste in non-hazardous Landfill**	**Hazardous Waste Landfill**
Chemtest Sample ID:	1287147						
Sample Ref:	ES25						
Sample ID:	1						
Sample Location:	TP19						
Top Depth(m):	0.30						
Bottom Depth(m):	0.30						
Sampling Date:							
Determinand	**SOP**	**Accred.**	**Units**				
Total Organic Carbon	2625	M	%	[A] 4.7	3	5	6
Loss On Ignition	2610	M	%	7.9	--	--	10
Total BTEX	2760	M	mg/kg	[A] < 0.010	6	--	--
Total PCBs (7 Congeners)	2815	M	mg/kg	< 0.10	1	--	--
TPH Total WAC	2670	M	mg/kg	[A] < 10	500	--	--
Total (Of 17) PAH's	2800	N	mg/kg	11	100	--	--
pH	2010	M		8.3	--	>6	--
Acid Neutralisation Capacity	2015	N	mol/kg	< 0.0020	--	To evaluate	To evaluate
Eluate Analysis			**10:1 Eluate mg/l**	**10:1 Eluate mg/kg**	**Limit values for compliance leaching test using BS EN 12457 at L/S 10 l/kg**		
Arsenic	1455	U	0.025	0.25	0.5	2	25
Barium	1455	U	< 0.005	< 0.0005	20	100	300
Cadmium	1455	U	< 0.00011	< 0.00011	0.04	1	5
Chromium	1455	U	< 0.0005	< 0.0005	0.5	10	70
Copper	1455	U	0.0033	0.033	2	50	100
Mercury	1455	U	< 0.00005	< 0.00005	0.01	0.2	2
Molybdenum	1455	U	0.0083	0.083	0.5	10	30
Nickel	1455	U	0.0006	0.0056	0.4	10	40
Lead	1455	U	< 0.0005	< 0.0005	0.5	10	50
Antimony	1455	U	0.0055	0.055	0.06	0.7	5
Selenium	1455	U	0.0010	0.010	0.1	0.5	7
Zinc	1455	U	0.003	0.030	4	50	200
Chloride	1220	U	< 1.0	< 10	800	15000	25000
Fluoride	1220	U	0.24	2.4	10	150	500
Sulphate	1220	U	< 1.0	< 10	1000	20000	50000
Total Dissolved Solids	1020	N	110	1100	4000	60000	100000
Phenol Index	1920	U	< 0.030	< 0.30	1	-	-
Dissolved Organic Carbon	1610	U	4.4	< 50	500	800	1000

Solid Information	
Dry mass of test portion/kg	0.090
Moisture (%)	9.1

Waste Acceptance Criteria

Landfill WAC analysis (specifically leaching test results) must not be used for hazardous waste classification purposes. This analysis is only applicable for hazardous waste landfill acceptance and does not give any indication as to whether a waste may be hazardous or non-hazardous.

Results - Single Stage WAC

Project: 5811

					Landfill Waste Acceptance Criteria Limits		
Chemtest Job No:	21-33504						
Chemtest Sample ID:	1287148						
Sample Ref:	ES26						
Sample ID:	2						
Sample Location:	TP19						
Top Depth(m):	0.80						
Bottom Depth(m):	0.80						
Sampling Date:					**Inert Waste Landfill**	**Stable, Non-reactive hazardous waste in non-hazardous Landfill**	**Hazardous Waste Landfill**
Determinand	**SOP**	**Accred.**	**Units**				
Total Organic Carbon	2625	M	%	[A] 3.9	3	5	6
Loss On Ignition	2610	M	%	2.7	--	--	10
Total BTEX	2760	M	mg/kg	[A] < 0.010	6	--	--
Total PCBs (7 Congeners)	2815	M	mg/kg	< 0.10	1	--	--
TPH Total WAC	2670	M	mg/kg	[A] < 10	500	--	--
Total (Of 17) PAH's	2800	N	mg/kg	< 2.0	100	--	--
pH	2010	M		8.6	--	>6	--
Acid Neutralisation Capacity	2015	N	mol/kg	< 0.0020	--	To evaluate	To evaluate
Eluate Analysis			**10:1 Eluate mg/l**	**10:1 Eluate mg/kg**	**Limit values for compliance leaching test using BS EN 12457 at L/S 10 l/kg**		
Arsenic	1455	U	0.0093	0.093	0.5	2	25
Barium	1455	U	< 0.005	< 0.0005	20	100	300
Cadmium	1455	U	< 0.00011	< 0.00011	0.04	1	5
Chromium	1455	U	< 0.0005	< 0.0005	0.5	10	70
Copper	1455	U	0.0019	0.019	2	50	100
Mercury	1455	U	< 0.00005	< 0.00005	0.01	0.2	2
Molybdenum	1455	U	0.021	0.21	0.5	10	30
Nickel	1455	U	< 0.0005	< 0.0005	0.4	10	40
Lead	1455	U	< 0.0005	< 0.0005	0.5	10	50
Antimony	1455	U	0.0032	0.032	0.06	0.7	5
Selenium	1455	U	0.0009	0.0086	0.1	0.5	7
Zinc	1455	U	< 0.003	< 0.003	4	50	200
Chloride	1220	U	< 1.0	< 10	800	15000	25000
Fluoride	1220	U	0.24	2.4	10	150	500
Sulphate	1220	U	< 1.0	< 10	1000	20000	50000
Total Dissolved Solids	1020	N	140	1400	4000	60000	100000
Phenol Index	1920	U	< 0.030	< 0.30	1	-	-
Dissolved Organic Carbon	1610	U	12	120	500	800	1000

Solid Information	
Dry mass of test portion/kg	0.090
Moisture (%)	13

Waste Acceptance Criteria

Landfill WAC analysis (specifically leaching test results) must not be used for hazardous waste classification purposes. This analysis is only applicable for hazardous waste landfill acceptance and does not give any indication as to whether a waste may be hazardous or non-hazardous.

Results - Single Stage WAC

Project: 5811

					Landfill Waste Acceptance Criteria Limits		
Chemtest Job No:	21-33504						
Chemtest Sample ID:	1287149						
Sample Ref:	ES27						
Sample ID:	1						
Sample Location:	TP20						
Top Depth(m):	0.40						
Bottom Depth(m):	0.40						
Sampling Date:					**Inert Waste Landfill**	**Stable, Non-reactive hazardous waste in non-hazardous Landfill**	**Hazardous Waste Landfill**
Determinand	**SOP**	**Accred.**	**Units**				
Total Organic Carbon	2625	M	%	[A] 1.4	3	5	6
Loss On Ignition	2610	M	%	6.6	--	--	10
Total BTEX	2760	M	mg/kg	[A] < 0.010	6	--	--
Total PCBs (7 Congeners)	2815	M	mg/kg	< 0.10	1	--	--
TPH Total WAC	2670	M	mg/kg	[A] < 10	500	--	--
Total (Of 17) PAH's	2800	N	mg/kg	< 2.0	100	--	--
pH	2010	M		8.5	--	>6	--
Acid Neutralisation Capacity	2015	N	mol/kg	0.013	--	To evaluate	To evaluate
Eluate Analysis			**10:1 Eluate mg/l**	**10:1 Eluate mg/kg**	**Limit values for compliance leaching test using BS EN 12457 at L/S 10 l/kg**		
Arsenic	1455	U	0.0016	0.016	0.5	2	25
Barium	1455	U	< 0.005	< 0.0005	20	100	300
Cadmium	1455	U	< 0.00011	< 0.00011	0.04	1	5
Chromium	1455	U	0.0007	0.0069	0.5	10	70
Copper	1455	U	0.0023	0.024	2	50	100
Mercury	1455	U	< 0.00005	< 0.00005	0.01	0.2	2
Molybdenum	1455	U	0.0076	0.076	0.5	10	30
Nickel	1455	U	< 0.0005	< 0.0005	0.4	10	40
Lead	1455	U	< 0.0005	< 0.0005	0.5	10	50
Antimony	1455	U	0.0008	0.0077	0.06	0.7	5
Selenium	1455	U	0.0006	0.0063	0.1	0.5	7
Zinc	1455	U	< 0.003	< 0.003	4	50	200
Chloride	1220	U	< 1.0	< 10	800	15000	25000
Fluoride	1220	U	0.28	2.8	10	150	500
Sulphate	1220	U	2.0	20	1000	20000	50000
Total Dissolved Solids	1020	N	100	1000	4000	60000	100000
Phenol Index	1920	U	< 0.030	< 0.30	1	-	-
Dissolved Organic Carbon	1610	U	5.5	55	500	800	1000

Solid Information	
Dry mass of test portion/kg	0.090
Moisture (%)	6.3

Waste Acceptance Criteria

Landfill WAC analysis (specifically leaching test results) must not be used for hazardous waste classification purposes. This analysis is only applicable for hazardous waste landfill acceptance and does not give any indication as to whether a waste may be hazardous or non-hazardous.

Results - Single Stage WAC

Project: 5811

					Landfill Waste Acceptance Criteria Limits		
Chemtest Job No:	21-33504						
Chemtest Sample ID:	1287150						
Sample Ref:	ES28						
Sample ID:	2						
Sample Location:	TP20						
Top Depth(m):	0.80						
Bottom Depth(m):	0.80						
Sampling Date:					Inert Waste Landfill	Stable, Non-reactive hazardous waste in non-hazardous Landfill	Hazardous Waste Landfill
Determinand	**SOP**	**Accred.**	**Units**				
Total Organic Carbon	2625	M	%	[A] 1.1	3	5	6
Loss On Ignition	2610	M	%	3.6	--	--	10
Total BTEX	2760	M	mg/kg	[A] < 0.010	6	--	--
Total PCBs (7 Congeners)	2815	M	mg/kg	< 0.10	1	--	--
TPH Total WAC	2670	M	mg/kg	[A] < 10	500	--	--
Total (Of 17) PAH's	2800	N	mg/kg	< 2.0	100	--	--
pH	2010	M		8.4	--	>6	--
Acid Neutralisation Capacity	2015	N	mol/kg	0.0040	--	To evaluate	To evaluate
Eluate Analysis			**10:1 Eluate mg/l**	**10:1 Eluate mg/kg**	**Limit values for compliance leaching test using BS EN 12457 at L/S 10 l/kg**		
Arsenic	1455	U	0.0003	0.0034	0.5	2	25
Barium	1455	U	< 0.005	< 0.0005	20	100	300
Cadmium	1455	U	< 0.00011	< 0.00011	0.04	1	5
Chromium	1455	U	0.0008	0.0079	0.5	10	70
Copper	1455	U	0.0011	0.011	2	50	100
Mercury	1455	U	< 0.00005	< 0.00005	0.01	0.2	2
Molybdenum	1455	U	0.011	0.11	0.5	10	30
Nickel	1455	U	< 0.0005	< 0.0005	0.4	10	40
Lead	1455	U	< 0.0005	< 0.0005	0.5	10	50
Antimony	1455	U	0.0006	0.0059	0.06	0.7	5
Selenium	1455	U	< 0.0005	< 0.0005	0.1	0.5	7
Zinc	1455	U	< 0.003	< 0.003	4	50	200
Chloride	1220	U	< 1.0	< 10	800	15000	25000
Fluoride	1220	U	0.28	2.8	10	150	500
Sulphate	1220	U	< 1.0	< 10	1000	20000	50000
Total Dissolved Solids	1020	N	72	710	4000	60000	100000
Phenol Index	1920	U	< 0.030	< 0.30	1	-	-
Dissolved Organic Carbon	1610	U	4.0	< 50	500	800	1000

Solid Information	
Dry mass of test portion/kg	0.090
Moisture (%)	14

Waste Acceptance Criteria

Landfill WAC analysis (specifically leaching test results) must not be used for hazardous waste classification purposes. This analysis is only applicable for hazardous waste landfill acceptance and does not give any indication as to whether a waste may be hazardous or non-hazardous.

Results - Single Stage WAC

Project: 5811

					Landfill Waste Acceptance Criteria Limits		
Chemtest Job No:	21-33504						
Chemtest Sample ID:	1287151						
Sample Ref:	ES29						
Sample ID:	1						
Sample Location:	TP22						
Top Depth(m):	0.30						
Bottom Depth(m):	0.30						
Sampling Date:					**Inert Waste Landfill**	**Stable, Non-reactive hazardous waste in non-hazardous Landfill**	**Hazardous Waste Landfill**
Determinand	**SOP**	**Accred.**	**Units**				
Total Organic Carbon	2625	M	%	[A] 6.0	3	5	6
Loss On Ignition	2610	M	%	10	--	--	10
Total BTEX	2760	M	mg/kg	[A] < 0.010	6	--	--
Total PCBs (7 Congeners)	2815	M	mg/kg	< 0.10	1	--	--
TPH Total WAC	2670	M	mg/kg	[A] < 10	500	--	--
Total (Of 17) PAH's	2800	N	mg/kg	11	100	--	--
pH	2010	M		8.7	--	>6	--
Acid Neutralisation Capacity	2015	N	mol/kg	0.0040	--	To evaluate	To evaluate
Eluate Analysis			**10:1 Eluate mg/l**	**10:1 Eluate mg/kg**	**Limit values for compliance leaching test using BS EN 12457 at L/S 10 l/kg**		
Arsenic	1455	U	0.030	0.30	0.5	2	25
Barium	1455	U	< 0.005	< 0.0005	20	100	300
Cadmium	1455	U	< 0.00011	< 0.00011	0.04	1	5
Chromium	1455	U	< 0.0005	< 0.0005	0.5	10	70
Copper	1455	U	0.0044	0.044	2	50	100
Mercury	1455	U	< 0.00005	< 0.00005	0.01	0.2	2
Molybdenum	1455	U	0.0056	0.056	0.5	10	30
Nickel	1455	U	0.0009	0.0091	0.4	10	40
Lead	1455	U	< 0.0005	< 0.0005	0.5	10	50
Antimony	1455	U	0.0049	0.049	0.06	0.7	5
Selenium	1455	U	0.0012	0.012	0.1	0.5	7
Zinc	1455	U	< 0.003	< 0.003	4	50	200
Chloride	1220	U	< 1.0	< 10	800	15000	25000
Fluoride	1220	U	0.22	2.2	10	150	500
Sulphate	1220	U	< 1.0	< 10	1000	20000	50000
Total Dissolved Solids	1020	N	100	1000	4000	60000	100000
Phenol Index	1920	U	< 0.030	< 0.30	1	-	-
Dissolved Organic Carbon	1610	U	5.3	53	500	800	1000

Solid Information	
Dry mass of test portion/kg	0.090
Moisture (%)	8.1

Waste Acceptance Criteria

Landfill WAC analysis (specifically leaching test results) must not be used for hazardous waste classification purposes. This analysis is only applicable for hazardous waste landfill acceptance and does not give any indication as to whether a waste may be hazardous or non-hazardous.

Results - Single Stage WAC

Project: 5811

					Landfill Waste Acceptance Criteria Limits		
Chemtest Job No:	21-33504				**Inert Waste Landfill**	**Stable, Non-reactive hazardous waste in non-hazardous Landfill**	**Hazardous Waste Landfill**
Chemtest Sample ID:	1287152						
Sample Ref:	ES30						
Sample ID:	2						
Sample Location:	TP22						
Top Depth(m):	1.00						
Bottom Depth(m):	1.00						
Sampling Date:							
Determinand	**SOP**	**Accred.**	**Units**				
Total Organic Carbon	2625	M	%	[A] 1.4	3	5	6
Loss On Ignition	2610	M	%	0.96	--	--	10
Total BTEX	2760	M	mg/kg	[A] < 0.010	6	--	--
Total PCBs (7 Congeners)	2815	M	mg/kg	< 0.10	1	--	--
TPH Total WAC	2670	M	mg/kg	[A] < 10	500	--	--
Total (Of 17) PAH's	2800	N	mg/kg	< 2.0	100	--	--
pH	2010	M		8.3	--	>6	--
Acid Neutralisation Capacity	2015	N	mol/kg	< 0.0020	--	To evaluate	To evaluate
Eluate Analysis			**10:1 Eluate mg/l**	**10:1 Eluate mg/kg**	**Limit values for compliance leaching test using BS EN 12457 at L/S 10 l/kg**		
Arsenic	1455	U	0.0008	0.0078	0.5	2	25
Barium	1455	U	< 0.005	< 0.0005	20	100	300
Cadmium	1455	U	< 0.00011	< 0.00011	0.04	1	5
Chromium	1455	U	0.0009	0.0093	0.5	10	70
Copper	1455	U	0.0011	0.011	2	50	100
Mercury	1455	U	< 0.00005	< 0.00005	0.01	0.2	2
Molybdenum	1455	U	0.020	0.20	0.5	10	30
Nickel	1455	U	< 0.0005	< 0.0005	0.4	10	40
Lead	1455	U	< 0.0005	< 0.0005	0.5	10	50
Antimony	1455	U	0.0006	0.0060	0.06	0.7	5
Selenium	1455	U	0.0008	0.0077	0.1	0.5	7
Zinc	1455	U	0.003	0.027	4	50	200
Chloride	1220	U	< 1.0	< 10	800	15000	25000
Fluoride	1220	U	0.33	3.3	10	150	500
Sulphate	1220	U	1.6	16	1000	20000	50000
Total Dissolved Solids	1020	N	180	1800	4000	60000	100000
Phenol Index	1920	U	< 0.030	< 0.30	1	-	-
Dissolved Organic Carbon	1610	U	4.0	< 50	500	800	1000

Solid Information	
Dry mass of test portion/kg	0.090
Moisture (%)	6.9

Waste Acceptance Criteria

Landfill WAC analysis (specifically leaching test results) must not be used for hazardous waste classification purposes. This analysis is only applicable for hazardous waste landfill acceptance and does not give any indication as to whether a waste may be hazardous or non-hazardous.

Results - Single Stage WAC

Project: 5811

Chemtest Job No:	21-33504				**Landfill Waste Acceptance Criteria Limits**		
Chemtest Sample ID:	1287153						
Sample Ref:	ES31				**Inert Waste Landfill**	**Stable, Non-reactive hazardous waste in non-hazardous Landfill**	**Hazardous Waste Landfill**
Sample ID:	1						
Sample Location:	TP23						
Top Depth(m):	0.30						
Bottom Depth(m):	0.30						
Sampling Date:							
Determinand	**SOP**	**Accred.**	**Units**				
Total Organic Carbon	2625	M	%	[A] 7.2	3	5	6
Loss On Ignition	2610	M	%	9.3	--	--	10
Total BTEX	2760	M	mg/kg	[A] < 0.010	6	--	--
Total PCBs (7 Congeners)	2815	M	mg/kg	< 0.10	1	--	--
TPH Total WAC	2670	M	mg/kg	[A] 100	500	--	--
Total (Of 17) PAH's	2800	N	mg/kg	27	100	--	--
pH	2010	M		8.2	--	>6	--
Acid Neutralisation Capacity	2015	N	mol/kg	< 0.0020	--	To evaluate	To evaluate
Eluate Analysis			**10:1 Eluate mg/l**	**10:1 Eluate mg/kg**	**Limit values for compliance leaching test using BS EN 12457 at L/S 10 l/kg**		
Arsenic	1455	U	0.016	0.16	0.5	2	25
Barium	1455	U	0.006	0.062	20	100	300
Cadmium	1455	U	< 0.00011	< 0.00011	0.04	1	5
Chromium	1455	U	< 0.0005	< 0.0005	0.5	10	70
Copper	1455	U	0.0046	0.046	2	50	100
Mercury	1455	U	< 0.00005	< 0.00005	0.01	0.2	2
Molybdenum	1455	U	0.0072	0.072	0.5	10	30
Nickel	1455	U	0.0008	0.0083	0.4	10	40
Lead	1455	U	< 0.0005	< 0.0005	0.5	10	50
Antimony	1455	U	0.0025	0.025	0.06	0.7	5
Selenium	1455	U	0.0012	0.012	0.1	0.5	7
Zinc	1455	U	0.003	0.025	4	50	200
Chloride	1220	U	< 1.0	< 10	800	15000	25000
Fluoride	1220	U	0.32	3.2	10	150	500
Sulphate	1220	U	< 1.0	< 10	1000	20000	50000
Total Dissolved Solids	1020	N	110	1100	4000	60000	100000
Phenol Index	1920	U	< 0.030	< 0.30	1	-	-
Dissolved Organic Carbon	1610	U	5.1	51	500	800	1000

Solid Information	
Dry mass of test portion/kg	0.090
Moisture (%)	8.1

Waste Acceptance Criteria

Landfill WAC analysis (specifically leaching test results) must not be used for hazardous waste classification purposes. This analysis is only applicable for hazardous waste landfill acceptance and does not give any indication as to whether a waste may be hazardous or non-hazardous.

Results - Single Stage WAC

Project: 5811

					Landfill Waste Acceptance Criteria Limits		
Chemtest Job No:	21-33504						
Chemtest Sample ID:	1287154						
Sample Ref:	ES32						
Sample ID:	2						
Sample Location:	TP23						
Top Depth(m):	0.80						
Bottom Depth(m):	0.80						
Sampling Date:					**Inert Waste Landfill**	**Stable, Non-reactive hazardous waste in non-hazardous Landfill**	**Hazardous Waste Landfill**
Determinand	**SOP**	**Accred.**	**Units**				
Total Organic Carbon	2625	M	%	[A] 1.4	3	5	6
Loss On Ignition	2610	M	%	3.3	--	--	10
Total BTEX	2760	M	mg/kg	[A] < 0.010	6	--	--
Total PCBs (7 Congeners)	2815	M	mg/kg	< 0.10	1	--	--
TPH Total WAC	2670	M	mg/kg	[A] < 10	500	--	--
Total (Of 17) PAH's	2800	N	mg/kg	< 2.0	100	--	--
pH	2010	M		8.5	--	>6	--
Acid Neutralisation Capacity	2015	N	mol/kg	0.015	--	To evaluate	To evaluate
Eluate Analysis			**10:1 Eluate mg/l**	**10:1 Eluate mg/kg**	**Limit values for compliance leaching test using BS EN 12457 at L/S 10 l/kg**		
Arsenic	1455	U	0.0017	0.017	0.5	2	25
Barium	1455	U	< 0.005	< 0.0005	20	100	300
Cadmium	1455	U	< 0.00011	< 0.00011	0.04	1	5
Chromium	1455	U	0.0012	0.012	0.5	10	70
Copper	1455	U	0.0016	0.016	2	50	100
Mercury	1455	U	< 0.00005	< 0.00005	0.01	0.2	2
Molybdenum	1455	U	0.030	0.30	0.5	10	30
Nickel	1455	U	< 0.0005	< 0.0005	0.4	10	40
Lead	1455	U	< 0.0005	< 0.0005	0.5	10	50
Antimony	1455	U	0.0013	0.013	0.06	0.7	5
Selenium	1455	U	< 0.0005	< 0.0005	0.1	0.5	7
Zinc	1455	U	< 0.003	< 0.003	4	50	200
Chloride	1220	U	< 1.0	< 10	800	15000	25000
Fluoride	1220	U	0.26	2.6	10	150	500
Sulphate	1220	U	< 1.0	< 10	1000	20000	50000
Total Dissolved Solids	1020	N	72	710	4000	60000	100000
Phenol Index	1920	U	< 0.030	< 0.30	1	-	-
Dissolved Organic Carbon	1610	U	9.1	91	500	800	1000

Solid Information	
Dry mass of test portion/kg	0.090
Moisture (%)	17

Waste Acceptance Criteria

Landfill WAC analysis (specifically leaching test results) must not be used for hazardous waste classification purposes. This analysis is only applicable for hazardous waste landfill acceptance and does not give any indication as to whether a waste may be hazardous or non-hazardous.

Results - Single Stage WAC

Project: 5811

					Landfill Waste Acceptance Criteria Limits		
Chemtest Job No:	21-33504						
Chemtest Sample ID:	1287155						
Sample Ref:	ES33						
Sample ID:	1						
Sample Location:	TP24						
Top Depth(m):	0.30						
Bottom Depth(m):	0.30						
Sampling Date:					**Inert Waste Landfill**	**Stable, Non-reactive hazardous waste in non-hazardous Landfill**	**Hazardous Waste Landfill**
Determinand	**SOP**	**Accred.**	**Units**				
Total Organic Carbon	2625	M	%	[A] 5.4	3	5	6
Loss On Ignition	2610	M	%	11	--	--	10
Total BTEX	2760	M	mg/kg	[A] < 0.010	6	--	--
Total PCBs (7 Congeners)	2815	M	mg/kg	< 0.10	1	--	--
TPH Total WAC	2670	M	mg/kg	[A] < 10	500	--	--
Total (Of 17) PAH's	2800	N	mg/kg	9.6	100	--	--
pH	2010	M		8.5	--	>6	--
Acid Neutralisation Capacity	2015	N	mol/kg	0.054	--	To evaluate	To evaluate
Eluate Analysis			**10:1 Eluate mg/l**	**10:1 Eluate mg/kg**	**Limit values for compliance leaching test using BS EN 12457 at L/S 10 l/kg**		
Arsenic	1455	U	0.013	0.13	0.5	2	25
Barium	1455	U	0.012	0.12	20	100	300
Cadmium	1455	U	< 0.00011	< 0.00011	0.04	1	5
Chromium	1455	U	< 0.0005	< 0.0005	0.5	10	70
Copper	1455	U	0.0039	0.039	2	50	100
Mercury	1455	U	< 0.00005	< 0.00005	0.01	0.2	2
Molybdenum	1455	U	0.012	0.12	0.5	10	30
Nickel	1455	U	0.0007	0.0072	0.4	10	40
Lead	1455	U	< 0.0005	< 0.0005	0.5	10	50
Antimony	1455	U	0.0048	0.048	0.06	0.7	5
Selenium	1455	U	0.0008	0.0078	0.1	0.5	7
Zinc	1455	U	0.003	0.027	4	50	200
Chloride	1220	U	< 1.0	< 10	800	15000	25000
Fluoride	1220	U	0.21	2.1	10	150	500
Sulphate	1220	U	< 1.0	< 10	1000	20000	50000
Total Dissolved Solids	1020	N	130	1300	4000	60000	100000
Phenol Index	1920	U	< 0.030	< 0.30	1	-	-
Dissolved Organic Carbon	1610	U	6.0	60	500	800	1000

Solid Information	
Dry mass of test portion/kg	0.090
Moisture (%)	8.0

Waste Acceptance Criteria

Landfill WAC analysis (specifically leaching test results) must not be used for hazardous waste classification purposes. This analysis is only applicable for hazardous waste landfill acceptance and does not give any indication as to whether a waste may be hazardous or non-hazardous.

Results - Single Stage WAC

Project: 5811

					Landfill Waste Acceptance Criteria Limits		
Chemtest Job No:	21-33504						
Chemtest Sample ID:	1287156						
Sample Ref:	ES34						
Sample ID:	2						
Sample Location:	TP24						
Top Depth(m):	1.00						
Bottom Depth(m):	1.00						
Sampling Date:					**Inert Waste Landfill**	**Stable, Non-reactive hazardous waste in non-hazardous Landfill**	**Hazardous Waste Landfill**
Determinand	**SOP**	**Accred.**	**Units**				
Total Organic Carbon	2625	M	%	[A] 3.7	3	5	6
Loss On Ignition	2610	M	%	5.3	--	--	10
Total BTEX	2760	M	mg/kg	[A] < 0.010	6	--	--
Total PCBs (7 Congeners)	2815	M	mg/kg	< 0.10	1	--	--
TPH Total WAC	2670	M	mg/kg	[A] 20	500	--	--
Total (Of 17) PAH's	2800	N	mg/kg	57	100	--	--
pH	2010	M		8.4	--	>6	--
Acid Neutralisation Capacity	2015	N	mol/kg	0.022	--	To evaluate	To evaluate
Eluate Analysis			**10:1 Eluate mg/l**	**10:1 Eluate mg/kg**	**Limit values for compliance leaching test using BS EN 12457 at L/S 10 l/kg**		
Arsenic	1455	U	0.0093	0.093	0.5	2	25
Barium	1455	U	0.005	0.053	20	100	300
Cadmium	1455	U	< 0.00011	< 0.00011	0.04	1	5
Chromium	1455	U	0.0006	0.0062	0.5	10	70
Copper	1455	U	0.0036	0.037	2	50	100
Mercury	1455	U	< 0.00005	< 0.00005	0.01	0.2	2
Molybdenum	1455	U	0.016	0.16	0.5	10	30
Nickel	1455	U	< 0.0005	< 0.0005	0.4	10	40
Lead	1455	U	< 0.0005	< 0.0005	0.5	10	50
Antimony	1455	U	0.0026	0.026	0.06	0.7	5
Selenium	1455	U	0.0007	0.0070	0.1	0.5	7
Zinc	1455	U	< 0.003	< 0.003	4	50	200
Chloride	1220	U	< 1.0	< 10	800	15000	25000
Fluoride	1220	U	0.27	2.7	10	150	500
Sulphate	1220	U	< 1.0	< 10	1000	20000	50000
Total Dissolved Solids	1020	N	110	1100	4000	60000	100000
Phenol Index	1920	U	< 0.030	< 0.30	1	-	-
Dissolved Organic Carbon	1610	U	7.3	73	500	800	1000

Solid Information	
Dry mass of test portion/kg	0.090
Moisture (%)	5.0

Waste Acceptance Criteria

Landfill WAC analysis (specifically leaching test results) must not be used for hazardous waste classification purposes. This analysis is only applicable for hazardous waste landfill acceptance and does not give any indication as to whether a waste may be hazardous or non-hazardous.

Results - Single Stage WAC

Project: 5811

Chemtest Job No:	21-33504				**Landfill Waste Acceptance Criteria Limits**		
Chemtest Sample ID:	1287157						
Sample Ref:	ES35				**Inert Waste Landfill**	**Stable, Non-reactive hazardous waste in non-hazardous Landfill**	**Hazardous Waste Landfill**
Sample ID:	1						
Sample Location:	TP25						
Top Depth(m):	0.30						
Bottom Depth(m):	0.30						
Sampling Date:							
Determinand	**SOP**	**Accred.**	**Units**				
Total Organic Carbon	2625	M	%	[A] 6.3	3	5	6
Loss On Ignition	2610	M	%	5.3	--	--	10
Total BTEX	2760	M	mg/kg	[A] < 0.010	6	--	--
Total PCBs (7 Congeners)	2815	M	mg/kg	< 0.10	1	--	--
TPH Total WAC	2670	M	mg/kg	[A] < 10	500	--	--
Total (Of 17) PAH's	2800	N	mg/kg	20	100	--	--
pH	2010	M		8.7	--	>6	--
Acid Neutralisation Capacity	2015	N	mol/kg	0.030	--	To evaluate	To evaluate
Eluate Analysis			**10:1 Eluate mg/l**	**10:1 Eluate mg/kg**	**Limit values for compliance leaching test using BS EN 12457 at L/S 10 l/kg**		
Arsenic	1455	U	0.011	0.11	0.5	2	25
Barium	1455	U	0.011	0.11	20	100	300
Cadmium	1455	U	< 0.00011	< 0.00011	0.04	1	5
Chromium	1455	U	< 0.0005	< 0.0005	0.5	10	70
Copper	1455	U	0.014	0.14	2	50	100
Mercury	1455	U	< 0.00005	< 0.00005	0.01	0.2	2
Molybdenum	1455	U	0.0078	0.078	0.5	10	30
Nickel	1455	U	0.0007	0.0067	0.4	10	40
Lead	1455	U	< 0.0005	< 0.0005	0.5	10	50
Antimony	1455	U	0.0020	0.020	0.06	0.7	5
Selenium	1455	U	0.0010	0.010	0.1	0.5	7
Zinc	1455	U	0.004	0.040	4	50	200
Chloride	1220	U	< 1.0	< 10	800	15000	25000
Fluoride	1220	U	0.40	4.0	10	150	500
Sulphate	1220	U	< 1.0	< 10	1000	20000	50000
Total Dissolved Solids	1020	N	140	1400	4000	60000	100000
Phenol Index	1920	U	< 0.030	< 0.30	1	-	-
Dissolved Organic Carbon	1610	U	5.4	54	500	800	1000

Solid Information	
Dry mass of test portion/kg	0.090
Moisture (%)	3.5

Waste Acceptance Criteria

Landfill WAC analysis (specifically leaching test results) must not be used for hazardous waste classification purposes. This analysis is only applicable for hazardous waste landfill acceptance and does not give any indication as to whether a waste may be hazardous or non-hazardous.

Results - Single Stage WAC

Project: 5811

					Landfill Waste Acceptance Criteria Limits		
Chemtest Job No:	21-33504						
Chemtest Sample ID:	1287158						
Sample Ref:	ES36						
Sample ID:	2						
Sample Location:	TP25						
Top Depth(m):	1.00						
Bottom Depth(m):	1.00						
Sampling Date:					**Inert Waste Landfill**	**Stable, Non-reactive hazardous waste in non-hazardous Landfill**	**Hazardous Waste Landfill**
Determinand	**SOP**	**Accred.**	**Units**				
Total Organic Carbon	2625	M	%	[A] 2.7	3	5	6
Loss On Ignition	2610	M	%	4.2	--	--	10
Total BTEX	2760	M	mg/kg	[A] < 0.010	6	--	--
Total PCBs (7 Congeners)	2815	M	mg/kg	< 0.10	1	--	--
TPH Total WAC	2670	M	mg/kg	[A] < 10	500	--	--
Total (Of 17) PAH's	2800	N	mg/kg	< 2.0	100	--	--
pH	2010	M		8.5	--	>6	--
Acid Neutralisation Capacity	2015	N	mol/kg	0.016	--	To evaluate	To evaluate
Eluate Analysis			**10:1 Eluate mg/l**	**10:1 Eluate mg/kg**	**Limit values for compliance leaching test using BS EN 12457 at L/S 10 l/kg**		
Arsenic	1455	U	0.0032	0.032	0.5	2	25
Barium	1455	U	< 0.005	< 0.0005	20	100	300
Cadmium	1455	U	< 0.00011	< 0.00011	0.04	1	5
Chromium	1455	U	0.0006	0.0063	0.5	10	70
Copper	1455	U	0.0025	0.025	2	50	100
Mercury	1455	U	< 0.00005	< 0.00005	0.01	0.2	2
Molybdenum	1455	U	0.042	0.42	0.5	10	30
Nickel	1455	U	< 0.0005	< 0.0005	0.4	10	40
Lead	1455	U	< 0.0005	< 0.0005	0.5	10	50
Antimony	1455	U	0.0017	0.018	0.06	0.7	5
Selenium	1455	U	0.0007	0.0071	0.1	0.5	7
Zinc	1455	U	< 0.003	< 0.003	4	50	200
Chloride	1220	U	< 1.0	< 10	800	15000	25000
Fluoride	1220	U	0.28	2.8	10	150	500
Sulphate	1220	U	< 1.0	< 10	1000	20000	50000
Total Dissolved Solids	1020	N	110	1100	4000	60000	100000
Phenol Index	1920	U	< 0.030	< 0.30	1	-	-
Dissolved Organic Carbon	1610	U	6.7	67	500	800	1000

Solid Information	
Dry mass of test portion/kg	0.090
Moisture (%)	4.4

Waste Acceptance Criteria

Landfill WAC analysis (specifically leaching test results) must not be used for hazardous waste classification purposes. This analysis is only applicable for hazardous waste landfill acceptance and does not give any indication as to whether a waste may be hazardous or non-hazardous.

Results - Single Stage WAC

Project: 5811

					Landfill Waste Acceptance Criteria Limits		
Chemtest Job No:	21-33504						
Chemtest Sample ID:	1287159						
Sample Ref:	ES37						
Sample ID:	1						
Sample Location:	TP26						
Top Depth(m):	0.30						
Bottom Depth(m):	0.30						
Sampling Date:					**Inert Waste Landfill**	**Stable, Non-reactive hazardous waste in non-hazardous Landfill**	**Hazardous Waste Landfill**
Determinand	**SOP**	**Accred.**	**Units**				
Total Organic Carbon	2625	M	%	[A] 2.8	3	5	6
Loss On Ignition	2610	M	%	4.9	--	--	10
Total BTEX	2760	M	mg/kg	[A] < 0.010	6	--	--
Total PCBs (7 Congeners)	2815	M	mg/kg	< 0.10	1	--	--
TPH Total WAC	2670	M	mg/kg	[A] < 10	500	--	--
Total (Of 17) PAH's	2800	N	mg/kg	2.1	100	--	--
pH	2010	M		8.6	--	>6	--
Acid Neutralisation Capacity	2015	N	mol/kg	0.038	--	To evaluate	To evaluate
Eluate Analysis			**10:1 Eluate mg/l**	**10:1 Eluate mg/kg**	**Limit values for compliance leaching test using BS EN 12457 at L/S 10 l/kg**		
Arsenic	1455	U	0.0031	0.031	0.5	2	25
Barium	1455	U	0.006	0.065	20	100	300
Cadmium	1455	U	< 0.00011	< 0.00011	0.04	1	5
Chromium	1455	U	0.0008	0.0084	0.5	10	70
Copper	1455	U	0.0025	0.025	2	50	100
Mercury	1455	U	< 0.00005	< 0.00005	0.01	0.2	2
Molybdenum	1455	U	0.011	0.11	0.5	10	30
Nickel	1455	U	< 0.0005	< 0.0005	0.4	10	40
Lead	1455	U	< 0.0005	< 0.0005	0.5	10	50
Antimony	1455	U	0.0010	0.010	0.06	0.7	5
Selenium	1455	U	0.0005	0.0054	0.1	0.5	7
Zinc	1455	U	< 0.003	< 0.003	4	50	200
Chloride	1220	U	< 1.0	< 10	800	15000	25000
Fluoride	1220	U	0.30	3.0	10	150	500
Sulphate	1220	U	< 1.0	< 10	1000	20000	50000
Total Dissolved Solids	1020	N	120	1200	4000	60000	100000
Phenol Index	1920	U	< 0.030	< 0.30	1	-	-
Dissolved Organic Carbon	1610	U	4.5	< 50	500	800	1000

Solid Information	
Dry mass of test portion/kg	0.090
Moisture (%)	6.2

Waste Acceptance Criteria

Landfill WAC analysis (specifically leaching test results) must not be used for hazardous waste classification purposes. This analysis is only applicable for hazardous waste landfill acceptance and does not give any indication as to whether a waste may be hazardous or non-hazardous.

Results - Single Stage WAC

Project: 5811

					Landfill Waste Acceptance Criteria Limits		
Chemtest Job No:	21-33504						
Chemtest Sample ID:	1287160						
Sample Ref:	ES38						
Sample ID:	2						
Sample Location:	TP26						
Top Depth(m):	1.20						
Bottom Depth(m):	1.20						
Sampling Date:					Inert Waste Landfill	Stable, Non-reactive hazardous waste in non-hazardous Landfill	Hazardous Waste Landfill
Determinand	**SOP**	**Accred.**	**Units**				
Total Organic Carbon	2625	M	%	[A] 2.6	3	5	6
Loss On Ignition	2610	M	%	5.6	--	--	10
Total BTEX	2760	M	mg/kg	[A] < 0.010	6	--	--
Total PCBs (7 Congeners)	2815	M	mg/kg	< 0.10	1	--	--
TPH Total WAC	2670	M	mg/kg	[A] < 10	500	--	--
Total (Of 17) PAH's	2800	N	mg/kg	< 2.0	100	--	--
pH	2010	M		8.5	--	>6	--
Acid Neutralisation Capacity	2015	N	mol/kg	0.030	--	To evaluate	To evaluate
Eluate Analysis			**10:1 Eluate mg/l**	**10:1 Eluate mg/kg**	**Limit values for compliance leaching test using BS EN 12457 at L/S 10 l/kg**		
Arsenic	1455	U	0.0022	0.022	0.5	2	25
Barium	1455	U	< 0.005	< 0.0005	20	100	300
Cadmium	1455	U	< 0.00011	< 0.00011	0.04	1	5
Chromium	1455	U	0.0012	0.012	0.5	10	70
Copper	1455	U	0.0015	0.015	2	50	100
Mercury	1455	U	< 0.00005	< 0.00005	0.01	0.2	2
Molybdenum	1455	U	0.040	0.40	0.5	10	30
Nickel	1455	U	< 0.0005	< 0.0005	0.4	10	40
Lead	1455	U	< 0.0005	< 0.0005	0.5	10	50
Antimony	1455	U	0.0011	0.011	0.06	0.7	5
Selenium	1455	U	0.0006	0.0057	0.1	0.5	7
Zinc	1455	U	< 0.003	< 0.003	4	50	200
Chloride	1220	U	< 1.0	< 10	800	15000	25000
Fluoride	1220	U	0.22	2.2	10	150	500
Sulphate	1220	U	< 1.0	< 10	1000	20000	50000
Total Dissolved Solids	1020	N	78	780	4000	60000	100000
Phenol Index	1920	U	< 0.030	< 0.30	1	-	-
Dissolved Organic Carbon	1610	U	12	120	500	800	1000

Solid Information	
Dry mass of test portion/kg	0.090
Moisture (%)	9.3

Waste Acceptance Criteria

Landfill WAC analysis (specifically leaching test results) must not be used for hazardous waste classification purposes. This analysis is only applicable for hazardous waste landfill acceptance and does not give any indication as to whether a waste may be hazardous or non-hazardous.

Results - Single Stage WAC

Project: 5811

Chemtest Job No:	21-33504				**Landfill Waste Acceptance Criteria Limits**		
Chemtest Sample ID:	1287161						
Sample Ref:	ES39				**Inert Waste Landfill**	**Stable, Non-reactive hazardous waste in non-hazardous Landfill**	**Hazardous Waste Landfill**
Sample ID:	1						
Sample Location:	TP27						
Top Depth(m):	0.30						
Bottom Depth(m):	0.30						
Sampling Date:							
Determinand	**SOP**	**Accred.**	**Units**				
Total Organic Carbon	2625	M	%	[A] 3.1	3	5	6
Loss On Ignition	2610	M	%	6.1	--	--	10
Total BTEX	2760	M	mg/kg	[A] < 0.010	6	--	--
Total PCBs (7 Congeners)	2815	M	mg/kg	< 0.10	1	--	--
TPH Total WAC	2670	M	mg/kg	[A] < 10	500	--	--
Total (Of 17) PAH's	2800	N	mg/kg	< 2.0	100	--	--
pH	2010	M		8.4	--	>6	--
Acid Neutralisation Capacity	2015	N	mol/kg	0.057	--	To evaluate	To evaluate
Eluate Analysis			**10:1 Eluate mg/l**	**10:1 Eluate mg/kg**	**Limit values for compliance leaching test using BS EN 12457 at L/S 10 l/kg**		
Arsenic	1455	U	0.0031	0.031	0.5	2	25
Barium	1455	U	< 0.005	< 0.0005	20	100	300
Cadmium	1455	U	< 0.00011	< 0.00011	0.04	1	5
Chromium	1455	U	0.0009	0.0087	0.5	10	70
Copper	1455	U	0.0022	0.023	2	50	100
Mercury	1455	U	< 0.00005	< 0.00005	0.01	0.2	2
Molybdenum	1455	U	0.037	0.37	0.5	10	30
Nickel	1455	U	< 0.0005	< 0.0005	0.4	10	40
Lead	1455	U	< 0.0005	< 0.0005	0.5	10	50
Antimony	1455	U	0.0018	0.018	0.06	0.7	5
Selenium	1455	U	0.0008	0.0079	0.1	0.5	7
Zinc	1455	U	< 0.003	< 0.003	4	50	200
Chloride	1220	U	< 1.0	< 10	800	15000	25000
Fluoride	1220	U	0.28	2.8	10	150	500
Sulphate	1220	U	< 1.0	< 10	1000	20000	50000
Total Dissolved Solids	1020	N	130	1300	4000	60000	100000
Phenol Index	1920	U	< 0.030	< 0.30	1	-	-
Dissolved Organic Carbon	1610	U	15	150	500	800	1000

Solid Information	
Dry mass of test portion/kg	0.090
Moisture (%)	20

Waste Acceptance Criteria

Landfill WAC analysis (specifically leaching test results) must not be used for hazardous waste classification purposes. This analysis is only applicable for hazardous waste landfill acceptance and does not give any indication as to whether a waste may be hazardous or non-hazardous.

Results - Single Stage WAC

Project: 5811

					Landfill Waste Acceptance Criteria Limits		
Chemtest Job No:	21-33504						
Chemtest Sample ID:	1287162						
Sample Ref:	ES40				**Inert Waste Landfill**	**Stable, Non-reactive hazardous waste in non-hazardous Landfill**	**Hazardous Waste Landfill**
Sample ID:	2						
Sample Location:	TP27						
Top Depth(m):	1.00						
Bottom Depth(m):	1.00						
Sampling Date:							
Determinand	**SOP**	**Accred.**	**Units**				
Total Organic Carbon	2625	M	%	[A] 0.40	3	5	6
Loss On Ignition	2610	M	%	7.3	--	--	10
Total BTEX	2760	M	mg/kg	[A] < 0.010	6	--	--
Total PCBs (7 Congeners)	2815	M	mg/kg	< 0.10	1	--	--
TPH Total WAC	2670	M	mg/kg	[A] < 10	500	--	--
Total (Of 17) PAH's	2800	N	mg/kg	< 2.0	100	--	--
pH	2010	M		8.4	--	>6	--
Acid Neutralisation Capacity	2015	N	mol/kg	0.049	--	To evaluate	To evaluate
Eluate Analysis			**10:1 Eluate mg/l**	**10:1 Eluate mg/kg**	**Limit values for compliance leaching test using BS EN 12457 at L/S 10 l/kg**		
Arsenic	1455	U	0.0005	0.0050	0.5	2	25
Barium	1455	U	< 0.005	< 0.0005	20	100	300
Cadmium	1455	U	< 0.00011	< 0.00011	0.04	1	5
Chromium	1455	U	0.0009	0.0088	0.5	10	70
Copper	1455	U	0.0011	0.011	2	50	100
Mercury	1455	U	< 0.00005	< 0.00005	0.01	0.2	2
Molybdenum	1455	U	0.029	0.29	0.5	10	30
Nickel	1455	U	< 0.0005	< 0.0005	0.4	10	40
Lead	1455	U	< 0.0005	< 0.0005	0.5	10	50
Antimony	1455	U	0.0007	0.0069	0.06	0.7	5
Selenium	1455	U	0.0006	0.0065	0.1	0.5	7
Zinc	1455	U	< 0.003	< 0.003	4	50	200
Chloride	1220	U	< 1.0	< 10	800	15000	25000
Fluoride	1220	U	0.32	3.2	10	150	500
Sulphate	1220	U	3.6	36	1000	20000	50000
Total Dissolved Solids	1020	N	85	840	4000	60000	100000
Phenol Index	1920	U	< 0.030	< 0.30	1	-	-
Dissolved Organic Carbon	1610	U	6.2	62	500	800	1000

Solid Information	
Dry mass of test portion/kg	0.090
Moisture (%)	17

Waste Acceptance Criteria

Landfill WAC analysis (specifically leaching test results) must not be used for hazardous waste classification purposes. This analysis is only applicable for hazardous waste landfill acceptance and does not give any indication as to whether a waste may be hazardous or non-hazardous.

Results - Single Stage WAC

Project: 5811

					Landfill Waste Acceptance Criteria Limits		
Chemtest Job No:	21-33504						
Chemtest Sample ID:	1287163						
Sample Ref:	ES41						
Sample ID:	1						
Sample Location:	TP28						
Top Depth(m):	0.20						
Bottom Depth(m):	0.30						
Sampling Date:					**Inert Waste Landfill**	**Stable, Non-reactive hazardous waste in non-hazardous Landfill**	**Hazardous Waste Landfill**
Determinand	**SOP**	**Accred.**	**Units**				
Total Organic Carbon	2625	M	%	[A] 3.9	3	5	6
Loss On Ignition	2610	M	%	4.0	--	--	10
Total BTEX	2760	M	mg/kg	[A] < 0.010	6	--	--
Total PCBs (7 Congeners)	2815	M	mg/kg	< 0.10	1	--	--
TPH Total WAC	2670	M	mg/kg	[A] 57	500	--	--
Total (Of 17) PAH's	2800	N	mg/kg	22	100	--	--
pH	2010	M		8.5	--	>6	--
Acid Neutralisation Capacity	2015	N	mol/kg	0.021	--	To evaluate	To evaluate
Eluate Analysis			**10:1 Eluate mg/l**	**10:1 Eluate mg/kg**	**Limit values for compliance leaching test using BS EN 12457 at L/S 10 l/kg**		
Arsenic	1455	U	0.010	0.10	0.5	2	25
Barium	1455	U	< 0.005	< 0.0005	20	100	300
Cadmium	1455	U	< 0.00011	< 0.00011	0.04	1	5
Chromium	1455	U	0.0006	0.0056	0.5	10	70
Copper	1455	U	0.0042	0.042	2	50	100
Mercury	1455	U	< 0.00005	< 0.00005	0.01	0.2	2
Molybdenum	1455	U	0.022	0.22	0.5	10	30
Nickel	1455	U	0.0005	0.0052	0.4	10	40
Lead	1455	U	< 0.0005	< 0.0005	0.5	10	50
Antimony	1455	U	0.0031	0.031	0.06	0.7	5
Selenium	1455	U	0.0007	0.0066	0.1	0.5	7
Zinc	1455	U	< 0.003	< 0.003	4	50	200
Chloride	1220	U	< 1.0	< 10	800	15000	25000
Fluoride	1220	U	0.39	3.9	10	150	500
Sulphate	1220	U	< 1.0	< 10	1000	20000	50000
Total Dissolved Solids	1020	N	200	2000	4000	60000	100000
Phenol Index	1920	U	< 0.030	< 0.30	1	-	-
Dissolved Organic Carbon	1610	U	5.0	50	500	800	1000

Solid Information	
Dry mass of test portion/kg	0.090
Moisture (%)	8.0

Waste Acceptance Criteria

Landfill WAC analysis (specifically leaching test results) must not be used for hazardous waste classification purposes. This analysis is only applicable for hazardous waste landfill acceptance and does not give any indication as to whether a waste may be hazardous or non-hazardous.

Results - Single Stage WAC

Project: 5811

					Landfill Waste Acceptance Criteria Limits		
Chemtest Job No:	21-33504						
Chemtest Sample ID:	1287164						
Sample Ref:	ES42						
Sample ID:	2						
Sample Location:	TP28						
Top Depth(m):	1.00						
Bottom Depth(m):	1.00						
Sampling Date:					**Inert Waste Landfill**	**Stable, Non-reactive hazardous waste in non-hazardous Landfill**	**Hazardous Waste Landfill**
Determinand	**SOP**	**Accred.**	**Units**				
Total Organic Carbon	2625	M	%	[A] 0.70	3	5	6
Loss On Ignition	2610	M	%	0.91	--	--	10
Total BTEX	2760	M	mg/kg	[A] < 0.010	6	--	--
Total PCBs (7 Congeners)	2815	M	mg/kg	< 0.10	1	--	--
TPH Total WAC	2670	M	mg/kg	[A] 28	500	--	--
Total (Of 17) PAH's	2800	N	mg/kg	< 2.0	100	--	--
pH	2010	M		8.7	--	>6	--
Acid Neutralisation Capacity	2015	N	mol/kg	0.019	--	To evaluate	To evaluate
Eluate Analysis			**10:1 Eluate mg/l**	**10:1 Eluate mg/kg**	**Limit values for compliance leaching test using BS EN 12457 at L/S 10 l/kg**		
Arsenic	1455	U	0.0005	0.0045	0.5	2	25
Barium	1455	U	< 0.005	< 0.0005	20	100	300
Cadmium	1455	U	< 0.00011	< 0.00011	0.04	1	5
Chromium	1455	U	0.0007	0.0067	0.5	10	70
Copper	1455	U	0.0011	0.011	2	50	100
Mercury	1455	U	< 0.00005	< 0.00005	0.01	0.2	2
Molybdenum	1455	U	0.017	0.17	0.5	10	30
Nickel	1455	U	< 0.0005	< 0.0005	0.4	10	40
Lead	1455	U	< 0.0005	< 0.0005	0.5	10	50
Antimony	1455	U	< 0.0005	< 0.0005	0.06	0.7	5
Selenium	1455	U	< 0.0005	< 0.0005	0.1	0.5	7
Zinc	1455	U	< 0.003	< 0.003	4	50	200
Chloride	1220	U	< 1.0	< 10	800	15000	25000
Fluoride	1220	U	0.37	3.7	10	150	500
Sulphate	1220	U	< 1.0	< 10	1000	20000	50000
Total Dissolved Solids	1020	N	72	710	4000	60000	100000
Phenol Index	1920	U	< 0.030	< 0.30	1	-	-
Dissolved Organic Carbon	1610	U	3.1	< 50	500	800	1000

Solid Information	
Dry mass of test portion/kg	0.090
Moisture (%)	9.1

Waste Acceptance Criteria

Landfill WAC analysis (specifically leaching test results) must not be used for hazardous waste classification purposes. This analysis is only applicable for hazardous waste landfill acceptance and does not give any indication as to whether a waste may be hazardous or non-hazardous.

Results - Single Stage WAC

Project: 5811

					Landfill Waste Acceptance Criteria Limits		
Chemtest Job No:	21-33504						
Chemtest Sample ID:	1287165						
Sample Ref:	ES43						
Sample ID:	1						
Sample Location:	TP30						
Top Depth(m):	0.30				Inert Waste Landfill	Stable, Non-reactive hazardous waste in non-hazardous Landfill	Hazardous Waste Landfill
Bottom Depth(m):	0.30						
Sampling Date:							
Determinand	**SOP**	**Accred.**	**Units**				
Total Organic Carbon	2625	M	%	[A] 6.2	3	5	6
Loss On Ignition	2610	M	%	9.1	--	--	10
Total BTEX	2760	M	mg/kg	[A] < 0.010	6	--	--
Total PCBs (7 Congeners)	2815	M	mg/kg	< 0.10	1	--	--
TPH Total WAC	2670	M	mg/kg	[A] 180	500	--	--
Total (Of 17) PAH's	2800	N	mg/kg	11	100	--	--
pH	2010	M		8.4	--	>6	--
Acid Neutralisation Capacity	2015	N	mol/kg	0.017	--	To evaluate	To evaluate
Eluate Analysis			**10:1 Eluate mg/l**	**10:1 Eluate mg/kg**	**Limit values for compliance leaching test using BS EN 12457 at L/S 10 l/kg**		
Arsenic	1455	U	0.0040	0.040	0.5	2	25
Barium	1455	U	0.009	0.092	20	100	300
Cadmium	1455	U	< 0.00011	< 0.00011	0.04	1	5
Chromium	1455	U	< 0.0005	< 0.0005	0.5	10	70
Copper	1455	U	0.0062	0.062	2	50	100
Mercury	1455	U	< 0.00005	< 0.00005	0.01	0.2	2
Molybdenum	1455	U	0.0059	0.059	0.5	10	30
Nickel	1455	U	0.0007	0.0074	0.4	10	40
Lead	1455	U	< 0.0005	< 0.0005	0.5	10	50
Antimony	1455	U	0.0010	0.0099	0.06	0.7	5
Selenium	1455	U	0.0009	0.0087	0.1	0.5	7
Zinc	1455	U	< 0.003	< 0.003	4	50	200
Chloride	1220	U	< 1.0	< 10	800	15000	25000
Fluoride	1220	U	0.30	3.0	10	150	500
Sulphate	1220	U	< 1.0	< 10	1000	20000	50000
Total Dissolved Solids	1020	N	160	1600	4000	60000	100000
Phenol Index	1920	U	< 0.030	< 0.30	1	-	-
Dissolved Organic Carbon	1610	U	6.2	62	500	800	1000

Solid Information	
Dry mass of test portion/kg	0.090
Moisture (%)	8.1

Waste Acceptance Criteria

Landfill WAC analysis (specifically leaching test results) must not be used for hazardous waste classification purposes. This analysis is only applicable for hazardous waste landfill acceptance and does not give any indication as to whether a waste may be hazardous or non-hazardous.

Results - Single Stage WAC

Project: 5811

					Landfill Waste Acceptance Criteria Limits		
Chemtest Job No:	21-33504						
Chemtest Sample ID:	1287166						
Sample Ref:	ES44						
Sample ID:	2						
Sample Location:	TP30						
Top Depth(m):	0.90						
Bottom Depth(m):	0.90						
Sampling Date:					**Inert Waste Landfill**	**Stable, Non-reactive hazardous waste in non-hazardous Landfill**	**Hazardous Waste Landfill**
Determinand	**SOP**	**Accred.**	**Units**				
Total Organic Carbon	2625	M	%	[A] 1.4	3	5	6
Loss On Ignition	2610	M	%	1.6	--	--	10
Total BTEX	2760	M	mg/kg	[A] < 0.010	6	--	--
Total PCBs (7 Congeners)	2815	M	mg/kg	< 0.10	1	--	--
TPH Total WAC	2670	M	mg/kg	[A] < 10	500	--	--
Total (Of 17) PAH's	2800	N	mg/kg	< 2.0	100	--	--
pH	2010	M		8.6	--	>6	--
Acid Neutralisation Capacity	2015	N	mol/kg	0.0090	--	To evaluate	To evaluate
Eluate Analysis			**10:1 Eluate mg/l**	**10:1 Eluate mg/kg**	**Limit values for compliance leaching test using BS EN 12457 at L/S 10 l/kg**		
Arsenic	1455	U	0.0013	0.013	0.5	2	25
Barium	1455	U	< 0.005	< 0.0005	20	100	300
Cadmium	1455	U	< 0.00011	< 0.00011	0.04	1	5
Chromium	1455	U	0.0010	0.010	0.5	10	70
Copper	1455	U	0.0016	0.016	2	50	100
Mercury	1455	U	< 0.00005	< 0.00005	0.01	0.2	2
Molybdenum	1455	U	0.016	0.16	0.5	10	30
Nickel	1455	U	< 0.0005	< 0.0005	0.4	10	40
Lead	1455	U	< 0.0005	< 0.0005	0.5	10	50
Antimony	1455	U	0.0007	0.0068	0.06	0.7	5
Selenium	1455	U	< 0.0005	< 0.0005	0.1	0.5	7
Zinc	1455	U	< 0.003	< 0.003	4	50	200
Chloride	1220	U	< 1.0	< 10	800	15000	25000
Fluoride	1220	U	0.37	3.7	10	150	500
Sulphate	1220	U	< 1.0	< 10	1000	20000	50000
Total Dissolved Solids	1020	N	91	910	4000	60000	100000
Phenol Index	1920	U	< 0.030	< 0.30	1	-	-
Dissolved Organic Carbon	1610	U	4.4	< 50	500	800	1000

Solid Information	
Dry mass of test portion/kg	0.090
Moisture (%)	10

Waste Acceptance Criteria

Landfill WAC analysis (specifically leaching test results) must not be used for hazardous waste classification purposes. This analysis is only applicable for hazardous waste landfill acceptance and does not give any indication as to whether a waste may be hazardous or non-hazardous.

Results - Single Stage WAC

Project: 5811

					Landfill Waste Acceptance Criteria Limits		
Chemtest Job No:	21-33504						
Chemtest Sample ID:	1287167						
Sample Ref:	ES45						
Sample ID:	1						
Sample Location:	TP31						
Top Depth(m):	0.30						
Bottom Depth(m):	0.30						
Sampling Date:					**Inert Waste Landfill**	**Stable, Non-reactive hazardous waste in non-hazardous Landfill**	**Hazardous Waste Landfill**
Determinand	**SOP**	**Accred.**	**Units**				
Total Organic Carbon	2625	M	%	[A] 7.5	3	5	6
Loss On Ignition	2610	M	%	11	--	--	10
Total BTEX	2760	M	mg/kg	[A] < 0.010	6	--	--
Total PCBs (7 Congeners)	2815	M	mg/kg	< 0.10	1	--	--
TPH Total WAC	2670	M	mg/kg	[A] 35	500	--	--
Total (Of 17) PAH's	2800	N	mg/kg	10	100	--	--
pH	2010	M		8.3	--	>6	--
Acid Neutralisation Capacity	2015	N	mol/kg	0.0040	--	To evaluate	To evaluate
Eluate Analysis			**10:1 Eluate mg/l**	**10:1 Eluate mg/kg**	**Limit values for compliance leaching test using BS EN 12457 at L/S 10 l/kg**		
Arsenic	1455	U	0.0051	0.051	0.5	2	25
Barium	1455	U	0.010	0.098	20	100	300
Cadmium	1455	U	< 0.00011	< 0.00011	0.04	1	5
Chromium	1455	U	< 0.0005	< 0.0005	0.5	10	70
Copper	1455	U	0.0064	0.064	2	50	100
Mercury	1455	U	< 0.00005	< 0.00005	0.01	0.2	2
Molybdenum	1455	U	0.0037	0.037	0.5	10	30
Nickel	1455	U	0.0008	0.0080	0.4	10	40
Lead	1455	U	< 0.0005	< 0.0005	0.5	10	50
Antimony	1455	U	0.0007	0.0074	0.06	0.7	5
Selenium	1455	U	0.0006	0.0064	0.1	0.5	7
Zinc	1455	U	< 0.003	< 0.003	4	50	200
Chloride	1220	U	< 1.0	< 10	800	15000	25000
Fluoride	1220	U	0.28	2.8	10	150	500
Sulphate	1220	U	< 1.0	< 10	1000	20000	50000
Total Dissolved Solids	1020	N	160	1600	4000	60000	100000
Phenol Index	1920	U	< 0.030	< 0.30	1	-	-
Dissolved Organic Carbon	1610	U	7.3	73	500	800	1000

Solid Information	
Dry mass of test portion/kg	0.090
Moisture (%)	8.7

Waste Acceptance Criteria

Landfill WAC analysis (specifically leaching test results) must not be used for hazardous waste classification purposes. This analysis is only applicable for hazardous waste landfill acceptance and does not give any indication as to whether a waste may be hazardous or non-hazardous.

Results - Single Stage WAC

Project: 5811

Chemtest Job No:	21-33504				**Landfill Waste Acceptance Criteria Limits**		
Chemtest Sample ID:	1287168						
Sample Ref:	ES46				**Inert Waste Landfill**	**Stable, Non-reactive hazardous waste in non-hazardous Landfill**	**Hazardous Waste Landfill**
Sample ID:	2						
Sample Location:	TP31						
Top Depth(m):	1.50						
Bottom Depth(m):	1.50						
Sampling Date:							
Determinand	**SOP**	**Accred.**	**Units**				
Total Organic Carbon	2625	M	%	[A] 0.66	3	5	6
Loss On Ignition	2610	M	%	2.1	--	--	10
Total BTEX	2760	M	mg/kg	[A] < 0.010	6	--	--
Total PCBs (7 Congeners)	2815	M	mg/kg	< 0.10	1	--	--
TPH Total WAC	2670	M	mg/kg	[A] < 10	500	--	--
Total (Of 17) PAH's	2800	N	mg/kg	< 2.0	100	--	--
pH	2010	M		8.5	--	>6	--
Acid Neutralisation Capacity	2015	N	mol/kg	0.015	--	To evaluate	To evaluate
Eluate Analysis			**10:1 Eluate mg/l**	**10:1 Eluate mg/kg**	**Limit values for compliance leaching test using BS EN 12457 at L/S 10 l/kg**		
Arsenic	1455	U	0.0005	0.0055	0.5	2	25
Barium	1455	U	< 0.005	< 0.0005	20	100	300
Cadmium	1455	U	< 0.00011	< 0.00011	0.04	1	5
Chromium	1455	U	0.0005	0.0052	0.5	10	70
Copper	1455	U	0.0011	0.011	2	50	100
Mercury	1455	U	< 0.00005	< 0.00005	0.01	0.2	2
Molybdenum	1455	U	0.020	0.20	0.5	10	30
Nickel	1455	U	< 0.0005	< 0.0005	0.4	10	40
Lead	1455	U	< 0.0005	< 0.0005	0.5	10	50
Antimony	1455	U	< 0.0005	< 0.0005	0.06	0.7	5
Selenium	1455	U	< 0.0005	< 0.0005	0.1	0.5	7
Zinc	1455	U	< 0.003	< 0.003	4	50	200
Chloride	1220	U	< 1.0	< 10	800	15000	25000
Fluoride	1220	U	0.31	3.1	10	150	500
Sulphate	1220	U	< 1.0	< 10	1000	20000	50000
Total Dissolved Solids	1020	N	78	780	4000	60000	100000
Phenol Index	1920	U	< 0.030	< 0.30	1	-	-
Dissolved Organic Carbon	1610	U	10	100	500	800	1000

Solid Information	
Dry mass of test portion/kg	0.090
Moisture (%)	12

Waste Acceptance Criteria

Landfill WAC analysis (specifically leaching test results) must not be used for hazardous waste classification purposes. This analysis is only applicable for hazardous waste landfill acceptance and does not give any indication as to whether a waste may be hazardous or non-hazardous.

Results - Single Stage WAC

Project: 5811

Chemtest Job No:	21-33504				**Landfill Waste Acceptance Criteria Limits**		
Chemtest Sample ID:	1287169						
Sample Ref:	ES47				**Inert Waste Landfill**	**Stable, Non-reactive hazardous waste in non-hazardous Landfill**	**Hazardous Waste Landfill**
Sample ID:	1						
Sample Location:	TP32						
Top Depth(m):	0.30						
Bottom Depth(m):	0.30						
Sampling Date:							
Determinand	**SOP**	**Accred.**	**Units**				
Total Organic Carbon	2625	M	%	[A] 3.7	3	5	6
Loss On Ignition	2610	M	%	6.4	--	--	10
Total BTEX	2760	M	mg/kg	[A] < 0.010	6	--	--
Total PCBs (7 Congeners)	2815	M	mg/kg	< 0.10	1	--	--
TPH Total WAC	2670	M	mg/kg	[A] 48	500	--	--
Total (Of 17) PAH's	2800	N	mg/kg	8.1	100	--	--
pH	2010	M		8.4	--	>6	--
Acid Neutralisation Capacity	2015	N	mol/kg	0.0080	--	To evaluate	To evaluate
Eluate Analysis			**10:1 Eluate mg/l**	**10:1 Eluate mg/kg**	**Limit values for compliance leaching test using BS EN 12457 at L/S 10 l/kg**		
Arsenic	1455	U	0.017	0.17	0.5	2	25
Barium	1455	U	< 0.005	< 0.0005	20	100	300
Cadmium	1455	U	< 0.00011	< 0.00011	0.04	1	5
Chromium	1455	U	< 0.0005	< 0.0005	0.5	10	70
Copper	1455	U	0.0047	0.047	2	50	100
Mercury	1455	U	< 0.00005	< 0.00005	0.01	0.2	2
Molybdenum	1455	U	0.0035	0.035	0.5	10	30
Nickel	1455	U	0.0006	0.0061	0.4	10	40
Lead	1455	U	0.0005	0.0052	0.5	10	50
Antimony	1455	U	0.0015	0.015	0.06	0.7	5
Selenium	1455	U	< 0.0005	< 0.0005	0.1	0.5	7
Zinc	1455	U	< 0.003	< 0.003	4	50	200
Chloride	1220	U	5.7	57	800	15000	25000
Fluoride	1220	U	0.32	3.2	10	150	500
Sulphate	1220	U	3.3	33	1000	20000	50000
Total Dissolved Solids	1020	N	98	970	4000	60000	100000
Phenol Index	1920	U	< 0.030	< 0.30	1	-	-
Dissolved Organic Carbon	1610	U	12	120	500	800	1000

Solid Information	
Dry mass of test portion/kg	0.090
Moisture (%)	10

Waste Acceptance Criteria

Landfill WAC analysis (specifically leaching test results) must not be used for hazardous waste classification purposes. This analysis is only applicable for hazardous waste landfill acceptance and does not give any indication as to whether a waste may be hazardous or non-hazardous.

Results - Single Stage WAC

Project: 5811

					Landfill Waste Acceptance Criteria Limits		
Chemtest Job No:	21-33504						
Chemtest Sample ID:	1287170						
Sample Ref:	ES48						
Sample ID:	2						
Sample Location:	TP32						
Top Depth(m):	1.00						
Bottom Depth(m):	1.00						
Sampling Date:					**Inert Waste Landfill**	**Stable, Non-reactive hazardous waste in non-hazardous Landfill**	**Hazardous Waste Landfill**
Determinand	**SOP**	**Accred.**	**Units**				
Total Organic Carbon	2625	M	%	[A] 0.73	3	5	6
Loss On Ignition	2610	M	%	1.5	--	--	10
Total BTEX	2760	M	mg/kg	[A] < 0.010	6	--	--
Total PCBs (7 Congeners)	2815	M	mg/kg	< 0.10	1	--	--
TPH Total WAC	2670	M	mg/kg	[A] < 10	500	--	--
Total (Of 17) PAH's	2800	N	mg/kg	< 2.0	100	--	--
pH	2010	M		8.7	--	>6	--
Acid Neutralisation Capacity	2015	N	mol/kg	0.0080	--	To evaluate	To evaluate
Eluate Analysis			**10:1 Eluate mg/l**	**10:1 Eluate mg/kg**	**Limit values for compliance leaching test using BS EN 12457 at L/S 10 l/kg**		
Arsenic	1455	U	0.0011	0.011	0.5	2	25
Barium	1455	U	< 0.005	< 0.0005	20	100	300
Cadmium	1455	U	< 0.00011	< 0.00011	0.04	1	5
Chromium	1455	U	0.0006	0.0063	0.5	10	70
Copper	1455	U	0.0012	0.012	2	50	100
Mercury	1455	U	< 0.00005	< 0.00005	0.01	0.2	2
Molybdenum	1455	U	0.018	0.18	0.5	10	30
Nickel	1455	U	< 0.0005	< 0.0005	0.4	10	40
Lead	1455	U	< 0.0005	< 0.0005	0.5	10	50
Antimony	1455	U	0.0007	0.0070	0.06	0.7	5
Selenium	1455	U	0.0005	0.0053	0.1	0.5	7
Zinc	1455	U	< 0.003	< 0.003	4	50	200
Chloride	1220	U	< 1.0	< 10	800	15000	25000
Fluoride	1220	U	0.34	3.4	10	150	500
Sulphate	1220	U	< 1.0	< 10	1000	20000	50000
Total Dissolved Solids	1020	N	85	840	4000	60000	100000
Phenol Index	1920	U	< 0.030	< 0.30	1	-	-
Dissolved Organic Carbon	1610	U	8.7	87	500	800	1000

Solid Information	
Dry mass of test portion/kg	0.090
Moisture (%)	11

Waste Acceptance Criteria

Landfill WAC analysis (specifically leaching test results) must not be used for hazardous waste classification purposes. This analysis is only applicable for hazardous waste landfill acceptance and does not give any indication as to whether a waste may be hazardous or non-hazardous.

Deviations

In accordance with UKAS Policy on Deviating Samples TPS 63. Chemtest have a procedure to ensure 'upon receipt of each sample a competent laboratory shall assess whether the sample is suitable with regard to the requested test(s)'. This policy and the respective holding times applied, can be supplied upon request.The reason a sample is declared as deviating is detailed below. Where applicable the analysis remains UKAS/MCERTs accredited but the results may be compromised.

Sample:	Sample Ref:	Sample ID:	Sample Location:	Sampled Date:	Deviation Code(s):	Containers Received:
1286930	ES49	1	TP33		A	Amber Glass 250ml
1286930	ES49	1	TP33		A	Amber Glass 60ml
1286930	ES49	1	TP33		A	Plastic Tub 500g
1286931	ES50	2	TP33		A	Amber Glass 250ml
1286931	ES50	2	TP33		A	Amber Glass 60ml
1286931	ES50	2	TP33		A	Plastic Tub 500g
1286932	ES51	1	TP34		A	Amber Glass 250ml
1286932	ES51	1	TP34		A	EPA Vial 40ml
1286932	ES51	1	TP34		A	Plastic Tub 500g
1286933	ES52	2	TP34		A	Amber Glass 250ml
1286933	ES52	2	TP34		A	EPA Vial 40ml
1286933	ES52	2	TP34		A	Plastic Tub 500g
1286934	ES53	1	TP35		A	Amber Glass 250ml
1286934	ES53	1	TP35		A	EPA Vial 40ml
1286934	ES53	1	TP35		A	Plastic Tub 500g
1286935	ES54	2	TP35		A	Amber Glass 250ml
1286935	ES54	2	TP35		A	EPA Vial 40ml
1286935	ES54	2	TP35		A	Plastic Tub 500g
1286936	ES55	1	TP36		A	Amber Glass 250ml
1286936	ES55	1	TP36		A	EPA Vial 40ml
1286936	ES55	1	TP36		A	Plastic Tub 500g
1286937	ES56	2	TP36		A	Amber Glass 250ml
1286937	ES56	2	TP36		A	EPA Vial 40ml
1286937	ES56	2	TP36		A	Plastic Tub 500g

Deviations

In accordance with UKAS Policy on Deviating Samples TPS 63. Chemtest have a procedure to ensure 'upon receipt of each sample a competent laboratory shall assess whether the sample is suitable with regard to the requested test(s)'. This policy and the respective holding times applied, can be supplied upon request.The reason a sample is declared as deviating is detailed below. Where applicable the analysis remains UKAS/MCERTs accredited but the results may be compromised.

Sample:	Sample Ref:	Sample ID:	Sample Location:	Sampled Date:	Deviation Code(s):	Containers Received:
1286943	ES57	1	TP05		A	Amber Glass 250ml
1286943	ES57	1	TP05		A	Amber Glass 60ml
1286943	ES57	1	TP05		A	Plastic Tub 500g
1286944	ES58	2	TP05		A	Amber Glass 250ml
1286944	ES58	2	TP05		A	Amber Glass 60ml
1286944	ES58	2	TP05		A	Plastic Tub 500g
1286945	ES59	3	TP05		A	Amber Glass 250ml
1286945	ES59	3	TP05		A	Amber Glass 60ml
1286945	ES59	3	TP05		A	Plastic Tub 500g
1286946	ES60	1	TP06		A	Amber Glass 250ml
1286946	ES60	1	TP06		A	Amber Glass 60ml
1286946	ES60	1	TP06		A	Plastic Tub 500g
1286947	ES61	2	TP06		A	Amber Glass 250ml
1286947	ES61	2	TP06		A	Amber Glass 60ml
1286947	ES61	2	TP06		A	Plastic Tub 500g
1286948	ES62	1	TP09		A	Amber Glass 250ml
1286948	ES62	1	TP09		A	Amber Glass 60ml
1286948	ES62	1	TP09		A	Plastic Tub 500g
1286949	ES63	2	TP09		A	Amber Glass 250ml
1286949	ES63	2	TP09		A	Amber Glass 60ml
1286949	ES63	2	TP09		A	Plastic Tub 500g
1286950	ES64	3	TP09		A	Amber Glass 250ml
1286950	ES64	3	TP09		A	Amber Glass 60ml
1286950	ES64	3	TP09		A	Plastic Tub 500g

Deviations

In accordance with UKAS Policy on Deviating Samples TPS 63. Chemtest have a procedure to ensure 'upon receipt of each sample a competent laboratory shall assess whether the sample is suitable with regard to the requested test(s)'. This policy and the respective holding times applied, can be supplied upon request.The reason a sample is declared as deviating is detailed below. Where applicable the analysis remains UKAS/MCERTs accredited but the results may be compromised.

Sample:	Sample Ref:	Sample ID:	Sample Location:	Sampled Date:	Deviation Code(s):	Containers Received:
1286951	ES65	1	TP10		A	Amber Glass 250ml
1286951	ES65	1	TP10		A	Amber Glass 60ml
1286951	ES65	1	TP10		A	Plastic Tub 500g
1286952	ES66	2	TP10		A	Amber Glass 250ml
1286952	ES66	2	TP10		A	Amber Glass 60ml
1286952	ES66	2	TP10		A	Plastic Tub 500g
1286961	ES67	1	TP11		A	Amber Glass 250ml
1286961	ES67	1	TP11		A	Amber Glass 60ml
1286961	ES67	1	TP11		A	Plastic Tub 500g
1286962	ES68	2	TP11		A	Amber Glass 250ml
1286962	ES68	2	TP11		A	Amber Glass 60ml
1286962	ES68	2	TP11		A	Plastic Tub 500g
1286963	ES69	1	TP12		A	Amber Glass 250ml
1286963	ES69	1	TP12		A	Amber Glass 60ml
1286963	ES69	1	TP12		A	Plastic Tub 500g
1286964	ES70	2	TP12		A	Amber Glass 250ml
1286964	ES70	2	TP12		A	Amber Glass 60ml
1286964	ES70	2	TP12		A	Plastic Tub 500g
1287123	ES1	1	TP1		A	Amber Glass 250ml
1287123	ES1	1	TP1		A	Amber Glass 60ml
1287123	ES1	1	TP1		A	Plastic Tub 500g
1287124	ES2	2	TP1		A	Amber Glass 250ml
1287124	ES2	2	TP1		A	Amber Glass 60ml
1287124	ES2	2	TP1		A	Plastic Tub 500g

Deviations

In accordance with UKAS Policy on Deviating Samples TPS 63. Chemtest have a procedure to ensure 'upon receipt of each sample a competent laboratory shall assess whether the sample is suitable with regard to the requested test(s)'. This policy and the respective holding times applied, can be supplied upon request.The reason a sample is declared as deviating is detailed below. Where applicable the analysis remains UKAS/MCERTs accredited but the results may be compromised.

Sample:	Sample Ref:	Sample ID:	Sample Location:	Sampled Date:	Deviation Code(s):	Containers Received:
1287125	ES3	1	TP2		A	Amber Glass 250ml
1287125	ES3	1	TP2		A	Amber Glass 60ml
1287125	ES3	1	TP2		A	Plastic Tub 500g
1287126	ES4	2	TP2		A	Amber Glass 250ml
1287126	ES4	2	TP2		A	Amber Glass 60ml
1287126	ES4	2	TP2		A	Plastic Tub 500g
1287127	ES5	1	TP3		A	Amber Glass 250ml
1287127	ES5	1	TP3		A	Amber Glass 60ml
1287127	ES5	1	TP3		A	Plastic Tub 500g
1287128	ES6	2	TP3		A	Amber Glass 250ml
1287128	ES6	2	TP3		A	Amber Glass 60ml
1287128	ES6	2	TP3		A	Plastic Tub 500g
1287129	ES7	1	TP4		A	Amber Glass 250ml
1287129	ES7	1	TP4		A	Amber Glass 60ml
1287129	ES7	1	TP4		A	Plastic Tub 500g
1287130	ES8	2	TP4		A	Amber Glass 250ml
1287130	ES8	2	TP4		A	Amber Glass 60ml
1287130	ES8	2	TP4		A	Plastic Tub 500g
1287131	ES9	1	TP7		A	Amber Glass 250ml
1287131	ES9	1	TP7		A	Amber Glass 60ml
1287131	ES9	1	TP7		A	Plastic Tub 500g
1287132	ES10	2	TP7		A	Amber Glass 250ml
1287132	ES10	2	TP7		A	Amber Glass 60ml
1287132	ES10	2	TP7		A	Plastic Tub 500g

Deviations

In accordance with UKAS Policy on Deviating Samples TPS 63. Chemtest have a procedure to ensure 'upon receipt of each sample a competent laboratory shall assess whether the sample is suitable with regard to the requested test(s)'. This policy and the respective holding times applied, can be supplied upon request.The reason a sample is declared as deviating is detailed below. Where applicable the analysis remains UKAS/MCERTs accredited but the results may be compromised.

Sample:	Sample Ref:	Sample ID:	Sample Location:	Sampled Date:	Deviation Code(s):	Containers Received:
1287133	ES11	1	TP8		A	Amber Glass 250ml
1287133	ES11	1	TP8		A	Amber Glass 60ml
1287133	ES11	1	TP8		A	Plastic Tub 500g
1287134	ES12	2	TP8		A	Amber Glass 250ml
1287134	ES12	2	TP8		A	Amber Glass 60ml
1287134	ES12	2	TP8		A	Plastic Tub 500g
1287135	ES13	1	TP13		A	Amber Glass 250ml
1287135	ES13	1	TP13		A	Amber Glass 60ml
1287135	ES13	1	TP13		A	Plastic Tub 500g
1287136	ES14	2	TP13		A	Amber Glass 250ml
1287136	ES14	2	TP13		A	Amber Glass 60ml
1287136	ES14	2	TP13		A	Plastic Tub 500g
1287137	ES15	1	TP14		A	Amber Glass 250ml
1287137	ES15	1	TP14		A	Amber Glass 60ml
1287137	ES15	1	TP14		A	Plastic Tub 500g
1287138	ES16	2	TP14		A	Amber Glass 250ml
1287138	ES16	2	TP14		A	Amber Glass 60ml
1287138	ES16	2	TP14		A	Plastic Tub 500g
1287139	ES17	1	TP15		A	Amber Glass 250ml
1287139	ES17	1	TP15		A	Amber Glass 60ml
1287139	ES17	1	TP15		A	Plastic Tub 500g
1287140	ES18	2	TP15		A	Amber Glass 250ml
1287140	ES18	2	TP15		A	Amber Glass 60ml
1287140	ES18	2	TP15		A	Plastic Tub 500g

Deviations

In accordance with UKAS Policy on Deviating Samples TPS 63. Chemtest have a procedure to ensure 'upon receipt of each sample a competent laboratory shall assess whether the sample is suitable with regard to the requested test(s)'. This policy and the respective holding times applied, can be supplied upon request.The reason a sample is declared as deviating is detailed below. Where applicable the analysis remains UKAS/MCERTs accredited but the results may be compromised.

Sample:	Sample Ref:	Sample ID:	Sample Location:	Sampled Date:	Deviation Code(s):	Containers Received:
1287141	ES19	1	TP16		A	Amber Glass 250ml
1287141	ES19	1	TP16		A	Amber Glass 60ml
1287141	ES19	1	TP16		A	Plastic Tub 500g
1287142	ES20	2	TP16		A	Amber Glass 250ml
1287142	ES20	2	TP16		A	Amber Glass 60ml
1287142	ES20	2	TP16		A	Plastic Tub 500g
1287143	ES21	1	TP17		A	Amber Glass 250ml
1287143	ES21	1	TP17		A	Amber Glass 60ml
1287143	ES21	1	TP17		A	Plastic Tub 500g
1287144	ES22	2	TP17		A	Amber Glass 250ml
1287144	ES22	2	TP17		A	Amber Glass 60ml
1287144	ES22	2	TP17		A	Plastic Tub 500g
1287145	ES23	1	TP18		A	Amber Glass 250ml
1287145	ES23	1	TP18		A	Amber Glass 60ml
1287145	ES23	1	TP18		A	Plastic Tub 500g
1287146	ES24	2	TP18		A	Amber Glass 250ml
1287146	ES24	2	TP18		A	Amber Glass 60ml
1287146	ES24	2	TP18		A	Plastic Tub 500g
1287147	ES25	1	TP19		A	Amber Glass 250ml
1287147	ES25	1	TP19		A	Amber Glass 60ml
1287147	ES25	1	TP19		A	Plastic Tub 500g
1287148	ES26	2	TP19		A	Amber Glass 250ml
1287148	ES26	2	TP19		A	Amber Glass 60ml
1287148	ES26	2	TP19		A	Plastic Tub 500g

Deviations

In accordance with UKAS Policy on Deviating Samples TPS 63. Chemtest have a procedure to ensure 'upon receipt of each sample a competent laboratory shall assess whether the sample is suitable with regard to the requested test(s)'. This policy and the respective holding times applied, can be supplied upon request.The reason a sample is declared as deviating is detailed below. Where applicable the analysis remains UKAS/MCERTs accredited but the results may be compromised.

Sample:	Sample Ref:	Sample ID:	Sample Location:	Sampled Date:	Deviation Code(s):	Containers Received:
1287149	ES27	1	TP20		A	Amber Glass 250ml
1287149	ES27	1	TP20		A	Amber Glass 60ml
1287149	ES27	1	TP20		A	Plastic Tub 500g
1287150	ES28	2	TP20		A	Amber Glass 250ml
1287150	ES28	2	TP20		A	Amber Glass 60ml
1287150	ES28	2	TP20		A	Plastic Tub 500g
1287151	ES29	1	TP22		A	Amber Glass 250ml
1287151	ES29	1	TP22		A	Amber Glass 60ml
1287151	ES29	1	TP22		A	Plastic Tub 500g
1287152	ES30	2	TP22		A	Amber Glass 250ml
1287152	ES30	2	TP22		A	Amber Glass 60ml
1287152	ES30	2	TP22		A	Plastic Tub 500g
1287153	ES31	1	TP23		A	Amber Glass 250ml
1287153	ES31	1	TP23		A	Amber Glass 60ml
1287153	ES31	1	TP23		A	Plastic Tub 500g
1287154	ES32	2	TP23		A	Amber Glass 250ml
1287154	ES32	2	TP23		A	Amber Glass 60ml
1287154	ES32	2	TP23		A	Plastic Tub 500g
1287155	ES33	1	TP24		A	Amber Glass 250ml
1287155	ES33	1	TP24		A	Amber Glass 60ml
1287155	ES33	1	TP24		A	Plastic Tub 500g
1287156	ES34	2	TP24		A	Amber Glass 250ml
1287156	ES34	2	TP24		A	Amber Glass 60ml
1287156	ES34	2	TP24		A	Plastic Tub 500g

Deviations

In accordance with UKAS Policy on Deviating Samples TPS 63. Chemtest have a procedure to ensure 'upon receipt of each sample a competent laboratory shall assess whether the sample is suitable with regard to the requested test(s)'. This policy and the respective holding times applied, can be supplied upon request.The reason a sample is declared as deviating is detailed below. Where applicable the analysis remains UKAS/MCERTs accredited but the results may be compromised.

Sample:	Sample Ref:	Sample ID:	Sample Location:	Sampled Date:	Deviation Code(s):	Containers Received:
1287157	ES35	1	TP25		A	Amber Glass 250ml
1287157	ES35	1	TP25		A	Amber Glass 60ml
1287157	ES35	1	TP25		A	Plastic Tub 500g
1287158	ES36	2	TP25		A	Amber Glass 250ml
1287158	ES36	2	TP25		A	Amber Glass 60ml
1287158	ES36	2	TP25		A	Plastic Tub 500g
1287159	ES37	1	TP26		A	Amber Glass 250ml
1287159	ES37	1	TP26		A	Amber Glass 60ml
1287159	ES37	1	TP26		A	Plastic Tub 500g
1287160	ES38	2	TP26		A	Amber Glass 250ml
1287160	ES38	2	TP26		A	Amber Glass 60ml
1287160	ES38	2	TP26		A	Plastic Tub 500g
1287161	ES39	1	TP27		A	Amber Glass 250ml
1287161	ES39	1	TP27		A	Amber Glass 60ml
1287161	ES39	1	TP27		A	Plastic Tub 500g
1287162	ES40	2	TP27		A	Amber Glass 250ml
1287162	ES40	2	TP27		A	Amber Glass 60ml
1287162	ES40	2	TP27		A	Plastic Tub 500g
1287163	ES41	1	TP28		A	Amber Glass 250ml
1287163	ES41	1	TP28		A	Amber Glass 60ml
1287163	ES41	1	TP28		A	Plastic Tub 500g
1287164	ES42	2	TP28		A	Amber Glass 250ml
1287164	ES42	2	TP28		A	Amber Glass 60ml
1287164	ES42	2	TP28		A	Plastic Tub 500g

Deviations

In accordance with UKAS Policy on Deviating Samples TPS 63. Chemtest have a procedure to ensure 'upon receipt of each sample a competent laboratory shall assess whether the sample is suitable with regard to the requested test(s)'. This policy and the respective holding times applied, can be supplied upon request.The reason a sample is declared as deviating is detailed below. Where applicable the analysis remains UKAS/MCERTs accredited but the results may be compromised.

Sample:	Sample Ref:	Sample ID:	Sample Location:	Sampled Date:	Deviation Code(s):	Containers Received:
1287165	ES43	1	TP30		A	Amber Glass 250ml
1287165	ES43	1	TP30		A	Amber Glass 60ml
1287165	ES43	1	TP30		A	Plastic Tub 500g
1287166	ES44	2	TP30		A	Amber Glass 250ml
1287166	ES44	2	TP30		A	Amber Glass 60ml
1287166	ES44	2	TP30		A	Plastic Tub 500g
1287167	ES45	1	TP31		A	Amber Glass 250ml
1287167	ES45	1	TP31		A	Amber Glass 60ml
1287167	ES45	1	TP31		A	Plastic Tub 500g
1287168	ES46	2	TP31		A	Amber Glass 250ml
1287168	ES46	2	TP31		A	Amber Glass 60ml
1287168	ES46	2	TP31		A	Plastic Tub 500g
1287169	ES47	1	TP32		A	Amber Glass 250ml
1287169	ES47	1	TP32		A	Amber Glass 60ml
1287169	ES47	1	TP32		A	Plastic Tub 500g
1287170	ES48	2	TP32		A	Amber Glass 250ml
1287170	ES48	2	TP32		A	Amber Glass 60ml
1287170	ES48	2	TP32		A	Plastic Tub 500g

Test Methods

SOP	Title	Parameters included	Method summary
1010	pH Value of Waters	pH	pH Meter
1020	Electrical Conductivity and Total Dissolved Solids (TDS) in Waters	Electrical Conductivity and Total Dissolved Solids (TDS) in Waters	Conductivity Meter
1220	Anions, Alkalinity & Ammonium in Waters	Fluoride; Chloride; Nitrite; Nitrate; Total; Oxidisable Nitrogen (TON); Sulfate; Phosphate; Alkalinity; Ammonium	Automated colorimetric analysis using ‘Aquakem 600’ Discrete Analyser.
1455	Metals in Waters by ICP-MS	Metals, including: Antimony; Arsenic; Barium; Beryllium; Boron; Cadmium; Chromium; Cobalt; Copper; Lead; Manganese; Mercury; Molybdenum; Nickel; Selenium; Tin; Vanadium; Zinc	Filtration of samples followed by direct determination by inductively coupled plasma mass spectrometry (ICP-MS).
1610	Total/Dissolved Organic Carbon in Waters	Organic Carbon	TOC Analyser using Catalytic Oxidation
1920	Phenols in Waters by HPLC	Phenolic compounds including: Phenol, Cresols, Xylenols, Trimethylphenols Note: Chlorophenols are excluded.	Determination by High Performance Liquid Chromatography (HPLC) using electrochemical detection.
2010	pH Value of Soils	pH	pH Meter
2015	Acid Neutralisation Capacity	Acid Reserve	Titration
2030	Moisture and Stone Content of Soils(Requirement of MCERTS)	Moisture content	Determination of moisture content of soil as a percentage of its as received mass obtained at <37°C.
2040	Soil Description(Requirement of MCERTS)	Soil description	As received soil is described based upon BS5930
2120	Water Soluble Boron, Sulphate, Magnesium & Chromium	Boron; Sulphate; Magnesium; Chromium	Aqueous extraction / ICP-OES
2180	Sulphur (Elemental) in Soils by HPLC	Sulphur	Dichloromethane extraction / HPLC with UV detection
2192	Asbestos	Asbestos	Polarised light microscopy / Gravimetry
2300	Cyanides & Thiocyanate in Soils	Free (or easy liberatable) Cyanide; total Cyanide; complex Cyanide; Thiocyanate	Allkaline extraction followed by colorimetric determination using Automated Flow Injection Analyser.
2325	Sulphide in Soils	Sulphide	Steam distillation with sulphuric acid / analysis by ‘Aquakem 600’ Discrete Analyser, using N,N–dimethyl-p-phenylenediamine.
2430	Total Sulphate in soils	Total Sulphate	Acid digestion followed by determination of sulphate in extract by ICP-OES.
2450	Acid Soluble Metals in Soils	Metals, including: Arsenic; Barium; Beryllium; Cadmium; Chromium; Cobalt; Copper; Lead; Manganese; Mercury; Molybdenum; Nickel; Selenium; Vanadium; Zinc	Acid digestion followed by determination of metals in extract by ICP-MS.
2490	Hexavalent Chromium in Soils	Chromium [VI]	Soil extracts are prepared by extracting dried and ground soil samples into boiling water. Chromium [VI] is determined by ‘Aquakem 600’ Discrete Analyser using 1,5-diphenylcarbazide.
2610	Loss on Ignition	loss on ignition (LOI)	Determination of the proportion by mass that is lost from a soil by ignition at 550°C.
2625	Total Organic Carbon in Soils	Total organic Carbon (TOC)	Determined by high temperature combustion under oxygen, using an Eltra elemental analyser.
2670	Total Petroleum Hydrocarbons (TPH) in Soils by GC-FID	TPH (C6–C40); optional carbon banding, e.g. 3-band – GRO, DRO & LRO*TPH C8–C40	Dichloromethane extraction / GC-FID
2680	TPH A/A Split	Aliphatics: >C5–C6, >C6–C8,>C8–C10, >C10–C12, >C12–C16, >C16–C21, >C21–C35, >C35– C44Aromatics: >C5–C7, >C7–C8, >C8– C10, >C10–C12, >C12–C16, >C16– C21, >C21– C35, >C35– C44	Dichloromethane extraction / GCxGC FID detection

Test Methods

SOP	Title	Parameters included	Method summary
2760	Volatile Organic Compounds (VOCs) in Soils by Headspace GC-MS	Volatile organic compounds, including BTEX and halogenated Aliphatic/Aromatics.(cf. USEPA Method 8260)*please refer to UKAS schedule	Automated headspace gas chromatographic (GC) analysis of a soil sample, as received, with mass spectrometric (MS) detection of volatile organic compounds.
2800	Speciated Polynuclear Aromatic Hydrocarbons (PAH) in Soil by GC-MS	Acenaphthene*; Acenaphthylene; Anthracene*; Benzo[a]Anthracene*; Benzo[a]Pyrene*; Benzo[b]Fluoranthene*; Benzo[ghi]Perylene*; Benzo[k]Fluoranthene; Chrysene*; Dibenz[ah]Anthracene; Fluoranthene*; Fluorene*; Indeno[123cd]Pyrene*; Naphthalene*; Phenanthrene*; Pyrene*	Dichloromethane extraction / GC-MS
2815	Polychlorinated Biphenyls (PCB) ICES7Congeners in Soils by GC-MS	ICES7 PCB congeners	Acetone/Hexane extraction / GC-MS
2920	Phenols in Soils by HPLC	Phenolic compounds including Resorcinol, Phenol, Methylphenols, Dimethylphenols, 1-Naphthol and TrimethylphenolsNote: chlorophenols are excluded.	60:40 methanol/water mixture extraction, followed by HPLC determination using electrochemical detection.
640	Characterisation of Waste (Leaching C10)	Waste material including soil, sludges and granular waste	ComplianceTest for Leaching of Granular Waste Material and Sludge

Report Information

Key	
U	UKAS accredited
M	MCERTS and UKAS accredited
N	Unaccredited
S	This analysis has been subcontracted to a UKAS accredited laboratory that is accredited for this analysis
SN	This analysis has been subcontracted to a UKAS accredited laboratory that is not accredited for this analysis
T	This analysis has been subcontracted to an unaccredited laboratory
I/S	Insufficient Sample
U/S	Unsuitable Sample
N/E	not evaluated
<	"less than"
>	"greater than"
SOP	Standard operating procedure
LOD	Limit of detection

Comments or interpretations are beyond the scope of UKAS accreditation
The results relate only to the items tested
Uncertainty of measurement for the determinands tested are available upon request
None of the results in this report have been recovery corrected
All results are expressed on a dry weight basis

The following tests were analysed on samples as received and the results subsequently corrected to a dry weight basis TPH, BTEX, VOCs, SVOCs, PCBs, Phenols

For all other tests the samples were dried at < 37°C prior to analysis
All Asbestos testing is performed at the indicated laboratory
Issue numbers are sequential starting with 1 all subsequent reports are incremented by 1

Sample Deviation Codes

A - Date of sampling not supplied
B - Sample age exceeds stability time (sampling to extraction)
C - Sample not received in appropriate containers
D - Broken Container
E - Insufficient Sample (Applies to LOI in Trommel Fines Only)

Sample Retention and Disposal

All soil samples will be retained for a period of 30 days from the date of receipt
All water samples will be retained for 14 days from the date of receipt
Charges may apply to extended sample storage

If you require extended retention of samples, please email your requirements to:
customerservices@chemtest.com

Appendix 8

Waste Classification Report

Waste Classification Report

HazWasteOnline™ classifies waste as either **hazardous** or **non-hazardous** based on its chemical composition, related legislation and the rules and data defined in the current UK or EU technical guidance (Appendix C) (note that HP 9 Infectious is not assessed). It is the responsibility of the classifier named below to:

a) understand the origin of the waste
b) select the correct List of Waste code(s)
c) confirm that the list of determinands, results and sampling plan are fit for purpose
d) select and justify the chosen metal species (Appendix B)
e) correctly apply moisture correction and other available corrections
f) add the meta data for their user-defined substances (Appendix A)
g) check that the classification engine is suitable with respect to the national destination of the waste (Appendix C)

To aid the reviewer, the laboratory results, assumptions and justifications managed by the classifier are highlighted in pale yellow.

42MAI-4ANZD-C5B0C

Job name

5811

Description/Comments

Client: Land Development Agency
Engineer: Barrett Mahony

Project

Dundrum Central Development

Site

Dundrum, Dublin 14

Classified by

Name:
Stephen Letch
Date:
14 Oct 2021 13:10 GMT
Telephone:
00353 86817 9449

Company:
Site Investigations Ltd

HazWasteOnline™ provides a two day, hazardous waste classification course that covers the use of the software and both basic and advanced waste classification techniques. Certification has to be renewed every 3 years.

HazWasteOnline™ Certification: **CERTIFIED**

Course	**Date**
Hazardous Waste Classification	09 Oct 2019

Next 3 year Refresher due by Oct 2022

Job summary

#	Sample name	Depth [m]	Classification Result	Hazard properties	WAC Results		Page
					Inert	Non Haz	
1	TP33-0.30	0.30-0.30	Non Hazardous		Fail	Pass	3
2	TP33-1.00	1.00-1.00	Non Hazardous		Pass	Pass	7
3	TP34-0.30	0.30-0.30	Non Hazardous		Fail	Fail	11
4	TP34-0.80	0.80-0.80	Non Hazardous		Pass	Pass	15
5	TP35-0.30	0.30-0.30	Non Hazardous		Fail	Pass	19
6	TP35-1.00	1.00-1.00	Non Hazardous		Pass	Pass	23
7	TP36-0.30	0.30-0.30	Non Hazardous		Fail	Fail	27
8	TP36-0.80	0.80-0.80	Non Hazardous		Pass	Pass	31
9	TP05-0.30	0.30-0.30	Non Hazardous		Fail	Pass	35
10	TP05-0.50	0.50-0.50	Non Hazardous		Pass	Pass	39
11	TP05-1.00	1.00-1.00	Non Hazardous		Pass	Pass	43
12	TP06-0.30	0.30-0.30	Non Hazardous		Fail	Pass	47
13	TP06-1.00	1.00-1.00	Non Hazardous		Pass	Pass	51
14	TP09-0.30	0.30-0.30	Non Hazardous		Pass	Pass	55
15	TP09-1.00	1.00-1.00	Non Hazardous		Pass	Pass	59
16	TP09-1.50	1.50-1.50	Non Hazardous		Pass	Pass	63
17	TP10-0.30	0.30-0.30	Non Hazardous		Fail	Pass	67
18	TP10-1.40	1.40-1.40	Non Hazardous		Pass	Pass	71
19	TP11-0.30	0.30-0.30	Non Hazardous		Fail	Pass	75
20	TP11-1.00	1.00-1.00	Non Hazardous		Pass	Pass	79
21	TP12-0.30	0.30-0.30	Non Hazardous		Fail	Pass	83
22	TP12-1.00	1.00-1.00	Non Hazardous		Pass	Pass	87
23	TP01-0.30	0.30-0.30	Non Hazardous		Fail	Pass	91
24	TP01-1.00	1.00-1.00	Non Hazardous		Pass	Pass	95
25	TP02-0.20	0.20-0.20	Non Hazardous		Fail	Fail	99
26	TP02-1.40	1.40-1.40	Non Hazardous		Fail	Pass	103
27	TP03-0.30	0.30-0.30	Non Hazardous		Fail	Pass	107

#	Sample name	Depth [m]	Classification Result	Hazard properties	WAC Results		Page
					Inert	Non Haz	
28	TP03-1.20	1.20-1.20	Non Hazardous		Fail	Pass	111
29	TP04-0.40	0.40-0.40	Non Hazardous		Fail	Fail	115
30	TP04-1.50	1.50-1.50	Non Hazardous		Pass	Pass	119
31	TP07-0.30	0.30-0.30	Non Hazardous		Fail	Pass	123
32	TP07-1.00	1.00-1.00	Non Hazardous		Pass	Pass	127
33	TP08-0.30	0.30-0.30	Non Hazardous		Fail	Fail	131
34	TP08-1.00	1.00-1.00	Non Hazardous		Pass	Pass	135
35	TP13-0.30	0.30-0.30	Non Hazardous		Pass	Pass	139
36	TP13-1.00	1.00-1.00	Non Hazardous		Pass	Pass	143
37	TP14-0.30	0.30-0.30	Non Hazardous		Fail	Pass	147
38	TP14-1.00	1.00-1.00	Non Hazardous		Pass	Pass	151
39	TP15-0.30	0.30-0.30	Non Hazardous		Fail	Pass	155
40	TP15-1.00	1.00-1.00	Non Hazardous		Pass	Pass	159
41	TP16-0.30	0.30-0.30	Non Hazardous		Fail	Pass	163
42	TP16-0.60	0.60-0.60	Non Hazardous		Pass	Pass	167
43	TP17-0.30	0.30-0.30	Non Hazardous		Fail	Pass	171
44	TP17-0.60	0.60-0.60	Non Hazardous		Pass	Pass	175
45	TP18-0.30	0.30-0.30	Non Hazardous		Fail	Pass	179
46	TP18-1.00	1.00-1.00	Non Hazardous		Pass	Pass	183
47	TP19-0.30	0.30-0.30	Non Hazardous		Fail	Pass	187
48	TP19-0.80	0.80-0.80	Non Hazardous		Fail	Pass	191
49	TP20-0.40	0.40-0.40	Non Hazardous		Pass	Pass	195
50	TP20-0.80	0.80-0.80	Non Hazardous		Pass	Pass	199
51	TP22-0.30	0.30-0.30	Non Hazardous		Fail	Fail	203
52	TP22-1.00	1.00-1.00	Non Hazardous		Pass	Pass	207
53	TP23-0.30	0.30-0.30	Non Hazardous		Fail	Fail	211
54	TP23-0.80	0.80-0.80	Non Hazardous		Pass	Pass	215
55	TP24-0.30	0.30-0.30	Non Hazardous		Fail	Fail	219
56	TP24-1.00	1.00-1.00	Non Hazardous		Fail	Pass	223
57	TP25-0.30	0.30-0.30	Non Hazardous		Fail	Fail	227
58	TP25-1.00	1.00-1.00	Non Hazardous		Pass	Pass	231
59	TP26-0.30	0.30-0.30	Non Hazardous		Pass	Pass	235
60	TP26-1.20	1.20-1.20	Non Hazardous		Pass	Pass	239
61	TP27-0.30	0.30-0.30	Non Hazardous		Fail	Pass	243
62	TP27-1.00	1.00-1.00	Non Hazardous		Pass	Pass	247
63	TP28-0.20	0.20-0.30	Non Hazardous		Fail	Pass	251
64	TP28-1.00	1.00-1.00	Non Hazardous		Pass	Pass	255
65	TP30-0.30	0.30-0.30	Non Hazardous		Fail	Fail	259
66	TP30-0.90	0.90-0.90	Non Hazardous		Pass	Pass	263
67	TP31-0.30	0.30-0.30	Non Hazardous		Fail	Fail	267
68	TP31-1.50	1.50-1.50	Non Hazardous		Pass	Pass	271
69	TP32-0.30	0.30-0.30	Non Hazardous		Fail	Pass	275
70	TP32-1.00	1.00-1.00	Non Hazardous		Pass	Pass	279

Related documents

#	Name	Description
1	HWOL_21-33474-20211014 133848.hwol	.hwol file used to create the Job

WAC results

WAC Settings: samples in this Job constitute a single population.

WAC limits used to evaluate the samples in this Job: "Ireland"
The WAC used in this report are the WAC defined for the inert and non-hazardous classes of landfill in the Republic of Ireland. You should check the actual acceptance criteria when the disposal site is identified as they may differ from the generic WAC used in this report.

Report

Created by: Stephen Letch

Created date: 14 Oct 2021 13:10 GMT

Classification of sample: TP33-0.30

Non Hazardous Waste
Classified as **17 05 04**
in the List of Waste

Sample details

Sample name:		LoW Code:	
TP33-0.30		Chapter:	17: Construction and Demolition Wastes (including excavated soil from contaminated sites)
Sample Depth:			
0.30-0.30 m		Entry:	17 05 04 (Soil and stones other than those mentioned in 17 05 03)
Moisture content:			
13% (wet weight correction)			

Hazard properties

None identified

Determinands

Moisture content: 13% Wet Weight Moisture Correction applied (MC)

#	Determinand	CLP index number	EC Number	CAS Number	CLP Note	User entered data		Conv. Factor	Compound conc.		Classification value	MC Applied	Conc. Not Used
1	pH			PH		8.5	pH		8.5	pH	8.5 pH		
2	boron { diboron trioxide; boric oxide }	005-008-00-8	215-125-8	1303-86-2		<0.4	mg/kg	3.22	<1.288	mg/kg	<0.000129 %		<LOD
3	sulfur { sulfur }	016-094-00-1	231-722-6	7704-34-9		20	mg/kg		17.4	mg/kg	0.00174 %	✓	
4	cyanides { salts of hydrogen cyanide with the exception of complex cyanides such as ferrocyanides, ferricyanides and mercuric oxycyanide and those specified elsewhere in this Annex }	006-007-00-5				<0.5	mg/kg	1.884	<0.942	mg/kg	<0.0000942 %		<LOD
5	barium { barium oxide }		215-127-9	1304-28-5		140	mg/kg	1.117	135.99	mg/kg	0.0136 %	✓	
6	cadmium { cadmium oxide }	048-002-00-0	215-146-2	1306-19-0		1.6	mg/kg	1.142	1.59	mg/kg	0.000159 %	✓	
7	molybdenum { molybdenum(VI) oxide }	042-001-00-9	215-204-7	1313-27-5		3.8	mg/kg	1.5	4.96	mg/kg	0.000496 %	✓	
8	antimony { antimony compounds, with the exception of the tetroxide (Sb_2O_4), pentoxide (Sb_2O_5), trisulphide (Sb_2S_3), pentasulphide (Sb_2S_5) and those specified elsewhere in this Annex }	051-003-00-9			1	3	mg/kg		2.61	mg/kg	0.000261 %	✓	
9	arsenic { arsenic }	033-001-00-X	231-148-6	7440-38-2		28	mg/kg		24.36	mg/kg	0.00244 %	✓	
10	granulated copper; [particle length: from 0,9 mm to 6,0 mm; particle width: from 0,494 to 0,949 mm]	029-024-00-X	231-159-6	7440-50-8		92	mg/kg		80.04	mg/kg	0.008 %	✓	
11	mercury { mercury }	080-001-00-0	231-106-7	7439-97-6		0.81	mg/kg		0.705	mg/kg	0.0000705 %	✓	
12	nickel { nickel(II) oxide (nickel monoxide) }	028-003-00-2	215-215-7 [1] 234-323-5 [2] - [3]	1313-99-1 [1] 11099-02-8 [2] 34492-97-2 [3]		54	mg/kg	1.273	59.786	mg/kg	0.00598 %	✓	
13	lead { lead compounds with the exception of those specified elsewhere in this Annex }	082-001-00-6			1	190	mg/kg		165.3	mg/kg	0.0165 %	✓	

#	Determinand	CLP index number	EC Number	CAS Number	CLP Note	User entered data		Conv. Factor	Compound conc.		Classification value	MC Applied	Conc. Not Used
14	selenium { selenium compounds with the exception of cadmium sulphoselenide and those specified elsewhere in this Annex }	034-002-00-8				0.78	mg/kg	1.405	0.953	mg/kg	0.0000953 %	✓	
15	zinc { zinc oxide }	030-013-00-7	215-222-5	1314-13-2		180	mg/kg	1.245	194.922	mg/kg	0.0195 %	✓	
16	chromium in chromium(III) compounds { chromium(III) oxide }		215-160-9	1308-38-9		29	mg/kg	1.462	36.875	mg/kg	0.00369 %	✓	
17	chromium in chromium(VI) compounds { chromium(VI) oxide }	024-001-00-0	215-607-8	1333-82-0		<0.5	mg/kg	1.923	<0.962	mg/kg	<0.0000962 %		**<LOD**
18	TPH (C6 to C40) petroleum group			TPH		<10	mg/kg		<10	mg/kg	<0.001 %		**<LOD**
19	benzene	601-020-00-8	200-753-7	71-43-2		<1	µg/kg		<0.001	mg/kg	<0.0000001 %		**<LOD**
20	toluene	601-021-00-3	203-625-9	108-88-3		<1	µg/kg		<0.001	mg/kg	<0.0000001 %		**<LOD**
21	ethylbenzene	601-023-00-4	202-849-4	100-41-4		<1	µg/kg		<0.001	mg/kg	<0.0000001 %		**<LOD**
22	tert-butyl methyl ether; MTBE; 2-methoxy-2-methylpropane	603-181-00-X	216-653-1	1634-04-4		<1	µg/kg		<0.001	mg/kg	<0.0000001 %		**<LOD**
23	naphthalene	601-052-00-2	202-049-5	91-20-3		0.44	mg/kg		0.383	mg/kg	0.0000383 %	✓	
24	acenaphthylene		205-917-1	208-96-8		0.1	mg/kg		0.087	mg/kg	0.0000087 %	✓	
25	acenaphthene		201-469-6	83-32-9		0.26	mg/kg		0.226	mg/kg	0.0000226 %	✓	
26	fluorene		201-695-5	86-73-7		0.23	mg/kg		0.2	mg/kg	0.00002 %	✓	
27	phenanthrene		201-581-5	85-01-8		2	mg/kg		1.74	mg/kg	0.000174 %	✓	
28	anthracene		204-371-1	120-12-7		0.33	mg/kg		0.287	mg/kg	0.0000287 %	✓	
29	fluoranthene		205-912-4	206-44-0		2.6	mg/kg		2.262	mg/kg	0.000226 %	✓	
30	pyrene		204-927-3	129-00-0		2.4	mg/kg		2.088	mg/kg	0.000209 %	✓	
31	benzo[a]anthracene	601-033-00-9	200-280-6	56-55-3		1.5	mg/kg		1.305	mg/kg	0.000131 %	✓	
32	chrysene	601-048-00-0	205-923-4	218-01-9		1.6	mg/kg		1.392	mg/kg	0.000139 %	✓	
33	benzo[b]fluoranthene	601-034-00-4	205-911-9	205-99-2		1.8	mg/kg		1.566	mg/kg	0.000157 %	✓	
34	benzo[k]fluoranthene	601-036-00-5	205-916-6	207-08-9		0.65	mg/kg		0.566	mg/kg	0.0000566 %	✓	
35	benzo[a]pyrene; benzo[def]chrysene	601-032-00-3	200-028-5	50-32-8		1.3	mg/kg		1.131	mg/kg	0.000113 %	✓	
36	indeno[123-cd]pyrene		205-893-2	193-39-5		0.87	mg/kg		0.757	mg/kg	0.0000757 %	✓	
37	dibenz[a,h]anthracene	601-041-00-2	200-181-8	53-70-3		0.25	mg/kg		0.218	mg/kg	0.0000218 %	✓	
38	benzo[ghi]perylene		205-883-8	191-24-2		0.91	mg/kg		0.792	mg/kg	0.0000792 %	✓	
39	coronene		205-881-7	191-07-1		<0.1	mg/kg		<0.1	mg/kg	<0.00001 %		**<LOD**
40	polychlorobiphenyls; PCB	602-039-00-4	215-648-1	1336-36-3		<0.1	mg/kg		<0.1	mg/kg	<0.00001 %		**<LOD**

#		Determinand: CLP index number	EC Number	CAS Number	CLP Note	User entered data	Conv. Factor	Compound conc.	Classification value	MC Applied	Conc. Not Used
41	●	monohydric phenols		P1186		<0.1 mg/kg		<0.1 mg/kg	<0.00001 %		**<LOD**
42		xylene 601-022-00-9	202-422-2 [1] 203-396-5 [2] 203-576-3 [3] 215-535-7 [4]	95-47-6 [1] 106-42-3 [2] 108-38-3 [3] 1330-20-7 [4]		<2 µg/kg		<0.002 mg/kg	<0.0000002 %		**<LOD**
								Total:	0.0754 %		

Key

(yellow)	User supplied data
(grey)	Determinand values ignored for classification, see column 'Conc. Not Used' for reason
●	Determinand defined or amended by HazWasteOnline (see Appendix A)
	Speciated Deteminand - Unless the Determinand is Note 1, the Conversion Factor is used to calculate the compound concentration
<LOD	Below limit of detection
ND	Not detected
CLP: Note 1	Only the metal concentration has been used for classification

WAC results for sample: TP33-0.30

WAC Settings: samples in this Job constitute a single population.

WAC limits used to evaluate this sample: "Ireland"
The WAC used in this report are the WAC defined for the inert and non-hazardous classes of landfill in the Republic of Ireland. You should check the actual acceptance criteria when the disposal site is identified as they may differ from the generic WAC used in this report.

The sample FAILS the Inert (Inert waste landfill) criteria.

The sample PASSES the Non Haz (Non hazardous waste landfill) criteria.

WAC Determinands

Solid Waste Analysis				Landfill Waste Acceptance Criteria Limits	
#	Determinand		User entered data	Inert waste landfill	Non hazardous waste landfill
1	TOC (total organic carbon)	%	4.6	3	5
2	LOI (loss on ignition)	%	8.9	-	-
3	BTEX (benzene, toluene, ethylbenzene and xylenes)	mg/kg	<0.01	6	-
4	PCBs (polychlorinated biphenyls, 7 congeners)	mg/kg	<0.1	1	-
5	Mineral oil (C10 to C40)	mg/kg	<10	500	-
6	PAHs (polycyclic aromatic hydrocarbons)	mg/kg	17	100	-
7	pH	pH	8.5	-	>6
8	ANC (acid neutralisation capacity)	mol/kg	<0.002	-	-
Eluate Analysis 10:1					
9	arsenic	mg/kg	0.079	0.5	2
10	barium	mg/kg	<0.0005	20	100
11	cadmium	mg/kg	<0.0001	0.04	1
12	chromium	mg/kg	0.021	0.5	10
13	copper	mg/kg	0.042	2	50
14	mercury	mg/kg	<5.0e-05	0.01	0.2
15	molybdenum	mg/kg	0.036	0.5	10
16	nickel	mg/kg	0.019	0.4	10
17	lead	mg/kg	0.008	0.5	10
18	antimony	mg/kg	0.011	0.06	0.7
19	selenium	mg/kg	0.0053	0.1	0.5
20	zinc	mg/kg	0.047	4	50
21	chloride	mg/kg	<10	800	15,000
22	fluoride	mg/kg	5.4	10	150
23	sulphate	mg/kg	86	1,000	20,000
24	phenol index	mg/kg	<0.3	1	-
25	DOC (dissolved organic carbon)	mg/kg	100	500	800
26	TDS (total dissolved solids)	mg/kg	1400	4,000	60,000

Key

User supplied data

Inert WAC criteria fail

Classification of sample: TP33-1.00

Non Hazardous Waste
Classified as **17 05 04**
in the List of Waste

Sample details

Sample name:		LoW Code:	
TP33-1.00		Chapter:	17: Construction and Demolition Wastes (including excavated soil from contaminated sites)
Sample Depth:			
1.00-1.00 m		Entry:	17 05 04 (Soil and stones other than those mentioned in 17 05 03)
Moisture content:			
12% (wet weight correction)			

Hazard properties

None identified

Determinands

Moisture content: 12% Wet Weight Moisture Correction applied (MC)

#		Determinand CLP index number / EC Number / CAS Number	CLP Note	User entered data		Conv. Factor	Compound conc.		Classification value	MC Applied	Conc. Not Used
1		pH PH		8.5	pH		8.5	pH	8.5 pH		
2		boron { diboron trioxide; boric oxide } 005-008-00-8 / 215-125-8 / 1303-86-2		0.59	mg/kg	3.22	1.672	mg/kg	0.000167 %	✓	
3		sulfur { sulfur } 016-094-00-1 / 231-722-6 / 7704-34-9		3.2	mg/kg		2.816	mg/kg	0.000282 %	✓	
4		cyanides { salts of hydrogen cyanide with the exception of complex cyanides such as ferrocyanides, ferricyanides and mercuric oxycyanide and those specified elsewhere in this Annex } 006-007-00-5		<0.5	mg/kg	1.884	<0.942	mg/kg	<0.0000942 %		<LOD
5		barium { barium oxide } 215-127-9 / 1304-28-5		89	mg/kg	1.117	87.445	mg/kg	0.00874 %	✓	
6		cadmium { cadmium oxide } 048-002-00-0 / 215-146-2 / 1306-19-0		2.8	mg/kg	1.142	2.815	mg/kg	0.000281 %	✓	
7		molybdenum { molybdenum(VI) oxide } 042-001-00-9 / 215-204-7 / 1313-27-5		4.5	mg/kg	1.5	5.941	mg/kg	0.000594 %	✓	
8		antimony { antimony compounds, with the exception of the tetroxide (Sb2O4), pentoxide (Sb2O5), trisulphide (Sb2S3), pentasulphide (Sb2S5) and those specified elsewhere in this Annex } 051-003-00-9	1	2.5	mg/kg		2.2	mg/kg	0.00022 %	✓	
9		arsenic { arsenic } 033-001-00-X / 231-148-6 / 7440-38-2		25	mg/kg		22	mg/kg	0.0022 %	✓	
10		granulated copper; [particle length: from 0,9 mm to 6,0 mm; particle width: from 0,494 to 0,949 mm] 029-024-00-X / 231-159-6 / 7440-50-8		70	mg/kg		61.6	mg/kg	0.00616 %	✓	
11		mercury { mercury } 080-001-00-0 / 231-106-7 / 7439-97-6		0.19	mg/kg		0.167	mg/kg	0.0000167 %	✓	
12		nickel { nickel(II) oxide (nickel monoxide) } 028-003-00-2 / 215-215-7 [1] 234-323-5 [2] - [3] / 1313-99-1 [1] 11099-02-8 [2] 34492-97-2 [3]		61	mg/kg	1.273	68.313	mg/kg	0.00683 %	✓	
13		lead { lead compounds with the exception of those specified elsewhere in this Annex } 082-001-00-6	1	48	mg/kg		42.24	mg/kg	0.00422 %	✓	

#	Determinand	CLP index number	EC Number	CAS Number	CLP Note	User entered data		Conv. Factor	Compound conc.		Classification value	MC Applied	Conc. Not Used
14	selenium { selenium compounds with the exception of cadmium sulphoselenide and those specified elsewhere in this Annex }	034-002-00-8				0.21	mg/kg	1.405	0.26	mg/kg	0.000026 %	✓	
15	zinc { zinc oxide }	030-013-00-7	215-222-5	1314-13-2		96	mg/kg	1.245	105.153	mg/kg	0.0105 %	✓	
16	chromium in chromium(III) compounds { chromium(III) oxide }		215-160-9	1308-38-9		22	mg/kg	1.462	28.296	mg/kg	0.00283 %	✓	
17	chromium in chromium(VI) compounds { chromium(VI) oxide }	024-001-00-0	215-607-8	1333-82-0		<0.5	mg/kg	1.923	<0.962	mg/kg	<0.0000962 %		<LOD
18	TPH (C6 to C40) petroleum group			TPH		<10	mg/kg		<10	mg/kg	<0.001 %		<LOD
19	benzene	601-020-00-8	200-753-7	71-43-2		<1	µg/kg		<0.001	mg/kg	<0.0000001 %		<LOD
20	toluene	601-021-00-3	203-625-9	108-88-3		<1	µg/kg		<0.001	mg/kg	<0.0000001 %		<LOD
21	ethylbenzene	601-023-00-4	202-849-4	100-41-4		<1	µg/kg		<0.001	mg/kg	<0.0000001 %		<LOD
22	tert-butyl methyl ether; MTBE; 2-methoxy-2-methylpropane	603-181-00-X	216-653-1	1634-04-4		<1	µg/kg		<0.001	mg/kg	<0.0000001 %		<LOD
23	naphthalene	601-052-00-2	202-049-5	91-20-3		<0.1	mg/kg		<0.1	mg/kg	<0.00001 %		<LOD
24	acenaphthylene		205-917-1	208-96-8		<0.1	mg/kg		<0.1	mg/kg	<0.00001 %		<LOD
25	acenaphthene		201-469-6	83-32-9		<0.1	mg/kg		<0.1	mg/kg	<0.00001 %		<LOD
26	fluorene		201-695-5	86-73-7		<0.1	mg/kg		<0.1	mg/kg	<0.00001 %		<LOD
27	phenanthrene		201-581-5	85-01-8		<0.1	mg/kg		<0.1	mg/kg	<0.00001 %		<LOD
28	anthracene		204-371-1	120-12-7		<0.1	mg/kg		<0.1	mg/kg	<0.00001 %		<LOD
29	fluoranthene		205-912-4	206-44-0		0.15	mg/kg		0.132	mg/kg	0.0000132 %	✓	
30	pyrene		204-927-3	129-00-0		0.17	mg/kg		0.15	mg/kg	0.000015 %	✓	
31	benzo[a]anthracene	601-033-00-9	200-280-6	56-55-3		<0.1	mg/kg		<0.1	mg/kg	<0.00001 %		<LOD
32	chrysene	601-048-00-0	205-923-4	218-01-9		<0.1	mg/kg		<0.1	mg/kg	<0.00001 %		<LOD
33	benzo[b]fluoranthene	601-034-00-4	205-911-9	205-99-2		<0.1	mg/kg		<0.1	mg/kg	<0.00001 %		<LOD
34	benzo[k]fluoranthene	601-036-00-5	205-916-6	207-08-9		<0.1	mg/kg		<0.1	mg/kg	<0.00001 %		<LOD
35	benzo[a]pyrene; benzo[def]chrysene	601-032-00-3	200-028-5	50-32-8		<0.1	mg/kg		<0.1	mg/kg	<0.00001 %		<LOD
36	indeno[123-cd]pyrene		205-893-2	193-39-5		<0.1	mg/kg		<0.1	mg/kg	<0.00001 %		<LOD
37	dibenz[a,h]anthracene	601-041-00-2	200-181-8	53-70-3		<0.1	mg/kg		<0.1	mg/kg	<0.00001 %		<LOD
38	benzo[ghi]perylene		205-883-8	191-24-2		<0.1	mg/kg		<0.1	mg/kg	<0.00001 %		<LOD
39	coronene		205-881-7	191-07-1		<0.1	mg/kg		<0.1	mg/kg	<0.00001 %		<LOD
40	polychlorobiphenyls; PCB	602-039-00-4	215-648-1	1336-36-3		<0.1	mg/kg		<0.1	mg/kg	<0.00001 %		<LOD

#		Determinand			CLP Note	User entered data		Conv. Factor	Compound conc.		Classification value	MC Applied	Conc. Not Used
		CLP index number	EC Number	CAS Number									
41	●	monohydric phenols		P1186		<0.1	mg/kg		<0.1	mg/kg	<0.00001 %		<LOD
42		xylene 601-022-00-9	202-422-2 [1] 203-396-5 [2] 203-576-3 [3] 215-535-7 [4]	95-47-6 [1] 106-42-3 [2] 108-38-3 [3] 1330-20-7 [4]		<2	µg/kg		<0.002	mg/kg	<0.0000002 %		<LOD
										Total:	0.0445 %		

Key

(yellow)	User supplied data
(grey)	Determinand values ignored for classification, see column 'Conc. Not Used' for reason
●	Determinand defined or amended by HazWasteOnline (see Appendix A)
	Speciated Deteminand - Unless the Determinand is Note 1, the Conversion Factor is used to calculate the compound concentration
<LOD	Below limit of detection
ND	Not detected
CLP: Note 1	Only the metal concentration has been used for classification

WAC results for sample: TP33-1.00

WAC Settings: samples in this Job constitute a single population.

WAC limits used to evaluate this sample: "Ireland"
The WAC used in this report are the WAC defined for the inert and non-hazardous classes of landfill in the Republic of Ireland. You should check the actual acceptance criteria when the disposal site is identified as they may differ from the generic WAC used in this report.

The sample PASSES the Inert (Inert waste landfill) criteria.

The sample PASSES the Non Haz (Non hazardous waste landfill) criteria.

WAC Determinands

Solid Waste Analysis				Landfill Waste Acceptance Criteria Limits	
#	Determinand		User entered data	Inert waste landfill	Non hazardous waste landfill
1	TOC (total organic carbon)	%	0.81	3	5
2	LOI (loss on ignition)	%	3	-	-
3	BTEX (benzene, toluene, ethylbenzene and xylenes)	mg/kg	<0.01	6	-
4	PCBs (polychlorinated biphenyls, 7 congeners)	mg/kg	<0.1	1	-
5	Mineral oil (C10 to C40)	mg/kg	<10	500	-
6	PAHs (polycyclic aromatic hydrocarbons)	mg/kg	<2	100	-
7	pH	pH	8.5	-	>6
8	ANC (acid neutralisation capacity)	mol/kg	<0.002	-	-
Eluate Analysis 10:1					
9	arsenic	mg/kg	0.014	0.5	2
10	barium	mg/kg	<0.0005	20	100
11	cadmium	mg/kg	<0.0001	0.04	1
12	chromium	mg/kg	0.019	0.5	10
13	copper	mg/kg	0.021	2	50
14	mercury	mg/kg	<5.0e-05	0.01	0.2
15	molybdenum	mg/kg	0.06	0.5	10
16	nickel	mg/kg	0.014	0.4	10
17	lead	mg/kg	0.0054	0.5	10
18	antimony	mg/kg	0.0058	0.06	0.7
19	selenium	mg/kg	<0.0005	0.1	0.5
20	zinc	mg/kg	0.055	4	50
21	chloride	mg/kg	<10	800	15,000
22	fluoride	mg/kg	2.2	10	150
23	sulphate	mg/kg	<10	1,000	20,000
24	phenol index	mg/kg	<0.3	1	-
25	DOC (dissolved organic carbon)	mg/kg	120	500	800
26	TDS (total dissolved solids)	mg/kg	780	4,000	60,000

Key
User supplied data

Classification of sample: TP34-0.30

Non Hazardous Waste
Classified as **17 05 04**
in the List of Waste

Sample details

Sample name:		LoW Code:	
TP34-0.30		Chapter:	17: Construction and Demolition Wastes (including excavated soil from contaminated sites)
Sample Depth:			
0.30-0.30 m		Entry:	17 05 04 (Soil and stones other than those mentioned in 17 05 03)
Moisture content:			
13% (wet weight correction)			

Hazard properties

None identified

Determinands

Moisture content: 13% Wet Weight Moisture Correction applied (MC)

#		Determinand			CLP Note	User entered data		Conv. Factor	Compound conc.		Classification value	MC Applied	Conc. Not Used
		CLP index number	EC Number	CAS Number									
1		pH				8.3	pH		8.3	pH	8.3 pH		
				PH									
2		boron { diboron trioxide; boric oxide }				0.63	mg/kg	3.22	1.765	mg/kg	0.000176 %	✓	
		005-008-00-8	215-125-8	1303-86-2									
3		sulfur { sulfur }				13	mg/kg		11.31	mg/kg	0.00113 %	✓	
		016-094-00-1	231-722-6	7704-34-9									
4		cyanides { salts of hydrogen cyanide with the exception of complex cyanides such as ferrocyanides, ferricyanides and mercuric oxycyanide and those specified elsewhere in this Annex }				<0.5	mg/kg	1.884	<0.942	mg/kg	<0.0000942 %		<LOD
		006-007-00-5											
5		barium { barium oxide }				150	mg/kg	1.117	145.704	mg/kg	0.0146 %	✓	
			215-127-9	1304-28-5									
6		cadmium { cadmium oxide }				1.7	mg/kg	1.142	1.69	mg/kg	0.000169 %	✓	
		048-002-00-0	215-146-2	1306-19-0									
7		molybdenum { molybdenum(VI) oxide }				3.8	mg/kg	1.5	4.96	mg/kg	0.000496 %	✓	
		042-001-00-9	215-204-7	1313-27-5									
8		antimony { antimony compounds, with the exception of the tetroxide (Sb_2O_4), pentoxide (Sb_2O_5), trisulphide (Sb_2S_3), pentasulphide (Sb_2S_5) and those specified elsewhere in this Annex }			1	3.1	mg/kg		2.697	mg/kg	0.00027 %	✓	
		051-003-00-9											
9		arsenic { arsenic }				30	mg/kg		26.1	mg/kg	0.00261 %	✓	
		033-001-00-X	231-148-6	7440-38-2									
10		granulated copper; [particle length: from 0,9 mm to 6,0 mm; particle width: from 0,494 to 0,949 mm]				93	mg/kg		80.91	mg/kg	0.00809 %	✓	
		029-024-00-X	231-159-6	7440-50-8									
11		mercury { mercury }				0.74	mg/kg		0.644	mg/kg	0.0000644 %	✓	
		080-001-00-0	231-106-7	7439-97-6									
12		nickel { nickel(II) oxide (nickel monoxide) }				57	mg/kg	1.273	63.108	mg/kg	0.00631 %	✓	
		028-003-00-2	215-215-7 [1] 234-323-5 [2] - [3]	1313-99-1 [1] 11099-02-8 [2] 34492-97-2 [3]									
13		lead { lead compounds with the exception of those specified elsewhere in this Annex }			1	200	mg/kg		174	mg/kg	0.0174 %	✓	
		082-001-00-6											

#	Determinand	CLP index number	EC Number	CAS Number	CLP Note	User entered data		Conv. Factor	Compound conc.		Classification value	MC Applied	Conc. Not Used
14	selenium { selenium compounds with the exception of cadmium sulphoselenide and those specified elsewhere in this Annex }	034-002-00-8				0.78	mg/kg	1.405	0.953	mg/kg	0.0000953 %	✓	
15	zinc { zinc oxide }	030-013-00-7	215-222-5	1314-13-2		180	mg/kg	1.245	194.922	mg/kg	0.0195 %	✓	
16	chromium in chromium(III) compounds { chromium(III) oxide }		215-160-9	1308-38-9		33	mg/kg	1.462	41.961	mg/kg	0.0042 %	✓	
17	chromium in chromium(VI) compounds { chromium(VI) oxide }	024-001-00-0	215-607-8	1333-82-0		<0.5	mg/kg	1.923	<0.962	mg/kg	<0.0000962 %		<LOD
18	TPH (C6 to C40) petroleum group			TPH		<10	mg/kg		<10	mg/kg	<0.001 %		<LOD
19	benzene	601-020-00-8	200-753-7	71-43-2		<1	µg/kg		<0.001	mg/kg	<0.0000001 %		<LOD
20	toluene	601-021-00-3	203-625-9	108-88-3		<1	µg/kg		<0.001	mg/kg	<0.0000001 %		<LOD
21	ethylbenzene	601-023-00-4	202-849-4	100-41-4		<1	µg/kg		<0.001	mg/kg	<0.0000001 %		<LOD
22	tert-butyl methyl ether; MTBE; 2-methoxy-2-methylpropane	603-181-00-X	216-653-1	1634-04-4		<1	µg/kg		<0.001	mg/kg	<0.0000001 %		<LOD
23	naphthalene	601-052-00-2	202-049-5	91-20-3		<0.1	mg/kg		<0.1	mg/kg	<0.00001 %		<LOD
24	acenaphthylene		205-917-1	208-96-8		<0.1	mg/kg		<0.1	mg/kg	<0.00001 %		<LOD
25	acenaphthene		201-469-6	83-32-9		<0.1	mg/kg		<0.1	mg/kg	<0.00001 %		<LOD
26	fluorene		201-695-5	86-73-7		<0.1	mg/kg		<0.1	mg/kg	<0.00001 %		<LOD
27	phenanthrene		201-581-5	85-01-8		3	mg/kg		2.61	mg/kg	0.000261 %	✓	
28	anthracene		204-371-1	120-12-7		0.48	mg/kg		0.418	mg/kg	0.0000418 %	✓	
29	fluoranthene		205-912-4	206-44-0		3	mg/kg		2.61	mg/kg	0.000261 %	✓	
30	pyrene		204-927-3	129-00-0		2.7	mg/kg		2.349	mg/kg	0.000235 %	✓	
31	benzo[a]anthracene	601-033-00-9	200-280-6	56-55-3		1.3	mg/kg		1.131	mg/kg	0.000113 %	✓	
32	chrysene	601-048-00-0	205-923-4	218-01-9		1.6	mg/kg		1.392	mg/kg	0.000139 %	✓	
33	benzo[b]fluoranthene	601-034-00-4	205-911-9	205-99-2		1.5	mg/kg		1.305	mg/kg	0.000131 %	✓	
34	benzo[k]fluoranthene	601-036-00-5	205-916-6	207-08-9		0.45	mg/kg		0.391	mg/kg	0.0000391 %	✓	
35	benzo[a]pyrene; benzo[def]chrysene	601-032-00-3	200-028-5	50-32-8		1.1	mg/kg		0.957	mg/kg	0.0000957 %	✓	
36	indeno[123-cd]pyrene		205-893-2	193-39-5		0.64	mg/kg		0.557	mg/kg	0.0000557 %	✓	
37	dibenz[a,h]anthracene	601-041-00-2	200-181-8	53-70-3		0.2	mg/kg		0.174	mg/kg	0.0000174 %	✓	
38	benzo[ghi]perylene		205-883-8	191-24-2		0.75	mg/kg		0.653	mg/kg	0.0000653 %	✓	
39	coronene		205-881-7	191-07-1		<0.1	mg/kg		<0.1	mg/kg	<0.00001 %		<LOD
40	polychlorobiphenyls; PCB	602-039-00-4	215-648-1	1336-36-3		<0.1	mg/kg		<0.1	mg/kg	<0.00001 %		<LOD

#		Determinand			CLP Note	User entered data		Conv. Factor	Compound conc.		Classification value	MC Applied	Conc. Not Used
		CLP index number	EC Number	CAS Number									
41	●	monohydric phenols				<0.1	mg/kg		<0.1	mg/kg	<0.00001 %		**<LOD**
				P1186									
42		xylene				<2	µg/kg		<0.002	mg/kg	<0.0000002 %		**<LOD**
		601-022-00-9	202-422-2 [1] 203-396-5 [2] 203-576-3 [3] 215-535-7 [4]	95-47-6 [1] 106-42-3 [2] 108-38-3 [3] 1330-20-7 [4]									
										Total:	0.0778 %		

Key

(yellow)	User supplied data
(grey)	Determinand values ignored for classification, see column 'Conc. Not Used' for reason
●	Determinand defined or amended by HazWasteOnline (see Appendix A)
	Speciated Deteminand - Unless the Determinand is Note 1, the Conversion Factor is used to calculate the compound concentration
<LOD	Below limit of detection
ND	Not detected
CLP: Note 1	Only the metal concentration has been used for classification

WAC results for sample: TP34-0.30

WAC Settings: samples in this Job constitute a single population.

WAC limits used to evaluate this sample: "Ireland"
The WAC used in this report are the WAC defined for the inert and non-hazardous classes of landfill in the Republic of Ireland. You should check the actual acceptance criteria when the disposal site is identified as they may differ from the generic WAC used in this report.

The sample FAILS the Inert (Inert waste landfill) criteria.

The sample FAILS the Non Haz (Non hazardous waste landfill) criteria.

WAC Determinands

Solid Waste Analysis				Landfill Waste Acceptance Criteria Limits	
#	Determinand		User entered data	Inert waste landfill	Non hazardous waste landfill
1	TOC (total organic carbon)	%	5.9	3	5
2	LOI (loss on ignition)	%	8	-	-
3	BTEX (benzene, toluene, ethylbenzene and xylenes)	mg/kg	<0.01	6	-
4	PCBs (polychlorinated biphenyls, 7 congeners)	mg/kg	<0.1	1	-
5	Mineral oil (C10 to C40)	mg/kg	<10	500	-
6	PAHs (polycyclic aromatic hydrocarbons)	mg/kg	17	100	-
7	pH	pH	8.3	-	>6
8	ANC (acid neutralisation capacity)	mol/kg	<0.002	-	-
Eluate Analysis 10:1					
9	arsenic	mg/kg	0.077	0.5	2
10	barium	mg/kg	<0.0005	20	100
11	cadmium	mg/kg	<0.0001	0.04	1
12	chromium	mg/kg	0.023	0.5	10
13	copper	mg/kg	0.044	2	50
14	mercury	mg/kg	<5.0e-05	0.01	0.2
15	molybdenum	mg/kg	0.026	0.5	10
16	nickel	mg/kg	0.018	0.4	10
17	lead	mg/kg	0.0091	0.5	10
18	antimony	mg/kg	0.015	0.06	0.7
19	selenium	mg/kg	<0.0005	0.1	0.5
20	zinc	mg/kg	0.075	4	50
21	chloride	mg/kg	<10	800	15,000
22	fluoride	mg/kg	4.9	10	150
23	sulphate	mg/kg	<10	1,000	20,000
24	phenol index	mg/kg	<0.3	1	-
25	DOC (dissolved organic carbon)	mg/kg	210	500	800
26	TDS (total dissolved solids)	mg/kg	780	4,000	60,000

Key

User supplied data
Inert WAC criteria fail
Non Hazardous WAC criteria fail

Classification of sample: TP34-0.80

Non Hazardous Waste
Classified as **17 05 04**
in the List of Waste

Sample details

Sample name:
TP34-0.80
Sample Depth:
0.80-0.80 m
Moisture content:
15%
(wet weight correction)

LoW Code:
Chapter: 17: Construction and Demolition Wastes (including excavated soil from contaminated sites)
Entry: 17 05 04 (Soil and stones other than those mentioned in 17 05 03)

Hazard properties

None identified

Determinands

Moisture content: 15% Wet Weight Moisture Correction applied (MC)

#	Determinand	CLP index number	EC Number	CAS Number	CLP Note	User entered data	Conv. Factor	Compound conc.	Classification value	MC Applied	Conc. Not Used
1	pH			PH		8.6 pH		8.6 pH	8.6 pH		
2	boron { diboron trioxide; boric oxide }	005-008-00-8	215-125-8	1303-86-2		<0.4 mg/kg	3.22	<1.288 mg/kg	<0.000129 %		<LOD
3	sulfur { sulfur }	016-094-00-1	231-722-6	7704-34-9		<1 mg/kg		<1 mg/kg	<0.0001 %		<LOD
4	cyanides { salts of hydrogen cyanide with the exception of complex cyanides such as ferrocyanides, ferricyanides and mercuric oxycyanide and those specified elsewhere in this Annex }	006-007-00-5				<0.5 mg/kg	1.884	<0.942 mg/kg	<0.0000942 %		<LOD
5	barium { barium oxide }		215-127-9	1304-28-5		110 mg/kg	1.117	104.393 mg/kg	0.0104 %	✓	
6	cadmium { cadmium oxide }	048-002-00-0	215-146-2	1306-19-0		3.3 mg/kg	1.142	3.204 mg/kg	0.00032 %	✓	
7	molybdenum { molybdenum(VI) oxide }	042-001-00-9	215-204-7	1313-27-5		4.9 mg/kg	1.5	6.248 mg/kg	0.000625 %	✓	
8	antimony { antimony compounds, with the exception of the tetroxide (Sb2O4), pentoxide (Sb2O5), trisulphide (Sb2S3), pentasulphide (Sb2S5) and those specified elsewhere in this Annex }	051-003-00-9			1	2.9 mg/kg		2.465 mg/kg	0.000246 %	✓	
9	arsenic { arsenic }	033-001-00-X	231-148-6	7440-38-2		31 mg/kg		26.35 mg/kg	0.00264 %	✓	
10	granulated copper; [particle length: from 0,9 mm to 6,0 mm; particle width: from 0,494 to 0,949 mm]	029-024-00-X	231-159-6	7440-50-8		48 mg/kg		40.8 mg/kg	0.00408 %	✓	
11	mercury { mercury }	080-001-00-0	231-106-7	7439-97-6		<0.1 mg/kg		<0.1 mg/kg	<0.00001 %		<LOD
12	nickel { nickel(II) oxide (nickel monoxide) }	028-003-00-2	215-215-7 [1] 234-323-5 [2] - [3]	1313-99-1 [1] 11099-02-8 [2] 34492-97-2 [3]		85 mg/kg	1.273	91.945 mg/kg	0.00919 %	✓	
13	lead { lead compounds with the exception of those specified elsewhere in this Annex }	082-001-00-6			1	41 mg/kg		34.85 mg/kg	0.00349 %	✓	

#	Determinand	CLP index number	EC Number	CAS Number	CLP Note	User entered data	Conv. Factor	Compound conc.	Classification value	MC Applied	Conc. Not Used
14	selenium { selenium compounds with the exception of cadmium sulphoselenide and those specified elsewhere in this Annex }	034-002-00-8				0.22 mg/kg	1.405	0.263 mg/kg	0.0000263 %	✓	
15	zinc { zinc oxide }	030-013-00-7	215-222-5	1314-13-2		110 mg/kg	1.245	116.381 mg/kg	0.0116 %	✓	
16	chromium in chromium(III) compounds { chromium(III) oxide }		215-160-9	1308-38-9		34 mg/kg	1.462	42.239 mg/kg	0.00422 %	✓	
17	chromium in chromium(VI) compounds { chromium(VI) oxide }	024-001-00-0	215-607-8	1333-82-0		<0.5 mg/kg	1.923	<0.962 mg/kg	<0.0000962 %		<LOD
18	TPH (C6 to C40) petroleum group			TPH		<10 mg/kg		<10 mg/kg	<0.001 %		<LOD
19	benzene	601-020-00-8	200-753-7	71-43-2		<1 µg/kg		<0.001 mg/kg	<0.0000001 %		<LOD
20	toluene	601-021-00-3	203-625-9	108-88-3		<1 µg/kg		<0.001 mg/kg	<0.0000001 %		<LOD
21	ethylbenzene	601-023-00-4	202-849-4	100-41-4		<1 µg/kg		<0.001 mg/kg	<0.0000001 %		<LOD
22	tert-butyl methyl ether; MTBE; 2-methoxy-2-methylpropane	603-181-00-X	216-653-1	1634-04-4		<1 µg/kg		<0.001 mg/kg	<0.0000001 %		<LOD
23	naphthalene	601-052-00-2	202-049-5	91-20-3		<0.1 mg/kg		<0.1 mg/kg	<0.00001 %		<LOD
24	acenaphthylene		205-917-1	208-96-8		<0.1 mg/kg		<0.1 mg/kg	<0.00001 %		<LOD
25	acenaphthene		201-469-6	83-32-9		<0.1 mg/kg		<0.1 mg/kg	<0.00001 %		<LOD
26	fluorene		201-695-5	86-73-7		<0.1 mg/kg		<0.1 mg/kg	<0.00001 %		<LOD
27	phenanthrene		201-581-5	85-01-8		<0.1 mg/kg		<0.1 mg/kg	<0.00001 %		<LOD
28	anthracene		204-371-1	120-12-7		<0.1 mg/kg		<0.1 mg/kg	<0.00001 %		<LOD
29	fluoranthene		205-912-4	206-44-0		<0.1 mg/kg		<0.1 mg/kg	<0.00001 %		<LOD
30	pyrene		204-927-3	129-00-0		<0.1 mg/kg		<0.1 mg/kg	<0.00001 %		<LOD
31	benzo[a]anthracene	601-033-00-9	200-280-6	56-55-3		<0.1 mg/kg		<0.1 mg/kg	<0.00001 %		<LOD
32	chrysene	601-048-00-0	205-923-4	218-01-9		<0.1 mg/kg		<0.1 mg/kg	<0.00001 %		<LOD
33	benzo[b]fluoranthene	601-034-00-4	205-911-9	205-99-2		<0.1 mg/kg		<0.1 mg/kg	<0.00001 %		<LOD
34	benzo[k]fluoranthene	601-036-00-5	205-916-6	207-08-9		<0.1 mg/kg		<0.1 mg/kg	<0.00001 %		<LOD
35	benzo[a]pyrene; benzo[def]chrysene	601-032-00-3	200-028-5	50-32-8		<0.1 mg/kg		<0.1 mg/kg	<0.00001 %		<LOD
36	indeno[123-cd]pyrene		205-893-2	193-39-5		<0.1 mg/kg		<0.1 mg/kg	<0.00001 %		<LOD
37	dibenz[a,h]anthracene	601-041-00-2	200-181-8	53-70-3		<0.1 mg/kg		<0.1 mg/kg	<0.00001 %		<LOD
38	benzo[ghi]perylene		205-883-8	191-24-2		<0.1 mg/kg		<0.1 mg/kg	<0.00001 %		<LOD
39	coronene		205-881-7	191-07-1		<0.1 mg/kg		<0.1 mg/kg	<0.00001 %		<LOD
40	polychlorobiphenyls; PCB	602-039-00-4	215-648-1	1336-36-3		<0.1 mg/kg		<0.1 mg/kg	<0.00001 %		<LOD

#		Determinand			CLP Note	User entered data		Conv. Factor	Compound conc.		Classification value	MC Applied	Conc. Not Used
		CLP index number	EC Number	CAS Number									
41	●	monohydric phenols		P1186		<0.1	mg/kg		<0.1	mg/kg	<0.00001 %		<LOD
42		xylene 601-022-00-9	202-422-2 [1] 203-396-5 [2] 203-576-3 [3] 215-535-7 [4]	95-47-6 [1] 106-42-3 [2] 108-38-3 [3] 1330-20-7 [4]		<2	µg/kg		<0.002	mg/kg	<0.0000002 %		<LOD
										Total:	0.0485 %		

Key

(yellow)	User supplied data
(grey)	Determinand values ignored for classification, see column 'Conc. Not Used' for reason
●	Determinand defined or amended by HazWasteOnline (see Appendix A)
	Speciated Deteminand - Unless the Determinand is Note 1, the Conversion Factor is used to calculate the compound concentration
<LOD	Below limit of detection
ND	Not detected
CLP: Note 1	Only the metal concentration has been used for classification

WAC results for sample: TP34-0.80

WAC Settings: samples in this Job constitute a single population.

WAC limits used to evaluate this sample: "Ireland"
The WAC used in this report are the WAC defined for the inert and non-hazardous classes of landfill in the Republic of Ireland. You should check the actual acceptance criteria when the disposal site is identified as they may differ from the generic WAC used in this report.

The sample PASSES the Inert (Inert waste landfill) criteria.

The sample PASSES the Non Haz (Non hazardous waste landfill) criteria.

WAC Determinands

Solid Waste Analysis				Landfill Waste Acceptance Criteria Limits	
#	Determinand		User entered data	Inert waste landfill	Non hazardous waste landfill
1	TOC (total organic carbon)	%	0.3	3	5
2	LOI (loss on ignition)	%	8	-	-
3	BTEX (benzene, toluene, ethylbenzene and xylenes)	mg/kg	<0.01	6	-
4	PCBs (polychlorinated biphenyls, 7 congeners)	mg/kg	<0.1	1	-
5	Mineral oil (C10 to C40)	mg/kg	<10	500	-
6	PAHs (polycyclic aromatic hydrocarbons)	mg/kg	<2	100	-
7	pH	pH	8.6	-	>6
8	ANC (acid neutralisation capacity)	mol/kg	<0.002	-	-
Eluate Analysis 10:1					
9	arsenic	mg/kg	<0.0002	0.5	2
10	barium	mg/kg	<0.0005	20	100
11	cadmium	mg/kg	<0.0001	0.04	1
12	chromium	mg/kg	0.024	0.5	10
13	copper	mg/kg	0.0086	2	50
14	mercury	mg/kg	<5.0e-05	0.01	0.2
15	molybdenum	mg/kg	0.06	0.5	10
16	nickel	mg/kg	0.011	0.4	10
17	lead	mg/kg	<0.0005	0.5	10
18	antimony	mg/kg	0.0058	0.06	0.7
19	selenium	mg/kg	<0.0005	0.1	0.5
20	zinc	mg/kg	0.03	4	50
21	chloride	mg/kg	<10	800	15,000
22	fluoride	mg/kg	3.5	10	150
23	sulphate	mg/kg	<10	1,000	20,000
24	phenol index	mg/kg	<0.3	1	-
25	DOC (dissolved organic carbon)	mg/kg	130	500	800
26	TDS (total dissolved solids)	mg/kg	650	4,000	60,000

Key

User supplied data

Classification of sample: TP35-0.30

Non Hazardous Waste
Classified as **17 05 04**
in the List of Waste

Sample details

Sample name:		LoW Code:	
TP35-0.30		Chapter:	17: Construction and Demolition Wastes (including excavated soil from contaminated sites)
Sample Depth:			
0.30-0.30 m		Entry:	17 05 04 (Soil and stones other than those mentioned in 17 05 03)
Moisture content:			
12% (wet weight correction)			

Hazard properties

None identified

Determinands

Moisture content: 12% Wet Weight Moisture Correction applied (MC)

#	Determinand	CLP index number	EC Number	CAS Number	CLP Note	User entered data		Conv. Factor	Compound conc.		Classification value	MC Applied	Conc. Not Used
1	pH			PH		8.3	pH		8.3	pH	8.3 pH		
2	boron { diboron trioxide; boric oxide }	005-008-00-8	215-125-8	1303-86-2		1.2	mg/kg	3.22	3.4	mg/kg	0.00034 %	✓	
3	sulfur { sulfur }	016-094-00-1	231-722-6	7704-34-9		8.2	mg/kg		7.216	mg/kg	0.000722 %	✓	
4	cyanides { salts of hydrogen cyanide with the exception of complex cyanides such as ferrocyanides, ferricyanides and mercuric oxycyanide and those specified elsewhere in this Annex }	006-007-00-5				<0.5	mg/kg	1.884	<0.942	mg/kg	<0.0000942 %		<LOD
5	barium { barium oxide }		215-127-9	1304-28-5		220	mg/kg	1.117	216.156	mg/kg	0.0216 %	✓	
6	cadmium { cadmium oxide }	048-002-00-0	215-146-2	1306-19-0		2.8	mg/kg	1.142	2.815	mg/kg	0.000281 %	✓	
7	molybdenum { molybdenum(VI) oxide }	042-001-00-9	215-204-7	1313-27-5		4.7	mg/kg	1.5	6.205	mg/kg	0.00062 %	✓	
8	antimony { antimony compounds, with the exception of the tetroxide (Sb_2O_4), pentoxide (Sb_2O_5), trisulphide (Sb_2S_3), pentasulphide (Sb_2S_5) and those specified elsewhere in this Annex }	051-003-00-9			1	4.8	mg/kg		4.224	mg/kg	0.000422 %	✓	
9	arsenic { arsenic }	033-001-00-X	231-148-6	7440-38-2		39	mg/kg		34.32	mg/kg	0.00343 %	✓	
10	granulated copper; [particle length: from 0,9 mm to 6,0 mm; particle width: from 0,494 to 0,949 mm]	029-024-00-X	231-159-6	7440-50-8		130	mg/kg		114.4	mg/kg	0.0114 %	✓	
11	mercury { mercury }	080-001-00-0	231-106-7	7439-97-6		0.86	mg/kg		0.757	mg/kg	0.0000757 %	✓	
12	nickel { nickel(II) oxide (nickel monoxide) }	028-003-00-2	215-215-7 [1] 234-323-5 [2] - [3]	1313-99-1 [1] 11099-02-8 [2] 34492-97-2 [3]		69	mg/kg	1.273	77.272	mg/kg	0.00773 %	✓	
13	lead { lead compounds with the exception of those specified elsewhere in this Annex }	082-001-00-6			1	280	mg/kg		246.4	mg/kg	0.0246 %	✓	

#	Determinand	CLP index number	EC Number	CAS Number	CLP Note	User entered data	Conv. Factor	Compound conc.	Classification value	MC Applied	Conc. Not Used
14	selenium { selenium compounds with the exception of cadmium sulphoselenide and those specified elsewhere in this Annex }	034-002-00-8				0.78 mg/kg	1.405	0.964 mg/kg	0.0000964 %	✓	
15	zinc { zinc oxide }	030-013-00-7	215-222-5	1314-13-2		280 mg/kg	1.245	306.698 mg/kg	0.0307 %	✓	
16	chromium in chromium(III) compounds { chromium(III) oxide }		215-160-9	1308-38-9		35 mg/kg	1.462	45.016 mg/kg	0.0045 %	✓	
17	chromium in chromium(VI) compounds { chromium(VI) oxide }	024-001-00-0	215-607-8	1333-82-0		<0.5 mg/kg	1.923	<0.962 mg/kg	<0.0000962 %		<LOD
18	TPH (C6 to C40) petroleum group			TPH		<10 mg/kg		<10 mg/kg	<0.001 %		<LOD
19	benzene	601-020-00-8	200-753-7	71-43-2		<1 µg/kg		<0.001 mg/kg	<0.0000001 %		<LOD
20	toluene	601-021-00-3	203-625-9	108-88-3		<1 µg/kg		<0.001 mg/kg	<0.0000001 %		<LOD
21	ethylbenzene	601-023-00-4	202-849-4	100-41-4		<1 µg/kg		<0.001 mg/kg	<0.0000001 %		<LOD
22	tert-butyl methyl ether; MTBE; 2-methoxy-2-methylpropane	603-181-00-X	216-653-1	1634-04-4		<1 µg/kg		<0.001 mg/kg	<0.0000001 %		<LOD
23	naphthalene	601-052-00-2	202-049-5	91-20-3		<0.1 mg/kg		<0.1 mg/kg	<0.00001 %		<LOD
24	acenaphthylene		205-917-1	208-96-8		<0.1 mg/kg		<0.1 mg/kg	<0.00001 %		<LOD
25	acenaphthene		201-469-6	83-32-9		<0.1 mg/kg		<0.1 mg/kg	<0.00001 %		<LOD
26	fluorene		201-695-5	86-73-7		<0.1 mg/kg		<0.1 mg/kg	<0.00001 %		<LOD
27	phenanthrene		201-581-5	85-01-8		7.3 mg/kg		6.424 mg/kg	0.000642 %	✓	
28	anthracene		204-371-1	120-12-7		1 mg/kg		0.88 mg/kg	0.000088 %	✓	
29	fluoranthene		205-912-4	206-44-0		6.2 mg/kg		5.456 mg/kg	0.000546 %	✓	
30	pyrene		204-927-3	129-00-0		5.5 mg/kg		4.84 mg/kg	0.000484 %	✓	
31	benzo[a]anthracene	601-033-00-9	200-280-6	56-55-3		2.4 mg/kg		2.112 mg/kg	0.000211 %	✓	
32	chrysene	601-048-00-0	205-923-4	218-01-9		2.9 mg/kg		2.552 mg/kg	0.000255 %	✓	
33	benzo[b]fluoranthene	601-034-00-4	205-911-9	205-99-2		2.9 mg/kg		2.552 mg/kg	0.000255 %	✓	
34	benzo[k]fluoranthene	601-036-00-5	205-916-6	207-08-9		1.1 mg/kg		0.968 mg/kg	0.0000968 %	✓	
35	benzo[a]pyrene; benzo[def]chrysene	601-032-00-3	200-028-5	50-32-8		2 mg/kg		1.76 mg/kg	0.000176 %	✓	
36	indeno[123-cd]pyrene		205-893-2	193-39-5		1.2 mg/kg		1.056 mg/kg	0.000106 %	✓	
37	dibenz[a,h]anthracene	601-041-00-2	200-181-8	53-70-3		0.37 mg/kg		0.326 mg/kg	0.0000326 %	✓	
38	benzo[ghi]perylene		205-883-8	191-24-2		1.5 mg/kg		1.32 mg/kg	0.000132 %	✓	
39	coronene		205-881-7	191-07-1		<0.1 mg/kg		<0.1 mg/kg	<0.00001 %		<LOD
40	polychlorobiphenyls; PCB	602-039-00-4	215-648-1	1336-36-3		<0.1 mg/kg		<0.1 mg/kg	<0.00001 %		<LOD

#		Determinand: CLP index number	EC Number	CAS Number	CLP Note	User entered data		Conv. Factor	Compound conc.		Classification value	MC Applied	Conc. Not Used
41	●	monohydric phenols				<0.1	mg/kg		<0.1	mg/kg	<0.00001 %		**<LOD**
				P1186									
42		xylene				<2	µg/kg		<0.002	mg/kg	<0.0000002 %		**<LOD**
		601-022-00-9	202-422-2 [1] 203-396-5 [2] 203-576-3 [3] 215-535-7 [4]	95-47-6 [1] 106-42-3 [2] 108-38-3 [3] 1330-20-7 [4]									
										Total:	0.111 %		

Key

(yellow)	User supplied data
(grey)	Determinand values ignored for classification, see column 'Conc. Not Used' for reason
●	Determinand defined or amended by HazWasteOnline (see Appendix A)
	Speciated Deteminand - Unless the Determinand is Note 1, the Conversion Factor is used to calculate the compound concentration
<LOD	Below limit of detection
ND	Not detected
CLP: Note 1	Only the metal concentration has been used for classification

WAC results for sample: TP35-0.30

WAC Settings: samples in this Job constitute a single population.

WAC limits used to evaluate this sample: "Ireland"
The WAC used in this report are the WAC defined for the inert and non-hazardous classes of landfill in the Republic of Ireland. You should check the actual acceptance criteria when the disposal site is identified as they may differ from the generic WAC used in this report.

The sample FAILS the Inert (Inert waste landfill) criteria.

The sample PASSES the Non Haz (Non hazardous waste landfill) criteria.

WAC Determinands

Solid Waste Analysis				Landfill Waste Acceptance Criteria Limits	
#	Determinand		User entered data	Inert waste landfill	Non hazardous waste landfill
1	TOC (total organic carbon)	%	3.1	3	5
2	LOI (loss on ignition)	%	7.9	-	-
3	BTEX (benzene, toluene, ethylbenzene and xylenes)	mg/kg	<0.01	6	-
4	PCBs (polychlorinated biphenyls, 7 congeners)	mg/kg	<0.1	1	-
5	Mineral oil (C10 to C40)	mg/kg	<10	500	-
6	PAHs (polycyclic aromatic hydrocarbons)	mg/kg	34	100	-
7	pH	pH	8.3	-	>6
8	ANC (acid neutralisation capacity)	mol/kg	0.01	-	-
Eluate Analysis 10:1					
9	arsenic	mg/kg	0.11	0.5	2
10	barium	mg/kg	<0.0005	20	100
11	cadmium	mg/kg	<0.0001	0.04	1
12	chromium	mg/kg	0.011	0.5	10
13	copper	mg/kg	0.038	2	50
14	mercury	mg/kg	<5.0e-05	0.01	0.2
15	molybdenum	mg/kg	0.052	0.5	10
16	nickel	mg/kg	0.012	0.4	10
17	lead	mg/kg	0.0051	0.5	10
18	antimony	mg/kg	0.025	0.06	0.7
19	selenium	mg/kg	<0.0005	0.1	0.5
20	zinc	mg/kg	0.051	4	50
21	chloride	mg/kg	<10	800	15,000
22	fluoride	mg/kg	5	10	150
23	sulphate	mg/kg	11	1,000	20,000
24	phenol index	mg/kg	<0.3	1	-
25	DOC (dissolved organic carbon)	mg/kg	120	500	800
26	TDS (total dissolved solids)	mg/kg	910	4,000	60,000

Key
User supplied data
Inert WAC criteria fail

Classification of sample: TP35-1.00

Non Hazardous Waste
Classified as **17 05 04**
in the List of Waste

Sample details

Sample name:	**TP35-1.00**	LoW Code:	
Sample Depth:	**1.00-1.00 m**	Chapter:	17: Construction and Demolition Wastes (including excavated soil from contaminated sites)
Moisture content:	**11%** (wet weight correction)	Entry:	17 05 04 (Soil and stones other than those mentioned in 17 05 03)

Hazard properties

None identified

Determinands

Moisture content: 11% Wet Weight Moisture Correction applied (MC)

#	Determinand	CLP index number	EC Number	CAS Number	CLP Note	User entered data	Conv. Factor	Compound conc.	Classification value	MC Applied	Conc. Not Used
1	pH			PH		8.6 pH		8.6 pH	8.6 pH		
2	boron { diboron trioxide; boric oxide }	005-008-00-8	215-125-8	1303-86-2		<0.4 mg/kg	3.22	<1.288 mg/kg	<0.000129 %		<LOD
3	sulfur { sulfur }	016-094-00-1	231-722-6	7704-34-9		<1 mg/kg		<1 mg/kg	<0.0001 %		<LOD
4	cyanides { salts of hydrogen cyanide with the exception of complex cyanides such as ferrocyanides, ferricyanides and mercuric oxycyanide and those specified elsewhere in this Annex }	006-007-00-5				<0.5 mg/kg	1.884	<0.942 mg/kg	<0.0000942 %		<LOD
5	barium { barium oxide }		215-127-9	1304-28-5		99 mg/kg	1.117	98.375 mg/kg	0.00984 %	✓	
6	cadmium { cadmium oxide }	048-002-00-0	215-146-2	1306-19-0		3.2 mg/kg	1.142	3.253 mg/kg	0.000325 %	✓	
7	molybdenum { molybdenum(VI) oxide }	042-001-00-9	215-204-7	1313-27-5		6.1 mg/kg	1.5	8.145 mg/kg	0.000814 %	✓	
8	antimony { antimony compounds, with the exception of the tetroxide (Sb2O4), pentoxide (Sb2O5), trisulphide (Sb2S3), pentasulphide (Sb2S5) and those specified elsewhere in this Annex }	051-003-00-9			1	2.6 mg/kg		2.314 mg/kg	0.000231 %	✓	
9	arsenic { arsenic }	033-001-00-X	231-148-6	7440-38-2		26 mg/kg		23.14 mg/kg	0.00231 %	✓	
10	granulated copper; [particle length: from 0,9 mm to 6,0 mm; particle width: from 0,494 to 0,949 mm]	029-024-00-X	231-159-6	7440-50-8		72 mg/kg		64.08 mg/kg	0.00641 %	✓	
11	mercury { mercury }	080-001-00-0	231-106-7	7439-97-6		0.12 mg/kg		0.107 mg/kg	0.0000107 %	✓	
12	nickel { nickel(II) oxide (nickel monoxide) }	028-003-00-2	215-215-7 [1] 234-323-5 [2] - [3]	1313-99-1 [1] 11099-02-8 [2] 34492-97-2 [3]		71 mg/kg	1.273	80.415 mg/kg	0.00804 %	✓	
13	lead { lead compounds with the exception of those specified elsewhere in this Annex }	082-001-00-6			1	42 mg/kg		37.38 mg/kg	0.00374 %	✓	

#	Determinand	CLP index number	EC Number	CAS Number	CLP Note	User entered data		Conv. Factor	Compound conc.		Classification value	MC Applied	Conc. Not Used
14	selenium { selenium compounds with the exception of cadmium sulphoselenide and those specified elsewhere in this Annex }	034-002-00-8				0.21	mg/kg	1.405	0.263	mg/kg	0.0000263 %	✓	
15	zinc { zinc oxide }	030-013-00-7	215-222-5	1314-13-2		96	mg/kg	1.245	106.348	mg/kg	0.0106 %	✓	
16	chromium in chromium(III) compounds { chromium(III) oxide }		215-160-9	1308-38-9		22	mg/kg	1.462	28.617	mg/kg	0.00286 %	✓	
17	chromium in chromium(VI) compounds { chromium(VI) oxide }	024-001-00-0	215-607-8	1333-82-0		<0.5	mg/kg	1.923	<0.962	mg/kg	<0.0000962 %		<LOD
18	TPH (C6 to C40) petroleum group			TPH		<10	mg/kg		<10	mg/kg	<0.001 %		<LOD
19	benzene	601-020-00-8	200-753-7	71-43-2		<1	µg/kg		<0.001	mg/kg	<0.0000001 %		<LOD
20	toluene	601-021-00-3	203-625-9	108-88-3		<1	µg/kg		<0.001	mg/kg	<0.0000001 %		<LOD
21	ethylbenzene	601-023-00-4	202-849-4	100-41-4		<1	µg/kg		<0.001	mg/kg	<0.0000001 %		<LOD
22	tert-butyl methyl ether; MTBE; 2-methoxy-2-methylpropane	603-181-00-X	216-653-1	1634-04-4		<1	µg/kg		<0.001	mg/kg	<0.0000001 %		<LOD
23	naphthalene	601-052-00-2	202-049-5	91-20-3		<0.1	mg/kg		<0.1	mg/kg	<0.00001 %		<LOD
24	acenaphthylene		205-917-1	208-96-8		<0.1	mg/kg		<0.1	mg/kg	<0.00001 %		<LOD
25	acenaphthene		201-469-6	83-32-9		<0.1	mg/kg		<0.1	mg/kg	<0.00001 %		<LOD
26	fluorene		201-695-5	86-73-7		<0.1	mg/kg		<0.1	mg/kg	<0.00001 %		<LOD
27	phenanthrene		201-581-5	85-01-8		<0.1	mg/kg		<0.1	mg/kg	<0.00001 %		<LOD
28	anthracene		204-371-1	120-12-7		<0.1	mg/kg		<0.1	mg/kg	<0.00001 %		<LOD
29	fluoranthene		205-912-4	206-44-0		<0.1	mg/kg		<0.1	mg/kg	<0.00001 %		<LOD
30	pyrene		204-927-3	129-00-0		<0.1	mg/kg		<0.1	mg/kg	<0.00001 %		<LOD
31	benzo[a]anthracene	601-033-00-9	200-280-6	56-55-3		<0.1	mg/kg		<0.1	mg/kg	<0.00001 %		<LOD
32	chrysene	601-048-00-0	205-923-4	218-01-9		<0.1	mg/kg		<0.1	mg/kg	<0.00001 %		<LOD
33	benzo[b]fluoranthene	601-034-00-4	205-911-9	205-99-2		<0.1	mg/kg		<0.1	mg/kg	<0.00001 %		<LOD
34	benzo[k]fluoranthene	601-036-00-5	205-916-6	207-08-9		<0.1	mg/kg		<0.1	mg/kg	<0.00001 %		<LOD
35	benzo[a]pyrene; benzo[def]chrysene	601-032-00-3	200-028-5	50-32-8		<0.1	mg/kg		<0.1	mg/kg	<0.00001 %		<LOD
36	indeno[123-cd]pyrene		205-893-2	193-39-5		<0.1	mg/kg		<0.1	mg/kg	<0.00001 %		<LOD
37	dibenz[a,h]anthracene	601-041-00-2	200-181-8	53-70-3		<0.1	mg/kg		<0.1	mg/kg	<0.00001 %		<LOD
38	benzo[ghi]perylene		205-883-8	191-24-2		<0.1	mg/kg		<0.1	mg/kg	<0.00001 %		<LOD
39	coronene		205-881-7	191-07-1		<0.1	mg/kg		<0.1	mg/kg	<0.00001 %		<LOD
40	polychlorobiphenyls; PCB	602-039-00-4	215-648-1	1336-36-3		<0.1	mg/kg		<0.1	mg/kg	<0.00001 %		<LOD

#		Determinand			CLP Note	User entered data		Conv. Factor	Compound conc.		Classification value	MC Applied	Conc. Not Used
		CLP index number	EC Number	CAS Number									
41		monohydric phenols				<0.1	mg/kg		<0.1	mg/kg	<0.00001 %		**<LOD**
				P1186									
42		xylene				<2	µg/kg		<0.002	mg/kg	<0.0000002 %		**<LOD**
		601-022-00-9	202-422-2 [1] 203-396-5 [2] 203-576-3 [3] 215-535-7 [4]	95-47-6 [1] 106-42-3 [2] 108-38-3 [3] 1330-20-7 [4]									
										Total:	0.0469 %		

Key

	User supplied data
	Determinand values ignored for classification, see column 'Conc. Not Used' for reason
	Determinand defined or amended by HazWasteOnline (see Appendix A)
	Speciated Deteminand - Unless the Determinand is Note 1, the Conversion Factor is used to calculate the compound concentration
<LOD	Below limit of detection
ND	Not detected
CLP: Note 1	Only the metal concentration has been used for classification

WAC results for sample: TP35-1.00

WAC Settings: samples in this Job constitute a single population.

WAC limits used to evaluate this sample: "Ireland"
The WAC used in this report are the WAC defined for the inert and non-hazardous classes of landfill in the Republic of Ireland. You should check the actual acceptance criteria when the disposal site is identified as they may differ from the generic WAC used in this report.

The sample PASSES the Inert (Inert waste landfill) criteria.

The sample PASSES the Non Haz (Non hazardous waste landfill) criteria.

WAC Determinands

Solid Waste Analysis				Landfill Waste Acceptance Criteria Limits	
#	Determinand		User entered data	Inert waste landfill	Non hazardous waste landfill
1	TOC (total organic carbon)	%	0.86	3	5
2	LOI (loss on ignition)	%	3.2	-	-
3	BTEX (benzene, toluene, ethylbenzene and xylenes)	mg/kg	<0.01	6	-
4	PCBs (polychlorinated biphenyls, 7 congeners)	mg/kg	<0.1	1	-
5	Mineral oil (C10 to C40)	mg/kg	<10	500	-
6	PAHs (polycyclic aromatic hydrocarbons)	mg/kg	<2	100	-
7	pH	pH	8.6	-	>6
8	ANC (acid neutralisation capacity)	mol/kg	0.019	-	-
Eluate Analysis 10:1					
9	arsenic	mg/kg	0.0027	0.5	2
10	barium	mg/kg	<0.0005	20	100
11	cadmium	mg/kg	<0.0001	0.04	1
12	chromium	mg/kg	0.012	0.5	10
13	copper	mg/kg	0.014	2	50
14	mercury	mg/kg	<5.0e-05	0.01	0.2
15	molybdenum	mg/kg	0.18	0.5	10
16	nickel	mg/kg	0.017	0.4	10
17	lead	mg/kg	<0.0005	0.5	10
18	antimony	mg/kg	<0.0005	0.06	0.7
19	selenium	mg/kg	<0.0005	0.1	0.5
20	zinc	mg/kg	0.034	4	50
21	chloride	mg/kg	<10	800	15,000
22	fluoride	mg/kg	3	10	150
23	sulphate	mg/kg	<10	1,000	20,000
24	phenol index	mg/kg	<0.3	1	-
25	DOC (dissolved organic carbon)	mg/kg	99	500	800
26	TDS (total dissolved solids)	mg/kg	620	4,000	60,000

Key

User supplied data

Classification of sample: TP36-0.30

Non Hazardous Waste
Classified as **17 05 04**
in the List of Waste

Sample details

Sample name:		LoW Code:	
TP36-0.30		Chapter:	17: Construction and Demolition Wastes (including excavated soil from contaminated sites)
Sample Depth:			
0.30-0.30 m		Entry:	17 05 04 (Soil and stones other than those mentioned in 17 05 03)
Moisture content:			
15% (wet weight correction)			

Hazard properties

None identified

Determinands

Moisture content: 15% Wet Weight Moisture Correction applied (MC)

#		Determinand / CLP index number	EC Number	CAS Number	CLP Note	User entered data		Conv. Factor	Compound conc.		Classification value	MC Applied	Conc. Not Used
1		pH		PH		8.2	pH		8.2	pH	8.2 pH		
2		boron { diboron trioxide; boric oxide } 005-008-00-8	215-125-8	1303-86-2		0.9	mg/kg	3.22	2.463	mg/kg	0.000246 %	✓	
3		sulfur { sulfur } 016-094-00-1	231-722-6	7704-34-9		12	mg/kg		10.2	mg/kg	0.00102 %	✓	
4		cyanides { salts of hydrogen cyanide with the exception of complex cyanides such as ferrocyanides, ferricyanides and mercuric oxycyanide and those specified elsewhere in this Annex } 006-007-00-5				<0.5	mg/kg	1.884	<0.942	mg/kg	<0.0000942 %		<LOD
5		barium { barium oxide }	215-127-9	1304-28-5		430	mg/kg	1.117	408.083	mg/kg	0.0408 %	✓	
6		cadmium { cadmium oxide } 048-002-00-0	215-146-2	1306-19-0		1.3	mg/kg	1.142	1.262	mg/kg	0.000126 %	✓	
7		molybdenum { molybdenum(VI) oxide } 042-001-00-9	215-204-7	1313-27-5		7	mg/kg	1.5	8.926	mg/kg	0.000893 %	✓	
8		antimony { antimony compounds, with the exception of the tetroxide (Sb2O4), pentoxide (Sb2O5), trisulphide (Sb2S3), pentasulphide (Sb2S5) and those specified elsewhere in this Annex } 051-003-00-9			1	4.6	mg/kg		3.91	mg/kg	0.000391 %	✓	
9		arsenic { arsenic } 033-001-00-X	231-148-6	7440-38-2		32	mg/kg		27.2	mg/kg	0.00272 %	✓	
10		granulated copper; [particle length: from 0,9 mm to 6,0 mm; particle width: from 0,494 to 0,949 mm] 029-024-00-X	231-159-6	7440-50-8		180	mg/kg		153	mg/kg	0.0153 %	✓	
11		mercury { mercury } 080-001-00-0	231-106-7	7439-97-6		0.84	mg/kg		0.714	mg/kg	0.0000714 %	✓	
12		nickel { nickel(II) oxide (nickel monoxide) } 028-003-00-2	215-215-7 [1] 234-323-5 [2] - [3]	1313-99-1 [1] 11099-02-8 [2] 34492-97-2 [3]		97	mg/kg	1.273	104.925	mg/kg	0.0105 %	✓	
13		lead { lead compounds with the exception of those specified elsewhere in this Annex } 082-001-00-6			1	680	mg/kg		578	mg/kg	0.0578 %	✓	

#	Determinand	CLP index number	EC Number	CAS Number	CLP Note	User entered data		Conv. Factor	Compound conc.		Classification value	MC Applied	Conc. Not Used
14	selenium { selenium compounds with the exception of cadmium sulphoselenide and those specified elsewhere in this Annex }	034-002-00-8				1.2	mg/kg	1.405	1.433	mg/kg	0.000143 %	✓	
15	zinc { zinc oxide }	030-013-00-7	215-222-5	1314-13-2		320	mg/kg	1.245	338.562	mg/kg	0.0339 %	✓	
16	chromium in chromium(III) compounds { chromium(III) oxide }		215-160-9	1308-38-9		30	mg/kg	1.462	37.27	mg/kg	0.00373 %	✓	
17	chromium in chromium(VI) compounds { chromium(VI) oxide }	024-001-00-0	215-607-8	1333-82-0		<0.5	mg/kg	1.923	<0.962	mg/kg	<0.0000962 %		<LOD
18	TPH (C6 to C40) petroleum group			TPH		<10	mg/kg		<10	mg/kg	<0.001 %		<LOD
19	benzene	601-020-00-8	200-753-7	71-43-2		<1	µg/kg		<0.001	mg/kg	<0.0000001 %		<LOD
20	toluene	601-021-00-3	203-625-9	108-88-3		<1	µg/kg		<0.001	mg/kg	<0.0000001 %		<LOD
21	ethylbenzene	601-023-00-4	202-849-4	100-41-4		<1	µg/kg		<0.001	mg/kg	<0.0000001 %		<LOD
22	tert-butyl methyl ether; MTBE; 2-methoxy-2-methylpropane	603-181-00-X	216-653-1	1634-04-4		<1	µg/kg		<0.001	mg/kg	<0.0000001 %		<LOD
23	naphthalene	601-052-00-2	202-049-5	91-20-3		0.31	mg/kg		0.264	mg/kg	0.0000264 %	✓	
24	acenaphthylene		205-917-1	208-96-8		<0.1	mg/kg		<0.1	mg/kg	<0.00001 %		<LOD
25	acenaphthene		201-469-6	83-32-9		<0.1	mg/kg		<0.1	mg/kg	<0.00001 %		<LOD
26	fluorene		201-695-5	86-73-7		<0.1	mg/kg		<0.1	mg/kg	<0.00001 %		<LOD
27	phenanthrene		201-581-5	85-01-8		0.71	mg/kg		0.603	mg/kg	0.0000603 %	✓	
28	anthracene		204-371-1	120-12-7		0.15	mg/kg		0.128	mg/kg	0.0000128 %	✓	
29	fluoranthene		205-912-4	206-44-0		1	mg/kg		0.85	mg/kg	0.000085 %	✓	
30	pyrene		204-927-3	129-00-0		1	mg/kg		0.85	mg/kg	0.000085 %	✓	
31	benzo[a]anthracene	601-033-00-9	200-280-6	56-55-3		0.67	mg/kg		0.57	mg/kg	0.000057 %	✓	
32	chrysene	601-048-00-0	205-923-4	218-01-9		0.83	mg/kg		0.706	mg/kg	0.0000706 %	✓	
33	benzo[b]fluoranthene	601-034-00-4	205-911-9	205-99-2		0.95	mg/kg		0.808	mg/kg	0.0000807 %	✓	
34	benzo[k]fluoranthene	601-036-00-5	205-916-6	207-08-9		0.37	mg/kg		0.315	mg/kg	0.0000314 %	✓	
35	benzo[a]pyrene; benzo[def]chrysene	601-032-00-3	200-028-5	50-32-8		0.65	mg/kg		0.553	mg/kg	0.0000553 %	✓	
36	indeno[123-cd]pyrene		205-893-2	193-39-5		0.46	mg/kg		0.391	mg/kg	0.0000391 %	✓	
37	dibenz[a,h]anthracene	601-041-00-2	200-181-8	53-70-3		0.12	mg/kg		0.102	mg/kg	0.0000102 %	✓	
38	benzo[ghi]perylene		205-883-8	191-24-2		0.57	mg/kg		0.484	mg/kg	0.0000484 %	✓	
39	coronene		205-881-7	191-07-1		<0.1	mg/kg		<0.1	mg/kg	<0.00001 %		<LOD
40	polychlorobiphenyls; PCB	602-039-00-4	215-648-1	1336-36-3		<0.1	mg/kg		<0.1	mg/kg	<0.00001 %		<LOD

#		Determinand			CLP Note	User entered data		Conv. Factor	Compound conc.		Classification value	MC Applied	Conc. Not Used
		CLP index number	EC Number	CAS Number									
41	●	monohydric phenols		P1186		<0.1	mg/kg		<0.1	mg/kg	<0.00001 %		**<LOD**
42		xylene 601-022-00-9	202-422-2 [1] 203-396-5 [2] 203-576-3 [3] 215-535-7 [4]	95-47-6 [1] 106-42-3 [2] 108-38-3 [3] 1330-20-7 [4]		<2	µg/kg		<0.002	mg/kg	<0.0000002 %		**<LOD**
										Total:	0.17 %		

Key

	User supplied data
	Determinand values ignored for classification, see column 'Conc. Not Used' for reason
●	Determinand defined or amended by HazWasteOnline (see Appendix A)
	Speciated Deteminand - Unless the Determinand is Note 1, the Conversion Factor is used to calculate the compound concentration
<LOD	Below limit of detection
ND	Not detected
CLP: Note 1	Only the metal concentration has been used for classification

WAC results for sample: TP36-0.30

WAC Settings: samples in this Job constitute a single population.

WAC limits used to evaluate this sample: "Ireland"
The WAC used in this report are the WAC defined for the inert and non-hazardous classes of landfill in the Republic of Ireland. You should check the actual acceptance criteria when the disposal site is identified as they may differ from the generic WAC used in this report.

The sample FAILS the Inert (Inert waste landfill) criteria.

The sample FAILS the Non Haz (Non hazardous waste landfill) criteria.

WAC Determinands

Solid Waste Analysis				Landfill Waste Acceptance Criteria Limits	
#	Determinand		User entered data	Inert waste landfill	Non hazardous waste landfill
1	TOC (total organic carbon)	%	16	3	5
2	LOI (loss on ignition)	%	17	-	-
3	BTEX (benzene, toluene, ethylbenzene and xylenes)	mg/kg	<0.01	6	-
4	PCBs (polychlorinated biphenyls, 7 congeners)	mg/kg	<0.1	1	-
5	Mineral oil (C10 to C40)	mg/kg	<10	500	-
6	PAHs (polycyclic aromatic hydrocarbons)	mg/kg	7.8	100	-
7	pH	pH	8.2	-	>6
8	ANC (acid neutralisation capacity)	mol/kg	0.01	-	-
Eluate Analysis 10:1					
9	arsenic	mg/kg	0.12	0.5	2
10	barium	mg/kg	<0.0005	20	100
11	cadmium	mg/kg	<0.0001	0.04	1
12	chromium	mg/kg	0.014	0.5	10
13	copper	mg/kg	0.029	2	50
14	mercury	mg/kg	<5.0e-05	0.01	0.2
15	molybdenum	mg/kg	0.026	0.5	10
16	nickel	mg/kg	0.017	0.4	10
17	lead	mg/kg	0.068	0.5	10
18	antimony	mg/kg	0.016	0.06	0.7
19	selenium	mg/kg	<0.0005	0.1	0.5
20	zinc	mg/kg	0.073	4	50
21	chloride	mg/kg	<10	800	15,000
22	fluoride	mg/kg	1.9	10	150
23	sulphate	mg/kg	<10	1,000	20,000
24	phenol index	mg/kg	<0.3	1	-
25	DOC (dissolved organic carbon)	mg/kg	68	500	800
26	TDS (total dissolved solids)	mg/kg	710	4,000	60,000

Key

User supplied data
Inert WAC criteria fail
Non Hazardous WAC criteria fail

Classification of sample: TP36-0.80

Non Hazardous Waste
Classified as **17 05 04**
in the List of Waste

Sample details

Sample name:		LoW Code:	
TP36-0.80		Chapter:	17: Construction and Demolition Wastes (including excavated soil from contaminated sites)
Sample Depth:			
0.80-0.80 m		Entry:	17 05 04 (Soil and stones other than those mentioned in 17 05 03)
Moisture content:			
12% (wet weight correction)			

Hazard properties

None identified

Determinands

Moisture content: 12% Wet Weight Moisture Correction applied (MC)

#	Determinand	CLP index number	EC Number	CAS Number	CLP Note	User entered data		Conv. Factor	Compound conc.		Classification value	MC Applied	Conc. Not Used
1	pH			PH		8.5	pH		8.5	pH	8.5 pH		
2	boron { diboron trioxide; boric oxide }	005-008-00-8	215-125-8	1303-86-2		<0.4	mg/kg	3.22	<1.288	mg/kg	<0.000129 %		<LOD
3	sulfur { sulfur }	016-094-00-1	231-722-6	7704-34-9		2.7	mg/kg		2.376	mg/kg	0.000238 %	✓	
4	cyanides { salts of hydrogen cyanide with the exception of complex cyanides such as ferrocyanides, ferricyanides and mercuric oxycyanide and those specified elsewhere in this Annex }	006-007-00-5				<0.5	mg/kg	1.884	<0.942	mg/kg	<0.0000942 %		<LOD
5	barium { barium oxide }		215-127-9	1304-28-5		58	mg/kg	1.117	56.986	mg/kg	0.0057 %	✓	
6	cadmium { cadmium oxide }	048-002-00-0	215-146-2	1306-19-0		3.1	mg/kg	1.142	3.116	mg/kg	0.000312 %	✓	
7	molybdenum { molybdenum(VI) oxide }	042-001-00-9	215-204-7	1313-27-5		5.2	mg/kg	1.5	6.865	mg/kg	0.000686 %	✓	
8	antimony { antimony compounds, with the exception of the tetroxide (Sb_2O_4), pentoxide (Sb_2O_5), trisulphide (Sb_2S_3), pentasulphide (Sb_2S_5) and those specified elsewhere in this Annex }	051-003-00-9			1	2.3	mg/kg		2.024	mg/kg	0.000202 %	✓	
9	arsenic { arsenic }	033-001-00-X	231-148-6	7440-38-2		27	mg/kg		23.76	mg/kg	0.00238 %	✓	
10	granulated copper; [particle length: from 0,9 mm to 6,0 mm; particle width: from 0,494 to 0,949 mm]	029-024-00-X	231-159-6	7440-50-8		39	mg/kg		34.32	mg/kg	0.00343 %	✓	
11	mercury { mercury }	080-001-00-0	231-106-7	7439-97-6		0.11	mg/kg		0.0968	mg/kg	0.00000968 %	✓	
12	nickel { nickel(II) oxide (nickel monoxide) }	028-003-00-2	215-215-7 [1] 234-323-5 [2] - [3]	1313-99-1 [1] 11099-02-8 [2] 34492-97-2 [3]		54	mg/kg	1.273	60.474	mg/kg	0.00605 %	✓	
13	lead { lead compounds with the exception of those specified elsewhere in this Annex }	082-001-00-6			1	55	mg/kg		48.4	mg/kg	0.00484 %	✓	

#	Determinand	CLP index number	EC Number	CAS Number	CLP Note	User entered data	Conv. Factor	Compound conc.	Classification value	MC Applied	Conc. Not Used
14	selenium { selenium compounds with the exception of cadmium sulphoselenide and those specified elsewhere in this Annex }	034-002-00-8				0.37 mg/kg	1.405	0.457 mg/kg	0.0000457 %	✓	
15	zinc { zinc oxide }	030-013-00-7	215-222-5	1314-13-2		110 mg/kg	1.245	120.488 mg/kg	0.012 %	✓	
16	chromium in chromium(III) compounds { chromium(III) oxide }		215-160-9	1308-38-9		25 mg/kg	1.462	32.154 mg/kg	0.00322 %	✓	
17	chromium in chromium(VI) compounds { chromium(VI) oxide }	024-001-00-0	215-607-8	1333-82-0		<0.5 mg/kg	1.923	<0.962 mg/kg	<0.0000962 %		<LOD
18	TPH (C6 to C40) petroleum group			TPH		<10 mg/kg		<10 mg/kg	<0.001 %		<LOD
19	benzene	601-020-00-8	200-753-7	71-43-2		<1 µg/kg		<0.001 mg/kg	<0.0000001 %		<LOD
20	toluene	601-021-00-3	203-625-9	108-88-3		<1 µg/kg		<0.001 mg/kg	<0.0000001 %		<LOD
21	ethylbenzene	601-023-00-4	202-849-4	100-41-4		<1 µg/kg		<0.001 mg/kg	<0.0000001 %		<LOD
22	tert-butyl methyl ether; MTBE; 2-methoxy-2-methylpropane	603-181-00-X	216-653-1	1634-04-4		<1 µg/kg		<0.001 mg/kg	<0.0000001 %		<LOD
23	naphthalene	601-052-00-2	202-049-5	91-20-3		<0.1 mg/kg		<0.1 mg/kg	<0.00001 %		<LOD
24	acenaphthylene		205-917-1	208-96-8		<0.1 mg/kg		<0.1 mg/kg	<0.00001 %		<LOD
25	acenaphthene		201-469-6	83-32-9		<0.1 mg/kg		<0.1 mg/kg	<0.00001 %		<LOD
26	fluorene		201-695-5	86-73-7		<0.1 mg/kg		<0.1 mg/kg	<0.00001 %		<LOD
27	phenanthrene		201-581-5	85-01-8		<0.1 mg/kg		<0.1 mg/kg	<0.00001 %		<LOD
28	anthracene		204-371-1	120-12-7		<0.1 mg/kg		<0.1 mg/kg	<0.00001 %		<LOD
29	fluoranthene		205-912-4	206-44-0		0.14 mg/kg		0.123 mg/kg	0.0000123 %	✓	
30	pyrene		204-927-3	129-00-0		0.12 mg/kg		0.106 mg/kg	0.0000106 %	✓	
31	benzo[a]anthracene	601-033-00-9	200-280-6	56-55-3		<0.1 mg/kg		<0.1 mg/kg	<0.00001 %		<LOD
32	chrysene	601-048-00-0	205-923-4	218-01-9		<0.1 mg/kg		<0.1 mg/kg	<0.00001 %		<LOD
33	benzo[b]fluoranthene	601-034-00-4	205-911-9	205-99-2		<0.1 mg/kg		<0.1 mg/kg	<0.00001 %		<LOD
34	benzo[k]fluoranthene	601-036-00-5	205-916-6	207-08-9		<0.1 mg/kg		<0.1 mg/kg	<0.00001 %		<LOD
35	benzo[a]pyrene; benzo[def]chrysene	601-032-00-3	200-028-5	50-32-8		<0.1 mg/kg		<0.1 mg/kg	<0.00001 %		<LOD
36	indeno[123-cd]pyrene		205-893-2	193-39-5		<0.1 mg/kg		<0.1 mg/kg	<0.00001 %		<LOD
37	dibenz[a,h]anthracene	601-041-00-2	200-181-8	53-70-3		<0.1 mg/kg		<0.1 mg/kg	<0.00001 %		<LOD
38	benzo[ghi]perylene		205-883-8	191-24-2		<0.1 mg/kg		<0.1 mg/kg	<0.00001 %		<LOD
39	coronene		205-881-7	191-07-1		<0.1 mg/kg		<0.1 mg/kg	<0.00001 %		<LOD
40	polychlorobiphenyls; PCB	602-039-00-4	215-648-1	1336-36-3		<0.1 mg/kg		<0.1 mg/kg	<0.00001 %		<LOD

#		Determinand			CLP Note	User entered data		Conv. Factor	Compound conc.		Classification value	MC Applied	Conc. Not Used
		CLP index number	EC Number	CAS Number									
41	●	monohydric phenols		P1186		<0.1	mg/kg		<0.1	mg/kg	<0.00001 %		<LOD
42		xylene 601-022-00-9	202-422-2 [1] 203-396-5 [2] 203-576-3 [3] 215-535-7 [4]	95-47-6 [1] 106-42-3 [2] 108-38-3 [3] 1330-20-7 [4]		<2	µg/kg		<0.002	mg/kg	<0.0000002 %		<LOD
										Total:	0.0407 %		

Key

(yellow)	User supplied data
(grey)	Determinand values ignored for classification, see column 'Conc. Not Used' for reason
●	Determinand defined or amended by HazWasteOnline (see Appendix A)
	Speciated Deteminand - Unless the Determinand is Note 1, the Conversion Factor is used to calculate the compound concentration
<LOD	Below limit of detection
ND	Not detected
CLP: Note 1	Only the metal concentration has been used for classification

WAC results for sample: TP36-0.80

WAC Settings: samples in this Job constitute a single population.

WAC limits used to evaluate this sample: "Ireland"
The WAC used in this report are the WAC defined for the inert and non-hazardous classes of landfill in the Republic of Ireland. You should check the actual acceptance criteria when the disposal site is identified as they may differ from the generic WAC used in this report.

The sample PASSES the Inert (Inert waste landfill) criteria.

The sample PASSES the Non Haz (Non hazardous waste landfill) criteria.

WAC Determinands

Solid Waste Analysis				Landfill Waste Acceptance Criteria Limits	
#	Determinand		User entered data	Inert waste landfill	Non hazardous waste landfill
1	TOC (total organic carbon)	%	0.59	3	5
2	LOI (loss on ignition)	%	2	-	-
3	BTEX (benzene, toluene, ethylbenzene and xylenes)	mg/kg	<0.01	6	-
4	PCBs (polychlorinated biphenyls, 7 congeners)	mg/kg	<0.1	1	-
5	Mineral oil (C10 to C40)	mg/kg	<10	500	-
6	PAHs (polycyclic aromatic hydrocarbons)	mg/kg	<2	100	-
7	pH	pH	8.5	-	>6
8	ANC (acid neutralisation capacity)	mol/kg	0.007	-	-
Eluate Analysis 10:1					
9	arsenic	mg/kg	0.067	0.5	2
10	barium	mg/kg	<0.0005	20	100
11	cadmium	mg/kg	<0.0001	0.04	1
12	chromium	mg/kg	0.019	0.5	10
13	copper	mg/kg	0.018	2	50
14	mercury	mg/kg	<5.0e-05	0.01	0.2
15	molybdenum	mg/kg	0.13	0.5	10
16	nickel	mg/kg	0.014	0.4	10
17	lead	mg/kg	<0.0005	0.5	10
18	antimony	mg/kg	0.012	0.06	0.7
19	selenium	mg/kg	<0.0005	0.1	0.5
20	zinc	mg/kg	0.046	4	50
21	chloride	mg/kg	<10	800	15,000
22	fluoride	mg/kg	2.1	10	150
23	sulphate	mg/kg	<10	1,000	20,000
24	phenol index	mg/kg	<0.3	1	-
25	DOC (dissolved organic carbon)	mg/kg	150	500	800
26	TDS (total dissolved solids)	mg/kg	580	4,000	60,000

Key

User supplied data

Classification of sample: TP05-0.30

Non Hazardous Waste
Classified as **17 05 04**
in the List of Waste

Sample details

Sample name:	**TP05-0.30**	LoW Code:	
Sample Depth:	**0.30-0.30 m**	Chapter:	17: Construction and Demolition Wastes (including excavated soil from contaminated sites)
Moisture content:	**5%** (wet weight correction)	Entry:	17 05 04 (Soil and stones other than those mentioned in 17 05 03)

Hazard properties

None identified

Determinands

Moisture content: 5% Wet Weight Moisture Correction applied (MC)

#	Determinand	CLP index number	EC Number	CAS Number	CLP Note	User entered data		Conv. Factor	Compound conc.		Classification value	MC Applied	Conc. Not Used
1	pH			PH		8.3	pH		8.3	pH	8.3 pH		
2	boron { diboron trioxide; boric oxide }	005-008-00-8	215-125-8	1303-86-2		<0.4	mg/kg	3.22	<1.288	mg/kg	<0.000129 %		<LOD
3	sulfur { sulfur }	016-094-00-1	231-722-6	7704-34-9		16	mg/kg		15.2	mg/kg	0.00152 %	✓	
4	cyanides { salts of hydrogen cyanide with the exception of complex cyanides such as ferrocyanides, ferricyanides and mercuric oxycyanide and those specified elsewhere in this Annex }	006-007-00-5				<0.5	mg/kg	1.884	<0.942	mg/kg	<0.0000942 %		<LOD
5	barium { barium oxide }		215-127-9	1304-28-5		160	mg/kg	1.117	169.709	mg/kg	0.017 %	✓	
6	cadmium { cadmium oxide }	048-002-00-0	215-146-2	1306-19-0		2.9	mg/kg	1.142	3.147	mg/kg	0.000315 %	✓	
7	molybdenum { molybdenum(VI) oxide }	042-001-00-9	215-204-7	1313-27-5		4.5	mg/kg	1.5	6.413	mg/kg	0.000641 %	✓	
8	antimony { antimony compounds, with the exception of the tetroxide (Sb2O4), pentoxide (Sb2O5), trisulphide (Sb2S3), pentasulphide (Sb2S5) and those specified elsewhere in this Annex }	051-003-00-9			1	3.6	mg/kg		3.42	mg/kg	0.000342 %	✓	
9	arsenic { arsenic }	033-001-00-X	231-148-6	7440-38-2		60	mg/kg		57	mg/kg	0.0057 %	✓	
10	granulated copper; [particle length: from 0,9 mm to 6,0 mm; particle width: from 0,494 to 0,949 mm]	029-024-00-X	231-159-6	7440-50-8		120	mg/kg		114	mg/kg	0.0114 %	✓	
11	mercury { mercury }	080-001-00-0	231-106-7	7439-97-6		0.58	mg/kg		0.551	mg/kg	0.0000551 %	✓	
12	nickel { nickel(II) oxide (nickel monoxide) }	028-003-00-2	215-215-7 [1] 234-323-5 [2] - [3]	1313-99-1 [1] 11099-02-8 [2] 34492-97-2 [3]		63	mg/kg	1.273	76.165	mg/kg	0.00762 %	✓	
13	lead { lead compounds with the exception of those specified elsewhere in this Annex }	082-001-00-6			1	180	mg/kg		171	mg/kg	0.0171 %	✓	

#	Determinand	CLP index number	EC Number	CAS Number	CLP Note	User entered data		Conv. Factor	Compound conc.		Classification value	MC Applied	Conc. Not Used
14	selenium { selenium compounds with the exception of cadmium sulphoselenide and those specified elsewhere in this Annex }	034-002-00-8				1.1	mg/kg	1.405	1.468	mg/kg	0.000147 %	✓	
15	zinc { zinc oxide }	030-013-00-7	215-222-5	1314-13-2		170	mg/kg	1.245	201.021	mg/kg	0.0201 %	✓	
16	chromium in chromium(III) compounds { chromium(III) oxide }		215-160-9	1308-38-9		32	mg/kg	1.462	44.431	mg/kg	0.00444 %	✓	
17	chromium in chromium(VI) compounds { chromium(VI) oxide }	024-001-00-0	215-607-8	1333-82-0		<0.5	mg/kg	1.923	<0.962	mg/kg	<0.0000962 %		<LOD
18	TPH (C6 to C40) petroleum group			TPH		<10	mg/kg		<10	mg/kg	<0.001 %		<LOD
19	benzene	601-020-00-8	200-753-7	71-43-2		<1	µg/kg		<0.001	mg/kg	<0.0000001 %		<LOD
20	toluene	601-021-00-3	203-625-9	108-88-3		<1	µg/kg		<0.001	mg/kg	<0.0000001 %		<LOD
21	ethylbenzene	601-023-00-4	202-849-4	100-41-4		<1	µg/kg		<0.001	mg/kg	<0.0000001 %		<LOD
22	tert-butyl methyl ether; MTBE; 2-methoxy-2-methylpropane	603-181-00-X	216-653-1	1634-04-4		<1	µg/kg		<0.001	mg/kg	<0.0000001 %		<LOD
23	naphthalene	601-052-00-2	202-049-5	91-20-3		0.22	mg/kg		0.209	mg/kg	0.0000209 %	✓	
24	acenaphthylene		205-917-1	208-96-8		<0.1	mg/kg		<0.1	mg/kg	<0.00001 %		<LOD
25	acenaphthene		201-469-6	83-32-9		0.48	mg/kg		0.456	mg/kg	0.0000456 %	✓	
26	fluorene		201-695-5	86-73-7		0.39	mg/kg		0.371	mg/kg	0.0000371 %	✓	
27	phenanthrene		201-581-5	85-01-8		3.8	mg/kg		3.61	mg/kg	0.000361 %	✓	
28	anthracene		204-371-1	120-12-7		0.58	mg/kg		0.551	mg/kg	0.0000551 %	✓	
29	fluoranthene		205-912-4	206-44-0		4.4	mg/kg		4.18	mg/kg	0.000418 %	✓	
30	pyrene		204-927-3	129-00-0		3.8	mg/kg		3.61	mg/kg	0.000361 %	✓	
31	benzo[a]anthracene	601-033-00-9	200-280-6	56-55-3		2	mg/kg		1.9	mg/kg	0.00019 %	✓	
32	chrysene	601-048-00-0	205-923-4	218-01-9		2.5	mg/kg		2.375	mg/kg	0.000238 %	✓	
33	benzo[b]fluoranthene	601-034-00-4	205-911-9	205-99-2		2.6	mg/kg		2.47	mg/kg	0.000247 %	✓	
34	benzo[k]fluoranthene	601-036-00-5	205-916-6	207-08-9		0.84	mg/kg		0.798	mg/kg	0.0000798 %	✓	
35	benzo[a]pyrene; benzo[def]chrysene	601-032-00-3	200-028-5	50-32-8		1.7	mg/kg		1.615	mg/kg	0.000162 %	✓	
36	indeno[123-cd]pyrene		205-893-2	193-39-5		1.2	mg/kg		1.14	mg/kg	0.000114 %	✓	
37	dibenz[a,h]anthracene	601-041-00-2	200-181-8	53-70-3		0.33	mg/kg		0.314	mg/kg	0.0000314 %	✓	
38	benzo[ghi]perylene		205-883-8	191-24-2		1.2	mg/kg		1.14	mg/kg	0.000114 %	✓	
39	coronene		205-881-7	191-07-1		<0.1	mg/kg		<0.1	mg/kg	<0.00001 %		<LOD
40	polychlorobiphenyls; PCB	602-039-00-4	215-648-1	1336-36-3		<0.1	mg/kg		<0.1	mg/kg	<0.00001 %		<LOD

#		Determinand CLP index number	EC Number	CAS Number	CLP Note	User entered data		Conv. Factor	Compound conc.		Classification value	MC Applied	Conc. Not Used
41	●	monohydric phenols		P1186		<0.1	mg/kg		<0.1	mg/kg	<0.00001 %		**<LOD**
42		xylene 601-022-00-9	202-422-2 [1] 203-396-5 [2] 203-576-3 [3] 215-535-7 [4]	95-47-6 [1] 106-42-3 [2] 108-38-3 [3] 1330-20-7 [4]		<2	µg/kg		<0.002	mg/kg	<0.0000002 %		**<LOD**
										Total:	0.0902 %		

Key

	User supplied data
	Determinand values ignored for classification, see column 'Conc. Not Used' for reason
●	Determinand defined or amended by HazWasteOnline (see Appendix A)
	Speciated Deteminand - Unless the Determinand is Note 1, the Conversion Factor is used to calculate the compound concentration
<LOD	Below limit of detection
ND	Not detected
CLP: Note 1	Only the metal concentration has been used for classification

WAC results for sample: TP05-0.30

WAC Settings: samples in this Job constitute a single population.

WAC limits used to evaluate this sample: "Ireland"
The WAC used in this report are the WAC defined for the inert and non-hazardous classes of landfill in the Republic of Ireland. You should check the actual acceptance criteria when the disposal site is identified as they may differ from the generic WAC used in this report.

The sample FAILS the Inert (Inert waste landfill) criteria.

The sample PASSES the Non Haz (Non hazardous waste landfill) criteria.

WAC Determinands

Solid Waste Analysis				Landfill Waste Acceptance Criteria Limits	
#	Determinand		User entered data	Inert waste landfill	Non hazardous waste landfill
1	TOC (total organic carbon)	%	3.6	3	5
2	LOI (loss on ignition)	%	7.9	-	-
3	BTEX (benzene, toluene, ethylbenzene and xylenes)	mg/kg	<0.01	6	-
4	PCBs (polychlorinated biphenyls, 7 congeners)	mg/kg	<0.1	1	-
5	Mineral oil (C10 to C40)	mg/kg	<10	500	-
6	PAHs (polycyclic aromatic hydrocarbons)	mg/kg	26	100	-
7	pH	pH	8.3	-	>6
8	ANC (acid neutralisation capacity)	mol/kg	0.005	-	-
Eluate Analysis 10:1					
9	arsenic	mg/kg	0.086	0.5	2
10	barium	mg/kg	<0.0005	20	100
11	cadmium	mg/kg	<0.0001	0.04	1
12	chromium	mg/kg	<0.0005	0.5	10
13	copper	mg/kg	0.067	2	50
14	mercury	mg/kg	<5.0e-05	0.01	0.2
15	molybdenum	mg/kg	0.04	0.5	10
16	nickel	mg/kg	<0.0005	0.4	10
17	lead	mg/kg	<0.0005	0.5	10
18	antimony	mg/kg	0.012	0.06	0.7
19	selenium	mg/kg	0.0063	0.1	0.5
20	zinc	mg/kg	<0.0025	4	50
21	chloride	mg/kg	<10	800	15,000
22	fluoride	mg/kg	4.4	10	150
23	sulphate	mg/kg	<10	1,000	20,000
24	phenol index	mg/kg	<0.3	1	-
25	DOC (dissolved organic carbon)	mg/kg	79	500	800
26	TDS (total dissolved solids)	mg/kg	1000	4,000	60,000

Key
User supplied data
Inert WAC criteria fail

Classification of sample: TP05-0.50

Non Hazardous Waste
Classified as **17 05 04**
in the List of Waste

Sample details

Sample name:	**TP05-0.50**	LoW Code:	
Sample Depth:	**0.50-0.50 m**	Chapter:	17: Construction and Demolition Wastes (including excavated soil from contaminated sites)
Moisture content:	**3.6%** (wet weight correction)	Entry:	17 05 04 (Soil and stones other than those mentioned in 17 05 03)

Hazard properties

None identified

Determinands

Moisture content: 3.6% Wet Weight Moisture Correction applied (MC)

#	Determinand	CLP index number	EC Number	CAS Number	CLP Note	User entered data		Conv. Factor	Compound conc.		Classification value	MC Applied	Conc. Not Used
1	pH			PH		8.3	pH		8.3	pH	8.3 pH		
2	boron { diboron trioxide; boric oxide }	005-008-00-8	215-125-8	1303-86-2		1.1	mg/kg	3.22	3.414	mg/kg	0.000341 %	✓	
3	sulfur { sulfur }	016-094-00-1	231-722-6	7704-34-9		8	mg/kg		7.712	mg/kg	0.000771 %	✓	
4	cyanides { salts of hydrogen cyanide with the exception of complex cyanides such as ferrocyanides, ferricyanides and mercuric oxycyanide and those specified elsewhere in this Annex }	006-007-00-5				<0.5	mg/kg	1.884	<0.942	mg/kg	<0.0000942 %		<LOD
5	barium { barium oxide }		215-127-9	1304-28-5		130	mg/kg	1.117	139.921	mg/kg	0.014 %	✓	
6	cadmium { cadmium oxide }	048-002-00-0	215-146-2	1306-19-0		2.7	mg/kg	1.142	2.973	mg/kg	0.000297 %	✓	
7	molybdenum { molybdenum(VI) oxide }	042-001-00-9	215-204-7	1313-27-5		4.9	mg/kg	1.5	7.086	mg/kg	0.000709 %	✓	
8	antimony { antimony compounds, with the exception of the tetroxide (Sb2O4), pentoxide (Sb2O5), trisulphide (Sb2S3), pentasulphide (Sb2S5) and those specified elsewhere in this Annex }	051-003-00-9			1	2.9	mg/kg		2.796	mg/kg	0.00028 %	✓	
9	arsenic { arsenic }	033-001-00-X	231-148-6	7440-38-2		31	mg/kg		29.884	mg/kg	0.00299 %	✓	
10	granulated copper; [particle length: from 0,9 mm to 6,0 mm; particle width: from 0,494 to 0,949 mm]	029-024-00-X	231-159-6	7440-50-8		110	mg/kg		106.04	mg/kg	0.0106 %	✓	
11	mercury { mercury }	080-001-00-0	231-106-7	7439-97-6		0.4	mg/kg		0.386	mg/kg	0.0000386 %	✓	
12	nickel { nickel(II) oxide (nickel monoxide) }	028-003-00-2	215-215-7 [1] 234-323-5 [2] - [3]	1313-99-1 [1] 11099-02-8 [2] 34492-97-2 [3]		61	mg/kg	1.273	74.834	mg/kg	0.00748 %	✓	
13	lead { lead compounds with the exception of those specified elsewhere in this Annex }	082-001-00-6			1	130	mg/kg		125.32	mg/kg	0.0125 %	✓	

#	Determinand	CLP index number	EC Number	CAS Number	CLP Note	User entered data		Conv. Factor	Compound conc.		Classification value	MC Applied	Conc. Not Used
14	selenium { selenium compounds with the exception of cadmium sulphoselenide and those specified elsewhere in this Annex }	034-002-00-8				1.2	mg/kg	1.405	1.625	mg/kg	0.000163 %	✓	
15	zinc { zinc oxide }	030-013-00-7	215-222-5	1314-13-2		140	mg/kg	1.245	167.987	mg/kg	0.0168 %	✓	
16	chromium in chromium(III) compounds { chromium(III) oxide }		215-160-9	1308-38-9		32	mg/kg	1.462	45.086	mg/kg	0.00451 %	✓	
17	chromium in chromium(VI) compounds { chromium(VI) oxide }	024-001-00-0	215-607-8	1333-82-0		<0.5	mg/kg	1.923	<0.962	mg/kg	<0.0000962 %		<LOD
18	TPH (C6 to C40) petroleum group			TPH		<10	mg/kg		<10	mg/kg	<0.001 %		<LOD
19	benzene	601-020-00-8	200-753-7	71-43-2		<1	µg/kg		<0.001	mg/kg	<0.0000001 %		<LOD
20	toluene	601-021-00-3	203-625-9	108-88-3		<1	µg/kg		<0.001	mg/kg	<0.0000001 %		<LOD
21	ethylbenzene	601-023-00-4	202-849-4	100-41-4		<1	µg/kg		<0.001	mg/kg	<0.0000001 %		<LOD
22	tert-butyl methyl ether; MTBE; 2-methoxy-2-methylpropane	603-181-00-X	216-653-1	1634-04-4		<1	µg/kg		<0.001	mg/kg	<0.0000001 %		<LOD
23	naphthalene	601-052-00-2	202-049-5	91-20-3		0.17	mg/kg		0.164	mg/kg	0.0000164 %	✓	
24	acenaphthylene		205-917-1	208-96-8		0.11	mg/kg		0.106	mg/kg	0.0000106 %	✓	
25	acenaphthene		201-469-6	83-32-9		0.18	mg/kg		0.174	mg/kg	0.0000174 %	✓	
26	fluorene		201-695-5	86-73-7		0.13	mg/kg		0.125	mg/kg	0.0000125 %	✓	
27	phenanthrene		201-581-5	85-01-8		1.1	mg/kg		1.06	mg/kg	0.000106 %	✓	
28	anthracene		204-371-1	120-12-7		0.27	mg/kg		0.26	mg/kg	0.000026 %	✓	
29	fluoranthene		205-912-4	206-44-0		2.1	mg/kg		2.024	mg/kg	0.000202 %	✓	
30	pyrene		204-927-3	129-00-0		1.8	mg/kg		1.735	mg/kg	0.000174 %	✓	
31	benzo[a]anthracene	601-033-00-9	200-280-6	56-55-3		0.97	mg/kg		0.935	mg/kg	0.0000935 %	✓	
32	chrysene	601-048-00-0	205-923-4	218-01-9		1.1	mg/kg		1.06	mg/kg	0.000106 %	✓	
33	benzo[b]fluoranthene	601-034-00-4	205-911-9	205-99-2		1.4	mg/kg		1.35	mg/kg	0.000135 %	✓	
34	benzo[k]fluoranthene	601-036-00-5	205-916-6	207-08-9		0.49	mg/kg		0.472	mg/kg	0.0000472 %	✓	
35	benzo[a]pyrene; benzo[def]chrysene	601-032-00-3	200-028-5	50-32-8		0.87	mg/kg		0.839	mg/kg	0.0000839 %	✓	
36	indeno[123-cd]pyrene		205-893-2	193-39-5		0.62	mg/kg		0.598	mg/kg	0.0000598 %	✓	
37	dibenz[a,h]anthracene	601-041-00-2	200-181-8	53-70-3		0.13	mg/kg		0.125	mg/kg	0.0000125 %	✓	
38	benzo[ghi]perylene		205-883-8	191-24-2		0.69	mg/kg		0.665	mg/kg	0.0000665 %	✓	
39	coronene		205-881-7	191-07-1		<0.1	mg/kg		<0.1	mg/kg	<0.00001 %		<LOD
40	polychlorobiphenyls; PCB	602-039-00-4	215-648-1	1336-36-3		<0.1	mg/kg		<0.1	mg/kg	<0.00001 %		<LOD

#		Determinand			CLP Note	User entered data		Conv. Factor	Compound conc.		Classification value	MC Applied	Conc. Not Used
		CLP index number	EC Number	CAS Number									
41	●	monohydric phenols				<0.1	mg/kg		<0.1	mg/kg	<0.00001 %		**<LOD**
				P1186									
42		xylene				<2	µg/kg		<0.002	mg/kg	<0.0000002 %		**<LOD**
		601-022-00-9	202-422-2 [1] 203-396-5 [2] 203-576-3 [3] 215-535-7 [4]	95-47-6 [1] 106-42-3 [2] 108-38-3 [3] 1330-20-7 [4]									
										Total:	0.0739 %		

Key

(yellow)	User supplied data
(grey)	Determinand values ignored for classification, see column 'Conc. Not Used' for reason
●	Determinand defined or amended by HazWasteOnline (see Appendix A)
	Speciated Deteminand - Unless the Determinand is Note 1, the Conversion Factor is used to calculate the compound concentration
<LOD	Below limit of detection
ND	Not detected
CLP: Note 1	Only the metal concentration has been used for classification

WAC results for sample: TP05-0.50

WAC Settings: samples in this Job constitute a single population.

WAC limits used to evaluate this sample: "Ireland"
The WAC used in this report are the WAC defined for the inert and non-hazardous classes of landfill in the Republic of Ireland. You should check the actual acceptance criteria when the disposal site is identified as they may differ from the generic WAC used in this report.

The sample PASSES the Inert (Inert waste landfill) criteria.

The sample PASSES the Non Haz (Non hazardous waste landfill) criteria.

WAC Determinands

Solid Waste Analysis				Landfill Waste Acceptance Criteria Limits	
#	Determinand		User entered data	Inert waste landfill	Non hazardous waste landfill
1	TOC (total organic carbon)	%	2.1	3	5
2	LOI (loss on ignition)	%	5.6	-	-
3	BTEX (benzene, toluene, ethylbenzene and xylenes)	mg/kg	<0.01	6	-
4	PCBs (polychlorinated biphenyls, 7 congeners)	mg/kg	<0.1	1	-
5	Mineral oil (C10 to C40)	mg/kg	<10	500	-
6	PAHs (polycyclic aromatic hydrocarbons)	mg/kg	12	100	-
7	pH	pH	8.3	-	>6
8	ANC (acid neutralisation capacity)	mol/kg	<0.002	-	-
Eluate Analysis 10:1					
9	arsenic	mg/kg	0.043	0.5	2
10	barium	mg/kg	<0.0005	20	100
11	cadmium	mg/kg	<0.0001	0.04	1
12	chromium	mg/kg	<0.0005	0.5	10
13	copper	mg/kg	0.031	2	50
14	mercury	mg/kg	<5.0e-05	0.01	0.2
15	molybdenum	mg/kg	0.036	0.5	10
16	nickel	mg/kg	<0.0005	0.4	10
17	lead	mg/kg	<0.0005	0.5	10
18	antimony	mg/kg	0.0069	0.06	0.7
19	selenium	mg/kg	<0.0005	0.1	0.5
20	zinc	mg/kg	<0.0025	4	50
21	chloride	mg/kg	<10	800	15,000
22	fluoride	mg/kg	2.5	10	150
23	sulphate	mg/kg	<10	1,000	20,000
24	phenol index	mg/kg	<0.3	1	-
25	DOC (dissolved organic carbon)	mg/kg	<50	500	800
26	TDS (total dissolved solids)	mg/kg	850	4,000	60,000

Key
User supplied data

Classification of sample: TP05-1.00

Non Hazardous Waste
Classified as **17 05 04**
in the List of Waste

Sample details

Sample name:	**TP05-1.00**	LoW Code:	
Sample Depth:	**1.00-1.00 m**	Chapter:	17: Construction and Demolition Wastes (including excavated soil from contaminated sites)
Moisture content:	**4.1%** (wet weight correction)	Entry:	17 05 04 (Soil and stones other than those mentioned in 17 05 03)

Hazard properties

None identified

Determinands

Moisture content: 4.1% Wet Weight Moisture Correction applied (MC)

#	Determinand	CLP index number	EC Number	CAS Number	CLP Note	User entered data		Conv. Factor	Compound conc.		Classification value	MC Applied	Conc. Not Used
1	pH			PH		8.2	pH		8.2	pH	8.2 pH		
2	boron { diboron trioxide; boric oxide }	005-008-00-8	215-125-8	1303-86-2		1.1	mg/kg	3.22	3.397	mg/kg	0.00034 %	✓	
3	sulfur { sulfur }	016-094-00-1	231-722-6	7704-34-9		11	mg/kg		10.549	mg/kg	0.00105 %	✓	
4	cyanides { salts of hydrogen cyanide with the exception of complex cyanides such as ferrocyanides, ferricyanides and mercuric oxycyanide and those specified elsewhere in this Annex }	006-007-00-5				<0.5	mg/kg	1.884	<0.942	mg/kg	<0.0000942 %		<LOD
5	barium { barium oxide }		215-127-9	1304-28-5		150	mg/kg	1.117	160.609	mg/kg	0.0161 %	✓	
6	cadmium { cadmium oxide }	048-002-00-0	215-146-2	1306-19-0		3	mg/kg	1.142	3.286	mg/kg	0.000329 %	✓	
7	molybdenum { molybdenum(VI) oxide }	042-001-00-9	215-204-7	1313-27-5		4.9	mg/kg	1.5	7.05	mg/kg	0.000705 %	✓	
8	antimony { antimony compounds, with the exception of the tetroxide (Sb2O4), pentoxide (Sb2O5), trisulphide (Sb2S3), pentasulphide (Sb2S5) and those specified elsewhere in this Annex }	051-003-00-9			1	3	mg/kg		2.877	mg/kg	0.000288 %	✓	
9	arsenic { arsenic }	033-001-00-X	231-148-6	7440-38-2		35	mg/kg		33.565	mg/kg	0.00336 %	✓	
10	granulated copper; [particle length: from 0,9 mm to 6,0 mm; particle width: from 0,494 to 0,949 mm]	029-024-00-X	231-159-6	7440-50-8		100	mg/kg		95.9	mg/kg	0.00959 %	✓	
11	mercury { mercury }	080-001-00-0	231-106-7	7439-97-6		0.66	mg/kg		0.633	mg/kg	0.0000633 %	✓	
12	nickel { nickel(II) oxide (nickel monoxide) }	028-003-00-2	215-215-7 [1] 234-323-5 [2] - [3]	1313-99-1 [1] 11099-02-8 [2] 34492-97-2 [3]		65	mg/kg	1.273	79.327	mg/kg	0.00793 %	✓	
13	lead { lead compounds with the exception of those specified elsewhere in this Annex }	082-001-00-6			1	140	mg/kg		134.26	mg/kg	0.0134 %	✓	

#	Determinand	CLP index number	EC Number	CAS Number	CLP Note	User entered data		Conv. Factor	Compound conc.		Classification value	MC Applied	Conc. Not Used
14	selenium { selenium compounds with the exception of cadmium sulphoselenide and those specified elsewhere in this Annex }	034-002-00-8				0.95	mg/kg	1.405	1.28	mg/kg	0.000128 %	✓	
15	zinc { zinc oxide }	030-013-00-7	215-222-5	1314-13-2		140	mg/kg	1.245	167.115	mg/kg	0.0167 %	✓	
16	chromium in chromium(III) compounds { chromium(III) oxide }		215-160-9	1308-38-9		32	mg/kg	1.462	44.852	mg/kg	0.00449 %	✓	
17	chromium in chromium(VI) compounds { chromium(VI) oxide }	024-001-00-0	215-607-8	1333-82-0		<0.5	mg/kg	1.923	<0.962	mg/kg	<0.0000962 %		<LOD
18	TPH (C6 to C40) petroleum group			TPH		<10	mg/kg		<10	mg/kg	<0.001 %		<LOD
19	benzene	601-020-00-8	200-753-7	71-43-2		<1	µg/kg		<0.001	mg/kg	<0.0000001 %		<LOD
20	toluene	601-021-00-3	203-625-9	108-88-3		<1	µg/kg		<0.001	mg/kg	<0.0000001 %		<LOD
21	ethylbenzene	601-023-00-4	202-849-4	100-41-4		<1	µg/kg		<0.001	mg/kg	<0.0000001 %		<LOD
22	tert-butyl methyl ether; MTBE; 2-methoxy-2-methylpropane	603-181-00-X	216-653-1	1634-04-4		<1	µg/kg		<0.001	mg/kg	<0.0000001 %		<LOD
23	naphthalene	601-052-00-2	202-049-5	91-20-3		<0.1	mg/kg		<0.1	mg/kg	<0.00001 %		<LOD
24	acenaphthylene		205-917-1	208-96-8		<0.1	mg/kg		<0.1	mg/kg	<0.00001 %		<LOD
25	acenaphthene		201-469-6	83-32-9		<0.1	mg/kg		<0.1	mg/kg	<0.00001 %		<LOD
26	fluorene		201-695-5	86-73-7		<0.1	mg/kg		<0.1	mg/kg	<0.00001 %		<LOD
27	phenanthrene		201-581-5	85-01-8		1.6	mg/kg		1.534	mg/kg	0.000153 %	✓	
28	anthracene		204-371-1	120-12-7		0.22	mg/kg		0.211	mg/kg	0.0000211 %	✓	
29	fluoranthene		205-912-4	206-44-0		1.9	mg/kg		1.822	mg/kg	0.000182 %	✓	
30	pyrene		204-927-3	129-00-0		1.8	mg/kg		1.726	mg/kg	0.000173 %	✓	
31	benzo[a]anthracene	601-033-00-9	200-280-6	56-55-3		0.93	mg/kg		0.892	mg/kg	0.0000892 %	✓	
32	chrysene	601-048-00-0	205-923-4	218-01-9		1.1	mg/kg		1.055	mg/kg	0.000105 %	✓	
33	benzo[b]fluoranthene	601-034-00-4	205-911-9	205-99-2		1.5	mg/kg		1.439	mg/kg	0.000144 %	✓	
34	benzo[k]fluoranthene	601-036-00-5	205-916-6	207-08-9		0.44	mg/kg		0.422	mg/kg	0.0000422 %	✓	
35	benzo[a]pyrene; benzo[def]chrysene	601-032-00-3	200-028-5	50-32-8		0.95	mg/kg		0.911	mg/kg	0.0000911 %	✓	
36	indeno[123-cd]pyrene		205-893-2	193-39-5		0.54	mg/kg		0.518	mg/kg	0.0000518 %	✓	
37	dibenz[a,h]anthracene	601-041-00-2	200-181-8	53-70-3		0.1	mg/kg		0.0959	mg/kg	0.00000959 %	✓	
38	benzo[ghi]perylene		205-883-8	191-24-2		0.72	mg/kg		0.69	mg/kg	0.000069 %	✓	
39	coronene		205-881-7	191-07-1		<0.1	mg/kg		<0.1	mg/kg	<0.00001 %		<LOD
40	polychlorobiphenyls; PCB	602-039-00-4	215-648-1	1336-36-3		<0.1	mg/kg		<0.1	mg/kg	<0.00001 %		<LOD

#		Determinand			CLP Note	User entered data		Conv. Factor	Compound conc.		Classification value	MC Applied	Conc. Not Used
		CLP index number	EC Number	CAS Number									
41	●	monohydric phenols				<0.1	mg/kg		<0.1	mg/kg	<0.00001 %		**<LOD**
				P1186									
42		xylene				<2	µg/kg		<0.002	mg/kg	<0.0000002 %		**<LOD**
		601-022-00-9	202-422-2 [1] 203-396-5 [2] 203-576-3 [3] 215-535-7 [4]	95-47-6 [1] 106-42-3 [2] 108-38-3 [3] 1330-20-7 [4]									
										Total:	0.0769 %		

Key

(yellow)	User supplied data
(grey)	Determinand values ignored for classification, see column 'Conc. Not Used' for reason
●	Determinand defined or amended by HazWasteOnline (see Appendix A)
	Speciated Deteminand - Unless the Determinand is Note 1, the Conversion Factor is used to calculate the compound concentration
<LOD	Below limit of detection
ND	Not detected
CLP: Note 1	Only the metal concentration has been used for classification

WAC results for sample: TP05-1.00

WAC Settings: samples in this Job constitute a single population.

WAC limits used to evaluate this sample: "Ireland"
The WAC used in this report are the WAC defined for the inert and non-hazardous classes of landfill in the Republic of Ireland. You should check the actual acceptance criteria when the disposal site is identified as they may differ from the generic WAC used in this report.

The sample PASSES the Inert (Inert waste landfill) criteria.

The sample PASSES the Non Haz (Non hazardous waste landfill) criteria.

WAC Determinands

Solid Waste Analysis				Landfill Waste Acceptance Criteria Limits	
#	Determinand		User entered data	Inert waste landfill	Non hazardous waste landfill
1	TOC (total organic carbon)	%	2.9	3	5
2	LOI (loss on ignition)	%	5.8	-	-
3	BTEX (benzene, toluene, ethylbenzene and xylenes)	mg/kg	<0.01	6	-
4	PCBs (polychlorinated biphenyls, 7 congeners)	mg/kg	<0.1	1	-
5	Mineral oil (C10 to C40)	mg/kg	<10	500	-
6	PAHs (polycyclic aromatic hydrocarbons)	mg/kg	12	100	-
7	pH	pH	8.2	-	>6
8	ANC (acid neutralisation capacity)	mol/kg	0.007	-	-
Eluate Analysis 10:1					
9	arsenic	mg/kg	0.016	0.5	2
10	barium	mg/kg	<0.0005	20	100
11	cadmium	mg/kg	<0.0001	0.04	1
12	chromium	mg/kg	<0.0005	0.5	10
13	copper	mg/kg	0.016	2	50
14	mercury	mg/kg	<5.0e-05	0.01	0.2
15	molybdenum	mg/kg	0.031	0.5	10
16	nickel	mg/kg	<0.0005	0.4	10
17	lead	mg/kg	<0.0005	0.5	10
18	antimony	mg/kg	0.0059	0.06	0.7
19	selenium	mg/kg	<0.0005	0.1	0.5
20	zinc	mg/kg	<0.0025	4	50
21	chloride	mg/kg	<10	800	15,000
22	fluoride	mg/kg	1.6	10	150
23	sulphate	mg/kg	<10	1,000	20,000
24	phenol index	mg/kg	<0.3	1	-
25	DOC (dissolved organic carbon)	mg/kg	<50	500	800
26	TDS (total dissolved solids)	mg/kg	520	4,000	60,000

Key

User supplied data

Classification of sample: TP06-0.30

Non Hazardous Waste
Classified as **17 05 04**
in the List of Waste

Sample details

Sample name:		LoW Code:	
TP06-0.30		Chapter:	17: Construction and Demolition Wastes (including excavated soil from contaminated sites)
Sample Depth:			
0.30-0.30 m		Entry:	17 05 04 (Soil and stones other than those mentioned in 17 05 03)
Moisture content:			
8.3% (wet weight correction)			

Hazard properties

None identified

Determinands

Moisture content: 8.3% Wet Weight Moisture Correction applied (MC)

#	Determinand	CLP index number	EC Number	CAS Number	CLP Note	User entered data		Conv. Factor	Compound conc.		Classification value	MC Applied	Conc. Not Used
1	pH			PH		8.2	pH		8.2	pH	8.2 pH		
2	boron { diboron trioxide; boric oxide }	005-008-00-8	215-125-8	1303-86-2		0.86	mg/kg	3.22	2.539	mg/kg	0.000254 %	✓	
3	sulfur { sulfur }	016-094-00-1	231-722-6	7704-34-9		7.4	mg/kg		6.786	mg/kg	0.000679 %	✓	
4	cyanides { salts of hydrogen cyanide with the exception of complex cyanides such as ferrocyanides, ferricyanides and mercuric oxycyanide and those specified elsewhere in this Annex }	006-007-00-5				<0.5	mg/kg	1.884	<0.942	mg/kg	<0.0000942 %		<LOD
5	barium { barium oxide }		215-127-9	1304-28-5		140	mg/kg	1.117	143.337	mg/kg	0.0143 %	✓	
6	cadmium { cadmium oxide }	048-002-00-0	215-146-2	1306-19-0		2.2	mg/kg	1.142	2.305	mg/kg	0.00023 %	✓	
7	molybdenum { molybdenum(VI) oxide }	042-001-00-9	215-204-7	1313-27-5		3.5	mg/kg	1.5	4.815	mg/kg	0.000481 %	✓	
8	antimony { antimony compounds, with the exception of the tetroxide (Sb2O4), pentoxide (Sb2O5), trisulphide (Sb2S3), pentasulphide (Sb2S5) and those specified elsewhere in this Annex }	051-003-00-9			1	3.5	mg/kg		3.21	mg/kg	0.000321 %	✓	
9	arsenic { arsenic }	033-001-00-X	231-148-6	7440-38-2		31	mg/kg		28.427	mg/kg	0.00284 %	✓	
10	granulated copper; [particle length: from 0,9 mm to 6,0 mm; particle width: from 0,494 to 0,949 mm]	029-024-00-X	231-159-6	7440-50-8		100	mg/kg		91.7	mg/kg	0.00917 %	✓	
11	mercury { mercury }	080-001-00-0	231-106-7	7439-97-6		0.41	mg/kg		0.376	mg/kg	0.0000376 %	✓	
12	nickel { nickel(II) oxide (nickel monoxide) }	028-003-00-2	215-215-7 [1] 234-323-5 [2] - [3]	1313-99-1 [1] 11099-02-8 [2] 34492-97-2 [3]		48	mg/kg	1.273	56.014	mg/kg	0.0056 %	✓	
13	lead { lead compounds with the exception of those specified elsewhere in this Annex }	082-001-00-6			1	140	mg/kg		128.38	mg/kg	0.0128 %	✓	

#	Determinand	CLP index number	EC Number	CAS Number	CLP Note	User entered data		Conv. Factor	Compound conc.		Classification value	MC Applied	Conc. Not Used
14	selenium { selenium compounds with the exception of cadmium sulphoselenide and those specified elsewhere in this Annex }	034-002-00-8				0.76	mg/kg	1.405	0.979	mg/kg	0.0000979 %	✓	
15	zinc { zinc oxide }	030-013-00-7	215-222-5	1314-13-2		160	mg/kg	1.245	182.624	mg/kg	0.0183 %	✓	
16	chromium in chromium(III) compounds { chromium(III) oxide }		215-160-9	1308-38-9		29	mg/kg	1.462	38.867	mg/kg	0.00389 %	✓	
17	chromium in chromium(VI) compounds { chromium(VI) oxide }	024-001-00-0	215-607-8	1333-82-0		<0.5	mg/kg	1.923	<0.962	mg/kg	<0.0000962 %		<LOD
18	TPH (C6 to C40) petroleum group			TPH		<10	mg/kg		<10	mg/kg	<0.001 %		<LOD
19	benzene	601-020-00-8	200-753-7	71-43-2		<1	µg/kg		<0.001	mg/kg	<0.0000001 %		<LOD
20	toluene	601-021-00-3	203-625-9	108-88-3		<1	µg/kg		<0.001	mg/kg	<0.0000001 %		<LOD
21	ethylbenzene	601-023-00-4	202-849-4	100-41-4		<1	µg/kg		<0.001	mg/kg	<0.0000001 %		<LOD
22	tert-butyl methyl ether; MTBE; 2-methoxy-2-methylpropane	603-181-00-X	216-653-1	1634-04-4		<1	µg/kg		<0.001	mg/kg	<0.0000001 %		<LOD
23	naphthalene	601-052-00-2	202-049-5	91-20-3		<0.1	mg/kg		<0.1	mg/kg	<0.00001 %		<LOD
24	acenaphthylene		205-917-1	208-96-8		<0.1	mg/kg		<0.1	mg/kg	<0.00001 %		<LOD
25	acenaphthene		201-469-6	83-32-9		<0.1	mg/kg		<0.1	mg/kg	<0.00001 %		<LOD
26	fluorene		201-695-5	86-73-7		<0.1	mg/kg		<0.1	mg/kg	<0.00001 %		<LOD
27	phenanthrene		201-581-5	85-01-8		<0.1	mg/kg		<0.1	mg/kg	<0.00001 %		<LOD
28	anthracene		204-371-1	120-12-7		<0.1	mg/kg		<0.1	mg/kg	<0.00001 %		<LOD
29	fluoranthene		205-912-4	206-44-0		0.67	mg/kg		0.614	mg/kg	0.0000614 %	✓	
30	pyrene		204-927-3	129-00-0		0.55	mg/kg		0.504	mg/kg	0.0000504 %	✓	
31	benzo[a]anthracene	601-033-00-9	200-280-6	56-55-3		0.33	mg/kg		0.303	mg/kg	0.0000303 %	✓	
32	chrysene	601-048-00-0	205-923-4	218-01-9		0.4	mg/kg		0.367	mg/kg	0.0000367 %	✓	
33	benzo[b]fluoranthene	601-034-00-4	205-911-9	205-99-2		0.4	mg/kg		0.367	mg/kg	0.0000367 %	✓	
34	benzo[k]fluoranthene	601-036-00-5	205-916-6	207-08-9		0.13	mg/kg		0.119	mg/kg	0.0000119 %	✓	
35	benzo[a]pyrene; benzo[def]chrysene	601-032-00-3	200-028-5	50-32-8		0.29	mg/kg		0.266	mg/kg	0.0000266 %	✓	
36	indeno[123-cd]pyrene		205-893-2	193-39-5		<0.1	mg/kg		<0.1	mg/kg	<0.00001 %		<LOD
37	dibenz[a,h]anthracene	601-041-00-2	200-181-8	53-70-3		<0.1	mg/kg		<0.1	mg/kg	<0.00001 %		<LOD
38	benzo[ghi]perylene		205-883-8	191-24-2		<0.1	mg/kg		<0.1	mg/kg	<0.00001 %		<LOD
39	coronene		205-881-7	191-07-1		<0.1	mg/kg		<0.1	mg/kg	<0.00001 %		<LOD
40	polychlorobiphenyls; PCB	602-039-00-4	215-648-1	1336-36-3		<0.1	mg/kg		<0.1	mg/kg	<0.00001 %		<LOD

#		Determinand CLP index number / EC Number / CAS Number	CLP Note	User entered data		Conv. Factor	Compound conc.		Classification value	MC Applied	Conc. Not Used
41	●	monohydric phenols P1186		<0.1	mg/kg		<0.1	mg/kg	<0.00001 %		<LOD
42		xylene 601-022-00-9 / 202-422-2 [1] 203-396-5 [2] 203-576-3 [3] 215-535-7 [4] / 95-47-6 [1] 106-42-3 [2] 108-38-3 [3] 1330-20-7 [4]		<2	µg/kg		<0.002	mg/kg	<0.0000002 %		<LOD
								Total:	0.0706 %		

Key

(yellow)	User supplied data
(grey)	Determinand values ignored for classification, see column 'Conc. Not Used' for reason
●	Determinand defined or amended by HazWasteOnline (see Appendix A)
	Speciated Deteminand - Unless the Determinand is Note 1, the Conversion Factor is used to calculate the compound concentration
<LOD	Below limit of detection
ND	Not detected
CLP: Note 1	Only the metal concentration has been used for classification

WAC results for sample: TP06-0.30

WAC Settings: samples in this Job constitute a single population.

WAC limits used to evaluate this sample: "Ireland"
The WAC used in this report are the WAC defined for the inert and non-hazardous classes of landfill in the Republic of Ireland. You should check the actual acceptance criteria when the disposal site is identified as they may differ from the generic WAC used in this report.

The sample FAILS the Inert (Inert waste landfill) criteria.

The sample PASSES the Non Haz (Non hazardous waste landfill) criteria.

WAC Determinands

Solid Waste Analysis				Landfill Waste Acceptance Criteria Limits	
#	Determinand		User entered data	Inert waste landfill	Non hazardous waste landfill
1	TOC (total organic carbon)	%	3.9	3	5
2	LOI (loss on ignition)	%	6.8	-	-
3	BTEX (benzene, toluene, ethylbenzene and xylenes)	mg/kg	<0.01	6	-
4	PCBs (polychlorinated biphenyls, 7 congeners)	mg/kg	<0.1	1	-
5	Mineral oil (C10 to C40)	mg/kg	<10	500	-
6	PAHs (polycyclic aromatic hydrocarbons)	mg/kg	2.8	100	-
7	pH	pH	8.2	-	>6
8	ANC (acid neutralisation capacity)	mol/kg	0.006	-	-
Eluate Analysis 10:1					
9	arsenic	mg/kg	0.061	0.5	2
10	barium	mg/kg	<0.0005	20	100
11	cadmium	mg/kg	<0.0001	0.04	1
12	chromium	mg/kg	<0.0005	0.5	10
13	copper	mg/kg	0.041	2	50
14	mercury	mg/kg	<5.0e-05	0.01	0.2
15	molybdenum	mg/kg	0.025	0.5	10
16	nickel	mg/kg	<0.0005	0.4	10
17	lead	mg/kg	<0.0005	0.5	10
18	antimony	mg/kg	0.01	0.06	0.7
19	selenium	mg/kg	<0.0005	0.1	0.5
20	zinc	mg/kg	<0.0025	4	50
21	chloride	mg/kg	<10	800	15,000
22	fluoride	mg/kg	2.4	10	150
23	sulphate	mg/kg	<10	1,000	20,000
24	phenol index	mg/kg	<0.3	1	-
25	DOC (dissolved organic carbon)	mg/kg	59	500	800
26	TDS (total dissolved solids)	mg/kg	590	4,000	60,000

Key

User supplied data

Inert WAC criteria fail

Classification of sample: TP06-1.00

Non Hazardous Waste
Classified as **17 05 04**
in the List of Waste

Sample details

Sample name:		LoW Code:	
TP06-1.00		Chapter:	17: Construction and Demolition Wastes (including excavated soil from contaminated sites)
Sample Depth:			
1.00-1.00 m		Entry:	17 05 04 (Soil and stones other than those mentioned in 17 05 03)
Moisture content:			
4.5% (wet weight correction)			

Hazard properties

None identified

Determinands

Moisture content: 4.5% Wet Weight Moisture Correction applied (MC)

#		Determinand CLP index number / EC Number / CAS Number	CLP Note	User entered data		Conv. Factor	Compound conc.		Classification value	MC Applied	Conc. Not Used
1		pH PH		8.8	pH		8.8	pH	8.8 pH		
2		boron { diboron trioxide; boric oxide } 005-008-00-8 / 215-125-8 / 1303-86-2		<0.4	mg/kg	3.22	<1.288	mg/kg	<0.000129 %		<LOD
3		sulfur { sulfur } 016-094-00-1 / 231-722-6 / 7704-34-9		1.5	mg/kg		1.433	mg/kg	0.000143 %	✓	
4		cyanides { salts of hydrogen cyanide with the exception of complex cyanides such as ferrocyanides, ferricyanides and mercuric oxycyanide and those specified elsewhere in this Annex } 006-007-00-5		<0.5	mg/kg	1.884	<0.942	mg/kg	<0.0000942 %		<LOD
5		barium { barium oxide } 215-127-9 / 1304-28-5		120	mg/kg	1.117	127.952	mg/kg	0.0128 %	✓	
6		cadmium { cadmium oxide } 048-002-00-0 / 215-146-2 / 1306-19-0		3.4	mg/kg	1.142	3.709	mg/kg	0.000371 %	✓	
7		molybdenum { molybdenum(VI) oxide } 042-001-00-9 / 215-204-7 / 1313-27-5		4.9	mg/kg	1.5	7.02	mg/kg	0.000702 %	✓	
8		antimony { antimony compounds, with the exception of the tetroxide (Sb2O4), pentoxide (Sb2O5), trisulphide (Sb2S3), pentasulphide (Sb2S5) and those specified elsewhere in this Annex } 051-003-00-9	1	2.4	mg/kg		2.292	mg/kg	0.000229 %	✓	
9		arsenic { arsenic } 033-001-00-X / 231-148-6 / 7440-38-2		39	mg/kg		37.245	mg/kg	0.00372 %	✓	
10		granulated copper; [particle length: from 0,9 mm to 6,0 mm; particle width: from 0,494 to 0,949 mm] 029-024-00-X / 231-159-6 / 7440-50-8		62	mg/kg		59.21	mg/kg	0.00592 %	✓	
11		mercury { mercury } 080-001-00-0 / 231-106-7 / 7439-97-6		0.1	mg/kg		0.0955	mg/kg	0.00000955 %	✓	
12		nickel { nickel(II) oxide (nickel monoxide) } 028-003-00-2 / 215-215-7 [1] 234-323-5 [2] - [3] / 1313-99-1 [1] 11099-02-8 [2] 34492-97-2 [3]		57	mg/kg	1.273	69.274	mg/kg	0.00693 %	✓	
13		lead { lead compounds with the exception of those specified elsewhere in this Annex } 082-001-00-6	1	48	mg/kg		45.84	mg/kg	0.00458 %	✓	

#	Determinand	CLP index number	EC Number	CAS Number	CLP Note	User entered data		Conv. Factor	Compound conc.		Classification value	MC Applied	Conc. Not Used
14	selenium { selenium compounds with the exception of cadmium sulphoselenide and those specified elsewhere in this Annex }	034-002-00-8				0.28	mg/kg	1.405	0.376	mg/kg	0.0000376 %	✓	
15	zinc { zinc oxide }	030-013-00-7	215-222-5	1314-13-2		90	mg/kg	1.245	106.983	mg/kg	0.0107 %	✓	
16	chromium in chromium(III) compounds { chromium(III) oxide }		215-160-9	1308-38-9		23	mg/kg	1.462	32.103	mg/kg	0.00321 %	✓	
17	chromium in chromium(VI) compounds { chromium(VI) oxide }	024-001-00-0	215-607-8	1333-82-0		<0.5	mg/kg	1.923	<0.962	mg/kg	<0.0000962 %		<LOD
18	TPH (C6 to C40) petroleum group			TPH		<10	mg/kg		<10	mg/kg	<0.001 %		<LOD
19	benzene	601-020-00-8	200-753-7	71-43-2		<1	µg/kg		<0.001	mg/kg	<0.0000001 %		<LOD
20	toluene	601-021-00-3	203-625-9	108-88-3		<1	µg/kg		<0.001	mg/kg	<0.0000001 %		<LOD
21	ethylbenzene	601-023-00-4	202-849-4	100-41-4		<1	µg/kg		<0.001	mg/kg	<0.0000001 %		<LOD
22	tert-butyl methyl ether; MTBE; 2-methoxy-2-methylpropane	603-181-00-X	216-653-1	1634-04-4		<1	µg/kg		<0.001	mg/kg	<0.0000001 %		<LOD
23	naphthalene	601-052-00-2	202-049-5	91-20-3		<0.1	mg/kg		<0.1	mg/kg	<0.00001 %		<LOD
24	acenaphthylene		205-917-1	208-96-8		<0.1	mg/kg		<0.1	mg/kg	<0.00001 %		<LOD
25	acenaphthene		201-469-6	83-32-9		<0.1	mg/kg		<0.1	mg/kg	<0.00001 %		<LOD
26	fluorene		201-695-5	86-73-7		<0.1	mg/kg		<0.1	mg/kg	<0.00001 %		<LOD
27	phenanthrene		201-581-5	85-01-8		<0.1	mg/kg		<0.1	mg/kg	<0.00001 %		<LOD
28	anthracene		204-371-1	120-12-7		<0.1	mg/kg		<0.1	mg/kg	<0.00001 %		<LOD
29	fluoranthene		205-912-4	206-44-0		<0.1	mg/kg		<0.1	mg/kg	<0.00001 %		<LOD
30	pyrene		204-927-3	129-00-0		<0.1	mg/kg		<0.1	mg/kg	<0.00001 %		<LOD
31	benzo[a]anthracene	601-033-00-9	200-280-6	56-55-3		<0.1	mg/kg		<0.1	mg/kg	<0.00001 %		<LOD
32	chrysene	601-048-00-0	205-923-4	218-01-9		<0.1	mg/kg		<0.1	mg/kg	<0.00001 %		<LOD
33	benzo[b]fluoranthene	601-034-00-4	205-911-9	205-99-2		<0.1	mg/kg		<0.1	mg/kg	<0.00001 %		<LOD
34	benzo[k]fluoranthene	601-036-00-5	205-916-6	207-08-9		<0.1	mg/kg		<0.1	mg/kg	<0.00001 %		<LOD
35	benzo[a]pyrene; benzo[def]chrysene	601-032-00-3	200-028-5	50-32-8		<0.1	mg/kg		<0.1	mg/kg	<0.00001 %		<LOD
36	indeno[123-cd]pyrene		205-893-2	193-39-5		<0.1	mg/kg		<0.1	mg/kg	<0.00001 %		<LOD
37	dibenz[a,h]anthracene	601-041-00-2	200-181-8	53-70-3		<0.1	mg/kg		<0.1	mg/kg	<0.00001 %		<LOD
38	benzo[ghi]perylene		205-883-8	191-24-2		<0.1	mg/kg		<0.1	mg/kg	<0.00001 %		<LOD
39	coronene		205-881-7	191-07-1		<0.1	mg/kg		<0.1	mg/kg	<0.00001 %		<LOD
40	polychlorobiphenyls; PCB	602-039-00-4	215-648-1	1336-36-3		<0.1	mg/kg		<0.1	mg/kg	<0.00001 %		<LOD

#		Determinand CLP index number / EC Number / CAS Number	CLP Note	User entered data		Conv. Factor	Compound conc.		Classification value	MC Applied	Conc. Not Used
41	●	monohydric phenols P1186		<0.1	mg/kg		<0.1	mg/kg	<0.00001 %		<LOD
42		xylene 601-022-00-9 / 202-422-2 [1] 203-396-5 [2] 203-576-3 [3] 215-535-7 [4] / 95-47-6 [1] 106-42-3 [2] 108-38-3 [3] 1330-20-7 [4]		<2	µg/kg		<0.002	mg/kg	<0.0000002 %		<LOD
								Total:	0.0509 %		

Key

(yellow)	User supplied data
(grey)	Determinand values ignored for classification, see column 'Conc. Not Used' for reason
●	Determinand defined or amended by HazWasteOnline (see Appendix A)
	Speciated Deteminand - Unless the Determinand is Note 1, the Conversion Factor is used to calculate the compound concentration
<LOD	Below limit of detection
ND	Not detected
CLP: Note 1	Only the metal concentration has been used for classification

WAC results for sample: TP06-1.00

WAC Settings: samples in this Job constitute a single population.

WAC limits used to evaluate this sample: "Ireland"
The WAC used in this report are the WAC defined for the inert and non-hazardous classes of landfill in the Republic of Ireland. You should check the actual acceptance criteria when the disposal site is identified as they may differ from the generic WAC used in this report.

The sample PASSES the Inert (Inert waste landfill) criteria.

The sample PASSES the Non Haz (Non hazardous waste landfill) criteria.

WAC Determinands

Solid Waste Analysis				Landfill Waste Acceptance Criteria Limits	
#	Determinand		User entered data	Inert waste landfill	Non hazardous waste landfill
1	TOC (total organic carbon)	%	2.3	3	5
2	LOI (loss on ignition)	%	1.8	-	-
3	BTEX (benzene, toluene, ethylbenzene and xylenes)	mg/kg	<0.01	6	-
4	PCBs (polychlorinated biphenyls, 7 congeners)	mg/kg	<0.1	1	-
5	Mineral oil (C10 to C40)	mg/kg	<10	500	-
6	PAHs (polycyclic aromatic hydrocarbons)	mg/kg	<2	100	-
7	pH	pH	8.8	-	>6
8	ANC (acid neutralisation capacity)	mol/kg	0.017	-	-
Eluate Analysis 10:1					
9	arsenic	mg/kg	0.017	0.5	2
10	barium	mg/kg	<0.0005	20	100
11	cadmium	mg/kg	<0.0001	0.04	1
12	chromium	mg/kg	<0.0005	0.5	10
13	copper	mg/kg	0.0079	2	50
14	mercury	mg/kg	<5.0e-05	0.01	0.2
15	molybdenum	mg/kg	0.043	0.5	10
16	nickel	mg/kg	<0.0005	0.4	10
17	lead	mg/kg	<0.0005	0.5	10
18	antimony	mg/kg	0.005	0.06	0.7
19	selenium	mg/kg	<0.0005	0.1	0.5
20	zinc	mg/kg	<0.0025	4	50
21	chloride	mg/kg	<10	800	15,000
22	fluoride	mg/kg	1.4	10	150
23	sulphate	mg/kg	<10	1,000	20,000
24	phenol index	mg/kg	<0.3	1	-
25	DOC (dissolved organic carbon)	mg/kg	<50	500	800
26	TDS (total dissolved solids)	mg/kg	460	4,000	60,000

Key

User supplied data

Classification of sample: TP09-0.30

Non Hazardous Waste
Classified as **17 05 04**
in the List of Waste

Sample details

Sample name:	**TP09-0.30**	LoW Code:	
Sample Depth:	**0.30-0.30 m**	Chapter:	17: Construction and Demolition Wastes (including excavated soil from contaminated sites)
Moisture content:	**9.2%** (wet weight correction)	Entry:	17 05 04 (Soil and stones other than those mentioned in 17 05 03)

Hazard properties

None identified

Determinands

Moisture content: 9.2% Wet Weight Moisture Correction applied (MC)

#	Determinand	CLP index number	EC Number	CAS Number	CLP Note	User entered data		Conv. Factor	Compound conc.		Classification value	MC Applied	Conc. Not Used
1	pH			PH		8.3	pH		8.3	pH	8.3 pH		
2	boron { diboron trioxide; boric oxide }	005-008-00-8	215-125-8	1303-86-2		1	mg/kg	3.22	2.924	mg/kg	0.000292 %	✓	
3	sulfur { sulfur }	016-094-00-1	231-722-6	7704-34-9		1.2	mg/kg		1.09	mg/kg	0.000109 %	✓	
4	cyanides { salts of hydrogen cyanide with the exception of complex cyanides such as ferrocyanides, ferricyanides and mercuric oxycyanide and those specified elsewhere in this Annex }	006-007-00-5				<0.5	mg/kg	1.884	<0.942	mg/kg	<0.0000942 %		**<LOD**
5	barium { barium oxide }		215-127-9	1304-28-5		120	mg/kg	1.117	121.654	mg/kg	0.0122 %	✓	
6	cadmium { cadmium oxide }	048-002-00-0	215-146-2	1306-19-0		2.9	mg/kg	1.142	3.008	mg/kg	0.000301 %	✓	
7	molybdenum { molybdenum(VI) oxide }	042-001-00-9	215-204-7	1313-27-5		5.5	mg/kg	1.5	7.492	mg/kg	0.000749 %	✓	
8	antimony { antimony compounds, with the exception of the tetroxide (Sb2O4), pentoxide (Sb2O5), trisulphide (Sb2S3), pentasulphide (Sb2S5) and those specified elsewhere in this Annex }	051-003-00-9			1	2.9	mg/kg		2.633	mg/kg	0.000263 %	✓	
9	arsenic { arsenic }	033-001-00-X	231-148-6	7440-38-2		30	mg/kg		27.24	mg/kg	0.00272 %	✓	
10	granulated copper; [particle length: from 0,9 mm to 6,0 mm; particle width: from 0,494 to 0,949 mm]	029-024-00-X	231-159-6	7440-50-8		75	mg/kg		68.1	mg/kg	0.00681 %	✓	
11	mercury { mercury }	080-001-00-0	231-106-7	7439-97-6		0.41	mg/kg		0.372	mg/kg	0.0000372 %	✓	
12	nickel { nickel(II) oxide (nickel monoxide) }	028-003-00-2	215-215-7 [1] 234-323-5 [2] - [3]	1313-99-1 [1] 11099-02-8 [2] 34492-97-2 [3]		60	mg/kg	1.273	69.331	mg/kg	0.00693 %	✓	
13	lead { lead compounds with the exception of those specified elsewhere in this Annex }	082-001-00-6			1	96	mg/kg		87.168	mg/kg	0.00872 %	✓	

#		Determinand CLP index number / EC Number / CAS Number	CLP Note	User entered data		Conv. Factor	Compound conc.		Classification value	MC Applied	Conc. Not Used
14		selenium { selenium compounds with the exception of cadmium sulphoselenide and those specified elsewhere in this Annex } 034-002-00-8		0.93	mg/kg	1.405	1.186	mg/kg	0.000119 %	✓	
15		zinc { zinc oxide } 030-013-00-7 / 215-222-5 / 1314-13-2		150	mg/kg	1.245	169.53	mg/kg	0.017 %	✓	
16		chromium in chromium(III) compounds { chromium(III) oxide } 215-160-9 / 1308-38-9		29	mg/kg	1.462	38.486	mg/kg	0.00385 %	✓	
17		chromium in chromium(VI) compounds { chromium(VI) oxide } 024-001-00-0 / 215-607-8 / 1333-82-0		<0.5	mg/kg	1.923	<0.962	mg/kg	<0.0000962 %		<LOD
18		TPH (C6 to C40) petroleum group TPH		<10	mg/kg		<10	mg/kg	<0.001 %		<LOD
19		benzene 601-020-00-8 / 200-753-7 / 71-43-2		<1	µg/kg		<0.001	mg/kg	<0.0000001 %		<LOD
20		toluene 601-021-00-3 / 203-625-9 / 108-88-3		<1	µg/kg		<0.001	mg/kg	<0.0000001 %		<LOD
21		ethylbenzene 601-023-00-4 / 202-849-4 / 100-41-4		<1	µg/kg		<0.001	mg/kg	<0.0000001 %		<LOD
22		tert-butyl methyl ether; MTBE; 2-methoxy-2-methylpropane 603-181-00-X / 216-653-1 / 1634-04-4		<1	µg/kg		<0.001	mg/kg	<0.0000001 %		<LOD
23		naphthalene 601-052-00-2 / 202-049-5 / 91-20-3		<0.1	mg/kg		<0.1	mg/kg	<0.00001 %		<LOD
24		acenaphthylene 205-917-1 / 208-96-8		<0.1	mg/kg		<0.1	mg/kg	<0.00001 %		<LOD
25		acenaphthene 201-469-6 / 83-32-9		<0.1	mg/kg		<0.1	mg/kg	<0.00001 %		<LOD
26		fluorene 201-695-5 / 86-73-7		<0.1	mg/kg		<0.1	mg/kg	<0.00001 %		<LOD
27		phenanthrene 201-581-5 / 85-01-8		<0.1	mg/kg		<0.1	mg/kg	<0.00001 %		<LOD
28		anthracene 204-371-1 / 120-12-7		<0.1	mg/kg		<0.1	mg/kg	<0.00001 %		<LOD
29		fluoranthene 205-912-4 / 206-44-0		0.15	mg/kg		0.136	mg/kg	0.0000136 %	✓	
30		pyrene 204-927-3 / 129-00-0		0.16	mg/kg		0.145	mg/kg	0.0000145 %	✓	
31		benzo[a]anthracene 601-033-00-9 / 200-280-6 / 56-55-3		<0.1	mg/kg		<0.1	mg/kg	<0.00001 %		<LOD
32		chrysene 601-048-00-0 / 205-923-4 / 218-01-9		<0.1	mg/kg		<0.1	mg/kg	<0.00001 %		<LOD
33		benzo[b]fluoranthene 601-034-00-4 / 205-911-9 / 205-99-2		<0.1	mg/kg		<0.1	mg/kg	<0.00001 %		<LOD
34		benzo[k]fluoranthene 601-036-00-5 / 205-916-6 / 207-08-9		<0.1	mg/kg		<0.1	mg/kg	<0.00001 %		<LOD
35		benzo[a]pyrene; benzo[def]chrysene 601-032-00-3 / 200-028-5 / 50-32-8		<0.1	mg/kg		<0.1	mg/kg	<0.00001 %		<LOD
36		indeno[123-cd]pyrene 205-893-2 / 193-39-5		<0.1	mg/kg		<0.1	mg/kg	<0.00001 %		<LOD
37		dibenz[a,h]anthracene 601-041-00-2 / 200-181-8 / 53-70-3		<0.1	mg/kg		<0.1	mg/kg	<0.00001 %		<LOD
38		benzo[ghi]perylene 205-883-8 / 191-24-2		<0.1	mg/kg		<0.1	mg/kg	<0.00001 %		<LOD
39		coronene 205-881-7 / 191-07-1		<0.1	mg/kg		<0.1	mg/kg	<0.00001 %		<LOD
40		polychlorobiphenyls; PCB 602-039-00-4 / 215-648-1 / 1336-36-3		<0.1	mg/kg		<0.1	mg/kg	<0.00001 %		<LOD

<table>
<tr><th rowspan="2">#</th><th rowspan="2"></th><th colspan="3">Determinand</th><th rowspan="2">CLP Note</th><th rowspan="2" colspan="2">User entered data</th><th rowspan="2">Conv. Factor</th><th rowspan="2" colspan="2">Compound conc.</th><th rowspan="2">Classification value</th><th rowspan="2">MC Applied</th><th rowspan="2">Conc. Not Used</th></tr>
<tr><th>CLP index number</th><th>EC Number</th><th>CAS Number</th></tr>
<tr><td rowspan="2">41</td><td rowspan="2">●</td><td colspan="3">monohydric phenols</td><td rowspan="2"></td><td rowspan="2"><0.1</td><td rowspan="2">mg/kg</td><td rowspan="2"></td><td rowspan="2"><0.1</td><td rowspan="2">mg/kg</td><td rowspan="2"><0.00001 %</td><td rowspan="2"></td><td rowspan="2"><LOD</td></tr>
<tr><td></td><td></td><td>P1186</td></tr>
<tr><td rowspan="2">42</td><td rowspan="2"></td><td colspan="3">xylene</td><td rowspan="2"></td><td rowspan="2"><2</td><td rowspan="2">µg/kg</td><td rowspan="2"></td><td rowspan="2"><0.002</td><td rowspan="2">mg/kg</td><td rowspan="2"><0.0000002 %</td><td rowspan="2"></td><td rowspan="2"><LOD</td></tr>
<tr><td>601-022-00-9</td><td>202-422-2 [1]
203-396-5 [2]
203-576-3 [3]
215-535-7 [4]</td><td>95-47-6 [1]
106-42-3 [2]
108-38-3 [3]
1330-20-7 [4]</td></tr>
<tr><td colspan="11" align="right">Total:</td><td>0.0614 %</td><td colspan="2"></td></tr>
</table>

Key

(yellow)	User supplied data
(grey)	Determinand values ignored for classification, see column 'Conc. Not Used' for reason
●	Determinand defined or amended by HazWasteOnline (see Appendix A)
	Speciated Deteminand - Unless the Determinand is Note 1, the Conversion Factor is used to calculate the compound concentration
<LOD	Below limit of detection
ND	Not detected
CLP: Note 1	Only the metal concentration has been used for classification

WAC results for sample: TP09-0.30

WAC Settings: samples in this Job constitute a single population.

WAC limits used to evaluate this sample: "Ireland"
The WAC used in this report are the WAC defined for the inert and non-hazardous classes of landfill in the Republic of Ireland. You should check the actual acceptance criteria when the disposal site is identified as they may differ from the generic WAC used in this report.

The sample PASSES the Inert (Inert waste landfill) criteria.

The sample PASSES the Non Haz (Non hazardous waste landfill) criteria.

WAC Determinands

Solid Waste Analysis				Landfill Waste Acceptance Criteria Limits	
#	Determinand		User entered data	Inert waste landfill	Non hazardous waste landfill
1	TOC (total organic carbon)	%	2.5	3	5
2	LOI (loss on ignition)	%	6.4	-	-
3	BTEX (benzene, toluene, ethylbenzene and xylenes)	mg/kg	<0.01	6	-
4	PCBs (polychlorinated biphenyls, 7 congeners)	mg/kg	<0.1	1	-
5	Mineral oil (C10 to C40)	mg/kg	<10	500	-
6	PAHs (polycyclic aromatic hydrocarbons)	mg/kg	<2	100	-
7	pH	pH	8.3	-	>6
8	ANC (acid neutralisation capacity)	mol/kg	<0.002	-	-
Eluate Analysis 10:1					
9	arsenic	mg/kg	0.021	0.5	2
10	barium	mg/kg	<0.0005	20	100
11	cadmium	mg/kg	<0.0001	0.04	1
12	chromium	mg/kg	<0.0005	0.5	10
13	copper	mg/kg	0.027	2	50
14	mercury	mg/kg	<5.0e-05	0.01	0.2
15	molybdenum	mg/kg	0.12	0.5	10
16	nickel	mg/kg	<0.0005	0.4	10
17	lead	mg/kg	<0.0005	0.5	10
18	antimony	mg/kg	0.0089	0.06	0.7
19	selenium	mg/kg	<0.0005	0.1	0.5
20	zinc	mg/kg	<0.0025	4	50
21	chloride	mg/kg	<10	800	15,000
22	fluoride	mg/kg	4.9	10	150
23	sulphate	mg/kg	<10	1,000	20,000
24	phenol index	mg/kg	<0.3	1	-
25	DOC (dissolved organic carbon)	mg/kg	64	500	800
26	TDS (total dissolved solids)	mg/kg	840	4,000	60,000

Key

User supplied data

Classification of sample: TP09-1.00

Non Hazardous Waste
Classified as **17 05 04**
in the List of Waste

Sample details

Sample name:		LoW Code:	
TP09-1.00		Chapter:	17: Construction and Demolition Wastes (including excavated soil from contaminated sites)
Sample Depth:			
1.00-1.00 m		Entry:	17 05 04 (Soil and stones other than those mentioned in 17 05 03)
Moisture content:			
3.8% (wet weight correction)			

Hazard properties

None identified

Determinands

Moisture content: 3.8% Wet Weight Moisture Correction applied (MC)

#	Determinand	CLP index number	EC Number	CAS Number	CLP Note	User entered data		Conv. Factor	Compound conc.		Classification value	MC Applied	Conc. Not Used
1	pH			PH		8.5	pH		8.5	pH	8.5 pH		
2	boron { diboron trioxide; boric oxide }	005-008-00-8	215-125-8	1303-86-2		0.46	mg/kg	3.22	1.425	mg/kg	0.000142 %	✓	
3	sulfur { sulfur }	016-094-00-1	231-722-6	7704-34-9		1.9	mg/kg		1.828	mg/kg	0.000183 %	✓	
4	cyanides { salts of hydrogen cyanide with the exception of complex cyanides such as ferrocyanides, ferricyanides and mercuric oxycyanide and those specified elsewhere in this Annex }	006-007-00-5				<0.5	mg/kg	1.884	<0.942	mg/kg	<0.0000942 %		<LOD
5	barium { barium oxide }		215-127-9	1304-28-5		98	mg/kg	1.117	105.26	mg/kg	0.0105 %	✓	
6	cadmium { cadmium oxide }	048-002-00-0	215-146-2	1306-19-0		2.8	mg/kg	1.142	3.077	mg/kg	0.000308 %	✓	
7	molybdenum { molybdenum(VI) oxide }	042-001-00-9	215-204-7	1313-27-5		4.7	mg/kg	1.5	6.783	mg/kg	0.000678 %	✓	
8	antimony { antimony compounds, with the exception of the tetroxide (Sb2O4), pentoxide (Sb2O5), trisulphide (Sb2S3), pentasulphide (Sb2S5) and those specified elsewhere in this Annex }	051-003-00-9			1	2.1	mg/kg		2.02	mg/kg	0.000202 %	✓	
9	arsenic { arsenic }	033-001-00-X	231-148-6	7440-38-2		28	mg/kg		26.936	mg/kg	0.00269 %	✓	
10	granulated copper; [particle length: from 0,9 mm to 6,0 mm; particle width: from 0,494 to 0,949 mm]	029-024-00-X	231-159-6	7440-50-8		110	mg/kg		105.82	mg/kg	0.0106 %	✓	
11	mercury { mercury }	080-001-00-0	231-106-7	7439-97-6		0.21	mg/kg		0.202	mg/kg	0.0000202 %	✓	
12	nickel { nickel(II) oxide (nickel monoxide) }	028-003-00-2	215-215-7 [1] 234-323-5 [2] - [3]	1313-99-1 [1] 11099-02-8 [2] 34492-97-2 [3]		59	mg/kg	1.273	72.23	mg/kg	0.00722 %	✓	
13	lead { lead compounds with the exception of those specified elsewhere in this Annex }	082-001-00-6			1	59	mg/kg		56.758	mg/kg	0.00568 %	✓	

#	Determinand	CLP index number	EC Number	CAS Number	CLP Note	User entered data	Conv. Factor	Compound conc.	Classification value	MC Applied	Conc. Not Used
14	selenium { selenium compounds with the exception of cadmium sulphoselenide and those specified elsewhere in this Annex }	034-002-00-8				0.53 mg/kg	1.405	0.716 mg/kg	0.0000716 %	✓	
15	zinc { zinc oxide }	030-013-00-7	215-222-5	1314-13-2		90 mg/kg	1.245	107.767 mg/kg	0.0108 %	✓	
16	chromium in chromium(III) compounds { chromium(III) oxide }		215-160-9	1308-38-9		31 mg/kg	1.462	43.587 mg/kg	0.00436 %	✓	
17	chromium in chromium(VI) compounds { chromium(VI) oxide }	024-001-00-0	215-607-8	1333-82-0		<0.5 mg/kg	1.923	<0.962 mg/kg	<0.0000962 %		<LOD
18	TPH (C6 to C40) petroleum group			TPH		<10 mg/kg		<10 mg/kg	<0.001 %		<LOD
19	benzene	601-020-00-8	200-753-7	71-43-2		<1 µg/kg		<0.001 mg/kg	<0.0000001 %		<LOD
20	toluene	601-021-00-3	203-625-9	108-88-3		<1 µg/kg		<0.001 mg/kg	<0.0000001 %		<LOD
21	ethylbenzene	601-023-00-4	202-849-4	100-41-4		<1 µg/kg		<0.001 mg/kg	<0.0000001 %		<LOD
22	tert-butyl methyl ether; MTBE; 2-methoxy-2-methylpropane	603-181-00-X	216-653-1	1634-04-4		<1 µg/kg		<0.001 mg/kg	<0.0000001 %		<LOD
23	naphthalene	601-052-00-2	202-049-5	91-20-3		<0.1 mg/kg		<0.1 mg/kg	<0.00001 %		<LOD
24	acenaphthylene		205-917-1	208-96-8		<0.1 mg/kg		<0.1 mg/kg	<0.00001 %		<LOD
25	acenaphthene		201-469-6	83-32-9		<0.1 mg/kg		<0.1 mg/kg	<0.00001 %		<LOD
26	fluorene		201-695-5	86-73-7		<0.1 mg/kg		<0.1 mg/kg	<0.00001 %		<LOD
27	phenanthrene		201-581-5	85-01-8		<0.1 mg/kg		<0.1 mg/kg	<0.00001 %		<LOD
28	anthracene		204-371-1	120-12-7		<0.1 mg/kg		<0.1 mg/kg	<0.00001 %		<LOD
29	fluoranthene		205-912-4	206-44-0		0.12 mg/kg		0.115 mg/kg	0.0000115 %	✓	
30	pyrene		204-927-3	129-00-0		0.13 mg/kg		0.125 mg/kg	0.0000125 %	✓	
31	benzo[a]anthracene	601-033-00-9	200-280-6	56-55-3		<0.1 mg/kg		<0.1 mg/kg	<0.00001 %		<LOD
32	chrysene	601-048-00-0	205-923-4	218-01-9		<0.1 mg/kg		<0.1 mg/kg	<0.00001 %		<LOD
33	benzo[b]fluoranthene	601-034-00-4	205-911-9	205-99-2		<0.1 mg/kg		<0.1 mg/kg	<0.00001 %		<LOD
34	benzo[k]fluoranthene	601-036-00-5	205-916-6	207-08-9		<0.1 mg/kg		<0.1 mg/kg	<0.00001 %		<LOD
35	benzo[a]pyrene; benzo[def]chrysene	601-032-00-3	200-028-5	50-32-8		<0.1 mg/kg		<0.1 mg/kg	<0.00001 %		<LOD
36	indeno[123-cd]pyrene		205-893-2	193-39-5		<0.1 mg/kg		<0.1 mg/kg	<0.00001 %		<LOD
37	dibenz[a,h]anthracene	601-041-00-2	200-181-8	53-70-3		<0.1 mg/kg		<0.1 mg/kg	<0.00001 %		<LOD
38	benzo[ghi]perylene		205-883-8	191-24-2		<0.1 mg/kg		<0.1 mg/kg	<0.00001 %		<LOD
39	coronene		205-881-7	191-07-1		<0.1 mg/kg		<0.1 mg/kg	<0.00001 %		<LOD
40	polychlorobiphenyls; PCB	602-039-00-4	215-648-1	1336-36-3		<0.1 mg/kg		<0.1 mg/kg	<0.00001 %		<LOD

#		Determinand			CLP Note	User entered data		Conv. Factor	Compound conc.		Classification value	MC Applied	Conc. Not Used
		CLP index number	EC Number	CAS Number									
41	●	monohydric phenols				<0.1	mg/kg		<0.1	mg/kg	<0.00001 %		<LOD
				P1186									
42		xylene				<2	µg/kg		<0.002	mg/kg	<0.0000002 %		<LOD
		601-022-00-9	202-422-2 [1] 203-396-5 [2] 203-576-3 [3] 215-535-7 [4]	95-47-6 [1] 106-42-3 [2] 108-38-3 [3] 1330-20-7 [4]									
										Total:	0.0548 %		

Key

(yellow)	User supplied data
(grey)	Determinand values ignored for classification, see column 'Conc. Not Used' for reason
●	Determinand defined or amended by HazWasteOnline (see Appendix A)
	Speciated Deteminand - Unless the Determinand is Note 1, the Conversion Factor is used to calculate the compound concentration
<LOD	Below limit of detection
ND	Not detected
CLP: Note 1	Only the metal concentration has been used for classification

WAC results for sample: TP09-1.00

WAC Settings: samples in this Job constitute a single population.

WAC limits used to evaluate this sample: "Ireland"
The WAC used in this report are the WAC defined for the inert and non-hazardous classes of landfill in the Republic of Ireland. You should check the actual acceptance criteria when the disposal site is identified as they may differ from the generic WAC used in this report.

The sample PASSES the Inert (Inert waste landfill) criteria.

The sample PASSES the Non Haz (Non hazardous waste landfill) criteria.

WAC Determinands

Solid Waste Analysis				Landfill Waste Acceptance Criteria Limits	
#	Determinand		User entered data	Inert waste landfill	Non hazardous waste landfill
1	TOC (total organic carbon)	%	1.3	3	5
2	LOI (loss on ignition)	%	2.9	-	-
3	BTEX (benzene, toluene, ethylbenzene and xylenes)	mg/kg	<0.01	6	-
4	PCBs (polychlorinated biphenyls, 7 congeners)	mg/kg	<0.1	1	-
5	Mineral oil (C10 to C40)	mg/kg	<10	500	-
6	PAHs (polycyclic aromatic hydrocarbons)	mg/kg	<2	100	-
7	pH	pH	8.5	-	>6
8	ANC (acid neutralisation capacity)	mol/kg	<0.002	-	-
Eluate Analysis 10:1					
9	arsenic	mg/kg	0.006	0.5	2
10	barium	mg/kg	<0.0005	20	100
11	cadmium	mg/kg	<0.0001	0.04	1
12	chromium	mg/kg	<0.0005	0.5	10
13	copper	mg/kg	0.01	2	50
14	mercury	mg/kg	<5.0e-05	0.01	0.2
15	molybdenum	mg/kg	0.12	0.5	10
16	nickel	mg/kg	<0.0005	0.4	10
17	lead	mg/kg	<0.0005	0.5	10
18	antimony	mg/kg	<0.0005	0.06	0.7
19	selenium	mg/kg	<0.0005	0.1	0.5
20	zinc	mg/kg	<0.0025	4	50
21	chloride	mg/kg	<10	800	15,000
22	fluoride	mg/kg	2.2	10	150
23	sulphate	mg/kg	<10	1,000	20,000
24	phenol index	mg/kg	<0.3	1	-
25	DOC (dissolved organic carbon)	mg/kg	<50	500	800
26	TDS (total dissolved solids)	mg/kg	590	4,000	60,000

Key

User supplied data

Classification of sample: TP09-1.50

Non Hazardous Waste
Classified as **17 05 04**
in the List of Waste

Sample details

Sample name:		LoW Code:	
TP09-1.50		Chapter:	17: Construction and Demolition Wastes (including excavated soil from contaminated sites)
Sample Depth:			
1.50-1.50 m		Entry:	17 05 04 (Soil and stones other than those mentioned in 17 05 03)
Moisture content:			
9.5% (wet weight correction)			

Hazard properties

None identified

Determinands

Moisture content: 9.5% Wet Weight Moisture Correction applied (MC)

#	Determinand	CLP index number	EC Number	CAS Number	CLP Note	User entered data		Conv. Factor	Compound conc.		Classification value	MC Applied	Conc. Not Used
1	pH			PH		8.6	pH		8.6	pH	8.6 pH		
2	boron { diboron trioxide; boric oxide }	005-008-00-8	215-125-8	1303-86-2		<0.4	mg/kg	3.22	<1.288	mg/kg	<0.000129 %		<LOD
3	sulfur { sulfur }	016-094-00-1	231-722-6	7704-34-9		<1	mg/kg		<1	mg/kg	<0.0001 %		<LOD
4	cyanides { salts of hydrogen cyanide with the exception of complex cyanides such as ferrocyanides, ferricyanides and mercuric oxycyanide and those specified elsewhere in this Annex }	006-007-00-5				<0.5	mg/kg	1.884	<0.942	mg/kg	<0.0000942 %		<LOD
5	barium { barium oxide }		215-127-9	1304-28-5		95	mg/kg	1.117	95.992	mg/kg	0.0096 %	✓	
6	cadmium { cadmium oxide }	048-002-00-0	215-146-2	1306-19-0		2.7	mg/kg	1.142	2.791	mg/kg	0.000279 %	✓	
7	molybdenum { molybdenum(VI) oxide }	042-001-00-9	215-204-7	1313-27-5		5	mg/kg	1.5	6.788	mg/kg	0.000679 %	✓	
8	antimony { antimony compounds, with the exception of the tetroxide (Sb2O4), pentoxide (Sb2O5), trisulphide (Sb2S3), pentasulphide (Sb2S5) and those specified elsewhere in this Annex }	051-003-00-9			1	4	mg/kg		3.62	mg/kg	0.000362 %	✓	
9	arsenic { arsenic }	033-001-00-X	231-148-6	7440-38-2		60	mg/kg		54.3	mg/kg	0.00543 %	✓	
10	granulated copper; [particle length: from 0,9 mm to 6,0 mm; particle width: from 0,494 to 0,949 mm]	029-024-00-X	231-159-6	7440-50-8		53	mg/kg		47.965	mg/kg	0.0048 %	✓	
11	mercury { mercury }	080-001-00-0	231-106-7	7439-97-6		0.15	mg/kg		0.136	mg/kg	0.0000136 %	✓	
12	nickel { nickel(II) oxide (nickel monoxide) }	028-003-00-2	215-215-7 [1] 234-323-5 [2] - [3]	1313-99-1 [1] 11099-02-8 [2] 34492-97-2 [3]		57	mg/kg	1.273	65.647	mg/kg	0.00656 %	✓	
13	lead { lead compounds with the exception of those specified elsewhere in this Annex }	082-001-00-6			1	220	mg/kg		199.1	mg/kg	0.0199 %	✓	

#	Determinand	CLP index number	EC Number	CAS Number	CLP Note	User entered data		Conv. Factor	Compound conc.		Classification value	MC Applied	Conc. Not Used
14	selenium { selenium compounds with the exception of cadmium sulphoselenide and those specified elsewhere in this Annex }	034-002-00-8				0.46	mg/kg	1.405	0.585	mg/kg	0.0000585 %	✓	
15	zinc { zinc oxide }	030-013-00-7	215-222-5	1314-13-2		290	mg/kg	1.245	326.675	mg/kg	0.0327 %	✓	
16	chromium in chromium(III) compounds { chromium(III) oxide }		215-160-9	1308-38-9		29	mg/kg	1.462	38.359	mg/kg	0.00384 %	✓	
17	chromium in chromium(VI) compounds { chromium(VI) oxide }	024-001-00-0	215-607-8	1333-82-0		<0.5	mg/kg	1.923	<0.962	mg/kg	<0.0000962 %		<LOD
18	TPH (C6 to C40) petroleum group			TPH		<10	mg/kg		<10	mg/kg	<0.001 %		<LOD
19	benzene	601-020-00-8	200-753-7	71-43-2		<1	µg/kg		<0.001	mg/kg	<0.0000001 %		<LOD
20	toluene	601-021-00-3	203-625-9	108-88-3		<1	µg/kg		<0.001	mg/kg	<0.0000001 %		<LOD
21	ethylbenzene	601-023-00-4	202-849-4	100-41-4		<1	µg/kg		<0.001	mg/kg	<0.0000001 %		<LOD
22	tert-butyl methyl ether; MTBE; 2-methoxy-2-methylpropane	603-181-00-X	216-653-1	1634-04-4		<1	µg/kg		<0.001	mg/kg	<0.0000001 %		<LOD
23	naphthalene	601-052-00-2	202-049-5	91-20-3		<0.1	mg/kg		<0.1	mg/kg	<0.00001 %		<LOD
24	acenaphthylene		205-917-1	208-96-8		<0.1	mg/kg		<0.1	mg/kg	<0.00001 %		<LOD
25	acenaphthene		201-469-6	83-32-9		<0.1	mg/kg		<0.1	mg/kg	<0.00001 %		<LOD
26	fluorene		201-695-5	86-73-7		<0.1	mg/kg		<0.1	mg/kg	<0.00001 %		<LOD
27	phenanthrene		201-581-5	85-01-8		<0.1	mg/kg		<0.1	mg/kg	<0.00001 %		<LOD
28	anthracene		204-371-1	120-12-7		<0.1	mg/kg		<0.1	mg/kg	<0.00001 %		<LOD
29	fluoranthene		205-912-4	206-44-0		<0.1	mg/kg		<0.1	mg/kg	<0.00001 %		<LOD
30	pyrene		204-927-3	129-00-0		<0.1	mg/kg		<0.1	mg/kg	<0.00001 %		<LOD
31	benzo[a]anthracene	601-033-00-9	200-280-6	56-55-3		<0.1	mg/kg		<0.1	mg/kg	<0.00001 %		<LOD
32	chrysene	601-048-00-0	205-923-4	218-01-9		<0.1	mg/kg		<0.1	mg/kg	<0.00001 %		<LOD
33	benzo[b]fluoranthene	601-034-00-4	205-911-9	205-99-2		<0.1	mg/kg		<0.1	mg/kg	<0.00001 %		<LOD
34	benzo[k]fluoranthene	601-036-00-5	205-916-6	207-08-9		<0.1	mg/kg		<0.1	mg/kg	<0.00001 %		<LOD
35	benzo[a]pyrene; benzo[def]chrysene	601-032-00-3	200-028-5	50-32-8		<0.1	mg/kg		<0.1	mg/kg	<0.00001 %		<LOD
36	indeno[123-cd]pyrene		205-893-2	193-39-5		<0.1	mg/kg		<0.1	mg/kg	<0.00001 %		<LOD
37	dibenz[a,h]anthracene	601-041-00-2	200-181-8	53-70-3		<0.1	mg/kg		<0.1	mg/kg	<0.00001 %		<LOD
38	benzo[ghi]perylene		205-883-8	191-24-2		<0.1	mg/kg		<0.1	mg/kg	<0.00001 %		<LOD
39	coronene		205-881-7	191-07-1		<0.1	mg/kg		<0.1	mg/kg	<0.00001 %		<LOD
40	polychlorobiphenyls; PCB	602-039-00-4	215-648-1	1336-36-3		<0.1	mg/kg		<0.1	mg/kg	<0.00001 %		<LOD

#		Determinand			CLP Note	User entered data		Conv. Factor	Compound conc.		Classification value	MC Applied	Conc. Not Used
		CLP index number	EC Number	CAS Number									
41	●	monohydric phenols				<0.1	mg/kg		<0.1	mg/kg	<0.00001 %		<LOD
				P1186									
42		xylene				<2	µg/kg		<0.002	mg/kg	<0.0000002 %		<LOD
		601-022-00-9	202-422-2 [1] 203-396-5 [2] 203-576-3 [3] 215-535-7 [4]	95-47-6 [1] 106-42-3 [2] 108-38-3 [3] 1330-20-7 [4]									
										Total:	0.0858 %		

Key

(yellow)	User supplied data
(grey)	Determinand values ignored for classification, see column 'Conc. Not Used' for reason
●	Determinand defined or amended by HazWasteOnline (see Appendix A)
	Speciated Deteminand - Unless the Determinand is Note 1, the Conversion Factor is used to calculate the compound concentration
<LOD	Below limit of detection
ND	Not detected
CLP: Note 1	Only the metal concentration has been used for classification

WAC results for sample: TP09-1.50

WAC Settings: samples in this Job constitute a single population.

WAC limits used to evaluate this sample: "Ireland"
The WAC used in this report are the WAC defined for the inert and non-hazardous classes of landfill in the Republic of Ireland. You should check the actual acceptance criteria when the disposal site is identified as they may differ from the generic WAC used in this report.

The sample PASSES the Inert (Inert waste landfill) criteria.

The sample PASSES the Non Haz (Non hazardous waste landfill) criteria.

WAC Determinands

Solid Waste Analysis				Landfill Waste Acceptance Criteria Limits	
#	Determinand		User entered data	Inert waste landfill	Non hazardous waste landfill
1	TOC (total organic carbon)	%	1.2	3	5
2	LOI (loss on ignition)	%	2.3	-	-
3	BTEX (benzene, toluene, ethylbenzene and xylenes)	mg/kg	<0.01	6	-
4	PCBs (polychlorinated biphenyls, 7 congeners)	mg/kg	<0.1	1	-
5	Mineral oil (C10 to C40)	mg/kg	<10	500	-
6	PAHs (polycyclic aromatic hydrocarbons)	mg/kg	<2	100	-
7	pH	pH	8.6	-	>6
8	ANC (acid neutralisation capacity)	mol/kg	0.005	-	-
Eluate Analysis 10:1					
9	arsenic	mg/kg	0.0038	0.5	2
10	barium	mg/kg	<0.0005	20	100
11	cadmium	mg/kg	<0.0001	0.04	1
12	chromium	mg/kg	<0.0005	0.5	10
13	copper	mg/kg	0.0073	2	50
14	mercury	mg/kg	<5.0e-05	0.01	0.2
15	molybdenum	mg/kg	0.055	0.5	10
16	nickel	mg/kg	<0.0005	0.4	10
17	lead	mg/kg	<0.0005	0.5	10
18	antimony	mg/kg	<0.0005	0.06	0.7
19	selenium	mg/kg	<0.0005	0.1	0.5
20	zinc	mg/kg	<0.0025	4	50
21	chloride	mg/kg	<10	800	15,000
22	fluoride	mg/kg	1.8	10	150
23	sulphate	mg/kg	<10	1,000	20,000
24	phenol index	mg/kg	<0.3	1	-
25	DOC (dissolved organic carbon)	mg/kg	57	500	800
26	TDS (total dissolved solids)	mg/kg	580	4,000	60,000

Key
User supplied data

Classification of sample: TP10-0.30

Non Hazardous Waste
Classified as **17 05 04**
in the List of Waste

Sample details

Sample name:		LoW Code:	
TP10-0.30		Chapter:	17: Construction and Demolition Wastes (including excavated soil from contaminated sites)
Sample Depth:			
0.30-0.30 m		Entry:	17 05 04 (Soil and stones other than those mentioned in 17 05 03)
Moisture content:			
6.5% (wet weight correction)			

Hazard properties

None identified

Determinands

Moisture content: 6.5% Wet Weight Moisture Correction applied (MC)

#	Determinand	CLP index number	EC Number	CAS Number	CLP Note	User entered data	Conv. Factor	Compound conc.	Classification value	MC Applied	Conc. Not Used
1	pH			PH		8.5 pH		8.5 pH	8.5 pH		
2	boron { diboron trioxide; boric oxide }	005-008-00-8	215-125-8	1303-86-2		0.93 mg/kg	3.22	2.8 mg/kg	0.00028 %	✓	
3	sulfur { sulfur }	016-094-00-1	231-722-6	7704-34-9		8.8 mg/kg		8.228 mg/kg	0.000823 %	✓	
4	cyanides { salts of hydrogen cyanide with the exception of complex cyanides such as ferrocyanides, ferricyanides and mercuric oxycyanide and those specified elsewhere in this Annex }	006-007-00-5				<0.5 mg/kg	1.884	<0.942 mg/kg	<0.0000942 %		<LOD
5	barium { barium oxide }		215-127-9	1304-28-5		160 mg/kg	1.117	167.029 mg/kg	0.0167 %	✓	
6	cadmium { cadmium oxide }	048-002-00-0	215-146-2	1306-19-0		2.2 mg/kg	1.142	2.35 mg/kg	0.000235 %	✓	
7	molybdenum { molybdenum(VI) oxide }	042-001-00-9	215-204-7	1313-27-5		4.3 mg/kg	1.5	6.032 mg/kg	0.000603 %	✓	
8	antimony { antimony compounds, with the exception of the tetroxide (Sb2O4), pentoxide (Sb2O5), trisulphide (Sb2S3), pentasulphide (Sb2S5) and those specified elsewhere in this Annex }	051-003-00-9			1	2.8 mg/kg		2.618 mg/kg	0.000262 %	✓	
9	arsenic { arsenic }	033-001-00-X	231-148-6	7440-38-2		32 mg/kg		29.92 mg/kg	0.00299 %	✓	
10	granulated copper; [particle length: from 0,9 mm to 6,0 mm; particle width: from 0,494 to 0,949 mm]	029-024-00-X	231-159-6	7440-50-8		120 mg/kg		112.2 mg/kg	0.0112 %	✓	
11	mercury { mercury }	080-001-00-0	231-106-7	7439-97-6		0.56 mg/kg		0.524 mg/kg	0.0000524 %	✓	
12	nickel { nickel(II) oxide (nickel monoxide) }	028-003-00-2	215-215-7 [1] 234-323-5 [2] - [3]	1313-99-1 [1] 11099-02-8 [2] 34492-97-2 [3]		65 mg/kg	1.273	77.342 mg/kg	0.00773 %	✓	
13	lead { lead compounds with the exception of those specified elsewhere in this Annex }	082-001-00-6			1	210 mg/kg		196.35 mg/kg	0.0196 %	✓	

#	Determinand	CLP index number	EC Number	CAS Number	CLP Note	User entered data		Conv. Factor	Compound conc.		Classification value	MC Applied	Conc. Not Used
14	selenium { selenium compounds with the exception of cadmium sulphoselenide and those specified elsewhere in this Annex }	034-002-00-8				0.78	mg/kg	1.405	1.025	mg/kg	0.000102 %	✓	
15	zinc { zinc oxide }	030-013-00-7	215-222-5	1314-13-2		200	mg/kg	1.245	232.762	mg/kg	0.0233 %	✓	
16	chromium in chromium(III) compounds { chromium(III) oxide }		215-160-9	1308-38-9		63	mg/kg	1.462	86.093	mg/kg	0.00861 %	✓	
17	chromium in chromium(VI) compounds { chromium(VI) oxide }	024-001-00-0	215-607-8	1333-82-0		<0.5	mg/kg	1.923	<0.962	mg/kg	<0.0000962 %		<LOD
18	TPH (C6 to C40) petroleum group			TPH		29	mg/kg		27.115	mg/kg	0.00271 %	✓	
19	benzene	601-020-00-8	200-753-7	71-43-2		<1	µg/kg		<0.001	mg/kg	<0.0000001 %		<LOD
20	toluene	601-021-00-3	203-625-9	108-88-3		<1	µg/kg		<0.001	mg/kg	<0.0000001 %		<LOD
21	ethylbenzene	601-023-00-4	202-849-4	100-41-4		<1	µg/kg		<0.001	mg/kg	<0.0000001 %		<LOD
22	tert-butyl methyl ether; MTBE; 2-methoxy-2-methylpropane	603-181-00-X	216-653-1	1634-04-4		<1	µg/kg		<0.001	mg/kg	<0.0000001 %		<LOD
23	naphthalene	601-052-00-2	202-049-5	91-20-3		0.19	mg/kg		0.178	mg/kg	0.0000178 %	✓	
24	acenaphthylene		205-917-1	208-96-8		<0.1	mg/kg		<0.1	mg/kg	<0.00001 %		<LOD
25	acenaphthene		201-469-6	83-32-9		0.27	mg/kg		0.252	mg/kg	0.0000252 %	✓	
26	fluorene		201-695-5	86-73-7		0.2	mg/kg		0.187	mg/kg	0.0000187 %	✓	
27	phenanthrene		201-581-5	85-01-8		2.7	mg/kg		2.525	mg/kg	0.000252 %	✓	
28	anthracene		204-371-1	120-12-7		0.54	mg/kg		0.505	mg/kg	0.0000505 %	✓	
29	fluoranthene		205-912-4	206-44-0		4.4	mg/kg		4.114	mg/kg	0.000411 %	✓	
30	pyrene		204-927-3	129-00-0		3.9	mg/kg		3.646	mg/kg	0.000365 %	✓	
31	benzo[a]anthracene	601-033-00-9	200-280-6	56-55-3		2.2	mg/kg		2.057	mg/kg	0.000206 %	✓	
32	chrysene	601-048-00-0	205-923-4	218-01-9		2.5	mg/kg		2.338	mg/kg	0.000234 %	✓	
33	benzo[b]fluoranthene	601-034-00-4	205-911-9	205-99-2		3	mg/kg		2.805	mg/kg	0.000281 %	✓	
34	benzo[k]fluoranthene	601-036-00-5	205-916-6	207-08-9		1.1	mg/kg		1.029	mg/kg	0.000103 %	✓	
35	benzo[a]pyrene; benzo[def]chrysene	601-032-00-3	200-028-5	50-32-8		2.1	mg/kg		1.964	mg/kg	0.000196 %	✓	
36	indeno[123-cd]pyrene		205-893-2	193-39-5		1.4	mg/kg		1.309	mg/kg	0.000131 %	✓	
37	dibenz[a,h]anthracene	601-041-00-2	200-181-8	53-70-3		0.19	mg/kg		0.178	mg/kg	0.0000178 %	✓	
38	benzo[ghi]perylene		205-883-8	191-24-2		1.6	mg/kg		1.496	mg/kg	0.00015 %	✓	
39	coronene		205-881-7	191-07-1		<0.1	mg/kg		<0.1	mg/kg	<0.00001 %		<LOD
40	polychlorobiphenyls; PCB	602-039-00-4	215-648-1	1336-36-3		<0.1	mg/kg		<0.1	mg/kg	<0.00001 %		<LOD

#		Determinand			CLP Note	User entered data		Conv. Factor	Compound conc.		Classification value	MC Applied	Conc. Not Used
		CLP index number	EC Number	CAS Number									
41	●	monohydric phenols				<0.1	mg/kg		<0.1	mg/kg	<0.00001 %		**<LOD**
				P1186									
42		xylene				<2	µg/kg		<0.002	mg/kg	<0.0000002 %		**<LOD**
		601-022-00-9	202-422-2 [1] 203-396-5 [2] 203-576-3 [3] 215-535-7 [4]	95-47-6 [1] 106-42-3 [2] 108-38-3 [3] 1330-20-7 [4]									
										Total:	0.0979 %		

Key

(yellow)	User supplied data
(grey)	Determinand values ignored for classification, see column 'Conc. Not Used' for reason
●	Determinand defined or amended by HazWasteOnline (see Appendix A)
	Speciated Deteminand - Unless the Determinand is Note 1, the Conversion Factor is used to calculate the compound concentration
<LOD	Below limit of detection
ND	Not detected
CLP: Note 1	Only the metal concentration has been used for classification

Supplementary Hazardous Property Information

HP 3(i): Flammable "flammable liquid waste: liquid waste having a flash point below 60°C or waste gas oil, diesel and light heating oils having a flash point > 55°C and <= 75°C"

Force this Hazardous property to non hazardous because HP 3 can be discounted as this is a solid waste without a free draining liquid phase.

Hazard Statements hit:

Flam. Liq. 3; H226 "Flammable liquid and vapour."

Because of determinand:

TPH (C6 to C40) petroleum group: (conc.: 0.00271%)

WAC results for sample: TP10-0.30

WAC Settings: samples in this Job constitute a single population.

WAC limits used to evaluate this sample: "Ireland"
The WAC used in this report are the WAC defined for the inert and non-hazardous classes of landfill in the Republic of Ireland. You should check the actual acceptance criteria when the disposal site is identified as they may differ from the generic WAC used in this report.

The sample FAILS the Inert (Inert waste landfill) criteria.

The sample PASSES the Non Haz (Non hazardous waste landfill) criteria.

WAC Determinands

Solid Waste Analysis				Landfill Waste Acceptance Criteria Limits	
#	Determinand		User entered data	Inert waste landfill	Non hazardous waste landfill
1	TOC (total organic carbon)	%	3.1	3	5
2	LOI (loss on ignition)	%	6.8	-	-
3	BTEX (benzene, toluene, ethylbenzene and xylenes)	mg/kg	<0.01	6	-
4	PCBs (polychlorinated biphenyls, 7 congeners)	mg/kg	<0.1	1	-
5	Mineral oil (C10 to C40)	mg/kg	29	500	-
6	PAHs (polycyclic aromatic hydrocarbons)	mg/kg	26	100	-
7	pH	pH	8.5	-	>6
8	ANC (acid neutralisation capacity)	mol/kg	0.005	-	-
Eluate Analysis 10:1					
9	arsenic	mg/kg	0.075	0.5	2
10	barium	mg/kg	<0.0005	20	100
11	cadmium	mg/kg	<0.0001	0.04	1
12	chromium	mg/kg	<0.0005	0.5	10
13	copper	mg/kg	0.033	2	50
14	mercury	mg/kg	<5.0e-05	0.01	0.2
15	molybdenum	mg/kg	0.053	0.5	10
16	nickel	mg/kg	<0.0005	0.4	10
17	lead	mg/kg	0.0065	0.5	10
18	antimony	mg/kg	0.007	0.06	0.7
19	selenium	mg/kg	<0.0005	0.1	0.5
20	zinc	mg/kg	<0.0025	4	50
21	chloride	mg/kg	<10	800	15,000
22	fluoride	mg/kg	4.3	10	150
23	sulphate	mg/kg	<10	1,000	20,000
24	phenol index	mg/kg	<0.3	1	-
25	DOC (dissolved organic carbon)	mg/kg	65	500	800
26	TDS (total dissolved solids)	mg/kg	720	4,000	60,000

Key

User supplied data

Inert WAC criteria fail

Classification of sample: TP10-1.40

Non Hazardous Waste
Classified as **17 05 04**
in the List of Waste

Sample details

Sample name:		LoW Code:	
TP10-1.40		Chapter:	17: Construction and Demolition Wastes (including excavated soil from contaminated sites)
Sample Depth:			
1.40-1.40 m		Entry:	17 05 04 (Soil and stones other than those mentioned in 17 05 03)
Moisture content:			
6.8% (wet weight correction)			

Hazard properties

None identified

Determinands

Moisture content: 6.8% Wet Weight Moisture Correction applied (MC)

#	Determinand	CLP index number	EC Number	CAS Number	CLP Note	User entered data		Conv. Factor	Compound conc.		Classification value	MC Applied	Conc. Not Used
1	pH			PH		8.6	pH		8.6	pH	8.6 pH		
2	boron { diboron trioxide; boric oxide }	005-008-00-8	215-125-8	1303-86-2		1	mg/kg	3.22	3.001	mg/kg	0.0003 %	✓	
3	sulfur { sulfur }	016-094-00-1	231-722-6	7704-34-9		18	mg/kg		16.776	mg/kg	0.00168 %	✓	
4	cyanides { salts of hydrogen cyanide with the exception of complex cyanides such as ferrocyanides, ferricyanides and mercuric oxycyanide and those specified elsewhere in this Annex }	006-007-00-5				<0.5	mg/kg	1.884	<0.942	mg/kg	<0.0000942 %		<LOD
5	barium { barium oxide }		215-127-9	1304-28-5		190	mg/kg	1.117	197.711	mg/kg	0.0198 %	✓	
6	cadmium { cadmium oxide }	048-002-00-0	215-146-2	1306-19-0		2.7	mg/kg	1.142	2.875	mg/kg	0.000287 %	✓	
7	molybdenum { molybdenum(VI) oxide }	042-001-00-9	215-204-7	1313-27-5		5.6	mg/kg	1.5	7.83	mg/kg	0.000783 %	✓	
8	antimony { antimony compounds, with the exception of the tetroxide (Sb2O4), pentoxide (Sb2O5), trisulphide (Sb2S3), pentasulphide (Sb2S5) and those specified elsewhere in this Annex }	051-003-00-9			1	3.6	mg/kg		3.355	mg/kg	0.000336 %	✓	
9	arsenic { arsenic }	033-001-00-X	231-148-6	7440-38-2		46	mg/kg		42.872	mg/kg	0.00429 %	✓	
10	granulated copper; [particle length: from 0,9 mm to 6,0 mm; particle width: from 0,494 to 0,949 mm]	029-024-00-X	231-159-6	7440-50-8		350	mg/kg		326.2	mg/kg	0.0326 %	✓	
11	mercury { mercury }	080-001-00-0	231-106-7	7439-97-6		0.74	mg/kg		0.69	mg/kg	0.000069 %	✓	
12	nickel { nickel(II) oxide (nickel monoxide) }	028-003-00-2	215-215-7 [1] 234-323-5 [2] - [3]	1313-99-1 [1] 11099-02-8 [2] 34492-97-2 [3]		68	mg/kg	1.273	80.652	mg/kg	0.00807 %	✓	
13	lead { lead compounds with the exception of those specified elsewhere in this Annex }	082-001-00-6			1	310	mg/kg		288.92	mg/kg	0.0289 %	✓	

#	Determinand	CLP index number	EC Number	CAS Number	CLP Note	User entered data		Conv. Factor	Compound conc.		Classification value	MC Applied	Conc. Not Used
14	selenium { selenium compounds with the exception of cadmium sulphoselenide and those specified elsewhere in this Annex }	034-002-00-8				0.75	mg/kg	1.405	0.982	mg/kg	0.0000982 %	✓	
15	zinc { zinc oxide }	030-013-00-7	215-222-5	1314-13-2		240	mg/kg	1.245	278.418	mg/kg	0.0278 %	✓	
16	chromium in chromium(III) compounds { chromium(III) oxide }		215-160-9	1308-38-9		45	mg/kg	1.462	61.298	mg/kg	0.00613 %	✓	
17	chromium in chromium(VI) compounds { chromium(VI) oxide }	024-001-00-0	215-607-8	1333-82-0		<0.5	mg/kg	1.923	<0.962	mg/kg	<0.0000962 %		<LOD
18	TPH (C6 to C40) petroleum group			TPH		<10	mg/kg		<10	mg/kg	<0.001 %		<LOD
19	benzene	601-020-00-8	200-753-7	71-43-2		<1	µg/kg		<0.001	mg/kg	<0.0000001 %		<LOD
20	toluene	601-021-00-3	203-625-9	108-88-3		<1	µg/kg		<0.001	mg/kg	<0.0000001 %		<LOD
21	ethylbenzene	601-023-00-4	202-849-4	100-41-4		<1	µg/kg		<0.001	mg/kg	<0.0000001 %		<LOD
22	tert-butyl methyl ether; MTBE; 2-methoxy-2-methylpropane	603-181-00-X	216-653-1	1634-04-4		<1	µg/kg		<0.001	mg/kg	<0.0000001 %		<LOD
23	naphthalene	601-052-00-2	202-049-5	91-20-3		0.18	mg/kg		0.168	mg/kg	0.0000168 %	✓	
24	acenaphthylene		205-917-1	208-96-8		0.1	mg/kg		0.0932	mg/kg	0.00000932 %	✓	
25	acenaphthene		201-469-6	83-32-9		0.39	mg/kg		0.363	mg/kg	0.0000363 %	✓	
26	fluorene		201-695-5	86-73-7		0.19	mg/kg		0.177	mg/kg	0.0000177 %	✓	
27	phenanthrene		201-581-5	85-01-8		2.5	mg/kg		2.33	mg/kg	0.000233 %	✓	
28	anthracene		204-371-1	120-12-7		0.74	mg/kg		0.69	mg/kg	0.000069 %	✓	
29	fluoranthene		205-912-4	206-44-0		9.4	mg/kg		8.761	mg/kg	0.000876 %	✓	
30	pyrene		204-927-3	129-00-0		9.5	mg/kg		8.854	mg/kg	0.000885 %	✓	
31	benzo[a]anthracene	601-033-00-9	200-280-6	56-55-3		5.3	mg/kg		4.94	mg/kg	0.000494 %	✓	
32	chrysene	601-048-00-0	205-923-4	218-01-9		5.1	mg/kg		4.753	mg/kg	0.000475 %	✓	
33	benzo[b]fluoranthene	601-034-00-4	205-911-9	205-99-2		8.6	mg/kg		8.015	mg/kg	0.000802 %	✓	
34	benzo[k]fluoranthene	601-036-00-5	205-916-6	207-08-9		2.7	mg/kg		2.516	mg/kg	0.000252 %	✓	
35	benzo[a]pyrene; benzo[def]chrysene	601-032-00-3	200-028-5	50-32-8		6.9	mg/kg		6.431	mg/kg	0.000643 %	✓	
36	indeno[123-cd]pyrene		205-893-2	193-39-5		5.1	mg/kg		4.753	mg/kg	0.000475 %	✓	
37	dibenz[a,h]anthracene	601-041-00-2	200-181-8	53-70-3		0.79	mg/kg		0.736	mg/kg	0.0000736 %	✓	
38	benzo[ghi]perylene		205-883-8	191-24-2		4.6	mg/kg		4.287	mg/kg	0.000429 %	✓	
39	coronene		205-881-7	191-07-1		<0.1	mg/kg		<0.1	mg/kg	<0.00001 %		<LOD
40	polychlorobiphenyls; PCB	602-039-00-4	215-648-1	1336-36-3		<0.1	mg/kg		<0.1	mg/kg	<0.00001 %		<LOD

#		Determinand: CLP index number	EC Number	CAS Number	CLP Note	User entered data		Conv. Factor	Compound conc.		Classification value	MC Applied	Conc. Not Used
41	●	monohydric phenols				<0.1	mg/kg		<0.1	mg/kg	<0.00001 %		**<LOD**
				P1186									
42		xylene				<2	µg/kg		<0.002	mg/kg	<0.0000002 %		**<LOD**
		601-022-00-9	202-422-2 [1] 203-396-5 [2] 203-576-3 [3] 215-535-7 [4]	95-47-6 [1] 106-42-3 [2] 108-38-3 [3] 1330-20-7 [4]									
										Total:	0.138 %		

Key

(yellow)	User supplied data
(grey)	Determinand values ignored for classification, see column 'Conc. Not Used' for reason
●	Determinand defined or amended by HazWasteOnline (see Appendix A)
	Speciated Deteminand - Unless the Determinand is Note 1, the Conversion Factor is used to calculate the compound concentration
<LOD	Below limit of detection
ND	Not detected
CLP: Note 1	Only the metal concentration has been used for classification

WAC results for sample: TP10-1.40

WAC Settings: samples in this Job constitute a single population.

WAC limits used to evaluate this sample: "Ireland"
The WAC used in this report are the WAC defined for the inert and non-hazardous classes of landfill in the Republic of Ireland. You should check the actual acceptance criteria when the disposal site is identified as they may differ from the generic WAC used in this report.

The sample PASSES the Inert (Inert waste landfill) criteria.

The sample PASSES the Non Haz (Non hazardous waste landfill) criteria.

WAC Determinands

Solid Waste Analysis				Landfill Waste Acceptance Criteria Limits	
#	Determinand		User entered data	Inert waste landfill	Non hazardous waste landfill
1	TOC (total organic carbon)	%	2.5	3	5
2	LOI (loss on ignition)	%	6.3	-	-
3	BTEX (benzene, toluene, ethylbenzene and xylenes)	mg/kg	<0.01	6	-
4	PCBs (polychlorinated biphenyls, 7 congeners)	mg/kg	<0.1	1	-
5	Mineral oil (C10 to C40)	mg/kg	<10	500	-
6	PAHs (polycyclic aromatic hydrocarbons)	mg/kg	62	100	-
7	pH	pH	8.6	-	>6
8	ANC (acid neutralisation capacity)	mol/kg	0.005	-	-
Eluate Analysis 10:1					
9	arsenic	mg/kg	0.044	0.5	2
10	barium	mg/kg	<0.0005	20	100
11	cadmium	mg/kg	<0.0001	0.04	1
12	chromium	mg/kg	<0.0005	0.5	10
13	copper	mg/kg	0.027	2	50
14	mercury	mg/kg	<5.0e-05	0.01	0.2
15	molybdenum	mg/kg	0.043	0.5	10
16	nickel	mg/kg	<0.0005	0.4	10
17	lead	mg/kg	0.0065	0.5	10
18	antimony	mg/kg	0.0051	0.06	0.7
19	selenium	mg/kg	<0.0005	0.1	0.5
20	zinc	mg/kg	<0.0025	4	50
21	chloride	mg/kg	<10	800	15,000
22	fluoride	mg/kg	2.7	10	150
23	sulphate	mg/kg	<10	1,000	20,000
24	phenol index	mg/kg	<0.3	1	-
25	DOC (dissolved organic carbon)	mg/kg	66	500	800
26	TDS (total dissolved solids)	mg/kg	590	4,000	60,000

Key

User supplied data

Classification of sample: TP11-0.30

Non Hazardous Waste
Classified as **17 05 04**
in the List of Waste

Sample details

Sample name:	**TP11-0.30**	LoW Code:	
Sample Depth:	**0.30-0.30 m**	Chapter:	17: Construction and Demolition Wastes (including excavated soil from contaminated sites)
Moisture content:	**6.5%** (wet weight correction)	Entry:	17 05 04 (Soil and stones other than those mentioned in 17 05 03)

Hazard properties

None identified

Determinands

Moisture content: 6.5% Wet Weight Moisture Correction applied (MC)

#	Determinand	CLP index number	EC Number	CAS Number	CLP Note	User entered data		Conv. Factor	Compound conc.		Classification value	MC Applied	Conc. Not Used
1	pH			PH		8.4	pH		8.4	pH	8.4 pH		
2	boron { diboron trioxide; boric oxide }	005-008-00-8	215-125-8	1303-86-2		0.95	mg/kg	3.22	2.86	mg/kg	0.000286 %	✓	
3	sulfur { sulfur }	016-094-00-1	231-722-6	7704-34-9		5.5	mg/kg		5.143	mg/kg	0.000514 %	✓	
4	cyanides { salts of hydrogen cyanide with the exception of complex cyanides such as ferrocyanides, ferricyanides and mercuric oxycyanide and those specified elsewhere in this Annex }	006-007-00-5				<0.5	mg/kg	1.884	<0.942	mg/kg	<0.0000942 %		<LOD
5	barium { barium oxide }		215-127-9	1304-28-5		150	mg/kg	1.117	156.59	mg/kg	0.0157 %	✓	
6	cadmium { cadmium oxide }	048-002-00-0	215-146-2	1306-19-0		2.4	mg/kg	1.142	2.563	mg/kg	0.000256 %	✓	
7	molybdenum { molybdenum(VI) oxide }	042-001-00-9	215-204-7	1313-27-5		5	mg/kg	1.5	7.013	mg/kg	0.000701 %	✓	
8	antimony { antimony compounds, with the exception of the tetroxide (Sb2O4), pentoxide (Sb2O5), trisulphide (Sb2S3), pentasulphide (Sb2S5) and those specified elsewhere in this Annex }	051-003-00-9			1	4.3	mg/kg		4.021	mg/kg	0.000402 %	✓	
9	arsenic { arsenic }	033-001-00-X	231-148-6	7440-38-2		32	mg/kg		29.92	mg/kg	0.00299 %	✓	
10	granulated copper; [particle length: from 0,9 mm to 6,0 mm; particle width: from 0,494 to 0,949 mm]	029-024-00-X	231-159-6	7440-50-8		120	mg/kg		112.2	mg/kg	0.0112 %	✓	
11	mercury { mercury }	080-001-00-0	231-106-7	7439-97-6		0.54	mg/kg		0.505	mg/kg	0.0000505 %	✓	
12	nickel { nickel(II) oxide (nickel monoxide) }	028-003-00-2	215-215-7 [1] 234-323-5 [2] - [3]	1313-99-1 [1] 11099-02-8 [2] 34492-97-2 [3]		54	mg/kg	1.273	64.253	mg/kg	0.00643 %	✓	
13	lead { lead compounds with the exception of those specified elsewhere in this Annex }	082-001-00-6			1	240	mg/kg		224.4	mg/kg	0.0224 %	✓	

#		Determinand	CLP index number	EC Number	CAS Number	CLP Note	User entered data		Conv. Factor	Compound conc.		Classification value	MC Applied	Conc. Not Used
14		selenium { selenium compounds with the exception of cadmium sulphoselenide and those specified elsewhere in this Annex }	034-002-00-8				0.8	mg/kg	1.405	1.051	mg/kg	0.000105 %	✓	
15		zinc { zinc oxide }	030-013-00-7	215-222-5	1314-13-2		160	mg/kg	1.245	186.209	mg/kg	0.0186 %	✓	
16		chromium in chromium(III) compounds { chromium(III) oxide }		215-160-9	1308-38-9		30	mg/kg	1.462	40.997	mg/kg	0.0041 %	✓	
17		chromium in chromium(VI) compounds { chromium(VI) oxide }	024-001-00-0	215-607-8	1333-82-0		<0.5	mg/kg	1.923	<0.962	mg/kg	<0.0000962 %		<LOD
18		TPH (C6 to C40) petroleum group			TPH		<10	mg/kg		<10	mg/kg	<0.001 %		<LOD
19		benzene	601-020-00-8	200-753-7	71-43-2		<1	µg/kg		<0.001	mg/kg	<0.0000001 %		<LOD
20		toluene	601-021-00-3	203-625-9	108-88-3		<1	µg/kg		<0.001	mg/kg	<0.0000001 %		<LOD
21		ethylbenzene	601-023-00-4	202-849-4	100-41-4		<1	µg/kg		<0.001	mg/kg	<0.0000001 %		<LOD
22		tert-butyl methyl ether; MTBE; 2-methoxy-2-methylpropane	603-181-00-X	216-653-1	1634-04-4		<1	µg/kg		<0.001	mg/kg	<0.0000001 %		<LOD
23		naphthalene	601-052-00-2	202-049-5	91-20-3		<0.1	mg/kg		<0.1	mg/kg	<0.00001 %		<LOD
24		acenaphthylene		205-917-1	208-96-8		<0.1	mg/kg		<0.1	mg/kg	<0.00001 %		<LOD
25		acenaphthene		201-469-6	83-32-9		<0.1	mg/kg		<0.1	mg/kg	<0.00001 %		<LOD
26		fluorene		201-695-5	86-73-7		<0.1	mg/kg		<0.1	mg/kg	<0.00001 %		<LOD
27		phenanthrene		201-581-5	85-01-8		0.78	mg/kg		0.729	mg/kg	0.0000729 %	✓	
28		anthracene		204-371-1	120-12-7		0.14	mg/kg		0.131	mg/kg	0.0000131 %	✓	
29		fluoranthene		205-912-4	206-44-0		1.2	mg/kg		1.122	mg/kg	0.000112 %	✓	
30		pyrene		204-927-3	129-00-0		1.1	mg/kg		1.029	mg/kg	0.000103 %	✓	
31		benzo[a]anthracene	601-033-00-9	200-280-6	56-55-3		0.56	mg/kg		0.524	mg/kg	0.0000524 %	✓	
32		chrysene	601-048-00-0	205-923-4	218-01-9		0.63	mg/kg		0.589	mg/kg	0.0000589 %	✓	
33		benzo[b]fluoranthene	601-034-00-4	205-911-9	205-99-2		0.85	mg/kg		0.795	mg/kg	0.0000795 %	✓	
34		benzo[k]fluoranthene	601-036-00-5	205-916-6	207-08-9		0.19	mg/kg		0.178	mg/kg	0.0000178 %	✓	
35		benzo[a]pyrene; benzo[def]chrysene	601-032-00-3	200-028-5	50-32-8		0.59	mg/kg		0.552	mg/kg	0.0000552 %	✓	
36		indeno[123-cd]pyrene		205-893-2	193-39-5		0.33	mg/kg		0.309	mg/kg	0.0000309 %	✓	
37		dibenz[a,h]anthracene	601-041-00-2	200-181-8	53-70-3		0.13	mg/kg		0.122	mg/kg	0.0000122 %	✓	
38		benzo[ghi]perylene		205-883-8	191-24-2		0.44	mg/kg		0.411	mg/kg	0.0000411 %	✓	
39		coronene		205-881-7	191-07-1		<0.1	mg/kg		<0.1	mg/kg	<0.00001 %		<LOD
40		polychlorobiphenyls; PCB	602-039-00-4	215-648-1	1336-36-3		<0.1	mg/kg		<0.1	mg/kg	<0.00001 %		<LOD

#		Determinand			CLP Note	User entered data		Conv. Factor	Compound conc.		Classification value	MC Applied	Conc. Not Used
		CLP index number	EC Number	CAS Number									
41	●	monohydric phenols				<0.1	mg/kg		<0.1	mg/kg	<0.00001 %		**<LOD**
				P1186									
42		xylene				<2	µg/kg		<0.002	mg/kg	<0.0000002 %		**<LOD**
		601-022-00-9	202-422-2 [1] 203-396-5 [2] 203-576-3 [3] 215-535-7 [4]	95-47-6 [1] 106-42-3 [2] 108-38-3 [3] 1330-20-7 [4]									
										Total:	0.0857 %		

Key

(yellow)	User supplied data
(grey)	Determinand values ignored for classification, see column 'Conc. Not Used' for reason
●	Determinand defined or amended by HazWasteOnline (see Appendix A)
	Speciated Deteminand - Unless the Determinand is Note 1, the Conversion Factor is used to calculate the compound concentration
<LOD	Below limit of detection
ND	Not detected
CLP: Note 1	Only the metal concentration has been used for classification

WAC results for sample: TP11-0.30

WAC Settings: samples in this Job constitute a single population.

WAC limits used to evaluate this sample: "Ireland"
The WAC used in this report are the WAC defined for the inert and non-hazardous classes of landfill in the Republic of Ireland. You should check the actual acceptance criteria when the disposal site is identified as they may differ from the generic WAC used in this report.

The sample FAILS the Inert (Inert waste landfill) criteria.

The sample PASSES the Non Haz (Non hazardous waste landfill) criteria.

WAC Determinands

Solid Waste Analysis				Landfill Waste Acceptance Criteria Limits	
#	Determinand		User entered data	Inert waste landfill	Non hazardous waste landfill
1	TOC (total organic carbon)	%	4.2	3	5
2	LOI (loss on ignition)	%	7.1	-	-
3	BTEX (benzene, toluene, ethylbenzene and xylenes)	mg/kg	<0.01	6	-
4	PCBs (polychlorinated biphenyls, 7 congeners)	mg/kg	<0.1	1	-
5	Mineral oil (C10 to C40)	mg/kg	<10	500	-
6	PAHs (polycyclic aromatic hydrocarbons)	mg/kg	6.9	100	-
7	pH	pH	8.4	-	>6
8	ANC (acid neutralisation capacity)	mol/kg	<0.002	-	-
Eluate Analysis 10:1					
9	arsenic	mg/kg	0.024	0.5	2
10	barium	mg/kg	0.059	20	100
11	cadmium	mg/kg	<0.0001	0.04	1
12	chromium	mg/kg	0.0057	0.5	10
13	copper	mg/kg	0.042	2	50
14	mercury	mg/kg	<5.0e-05	0.01	0.2
15	molybdenum	mg/kg	0.047	0.5	10
16	nickel	mg/kg	<0.0005	0.4	10
17	lead	mg/kg	<0.0005	0.5	10
18	antimony	mg/kg	0.0073	0.06	0.7
19	selenium	mg/kg	0.0057	0.1	0.5
20	zinc	mg/kg	<0.0025	4	50
21	chloride	mg/kg	<10	800	15,000
22	fluoride	mg/kg	6.4	10	150
23	sulphate	mg/kg	28	1,000	20,000
24	phenol index	mg/kg	<0.3	1	-
25	DOC (dissolved organic carbon)	mg/kg	63	500	800
26	TDS (total dissolved solids)	mg/kg	2300	4,000	60,000

Key
User supplied data
Inert WAC criteria fail

Classification of sample: TP11-1.00

Non Hazardous Waste
Classified as **17 05 04**
in the List of Waste

Sample details

Sample name:		LoW Code:	
TP11-1.00		Chapter:	17: Construction and Demolition Wastes (including excavated soil from contaminated sites)
Sample Depth:			
1.00-1.00 m		Entry:	17 05 04 (Soil and stones other than those mentioned in 17 05 03)
Moisture content:			
11% (wet weight correction)			

Hazard properties

None identified

Determinands

Moisture content: 11% Wet Weight Moisture Correction applied (MC)

#		Determinand	CLP index number	EC Number	CAS Number	CLP Note	User entered data		Conv. Factor	Compound conc.		Classification value	MC Applied	Conc. Not Used
1		pH			PH		8.5	pH		8.5	pH	8.5 pH		
2		boron { diboron trioxide; boric oxide }	005-008-00-8	215-125-8	1303-86-2		0.44	mg/kg	3.22	1.261	mg/kg	0.000126 %	✓	
3		sulfur { sulfur }	016-094-00-1	231-722-6	7704-34-9		<1	mg/kg		<1	mg/kg	<0.0001 %		<LOD
4		cyanides { salts of hydrogen cyanide with the exception of complex cyanides such as ferrocyanides, ferricyanides and mercuric oxycyanide and those specified elsewhere in this Annex }	006-007-00-5				<0.5	mg/kg	1.884	<0.942	mg/kg	<0.0000942 %		<LOD
5		barium { barium oxide }		215-127-9	1304-28-5		110	mg/kg	1.117	109.306	mg/kg	0.0109 %	✓	
6		cadmium { cadmium oxide }	048-002-00-0	215-146-2	1306-19-0		2	mg/kg	1.142	2.033	mg/kg	0.000203 %	✓	
7		molybdenum { molybdenum(VI) oxide }	042-001-00-9	215-204-7	1313-27-5		5	mg/kg	1.5	6.676	mg/kg	0.000668 %	✓	
8		antimony { antimony compounds, with the exception of the tetroxide (Sb2O4), pentoxide (Sb2O5), trisulphide (Sb2S3), pentasulphide (Sb2S5) and those specified elsewhere in this Annex }	051-003-00-9			1	<2	mg/kg		<2	mg/kg	<0.0002 %		<LOD
9		arsenic { arsenic }	033-001-00-X	231-148-6	7440-38-2		16	mg/kg		14.24	mg/kg	0.00142 %	✓	
10		granulated copper; [particle length: from 0,9 mm to 6,0 mm; particle width: from 0,494 to 0,949 mm]	029-024-00-X	231-159-6	7440-50-8		37	mg/kg		32.93	mg/kg	0.00329 %	✓	
11		mercury { mercury }	080-001-00-0	231-106-7	7439-97-6		0.14	mg/kg		0.125	mg/kg	0.0000125 %	✓	
12		nickel { nickel(II) oxide (nickel monoxide) }	028-003-00-2	215-215-7 [1] 234-323-5 [2] - [3]	1313-99-1 [1] 11099-02-8 [2] 34492-97-2 [3]		37	mg/kg	1.273	41.906	mg/kg	0.00419 %	✓	
13		lead { lead compounds with the exception of those specified elsewhere in this Annex }	082-001-00-6			1	43	mg/kg		38.27	mg/kg	0.00383 %	✓	

#	Determinand	CLP index number	EC Number	CAS Number	CLP Note	User entered data		Conv. Factor	Compound conc.		Classification value	MC Applied	Conc. Not Used
14	selenium { selenium compounds with the exception of cadmium sulphoselenide and those specified elsewhere in this Annex }	034-002-00-8				0.4	mg/kg	1.405	0.5	mg/kg	0.00005 %	✓	
15	zinc { zinc oxide }	030-013-00-7	215-222-5	1314-13-2		120	mg/kg	1.245	132.935	mg/kg	0.0133 %	✓	
16	chromium in chromium(III) compounds { chromium(III) oxide }		215-160-9	1308-38-9		29	mg/kg	1.462	37.723	mg/kg	0.00377 %	✓	
17	chromium in chromium(VI) compounds { chromium(VI) oxide }	024-001-00-0	215-607-8	1333-82-0		<0.5	mg/kg	1.923	<0.962	mg/kg	<0.0000962 %		**<LOD**
18	TPH (C6 to C40) petroleum group			TPH		<10	mg/kg		<10	mg/kg	<0.001 %		**<LOD**
19	benzene	601-020-00-8	200-753-7	71-43-2		<1	µg/kg		<0.001	mg/kg	<0.0000001 %		**<LOD**
20	toluene	601-021-00-3	203-625-9	108-88-3		<1	µg/kg		<0.001	mg/kg	<0.0000001 %		**<LOD**
21	ethylbenzene	601-023-00-4	202-849-4	100-41-4		<1	µg/kg		<0.001	mg/kg	<0.0000001 %		**<LOD**
22	tert-butyl methyl ether; MTBE; 2-methoxy-2-methylpropane	603-181-00-X	216-653-1	1634-04-4		<1	µg/kg		<0.001	mg/kg	<0.0000001 %		**<LOD**
23	naphthalene	601-052-00-2	202-049-5	91-20-3		<0.1	mg/kg		<0.1	mg/kg	<0.00001 %		**<LOD**
24	acenaphthylene		205-917-1	208-96-8		<0.1	mg/kg		<0.1	mg/kg	<0.00001 %		**<LOD**
25	acenaphthene		201-469-6	83-32-9		<0.1	mg/kg		<0.1	mg/kg	<0.00001 %		**<LOD**
26	fluorene		201-695-5	86-73-7		<0.1	mg/kg		<0.1	mg/kg	<0.00001 %		**<LOD**
27	phenanthrene		201-581-5	85-01-8		<0.1	mg/kg		<0.1	mg/kg	<0.00001 %		**<LOD**
28	anthracene		204-371-1	120-12-7		<0.1	mg/kg		<0.1	mg/kg	<0.00001 %		**<LOD**
29	fluoranthene		205-912-4	206-44-0		<0.1	mg/kg		<0.1	mg/kg	<0.00001 %		**<LOD**
30	pyrene		204-927-3	129-00-0		<0.1	mg/kg		<0.1	mg/kg	<0.00001 %		**<LOD**
31	benzo[a]anthracene	601-033-00-9	200-280-6	56-55-3		<0.1	mg/kg		<0.1	mg/kg	<0.00001 %		**<LOD**
32	chrysene	601-048-00-0	205-923-4	218-01-9		<0.1	mg/kg		<0.1	mg/kg	<0.00001 %		**<LOD**
33	benzo[b]fluoranthene	601-034-00-4	205-911-9	205-99-2		<0.1	mg/kg		<0.1	mg/kg	<0.00001 %		**<LOD**
34	benzo[k]fluoranthene	601-036-00-5	205-916-6	207-08-9		<0.1	mg/kg		<0.1	mg/kg	<0.00001 %		**<LOD**
35	benzo[a]pyrene; benzo[def]chrysene	601-032-00-3	200-028-5	50-32-8		<0.1	mg/kg		<0.1	mg/kg	<0.00001 %		**<LOD**
36	indeno[123-cd]pyrene		205-893-2	193-39-5		<0.1	mg/kg		<0.1	mg/kg	<0.00001 %		**<LOD**
37	dibenz[a,h]anthracene	601-041-00-2	200-181-8	53-70-3		<0.1	mg/kg		<0.1	mg/kg	<0.00001 %		**<LOD**
38	benzo[ghi]perylene		205-883-8	191-24-2		<0.1	mg/kg		<0.1	mg/kg	<0.00001 %		**<LOD**
39	coronene		205-881-7	191-07-1		<0.1	mg/kg		<0.1	mg/kg	<0.00001 %		**<LOD**
40	polychlorobiphenyls; PCB	602-039-00-4	215-648-1	1336-36-3		<0.1	mg/kg		<0.1	mg/kg	<0.00001 %		**<LOD**

#		Determinand			CLP Note	User entered data		Conv. Factor	Compound conc.		Classification value	MC Applied	Conc. Not Used
		CLP index number	EC Number	CAS Number									
41	●	monohydric phenols		P1186		<0.1	mg/kg		<0.1	mg/kg	<0.00001 %		**<LOD**
42		xylene 601-022-00-9	202-422-2 [1] 203-396-5 [2] 203-576-3 [3] 215-535-7 [4]	95-47-6 [1] 106-42-3 [2] 108-38-3 [3] 1330-20-7 [4]		<2	µg/kg		<0.002	mg/kg	<0.0000002 %		**<LOD**
										Total:	0.0435 %		

Key

(yellow)	User supplied data
(grey)	Determinand values ignored for classification, see column 'Conc. Not Used' for reason
●	Determinand defined or amended by HazWasteOnline (see Appendix A)
	Speciated Deteminand - Unless the Determinand is Note 1, the Conversion Factor is used to calculate the compound concentration
<LOD	Below limit of detection
ND	Not detected
CLP: Note 1	Only the metal concentration has been used for classification

WAC results for sample: TP11-1.00

WAC Settings: samples in this Job constitute a single population.

WAC limits used to evaluate this sample: "Ireland"
The WAC used in this report are the WAC defined for the inert and non-hazardous classes of landfill in the Republic of Ireland. You should check the actual acceptance criteria when the disposal site is identified as they may differ from the generic WAC used in this report.

The sample PASSES the Inert (Inert waste landfill) criteria.

The sample PASSES the Non Haz (Non hazardous waste landfill) criteria.

WAC Determinands

Solid Waste Analysis				Landfill Waste Acceptance Criteria Limits	
#	Determinand		User entered data	Inert waste landfill	Non hazardous waste landfill
1	TOC (total organic carbon)	%	0.84	3	5
2	LOI (loss on ignition)	%	3.1	-	-
3	BTEX (benzene, toluene, ethylbenzene and xylenes)	mg/kg	<0.01	6	-
4	PCBs (polychlorinated biphenyls, 7 congeners)	mg/kg	<0.1	1	-
5	Mineral oil (C10 to C40)	mg/kg	<10	500	-
6	PAHs (polycyclic aromatic hydrocarbons)	mg/kg	<2	100	-
7	pH	pH	8.5	-	>6
8	ANC (acid neutralisation capacity)	mol/kg	<0.002	-	-
Eluate Analysis 10:1					
9	arsenic	mg/kg	0.0042	0.5	2
10	barium	mg/kg	<0.0005	20	100
11	cadmium	mg/kg	<0.0001	0.04	1
12	chromium	mg/kg	<0.0005	0.5	10
13	copper	mg/kg	0.014	2	50
14	mercury	mg/kg	<5.0e-05	0.01	0.2
15	molybdenum	mg/kg	0.095	0.5	10
16	nickel	mg/kg	<0.0005	0.4	10
17	lead	mg/kg	<0.0005	0.5	10
18	antimony	mg/kg	<0.0005	0.06	0.7
19	selenium	mg/kg	<0.0005	0.1	0.5
20	zinc	mg/kg	<0.0025	4	50
21	chloride	mg/kg	<10	800	15,000
22	fluoride	mg/kg	4.2	10	150
23	sulphate	mg/kg	20	1,000	20,000
24	phenol index	mg/kg	<0.3	1	-
25	DOC (dissolved organic carbon)	mg/kg	190	500	800
26	TDS (total dissolved solids)	mg/kg	710	4,000	60,000

Key

User supplied data

Classification of sample: TP12-0.30

Non Hazardous Waste
Classified as **17 05 04**
in the List of Waste

Sample details

Sample name:		LoW Code:	
TP12-0.30		Chapter:	17: Construction and Demolition Wastes (including excavated soil from contaminated sites)
Sample Depth:			
0.30-0.30 m		Entry:	17 05 04 (Soil and stones other than those mentioned in 17 05 03)
Moisture content:			
6.6% (wet weight correction)			

Hazard properties

None identified

Determinands

Moisture content: 6.6% Wet Weight Moisture Correction applied (MC)

#		Determinand (CLP index number / EC Number / CAS Number)	CLP Note	User entered data		Conv. Factor	Compound conc.		Classification value	MC Applied	Conc. Not Used
1		pH PH		8.2	pH		8.2	pH	8.2 pH		
2		boron { diboron trioxide; boric oxide } 005-008-00-8 / 215-125-8 / 1303-86-2		1.4	mg/kg	3.22	4.21	mg/kg	0.000421 %	✓	
3		sulfur { sulfur } 016-094-00-1 / 231-722-6 / 7704-34-9		8.3	mg/kg		7.752	mg/kg	0.000775 %	✓	
4		cyanides { salts of hydrogen cyanide with the exception of complex cyanides such as ferrocyanides, ferricyanides and mercuric oxycyanide and those specified elsewhere in this Annex } 006-007-00-5		0.5	mg/kg	1.884	0.88	mg/kg	0.000088 %	✓	
5		barium { barium oxide } 215-127-9 / 1304-28-5		130	mg/kg	1.117	135.566	mg/kg	0.0136 %	✓	
6		cadmium { cadmium oxide } 048-002-00-0 / 215-146-2 / 1306-19-0		2.1	mg/kg	1.142	2.241	mg/kg	0.000224 %	✓	
7		molybdenum { molybdenum(VI) oxide } 042-001-00-9 / 215-204-7 / 1313-27-5		3.7	mg/kg	1.5	5.184	mg/kg	0.000518 %	✓	
8		antimony { antimony compounds, with the exception of the tetroxide (Sb2O4), pentoxide (Sb2O5), trisulphide (Sb2S3), pentasulphide (Sb2S5) and those specified elsewhere in this Annex } 051-003-00-9	1	2.7	mg/kg		2.522	mg/kg	0.000252 %	✓	
9		arsenic { arsenic } 033-001-00-X / 231-148-6 / 7440-38-2		29	mg/kg		27.086	mg/kg	0.00271 %	✓	
10		granulated copper; [particle length: from 0,9 mm to 6,0 mm; particle width: from 0,494 to 0,949 mm] 029-024-00-X / 231-159-6 / 7440-50-8		91	mg/kg		84.994	mg/kg	0.0085 %	✓	
11		mercury { mercury } 080-001-00-0 / 231-106-7 / 7439-97-6		0.43	mg/kg		0.402	mg/kg	0.0000402 %	✓	
12		nickel { nickel(II) oxide (nickel monoxide) } 028-003-00-2 / 215-215-7 [1] 234-323-5 [2] - [3] / 1313-99-1 [1] 11099-02-8 [2] 34492-97-2 [3]		54	mg/kg	1.273	64.184	mg/kg	0.00642 %	✓	
13		lead { lead compounds with the exception of those specified elsewhere in this Annex } 082-001-00-6	1	150	mg/kg		140.1	mg/kg	0.014 %	✓	

#	Determinand	CLP index number	EC Number	CAS Number	CLP Note	User entered data		Conv. Factor	Compound conc.		Classification value	MC Applied	Conc. Not Used
14	selenium { selenium compounds with the exception of cadmium sulphoselenide and those specified elsewhere in this Annex }	034-002-00-8				0.96	mg/kg	1.405	1.26	mg/kg	0.000126 %	✓	
15	zinc { zinc oxide }	030-013-00-7	215-222-5	1314-13-2		140	mg/kg	1.245	162.759	mg/kg	0.0163 %	✓	
16	chromium in chromium(III) compounds { chromium(III) oxide }		215-160-9	1308-38-9		32	mg/kg	1.462	43.683	mg/kg	0.00437 %	✓	
17	chromium in chromium(VI) compounds { chromium(VI) oxide }	024-001-00-0	215-607-8	1333-82-0		<0.5	mg/kg	1.923	<0.962	mg/kg	<0.0000962 %		<LOD
18	TPH (C6 to C40) petroleum group			TPH		<10	mg/kg		<10	mg/kg	<0.001 %		<LOD
19	benzene	601-020-00-8	200-753-7	71-43-2		<1	µg/kg		<0.001	mg/kg	<0.0000001 %		<LOD
20	toluene	601-021-00-3	203-625-9	108-88-3		<1	µg/kg		<0.001	mg/kg	<0.0000001 %		<LOD
21	ethylbenzene	601-023-00-4	202-849-4	100-41-4		<1	µg/kg		<0.001	mg/kg	<0.0000001 %		<LOD
22	tert-butyl methyl ether; MTBE; 2-methoxy-2-methylpropane	603-181-00-X	216-653-1	1634-04-4		<1	µg/kg		<0.001	mg/kg	<0.0000001 %		<LOD
23	naphthalene	601-052-00-2	202-049-5	91-20-3		0.23	mg/kg		0.215	mg/kg	0.0000215 %	✓	
24	acenaphthylene		205-917-1	208-96-8		0.35	mg/kg		0.327	mg/kg	0.0000327 %	✓	
25	acenaphthene		201-469-6	83-32-9		0.12	mg/kg		0.112	mg/kg	0.0000112 %	✓	
26	fluorene		201-695-5	86-73-7		0.19	mg/kg		0.177	mg/kg	0.0000177 %	✓	
27	phenanthrene		201-581-5	85-01-8		2.8	mg/kg		2.615	mg/kg	0.000262 %	✓	
28	anthracene		204-371-1	120-12-7		0.64	mg/kg		0.598	mg/kg	0.0000598 %	✓	
29	fluoranthene		205-912-4	206-44-0		4.1	mg/kg		3.829	mg/kg	0.000383 %	✓	
30	pyrene		204-927-3	129-00-0		3.2	mg/kg		2.989	mg/kg	0.000299 %	✓	
31	benzo[a]anthracene	601-033-00-9	200-280-6	56-55-3		1.8	mg/kg		1.681	mg/kg	0.000168 %	✓	
32	chrysene	601-048-00-0	205-923-4	218-01-9		1.8	mg/kg		1.681	mg/kg	0.000168 %	✓	
33	benzo[b]fluoranthene	601-034-00-4	205-911-9	205-99-2		2.2	mg/kg		2.055	mg/kg	0.000205 %	✓	
34	benzo[k]fluoranthene	601-036-00-5	205-916-6	207-08-9		0.7	mg/kg		0.654	mg/kg	0.0000654 %	✓	
35	benzo[a]pyrene; benzo[def]chrysene	601-032-00-3	200-028-5	50-32-8		1.5	mg/kg		1.401	mg/kg	0.00014 %	✓	
36	indeno[123-cd]pyrene		205-893-2	193-39-5		1.1	mg/kg		1.027	mg/kg	0.000103 %	✓	
37	dibenz[a,h]anthracene	601-041-00-2	200-181-8	53-70-3		0.24	mg/kg		0.224	mg/kg	0.0000224 %	✓	
38	benzo[ghi]perylene		205-883-8	191-24-2		1	mg/kg		0.934	mg/kg	0.0000934 %	✓	
39	coronene		205-881-7	191-07-1		<0.1	mg/kg		<0.1	mg/kg	<0.00001 %		<LOD
40	polychlorobiphenyls; PCB	602-039-00-4	215-648-1	1336-36-3		<0.1	mg/kg		<0.1	mg/kg	<0.00001 %		<LOD

#		Determinand: CLP index number	EC Number	CAS Number	CLP Note	User entered data		Conv. Factor	Compound conc.		Classification value	MC Applied	Conc. Not Used
41	●	monohydric phenols				<0.1	mg/kg		<0.1	mg/kg	<0.00001 %		**<LOD**
				P1186									
42		xylene				<2	µg/kg		<0.002	mg/kg	<0.0000002 %		**<LOD**
		601-022-00-9	202-422-2 [1] 203-396-5 [2] 203-576-3 [3] 215-535-7 [4]	95-47-6 [1] 106-42-3 [2] 108-38-3 [3] 1330-20-7 [4]									
										Total:	0.0715 %		

Key

(yellow)	User supplied data
(grey)	Determinand values ignored for classification, see column 'Conc. Not Used' for reason
●	Determinand defined or amended by HazWasteOnline (see Appendix A)
	Speciated Deteminand - Unless the Determinand is Note 1, the Conversion Factor is used to calculate the compound concentration
<LOD	Below limit of detection
ND	Not detected
CLP: Note 1	Only the metal concentration has been used for classification

WAC results for sample: TP12-0.30

WAC Settings: samples in this Job constitute a single population.

WAC limits used to evaluate this sample: "Ireland"
The WAC used in this report are the WAC defined for the inert and non-hazardous classes of landfill in the Republic of Ireland. You should check the actual acceptance criteria when the disposal site is identified as they may differ from the generic WAC used in this report.

The sample FAILS the Inert (Inert waste landfill) criteria.

The sample PASSES the Non Haz (Non hazardous waste landfill) criteria.

WAC Determinands

Solid Waste Analysis				Landfill Waste Acceptance Criteria Limits	
#	Determinand		User entered data	Inert waste landfill	Non hazardous waste landfill
1	TOC (total organic carbon)	%	4.9	3	5
2	LOI (loss on ignition)	%	8.8	-	-
3	BTEX (benzene, toluene, ethylbenzene and xylenes)	mg/kg	<0.01	6	-
4	PCBs (polychlorinated biphenyls, 7 congeners)	mg/kg	<0.1	1	-
5	Mineral oil (C10 to C40)	mg/kg	<10	500	-
6	PAHs (polycyclic aromatic hydrocarbons)	mg/kg	22	100	-
7	pH	pH	8.2	-	>6
8	ANC (acid neutralisation capacity)	mol/kg	<0.002	-	-
Eluate Analysis 10:1					
9	arsenic	mg/kg	0.017	0.5	2
10	barium	mg/kg	<0.0005	20	100
11	cadmium	mg/kg	<0.0001	0.04	1
12	chromium	mg/kg	<0.0005	0.5	10
13	copper	mg/kg	0.033	2	50
14	mercury	mg/kg	<5.0e-05	0.01	0.2
15	molybdenum	mg/kg	0.042	0.5	10
16	nickel	mg/kg	0.0057	0.4	10
17	lead	mg/kg	<0.0005	0.5	10
18	antimony	mg/kg	<0.0005	0.06	0.7
19	selenium	mg/kg	<0.0005	0.1	0.5
20	zinc	mg/kg	<0.0025	4	50
21	chloride	mg/kg	<10	800	15,000
22	fluoride	mg/kg	2.7	10	150
23	sulphate	mg/kg	<10	1,000	20,000
24	phenol index	mg/kg	<0.3	1	-
25	DOC (dissolved organic carbon)	mg/kg	64	500	800
26	TDS (total dissolved solids)	mg/kg	1200	4,000	60,000

Key
User supplied data
Inert WAC criteria fail

Classification of sample: TP12-1.00

Non Hazardous Waste
Classified as **17 05 04**
in the List of Waste

Sample details

Sample name:	**TP12-1.00**	LoW Code:	
Sample Depth:	**1.00-1.00 m**	Chapter:	17: Construction and Demolition Wastes (including excavated soil from contaminated sites)
Moisture content:	**5.9%** (wet weight correction)	Entry:	17 05 04 (Soil and stones other than those mentioned in 17 05 03)

Hazard properties

None identified

Determinands

Moisture content: 5.9% Wet Weight Moisture Correction applied (MC)

#	Determinand	CLP index number	EC Number	CAS Number	CLP Note	User entered data		Conv. Factor	Compound conc.		Classification value	MC Applied	Conc. Not Used
1	pH			PH		8.6	pH		8.6	pH	8.6 pH		
2	boron { diboron trioxide; boric oxide }	005-008-00-8	215-125-8	1303-86-2		<0.4	mg/kg	3.22	<1.288	mg/kg	<0.000129 %		<LOD
3	sulfur { sulfur }	016-094-00-1	231-722-6	7704-34-9		1.9	mg/kg		1.788	mg/kg	0.000179 %	✓	
4	cyanides { salts of hydrogen cyanide with the exception of complex cyanides such as ferrocyanides, ferricyanides and mercuric oxycyanide and those specified elsewhere in this Annex }	006-007-00-5				<0.5	mg/kg	1.884	<0.942	mg/kg	<0.0000942 %		<LOD
5	barium { barium oxide }		215-127-9	1304-28-5		79	mg/kg	1.117	83	mg/kg	0.0083 %	✓	
6	cadmium { cadmium oxide }	048-002-00-0	215-146-2	1306-19-0		2	mg/kg	1.142	2.15	mg/kg	0.000215 %	✓	
7	molybdenum { molybdenum(VI) oxide }	042-001-00-9	215-204-7	1313-27-5		3.2	mg/kg	1.5	4.517	mg/kg	0.000452 %	✓	
8	antimony { antimony compounds, with the exception of the tetroxide (Sb2O4), pentoxide (Sb2O5), trisulphide (Sb2S3), pentasulphide (Sb2S5) and those specified elsewhere in this Annex }	051-003-00-9			1	<2	mg/kg		<2	mg/kg	<0.0002 %		<LOD
9	arsenic { arsenic }	033-001-00-X	231-148-6	7440-38-2		23	mg/kg		21.643	mg/kg	0.00216 %	✓	
10	granulated copper; [particle length: from 0,9 mm to 6,0 mm; particle width: from 0,494 to 0,949 mm]	029-024-00-X	231-159-6	7440-50-8		37	mg/kg		34.817	mg/kg	0.00348 %	✓	
11	mercury { mercury }	080-001-00-0	231-106-7	7439-97-6		0.16	mg/kg		0.151	mg/kg	0.0000151 %	✓	
12	nickel { nickel(II) oxide (nickel monoxide) }	028-003-00-2	215-215-7 [1] 234-323-5 [2] - [3]	1313-99-1 [1] 11099-02-8 [2] 34492-97-2 [3]		41	mg/kg	1.273	49.098	mg/kg	0.00491 %	✓	
13	lead { lead compounds with the exception of those specified elsewhere in this Annex }	082-001-00-6			1	79	mg/kg		74.339	mg/kg	0.00743 %	✓	

#		Determinand	CLP index number	EC Number	CAS Number	CLP Note	User entered data		Conv. Factor	Compound conc.		Classification value	MC Applied	Conc. Not Used
14		selenium { selenium compounds with the exception of cadmium sulphoselenide and those specified elsewhere in this Annex }	034-002-00-8				0.32	mg/kg	1.405	0.423	mg/kg	0.0000423 %	✓	
15		zinc { zinc oxide }	030-013-00-7	215-222-5	1314-13-2		83	mg/kg	1.245	97.216	mg/kg	0.00972 %	✓	
16		chromium in chromium(III) compounds { chromium(III) oxide }		215-160-9	1308-38-9		21	mg/kg	1.462	28.882	mg/kg	0.00289 %	✓	
17		chromium in chromium(VI) compounds { chromium(VI) oxide }	024-001-00-0	215-607-8	1333-82-0		<0.5	mg/kg	1.923	<0.962	mg/kg	<0.0000962 %		<LOD
18		TPH (C6 to C40) petroleum group			TPH		<10	mg/kg		<10	mg/kg	<0.001 %		<LOD
19		benzene	601-020-00-8	200-753-7	71-43-2		<1	µg/kg		<0.001	mg/kg	<0.0000001 %		<LOD
20		toluene	601-021-00-3	203-625-9	108-88-3		<1	µg/kg		<0.001	mg/kg	<0.0000001 %		<LOD
21		ethylbenzene	601-023-00-4	202-849-4	100-41-4		<1	µg/kg		<0.001	mg/kg	<0.0000001 %		<LOD
22		tert-butyl methyl ether; MTBE; 2-methoxy-2-methylpropane	603-181-00-X	216-653-1	1634-04-4		<1	µg/kg		<0.001	mg/kg	<0.0000001 %		<LOD
23		naphthalene	601-052-00-2	202-049-5	91-20-3		<0.1	mg/kg		<0.1	mg/kg	<0.00001 %		<LOD
24		acenaphthylene		205-917-1	208-96-8		<0.1	mg/kg		<0.1	mg/kg	<0.00001 %		<LOD
25		acenaphthene		201-469-6	83-32-9		<0.1	mg/kg		<0.1	mg/kg	<0.00001 %		<LOD
26		fluorene		201-695-5	86-73-7		<0.1	mg/kg		<0.1	mg/kg	<0.00001 %		<LOD
27		phenanthrene		201-581-5	85-01-8		<0.1	mg/kg		<0.1	mg/kg	<0.00001 %		<LOD
28		anthracene		204-371-1	120-12-7		<0.1	mg/kg		<0.1	mg/kg	<0.00001 %		<LOD
29		fluoranthene		205-912-4	206-44-0		0.23	mg/kg		0.216	mg/kg	0.0000216 %	✓	
30		pyrene		204-927-3	129-00-0		0.26	mg/kg		0.245	mg/kg	0.0000245 %	✓	
31		benzo[a]anthracene	601-033-00-9	200-280-6	56-55-3		0.13	mg/kg		0.122	mg/kg	0.0000122 %	✓	
32		chrysene	601-048-00-0	205-923-4	218-01-9		0.18	mg/kg		0.169	mg/kg	0.0000169 %	✓	
33		benzo[b]fluoranthene	601-034-00-4	205-911-9	205-99-2		0.29	mg/kg		0.273	mg/kg	0.0000273 %	✓	
34		benzo[k]fluoranthene	601-036-00-5	205-916-6	207-08-9		0.1	mg/kg		0.0941	mg/kg	0.00000941 %	✓	
35		benzo[a]pyrene; benzo[def]chrysene	601-032-00-3	200-028-5	50-32-8		0.22	mg/kg		0.207	mg/kg	0.0000207 %	✓	
36		indeno[123-cd]pyrene		205-893-2	193-39-5		<0.1	mg/kg		<0.1	mg/kg	<0.00001 %		<LOD
37		dibenz[a,h]anthracene	601-041-00-2	200-181-8	53-70-3		<0.1	mg/kg		<0.1	mg/kg	<0.00001 %		<LOD
38		benzo[ghi]perylene		205-883-8	191-24-2		<0.1	mg/kg		<0.1	mg/kg	<0.00001 %		<LOD
39		coronene		205-881-7	191-07-1		<0.1	mg/kg		<0.1	mg/kg	<0.00001 %		<LOD
40		polychlorobiphenyls; PCB	602-039-00-4	215-648-1	1336-36-3		<0.1	mg/kg		<0.1	mg/kg	<0.00001 %		<LOD

#		Determinand CLP index number / EC Number / CAS Number	CLP Note	User entered data		Conv. Factor	Compound conc.		Classification value	MC Applied	Conc. Not Used
41	●	monohydric phenols P1186		<0.1	mg/kg		<0.1	mg/kg	<0.00001 %		<LOD
42		xylene 601-022-00-9 / 202-422-2 [1] 203-396-5 [2] 203-576-3 [3] 215-535-7 [4] / 95-47-6 [1] 106-42-3 [2] 108-38-3 [3] 1330-20-7 [4]		<2	µg/kg		<0.002	mg/kg	<0.0000002 %		<LOD
								Total:	0.0416 %		

Key

(yellow)	User supplied data
(grey)	Determinand values ignored for classification, see column 'Conc. Not Used' for reason
●	Determinand defined or amended by HazWasteOnline (see Appendix A)
	Speciated Deteminand - Unless the Determinand is Note 1, the Conversion Factor is used to calculate the compound concentration
<LOD	Below limit of detection
ND	Not detected
CLP: Note 1	Only the metal concentration has been used for classification

WAC results for sample: TP12-1.00

WAC Settings: samples in this Job constitute a single population.

WAC limits used to evaluate this sample: "Ireland"
The WAC used in this report are the WAC defined for the inert and non-hazardous classes of landfill in the Republic of Ireland. You should check the actual acceptance criteria when the disposal site is identified as they may differ from the generic WAC used in this report.

The sample PASSES the Inert (Inert waste landfill) criteria.

The sample PASSES the Non Haz (Non hazardous waste landfill) criteria.

WAC Determinands

Solid Waste Analysis				Landfill Waste Acceptance Criteria Limits	
#	Determinand		User entered data	Inert waste landfill	Non hazardous waste landfill
1	TOC (total organic carbon)	%	2	3	5
2	LOI (loss on ignition)	%	3.2	-	-
3	BTEX (benzene, toluene, ethylbenzene and xylenes)	mg/kg	<0.01	6	-
4	PCBs (polychlorinated biphenyls, 7 congeners)	mg/kg	<0.1	1	-
5	Mineral oil (C10 to C40)	mg/kg	<10	500	-
6	PAHs (polycyclic aromatic hydrocarbons)	mg/kg	<2	100	-
7	pH	pH	8.6	-	>6
8	ANC (acid neutralisation capacity)	mol/kg	0.014	-	-
Eluate Analysis 10:1					
9	arsenic	mg/kg	0.017	0.5	2
10	barium	mg/kg	0.052	20	100
11	cadmium	mg/kg	<0.0001	0.04	1
12	chromium	mg/kg	0.0061	0.5	10
13	copper	mg/kg	0.018	2	50
14	mercury	mg/kg	<5.0e-05	0.01	0.2
15	molybdenum	mg/kg	0.05	0.5	10
16	nickel	mg/kg	<0.0005	0.4	10
17	lead	mg/kg	<0.0005	0.5	10
18	antimony	mg/kg	0.0055	0.06	0.7
19	selenium	mg/kg	<0.0005	0.1	0.5
20	zinc	mg/kg	<0.0025	4	50
21	chloride	mg/kg	<10	800	15,000
22	fluoride	mg/kg	2.3	10	150
23	sulphate	mg/kg	140	1,000	20,000
24	phenol index	mg/kg	<0.3	1	-
25	DOC (dissolved organic carbon)	mg/kg	61	500	800
26	TDS (total dissolved solids)	mg/kg	780	4,000	60,000

Key

User supplied data

Classification of sample: TP01-0.30

Non Hazardous Waste
Classified as **17 05 04**
in the List of Waste

Sample details

Sample name:		LoW Code:	
TP01-0.30		Chapter:	17: Construction and Demolition Wastes (including excavated soil from contaminated sites)
Sample Depth:			
0.30-0.30 m		Entry:	17 05 04 (Soil and stones other than those mentioned in 17 05 03)
Moisture content:			
7.9% (wet weight correction)			

Hazard properties

None identified

Determinands

Moisture content: 7.9% Wet Weight Moisture Correction applied (MC)

#	Determinand	CLP index number	EC Number	CAS Number	CLP Note	User entered data		Conv. Factor	Compound conc.		Classification value	MC Applied	Conc. Not Used
1	pH			PH		8.2	pH		8.2	pH	8.2 pH		
2	boron { diboron trioxide; boric oxide }	005-008-00-8	215-125-8	1303-86-2		1	mg/kg	3.22	2.966	mg/kg	0.000297 %	✓	
3	sulfur { sulfur }	016-094-00-1	231-722-6	7704-34-9		6.3	mg/kg		5.802	mg/kg	0.00058 %	✓	
4	cyanides { salts of hydrogen cyanide with the exception of complex cyanides such as ferrocyanides, ferricyanides and mercuric oxycyanide and those specified elsewhere in this Annex }	006-007-00-5				<0.5	mg/kg	1.884	<0.942	mg/kg	<0.0000942 %		<LOD
5	barium { barium oxide }		215-127-9	1304-28-5		140	mg/kg	1.117	143.962	mg/kg	0.0144 %	✓	
6	cadmium { cadmium oxide }	048-002-00-0	215-146-2	1306-19-0		2	mg/kg	1.142	2.104	mg/kg	0.00021 %	✓	
7	molybdenum { molybdenum(VI) oxide }	042-001-00-9	215-204-7	1313-27-5		3.5	mg/kg	1.5	4.836	mg/kg	0.000484 %	✓	
8	antimony { antimony compounds, with the exception of the tetroxide (Sb2O4), pentoxide (Sb2O5), trisulphide (Sb2S3), pentasulphide (Sb2S5) and those specified elsewhere in this Annex }	051-003-00-9			1	3.3	mg/kg		3.039	mg/kg	0.000304 %	✓	
9	arsenic { arsenic }	033-001-00-X	231-148-6	7440-38-2		28	mg/kg		25.788	mg/kg	0.00258 %	✓	
10	granulated copper; [particle length: from 0,9 mm to 6,0 mm; particle width: from 0,494 to 0,949 mm]	029-024-00-X	231-159-6	7440-50-8		89	mg/kg		81.969	mg/kg	0.0082 %	✓	
11	mercury { mercury }	080-001-00-0	231-106-7	7439-97-6		0.72	mg/kg		0.663	mg/kg	0.0000663 %	✓	
12	nickel { nickel(II) oxide (nickel monoxide) }	028-003-00-2	215-215-7 [1] 234-323-5 [2] - [3]	1313-99-1 [1] 11099-02-8 [2] 34492-97-2 [3]		43	mg/kg	1.273	50.398	mg/kg	0.00504 %	✓	
13	lead { lead compounds with the exception of those specified elsewhere in this Annex }	082-001-00-6			1	220	mg/kg		202.62	mg/kg	0.0203 %	✓	

#	Determinand	CLP index number	EC Number	CAS Number	CLP Note	User entered data		Conv. Factor	Compound conc.		Classification value	MC Applied	Conc. Not Used
14	selenium { selenium compounds with the exception of cadmium sulphoselenide and those specified elsewhere in this Annex }	034-002-00-8				0.97	mg/kg	1.405	1.255	mg/kg	0.000126 %	✓	
15	zinc { zinc oxide }	030-013-00-7	215-222-5	1314-13-2		190	mg/kg	1.245	217.812	mg/kg	0.0218 %	✓	
16	chromium in chromium(III) compounds { chromium(III) oxide }		215-160-9	1308-38-9		25	mg/kg	1.462	33.652	mg/kg	0.00337 %	✓	
17	chromium in chromium(VI) compounds { chromium(VI) oxide }	024-001-00-0	215-607-8	1333-82-0		<0.5	mg/kg	1.923	<0.962	mg/kg	<0.0000962 %		<LOD
18	TPH (C6 to C40) petroleum group			TPH		23	mg/kg		21.183	mg/kg	0.00212 %	✓	
19	benzene	601-020-00-8	200-753-7	71-43-2		<1	µg/kg		<0.001	mg/kg	<0.0000001 %		<LOD
20	toluene	601-021-00-3	203-625-9	108-88-3		<1	µg/kg		<0.001	mg/kg	<0.0000001 %		<LOD
21	ethylbenzene	601-023-00-4	202-849-4	100-41-4		<1	µg/kg		<0.001	mg/kg	<0.0000001 %		<LOD
22	tert-butyl methyl ether; MTBE; 2-methoxy-2-methylpropane	603-181-00-X	216-653-1	1634-04-4		<1	µg/kg		<0.001	mg/kg	<0.0000001 %		<LOD
23	naphthalene	601-052-00-2	202-049-5	91-20-3		0.33	mg/kg		0.304	mg/kg	0.0000304 %	✓	
24	acenaphthylene		205-917-1	208-96-8		0.1	mg/kg		0.0921	mg/kg	0.00000921 %	✓	
25	acenaphthene		201-469-6	83-32-9		0.23	mg/kg		0.212	mg/kg	0.0000212 %	✓	
26	fluorene		201-695-5	86-73-7		0.19	mg/kg		0.175	mg/kg	0.0000175 %	✓	
27	phenanthrene		201-581-5	85-01-8		2	mg/kg		1.842	mg/kg	0.000184 %	✓	
28	anthracene		204-371-1	120-12-7		0.3	mg/kg		0.276	mg/kg	0.0000276 %	✓	
29	fluoranthene		205-912-4	206-44-0		2.6	mg/kg		2.395	mg/kg	0.000239 %	✓	
30	pyrene		204-927-3	129-00-0		2.3	mg/kg		2.118	mg/kg	0.000212 %	✓	
31	benzo[a]anthracene	601-033-00-9	200-280-6	56-55-3		1.3	mg/kg		1.197	mg/kg	0.00012 %	✓	
32	chrysene	601-048-00-0	205-923-4	218-01-9		1.4	mg/kg		1.289	mg/kg	0.000129 %	✓	
33	benzo[b]fluoranthene	601-034-00-4	205-911-9	205-99-2		1.8	mg/kg		1.658	mg/kg	0.000166 %	✓	
34	benzo[k]fluoranthene	601-036-00-5	205-916-6	207-08-9		0.56	mg/kg		0.516	mg/kg	0.0000516 %	✓	
35	benzo[a]pyrene; benzo[def]chrysene	601-032-00-3	200-028-5	50-32-8		1.2	mg/kg		1.105	mg/kg	0.000111 %	✓	
36	indeno[123-cd]pyrene		205-893-2	193-39-5		0.79	mg/kg		0.728	mg/kg	0.0000728 %	✓	
37	dibenz[a,h]anthracene	601-041-00-2	200-181-8	53-70-3		0.21	mg/kg		0.193	mg/kg	0.0000193 %	✓	
38	benzo[ghi]perylene		205-883-8	191-24-2		0.86	mg/kg		0.792	mg/kg	0.0000792 %	✓	
39	coronene		205-881-7	191-07-1		<0.1	mg/kg		<0.1	mg/kg	<0.00001 %		<LOD
40	polychlorobiphenyls; PCB	602-039-00-4	215-648-1	1336-36-3		<0.1	mg/kg		<0.1	mg/kg	<0.00001 %		<LOD

#		Determinand	CLP index number	EC Number	CAS Number	CLP Note	User entered data	Conv. Factor	Compound conc.	Classification value	MC Applied	Conc. Not Used
41	●	monohydric phenols			P1186		<0.1 mg/kg		<0.1 mg/kg	<0.00001 %		**<LOD**
42		xylene	601-022-00-9	202-422-2 [1] 203-396-5 [2] 203-576-3 [3] 215-535-7 [4]	95-47-6 [1] 106-42-3 [2] 108-38-3 [3] 1330-20-7 [4]		<2 µg/kg		<0.002 mg/kg	<0.0000002 %		**<LOD**
									Total:	0.0815 %		

Key

(yellow)	User supplied data
(grey)	Determinand values ignored for classification, see column 'Conc. Not Used' for reason
●	Determinand defined or amended by HazWasteOnline (see Appendix A)
	Speciated Deteminand - Unless the Determinand is Note 1, the Conversion Factor is used to calculate the compound concentration
<LOD	Below limit of detection
ND	Not detected
CLP: Note 1	Only the metal concentration has been used for classification

Supplementary Hazardous Property Information

HP 3(i): Flammable "flammable liquid waste: liquid waste having a flash point below 60°C or waste gas oil, diesel and light heating oils having a flash point > 55°C and <= 75°C"

Force this Hazardous property to non hazardous because HP 3 can be discounted as this is a solid waste without a free draining liquid phase.

Hazard Statements hit:

Flam. Liq. 3; H226 "Flammable liquid and vapour."

Because of determinand:

TPH (C6 to C40) petroleum group: (conc.: 0.00212%)

WAC results for sample: TP01-0.30

WAC Settings: samples in this Job constitute a single population.

WAC limits used to evaluate this sample: "Ireland"
The WAC used in this report are the WAC defined for the inert and non-hazardous classes of landfill in the Republic of Ireland. You should check the actual acceptance criteria when the disposal site is identified as they may differ from the generic WAC used in this report.

The sample FAILS the Inert (Inert waste landfill) criteria.

The sample PASSES the Non Haz (Non hazardous waste landfill) criteria.

WAC Determinands

Solid Waste Analysis				Landfill Waste Acceptance Criteria Limits	
#	Determinand		User entered data	Inert waste landfill	Non hazardous waste landfill
1	TOC (total organic carbon)	%	3.5	3	5
2	LOI (loss on ignition)	%	6.9	-	-
3	BTEX (benzene, toluene, ethylbenzene and xylenes)	mg/kg	<0.01	6	-
4	PCBs (polychlorinated biphenyls, 7 congeners)	mg/kg	<0.1	1	-
5	Mineral oil (C10 to C40)	mg/kg	23	500	-
6	PAHs (polycyclic aromatic hydrocarbons)	mg/kg	16	100	-
7	pH	pH	8.2	-	>6
8	ANC (acid neutralisation capacity)	mol/kg	0.004	-	-
Eluate Analysis 10:1					
9	arsenic	mg/kg	0.11	0.5	2
10	barium	mg/kg	0.064	20	100
11	cadmium	mg/kg	0.002	0.04	1
12	chromium	mg/kg	0.0085	0.5	10
13	copper	mg/kg	0.049	2	50
14	mercury	mg/kg	<5.0e-05	0.01	0.2
15	molybdenum	mg/kg	0.056	0.5	10
16	nickel	mg/kg	0.0076	0.4	10
17	lead	mg/kg	<0.0005	0.5	10
18	antimony	mg/kg	0.023	0.06	0.7
19	selenium	mg/kg	0.012	0.1	0.5
20	zinc	mg/kg	<0.0025	4	50
21	chloride	mg/kg	<10	800	15,000
22	fluoride	mg/kg	2.9	10	150
23	sulphate	mg/kg	<10	1,000	20,000
24	phenol index	mg/kg	<0.3	1	-
25	DOC (dissolved organic carbon)	mg/kg	<50	500	800
26	TDS (total dissolved solids)	mg/kg	2500	4,000	60,000

Key

(yellow)	User supplied data
(blue)	Inert WAC criteria fail

Classification of sample: TP01-1.00

Non Hazardous Waste
Classified as **17 05 04**
in the List of Waste

Sample details

Sample name:
TP01-1.00
Sample Depth:
1.00-1.00 m
Moisture content:
3.9%
(wet weight correction)

LoW Code:
Chapter: 17: Construction and Demolition Wastes (including excavated soil from contaminated sites)
Entry: 17 05 04 (Soil and stones other than those mentioned in 17 05 03)

Hazard properties

None identified

Determinands

Moisture content: 3.9% Wet Weight Moisture Correction applied (MC)

#	Determinand	CLP index number	EC Number	CAS Number	CLP Note	User entered data	Conv. Factor	Compound conc.	Classification value	MC Applied	Conc. Not Used
1	pH			PH		8.3 pH		8.3 pH	8.3 pH		
2	boron { diboron trioxide; boric oxide }	005-008-00-8	215-125-8	1303-86-2		0.98 mg/kg	3.22	3.032 mg/kg	0.000303 %	✓	
3	sulfur { sulfur }	016-094-00-1	231-722-6	7704-34-9		2.6 mg/kg		2.499 mg/kg	0.00025 %	✓	
4	cyanides { salts of hydrogen cyanide with the exception of complex cyanides such as ferrocyanides, ferricyanides and mercuric oxycyanide and those specified elsewhere in this Annex }	006-007-00-5				<0.5 mg/kg	1.884	<0.942 mg/kg	<0.0000942 %		<LOD
5	barium { barium oxide }		215-127-9	1304-28-5		120 mg/kg	1.117	128.755 mg/kg	0.0129 %	✓	
6	cadmium { cadmium oxide }	048-002-00-0	215-146-2	1306-19-0		2.7 mg/kg	1.142	2.964 mg/kg	0.000296 %	✓	
7	molybdenum { molybdenum(VI) oxide }	042-001-00-9	215-204-7	1313-27-5		5.9 mg/kg	1.5	8.506 mg/kg	0.000851 %	✓	
8	antimony { antimony compounds, with the exception of the tetroxide (Sb2O4), pentoxide (Sb2O5), trisulphide (Sb2S3), pentasulphide (Sb2S5) and those specified elsewhere in this Annex }	051-003-00-9			1	3.1 mg/kg		2.979 mg/kg	0.000298 %	✓	
9	arsenic { arsenic }	033-001-00-X	231-148-6	7440-38-2		30 mg/kg		28.83 mg/kg	0.00288 %	✓	
10	granulated copper; [particle length: from 0,9 mm to 6,0 mm; particle width: from 0,494 to 0,949 mm]	029-024-00-X	231-159-6	7440-50-8		70 mg/kg		67.27 mg/kg	0.00673 %	✓	
11	mercury { mercury }	080-001-00-0	231-106-7	7439-97-6		0.76 mg/kg		0.73 mg/kg	0.000073 %	✓	
12	nickel { nickel(II) oxide (nickel monoxide) }	028-003-00-2	215-215-7 [1] 234-323-5 [2] - [3]	1313-99-1 [1] 11099-02-8 [2] 34492-97-2 [3]		57 mg/kg	1.273	69.709 mg/kg	0.00697 %	✓	
13	lead { lead compounds with the exception of those specified elsewhere in this Annex }	082-001-00-6			1	160 mg/kg		153.76 mg/kg	0.0154 %	✓	

#	Determinand	CLP index number	EC Number	CAS Number	CLP Note	User entered data		Conv. Factor	Compound conc.		Classification value	MC Applied	Conc. Not Used
14	selenium { selenium compounds with the exception of cadmium sulphoselenide and those specified elsewhere in this Annex }	034-002-00-8				0.66	mg/kg	1.405	0.891	mg/kg	0.0000891 %	✓	
15	zinc { zinc oxide }	030-013-00-7	215-222-5	1314-13-2		110	mg/kg	1.245	131.579	mg/kg	0.0132 %	✓	
16	chromium in chromium(III) compounds { chromium(III) oxide }		215-160-9	1308-38-9		31	mg/kg	1.462	43.541	mg/kg	0.00435 %	✓	
17	chromium in chromium(VI) compounds { chromium(VI) oxide }	024-001-00-0	215-607-8	1333-82-0		<0.5	mg/kg	1.923	<0.962	mg/kg	<0.0000962 %		<LOD
18	TPH (C6 to C40) petroleum group			TPH		<10	mg/kg		<10	mg/kg	<0.001 %		<LOD
19	benzene	601-020-00-8	200-753-7	71-43-2		<1	µg/kg		<0.001	mg/kg	<0.0000001 %		<LOD
20	toluene	601-021-00-3	203-625-9	108-88-3		<1	µg/kg		<0.001	mg/kg	<0.0000001 %		<LOD
21	ethylbenzene	601-023-00-4	202-849-4	100-41-4		<1	µg/kg		<0.001	mg/kg	<0.0000001 %		<LOD
22	tert-butyl methyl ether; MTBE; 2-methoxy-2-methylpropane	603-181-00-X	216-653-1	1634-04-4		<1	µg/kg		<0.001	mg/kg	<0.0000001 %		<LOD
23	naphthalene	601-052-00-2	202-049-5	91-20-3		<0.1	mg/kg		<0.1	mg/kg	<0.00001 %		<LOD
24	acenaphthylene		205-917-1	208-96-8		<0.1	mg/kg		<0.1	mg/kg	<0.00001 %		<LOD
25	acenaphthene		201-469-6	83-32-9		<0.1	mg/kg		<0.1	mg/kg	<0.00001 %		<LOD
26	fluorene		201-695-5	86-73-7		<0.1	mg/kg		<0.1	mg/kg	<0.00001 %		<LOD
27	phenanthrene		201-581-5	85-01-8		<0.1	mg/kg		<0.1	mg/kg	<0.00001 %		<LOD
28	anthracene		204-371-1	120-12-7		<0.1	mg/kg		<0.1	mg/kg	<0.00001 %		<LOD
29	fluoranthene		205-912-4	206-44-0		0.12	mg/kg		0.115	mg/kg	0.0000115 %	✓	
30	pyrene		204-927-3	129-00-0		0.11	mg/kg		0.106	mg/kg	0.0000106 %	✓	
31	benzo[a]anthracene	601-033-00-9	200-280-6	56-55-3		<0.1	mg/kg		<0.1	mg/kg	<0.00001 %		<LOD
32	chrysene	601-048-00-0	205-923-4	218-01-9		<0.1	mg/kg		<0.1	mg/kg	<0.00001 %		<LOD
33	benzo[b]fluoranthene	601-034-00-4	205-911-9	205-99-2		<0.1	mg/kg		<0.1	mg/kg	<0.00001 %		<LOD
34	benzo[k]fluoranthene	601-036-00-5	205-916-6	207-08-9		<0.1	mg/kg		<0.1	mg/kg	<0.00001 %		<LOD
35	benzo[a]pyrene; benzo[def]chrysene	601-032-00-3	200-028-5	50-32-8		<0.1	mg/kg		<0.1	mg/kg	<0.00001 %		<LOD
36	indeno[123-cd]pyrene		205-893-2	193-39-5		<0.1	mg/kg		<0.1	mg/kg	<0.00001 %		<LOD
37	dibenz[a,h]anthracene	601-041-00-2	200-181-8	53-70-3		<0.1	mg/kg		<0.1	mg/kg	<0.00001 %		<LOD
38	benzo[ghi]perylene		205-883-8	191-24-2		<0.1	mg/kg		<0.1	mg/kg	<0.00001 %		<LOD
39	coronene		205-881-7	191-07-1		<0.1	mg/kg		<0.1	mg/kg	<0.00001 %		<LOD
40	polychlorobiphenyls; PCB	602-039-00-4	215-648-1	1336-36-3		<0.1	mg/kg		<0.1	mg/kg	<0.00001 %		<LOD

#		Determinand CLP index number | EC Number | CAS Number	CLP Note	User entered data		Conv. Factor	Compound conc.		Classification value	MC Applied	Conc. Not Used
41	●	monohydric phenols P1186		<0.1	mg/kg		<0.1	mg/kg	<0.00001 %		**<LOD**
42		xylene 601-022-00-9 | 202-422-2 [1] 203-396-5 [2] 203-576-3 [3] 215-535-7 [4] | 95-47-6 [1] 106-42-3 [2] 108-38-3 [3] 1330-20-7 [4]		<2	µg/kg		<0.002	mg/kg	<0.0000002 %		**<LOD**
								Total:	0.0659 %		

Key

(yellow)	User supplied data
(grey)	Determinand values ignored for classification, see column 'Conc. Not Used' for reason
●	Determinand defined or amended by HazWasteOnline (see Appendix A)
	Speciated Deteminand - Unless the Determinand is Note 1, the Conversion Factor is used to calculate the compound concentration
<LOD	Below limit of detection
ND	Not detected
CLP: Note 1	Only the metal concentration has been used for classification

WAC results for sample: TP01-1.00

WAC Settings: samples in this Job constitute a single population.

WAC limits used to evaluate this sample: "Ireland"
The WAC used in this report are the WAC defined for the inert and non-hazardous classes of landfill in the Republic of Ireland. You should check the actual acceptance criteria when the disposal site is identified as they may differ from the generic WAC used in this report.

The sample PASSES the Inert (Inert waste landfill) criteria.

The sample PASSES the Non Haz (Non hazardous waste landfill) criteria.

WAC Determinands

Solid Waste Analysis				Landfill Waste Acceptance Criteria Limits	
#	Determinand		User entered data	Inert waste landfill	Non hazardous waste landfill
1	TOC (total organic carbon)	%	2.3	3	5
2	LOI (loss on ignition)	%	4.7	-	-
3	BTEX (benzene, toluene, ethylbenzene and xylenes)	mg/kg	<0.01	6	-
4	PCBs (polychlorinated biphenyls, 7 congeners)	mg/kg	<0.1	1	-
5	Mineral oil (C10 to C40)	mg/kg	<10	500	-
6	PAHs (polycyclic aromatic hydrocarbons)	mg/kg	<2	100	-
7	pH	pH	8.3	-	>6
8	ANC (acid neutralisation capacity)	mol/kg	0.006	-	-
Eluate Analysis 10:1					
9	arsenic	mg/kg	0.034	0.5	2
10	barium	mg/kg	<0.0005	20	100
11	cadmium	mg/kg	0.0022	0.04	1
12	chromium	mg/kg	0.0056	0.5	10
13	copper	mg/kg	0.02	2	50
14	mercury	mg/kg	<5.0e-05	0.01	0.2
15	molybdenum	mg/kg	0.48	0.5	10
16	nickel	mg/kg	<0.0005	0.4	10
17	lead	mg/kg	<0.0005	0.5	10
18	antimony	mg/kg	0.018	0.06	0.7
19	selenium	mg/kg	0.0099	0.1	0.5
20	zinc	mg/kg	<0.0025	4	50
21	chloride	mg/kg	<10	800	15,000
22	fluoride	mg/kg	2.4	10	150
23	sulphate	mg/kg	<10	1,000	20,000
24	phenol index	mg/kg	<0.3	1	-
25	DOC (dissolved organic carbon)	mg/kg	<50	500	800
26	TDS (total dissolved solids)	mg/kg	1100	4,000	60,000

Key

User supplied data

HazWasteOnline™
Report created by Stephen Letch on 14 Oct 2021

Classification of sample: TP02-0.20

Non Hazardous Waste
Classified as **17 05 04**
in the List of Waste

Sample details

Sample name:
TP02-0.20
Sample Depth:
0.20-0.20 m
Moisture content:
4.5%
(wet weight correction)

LoW Code:
Chapter: 17: Construction and Demolition Wastes (including excavated soil from contaminated sites)
Entry: 17 05 04 (Soil and stones other than those mentioned in 17 05 03)

Hazard properties

None identified

Determinands

Moisture content: 4.5% Wet Weight Moisture Correction applied (MC)

#	Determinand	CLP index number	EC Number	CAS Number	CLP Note	User entered data		Conv. Factor	Compound conc.		Classification value	MC Applied	Conc. Not Used
1	pH			PH		8.3	pH		8.3	pH	8.3 pH		
2	boron { diboron trioxide; boric oxide }	005-008-00-8	215-125-8	1303-86-2		1	mg/kg	3.22	3.075	mg/kg	0.000307 %	✓	
3	sulfur { sulfur }	016-094-00-1	231-722-6	7704-34-9		120	mg/kg		114.6	mg/kg	0.0115 %	✓	
4	cyanides { salts of hydrogen cyanide with the exception of complex cyanides such as ferrocyanides, ferricyanides and mercuric oxycyanide and those specified elsewhere in this Annex }	006-007-00-5				0.5	mg/kg	1.884	0.9	mg/kg	0.00009 %	✓	
5	barium { barium oxide }		215-127-9	1304-28-5		210	mg/kg	1.117	223.915	mg/kg	0.0224 %	✓	
6	cadmium { cadmium oxide }	048-002-00-0	215-146-2	1306-19-0		1.5	mg/kg	1.142	1.636	mg/kg	0.000164 %	✓	
7	molybdenum { molybdenum(VI) oxide }	042-001-00-9	215-204-7	1313-27-5		4.5	mg/kg	1.5	6.447	mg/kg	0.000645 %	✓	
8	antimony { antimony compounds, with the exception of the tetroxide (Sb2O4), pentoxide (Sb2O5), trisulphide (Sb2S3), pentasulphide (Sb2S5) and those specified elsewhere in this Annex }	051-003-00-9			1	3	mg/kg		2.865	mg/kg	0.000287 %	✓	
9	arsenic { arsenic }	033-001-00-X	231-148-6	7440-38-2		31	mg/kg		29.605	mg/kg	0.00296 %	✓	
10	granulated copper; [particle length: from 0,9 mm to 6,0 mm; particle width: from 0,494 to 0,949 mm]	029-024-00-X	231-159-6	7440-50-8		86	mg/kg		82.13	mg/kg	0.00821 %	✓	
11	mercury { mercury }	080-001-00-0	231-106-7	7439-97-6		0.43	mg/kg		0.411	mg/kg	0.0000411 %	✓	
12	nickel { nickel(II) oxide (nickel monoxide) }	028-003-00-2	215-215-7 [1] 234-323-5 [2] - [3]	1313-99-1 [1] 11099-02-8 [2] 34492-97-2 [3]		56	mg/kg	1.273	68.058	mg/kg	0.00681 %	✓	
13	lead { lead compounds with the exception of those specified elsewhere in this Annex }	082-001-00-6			1	410	mg/kg		391.55	mg/kg	0.0392 %	✓	

#	Determinand	CLP index number	EC Number	CAS Number	CLP Note	User entered data	Conv. Factor	Compound conc.	Classification value	MC Applied	Conc. Not Used
14	selenium { selenium compounds with the exception of cadmium sulphoselenide and those specified elsewhere in this Annex }	034-002-00-8				1 mg/kg	1.405	1.342 mg/kg	0.000134 %	✓	
15	zinc { zinc oxide }	030-013-00-7	215-222-5	1314-13-2		250 mg/kg	1.245	297.175 mg/kg	0.0297 %	✓	
16	chromium in chromium(III) compounds { chromium(III) oxide }		215-160-9	1308-38-9		22 mg/kg	1.462	30.707 mg/kg	0.00307 %	✓	
17	chromium in chromium(VI) compounds { chromium(VI) oxide }	024-001-00-0	215-607-8	1333-82-0		<0.5 mg/kg	1.923	<0.962 mg/kg	<0.0000962 %		<LOD
18	TPH (C6 to C40) petroleum group			TPH		<10 mg/kg		<10 mg/kg	<0.001 %		<LOD
19	benzene	601-020-00-8	200-753-7	71-43-2		<1 µg/kg		<0.001 mg/kg	<0.0000001 %		<LOD
20	toluene	601-021-00-3	203-625-9	108-88-3		<1 µg/kg		<0.001 mg/kg	<0.0000001 %		<LOD
21	ethylbenzene	601-023-00-4	202-849-4	100-41-4		<1 µg/kg		<0.001 mg/kg	<0.0000001 %		<LOD
22	tert-butyl methyl ether; MTBE; 2-methoxy-2-methylpropane	603-181-00-X	216-653-1	1634-04-4		<1 µg/kg		<0.001 mg/kg	<0.0000001 %		<LOD
23	naphthalene	601-052-00-2	202-049-5	91-20-3		<0.1 mg/kg		<0.1 mg/kg	<0.00001 %		<LOD
24	acenaphthylene		205-917-1	208-96-8		<0.1 mg/kg		<0.1 mg/kg	<0.00001 %		<LOD
25	acenaphthene		201-469-6	83-32-9		<0.1 mg/kg		<0.1 mg/kg	<0.00001 %		<LOD
26	fluorene		201-695-5	86-73-7		<0.1 mg/kg		<0.1 mg/kg	<0.00001 %		<LOD
27	phenanthrene		201-581-5	85-01-8		<0.1 mg/kg		<0.1 mg/kg	<0.00001 %		<LOD
28	anthracene		204-371-1	120-12-7		<0.1 mg/kg		<0.1 mg/kg	<0.00001 %		<LOD
29	fluoranthene		205-912-4	206-44-0		0.5 mg/kg		0.478 mg/kg	0.0000477 %	✓	
30	pyrene		204-927-3	129-00-0		0.43 mg/kg		0.411 mg/kg	0.0000411 %	✓	
31	benzo[a]anthracene	601-033-00-9	200-280-6	56-55-3		<0.1 mg/kg		<0.1 mg/kg	<0.00001 %		<LOD
32	chrysene	601-048-00-0	205-923-4	218-01-9		<0.1 mg/kg		<0.1 mg/kg	<0.00001 %		<LOD
33	benzo[b]fluoranthene	601-034-00-4	205-911-9	205-99-2		<0.1 mg/kg		<0.1 mg/kg	<0.00001 %		<LOD
34	benzo[k]fluoranthene	601-036-00-5	205-916-6	207-08-9		<0.1 mg/kg		<0.1 mg/kg	<0.00001 %		<LOD
35	benzo[a]pyrene; benzo[def]chrysene	601-032-00-3	200-028-5	50-32-8		<0.1 mg/kg		<0.1 mg/kg	<0.00001 %		<LOD
36	indeno[123-cd]pyrene		205-893-2	193-39-5		<0.1 mg/kg		<0.1 mg/kg	<0.00001 %		<LOD
37	dibenz[a,h]anthracene	601-041-00-2	200-181-8	53-70-3		<0.1 mg/kg		<0.1 mg/kg	<0.00001 %		<LOD
38	benzo[ghi]perylene		205-883-8	191-24-2		<0.1 mg/kg		<0.1 mg/kg	<0.00001 %		<LOD
39	coronene		205-881-7	191-07-1		<0.1 mg/kg		<0.1 mg/kg	<0.00001 %		<LOD
40	polychlorobiphenyls; PCB	602-039-00-4	215-648-1	1336-36-3		<0.1 mg/kg		<0.1 mg/kg	<0.00001 %		<LOD

#		Determinand			CLP Note	User entered data		Conv. Factor	Compound conc.		Classification value	MC Applied	Conc. Not Used
		CLP index number	EC Number	CAS Number									
41	●	monohydric phenols				<0.1	mg/kg		<0.1	mg/kg	<0.00001 %		**<LOD**
				P1186									
42		xylene				<2	µg/kg		<0.002	mg/kg	<0.0000002 %		**<LOD**
		601-022-00-9	202-422-2 [1] 203-396-5 [2] 203-576-3 [3] 215-535-7 [4]	95-47-6 [1] 106-42-3 [2] 108-38-3 [3] 1330-20-7 [4]									
										Total:	0.127 %		

Key

(yellow)	User supplied data
(grey)	Determinand values ignored for classification, see column 'Conc. Not Used' for reason
●	Determinand defined or amended by HazWasteOnline (see Appendix A)
	Speciated Deteminand - Unless the Determinand is Note 1, the Conversion Factor is used to calculate the compound concentration
<LOD	Below limit of detection
ND	Not detected
CLP: Note 1	Only the metal concentration has been used for classification

WAC results for sample: TP02-0.20

WAC Settings: samples in this Job constitute a single population.

WAC limits used to evaluate this sample: "Ireland"
The WAC used in this report are the WAC defined for the inert and non-hazardous classes of landfill in the Republic of Ireland. You should check the actual acceptance criteria when the disposal site is identified as they may differ from the generic WAC used in this report.

The sample FAILS the Inert (Inert waste landfill) criteria.

The sample FAILS the Non Haz (Non hazardous waste landfill) criteria.

WAC Determinands

Solid Waste Analysis				Landfill Waste Acceptance Criteria Limits	
#	Determinand		User entered data	Inert waste landfill	Non hazardous waste landfill
1	TOC (total organic carbon)	%	15	3	5
2	LOI (loss on ignition)	%	14	-	-
3	BTEX (benzene, toluene, ethylbenzene and xylenes)	mg/kg	<0.01	6	-
4	PCBs (polychlorinated biphenyls, 7 congeners)	mg/kg	<0.1	1	-
5	Mineral oil (C10 to C40)	mg/kg	<10	500	-
6	PAHs (polycyclic aromatic hydrocarbons)	mg/kg	<2	100	-
7	pH	pH	8.3	-	>6
8	ANC (acid neutralisation capacity)	mol/kg	<0.002	-	-
Eluate Analysis 10:1					
9	arsenic	mg/kg	0.1	0.5	2
10	barium	mg/kg	0.13	20	100
11	cadmium	mg/kg	0.0021	0.04	1
12	chromium	mg/kg	0.0056	0.5	10
13	copper	mg/kg	0.04	2	50
14	mercury	mg/kg	<5.0e-05	0.01	0.2
15	molybdenum	mg/kg	0.049	0.5	10
16	nickel	mg/kg	0.011	0.4	10
17	lead	mg/kg	0.019	0.5	10
18	antimony	mg/kg	0.018	0.06	0.7
19	selenium	mg/kg	0.012	0.1	0.5
20	zinc	mg/kg	0.034	4	50
21	chloride	mg/kg	<10	800	15,000
22	fluoride	mg/kg	1.6	10	150
23	sulphate	mg/kg	<10	1,000	20,000
24	phenol index	mg/kg	<0.3	1	-
25	DOC (dissolved organic carbon)	mg/kg	55	500	800
26	TDS (total dissolved solids)	mg/kg	1900	4,000	60,000

Key

(yellow)	User supplied data
(blue)	Inert WAC criteria fail
(magenta)	Non Hazardous WAC criteria fail

Classification of sample: TP02-1.40

Non Hazardous Waste
Classified as **17 05 04**
in the List of Waste

Sample details

Sample name:		LoW Code:	
TP02-1.40		Chapter:	17: Construction and Demolition Wastes (including excavated soil from contaminated sites)
Sample Depth:			
1.40-1.40 m		Entry:	17 05 04 (Soil and stones other than those mentioned in 17 05 03)
Moisture content:			
6.9% (wet weight correction)			

Hazard properties

None identified

Determinands

Moisture content: 6.9% Wet Weight Moisture Correction applied (MC)

#		Determinand / CLP index number	EC Number	CAS Number	CLP Note	User entered data		Conv. Factor	Compound conc.		Classification value	MC Applied	Conc. Not Used
1		pH		PH		8.6	pH		8.6	pH	8.6 pH		
2		boron { diboron trioxide; boric oxide } 005-008-00-8	215-125-8	1303-86-2		0.94	mg/kg	3.22	2.818	mg/kg	0.000282 %	✓	
3		sulfur { sulfur } 016-094-00-1	231-722-6	7704-34-9		9.1	mg/kg		8.472	mg/kg	0.000847 %	✓	
4		cyanides { salts of hydrogen cyanide with the exception of complex cyanides such as ferrocyanides, ferricyanides and mercuric oxycyanide and those specified elsewhere in this Annex } 006-007-00-5				0.5	mg/kg	1.884	0.877	mg/kg	0.0000877 %	✓	
5		barium { barium oxide }	215-127-9	1304-28-5		100	mg/kg	1.117	103.947	mg/kg	0.0104 %	✓	
6		cadmium { cadmium oxide } 048-002-00-0	215-146-2	1306-19-0		1.2	mg/kg	1.142	1.276	mg/kg	0.000128 %	✓	
7		molybdenum { molybdenum(VI) oxide } 042-001-00-9	215-204-7	1313-27-5		3.9	mg/kg	1.5	5.447	mg/kg	0.000545 %	✓	
8		antimony { antimony compounds, with the exception of the tetroxide (Sb2O4), pentoxide (Sb2O5), trisulphide (Sb2S3), pentasulphide (Sb2S5) and those specified elsewhere in this Annex } 051-003-00-9			1	2	mg/kg		1.862	mg/kg	0.000186 %	✓	
9		arsenic { arsenic } 033-001-00-X	231-148-6	7440-38-2		25	mg/kg		23.275	mg/kg	0.00233 %	✓	
10		granulated copper; [particle length: from 0,9 mm to 6,0 mm; particle width: from 0,494 to 0,949 mm] 029-024-00-X	231-159-6	7440-50-8		36	mg/kg		33.516	mg/kg	0.00335 %	✓	
11		mercury { mercury } 080-001-00-0	231-106-7	7439-97-6		0.2	mg/kg		0.186	mg/kg	0.0000186 %	✓	
12		nickel { nickel(II) oxide (nickel monoxide) } 028-003-00-2	215-215-7 [1] 234-323-5 [2] - [3]	1313-99-1 [1] 11099-02-8 [2] 34492-97-2 [3]		36	mg/kg	1.273	42.652	mg/kg	0.00427 %	✓	
13		lead { lead compounds with the exception of those specified elsewhere in this Annex } 082-001-00-6			1	260	mg/kg		242.06	mg/kg	0.0242 %	✓	

#	Determinand	CLP index number	EC Number	CAS Number	CLP Note	User entered data	Conv. Factor	Compound conc.	Classification value	MC Applied	Conc. Not Used
14	selenium { selenium compounds with the exception of cadmium sulphoselenide and those specified elsewhere in this Annex }	034-002-00-8				0.52 mg/kg	1.405	0.68 mg/kg	0.000068 %	✓	
15	zinc { zinc oxide }	030-013-00-7	215-222-5	1314-13-2		81 mg/kg	1.245	93.865 mg/kg	0.00939 %	✓	
16	chromium in chromium(III) compounds { chromium(III) oxide }		215-160-9	1308-38-9		15 mg/kg	1.462	20.411 mg/kg	0.00204 %	✓	
17	chromium in chromium(VI) compounds { chromium(VI) oxide }	024-001-00-0	215-607-8	1333-82-0		<0.5 mg/kg	1.923	<0.962 mg/kg	<0.0000962 %		<LOD
18	TPH (C6 to C40) petroleum group			TPH		<10 mg/kg		<10 mg/kg	<0.001 %		<LOD
19	benzene	601-020-00-8	200-753-7	71-43-2		<1 µg/kg		<0.001 mg/kg	<0.0000001 %		<LOD
20	toluene	601-021-00-3	203-625-9	108-88-3		<1 µg/kg		<0.001 mg/kg	<0.0000001 %		<LOD
21	ethylbenzene	601-023-00-4	202-849-4	100-41-4		<1 µg/kg		<0.001 mg/kg	<0.0000001 %		<LOD
22	tert-butyl methyl ether; MTBE; 2-methoxy-2-methylpropane	603-181-00-X	216-653-1	1634-04-4		<1 µg/kg		<0.001 mg/kg	<0.0000001 %		<LOD
23	naphthalene	601-052-00-2	202-049-5	91-20-3		0.29 mg/kg		0.27 mg/kg	0.000027 %	✓	
24	acenaphthylene		205-917-1	208-96-8		0.13 mg/kg		0.121 mg/kg	0.0000121 %	✓	
25	acenaphthene		201-469-6	83-32-9		0.84 mg/kg		0.782 mg/kg	0.0000782 %	✓	
26	fluorene		201-695-5	86-73-7		0.62 mg/kg		0.577 mg/kg	0.0000577 %	✓	
27	phenanthrene		201-581-5	85-01-8		5.6 mg/kg		5.214 mg/kg	0.000521 %	✓	
28	anthracene		204-371-1	120-12-7		1.5 mg/kg		1.396 mg/kg	0.00014 %	✓	
29	fluoranthene		205-912-4	206-44-0		7.5 mg/kg		6.983 mg/kg	0.000698 %	✓	
30	pyrene		204-927-3	129-00-0		6.1 mg/kg		5.679 mg/kg	0.000568 %	✓	
31	benzo[a]anthracene	601-033-00-9	200-280-6	56-55-3		2.5 mg/kg		2.328 mg/kg	0.000233 %	✓	
32	chrysene	601-048-00-0	205-923-4	218-01-9		2.3 mg/kg		2.141 mg/kg	0.000214 %	✓	
33	benzo[b]fluoranthene	601-034-00-4	205-911-9	205-99-2		2.7 mg/kg		2.514 mg/kg	0.000251 %	✓	
34	benzo[k]fluoranthene	601-036-00-5	205-916-6	207-08-9		0.9 mg/kg		0.838 mg/kg	0.0000838 %	✓	
35	benzo[a]pyrene; benzo[def]chrysene	601-032-00-3	200-028-5	50-32-8		2.2 mg/kg		2.048 mg/kg	0.000205 %	✓	
36	indeno[123-cd]pyrene		205-893-2	193-39-5		2.2 mg/kg		2.048 mg/kg	0.000205 %	✓	
37	dibenz[a,h]anthracene	601-041-00-2	200-181-8	53-70-3		1.4 mg/kg		1.303 mg/kg	0.00013 %	✓	
38	benzo[ghi]perylene		205-883-8	191-24-2		0.26 mg/kg		0.242 mg/kg	0.0000242 %	✓	
39	coronene		205-881-7	191-07-1		1.3 mg/kg		1.21 mg/kg	0.000121 %	✓	
40	polychlorobiphenyls; PCB	602-039-00-4	215-648-1	1336-36-3		<0.1 mg/kg		<0.1 mg/kg	<0.00001 %		<LOD

#		Determinand			CLP Note	User entered data	Conv. Factor	Compound conc.	Classification value	MC Applied	Conc. Not Used
		CLP index number	EC Number	CAS Number							
41	●	monohydric phenols									
				P1186		<0.1 mg/kg		<0.1 mg/kg	<0.00001 %		<LOD
42		xylene									
		601-022-00-9	202-422-2 [1] 203-396-5 [2] 203-576-3 [3] 215-535-7 [4]	95-47-6 [1] 106-42-3 [2] 108-38-3 [3] 1330-20-7 [4]		<2 µg/kg		<0.002 mg/kg	<0.0000002 %		<LOD
								Total:	0.0628 %		

Key

	User supplied data
	Determinand values ignored for classification, see column 'Conc. Not Used' for reason
●	Determinand defined or amended by HazWasteOnline (see Appendix A)
	Speciated Deteminand - Unless the Determinand is Note 1, the Conversion Factor is used to calculate the compound concentration
<LOD	Below limit of detection
ND	Not detected
CLP: Note 1	Only the metal concentration has been used for classification

WAC results for sample: TP02-1.40

WAC Settings: samples in this Job constitute a single population.

WAC limits used to evaluate this sample: "Ireland"
The WAC used in this report are the WAC defined for the inert and non-hazardous classes of landfill in the Republic of Ireland. You should check the actual acceptance criteria when the disposal site is identified as they may differ from the generic WAC used in this report.

The sample FAILS the Inert (Inert waste landfill) criteria.

The sample PASSES the Non Haz (Non hazardous waste landfill) criteria.

WAC Determinands

Solid Waste Analysis				Landfill Waste Acceptance Criteria Limits	
#	Determinand		User entered data	Inert waste landfill	Non hazardous waste landfill
1	TOC (total organic carbon)	%	4.6	3	5
2	LOI (loss on ignition)	%	5.7	-	-
3	BTEX (benzene, toluene, ethylbenzene and xylenes)	mg/kg	<0.01	6	-
4	PCBs (polychlorinated biphenyls, 7 congeners)	mg/kg	<0.1	1	-
5	Mineral oil (C10 to C40)	mg/kg	<10	500	-
6	PAHs (polycyclic aromatic hydrocarbons)	mg/kg	38	100	-
7	pH	pH	8.6	-	>6
8	ANC (acid neutralisation capacity)	mol/kg	0.007	-	-
Eluate Analysis 10:1					
9	arsenic	mg/kg	0.013	0.5	2
10	barium	mg/kg	0.13	20	100
11	cadmium	mg/kg	0.0017	0.04	1
12	chromium	mg/kg	0.025	0.5	10
13	copper	mg/kg	0.18	2	50
14	mercury	mg/kg	<5.0e-05	0.01	0.2
15	molybdenum	mg/kg	0.23	0.5	10
16	nickel	mg/kg	0.02	0.4	10
17	lead	mg/kg	0.0052	0.5	10
18	antimony	mg/kg	0.011	0.06	0.7
19	selenium	mg/kg	0.019	0.1	0.5
20	zinc	mg/kg	<0.0025	4	50
21	chloride	mg/kg	67	800	15,000
22	fluoride	mg/kg	2.2	10	150
23	sulphate	mg/kg	150	1,000	20,000
24	phenol index	mg/kg	<0.3	1	-
25	DOC (dissolved organic carbon)	mg/kg	53	500	800
26	TDS (total dissolved solids)	mg/kg	4200	4,000	60,000

Key
User supplied data
Inert WAC criteria fail

HazWasteOnline™
Report created by Stephen Letch on 14 Oct 2021

Classification of sample: TP03-0.30

Non Hazardous Waste
Classified as **17 05 04**
in the List of Waste

Sample details

Sample name:
TP03-0.30
Sample Depth:
0.30-0.30 m
Moisture content:
7.2%
(wet weight correction)

LoW Code:
Chapter: 17: Construction and Demolition Wastes (including excavated soil from contaminated sites)
Entry: 17 05 04 (Soil and stones other than those mentioned in 17 05 03)

Hazard properties

None identified

Determinands

Moisture content: 7.2% Wet Weight Moisture Correction applied (MC)

#	Determinand	CLP index number	EC Number	CAS Number	CLP Note	User entered data		Conv. Factor	Compound conc.		Classification value	MC Applied	Conc. Not Used
1	pH			PH		8.4	pH		8.4	pH	8.4 pH		
2	boron { diboron trioxide; boric oxide }	005-008-00-8	215-125-8	1303-86-2		1.4	mg/kg	3.22	4.183	mg/kg	0.000418 %	✓	
3	sulfur { sulfur }	016-094-00-1	231-722-6	7704-34-9		9.4	mg/kg		8.723	mg/kg	0.000872 %	✓	
4	cyanides { salts of hydrogen cyanide with the exception of complex cyanides such as ferrocyanides, ferricyanides and mercuric oxycyanide and those specified elsewhere in this Annex }	006-007-00-5				<0.5	mg/kg	1.884	<0.942	mg/kg	<0.0000942 %		<LOD
5	barium { barium oxide }		215-127-9	1304-28-5		130	mg/kg	1.117	134.695	mg/kg	0.0135 %	✓	
6	cadmium { cadmium oxide }	048-002-00-0	215-146-2	1306-19-0		1.8	mg/kg	1.142	1.908	mg/kg	0.000191 %	✓	
7	molybdenum { molybdenum(VI) oxide }	042-001-00-9	215-204-7	1313-27-5		3.3	mg/kg	1.5	4.594	mg/kg	0.000459 %	✓	
8	antimony { antimony compounds, with the exception of the tetroxide (Sb2O4), pentoxide (Sb2O5), trisulphide (Sb2S3), pentasulphide (Sb2S5) and those specified elsewhere in this Annex }	051-003-00-9			1	2.6	mg/kg		2.413	mg/kg	0.000241 %	✓	
9	arsenic { arsenic }	033-001-00-X	231-148-6	7440-38-2		22	mg/kg		20.416	mg/kg	0.00204 %	✓	
10	granulated copper; [particle length: from 0,9 mm to 6,0 mm; particle width: from 0,494 to 0,949 mm]	029-024-00-X	231-159-6	7440-50-8		64	mg/kg		59.392	mg/kg	0.00594 %	✓	
11	mercury { mercury }	080-001-00-0	231-106-7	7439-97-6		0.53	mg/kg		0.492	mg/kg	0.0000492 %	✓	
12	nickel { nickel(II) oxide (nickel monoxide) }	028-003-00-2	215-215-7 [1] 234-323-5 [2] - [3]	1313-99-1 [1] 11099-02-8 [2] 34492-97-2 [3]		39	mg/kg	1.273	46.058	mg/kg	0.00461 %	✓	
13	lead { lead compounds with the exception of those specified elsewhere in this Annex }	082-001-00-6			1	210	mg/kg		194.88	mg/kg	0.0195 %	✓	

#	Determinand	CLP index number	EC Number	CAS Number	CLP Note	User entered data		Conv. Factor	Compound conc.		Classification value	MC Applied	Conc. Not Used
14	selenium { selenium compounds with the exception of cadmium sulphoselenide and those specified elsewhere in this Annex }	034-002-00-8				0.93	mg/kg	1.405	1.213	mg/kg	0.000121 %	✓	
15	zinc { zinc oxide }	030-013-00-7	215-222-5	1314-13-2		150	mg/kg	1.245	173.264	mg/kg	0.0173 %	✓	
16	chromium in chromium(III) compounds { chromium(III) oxide }		215-160-9	1308-38-9		23	mg/kg	1.462	31.195	mg/kg	0.00312 %	✓	
17	chromium in chromium(VI) compounds { chromium(VI) oxide }	024-001-00-0	215-607-8	1333-82-0		<0.5	mg/kg	1.923	<0.962	mg/kg	<0.0000962 %		<LOD
18	TPH (C6 to C40) petroleum group			TPH		<10	mg/kg		<10	mg/kg	<0.001 %		<LOD
19	benzene	601-020-00-8	200-753-7	71-43-2		<1	µg/kg		<0.001	mg/kg	<0.0000001 %		<LOD
20	toluene	601-021-00-3	203-625-9	108-88-3		<1	µg/kg		<0.001	mg/kg	<0.0000001 %		<LOD
21	ethylbenzene	601-023-00-4	202-849-4	100-41-4		<1	µg/kg		<0.001	mg/kg	<0.0000001 %		<LOD
22	tert-butyl methyl ether; MTBE; 2-methoxy-2-methylpropane	603-181-00-X	216-653-1	1634-04-4		<1	µg/kg		<0.001	mg/kg	<0.0000001 %		<LOD
23	naphthalene	601-052-00-2	202-049-5	91-20-3		0.74	mg/kg		0.687	mg/kg	0.0000687 %	✓	
24	acenaphthylene		205-917-1	208-96-8		0.14	mg/kg		0.13	mg/kg	0.000013 %	✓	
25	acenaphthene		201-469-6	83-32-9		1.6	mg/kg		1.485	mg/kg	0.000148 %	✓	
26	fluorene		201-695-5	86-73-7		1.2	mg/kg		1.114	mg/kg	0.000111 %	✓	
27	phenanthrene		201-581-5	85-01-8		11	mg/kg		10.208	mg/kg	0.00102 %	✓	
28	anthracene		204-371-1	120-12-7		1.6	mg/kg		1.485	mg/kg	0.000148 %	✓	
29	fluoranthene		205-912-4	206-44-0		11	mg/kg		10.208	mg/kg	0.00102 %	✓	
30	pyrene		204-927-3	129-00-0		9.1	mg/kg		8.445	mg/kg	0.000844 %	✓	
31	benzo[a]anthracene	601-033-00-9	200-280-6	56-55-3		4.1	mg/kg		3.805	mg/kg	0.00038 %	✓	
32	chrysene	601-048-00-0	205-923-4	218-01-9		4.2	mg/kg		3.898	mg/kg	0.00039 %	✓	
33	benzo[b]fluoranthene	601-034-00-4	205-911-9	205-99-2		5	mg/kg		4.64	mg/kg	0.000464 %	✓	
34	benzo[k]fluoranthene	601-036-00-5	205-916-6	207-08-9		1.7	mg/kg		1.578	mg/kg	0.000158 %	✓	
35	benzo[a]pyrene; benzo[def]chrysene	601-032-00-3	200-028-5	50-32-8		3.5	mg/kg		3.248	mg/kg	0.000325 %	✓	
36	indeno[123-cd]pyrene		205-893-2	193-39-5		2.6	mg/kg		2.413	mg/kg	0.000241 %	✓	
37	dibenz[a,h]anthracene	601-041-00-2	200-181-8	53-70-3		0.75	mg/kg		0.696	mg/kg	0.0000696 %	✓	
38	benzo[ghi]perylene		205-883-8	191-24-2		2.7	mg/kg		2.506	mg/kg	0.000251 %	✓	
39	coronene		205-881-7	191-07-1		<0.1	mg/kg		<0.1	mg/kg	<0.00001 %		<LOD
40	polychlorobiphenyls; PCB	602-039-00-4	215-648-1	1336-36-3		<0.1	mg/kg		<0.1	mg/kg	<0.00001 %		<LOD

#		Determinand: CLP index number	EC Number	CAS Number	CLP Note	User entered data		Conv. Factor	Compound conc.		Classification value	MC Applied	Conc. Not Used
41	●	monohydric phenols				<0.1	mg/kg		<0.1	mg/kg	<0.00001 %		**<LOD**
				P1186									
42		xylene				<2	µg/kg		<0.002	mg/kg	<0.0000002 %		**<LOD**
		601-022-00-9	202-422-2 [1] 203-396-5 [2] 203-576-3 [3] 215-535-7 [4]	95-47-6 [1] 106-42-3 [2] 108-38-3 [3] 1330-20-7 [4]									
										Total:	0.0752 %		

Key

(yellow)	User supplied data
(grey)	Determinand values ignored for classification, see column 'Conc. Not Used' for reason
●	Determinand defined or amended by HazWasteOnline (see Appendix A)
	Speciated Deteminand - Unless the Determinand is Note 1, the Conversion Factor is used to calculate the compound concentration
<LOD	Below limit of detection
ND	Not detected
CLP: Note 1	Only the metal concentration has been used for classification

WAC results for sample: TP03-0.30

WAC Settings: samples in this Job constitute a single population.

WAC limits used to evaluate this sample: "Ireland"
The WAC used in this report are the WAC defined for the inert and non-hazardous classes of landfill in the Republic of Ireland. You should check the actual acceptance criteria when the disposal site is identified as they may differ from the generic WAC used in this report.

The sample FAILS the Inert (Inert waste landfill) criteria.

The sample PASSES the Non Haz (Non hazardous waste landfill) criteria.

WAC Determinands

Solid Waste Analysis				Landfill Waste Acceptance Criteria Limits	
#	Determinand		User entered data	Inert waste landfill	Non hazardous waste landfill
1	TOC (total organic carbon)	%	4.5	3	5
2	LOI (loss on ignition)	%	8.6	-	-
3	BTEX (benzene, toluene, ethylbenzene and xylenes)	mg/kg	<0.01	6	-
4	PCBs (polychlorinated biphenyls, 7 congeners)	mg/kg	<0.1	1	-
5	Mineral oil (C10 to C40)	mg/kg	<10	500	-
6	PAHs (polycyclic aromatic hydrocarbons)	mg/kg	61	100	-
7	pH	pH	8.4	-	>6
8	ANC (acid neutralisation capacity)	mol/kg	<0.002	-	-
Eluate Analysis 10:1					
9	arsenic	mg/kg	0.061	0.5	2
10	barium	mg/kg	0.085	20	100
11	cadmium	mg/kg	0.0016	0.04	1
12	chromium	mg/kg	0.0058	0.5	10
13	copper	mg/kg	0.043	2	50
14	mercury	mg/kg	<5.0e-05	0.01	0.2
15	molybdenum	mg/kg	0.042	0.5	10
16	nickel	mg/kg	0.0079	0.4	10
17	lead	mg/kg	<0.0005	0.5	10
18	antimony	mg/kg	0.016	0.06	0.7
19	selenium	mg/kg	0.0085	0.1	0.5
20	zinc	mg/kg	<0.0025	4	50
21	chloride	mg/kg	<10	800	15,000
22	fluoride	mg/kg	1.9	10	150
23	sulphate	mg/kg	<10	1,000	20,000
24	phenol index	mg/kg	<0.3	1	-
25	DOC (dissolved organic carbon)	mg/kg	57	500	800
26	TDS (total dissolved solids)	mg/kg	1400	4,000	60,000

Key
User supplied data
Inert WAC criteria fail

Classification of sample: TP03-1.20

Non Hazardous Waste
Classified as **17 05 04**
in the List of Waste

Sample details

Sample name:		LoW Code:	
TP03-1.20		Chapter:	17: Construction and Demolition Wastes (including excavated soil from contaminated sites)
Sample Depth:			
1.20-1.20 m		Entry:	17 05 04 (Soil and stones other than those mentioned in 17 05 03)
Moisture content:			
6.8% (wet weight correction)			

Hazard properties

None identified

Determinands

Moisture content: 6.8% Wet Weight Moisture Correction applied (MC)

#		Determinand			CLP Note	User entered data		Conv. Factor	Compound conc.		Classification value	MC Applied	Conc. Not Used
		CLP index number	EC Number	CAS Number									
1		pH				8.4	pH		8.4	pH	8.4 pH		
				PH									
2		boron { diboron trioxide; boric oxide }				0.99	mg/kg	3.22	2.971	mg/kg	0.000297 %	✓	
		005-008-00-8	215-125-8	1303-86-2									
3		sulfur { sulfur }				19	mg/kg		17.708	mg/kg	0.00177 %	✓	
		016-094-00-1	231-722-6	7704-34-9									
4		cyanides { salts of hydrogen cyanide with the exception of complex cyanides such as ferrocyanides, ferricyanides and mercuric oxycyanide and those specified elsewhere in this Annex }				<0.5	mg/kg	1.884	<0.942	mg/kg	<0.0000942 %		<LOD
		006-007-00-5											
5		barium { barium oxide }				110	mg/kg	1.117	114.464	mg/kg	0.0114 %	✓	
			215-127-9	1304-28-5									
6		cadmium { cadmium oxide }				1.1	mg/kg	1.142	1.171	mg/kg	0.000117 %	✓	
		048-002-00-0	215-146-2	1306-19-0									
7		molybdenum { molybdenum(VI) oxide }				3.5	mg/kg	1.5	4.894	mg/kg	0.000489 %	✓	
		042-001-00-9	215-204-7	1313-27-5									
8		antimony { antimony compounds, with the exception of the tetroxide (Sb2O4), pentoxide (Sb2O5), trisulphide (Sb2S3), pentasulphide (Sb2S5) and those specified elsewhere in this Annex }			1	2	mg/kg		1.864	mg/kg	0.000186 %	✓	
		051-003-00-9											
9		arsenic { arsenic }				21	mg/kg		19.572	mg/kg	0.00196 %	✓	
		033-001-00-X	231-148-6	7440-38-2									
10		granulated copper; [particle length: from 0,9 mm to 6,0 mm; particle width: from 0,494 to 0,949 mm]				61	mg/kg		56.852	mg/kg	0.00569 %	✓	
		029-024-00-X	231-159-6	7440-50-8									
11		mercury { mercury }				0.36	mg/kg		0.336	mg/kg	0.0000336 %	✓	
		080-001-00-0	231-106-7	7439-97-6									
12		nickel { nickel(II) oxide (nickel monoxide) }				34	mg/kg	1.273	40.326	mg/kg	0.00403 %	✓	
		028-003-00-2	215-215-7 [1] 234-323-5 [2] - [3]	1313-99-1 [1] 11099-02-8 [2] 34492-97-2 [3]									
13		lead { lead compounds with the exception of those specified elsewhere in this Annex }			1	150	mg/kg		139.8	mg/kg	0.014 %	✓	
		082-001-00-6											

#	Determinand	CLP index number	EC Number	CAS Number	CLP Note	User entered data		Conv. Factor	Compound conc.		Classification value	MC Applied	Conc. Not Used
14	selenium { selenium compounds with the exception of cadmium sulphoselenide and those specified elsewhere in this Annex }	034-002-00-8				0.61	mg/kg	1.405	0.799	mg/kg	0.0000799 %	✓	
15	zinc { zinc oxide }	030-013-00-7	215-222-5	1314-13-2		120	mg/kg	1.245	139.209	mg/kg	0.0139 %	✓	
16	chromium in chromium(III) compounds { chromium(III) oxide }		215-160-9	1308-38-9		16	mg/kg	1.462	21.795	mg/kg	0.00218 %	✓	
17	chromium in chromium(VI) compounds { chromium(VI) oxide }	024-001-00-0	215-607-8	1333-82-0		<0.5	mg/kg	1.923	<0.962	mg/kg	<0.0000962 %		<LOD
18	TPH (C6 to C40) petroleum group			TPH		160	mg/kg		149.12	mg/kg	0.0149 %	✓	
19	benzene	601-020-00-8	200-753-7	71-43-2		<1	µg/kg		<0.001	mg/kg	<0.0000001 %		<LOD
20	toluene	601-021-00-3	203-625-9	108-88-3		<1	µg/kg		<0.001	mg/kg	<0.0000001 %		<LOD
21	ethylbenzene	601-023-00-4	202-849-4	100-41-4		<1	µg/kg		<0.001	mg/kg	<0.0000001 %		<LOD
22	tert-butyl methyl ether; MTBE; 2-methoxy-2-methylpropane	603-181-00-X	216-653-1	1634-04-4		<1	µg/kg		<0.001	mg/kg	<0.0000001 %		<LOD
23	naphthalene	601-052-00-2	202-049-5	91-20-3		0.3	mg/kg		0.28	mg/kg	0.000028 %	✓	
24	acenaphthylene		205-917-1	208-96-8		0.68	mg/kg		0.634	mg/kg	0.0000634 %	✓	
25	acenaphthene		201-469-6	83-32-9		0.59	mg/kg		0.55	mg/kg	0.000055 %	✓	
26	fluorene		201-695-5	86-73-7		1	mg/kg		0.932	mg/kg	0.0000932 %	✓	
27	phenanthrene		201-581-5	85-01-8		11	mg/kg		10.252	mg/kg	0.00103 %	✓	
28	anthracene		204-371-1	120-12-7		1.9	mg/kg		1.771	mg/kg	0.000177 %	✓	
29	fluoranthene		205-912-4	206-44-0		16	mg/kg		14.912	mg/kg	0.00149 %	✓	
30	pyrene		204-927-3	129-00-0		13	mg/kg		12.116	mg/kg	0.00121 %	✓	
31	benzo[a]anthracene	601-033-00-9	200-280-6	56-55-3		6.2	mg/kg		5.778	mg/kg	0.000578 %	✓	
32	chrysene	601-048-00-0	205-923-4	218-01-9		6.2	mg/kg		5.778	mg/kg	0.000578 %	✓	
33	benzo[b]fluoranthene	601-034-00-4	205-911-9	205-99-2		6.8	mg/kg		6.338	mg/kg	0.000634 %	✓	
34	benzo[k]fluoranthene	601-036-00-5	205-916-6	207-08-9		2.5	mg/kg		2.33	mg/kg	0.000233 %	✓	
35	benzo[a]pyrene; benzo[def]chrysene	601-032-00-3	200-028-5	50-32-8		5.5	mg/kg		5.126	mg/kg	0.000513 %	✓	
36	indeno[123-cd]pyrene		205-893-2	193-39-5		3.3	mg/kg		3.076	mg/kg	0.000308 %	✓	
37	dibenz[a,h]anthracene	601-041-00-2	200-181-8	53-70-3		0.74	mg/kg		0.69	mg/kg	0.000069 %	✓	
38	benzo[ghi]perylene		205-883-8	191-24-2		3	mg/kg		2.796	mg/kg	0.00028 %	✓	
39	coronene		205-881-7	191-07-1		<0.1	mg/kg		<0.1	mg/kg	<0.00001 %		<LOD
40	polychlorobiphenyls; PCB	602-039-00-4	215-648-1	1336-36-3		<0.1	mg/kg		<0.1	mg/kg	<0.00001 %		<LOD

#		Determinand			CLP Note	User entered data		Conv. Factor	Compound conc.		Classification value	MC Applied	Conc. Not Used
		CLP index number	EC Number	CAS Number									
41	●	monohydric phenols		P1186		<0.1	mg/kg		<0.1	mg/kg	<0.00001 %		**<LOD**
42		xylene 601-022-00-9	202-422-2 [1] 203-396-5 [2] 203-576-3 [3] 215-535-7 [4]	95-47-6 [1] 106-42-3 [2] 108-38-3 [3] 1330-20-7 [4]		<2	µg/kg		<0.002	mg/kg	<0.0000002 %		**<LOD**
										Total:	0.0786 %		

Key

	User supplied data
	Determinand values ignored for classification, see column 'Conc. Not Used' for reason
●	Determinand defined or amended by HazWasteOnline (see Appendix A)
	Speciated Deteminand - Unless the Determinand is Note 1, the Conversion Factor is used to calculate the compound concentration
<LOD	Below limit of detection
ND	Not detected
CLP: Note 1	Only the metal concentration has been used for classification

Supplementary Hazardous Property Information

HP 3(i): Flammable "flammable liquid waste: liquid waste having a flash point below 60°C or waste gas oil, diesel and light heating oils having a flash point > 55°C and <= 75°C"

Force this Hazardous property to non hazardous because HP 3 can be discounted as this is a solid waste without a free draining liquid phase.

Hazard Statements hit:

Flam. Liq. 3; H226 "Flammable liquid and vapour."

Because of determinand:

TPH (C6 to C40) petroleum group: (conc.: 0.0149%)

WAC results for sample: TP03-1.20

WAC Settings: samples in this Job constitute a single population.

WAC limits used to evaluate this sample: "Ireland"
The WAC used in this report are the WAC defined for the inert and non-hazardous classes of landfill in the Republic of Ireland. You should check the actual acceptance criteria when the disposal site is identified as they may differ from the generic WAC used in this report.

The sample FAILS the Inert (Inert waste landfill) criteria.

The sample PASSES the Non Haz (Non hazardous waste landfill) criteria.

WAC Determinands

Solid Waste Analysis				Landfill Waste Acceptance Criteria Limits	
#	Determinand		User entered data	Inert waste landfill	Non hazardous waste landfill
1	TOC (total organic carbon)	%	4.9	3	5
2	LOI (loss on ignition)	%	7.7	-	-
3	BTEX (benzene, toluene, ethylbenzene and xylenes)	mg/kg	<0.01	6	-
4	PCBs (polychlorinated biphenyls, 7 congeners)	mg/kg	<0.1	1	-
5	Mineral oil (C10 to C40)	mg/kg	160	500	-
6	PAHs (polycyclic aromatic hydrocarbons)	mg/kg	79	100	-
7	pH	pH	8.4	-	>6
8	ANC (acid neutralisation capacity)	mol/kg	<0.002	-	-
Eluate Analysis 10:1					
9	arsenic	mg/kg	0.05	0.5	2
10	barium	mg/kg	<0.0005	20	100
11	cadmium	mg/kg	0.0017	0.04	1
12	chromium	mg/kg	0.006	0.5	10
13	copper	mg/kg	0.045	2	50
14	mercury	mg/kg	<5.0e-05	0.01	0.2
15	molybdenum	mg/kg	0.18	0.5	10
16	nickel	mg/kg	0.015	0.4	10
17	lead	mg/kg	0.01	0.5	10
18	antimony	mg/kg	0.022	0.06	0.7
19	selenium	mg/kg	0.0098	0.1	0.5
20	zinc	mg/kg	0.026	4	50
21	chloride	mg/kg	<10	800	15,000
22	fluoride	mg/kg	1.6	10	150
23	sulphate	mg/kg	14	1,000	20,000
24	phenol index	mg/kg	<0.3	1	-
25	DOC (dissolved organic carbon)	mg/kg	79	500	800
26	TDS (total dissolved solids)	mg/kg	980	4,000	60,000

Key

User supplied data

Inert WAC criteria fail

Classification of sample: TP04-0.40

Non Hazardous Waste
Classified as **17 05 04**
in the List of Waste

Sample details

Sample name:		LoW Code:	
TP04-0.40		Chapter:	17: Construction and Demolition Wastes (including excavated soil from contaminated sites)
Sample Depth:			
0.40-0.40 m		Entry:	17 05 04 (Soil and stones other than those mentioned in 17 05 03)
Moisture content:			
3.6% (wet weight correction)			

Hazard properties

None identified

Determinands

Moisture content: 3.6% Wet Weight Moisture Correction applied (MC)

#	Determinand	CLP index number	EC Number	CAS Number	CLP Note	User entered data		Conv. Factor	Compound conc.		Classification value	MC Applied	Conc. Not Used
1	pH			PH		8.5	pH		8.5	pH	8.5 pH		
2	boron { diboron trioxide; boric oxide }	005-008-00-8	215-125-8	1303-86-2		0.45	mg/kg	3.22	1.397	mg/kg	0.00014 %	✓	
3	sulfur { sulfur }	016-094-00-1	231-722-6	7704-34-9		4	mg/kg		3.856	mg/kg	0.000386 %	✓	
4	cyanides { salts of hydrogen cyanide with the exception of complex cyanides such as ferrocyanides, ferricyanides and mercuric oxycyanide and those specified elsewhere in this Annex }	006-007-00-5				<0.5	mg/kg	1.884	<0.942	mg/kg	<0.0000942 %		<LOD
5	barium { barium oxide }		215-127-9	1304-28-5		150	mg/kg	1.117	161.447	mg/kg	0.0161 %	✓	
6	cadmium { cadmium oxide }	048-002-00-0	215-146-2	1306-19-0		2.3	mg/kg	1.142	2.533	mg/kg	0.000253 %	✓	
7	molybdenum { molybdenum(VI) oxide }	042-001-00-9	215-204-7	1313-27-5		4.7	mg/kg	1.5	6.797	mg/kg	0.00068 %	✓	
8	antimony { antimony compounds, with the exception of the tetroxide (Sb2O4), pentoxide (Sb2O5), trisulphide (Sb2S3), pentasulphide (Sb2S5) and those specified elsewhere in this Annex }	051-003-00-9			1	2.5	mg/kg		2.41	mg/kg	0.000241 %	✓	
9	arsenic { arsenic }	033-001-00-X	231-148-6	7440-38-2		25	mg/kg		24.1	mg/kg	0.00241 %	✓	
10	granulated copper; [particle length: from 0,9 mm to 6,0 mm; particle width: from 0,494 to 0,949 mm]	029-024-00-X	231-159-6	7440-50-8		63	mg/kg		60.732	mg/kg	0.00607 %	✓	
11	mercury { mercury }	080-001-00-0	231-106-7	7439-97-6		0.33	mg/kg		0.318	mg/kg	0.0000318 %	✓	
12	nickel { nickel(II) oxide (nickel monoxide) }	028-003-00-2	215-215-7 [1] 234-323-5 [2] - [3]	1313-99-1 [1] 11099-02-8 [2] 34492-97-2 [3]		54	mg/kg	1.273	66.246	mg/kg	0.00662 %	✓	
13	lead { lead compounds with the exception of those specified elsewhere in this Annex }	082-001-00-6			1	130	mg/kg		125.32	mg/kg	0.0125 %	✓	

#		Determinand / CLP index number	EC Number	CAS Number	CLP Note	User entered data		Conv. Factor	Compound conc.		Classification value	MC Applied	Conc. Not Used
14		selenium { selenium compounds with the exception of cadmium sulphoselenide and those specified elsewhere in this Annex } 034-002-00-8				1.3	mg/kg	1.405	1.761	mg/kg	0.000176 %	✓	
15		zinc { zinc oxide } 030-013-00-7	215-222-5	1314-13-2		130	mg/kg	1.245	155.988	mg/kg	0.0156 %	✓	
16		chromium in chromium(III) compounds { chromium(III) oxide }	215-160-9	1308-38-9		23	mg/kg	1.462	32.406	mg/kg	0.00324 %	✓	
17		chromium in chromium(VI) compounds { chromium(VI) oxide } 024-001-00-0	215-607-8	1333-82-0		<0.5	mg/kg	1.923	<0.962	mg/kg	<0.0000962 %		<LOD
18		TPH (C6 to C40) petroleum group		TPH		<10	mg/kg		<10	mg/kg	<0.001 %		<LOD
19		benzene 601-020-00-8	200-753-7	71-43-2		<1	µg/kg		<0.001	mg/kg	<0.0000001 %		<LOD
20		toluene 601-021-00-3	203-625-9	108-88-3		<1	µg/kg		<0.001	mg/kg	<0.0000001 %		<LOD
21		ethylbenzene 601-023-00-4	202-849-4	100-41-4		<1	µg/kg		<0.001	mg/kg	<0.0000001 %		<LOD
22		tert-butyl methyl ether; MTBE; 2-methoxy-2-methylpropane 603-181-00-X	216-653-1	1634-04-4		<1	µg/kg		<0.001	mg/kg	<0.0000001 %		<LOD
23		naphthalene 601-052-00-2	202-049-5	91-20-3		<0.1	mg/kg		<0.1	mg/kg	<0.00001 %		<LOD
24		acenaphthylene	205-917-1	208-96-8		<0.1	mg/kg		<0.1	mg/kg	<0.00001 %		<LOD
25		acenaphthene	201-469-6	83-32-9		<0.1	mg/kg		<0.1	mg/kg	<0.00001 %		<LOD
26		fluorene	201-695-5	86-73-7		<0.1	mg/kg		<0.1	mg/kg	<0.00001 %		<LOD
27		phenanthrene	201-581-5	85-01-8		<0.1	mg/kg		<0.1	mg/kg	<0.00001 %		<LOD
28		anthracene	204-371-1	120-12-7		<0.1	mg/kg		<0.1	mg/kg	<0.00001 %		<LOD
29		fluoranthene	205-912-4	206-44-0		0.42	mg/kg		0.405	mg/kg	0.0000405 %	✓	
30		pyrene	204-927-3	129-00-0		0.42	mg/kg		0.405	mg/kg	0.0000405 %	✓	
31		benzo[a]anthracene 601-033-00-9	200-280-6	56-55-3		0.3	mg/kg		0.289	mg/kg	0.0000289 %	✓	
32		chrysene 601-048-00-0	205-923-4	218-01-9		0.32	mg/kg		0.308	mg/kg	0.0000308 %	✓	
33		benzo[b]fluoranthene 601-034-00-4	205-911-9	205-99-2		0.38	mg/kg		0.366	mg/kg	0.0000366 %	✓	
34		benzo[k]fluoranthene 601-036-00-5	205-916-6	207-08-9		0.16	mg/kg		0.154	mg/kg	0.0000154 %	✓	
35		benzo[a]pyrene; benzo[def]chrysene 601-032-00-3	200-028-5	50-32-8		0.2	mg/kg		0.193	mg/kg	0.0000193 %	✓	
36		indeno[123-cd]pyrene	205-893-2	193-39-5		<0.1	mg/kg		<0.1	mg/kg	<0.00001 %		<LOD
37		dibenz[a,h]anthracene 601-041-00-2	200-181-8	53-70-3		<0.1	mg/kg		<0.1	mg/kg	<0.00001 %		<LOD
38		benzo[ghi]perylene	205-883-8	191-24-2		<0.1	mg/kg		<0.1	mg/kg	<0.00001 %		<LOD
39		coronene	205-881-7	191-07-1		<0.1	mg/kg		<0.1	mg/kg	<0.00001 %		<LOD
40		polychlorobiphenyls; PCB 602-039-00-4	215-648-1	1336-36-3		<0.1	mg/kg		<0.1	mg/kg	<0.00001 %		<LOD

#		Determinand: CLP index number	EC Number	CAS Number	CLP Note	User entered data		Conv. Factor	Compound conc.		Classification value	MC Applied	Conc. Not Used
41	●	monohydric phenols		P1186		<0.1	mg/kg		<0.1	mg/kg	<0.00001 %		**<LOD**
42		xylene 601-022-00-9	202-422-2 [1] 203-396-5 [2] 203-576-3 [3] 215-535-7 [4]	95-47-6 [1] 106-42-3 [2] 108-38-3 [3] 1330-20-7 [4]		<2	µg/kg		<0.002	mg/kg	<0.0000002 %		**<LOD**
										Total:	0.0661 %		

Key

(yellow)	User supplied data
(grey)	Determinand values ignored for classification, see column 'Conc. Not Used' for reason
●	Determinand defined or amended by HazWasteOnline (see Appendix A)
	Speciated Deteminand - Unless the Determinand is Note 1, the Conversion Factor is used to calculate the compound concentration
<LOD	Below limit of detection
ND	Not detected
CLP: Note 1	Only the metal concentration has been used for classification

WAC results for sample: TP04-0.40

WAC Settings: samples in this Job constitute a single population.

WAC limits used to evaluate this sample: "Ireland"
The WAC used in this report are the WAC defined for the inert and non-hazardous classes of landfill in the Republic of Ireland. You should check the actual acceptance criteria when the disposal site is identified as they may differ from the generic WAC used in this report.

The sample FAILS the Inert (Inert waste landfill) criteria.

The sample FAILS the Non Haz (Non hazardous waste landfill) criteria.

WAC Determinands

Solid Waste Analysis				Landfill Waste Acceptance Criteria Limits	
#	Determinand		User entered data	Inert waste landfill	Non hazardous waste landfill
1	TOC (total organic carbon)	%	5.4	3	5
2	LOI (loss on ignition)	%	5.2	-	-
3	BTEX (benzene, toluene, ethylbenzene and xylenes)	mg/kg	<0.01	6	-
4	PCBs (polychlorinated biphenyls, 7 congeners)	mg/kg	<0.1	1	-
5	Mineral oil (C10 to C40)	mg/kg	<10	500	-
6	PAHs (polycyclic aromatic hydrocarbons)	mg/kg	2.2	100	-
7	pH	pH	8.5	-	>6
8	ANC (acid neutralisation capacity)	mol/kg	0.007	-	-
Eluate Analysis 10:1					
9	arsenic	mg/kg	0.0067	0.5	2
10	barium	mg/kg	0.22	20	100
11	cadmium	mg/kg	<0.0001	0.04	1
12	chromium	mg/kg	<0.0005	0.5	10
13	copper	mg/kg	0.015	2	50
14	mercury	mg/kg	<5.0e-05	0.01	0.2
15	molybdenum	mg/kg	0.34	0.5	10
16	nickel	mg/kg	<0.0005	0.4	10
17	lead	mg/kg	<0.0005	0.5	10
18	antimony	mg/kg	0.0063	0.06	0.7
19	selenium	mg/kg	0.014	0.1	0.5
20	zinc	mg/kg	<0.0025	4	50
21	chloride	mg/kg	<10	800	15,000
22	fluoride	mg/kg	4.3	10	150
23	sulphate	mg/kg	47	1,000	20,000
24	phenol index	mg/kg	<0.3	1	-
25	DOC (dissolved organic carbon)	mg/kg	54	500	800
26	TDS (total dissolved solids)	mg/kg	1000	4,000	60,000

Key

User supplied data
Inert WAC criteria fail
Non Hazardous WAC criteria fail

Classification of sample: TP04-1.50

Non Hazardous Waste
Classified as **17 05 04**
in the List of Waste

Sample details

Sample name:		LoW Code:	
TP04-1.50		Chapter:	17: Construction and Demolition Wastes (including excavated soil from contaminated sites)
Sample Depth:			
1.50-1.50 m		Entry:	17 05 04 (Soil and stones other than those mentioned in 17 05 03)
Moisture content:			
2.9% (wet weight correction)			

Hazard properties

None identified

Determinands

Moisture content: 2.9% Wet Weight Moisture Correction applied (MC)

#	Determinand	CLP index number	EC Number	CAS Number	CLP Note	User entered data		Conv. Factor	Compound conc.		Classification value	MC Applied	Conc. Not Used
1	pH			PH		8.6	pH		8.6	pH	8.6 pH		
2	boron { diboron trioxide; boric oxide }	005-008-00-8	215-125-8	1303-86-2		0.65	mg/kg	3.22	2.032	mg/kg	0.000203 %	✓	
3	sulfur { sulfur }	016-094-00-1	231-722-6	7704-34-9		1.8	mg/kg		1.748	mg/kg	0.000175 %	✓	
4	cyanides { salts of hydrogen cyanide with the exception of complex cyanides such as ferrocyanides, ferricyanides and mercuric oxycyanide and those specified elsewhere in this Annex }	006-007-00-5				<0.5	mg/kg	1.884	<0.942	mg/kg	<0.0000942 %		<LOD
5	barium { barium oxide }		215-127-9	1304-28-5		94	mg/kg	1.117	101.908	mg/kg	0.0102 %	✓	
6	cadmium { cadmium oxide }	048-002-00-0	215-146-2	1306-19-0		2	mg/kg	1.142	2.218	mg/kg	0.000222 %	✓	
7	molybdenum { molybdenum(VI) oxide }	042-001-00-9	215-204-7	1313-27-5		3.8	mg/kg	1.5	5.535	mg/kg	0.000554 %	✓	
8	antimony { antimony compounds, with the exception of the tetroxide (Sb2O4), pentoxide (Sb2O5), trisulphide (Sb2S3), pentasulphide (Sb2S5) and those specified elsewhere in this Annex }	051-003-00-9			1	2	mg/kg		1.942	mg/kg	0.000194 %	✓	
9	arsenic { arsenic }	033-001-00-X	231-148-6	7440-38-2		24	mg/kg		23.304	mg/kg	0.00233 %	✓	
10	granulated copper; [particle length: from 0,9 mm to 6,0 mm; particle width: from 0,494 to 0,949 mm]	029-024-00-X	231-159-6	7440-50-8		85	mg/kg		82.535	mg/kg	0.00825 %	✓	
11	mercury { mercury }	080-001-00-0	231-106-7	7439-97-6		0.19	mg/kg		0.184	mg/kg	0.0000184 %	✓	
12	nickel { nickel(II) oxide (nickel monoxide) }	028-003-00-2	215-215-7 [1] 234-323-5 [2] - [3]	1313-99-1 [1] 11099-02-8 [2] 34492-97-2 [3]		41	mg/kg	1.273	50.663	mg/kg	0.00507 %	✓	
13	lead { lead compounds with the exception of those specified elsewhere in this Annex }	082-001-00-6			1	93	mg/kg		90.303	mg/kg	0.00903 %	✓	

#		Determinand	CLP index number	EC Number	CAS Number	CLP Note	User entered data		Conv. Factor	Compound conc.		Classification value	MC Applied	Conc. Not Used
14		selenium { selenium compounds with the exception of cadmium sulphoselenide and those specified elsewhere in this Annex }	034-002-00-8				0.87	mg/kg	1.405	1.187	mg/kg	0.000119 %	✓	
15		zinc { zinc oxide }	030-013-00-7	215-222-5	1314-13-2		110	mg/kg	1.245	132.948	mg/kg	0.0133 %	✓	
16		chromium in chromium(III) compounds { chromium(III) oxide }		215-160-9	1308-38-9		19	mg/kg	1.462	26.964	mg/kg	0.0027 %	✓	
17		chromium in chromium(VI) compounds { chromium(VI) oxide }	024-001-00-0	215-607-8	1333-82-0		<0.5	mg/kg	1.923	<0.962	mg/kg	<0.0000962 %		<LOD
18		TPH (C6 to C40) petroleum group			TPH		<10	mg/kg		<10	mg/kg	<0.001 %		<LOD
19		benzene	601-020-00-8	200-753-7	71-43-2		<1	µg/kg		<0.001	mg/kg	<0.0000001 %		<LOD
20		toluene	601-021-00-3	203-625-9	108-88-3		<1	µg/kg		<0.001	mg/kg	<0.0000001 %		<LOD
21		ethylbenzene	601-023-00-4	202-849-4	100-41-4		<1	µg/kg		<0.001	mg/kg	<0.0000001 %		<LOD
22		tert-butyl methyl ether; MTBE; 2-methoxy-2-methylpropane	603-181-00-X	216-653-1	1634-04-4		<1	µg/kg		<0.001	mg/kg	<0.0000001 %		<LOD
23		naphthalene	601-052-00-2	202-049-5	91-20-3		<0.1	mg/kg		<0.1	mg/kg	<0.00001 %		<LOD
24		acenaphthylene		205-917-1	208-96-8		<0.1	mg/kg		<0.1	mg/kg	<0.00001 %		<LOD
25		acenaphthene		201-469-6	83-32-9		<0.1	mg/kg		<0.1	mg/kg	<0.00001 %		<LOD
26		fluorene		201-695-5	86-73-7		<0.1	mg/kg		<0.1	mg/kg	<0.00001 %		<LOD
27		phenanthrene		201-581-5	85-01-8		<0.1	mg/kg		<0.1	mg/kg	<0.00001 %		<LOD
28		anthracene		204-371-1	120-12-7		<0.1	mg/kg		<0.1	mg/kg	<0.00001 %		<LOD
29		fluoranthene		205-912-4	206-44-0		0.34	mg/kg		0.33	mg/kg	0.000033 %	✓	
30		pyrene		204-927-3	129-00-0		0.36	mg/kg		0.35	mg/kg	0.000035 %	✓	
31		benzo[a]anthracene	601-033-00-9	200-280-6	56-55-3		0.19	mg/kg		0.184	mg/kg	0.0000184 %	✓	
32		chrysene	601-048-00-0	205-923-4	218-01-9		0.23	mg/kg		0.223	mg/kg	0.0000223 %	✓	
33		benzo[b]fluoranthene	601-034-00-4	205-911-9	205-99-2		<0.1	mg/kg		<0.1	mg/kg	<0.00001 %		<LOD
34		benzo[k]fluoranthene	601-036-00-5	205-916-6	207-08-9		<0.1	mg/kg		<0.1	mg/kg	<0.00001 %		<LOD
35		benzo[a]pyrene; benzo[def]chrysene	601-032-00-3	200-028-5	50-32-8		<0.1	mg/kg		<0.1	mg/kg	<0.00001 %		<LOD
36		indeno[123-cd]pyrene		205-893-2	193-39-5		<0.1	mg/kg		<0.1	mg/kg	<0.00001 %		<LOD
37		dibenz[a,h]anthracene	601-041-00-2	200-181-8	53-70-3		<0.1	mg/kg		<0.1	mg/kg	<0.00001 %		<LOD
38		benzo[ghi]perylene		205-883-8	191-24-2		<0.1	mg/kg		<0.1	mg/kg	<0.00001 %		<LOD
39		coronene		205-881-7	191-07-1		<0.1	mg/kg		<0.1	mg/kg	<0.00001 %		<LOD
40		polychlorobiphenyls; PCB	602-039-00-4	215-648-1	1336-36-3		<0.1	mg/kg		<0.1	mg/kg	<0.00001 %		<LOD

#		Determinand CLP index number | EC Number | CAS Number	CLP Note	User entered data		Conv. Factor	Compound conc.		Classification value	MC Applied	Conc. Not Used
41	●	monohydric phenols P1186		<0.1	mg/kg		<0.1	mg/kg	<0.00001 %		**<LOD**
42		xylene 601-022-00-9 | 202-422-2 [1] 203-396-5 [2] 203-576-3 [3] 215-535-7 [4] | 95-47-6 [1] 106-42-3 [2] 108-38-3 [3] 1330-20-7 [4]		<2	µg/kg		<0.002	mg/kg	<0.0000002 %		**<LOD**
								Total:	0.0538 %		

Key

(yellow)	User supplied data
(grey)	Determinand values ignored for classification, see column 'Conc. Not Used' for reason
●	Determinand defined or amended by HazWasteOnline (see Appendix A)
	Speciated Deteminand - Unless the Determinand is Note 1, the Conversion Factor is used to calculate the compound concentration
<LOD	Below limit of detection
ND	Not detected
CLP: Note 1	Only the metal concentration has been used for classification

WAC results for sample: TP04-1.50

WAC Settings: samples in this Job constitute a single population.

WAC limits used to evaluate this sample: "Ireland"
The WAC used in this report are the WAC defined for the inert and non-hazardous classes of landfill in the Republic of Ireland. You should check the actual acceptance criteria when the disposal site is identified as they may differ from the generic WAC used in this report.

The sample PASSES the Inert (Inert waste landfill) criteria.

The sample PASSES the Non Haz (Non hazardous waste landfill) criteria.

WAC Determinands

Solid Waste Analysis				Landfill Waste Acceptance Criteria Limits	
#	Determinand		User entered data	Inert waste landfill	Non hazardous waste landfill
1	TOC (total organic carbon)	%	1.5	3	5
2	LOI (loss on ignition)	%	4.6	-	-
3	BTEX (benzene, toluene, ethylbenzene and xylenes)	mg/kg	<0.01	6	-
4	PCBs (polychlorinated biphenyls, 7 congeners)	mg/kg	<0.1	1	-
5	Mineral oil (C10 to C40)	mg/kg	<10	500	-
6	PAHs (polycyclic aromatic hydrocarbons)	mg/kg	<2	100	-
7	pH	pH	8.6	-	>6
8	ANC (acid neutralisation capacity)	mol/kg	0.057	-	-
Eluate Analysis 10:1					
9	arsenic	mg/kg	0.015	0.5	2
10	barium	mg/kg	0.082	20	100
11	cadmium	mg/kg	<0.0001	0.04	1
12	chromium	mg/kg	<0.0005	0.5	10
13	copper	mg/kg	0.016	2	50
14	mercury	mg/kg	<5.0e-05	0.01	0.2
15	molybdenum	mg/kg	0.21	0.5	10
16	nickel	mg/kg	0.0059	0.4	10
17	lead	mg/kg	<0.0005	0.5	10
18	antimony	mg/kg	0.0061	0.06	0.7
19	selenium	mg/kg	0.0057	0.1	0.5
20	zinc	mg/kg	<0.0025	4	50
21	chloride	mg/kg	<10	800	15,000
22	fluoride	mg/kg	3.1	10	150
23	sulphate	mg/kg	32	1,000	20,000
24	phenol index	mg/kg	<0.3	1	-
25	DOC (dissolved organic carbon)	mg/kg	<50	500	800
26	TDS (total dissolved solids)	mg/kg	1100	4,000	60,000

Key

User supplied data

Classification of sample: TP07-0.30

Non Hazardous Waste
Classified as **17 05 04**
in the List of Waste

Sample details

Sample name:		LoW Code:	
TP07-0.30		Chapter:	17: Construction and Demolition Wastes (including excavated soil from contaminated sites)
Sample Depth:			
0.30-0.30 m		Entry:	17 05 04 (Soil and stones other than those mentioned in 17 05 03)
Moisture content:			
7.4% (wet weight correction)			

Hazard properties

None identified

Determinands

Moisture content: 7.4% Wet Weight Moisture Correction applied (MC)

#	Determinand	CLP index number	EC Number	CAS Number	CLP Note	User entered data		Conv. Factor	Compound conc.		Classification value	MC Applied	Conc. Not Used
1	pH			PH		8.3	pH		8.3	pH	8.3 pH		
2	boron { diboron trioxide; boric oxide }	005-008-00-8	215-125-8	1303-86-2		1.2	mg/kg	3.22	3.578	mg/kg	0.000358 %	✓	
3	sulfur { sulfur }	016-094-00-1	231-722-6	7704-34-9		5.1	mg/kg		4.723	mg/kg	0.000472 %	✓	
4	cyanides { salts of hydrogen cyanide with the exception of complex cyanides such as ferrocyanides, ferricyanides and mercuric oxycyanide and those specified elsewhere in this Annex }	006-007-00-5				<0.5	mg/kg	1.884	<0.942	mg/kg	<0.0000942 %		<LOD
5	barium { barium oxide }		215-127-9	1304-28-5		110	mg/kg	1.117	113.727	mg/kg	0.0114 %	✓	
6	cadmium { cadmium oxide }	048-002-00-0	215-146-2	1306-19-0		1.6	mg/kg	1.142	1.692	mg/kg	0.000169 %	✓	
7	molybdenum { molybdenum(VI) oxide }	042-001-00-9	215-204-7	1313-27-5		2.6	mg/kg	1.5	3.612	mg/kg	0.000361 %	✓	
8	antimony { antimony compounds, with the exception of the tetroxide (Sb2O4), pentoxide (Sb2O5), trisulphide (Sb2S3), pentasulphide (Sb2S5) and those specified elsewhere in this Annex }	051-003-00-9			1	<2	mg/kg		<2	mg/kg	<0.0002 %		<LOD
9	arsenic { arsenic }	033-001-00-X	231-148-6	7440-38-2		20	mg/kg		18.52	mg/kg	0.00185 %	✓	
10	granulated copper; [particle length: from 0,9 mm to 6,0 mm; particle width: from 0,494 to 0,949 mm]	029-024-00-X	231-159-6	7440-50-8		130	mg/kg		120.38	mg/kg	0.012 %	✓	
11	mercury { mercury }	080-001-00-0	231-106-7	7439-97-6		0.4	mg/kg		0.37	mg/kg	0.000037 %	✓	
12	nickel { nickel(II) oxide (nickel monoxide) }	028-003-00-2	215-215-7 [1] 234-323-5 [2] - [3]	1313-99-1 [1] 11099-02-8 [2] 34492-97-2 [3]		35	mg/kg	1.273	41.245	mg/kg	0.00412 %	✓	
13	lead { lead compounds with the exception of those specified elsewhere in this Annex }	082-001-00-6			1	180	mg/kg		166.68	mg/kg	0.0167 %	✓	

#	Determinand	CLP index number	EC Number	CAS Number	CLP Note	User entered data		Conv. Factor	Compound conc.		Classification value	MC Applied	Conc. Not Used
14	selenium { selenium compounds with the exception of cadmium sulphoselenide and those specified elsewhere in this Annex }	034-002-00-8				0.9	mg/kg	1.405	1.171	mg/kg	0.000117 %	✓	
15	zinc { zinc oxide }	030-013-00-7	215-222-5	1314-13-2		150	mg/kg	1.245	172.891	mg/kg	0.0173 %	✓	
16	chromium in chromium(III) compounds { chromium(III) oxide }		215-160-9	1308-38-9		19	mg/kg	1.462	25.715	mg/kg	0.00257 %	✓	
17	chromium in chromium(VI) compounds { chromium(VI) oxide }	024-001-00-0	215-607-8	1333-82-0		<0.5	mg/kg	1.923	<0.962	mg/kg	<0.0000962 %		<LOD
18	TPH (C6 to C40) petroleum group			TPH		88	mg/kg		81.488	mg/kg	0.00815 %	✓	
19	benzene	601-020-00-8	200-753-7	71-43-2		<1	µg/kg		<0.001	mg/kg	<0.0000001 %		<LOD
20	toluene	601-021-00-3	203-625-9	108-88-3		<1	µg/kg		<0.001	mg/kg	<0.0000001 %		<LOD
21	ethylbenzene	601-023-00-4	202-849-4	100-41-4		<1	µg/kg		<0.001	mg/kg	<0.0000001 %		<LOD
22	tert-butyl methyl ether; MTBE; 2-methoxy-2-methylpropane	603-181-00-X	216-653-1	1634-04-4		<1	µg/kg		<0.001	mg/kg	<0.0000001 %		<LOD
23	naphthalene	601-052-00-2	202-049-5	91-20-3		<0.1	mg/kg		<0.1	mg/kg	<0.00001 %		<LOD
24	acenaphthylene		205-917-1	208-96-8		<0.1	mg/kg		<0.1	mg/kg	<0.00001 %		<LOD
25	acenaphthene		201-469-6	83-32-9		<0.1	mg/kg		<0.1	mg/kg	<0.00001 %		<LOD
26	fluorene		201-695-5	86-73-7		<0.1	mg/kg		<0.1	mg/kg	<0.00001 %		<LOD
27	phenanthrene		201-581-5	85-01-8		1	mg/kg		0.926	mg/kg	0.0000926 %	✓	
28	anthracene		204-371-1	120-12-7		0.18	mg/kg		0.167	mg/kg	0.0000167 %	✓	
29	fluoranthene		205-912-4	206-44-0		1.7	mg/kg		1.574	mg/kg	0.000157 %	✓	
30	pyrene		204-927-3	129-00-0		1.5	mg/kg		1.389	mg/kg	0.000139 %	✓	
31	benzo[a]anthracene	601-033-00-9	200-280-6	56-55-3		0.8	mg/kg		0.741	mg/kg	0.0000741 %	✓	
32	chrysene	601-048-00-0	205-923-4	218-01-9		0.89	mg/kg		0.824	mg/kg	0.0000824 %	✓	
33	benzo[b]fluoranthene	601-034-00-4	205-911-9	205-99-2		0.95	mg/kg		0.88	mg/kg	0.000088 %	✓	
34	benzo[k]fluoranthene	601-036-00-5	205-916-6	207-08-9		0.42	mg/kg		0.389	mg/kg	0.0000389 %	✓	
35	benzo[a]pyrene; benzo[def]chrysene	601-032-00-3	200-028-5	50-32-8		0.76	mg/kg		0.704	mg/kg	0.0000704 %	✓	
36	indeno[123-cd]pyrene		205-893-2	193-39-5		0.48	mg/kg		0.444	mg/kg	0.0000444 %	✓	
37	dibenz[a,h]anthracene	601-041-00-2	200-181-8	53-70-3		0.17	mg/kg		0.157	mg/kg	0.0000157 %	✓	
38	benzo[ghi]perylene		205-883-8	191-24-2		0.43	mg/kg		0.398	mg/kg	0.0000398 %	✓	
39	coronene		205-881-7	191-07-1		<0.1	mg/kg		<0.1	mg/kg	<0.00001 %		<LOD
40	polychlorobiphenyls; PCB	602-039-00-4	215-648-1	1336-36-3		<0.1	mg/kg		<0.1	mg/kg	<0.00001 %		<LOD

#		Determinand			CLP Note	User entered data		Conv. Factor	Compound conc.		Classification value	MC Applied	Conc. Not Used
		CLP index number	EC Number	CAS Number									
41	●	monohydric phenols		P1186		<0.1	mg/kg		<0.1	mg/kg	<0.00001 %		<LOD
42		xylene 601-022-00-9	202-422-2 [1] 203-396-5 [2] 203-576-3 [3] 215-535-7 [4]	95-47-6 [1] 106-42-3 [2] 108-38-3 [3] 1330-20-7 [4]		<2	µg/kg		<0.002	mg/kg	<0.0000002 %		<LOD
										Total:	0.0769 %		

Key

(yellow)	User supplied data
(grey)	Determinand values ignored for classification, see column 'Conc. Not Used' for reason
●	Determinand defined or amended by HazWasteOnline (see Appendix A)
	Speciated Deteminand - Unless the Determinand is Note 1, the Conversion Factor is used to calculate the compound concentration
<LOD	Below limit of detection
ND	Not detected
CLP: Note 1	Only the metal concentration has been used for classification

Supplementary Hazardous Property Information

HP 3(i): Flammable "flammable liquid waste: liquid waste having a flash point below 60°C or waste gas oil, diesel and light heating oils having a flash point > 55°C and <= 75°C"
Force this Hazardous property to non hazardous because HP 3 can be discounted as this is a solid waste without a free draining liquid phase.

Hazard Statements hit:

Flam. Liq. 3; H226 "Flammable liquid and vapour."

Because of determinand:

TPH (C6 to C40) petroleum group: (conc.: 0.00815%)

WAC results for sample: TP07-0.30

WAC Settings: samples in this Job constitute a single population.

WAC limits used to evaluate this sample: "Ireland"
The WAC used in this report are the WAC defined for the inert and non-hazardous classes of landfill in the Republic of Ireland. You should check the actual acceptance criteria when the disposal site is identified as they may differ from the generic WAC used in this report.

The sample FAILS the Inert (Inert waste landfill) criteria.

The sample PASSES the Non Haz (Non hazardous waste landfill) criteria.

WAC Determinands

Solid Waste Analysis				Landfill Waste Acceptance Criteria Limits	
#	Determinand		User entered data	Inert waste landfill	Non hazardous waste landfill
1	TOC (total organic carbon)	%	4	3	5
2	LOI (loss on ignition)	%	9	-	-
3	BTEX (benzene, toluene, ethylbenzene and xylenes)	mg/kg	<0.01	6	-
4	PCBs (polychlorinated biphenyls, 7 congeners)	mg/kg	<0.1	1	-
5	Mineral oil (C10 to C40)	mg/kg	88	500	-
6	PAHs (polycyclic aromatic hydrocarbons)	mg/kg	9.3	100	-
7	pH	pH	8.3	-	>6
8	ANC (acid neutralisation capacity)	mol/kg	0.014	-	-
Eluate Analysis 10:1					
9	arsenic	mg/kg	0.057	0.5	2
10	barium	mg/kg	0.13	20	100
11	cadmium	mg/kg	<0.0001	0.04	1
12	chromium	mg/kg	<0.0005	0.5	10
13	copper	mg/kg	0.061	2	50
14	mercury	mg/kg	<5.0e-05	0.01	0.2
15	molybdenum	mg/kg	0.05	0.5	10
16	nickel	mg/kg	0.011	0.4	10
17	lead	mg/kg	<0.0005	0.5	10
18	antimony	mg/kg	0.0056	0.06	0.7
19	selenium	mg/kg	0.0072	0.1	0.5
20	zinc	mg/kg	0.034	4	50
21	chloride	mg/kg	20	800	15,000
22	fluoride	mg/kg	2.2	10	150
23	sulphate	mg/kg	<10	1,000	20,000
24	phenol index	mg/kg	<0.3	1	-
25	DOC (dissolved organic carbon)	mg/kg	63	500	800
26	TDS (total dissolved solids)	mg/kg	1800	4,000	60,000

Key

User supplied data

Inert WAC criteria fail

Classification of sample: TP07-1.00

Non Hazardous Waste
Classified as **17 05 04**
in the List of Waste

Sample details

Sample name:		LoW Code:	
TP07-1.00		Chapter:	17: Construction and Demolition Wastes (including excavated soil from contaminated sites)
Sample Depth:			
1.00-1.00 m		Entry:	17 05 04 (Soil and stones other than those mentioned in 17 05 03)
Moisture content:			
8.2% (wet weight correction)			

Hazard properties

None identified

Determinands

Moisture content: 8.2% Wet Weight Moisture Correction applied (MC)

#	Determinand	CLP index number	EC Number	CAS Number	CLP Note	User entered data		Conv. Factor	Compound conc.		Classification value	MC Applied	Conc. Not Used
1	pH			PH		8.6	pH		8.6	pH	8.6 pH		
2	boron { diboron trioxide; boric oxide }	005-008-00-8	215-125-8	1303-86-2		0.58	mg/kg	3.22	1.714	mg/kg	0.000171 %	✓	
3	sulfur { sulfur }	016-094-00-1	231-722-6	7704-34-9		1.8	mg/kg		1.652	mg/kg	0.000165 %	✓	
4	cyanides { salts of hydrogen cyanide with the exception of complex cyanides such as ferrocyanides, ferricyanides and mercuric oxycyanide and those specified elsewhere in this Annex }	006-007-00-5				<0.5	mg/kg	1.884	<0.942	mg/kg	<0.0000942 %		<LOD
5	barium { barium oxide }		215-127-9	1304-28-5		67	mg/kg	1.117	68.672	mg/kg	0.00687 %	✓	
6	cadmium { cadmium oxide }	048-002-00-0	215-146-2	1306-19-0		1.6	mg/kg	1.142	1.678	mg/kg	0.000168 %	✓	
7	molybdenum { molybdenum(VI) oxide }	042-001-00-9	215-204-7	1313-27-5		3.5	mg/kg	1.5	4.82	mg/kg	0.000482 %	✓	
8	antimony { antimony compounds, with the exception of the tetroxide (Sb2O4), pentoxide (Sb2O5), trisulphide (Sb2S3), pentasulphide (Sb2S5) and those specified elsewhere in this Annex }	051-003-00-9			1	2	mg/kg		1.836	mg/kg	0.000184 %	✓	
9	arsenic { arsenic }	033-001-00-X	231-148-6	7440-38-2		17	mg/kg		15.606	mg/kg	0.00156 %	✓	
10	granulated copper; [particle length: from 0,9 mm to 6,0 mm; particle width: from 0,494 to 0,949 mm]	029-024-00-X	231-159-6	7440-50-8		53	mg/kg		48.654	mg/kg	0.00487 %	✓	
11	mercury { mercury }	080-001-00-0	231-106-7	7439-97-6		0.26	mg/kg		0.239	mg/kg	0.0000239 %	✓	
12	nickel { nickel(II) oxide (nickel monoxide) }	028-003-00-2	215-215-7 [1] 234-323-5 [2] - [3]	1313-99-1 [1] 11099-02-8 [2] 34492-97-2 [3]		36	mg/kg	1.273	42.057	mg/kg	0.00421 %	✓	
13	lead { lead compounds with the exception of those specified elsewhere in this Annex }	082-001-00-6			1	77	mg/kg		70.686	mg/kg	0.00707 %	✓	

#	Determinand	CLP index number	EC Number	CAS Number	CLP Note	User entered data		Conv. Factor	Compound conc.		Classification value	MC Applied	Conc. Not Used
14	selenium { selenium compounds with the exception of cadmium sulphoselenide and those specified elsewhere in this Annex }	034-002-00-8				0.61	mg/kg	1.405	0.787	mg/kg	0.0000787 %	✓	
15	zinc { zinc oxide }	030-013-00-7	215-222-5	1314-13-2		100	mg/kg	1.245	114.265	mg/kg	0.0114 %	✓	
16	chromium in chromium(III) compounds { chromium(III) oxide }		215-160-9	1308-38-9		19	mg/kg	1.462	25.492	mg/kg	0.00255 %	✓	
17	chromium in chromium(VI) compounds { chromium(VI) oxide }	024-001-00-0	215-607-8	1333-82-0		<0.5	mg/kg	1.923	<0.962	mg/kg	<0.0000962 %		<LOD
18	TPH (C6 to C40) petroleum group			TPH		98	mg/kg		89.964	mg/kg	0.009 %	✓	
19	benzene	601-020-00-8	200-753-7	71-43-2		<1	µg/kg		<0.001	mg/kg	<0.0000001 %		<LOD
20	toluene	601-021-00-3	203-625-9	108-88-3		<1	µg/kg		<0.001	mg/kg	<0.0000001 %		<LOD
21	ethylbenzene	601-023-00-4	202-849-4	100-41-4		<1	µg/kg		<0.001	mg/kg	<0.0000001 %		<LOD
22	tert-butyl methyl ether; MTBE; 2-methoxy-2-methylpropane	603-181-00-X	216-653-1	1634-04-4		<1	µg/kg		<0.001	mg/kg	<0.0000001 %		<LOD
23	naphthalene	601-052-00-2	202-049-5	91-20-3		<0.1	mg/kg		<0.1	mg/kg	<0.00001 %		<LOD
24	acenaphthylene		205-917-1	208-96-8		<0.1	mg/kg		<0.1	mg/kg	<0.00001 %		<LOD
25	acenaphthene		201-469-6	83-32-9		<0.1	mg/kg		<0.1	mg/kg	<0.00001 %		<LOD
26	fluorene		201-695-5	86-73-7		<0.1	mg/kg		<0.1	mg/kg	<0.00001 %		<LOD
27	phenanthrene		201-581-5	85-01-8		<0.1	mg/kg		<0.1	mg/kg	<0.00001 %		<LOD
28	anthracene		204-371-1	120-12-7		<0.1	mg/kg		<0.1	mg/kg	<0.00001 %		<LOD
29	fluoranthene		205-912-4	206-44-0		0.14	mg/kg		0.129	mg/kg	0.0000129 %	✓	
30	pyrene		204-927-3	129-00-0		0.13	mg/kg		0.119	mg/kg	0.0000119 %	✓	
31	benzo[a]anthracene	601-033-00-9	200-280-6	56-55-3		<0.1	mg/kg		<0.1	mg/kg	<0.00001 %		<LOD
32	chrysene	601-048-00-0	205-923-4	218-01-9		<0.1	mg/kg		<0.1	mg/kg	<0.00001 %		<LOD
33	benzo[b]fluoranthene	601-034-00-4	205-911-9	205-99-2		<0.1	mg/kg		<0.1	mg/kg	<0.00001 %		<LOD
34	benzo[k]fluoranthene	601-036-00-5	205-916-6	207-08-9		<0.1	mg/kg		<0.1	mg/kg	<0.00001 %		<LOD
35	benzo[a]pyrene; benzo[def]chrysene	601-032-00-3	200-028-5	50-32-8		<0.1	mg/kg		<0.1	mg/kg	<0.00001 %		<LOD
36	indeno[123-cd]pyrene		205-893-2	193-39-5		<0.1	mg/kg		<0.1	mg/kg	<0.00001 %		<LOD
37	dibenz[a,h]anthracene	601-041-00-2	200-181-8	53-70-3		<0.1	mg/kg		<0.1	mg/kg	<0.00001 %		<LOD
38	benzo[ghi]perylene		205-883-8	191-24-2		<0.1	mg/kg		<0.1	mg/kg	<0.00001 %		<LOD
39	coronene		205-881-7	191-07-1		<0.1	mg/kg		<0.1	mg/kg	<0.00001 %		<LOD
40	polychlorobiphenyls; PCB	602-039-00-4	215-648-1	1336-36-3		<0.1	mg/kg		<0.1	mg/kg	<0.00001 %		<LOD

#		Determinand			CLP Note	User entered data		Conv. Factor	Compound conc.		Classification value	MC Applied	Conc. Not Used
		CLP index number	EC Number	CAS Number									
41	●	monohydric phenols				<0.1	mg/kg		<0.1	mg/kg	<0.00001 %		<LOD
				P1186									
42		xylene				<2	µg/kg		<0.002	mg/kg	<0.0000002 %		<LOD
		601-022-00-9	202-422-2 [1] 203-396-5 [2] 203-576-3 [3] 215-535-7 [4]	95-47-6 [1] 106-42-3 [2] 108-38-3 [3] 1330-20-7 [4]									
										Total:	0.0492 %		

Key

(yellow)	User supplied data
(grey)	Determinand values ignored for classification, see column 'Conc. Not Used' for reason
●	Determinand defined or amended by HazWasteOnline (see Appendix A)
	Speciated Deteminand - Unless the Determinand is Note 1, the Conversion Factor is used to calculate the compound concentration
<LOD	Below limit of detection
ND	Not detected
CLP: Note 1	Only the metal concentration has been used for classification

Supplementary Hazardous Property Information

HP 3(i): Flammable "flammable liquid waste: liquid waste having a flash point below 60°C or waste gas oil, diesel and light heating oils having a flash point > 55°C and <= 75°C"

Force this Hazardous property to non hazardous because HP 3 can be discounted as this is a solid waste without a free draining liquid phase.

Hazard Statements hit:

Flam. Liq. 3; H226 "Flammable liquid and vapour."

Because of determinand:

TPH (C6 to C40) petroleum group: (conc.: 0.009%)

WAC results for sample: TP07-1.00

WAC Settings: samples in this Job constitute a single population.

WAC limits used to evaluate this sample: "Ireland"
The WAC used in this report are the WAC defined for the inert and non-hazardous classes of landfill in the Republic of Ireland. You should check the actual acceptance criteria when the disposal site is identified as they may differ from the generic WAC used in this report.

The sample PASSES the Inert (Inert waste landfill) criteria.

The sample PASSES the Non Haz (Non hazardous waste landfill) criteria.

WAC Determinands

Solid Waste Analysis				Landfill Waste Acceptance Criteria Limits	
#	Determinand		User entered data	Inert waste landfill	Non hazardous waste landfill
1	TOC (total organic carbon)	%	1.5	3	5
2	LOI (loss on ignition)	%	12	-	-
3	BTEX (benzene, toluene, ethylbenzene and xylenes)	mg/kg	<0.01	6	-
4	PCBs (polychlorinated biphenyls, 7 congeners)	mg/kg	<0.1	1	-
5	Mineral oil (C10 to C40)	mg/kg	98	500	-
6	PAHs (polycyclic aromatic hydrocarbons)	mg/kg	<2	100	-
7	pH	pH	8.6	-	>6
8	ANC (acid neutralisation capacity)	mol/kg	<0.002	-	-
Eluate Analysis 10:1					
9	arsenic	mg/kg	0.055	0.5	2
10	barium	mg/kg	<0.0005	20	100
11	cadmium	mg/kg	<0.0001	0.04	1
12	chromium	mg/kg	0.011	0.5	10
13	copper	mg/kg	0.028	2	50
14	mercury	mg/kg	<5.0e-05	0.01	0.2
15	molybdenum	mg/kg	0.2	0.5	10
16	nickel	mg/kg	<0.0005	0.4	10
17	lead	mg/kg	<0.0005	0.5	10
18	antimony	mg/kg	0.016	0.06	0.7
19	selenium	mg/kg	0.0097	0.1	0.5
20	zinc	mg/kg	<0.0025	4	50
21	chloride	mg/kg	<10	800	15,000
22	fluoride	mg/kg	4.7	10	150
23	sulphate	mg/kg	<10	1,000	20,000
24	phenol index	mg/kg	<0.3	1	-
25	DOC (dissolved organic carbon)	mg/kg	<50	500	800
26	TDS (total dissolved solids)	mg/kg	1200	4,000	60,000

Key

User supplied data

Classification of sample: TP08-0.30

Non Hazardous Waste
Classified as **17 05 04**
in the List of Waste

Sample details

Sample name:		LoW Code:	
TP08-0.30		Chapter:	17: Construction and Demolition Wastes (including excavated soil from contaminated sites)
Sample Depth:			
0.30-0.30 m		Entry:	17 05 04 (Soil and stones other than those mentioned in 17 05 03)
Moisture content:			
8.4% (wet weight correction)			

Hazard properties

None identified

Determinands

Moisture content: 8.4% Wet Weight Moisture Correction applied (MC)

#	Determinand	CLP index number	EC Number	CAS Number	CLP Note	User entered data		Conv. Factor	Compound conc.		Classification value	MC Applied	Conc. Not Used
1	pH			PH		8.3	pH		8.3	pH	8.3 pH		
2	boron { diboron trioxide; boric oxide }	005-008-00-8	215-125-8	1303-86-2		1.5	mg/kg	3.22	4.424	mg/kg	0.000442 %	✓	
3	sulfur { sulfur }	016-094-00-1	231-722-6	7704-34-9		12	mg/kg		10.992	mg/kg	0.0011 %	✓	
4	cyanides { salts of hydrogen cyanide with the exception of complex cyanides such as ferrocyanides, ferricyanides and mercuric oxycyanide and those specified elsewhere in this Annex }	006-007-00-5				<0.5	mg/kg	1.884	<0.942	mg/kg	<0.0000942 %		<LOD
5	barium { barium oxide }		215-127-9	1304-28-5		190	mg/kg	1.117	194.317	mg/kg	0.0194 %	✓	
6	cadmium { cadmium oxide }	048-002-00-0	215-146-2	1306-19-0		1.3	mg/kg	1.142	1.36	mg/kg	0.000136 %	✓	
7	molybdenum { molybdenum(VI) oxide }	042-001-00-9	215-204-7	1313-27-5		5	mg/kg	1.5	6.871	mg/kg	0.000687 %	✓	
8	antimony { antimony compounds, with the exception of the tetroxide (Sb2O4), pentoxide (Sb2O5), trisulphide (Sb2S3), pentasulphide (Sb2S5) and those specified elsewhere in this Annex }	051-003-00-9			1	4.6	mg/kg		4.214	mg/kg	0.000421 %	✓	
9	arsenic { arsenic }	033-001-00-X	231-148-6	7440-38-2		30	mg/kg		27.48	mg/kg	0.00275 %	✓	
10	granulated copper; [particle length: from 0,9 mm to 6,0 mm; particle width: from 0,494 to 0,949 mm]	029-024-00-X	231-159-6	7440-50-8		110	mg/kg		100.76	mg/kg	0.0101 %	✓	
11	mercury { mercury }	080-001-00-0	231-106-7	7439-97-6		0.84	mg/kg		0.769	mg/kg	0.0000769 %	✓	
12	nickel { nickel(II) oxide (nickel monoxide) }	028-003-00-2	215-215-7 [1] 234-323-5 [2] - [3]	1313-99-1 [1] 11099-02-8 [2] 34492-97-2 [3]		48	mg/kg	1.273	55.953	mg/kg	0.0056 %	✓	
13	lead { lead compounds with the exception of those specified elsewhere in this Annex }	082-001-00-6			1	450	mg/kg		412.2	mg/kg	0.0412 %	✓	

#	Determinand	CLP index number	EC Number	CAS Number	CLP Note	User entered data		Conv. Factor	Compound conc.		Classification value	MC Applied	Conc. Not Used
14	selenium { selenium compounds with the exception of cadmium sulphoselenide and those specified elsewhere in this Annex }	034-002-00-8				0.69	mg/kg	1.405	0.888	mg/kg	0.0000888 %	✓	
15	zinc { zinc oxide }	030-013-00-7	215-222-5	1314-13-2		210	mg/kg	1.245	239.433	mg/kg	0.0239 %	✓	
16	chromium in chromium(III) compounds { chromium(III) oxide }		215-160-9	1308-38-9		21	mg/kg	1.462	28.114	mg/kg	0.00281 %	✓	
17	chromium in chromium(VI) compounds { chromium(VI) oxide }	024-001-00-0	215-607-8	1333-82-0		<0.5	mg/kg	1.923	<0.962	mg/kg	<0.0000962 %		<LOD
18	TPH (C6 to C40) petroleum group			TPH		<10	mg/kg		<10	mg/kg	<0.001 %		<LOD
19	benzene	601-020-00-8	200-753-7	71-43-2		<1	µg/kg		<0.001	mg/kg	<0.0000001 %		<LOD
20	toluene	601-021-00-3	203-625-9	108-88-3		<1	µg/kg		<0.001	mg/kg	<0.0000001 %		<LOD
21	ethylbenzene	601-023-00-4	202-849-4	100-41-4		<1	µg/kg		<0.001	mg/kg	<0.0000001 %		<LOD
22	tert-butyl methyl ether; MTBE; 2-methoxy-2-methylpropane	603-181-00-X	216-653-1	1634-04-4		<1	µg/kg		<0.001	mg/kg	<0.0000001 %		<LOD
23	naphthalene	601-052-00-2	202-049-5	91-20-3		0.16	mg/kg		0.147	mg/kg	0.0000147 %	✓	
24	acenaphthylene		205-917-1	208-96-8		0.11	mg/kg		0.101	mg/kg	0.0000101 %	✓	
25	acenaphthene		201-469-6	83-32-9		0.1	mg/kg		0.0916	mg/kg	0.00000916 %	✓	
26	fluorene		201-695-5	86-73-7		0.12	mg/kg		0.11	mg/kg	0.000011 %	✓	
27	phenanthrene		201-581-5	85-01-8		1.1	mg/kg		1.008	mg/kg	0.000101 %	✓	
28	anthracene		204-371-1	120-12-7		0.39	mg/kg		0.357	mg/kg	0.0000357 %	✓	
29	fluoranthene		205-912-4	206-44-0		1.8	mg/kg		1.649	mg/kg	0.000165 %	✓	
30	pyrene		204-927-3	129-00-0		1.7	mg/kg		1.557	mg/kg	0.000156 %	✓	
31	benzo[a]anthracene	601-033-00-9	200-280-6	56-55-3		1	mg/kg		0.916	mg/kg	0.0000916 %	✓	
32	chrysene	601-048-00-0	205-923-4	218-01-9		1.1	mg/kg		1.008	mg/kg	0.000101 %	✓	
33	benzo[b]fluoranthene	601-034-00-4	205-911-9	205-99-2		1.3	mg/kg		1.191	mg/kg	0.000119 %	✓	
34	benzo[k]fluoranthene	601-036-00-5	205-916-6	207-08-9		0.46	mg/kg		0.421	mg/kg	0.0000421 %	✓	
35	benzo[a]pyrene; benzo[def]chrysene	601-032-00-3	200-028-5	50-32-8		1.1	mg/kg		1.008	mg/kg	0.000101 %	✓	
36	indeno[123-cd]pyrene		205-893-2	193-39-5		0.65	mg/kg		0.595	mg/kg	0.0000595 %	✓	
37	dibenz[a,h]anthracene	601-041-00-2	200-181-8	53-70-3		0.26	mg/kg		0.238	mg/kg	0.0000238 %	✓	
38	benzo[ghi]perylene		205-883-8	191-24-2		0.64	mg/kg		0.586	mg/kg	0.0000586 %	✓	
39	coronene		205-881-7	191-07-1		<0.1	mg/kg		<0.1	mg/kg	<0.00001 %		<LOD
40	polychlorobiphenyls; PCB	602-039-00-4	215-648-1	1336-36-3		<0.1	mg/kg		<0.1	mg/kg	<0.00001 %		<LOD

#		Determinand CLP index number / EC Number / CAS Number	CLP Note	User entered data		Conv. Factor	Compound conc.		Classification value	MC Applied	Conc. Not Used
41	●	monohydric phenols P1186		<0.1	mg/kg		<0.1	mg/kg	<0.00001 %		**<LOD**
42		xylene 601-022-00-9 / 202-422-2 [1], 203-396-5 [2], 203-576-3 [3], 215-535-7 [4] / 95-47-6 [1], 106-42-3 [2], 108-38-3 [3], 1330-20-7 [4]		<2	µg/kg		<0.002	mg/kg	<0.0000002 %		**<LOD**
							Total:		0.111 %		

Key

(yellow)	User supplied data
(grey)	Determinand values ignored for classification, see column 'Conc. Not Used' for reason
●	Determinand defined or amended by HazWasteOnline (see Appendix A)
	Speciated Deteminand - Unless the Determinand is Note 1, the Conversion Factor is used to calculate the compound concentration
<LOD	Below limit of detection
ND	Not detected
CLP: Note 1	Only the metal concentration has been used for classification

WAC results for sample: TP08-0.30

WAC Settings: samples in this Job constitute a single population.

WAC limits used to evaluate this sample: "Ireland"
The WAC used in this report are the WAC defined for the inert and non-hazardous classes of landfill in the Republic of Ireland. You should check the actual acceptance criteria when the disposal site is identified as they may differ from the generic WAC used in this report.

The sample FAILS the Inert (Inert waste landfill) criteria.

The sample FAILS the Non Haz (Non hazardous waste landfill) criteria.

WAC Determinands

Solid Waste Analysis				Landfill Waste Acceptance Criteria Limits	
#	Determinand		User entered data	Inert waste landfill	Non hazardous waste landfill
1	TOC (total organic carbon)	%	6.6	3	5
2	LOI (loss on ignition)	%	10	-	-
3	BTEX (benzene, toluene, ethylbenzene and xylenes)	mg/kg	<0.01	6	-
4	PCBs (polychlorinated biphenyls, 7 congeners)	mg/kg	<0.1	1	-
5	Mineral oil (C10 to C40)	mg/kg	<10	500	-
6	PAHs (polycyclic aromatic hydrocarbons)	mg/kg	12	100	-
7	pH	pH	8.3	-	>6
8	ANC (acid neutralisation capacity)	mol/kg	0.007	-	-
Eluate Analysis 10:1					
9	arsenic	mg/kg	0.14	0.5	2
10	barium	mg/kg	0.063	20	100
11	cadmium	mg/kg	<0.0001	0.04	1
12	chromium	mg/kg	<0.0005	0.5	10
13	copper	mg/kg	0.03	2	50
14	mercury	mg/kg	<5.0e-05	0.01	0.2
15	molybdenum	mg/kg	0.11	0.5	10
16	nickel	mg/kg	0.0054	0.4	10
17	lead	mg/kg	<0.0005	0.5	10
18	antimony	mg/kg	0.031	0.06	0.7
19	selenium	mg/kg	0.0097	0.1	0.5
20	zinc	mg/kg	<0.0025	4	50
21	chloride	mg/kg	<10	800	15,000
22	fluoride	mg/kg	2.9	10	150
23	sulphate	mg/kg	<10	1,000	20,000
24	phenol index	mg/kg	<0.3	1	-
25	DOC (dissolved organic carbon)	mg/kg	<50	500	800
26	TDS (total dissolved solids)	mg/kg	1200	4,000	60,000

Key

(yellow)	User supplied data
(blue)	Inert WAC criteria fail
(magenta)	Non Hazardous WAC criteria fail

Classification of sample: TP08-1.00

Non Hazardous Waste
Classified as **17 05 04**
in the List of Waste

Sample details

Sample name:		LoW Code:	
TP08-1.00		Chapter:	17: Construction and Demolition Wastes (including excavated soil from contaminated sites)
Sample Depth:			
1.00-1.00 m		Entry:	17 05 04 (Soil and stones other than those mentioned in 17 05 03)
Moisture content:			
12% (wet weight correction)			

Hazard properties

None identified

Determinands

Moisture content: 12% Wet Weight Moisture Correction applied (MC)

#	Determinand	CLP index number	EC Number	CAS Number	CLP Note	User entered data		Conv. Factor	Compound conc.		Classification value	MC Applied	Conc. Not Used
1	pH			PH		8.4	pH		8.4	pH	8.4 pH		
2	boron { diboron trioxide; boric oxide }	005-008-00-8	215-125-8	1303-86-2		0.73	mg/kg	3.22	2.068	mg/kg	0.000207 %	✓	
3	sulfur { sulfur }	016-094-00-1	231-722-6	7704-34-9		<1	mg/kg		<1	mg/kg	<0.0001 %		<LOD
4	cyanides { salts of hydrogen cyanide with the exception of complex cyanides such as ferrocyanides, ferricyanides and mercuric oxycyanide and those specified elsewhere in this Annex }	006-007-00-5				<0.5	mg/kg	1.884	<0.942	mg/kg	<0.0000942 %		<LOD
5	barium { barium oxide }		215-127-9	1304-28-5		56	mg/kg	1.117	55.021	mg/kg	0.0055 %	✓	
6	cadmium { cadmium oxide }	048-002-00-0	215-146-2	1306-19-0		1	mg/kg	1.142	1.005	mg/kg	0.000101 %	✓	
7	molybdenum { molybdenum(VI) oxide }	042-001-00-9	215-204-7	1313-27-5		<2	mg/kg	1.5	<3	mg/kg	<0.0003 %		<LOD
8	antimony { antimony compounds, with the exception of the tetroxide (Sb2O4), pentoxide (Sb2O5), trisulphide (Sb2S3), pentasulphide (Sb2S5) and those specified elsewhere in this Annex }	051-003-00-9			1	<2	mg/kg		<2	mg/kg	<0.0002 %		<LOD
9	arsenic { arsenic }	033-001-00-X	231-148-6	7440-38-2		12	mg/kg		10.56	mg/kg	0.00106 %	✓	
10	granulated copper; [particle length: from 0,9 mm to 6,0 mm; particle width: from 0,494 to 0,949 mm]	029-024-00-X	231-159-6	7440-50-8		34	mg/kg		29.92	mg/kg	0.00299 %	✓	
11	mercury { mercury }	080-001-00-0	231-106-7	7439-97-6		0.25	mg/kg		0.22	mg/kg	0.000022 %	✓	
12	nickel { nickel(II) oxide (nickel monoxide) }	028-003-00-2	215-215-7 [1] 234-323-5 [2] - [3]	1313-99-1 [1] 11099-02-8 [2] 34492-97-2 [3]		29	mg/kg	1.273	32.477	mg/kg	0.00325 %	✓	
13	lead { lead compounds with the exception of those specified elsewhere in this Annex }	082-001-00-6			1	29	mg/kg		25.52	mg/kg	0.00255 %	✓	

#	Determinand	CLP index number	EC Number	CAS Number	CLP Note	User entered data		Conv. Factor	Compound conc.		Classification value	MC Applied	Conc. Not Used
14	selenium { selenium compounds with the exception of cadmium sulphoselenide and those specified elsewhere in this Annex }	034-002-00-8				<0.2	mg/kg	1.405	<0.281	mg/kg	<0.0000281 %		<LOD
15	zinc { zinc oxide }	030-013-00-7	215-222-5	1314-13-2		66	mg/kg	1.245	72.293	mg/kg	0.00723 %	✓	
16	chromium in chromium(III) compounds { chromium(III) oxide }		215-160-9	1308-38-9		20	mg/kg	1.462	25.723	mg/kg	0.00257 %	✓	
17	chromium in chromium(VI) compounds { chromium(VI) oxide }	024-001-00-0	215-607-8	1333-82-0		<0.5	mg/kg	1.923	<0.962	mg/kg	<0.0000962 %		<LOD
18	TPH (C6 to C40) petroleum group			TPH		<10	mg/kg		<10	mg/kg	<0.001 %		<LOD
19	benzene	601-020-00-8	200-753-7	71-43-2		<1	µg/kg		<0.001	mg/kg	<0.0000001 %		<LOD
20	toluene	601-021-00-3	203-625-9	108-88-3		<1	µg/kg		<0.001	mg/kg	<0.0000001 %		<LOD
21	ethylbenzene	601-023-00-4	202-849-4	100-41-4		<1	µg/kg		<0.001	mg/kg	<0.0000001 %		<LOD
22	tert-butyl methyl ether; MTBE; 2-methoxy-2-methylpropane	603-181-00-X	216-653-1	1634-04-4		<1	µg/kg		<0.001	mg/kg	<0.0000001 %		<LOD
23	naphthalene	601-052-00-2	202-049-5	91-20-3		<0.1	mg/kg		<0.1	mg/kg	<0.00001 %		<LOD
24	acenaphthylene		205-917-1	208-96-8		<0.1	mg/kg		<0.1	mg/kg	<0.00001 %		<LOD
25	acenaphthene		201-469-6	83-32-9		<0.1	mg/kg		<0.1	mg/kg	<0.00001 %		<LOD
26	fluorene		201-695-5	86-73-7		<0.1	mg/kg		<0.1	mg/kg	<0.00001 %		<LOD
27	phenanthrene		201-581-5	85-01-8		<0.1	mg/kg		<0.1	mg/kg	<0.00001 %		<LOD
28	anthracene		204-371-1	120-12-7		<0.1	mg/kg		<0.1	mg/kg	<0.00001 %		<LOD
29	fluoranthene		205-912-4	206-44-0		<0.1	mg/kg		<0.1	mg/kg	<0.00001 %		<LOD
30	pyrene		204-927-3	129-00-0		<0.1	mg/kg		<0.1	mg/kg	<0.00001 %		<LOD
31	benzo[a]anthracene	601-033-00-9	200-280-6	56-55-3		<0.1	mg/kg		<0.1	mg/kg	<0.00001 %		<LOD
32	chrysene	601-048-00-0	205-923-4	218-01-9		<0.1	mg/kg		<0.1	mg/kg	<0.00001 %		<LOD
33	benzo[b]fluoranthene	601-034-00-4	205-911-9	205-99-2		<0.1	mg/kg		<0.1	mg/kg	<0.00001 %		<LOD
34	benzo[k]fluoranthene	601-036-00-5	205-916-6	207-08-9		<0.1	mg/kg		<0.1	mg/kg	<0.00001 %		<LOD
35	benzo[a]pyrene; benzo[def]chrysene	601-032-00-3	200-028-5	50-32-8		<0.1	mg/kg		<0.1	mg/kg	<0.00001 %		<LOD
36	indeno[123-cd]pyrene		205-893-2	193-39-5		<0.1	mg/kg		<0.1	mg/kg	<0.00001 %		<LOD
37	dibenz[a,h]anthracene	601-041-00-2	200-181-8	53-70-3		<0.1	mg/kg		<0.1	mg/kg	<0.00001 %		<LOD
38	benzo[ghi]perylene		205-883-8	191-24-2		<0.1	mg/kg		<0.1	mg/kg	<0.00001 %		<LOD
39	coronene		205-881-7	191-07-1		<0.1	mg/kg		<0.1	mg/kg	<0.00001 %		<LOD
40	polychlorobiphenyls; PCB	602-039-00-4	215-648-1	1336-36-3		<0.1	mg/kg		<0.1	mg/kg	<0.00001 %		<LOD

#		Determinand			CLP Note	User entered data		Conv. Factor	Compound conc.		Classification value	MC Applied	Conc. Not Used
		CLP index number	EC Number	CAS Number									
41	●	monohydric phenols		P1186		<0.1	mg/kg		<0.1	mg/kg	<0.00001 %		**<LOD**
42		xylene 601-022-00-9	202-422-2 [1] 203-396-5 [2] 203-576-3 [3] 215-535-7 [4]	95-47-6 [1] 106-42-3 [2] 108-38-3 [3] 1330-20-7 [4]		<2	µg/kg		<0.002	mg/kg	<0.0000002 %		**<LOD**
										Total:	0.0275 %		

Key

	User supplied data
	Determinand values ignored for classification, see column 'Conc. Not Used' for reason
●	Determinand defined or amended by HazWasteOnline (see Appendix A)
	Speciated Deteminand - Unless the Determinand is Note 1, the Conversion Factor is used to calculate the compound concentration
<LOD	Below limit of detection
ND	Not detected
CLP: Note 1	Only the metal concentration has been used for classification

WAC results for sample: TP08-1.00

WAC Settings: samples in this Job constitute a single population.

WAC limits used to evaluate this sample: "Ireland"
The WAC used in this report are the WAC defined for the inert and non-hazardous classes of landfill in the Republic of Ireland. You should check the actual acceptance criteria when the disposal site is identified as they may differ from the generic WAC used in this report.

The sample PASSES the Inert (Inert waste landfill) criteria.

The sample PASSES the Non Haz (Non hazardous waste landfill) criteria.

WAC Determinands

Solid Waste Analysis				Landfill Waste Acceptance Criteria Limits	
#	Determinand		User entered data	Inert waste landfill	Non hazardous waste landfill
1	TOC (total organic carbon)	%	1.8	3	5
2	LOI (loss on ignition)	%	2.9	-	-
3	BTEX (benzene, toluene, ethylbenzene and xylenes)	mg/kg	<0.01	6	-
4	PCBs (polychlorinated biphenyls, 7 congeners)	mg/kg	<0.1	1	-
5	Mineral oil (C10 to C40)	mg/kg	<10	500	-
6	PAHs (polycyclic aromatic hydrocarbons)	mg/kg	<2	100	-
7	pH	pH	8.4	-	>6
8	ANC (acid neutralisation capacity)	mol/kg	0.007	-	-
Eluate Analysis 10:1					
9	arsenic	mg/kg	0.0098	0.5	2
10	barium	mg/kg	<0.0005	20	100
11	cadmium	mg/kg	<0.0001	0.04	1
12	chromium	mg/kg	0.01	0.5	10
13	copper	mg/kg	0.01	2	50
14	mercury	mg/kg	<5.0e-05	0.01	0.2
15	molybdenum	mg/kg	0.18	0.5	10
16	nickel	mg/kg	<0.0005	0.4	10
17	lead	mg/kg	<0.0005	0.5	10
18	antimony	mg/kg	0.0072	0.06	0.7
19	selenium	mg/kg	<0.0005	0.1	0.5
20	zinc	mg/kg	<0.0025	4	50
21	chloride	mg/kg	<10	800	15,000
22	fluoride	mg/kg	2.3	10	150
23	sulphate	mg/kg	11	1,000	20,000
24	phenol index	mg/kg	<0.3	1	-
25	DOC (dissolved organic carbon)	mg/kg	<50	500	800
26	TDS (total dissolved solids)	mg/kg	780	4,000	60,000

Key

User supplied data

Classification of sample: TP13-0.30

Non Hazardous Waste
Classified as **17 05 04**
in the List of Waste

Sample details

Sample name:		LoW Code:	
TP13-0.30		Chapter:	17: Construction and Demolition Wastes (including excavated soil from contaminated sites)
Sample Depth:			
0.30-0.30 m		Entry:	17 05 04 (Soil and stones other than those mentioned in 17 05 03)
Moisture content:			
5.1% (wet weight correction)			

Hazard properties

None identified

Determinands

Moisture content: 5.1% Wet Weight Moisture Correction applied (MC)

#	Determinand	CLP index number	EC Number	CAS Number	CLP Note	User entered data		Conv. Factor	Compound conc.		Classification value	MC Applied	Conc. Not Used
1	pH			PH		8.6	pH		8.6	pH	8.6 pH		
2	boron { diboron trioxide; boric oxide }	005-008-00-8	215-125-8	1303-86-2		0.92	mg/kg	3.22	2.811	mg/kg	0.000281 %	✓	
3	sulfur { sulfur }	016-094-00-1	231-722-6	7704-34-9		<1	mg/kg		<1	mg/kg	<0.0001 %		**<LOD**
4	cyanides { salts of hydrogen cyanide with the exception of complex cyanides such as ferrocyanides, ferricyanides and mercuric oxycyanide and those specified elsewhere in this Annex }	006-007-00-5				<0.5	mg/kg	1.884	<0.942	mg/kg	<0.0000942 %		**<LOD**
5	barium { barium oxide }		215-127-9	1304-28-5		60	mg/kg	1.117	63.574	mg/kg	0.00636 %	✓	
6	cadmium { cadmium oxide }	048-002-00-0	215-146-2	1306-19-0		2.4	mg/kg	1.142	2.602	mg/kg	0.00026 %	✓	
7	molybdenum { molybdenum(VI) oxide }	042-001-00-9	215-204-7	1313-27-5		3.8	mg/kg	1.5	5.41	mg/kg	0.000541 %	✓	
8	antimony { antimony compounds, with the exception of the tetroxide (Sb2O4), pentoxide (Sb2O5), trisulphide (Sb2S3), pentasulphide (Sb2S5) and those specified elsewhere in this Annex }	051-003-00-9			1	2	mg/kg		1.898	mg/kg	0.00019 %	✓	
9	arsenic { arsenic }	033-001-00-X	231-148-6	7440-38-2		25	mg/kg		23.725	mg/kg	0.00237 %	✓	
10	granulated copper; [particle length: from 0,9 mm to 6,0 mm; particle width: from 0,494 to 0,949 mm]	029-024-00-X	231-159-6	7440-50-8		50	mg/kg		47.45	mg/kg	0.00475 %	✓	
11	mercury { mercury }	080-001-00-0	231-106-7	7439-97-6		0.13	mg/kg		0.123	mg/kg	0.0000123 %	✓	
12	nickel { nickel(II) oxide (nickel monoxide) }	028-003-00-2	215-215-7 [1] 234-323-5 [2] - [3]	1313-99-1 [1] 11099-02-8 [2] 34492-97-2 [3]		44	mg/kg	1.273	53.138	mg/kg	0.00531 %	✓	
13	lead { lead compounds with the exception of those specified elsewhere in this Annex }	082-001-00-6			1	40	mg/kg		37.96	mg/kg	0.0038 %	✓	

#		Determinand	CLP index number	EC Number	CAS Number	CLP Note	User entered data		Conv. Factor	Compound conc.		Classification value	MC Applied	Conc. Not Used
14		selenium { selenium compounds with the exception of cadmium sulphoselenide and those specified elsewhere in this Annex }	034-002-00-8				0.24	mg/kg	1.405	0.32	mg/kg	0.000032 %	✓	
15		zinc { zinc oxide }	030-013-00-7	215-222-5	1314-13-2		73	mg/kg	1.245	86.23	mg/kg	0.00862 %	✓	
16		chromium in chromium(III) compounds { chromium(III) oxide }		215-160-9	1308-38-9		19	mg/kg	1.462	26.353	mg/kg	0.00264 %	✓	
17		chromium in chromium(VI) compounds { chromium(VI) oxide }	024-001-00-0	215-607-8	1333-82-0		<0.5	mg/kg	1.923	<0.962	mg/kg	<0.0000962 %		<LOD
18		TPH (C6 to C40) petroleum group			TPH		130	mg/kg		123.37	mg/kg	0.0123 %	✓	
19		benzene	601-020-00-8	200-753-7	71-43-2		<1	µg/kg		<0.001	mg/kg	<0.0000001 %		<LOD
20		toluene	601-021-00-3	203-625-9	108-88-3		<1	µg/kg		<0.001	mg/kg	<0.0000001 %		<LOD
21		ethylbenzene	601-023-00-4	202-849-4	100-41-4		<1	µg/kg		<0.001	mg/kg	<0.0000001 %		<LOD
22		tert-butyl methyl ether; MTBE; 2-methoxy-2-methylpropane	603-181-00-X	216-653-1	1634-04-4		<1	µg/kg		<0.001	mg/kg	<0.0000001 %		<LOD
23		naphthalene	601-052-00-2	202-049-5	91-20-3		<0.1	mg/kg		<0.1	mg/kg	<0.00001 %		<LOD
24		acenaphthylene		205-917-1	208-96-8		<0.1	mg/kg		<0.1	mg/kg	<0.00001 %		<LOD
25		acenaphthene		201-469-6	83-32-9		<0.1	mg/kg		<0.1	mg/kg	<0.00001 %		<LOD
26		fluorene		201-695-5	86-73-7		<0.1	mg/kg		<0.1	mg/kg	<0.00001 %		<LOD
27		phenanthrene		201-581-5	85-01-8		<0.1	mg/kg		<0.1	mg/kg	<0.00001 %		<LOD
28		anthracene		204-371-1	120-12-7		<0.1	mg/kg		<0.1	mg/kg	<0.00001 %		<LOD
29		fluoranthene		205-912-4	206-44-0		<0.1	mg/kg		<0.1	mg/kg	<0.00001 %		<LOD
30		pyrene		204-927-3	129-00-0		<0.1	mg/kg		<0.1	mg/kg	<0.00001 %		<LOD
31		benzo[a]anthracene	601-033-00-9	200-280-6	56-55-3		<0.1	mg/kg		<0.1	mg/kg	<0.00001 %		<LOD
32		chrysene	601-048-00-0	205-923-4	218-01-9		<0.1	mg/kg		<0.1	mg/kg	<0.00001 %		<LOD
33		benzo[b]fluoranthene	601-034-00-4	205-911-9	205-99-2		<0.1	mg/kg		<0.1	mg/kg	<0.00001 %		<LOD
34		benzo[k]fluoranthene	601-036-00-5	205-916-6	207-08-9		<0.1	mg/kg		<0.1	mg/kg	<0.00001 %		<LOD
35		benzo[a]pyrene; benzo[def]chrysene	601-032-00-3	200-028-5	50-32-8		<0.1	mg/kg		<0.1	mg/kg	<0.00001 %		<LOD
36		indeno[123-cd]pyrene		205-893-2	193-39-5		<0.1	mg/kg		<0.1	mg/kg	<0.00001 %		<LOD
37		dibenz[a,h]anthracene	601-041-00-2	200-181-8	53-70-3		<0.1	mg/kg		<0.1	mg/kg	<0.00001 %		<LOD
38		benzo[ghi]perylene		205-883-8	191-24-2		<0.1	mg/kg		<0.1	mg/kg	<0.00001 %		<LOD
39		coronene		205-881-7	191-07-1		<0.1	mg/kg		<0.1	mg/kg	<0.00001 %		<LOD
40		polychlorobiphenyls; PCB	602-039-00-4	215-648-1	1336-36-3		<0.1	mg/kg		<0.1	mg/kg	<0.00001 %		<LOD

#		Determinand			CLP Note	User entered data		Conv. Factor	Compound conc.		Classification value	MC Applied	Conc. Not Used
		CLP index number	EC Number	CAS Number									
41	●	monohydric phenols		P1186		<0.1	mg/kg		<0.1	mg/kg	<0.00001 %		<LOD
42		xylene 601-022-00-9	202-422-2 [1] 203-396-5 [2] 203-576-3 [3] 215-535-7 [4]	95-47-6 [1] 106-42-3 [2] 108-38-3 [3] 1330-20-7 [4]		<2	µg/kg		<0.002	mg/kg	<0.0000002 %		<LOD
										Total:	0.048 %		

Key

(yellow)	User supplied data
(grey)	Determinand values ignored for classification, see column 'Conc. Not Used' for reason
●	Determinand defined or amended by HazWasteOnline (see Appendix A)
	Speciated Deteminand - Unless the Determinand is Note 1, the Conversion Factor is used to calculate the compound concentration
<LOD	Below limit of detection
ND	Not detected
CLP: Note 1	Only the metal concentration has been used for classification

Supplementary Hazardous Property Information

HP 3(i): Flammable "flammable liquid waste: liquid waste having a flash point below 60°C or waste gas oil, diesel and light heating oils having a flash point > 55°C and <= 75°C"

Force this Hazardous property to non hazardous because HP 3 can be discounted as this is a solid waste without a free draining liquid phase.

Hazard Statements hit:

Flam. Liq. 3; H226 "Flammable liquid and vapour."

Because of determinand:

TPH (C6 to C40) petroleum group: (conc.: 0.0123%)

WAC results for sample: TP13-0.30

WAC Settings: samples in this Job constitute a single population.

WAC limits used to evaluate this sample: "Ireland"
The WAC used in this report are the WAC defined for the inert and non-hazardous classes of landfill in the Republic of Ireland. You should check the actual acceptance criteria when the disposal site is identified as they may differ from the generic WAC used in this report.

The sample PASSES the Inert (Inert waste landfill) criteria.

The sample PASSES the Non Haz (Non hazardous waste landfill) criteria.

WAC Determinands

Solid Waste Analysis				Landfill Waste Acceptance Criteria Limits	
#	Determinand		User entered data	Inert waste landfill	Non hazardous waste landfill
1	TOC (total organic carbon)	%	1.8	3	5
2	LOI (loss on ignition)	%	4.6	-	-
3	BTEX (benzene, toluene, ethylbenzene and xylenes)	mg/kg	<0.01	6	-
4	PCBs (polychlorinated biphenyls, 7 congeners)	mg/kg	<0.1	1	-
5	Mineral oil (C10 to C40)	mg/kg	130	500	-
6	PAHs (polycyclic aromatic hydrocarbons)	mg/kg	<2	100	-
7	pH	pH	8.6	-	>6
8	ANC (acid neutralisation capacity)	mol/kg	0.014	-	-
Eluate Analysis 10:1					
9	arsenic	mg/kg	0.0063	0.5	2
10	barium	mg/kg	<0.0005	20	100
11	cadmium	mg/kg	<0.0001	0.04	1
12	chromium	mg/kg	<0.0005	0.5	10
13	copper	mg/kg	0.02	2	50
14	mercury	mg/kg	<5.0e-05	0.01	0.2
15	molybdenum	mg/kg	0.063	0.5	10
16	nickel	mg/kg	<0.0005	0.4	10
17	lead	mg/kg	<0.0005	0.5	10
18	antimony	mg/kg	0.0052	0.06	0.7
19	selenium	mg/kg	0.0062	0.1	0.5
20	zinc	mg/kg	<0.0025	4	50
21	chloride	mg/kg	<10	800	15,000
22	fluoride	mg/kg	3.2	10	150
23	sulphate	mg/kg	<10	1,000	20,000
24	phenol index	mg/kg	<0.3	1	-
25	DOC (dissolved organic carbon)	mg/kg	54	500	800
26	TDS (total dissolved solids)	mg/kg	720	4,000	60,000

Key

User supplied data

Classification of sample: TP13-1.00

Non Hazardous Waste
Classified as **17 05 04**
in the List of Waste

Sample details

Sample name:		LoW Code:	
TP13-1.00		Chapter:	17: Construction and Demolition Wastes (including excavated soil from contaminated sites)
Sample Depth:			
1.00-1.00 m		Entry:	17 05 04 (Soil and stones other than those mentioned in 17 05 03)
Moisture content:			
2.4% (wet weight correction)			

Hazard properties

None identified

Determinands

Moisture content: 2.4% Wet Weight Moisture Correction applied (MC)

#	Determinand	CLP index number	EC Number	CAS Number	CLP Note	User entered data		Conv. Factor	Compound conc.		Classification value	MC Applied	Conc. Not Used
1	pH			PH		8.8	pH		8.8	pH	8.8 pH		
2	boron { diboron trioxide; boric oxide }	005-008-00-8	215-125-8	1303-86-2		<0.4	mg/kg	3.22	<1.288	mg/kg	<0.000129 %		<LOD
3	sulfur { sulfur }	016-094-00-1	231-722-6	7704-34-9		<1	mg/kg		<1	mg/kg	<0.0001 %		<LOD
4	cyanides { salts of hydrogen cyanide with the exception of complex cyanides such as ferrocyanides, ferricyanides and mercuric oxycyanide and those specified elsewhere in this Annex }	006-007-00-5				0.7	mg/kg	1.884	1.287	mg/kg	0.000129 %	✓	
5	barium { barium oxide }		215-127-9	1304-28-5		84	mg/kg	1.117	91.536	mg/kg	0.00915 %	✓	
6	cadmium { cadmium oxide }	048-002-00-0	215-146-2	1306-19-0		1.2	mg/kg	1.142	1.338	mg/kg	0.000134 %	✓	
7	molybdenum { molybdenum(VI) oxide }	042-001-00-9	215-204-7	1313-27-5		2.8	mg/kg	1.5	4.1	mg/kg	0.00041 %	✓	
8	antimony { antimony compounds, with the exception of the tetroxide (Sb2O4), pentoxide (Sb2O5), trisulphide (Sb2S3), pentasulphide (Sb2S5) and those specified elsewhere in this Annex }	051-003-00-9			1	2.2	mg/kg		2.147	mg/kg	0.000215 %	✓	
9	arsenic { arsenic }	033-001-00-X	231-148-6	7440-38-2		17	mg/kg		16.592	mg/kg	0.00166 %	✓	
10	granulated copper; [particle length: from 0,9 mm to 6,0 mm; particle width: from 0,494 to 0,949 mm]	029-024-00-X	231-159-6	7440-50-8		54	mg/kg		52.704	mg/kg	0.00527 %	✓	
11	mercury { mercury }	080-001-00-0	231-106-7	7439-97-6		0.71	mg/kg		0.693	mg/kg	0.0000693 %	✓	
12	nickel { nickel(II) oxide (nickel monoxide) }	028-003-00-2	215-215-7 [1] 234-323-5 [2] - [3]	1313-99-1 [1] 11099-02-8 [2] 34492-97-2 [3]		32	mg/kg	1.273	39.746	mg/kg	0.00397 %	✓	
13	lead { lead compounds with the exception of those specified elsewhere in this Annex }	082-001-00-6			1	190	mg/kg		185.44	mg/kg	0.0185 %	✓	

#	Determinand	CLP index number	EC Number	CAS Number	CLP Note	User entered data		Conv. Factor	Compound conc.		Classification value	MC Applied	Conc. Not Used
14	selenium { selenium compounds with the exception of cadmium sulphoselenide and those specified elsewhere in this Annex }	034-002-00-8				0.68	mg/kg	1.405	0.932	mg/kg	0.0000932 %	✓	
15	zinc { zinc oxide }	030-013-00-7	215-222-5	1314-13-2		130	mg/kg	1.245	157.929	mg/kg	0.0158 %	✓	
16	chromium in chromium(III) compounds { chromium(III) oxide }		215-160-9	1308-38-9		19	mg/kg	1.462	27.103	mg/kg	0.00271 %	✓	
17	chromium in chromium(VI) compounds { chromium(VI) oxide }	024-001-00-0	215-607-8	1333-82-0		<0.5	mg/kg	1.923	<0.962	mg/kg	<0.0000962 %		<LOD
18	TPH (C6 to C40) petroleum group			TPH		<10	mg/kg		<10	mg/kg	<0.001 %		<LOD
19	benzene	601-020-00-8	200-753-7	71-43-2		<1	µg/kg		<0.001	mg/kg	<0.0000001 %		<LOD
20	toluene	601-021-00-3	203-625-9	108-88-3		<1	µg/kg		<0.001	mg/kg	<0.0000001 %		<LOD
21	ethylbenzene	601-023-00-4	202-849-4	100-41-4		<1	µg/kg		<0.001	mg/kg	<0.0000001 %		<LOD
22	tert-butyl methyl ether; MTBE; 2-methoxy-2-methylpropane	603-181-00-X	216-653-1	1634-04-4		<1	µg/kg		<0.001	mg/kg	<0.0000001 %		<LOD
23	naphthalene	601-052-00-2	202-049-5	91-20-3		<0.1	mg/kg		<0.1	mg/kg	<0.00001 %		<LOD
24	acenaphthylene		205-917-1	208-96-8		<0.1	mg/kg		<0.1	mg/kg	<0.00001 %		<LOD
25	acenaphthene		201-469-6	83-32-9		<0.1	mg/kg		<0.1	mg/kg	<0.00001 %		<LOD
26	fluorene		201-695-5	86-73-7		<0.1	mg/kg		<0.1	mg/kg	<0.00001 %		<LOD
27	phenanthrene		201-581-5	85-01-8		<0.1	mg/kg		<0.1	mg/kg	<0.00001 %		<LOD
28	anthracene		204-371-1	120-12-7		<0.1	mg/kg		<0.1	mg/kg	<0.00001 %		<LOD
29	fluoranthene		205-912-4	206-44-0		<0.1	mg/kg		<0.1	mg/kg	<0.00001 %		<LOD
30	pyrene		204-927-3	129-00-0		<0.1	mg/kg		<0.1	mg/kg	<0.00001 %		<LOD
31	benzo[a]anthracene	601-033-00-9	200-280-6	56-55-3		<0.1	mg/kg		<0.1	mg/kg	<0.00001 %		<LOD
32	chrysene	601-048-00-0	205-923-4	218-01-9		<0.1	mg/kg		<0.1	mg/kg	<0.00001 %		<LOD
33	benzo[b]fluoranthene	601-034-00-4	205-911-9	205-99-2		<0.1	mg/kg		<0.1	mg/kg	<0.00001 %		<LOD
34	benzo[k]fluoranthene	601-036-00-5	205-916-6	207-08-9		<0.1	mg/kg		<0.1	mg/kg	<0.00001 %		<LOD
35	benzo[a]pyrene; benzo[def]chrysene	601-032-00-3	200-028-5	50-32-8		<0.1	mg/kg		<0.1	mg/kg	<0.00001 %		<LOD
36	indeno[123-cd]pyrene		205-893-2	193-39-5		<0.1	mg/kg		<0.1	mg/kg	<0.00001 %		<LOD
37	dibenz[a,h]anthracene	601-041-00-2	200-181-8	53-70-3		<0.1	mg/kg		<0.1	mg/kg	<0.00001 %		<LOD
38	benzo[ghi]perylene		205-883-8	191-24-2		<0.1	mg/kg		<0.1	mg/kg	<0.00001 %		<LOD
39	coronene		205-881-7	191-07-1		<0.1	mg/kg		<0.1	mg/kg	<0.00001 %		<LOD
40	polychlorobiphenyls; PCB	602-039-00-4	215-648-1	1336-36-3		<0.1	mg/kg		<0.1	mg/kg	<0.00001 %		<LOD

#		Determinand			CLP Note	User entered data		Conv. Factor	Compound conc.		Classification value	MC Applied	Conc. Not Used
		CLP index number	EC Number	CAS Number									
41	●	monohydric phenols											
				P1186		<0.1	mg/kg		<0.1	mg/kg	<0.00001 %		**<LOD**
42		xylene											
		601-022-00-9	202-422-2 [1] 203-396-5 [2] 203-576-3 [3] 215-535-7 [4]	95-47-6 [1] 106-42-3 [2] 108-38-3 [3] 1330-20-7 [4]		<2	µg/kg		<0.002	mg/kg	<0.0000002 %		**<LOD**
										Total:	0.0597 %		

Key

(yellow)	User supplied data
(grey)	Determinand values ignored for classification, see column 'Conc. Not Used' for reason
●	Determinand defined or amended by HazWasteOnline (see Appendix A)
	Speciated Deteminand - Unless the Determinand is Note 1, the Conversion Factor is used to calculate the compound concentration
<LOD	Below limit of detection
ND	Not detected
CLP: Note 1	Only the metal concentration has been used for classification

WAC results for sample: TP13-1.00

WAC Settings: samples in this Job constitute a single population.

WAC limits used to evaluate this sample: "Ireland"
The WAC used in this report are the WAC defined for the inert and non-hazardous classes of landfill in the Republic of Ireland. You should check the actual acceptance criteria when the disposal site is identified as they may differ from the generic WAC used in this report.

The sample PASSES the Inert (Inert waste landfill) criteria.

The sample PASSES the Non Haz (Non hazardous waste landfill) criteria.

WAC Determinands

Solid Waste Analysis				Landfill Waste Acceptance Criteria Limits	
#	Determinand		User entered data	Inert waste landfill	Non hazardous waste landfill
1	TOC (total organic carbon)	%	2.4	3	5
2	LOI (loss on ignition)	%	2.2	-	-
3	BTEX (benzene, toluene, ethylbenzene and xylenes)	mg/kg	<0.01	6	-
4	PCBs (polychlorinated biphenyls, 7 congeners)	mg/kg	<0.1	1	-
5	Mineral oil (C10 to C40)	mg/kg	<10	500	-
6	PAHs (polycyclic aromatic hydrocarbons)	mg/kg	<2	100	-
7	pH	pH	8.8	-	>6
8	ANC (acid neutralisation capacity)	mol/kg	0.006	-	-
Eluate Analysis 10:1					
9	arsenic	mg/kg	0.005	0.5	2
10	barium	mg/kg	<0.0005	20	100
11	cadmium	mg/kg	<0.0001	0.04	1
12	chromium	mg/kg	0.0061	0.5	10
13	copper	mg/kg	0.008	2	50
14	mercury	mg/kg	<5.0e-05	0.01	0.2
15	molybdenum	mg/kg	0.045	0.5	10
16	nickel	mg/kg	<0.0005	0.4	10
17	lead	mg/kg	<0.0005	0.5	10
18	antimony	mg/kg	<0.0005	0.06	0.7
19	selenium	mg/kg	0.0058	0.1	0.5
20	zinc	mg/kg	<0.0025	4	50
21	chloride	mg/kg	<10	800	15,000
22	fluoride	mg/kg	3.6	10	150
23	sulphate	mg/kg	24	1,000	20,000
24	phenol index	mg/kg	<0.3	1	-
25	DOC (dissolved organic carbon)	mg/kg	<50	500	800
26	TDS (total dissolved solids)	mg/kg	720	4,000	60,000

Key

User supplied data

Classification of sample: TP14-0.30

Non Hazardous Waste
Classified as **17 05 04**
in the List of Waste

Sample details

Sample name:		LoW Code:	
TP14-0.30		Chapter:	17: Construction and Demolition Wastes (including excavated soil from contaminated sites)
Sample Depth:			
0.30-0.30 m		Entry:	17 05 04 (Soil and stones other than those mentioned in 17 05 03)
Moisture content:			
9.1% (wet weight correction)			

Hazard properties

None identified

Determinands

Moisture content: 9.1% Wet Weight Moisture Correction applied (MC)

#	Determinand	CLP index number	EC Number	CAS Number	CLP Note	User entered data		Conv. Factor	Compound conc.		Classification value	MC Applied	Conc. Not Used
1	pH			PH		8.6	pH		8.6	pH	8.6 pH		
2	boron { diboron trioxide; boric oxide }	005-008-00-8	215-125-8	1303-86-2		1.4	mg/kg	3.22	4.098	mg/kg	0.00041 %	✓	
3	sulfur { sulfur }	016-094-00-1	231-722-6	7704-34-9		7.6	mg/kg		6.908	mg/kg	0.000691 %	✓	
4	cyanides { salts of hydrogen cyanide with the exception of complex cyanides such as ferrocyanides, ferricyanides and mercuric oxycyanide and those specified elsewhere in this Annex }	006-007-00-5				<0.5	mg/kg	1.884	<0.942	mg/kg	<0.0000942 %		<LOD
5	barium { barium oxide }		215-127-9	1304-28-5		76	mg/kg	1.117	77.133	mg/kg	0.00771 %	✓	
6	cadmium { cadmium oxide }	048-002-00-0	215-146-2	1306-19-0		1.6	mg/kg	1.142	1.661	mg/kg	0.000166 %	✓	
7	molybdenum { molybdenum(VI) oxide }	042-001-00-9	215-204-7	1313-27-5		2.6	mg/kg	1.5	3.546	mg/kg	0.000355 %	✓	
8	antimony { antimony compounds, with the exception of the tetroxide (Sb2O4), pentoxide (Sb2O5), trisulphide (Sb2S3), pentasulphide (Sb2S5) and those specified elsewhere in this Annex }	051-003-00-9			1	<2	mg/kg		<2	mg/kg	<0.0002 %		<LOD
9	arsenic { arsenic }	033-001-00-X	231-148-6	7440-38-2		22	mg/kg		19.998	mg/kg	0.002 %	✓	
10	granulated copper; [particle length: from 0,9 mm to 6,0 mm; particle width: from 0,494 to 0,949 mm]	029-024-00-X	231-159-6	7440-50-8		46	mg/kg		41.814	mg/kg	0.00418 %	✓	
11	mercury { mercury }	080-001-00-0	231-106-7	7439-97-6		0.16	mg/kg		0.145	mg/kg	0.0000145 %	✓	
12	nickel { nickel(II) oxide (nickel monoxide) }	028-003-00-2	215-215-7 [1] 234-323-5 [2] - [3]	1313-99-1 [1] 11099-02-8 [2] 34492-97-2 [3]		34	mg/kg	1.273	39.331	mg/kg	0.00393 %	✓	
13	lead { lead compounds with the exception of those specified elsewhere in this Annex }	082-001-00-6			1	46	mg/kg		41.814	mg/kg	0.00418 %	✓	

#	Determinand	CLP index number	EC Number	CAS Number	CLP Note	User entered data	Conv. Factor	Compound conc.	Classification value	MC Applied	Conc. Not Used
14	selenium { selenium compounds with the exception of cadmium sulphoselenide and those specified elsewhere in this Annex }	034-002-00-8				0.37 mg/kg	1.405	0.473 mg/kg	0.0000473 %	✓	
15	zinc { zinc oxide }	030-013-00-7	215-222-5	1314-13-2		55 mg/kg	1.245	62.229 mg/kg	0.00622 %	✓	
16	chromium in chromium(III) compounds { chromium(III) oxide }		215-160-9	1308-38-9		18 mg/kg	1.462	23.914 mg/kg	0.00239 %	✓	
17	chromium in chromium(VI) compounds { chromium(VI) oxide }	024-001-00-0	215-607-8	1333-82-0		<0.5 mg/kg	1.923	<0.962 mg/kg	<0.0000962 %		<LOD
18	TPH (C6 to C40) petroleum group			TPH		79 mg/kg		71.811 mg/kg	0.00718 %	✓	
19	benzene	601-020-00-8	200-753-7	71-43-2		<1 µg/kg		<0.001 mg/kg	<0.0000001 %		<LOD
20	toluene	601-021-00-3	203-625-9	108-88-3		<1 µg/kg		<0.001 mg/kg	<0.0000001 %		<LOD
21	ethylbenzene	601-023-00-4	202-849-4	100-41-4		<1 µg/kg		<0.001 mg/kg	<0.0000001 %		<LOD
22	tert-butyl methyl ether; MTBE; 2-methoxy-2-methylpropane	603-181-00-X	216-653-1	1634-04-4		<1 µg/kg		<0.001 mg/kg	<0.0000001 %		<LOD
23	naphthalene	601-052-00-2	202-049-5	91-20-3		0.27 mg/kg		0.245 mg/kg	0.0000245 %	✓	
24	acenaphthylene		205-917-1	208-96-8		<0.1 mg/kg		<0.1 mg/kg	<0.00001 %		<LOD
25	acenaphthene		201-469-6	83-32-9		0.52 mg/kg		0.473 mg/kg	0.0000473 %	✓	
26	fluorene		201-695-5	86-73-7		0.52 mg/kg		0.473 mg/kg	0.0000473 %	✓	
27	phenanthrene		201-581-5	85-01-8		4 mg/kg		3.636 mg/kg	0.000364 %	✓	
28	anthracene		204-371-1	120-12-7		0.68 mg/kg		0.618 mg/kg	0.0000618 %	✓	
29	fluoranthene		205-912-4	206-44-0		4 mg/kg		3.636 mg/kg	0.000364 %	✓	
30	pyrene		204-927-3	129-00-0		3.2 mg/kg		2.909 mg/kg	0.000291 %	✓	
31	benzo[a]anthracene	601-033-00-9	200-280-6	56-55-3		1.8 mg/kg		1.636 mg/kg	0.000164 %	✓	
32	chrysene	601-048-00-0	205-923-4	218-01-9		2 mg/kg		1.818 mg/kg	0.000182 %	✓	
33	benzo[b]fluoranthene	601-034-00-4	205-911-9	205-99-2		2 mg/kg		1.818 mg/kg	0.000182 %	✓	
34	benzo[k]fluoranthene	601-036-00-5	205-916-6	207-08-9		0.65 mg/kg		0.591 mg/kg	0.0000591 %	✓	
35	benzo[a]pyrene; benzo[def]chrysene	601-032-00-3	200-028-5	50-32-8		1.7 mg/kg		1.545 mg/kg	0.000155 %	✓	
36	indeno[123-cd]pyrene		205-893-2	193-39-5		0.97 mg/kg		0.882 mg/kg	0.0000882 %	✓	
37	dibenz[a,h]anthracene	601-041-00-2	200-181-8	53-70-3		0.26 mg/kg		0.236 mg/kg	0.0000236 %	✓	
38	benzo[ghi]perylene		205-883-8	191-24-2		0.93 mg/kg		0.845 mg/kg	0.0000845 %	✓	
39	coronene		205-881-7	191-07-1		<0.1 mg/kg		<0.1 mg/kg	<0.00001 %		<LOD
40	polychlorobiphenyls; PCB	602-039-00-4	215-648-1	1336-36-3		<0.1 mg/kg		<0.1 mg/kg	<0.00001 %		<LOD

#		Determinand			CLP Note	User entered data	Conv. Factor	Compound conc.	Classification value	MC Applied	Conc. Not Used
		CLP index number	EC Number	CAS Number							
41	●	monohydric phenols				<0.1 mg/kg		<0.1 mg/kg	<0.00001 %		**<LOD**
				P1186							
42		xylene				<2 µg/kg		<0.002 mg/kg	<0.0000002 %		**<LOD**
		601-022-00-9	202-422-2 [1] 203-396-5 [2] 203-576-3 [3] 215-535-7 [4]	95-47-6 [1] 106-42-3 [2] 108-38-3 [3] 1330-20-7 [4]							
								Total:	0.0421 %		

Key

(yellow)	User supplied data
(grey)	Determinand values ignored for classification, see column 'Conc. Not Used' for reason
●	Determinand defined or amended by HazWasteOnline (see Appendix A)
	Speciated Deteminand - Unless the Determinand is Note 1, the Conversion Factor is used to calculate the compound concentration
<LOD	Below limit of detection
ND	Not detected
CLP: Note 1	Only the metal concentration has been used for classification

Supplementary Hazardous Property Information

HP 3(i): Flammable "flammable liquid waste: liquid waste having a flash point below 60°C or waste gas oil, diesel and light heating oils having a flash point > 55°C and <= 75°C"
Force this Hazardous property to non hazardous because HP 3 can be discounted as this is a solid waste without a free draining liquid phase.

Hazard Statements hit:

Flam. Liq. 3; H226 "Flammable liquid and vapour."

Because of determinand:

TPH (C6 to C40) petroleum group: (conc.: 0.00718%)

WAC results for sample: TP14-0.30

WAC Settings: samples in this Job constitute a single population.

WAC limits used to evaluate this sample: "Ireland"
The WAC used in this report are the WAC defined for the inert and non-hazardous classes of landfill in the Republic of Ireland. You should check the actual acceptance criteria when the disposal site is identified as they may differ from the generic WAC used in this report.

The sample FAILS the Inert (Inert waste landfill) criteria.

The sample PASSES the Non Haz (Non hazardous waste landfill) criteria.

WAC Determinands

Solid Waste Analysis				Landfill Waste Acceptance Criteria Limits	
#	Determinand		User entered data	Inert waste landfill	Non hazardous waste landfill
1	TOC (total organic carbon)	%	3.7	3	5
2	LOI (loss on ignition)	%	7.9	-	-
3	BTEX (benzene, toluene, ethylbenzene and xylenes)	mg/kg	<0.01	6	-
4	PCBs (polychlorinated biphenyls, 7 congeners)	mg/kg	<0.1	1	-
5	Mineral oil (C10 to C40)	mg/kg	79	500	-
6	PAHs (polycyclic aromatic hydrocarbons)	mg/kg	24	100	-
7	pH	pH	8.6	-	>6
8	ANC (acid neutralisation capacity)	mol/kg	<0.002	-	-
Eluate Analysis 10:1					
9	arsenic	mg/kg	0.027	0.5	2
10	barium	mg/kg	0.1	20	100
11	cadmium	mg/kg	<0.0001	0.04	1
12	chromium	mg/kg	<0.0005	0.5	10
13	copper	mg/kg	0.042	2	50
14	mercury	mg/kg	<5.0e-05	0.01	0.2
15	molybdenum	mg/kg	0.14	0.5	10
16	nickel	mg/kg	0.005	0.4	10
17	lead	mg/kg	<0.0005	0.5	10
18	antimony	mg/kg	0.02	0.06	0.7
19	selenium	mg/kg	0.0091	0.1	0.5
20	zinc	mg/kg	<0.0025	4	50
21	chloride	mg/kg	21	800	15,000
22	fluoride	mg/kg	3.7	10	150
23	sulphate	mg/kg	<10	1,000	20,000
24	phenol index	mg/kg	<0.3	1	-
25	DOC (dissolved organic carbon)	mg/kg	69	500	800
26	TDS (total dissolved solids)	mg/kg	1400	4,000	60,000

Key

User supplied data

Inert WAC criteria fail

Classification of sample: TP14-1.00

Non Hazardous Waste
Classified as **17 05 04**
in the List of Waste

Sample details

Sample name:		LoW Code:	
TP14-1.00		Chapter:	17: Construction and Demolition Wastes (including excavated soil from contaminated sites)
Sample Depth:			
1.00-1.00 m		Entry:	17 05 04 (Soil and stones other than those mentioned in 17 05 03)
Moisture content:			
2.5% (wet weight correction)			

Hazard properties

None identified

Determinands

Moisture content: 2.5% Wet Weight Moisture Correction applied (MC)

#	Determinand	CLP index number	EC Number	CAS Number	CLP Note	User entered data		Conv. Factor	Compound conc.		Classification value	MC Applied	Conc. Not Used
1	pH			PH		8.7	pH		8.7	pH	8.7 pH		
2	boron { diboron trioxide; boric oxide }	005-008-00-8	215-125-8	1303-86-2		0.52	mg/kg	3.22	1.632	mg/kg	0.000163 %	✓	
3	sulfur { sulfur }	016-094-00-1	231-722-6	7704-34-9		<1	mg/kg		<1	mg/kg	<0.0001 %		<LOD
4	cyanides { salts of hydrogen cyanide with the exception of complex cyanides such as ferrocyanides, ferricyanides and mercuric oxycyanide and those specified elsewhere in this Annex }	006-007-00-5				<0.5	mg/kg	1.884	<0.942	mg/kg	<0.0000942 %		<LOD
5	barium { barium oxide }		215-127-9	1304-28-5		70	mg/kg	1.117	76.202	mg/kg	0.00762 %	✓	
6	cadmium { cadmium oxide }	048-002-00-0	215-146-2	1306-19-0		1.2	mg/kg	1.142	1.337	mg/kg	0.000134 %	✓	
7	molybdenum { molybdenum(VI) oxide }	042-001-00-9	215-204-7	1313-27-5		2.3	mg/kg	1.5	3.364	mg/kg	0.000336 %	✓	
8	antimony { antimony compounds, with the exception of the tetroxide (Sb2O4), pentoxide (Sb2O5), trisulphide (Sb2S3), pentasulphide (Sb2S5) and those specified elsewhere in this Annex }	051-003-00-9			1	<2	mg/kg		<2	mg/kg	<0.0002 %		<LOD
9	arsenic { arsenic }	033-001-00-X	231-148-6	7440-38-2		16	mg/kg		15.6	mg/kg	0.00156 %	✓	
10	granulated copper; [particle length: from 0,9 mm to 6,0 mm; particle width: from 0,494 to 0,949 mm]	029-024-00-X	231-159-6	7440-50-8		67	mg/kg		65.325	mg/kg	0.00653 %	✓	
11	mercury { mercury }	080-001-00-0	231-106-7	7439-97-6		0.26	mg/kg		0.254	mg/kg	0.0000254 %	✓	
12	nickel { nickel(II) oxide (nickel monoxide) }	028-003-00-2	215-215-7 [1] 234-323-5 [2] - [3]	1313-99-1 [1] 11099-02-8 [2] 34492-97-2 [3]		28	mg/kg	1.273	34.742	mg/kg	0.00347 %	✓	
13	lead { lead compounds with the exception of those specified elsewhere in this Annex }	082-001-00-6			1	97	mg/kg		94.575	mg/kg	0.00946 %	✓	

#	Determinand	CLP index number	EC Number	CAS Number	CLP Note	User entered data	Conv. Factor	Compound conc.	Classification value	MC Applied	Conc. Not Used
14	selenium { selenium compounds with the exception of cadmium sulphoselenide and those specified elsewhere in this Annex }	034-002-00-8				0.48 mg/kg	1.405	0.658 mg/kg	0.0000658 %	✓	
15	zinc { zinc oxide }	030-013-00-7	215-222-5	1314-13-2		95 mg/kg	1.245	115.292 mg/kg	0.0115 %	✓	
16	chromium in chromium(III) compounds { chromium(III) oxide }		215-160-9	1308-38-9		16 mg/kg	1.462	22.8 mg/kg	0.00228 %	✓	
17	chromium in chromium(VI) compounds { chromium(VI) oxide }	024-001-00-0	215-607-8	1333-82-0		<0.5 mg/kg	1.923	<0.962 mg/kg	<0.0000962 %		<LOD
18	TPH (C6 to C40) petroleum group			TPH		<10 mg/kg		<10 mg/kg	<0.001 %		<LOD
19	benzene	601-020-00-8	200-753-7	71-43-2		<1 µg/kg		<0.001 mg/kg	<0.0000001 %		<LOD
20	toluene	601-021-00-3	203-625-9	108-88-3		<1 µg/kg		<0.001 mg/kg	<0.0000001 %		<LOD
21	ethylbenzene	601-023-00-4	202-849-4	100-41-4		<1 µg/kg		<0.001 mg/kg	<0.0000001 %		<LOD
22	tert-butyl methyl ether; MTBE; 2-methoxy-2-methylpropane	603-181-00-X	216-653-1	1634-04-4		<1 µg/kg		<0.001 mg/kg	<0.0000001 %		<LOD
23	naphthalene	601-052-00-2	202-049-5	91-20-3		<0.1 mg/kg		<0.1 mg/kg	<0.00001 %		<LOD
24	acenaphthylene		205-917-1	208-96-8		<0.1 mg/kg		<0.1 mg/kg	<0.00001 %		<LOD
25	acenaphthene		201-469-6	83-32-9		<0.1 mg/kg		<0.1 mg/kg	<0.00001 %		<LOD
26	fluorene		201-695-5	86-73-7		<0.1 mg/kg		<0.1 mg/kg	<0.00001 %		<LOD
27	phenanthrene		201-581-5	85-01-8		<0.1 mg/kg		<0.1 mg/kg	<0.00001 %		<LOD
28	anthracene		204-371-1	120-12-7		<0.1 mg/kg		<0.1 mg/kg	<0.00001 %		<LOD
29	fluoranthene		205-912-4	206-44-0		0.13 mg/kg		0.127 mg/kg	0.0000127 %	✓	
30	pyrene		204-927-3	129-00-0		0.12 mg/kg		0.117 mg/kg	0.0000117 %	✓	
31	benzo[a]anthracene	601-033-00-9	200-280-6	56-55-3		<0.1 mg/kg		<0.1 mg/kg	<0.00001 %		<LOD
32	chrysene	601-048-00-0	205-923-4	218-01-9		<0.1 mg/kg		<0.1 mg/kg	<0.00001 %		<LOD
33	benzo[b]fluoranthene	601-034-00-4	205-911-9	205-99-2		<0.1 mg/kg		<0.1 mg/kg	<0.00001 %		<LOD
34	benzo[k]fluoranthene	601-036-00-5	205-916-6	207-08-9		<0.1 mg/kg		<0.1 mg/kg	<0.00001 %		<LOD
35	benzo[a]pyrene; benzo[def]chrysene	601-032-00-3	200-028-5	50-32-8		<0.1 mg/kg		<0.1 mg/kg	<0.00001 %		<LOD
36	indeno[123-cd]pyrene		205-893-2	193-39-5		<0.1 mg/kg		<0.1 mg/kg	<0.00001 %		<LOD
37	dibenz[a,h]anthracene	601-041-00-2	200-181-8	53-70-3		<0.1 mg/kg		<0.1 mg/kg	<0.00001 %		<LOD
38	benzo[ghi]perylene		205-883-8	191-24-2		<0.1 mg/kg		<0.1 mg/kg	<0.00001 %		<LOD
39	coronene		205-881-7	191-07-1		<0.1 mg/kg		<0.1 mg/kg	<0.00001 %		<LOD
40	polychlorobiphenyls; PCB	602-039-00-4	215-648-1	1336-36-3		<0.1 mg/kg		<0.1 mg/kg	<0.00001 %		<LOD

#		Determinand			CLP Note	User entered data		Conv. Factor	Compound conc.		Classification value	MC Applied	Conc. Not Used
		CLP index number	EC Number	CAS Number									
41	●	monohydric phenols				<0.1	mg/kg		<0.1	mg/kg	<0.00001 %		<LOD
				P1186									
42		xylene				<2	µg/kg		<0.002	mg/kg	<0.0000002 %		<LOD
		601-022-00-9	202-422-2 [1] 203-396-5 [2] 203-576-3 [3] 215-535-7 [4]	95-47-6 [1] 106-42-3 [2] 108-38-3 [3] 1330-20-7 [4]									
										Total:	0.0449 %		

Key

(yellow)	User supplied data
(grey)	Determinand values ignored for classification, see column 'Conc. Not Used' for reason
●	Determinand defined or amended by HazWasteOnline (see Appendix A)
	Speciated Deteminand - Unless the Determinand is Note 1, the Conversion Factor is used to calculate the compound concentration
<LOD	Below limit of detection
ND	Not detected
CLP: Note 1	Only the metal concentration has been used for classification

WAC results for sample: TP14-1.00

WAC Settings: samples in this Job constitute a single population.

WAC limits used to evaluate this sample: "Ireland"
The WAC used in this report are the WAC defined for the inert and non-hazardous classes of landfill in the Republic of Ireland. You should check the actual acceptance criteria when the disposal site is identified as they may differ from the generic WAC used in this report.

The sample PASSES the Inert (Inert waste landfill) criteria.

The sample PASSES the Non Haz (Non hazardous waste landfill) criteria.

WAC Determinands

Solid Waste Analysis				Landfill Waste Acceptance Criteria Limits	
#	Determinand		User entered data	Inert waste landfill	Non hazardous waste landfill
1	TOC (total organic carbon)	%	1.1	3	5
2	LOI (loss on ignition)	%	2.5	-	-
3	BTEX (benzene, toluene, ethylbenzene and xylenes)	mg/kg	<0.01	6	-
4	PCBs (polychlorinated biphenyls, 7 congeners)	mg/kg	<0.1	1	-
5	Mineral oil (C10 to C40)	mg/kg	<10	500	-
6	PAHs (polycyclic aromatic hydrocarbons)	mg/kg	<2	100	-
7	pH	pH	8.7	-	>6
8	ANC (acid neutralisation capacity)	mol/kg	<0.002	-	-
Eluate Analysis 10:1					
9	arsenic	mg/kg	0.005	0.5	2
10	barium	mg/kg	0.057	20	100
11	cadmium	mg/kg	<0.0001	0.04	1
12	chromium	mg/kg	0.011	0.5	10
13	copper	mg/kg	0.0095	2	50
14	mercury	mg/kg	<5.0e-05	0.01	0.2
15	molybdenum	mg/kg	0.045	0.5	10
16	nickel	mg/kg	<0.0005	0.4	10
17	lead	mg/kg	<0.0005	0.5	10
18	antimony	mg/kg	<0.0005	0.06	0.7
19	selenium	mg/kg	<0.0005	0.1	0.5
20	zinc	mg/kg	<0.0025	4	50
21	chloride	mg/kg	21	800	15,000
22	fluoride	mg/kg	3.1	10	150
23	sulphate	mg/kg	73	1,000	20,000
24	phenol index	mg/kg	<0.3	1	-
25	DOC (dissolved organic carbon)	mg/kg	<50	500	800
26	TDS (total dissolved solids)	mg/kg	1500	4,000	60,000

Key

User supplied data

Classification of sample: TP15-0.30

Non Hazardous Waste
Classified as **17 05 04**
in the List of Waste

Sample details

Sample name:	**TP15-0.30**	LoW Code:	
Sample Depth:	**0.30-0.30 m**	Chapter:	17: Construction and Demolition Wastes (including excavated soil from contaminated sites)
Moisture content:	**7.2%** (wet weight correction)	Entry:	17 05 04 (Soil and stones other than those mentioned in 17 05 03)

Hazard properties

None identified

Determinands

Moisture content: 7.2% Wet Weight Moisture Correction applied (MC)

#	Determinand	CLP index number	EC Number	CAS Number	CLP Note	User entered data		Conv. Factor	Compound conc.		Classification value	MC Applied	Conc. Not Used
1	pH			PH		8.4	pH		8.4	pH	8.4 pH		
2	boron { diboron trioxide; boric oxide }	005-008-00-8	215-125-8	1303-86-2		1.1	mg/kg	3.22	3.287	mg/kg	0.000329 %	✓	
3	sulfur { sulfur }	016-094-00-1	231-722-6	7704-34-9		5.3	mg/kg		4.918	mg/kg	0.000492 %	✓	
4	cyanides { salts of hydrogen cyanide with the exception of complex cyanides such as ferrocyanides, ferricyanides and mercuric oxycyanide and those specified elsewhere in this Annex }	006-007-00-5				8.3	mg/kg	1.884	14.511	mg/kg	0.00145 %	✓	
5	barium { barium oxide }		215-127-9	1304-28-5		87	mg/kg	1.117	90.142	mg/kg	0.00901 %	✓	
6	cadmium { cadmium oxide }	048-002-00-0	215-146-2	1306-19-0		1.6	mg/kg	1.142	1.696	mg/kg	0.00017 %	✓	
7	molybdenum { molybdenum(VI) oxide }	042-001-00-9	215-204-7	1313-27-5		2.7	mg/kg	1.5	3.759	mg/kg	0.000376 %	✓	
8	antimony { antimony compounds, with the exception of the tetroxide (Sb2O4), pentoxide (Sb2O5), trisulphide (Sb2S3), pentasulphide (Sb2S5) and those specified elsewhere in this Annex }	051-003-00-9			1	<2	mg/kg		<2	mg/kg	<0.0002 %		<LOD
9	arsenic { arsenic }	033-001-00-X	231-148-6	7440-38-2		19	mg/kg		17.632	mg/kg	0.00176 %	✓	
10	granulated copper; [particle length: from 0,9 mm to 6,0 mm; particle width: from 0,494 to 0,949 mm]	029-024-00-X	231-159-6	7440-50-8		85	mg/kg		78.88	mg/kg	0.00789 %	✓	
11	mercury { mercury }	080-001-00-0	231-106-7	7439-97-6		0.28	mg/kg		0.26	mg/kg	0.000026 %	✓	
12	nickel { nickel(II) oxide (nickel monoxide) }	028-003-00-2	215-215-7 [1] 234-323-5 [2] - [3]	1313-99-1 [1] 11099-02-8 [2] 34492-97-2 [3]		33	mg/kg	1.273	38.972	mg/kg	0.0039 %	✓	
13	lead { lead compounds with the exception of those specified elsewhere in this Annex }	082-001-00-6			1	110	mg/kg		102.08	mg/kg	0.0102 %	✓	

#	Determinand	CLP index number	EC Number	CAS Number	CLP Note	User entered data	Conv. Factor	Compound conc.	Classification value	MC Applied	Conc. Not Used
14	selenium { selenium compounds with the exception of cadmium sulphoselenide and those specified elsewhere in this Annex }	034-002-00-8				0.67 mg/kg	1.405	0.874 mg/kg	0.0000874 %	✓	
15	zinc { zinc oxide }	030-013-00-7	215-222-5	1314-13-2		120 mg/kg	1.245	138.611 mg/kg	0.0139 %	✓	
16	chromium in chromium(III) compounds { chromium(III) oxide }		215-160-9	1308-38-9		20 mg/kg	1.462	27.126 mg/kg	0.00271 %	✓	
17	chromium in chromium(VI) compounds { chromium(VI) oxide }	024-001-00-0	215-607-8	1333-82-0		<0.5 mg/kg	1.923	<0.962 mg/kg	<0.0000962 %		<LOD
18	TPH (C6 to C40) petroleum group			TPH		<10 mg/kg		<10 mg/kg	<0.001 %		<LOD
19	benzene	601-020-00-8	200-753-7	71-43-2		<1 µg/kg		<0.001 mg/kg	<0.0000001 %		<LOD
20	toluene	601-021-00-3	203-625-9	108-88-3		<1 µg/kg		<0.001 mg/kg	<0.0000001 %		<LOD
21	ethylbenzene	601-023-00-4	202-849-4	100-41-4		<1 µg/kg		<0.001 mg/kg	<0.0000001 %		<LOD
22	tert-butyl methyl ether; MTBE; 2-methoxy-2-methylpropane	603-181-00-X	216-653-1	1634-04-4		<1 µg/kg		<0.001 mg/kg	<0.0000001 %		<LOD
23	naphthalene	601-052-00-2	202-049-5	91-20-3		<0.1 mg/kg		<0.1 mg/kg	<0.00001 %		<LOD
24	acenaphthylene		205-917-1	208-96-8		<0.1 mg/kg		<0.1 mg/kg	<0.00001 %		<LOD
25	acenaphthene		201-469-6	83-32-9		<0.1 mg/kg		<0.1 mg/kg	<0.00001 %		<LOD
26	fluorene		201-695-5	86-73-7		<0.1 mg/kg		<0.1 mg/kg	<0.00001 %		<LOD
27	phenanthrene		201-581-5	85-01-8		0.52 mg/kg		0.483 mg/kg	0.0000483 %	✓	
28	anthracene		204-371-1	120-12-7		0.5 mg/kg		0.464 mg/kg	0.0000464 %	✓	
29	fluoranthene		205-912-4	206-44-0		1.7 mg/kg		1.578 mg/kg	0.000158 %	✓	
30	pyrene		204-927-3	129-00-0		1.7 mg/kg		1.578 mg/kg	0.000158 %	✓	
31	benzo[a]anthracene	601-033-00-9	200-280-6	56-55-3		1.3 mg/kg		1.206 mg/kg	0.000121 %	✓	
32	chrysene	601-048-00-0	205-923-4	218-01-9		1.2 mg/kg		1.114 mg/kg	0.000111 %	✓	
33	benzo[b]fluoranthene	601-034-00-4	205-911-9	205-99-2		1.4 mg/kg		1.299 mg/kg	0.00013 %	✓	
34	benzo[k]fluoranthene	601-036-00-5	205-916-6	207-08-9		0.61 mg/kg		0.566 mg/kg	0.0000566 %	✓	
35	benzo[a]pyrene; benzo[def]chrysene	601-032-00-3	200-028-5	50-32-8		1.1 mg/kg		1.021 mg/kg	0.000102 %	✓	
36	indeno[123-cd]pyrene		205-893-2	193-39-5		0.7 mg/kg		0.65 mg/kg	0.000065 %	✓	
37	dibenz[a,h]anthracene	601-041-00-2	200-181-8	53-70-3		0.14 mg/kg		0.13 mg/kg	0.000013 %	✓	
38	benzo[ghi]perylene		205-883-8	191-24-2		0.68 mg/kg		0.631 mg/kg	0.0000631 %	✓	
39	coronene		205-881-7	191-07-1		<0.1 mg/kg		<0.1 mg/kg	<0.00001 %		<LOD
40	polychlorobiphenyls; PCB	602-039-00-4	215-648-1	1336-36-3		<0.1 mg/kg		<0.1 mg/kg	<0.00001 %		<LOD

#		Determinand			CLP Note	User entered data		Conv. Factor	Compound conc.		Classification value	MC Applied	Conc. Not Used
		CLP index number	EC Number	CAS Number									
41	●	monohydric phenols				<0.1	mg/kg		<0.1	mg/kg	<0.00001 %		**<LOD**
				P1186									
42		xylene				<2	µg/kg		<0.002	mg/kg	<0.0000002 %		**<LOD**
		601-022-00-9	202-422-2 [1] 203-396-5 [2] 203-576-3 [3] 215-535-7 [4]	95-47-6 [1] 106-42-3 [2] 108-38-3 [3] 1330-20-7 [4]									
										Total:	0.0547 %		

Key

(yellow)	User supplied data
(grey)	Determinand values ignored for classification, see column 'Conc. Not Used' for reason
●	Determinand defined or amended by HazWasteOnline (see Appendix A)
	Speciated Deteminand - Unless the Determinand is Note 1, the Conversion Factor is used to calculate the compound concentration
<LOD	Below limit of detection
ND	Not detected
CLP: Note 1	Only the metal concentration has been used for classification

WAC results for sample: TP15-0.30

WAC Settings: samples in this Job constitute a single population.

WAC limits used to evaluate this sample: "Ireland"
The WAC used in this report are the WAC defined for the inert and non-hazardous classes of landfill in the Republic of Ireland. You should check the actual acceptance criteria when the disposal site is identified as they may differ from the generic WAC used in this report.

The sample FAILS the Inert (Inert waste landfill) criteria.

The sample PASSES the Non Haz (Non hazardous waste landfill) criteria.

WAC Determinands

Solid Waste Analysis				Landfill Waste Acceptance Criteria Limits	
#	Determinand		User entered data	Inert waste landfill	Non hazardous waste landfill
1	TOC (total organic carbon)	%	3	3	5
2	LOI (loss on ignition)	%	5.5	-	-
3	BTEX (benzene, toluene, ethylbenzene and xylenes)	mg/kg	<0.01	6	-
4	PCBs (polychlorinated biphenyls, 7 congeners)	mg/kg	<0.1	1	-
5	Mineral oil (C10 to C40)	mg/kg	<10	500	-
6	PAHs (polycyclic aromatic hydrocarbons)	mg/kg	12	100	-
7	pH	pH	8.4	-	>6
8	ANC (acid neutralisation capacity)	mol/kg	<0.002	-	-
Eluate Analysis 10:1					
9	arsenic	mg/kg	0.099	0.5	2
10	barium	mg/kg	0.075	20	100
11	cadmium	mg/kg	<0.0001	0.04	1
12	chromium	mg/kg	0.019	0.5	10
13	copper	mg/kg	0.056	2	50
14	mercury	mg/kg	<5.0e-05	0.01	0.2
15	molybdenum	mg/kg	0.07	0.5	10
16	nickel	mg/kg	0.0086	0.4	10
17	lead	mg/kg	<0.0005	0.5	10
18	antimony	mg/kg	0.02	0.06	0.7
19	selenium	mg/kg	0.011	0.1	0.5
20	zinc	mg/kg	<0.0025	4	50
21	chloride	mg/kg	<10	800	15,000
22	fluoride	mg/kg	3.4	10	150
23	sulphate	mg/kg	<10	1,000	20,000
24	phenol index	mg/kg	<0.3	1	-
25	DOC (dissolved organic carbon)	mg/kg	56	500	800
26	TDS (total dissolved solids)	mg/kg	7800	4,000	60,000

Key

User supplied data

Inert WAC criteria fail

Classification of sample: TP15-1.00

Non Hazardous Waste
Classified as **17 05 04**
in the List of Waste

Sample details

Sample name:
TP15-1.00
Sample Depth:
1.00-1.00 m
Moisture content:
8.3%
(wet weight correction)

LoW Code:
Chapter: 17: Construction and Demolition Wastes (including excavated soil from contaminated sites)
Entry: 17 05 04 (Soil and stones other than those mentioned in 17 05 03)

Hazard properties

None identified

Determinands

Moisture content: 8.3% Wet Weight Moisture Correction applied (MC)

#	Determinand	CLP index number	EC Number	CAS Number	CLP Note	User entered data		Conv. Factor	Compound conc.		Classification value	MC Applied	Conc. Not Used
1	pH			PH		8.6	pH		8.6	pH	8.6 pH		
2	boron { diboron trioxide; boric oxide }	005-008-00-8	215-125-8	1303-86-2		0.53	mg/kg	3.22	1.565	mg/kg	0.000156 %	✓	
3	sulfur { sulfur }	016-094-00-1	231-722-6	7704-34-9		<1	mg/kg		<1	mg/kg	<0.0001 %		<LOD
4	cyanides { salts of hydrogen cyanide with the exception of complex cyanides such as ferrocyanides, ferricyanides and mercuric oxycyanide and those specified elsewhere in this Annex }	006-007-00-5				10	mg/kg	1.884	17.276	mg/kg	0.00173 %	✓	
5	barium { barium oxide }		215-127-9	1304-28-5		43	mg/kg	1.117	44.025	mg/kg	0.0044 %	✓	
6	cadmium { cadmium oxide }	048-002-00-0	215-146-2	1306-19-0		0.83	mg/kg	1.142	0.869	mg/kg	0.0000869 %	✓	
7	molybdenum { molybdenum(VI) oxide }	042-001-00-9	215-204-7	1313-27-5		2.9	mg/kg	1.5	3.989	mg/kg	0.000399 %	✓	
8	antimony { antimony compounds, with the exception of the tetroxide (Sb_2O_4), pentoxide (Sb_2O_5), trisulphide (Sb_2S_3), pentasulphide (Sb_2S_5) and those specified elsewhere in this Annex }	051-003-00-9			1	<2	mg/kg		<2	mg/kg	<0.0002 %		<LOD
9	arsenic { arsenic }	033-001-00-X	231-148-6	7440-38-2		9.8	mg/kg		8.987	mg/kg	0.000899 %	✓	
10	granulated copper; [particle length: from 0,9 mm to 6,0 mm; particle width: from 0,494 to 0,949 mm]	029-024-00-X	231-159-6	7440-50-8		110	mg/kg		100.87	mg/kg	0.0101 %	✓	
11	mercury { mercury }	080-001-00-0	231-106-7	7439-97-6		<0.1	mg/kg		<0.1	mg/kg	<0.00001 %		<LOD
12	nickel { nickel(II) oxide (nickel monoxide) }	028-003-00-2	215-215-7 [1] 234-323-5 [2] - [3]	1313-99-1 [1] 11099-02-8 [2] 34492-97-2 [3]		26	mg/kg	1.273	30.341	mg/kg	0.00303 %	✓	
13	lead { lead compounds with the exception of those specified elsewhere in this Annex }	082-001-00-6			1	31	mg/kg		28.427	mg/kg	0.00284 %	✓	

#	Determinand	CLP index number	EC Number	CAS Number	CLP Note	User entered data		Conv. Factor	Compound conc.		Classification value	MC Applied	Conc. Not Used
14	selenium { selenium compounds with the exception of cadmium sulphoselenide and those specified elsewhere in this Annex }	034-002-00-8				0.53	mg/kg	1.405	0.683	mg/kg	0.0000683 %	✓	
15	zinc { zinc oxide }	030-013-00-7	215-222-5	1314-13-2		70	mg/kg	1.245	79.898	mg/kg	0.00799 %	✓	
16	chromium in chromium(III) compounds { chromium(III) oxide }		215-160-9	1308-38-9		18	mg/kg	1.462	24.124	mg/kg	0.00241 %	✓	
17	chromium in chromium(VI) compounds { chromium(VI) oxide }	024-001-00-0	215-607-8	1333-82-0		<0.5	mg/kg	1.923	<0.962	mg/kg	<0.0000962 %		<LOD
18	TPH (C6 to C40) petroleum group			TPH		<10	mg/kg		<10	mg/kg	<0.001 %		<LOD
19	benzene	601-020-00-8	200-753-7	71-43-2		<1	µg/kg		<0.001	mg/kg	<0.0000001 %		<LOD
20	toluene	601-021-00-3	203-625-9	108-88-3		<1	µg/kg		<0.001	mg/kg	<0.0000001 %		<LOD
21	ethylbenzene	601-023-00-4	202-849-4	100-41-4		<1	µg/kg		<0.001	mg/kg	<0.0000001 %		<LOD
22	tert-butyl methyl ether; MTBE; 2-methoxy-2-methylpropane	603-181-00-X	216-653-1	1634-04-4		<1	µg/kg		<0.001	mg/kg	<0.0000001 %		<LOD
23	naphthalene	601-052-00-2	202-049-5	91-20-3		<0.1	mg/kg		<0.1	mg/kg	<0.00001 %		<LOD
24	acenaphthylene		205-917-1	208-96-8		<0.1	mg/kg		<0.1	mg/kg	<0.00001 %		<LOD
25	acenaphthene		201-469-6	83-32-9		<0.1	mg/kg		<0.1	mg/kg	<0.00001 %		<LOD
26	fluorene		201-695-5	86-73-7		<0.1	mg/kg		<0.1	mg/kg	<0.00001 %		<LOD
27	phenanthrene		201-581-5	85-01-8		<0.1	mg/kg		<0.1	mg/kg	<0.00001 %		<LOD
28	anthracene		204-371-1	120-12-7		<0.1	mg/kg		<0.1	mg/kg	<0.00001 %		<LOD
29	fluoranthene		205-912-4	206-44-0		<0.1	mg/kg		<0.1	mg/kg	<0.00001 %		<LOD
30	pyrene		204-927-3	129-00-0		<0.1	mg/kg		<0.1	mg/kg	<0.00001 %		<LOD
31	benzo[a]anthracene	601-033-00-9	200-280-6	56-55-3		<0.1	mg/kg		<0.1	mg/kg	<0.00001 %		<LOD
32	chrysene	601-048-00-0	205-923-4	218-01-9		<0.1	mg/kg		<0.1	mg/kg	<0.00001 %		<LOD
33	benzo[b]fluoranthene	601-034-00-4	205-911-9	205-99-2		<0.1	mg/kg		<0.1	mg/kg	<0.00001 %		<LOD
34	benzo[k]fluoranthene	601-036-00-5	205-916-6	207-08-9		<0.1	mg/kg		<0.1	mg/kg	<0.00001 %		<LOD
35	benzo[a]pyrene; benzo[def]chrysene	601-032-00-3	200-028-5	50-32-8		<0.1	mg/kg		<0.1	mg/kg	<0.00001 %		<LOD
36	indeno[123-cd]pyrene		205-893-2	193-39-5		<0.1	mg/kg		<0.1	mg/kg	<0.00001 %		<LOD
37	dibenz[a,h]anthracene	601-041-00-2	200-181-8	53-70-3		<0.1	mg/kg		<0.1	mg/kg	<0.00001 %		<LOD
38	benzo[ghi]perylene		205-883-8	191-24-2		<0.1	mg/kg		<0.1	mg/kg	<0.00001 %		<LOD
39	coronene		205-881-7	191-07-1		<0.1	mg/kg		<0.1	mg/kg	<0.00001 %		<LOD
40	polychlorobiphenyls; PCB	602-039-00-4	215-648-1	1336-36-3		<0.1	mg/kg		<0.1	mg/kg	<0.00001 %		<LOD

#		Determinand CLP index number	EC Number	CAS Number	CLP Note	User entered data		Conv. Factor	Compound conc.		Classification value	MC Applied	Conc. Not Used
41	●	monohydric phenols		P1186		<0.1	mg/kg		<0.1	mg/kg	<0.00001 %		**<LOD**
42		xylene 601-022-00-9	202-422-2 [1] 203-396-5 [2] 203-576-3 [3] 215-535-7 [4]	95-47-6 [1] 106-42-3 [2] 108-38-3 [3] 1330-20-7 [4]		<2	µg/kg		<0.002	mg/kg	<0.0000002 %		**<LOD**
										Total:	0.0357 %		

Key

(yellow)	User supplied data
(grey)	Determinand values ignored for classification, see column 'Conc. Not Used' for reason
●	Determinand defined or amended by HazWasteOnline (see Appendix A)
	Speciated Deteminand - Unless the Determinand is Note 1, the Conversion Factor is used to calculate the compound concentration
<LOD	Below limit of detection
ND	Not detected
CLP: Note 1	Only the metal concentration has been used for classification

WAC results for sample: TP15-1.00

WAC Settings: samples in this Job constitute a single population.

WAC limits used to evaluate this sample: "Ireland"
The WAC used in this report are the WAC defined for the inert and non-hazardous classes of landfill in the Republic of Ireland. You should check the actual acceptance criteria when the disposal site is identified as they may differ from the generic WAC used in this report.

The sample PASSES the Inert (Inert waste landfill) criteria.

The sample PASSES the Non Haz (Non hazardous waste landfill) criteria.

WAC Determinands

Solid Waste Analysis				Landfill Waste Acceptance Criteria Limits	
#	Determinand		User entered data	Inert waste landfill	Non hazardous waste landfill
1	TOC (total organic carbon)	%	0.68	3	5
2	LOI (loss on ignition)	%	2.2	-	-
3	BTEX (benzene, toluene, ethylbenzene and xylenes)	mg/kg	<0.01	6	-
4	PCBs (polychlorinated biphenyls, 7 congeners)	mg/kg	<0.1	1	-
5	Mineral oil (C10 to C40)	mg/kg	<10	500	-
6	PAHs (polycyclic aromatic hydrocarbons)	mg/kg	<2	100	-
7	pH	pH	8.6	-	>6
8	ANC (acid neutralisation capacity)	mol/kg	<0.002	-	-
Eluate Analysis 10:1					
9	arsenic	mg/kg	0.0079	0.5	2
10	barium	mg/kg	<0.0005	20	100
11	cadmium	mg/kg	<0.0001	0.04	1
12	chromium	mg/kg	0.011	0.5	10
13	copper	mg/kg	0.021	2	50
14	mercury	mg/kg	<5.0e-05	0.01	0.2
15	molybdenum	mg/kg	0.17	0.5	10
16	nickel	mg/kg	0.0058	0.4	10
17	lead	mg/kg	<0.0005	0.5	10
18	antimony	mg/kg	0.006	0.06	0.7
19	selenium	mg/kg	<0.0005	0.1	0.5
20	zinc	mg/kg	0.025	4	50
21	chloride	mg/kg	<10	800	15,000
22	fluoride	mg/kg	2.8	10	150
23	sulphate	mg/kg	<10	1,000	20,000
24	phenol index	mg/kg	<0.3	1	-
25	DOC (dissolved organic carbon)	mg/kg	120	500	800
26	TDS (total dissolved solids)	mg/kg	1800	4,000	60,000

Key

User supplied data

Classification of sample: TP16-0.30

Non Hazardous Waste
Classified as **17 05 04**
in the List of Waste

Sample details

Sample name:		LoW Code:	
TP16-0.30		Chapter:	17: Construction and Demolition Wastes (including excavated soil from contaminated sites)
Sample Depth:			
0.30-0.30 m		Entry:	17 05 04 (Soil and stones other than those mentioned in 17 05 03)
Moisture content:			
10% (wet weight correction)			

Hazard properties

None identified

Determinands

Moisture content: 10% Wet Weight Moisture Correction applied (MC)

#		Determinand CLP index number / EC Number / CAS Number	CLP Note	User entered data		Conv. Factor	Compound conc.		Classification value	MC Applied	Conc. Not Used
1		pH PH		8.2	pH		8.2	pH	8.2 pH		
2		boron { diboron trioxide; boric oxide } 005-008-00-8 / 215-125-8 / 1303-86-2		0.7	mg/kg	3.22	2.029	mg/kg	0.000203 %	✓	
3		sulfur { sulfur } 016-094-00-1 / 231-722-6 / 7704-34-9		7.2	mg/kg		6.48	mg/kg	0.000648 %	✓	
4		cyanides { salts of hydrogen cyanide with the exception of complex cyanides such as ferrocyanides, ferricyanides and mercuric oxycyanide and those specified elsewhere in this Annex } 006-007-00-5		7.9	mg/kg	1.884	13.395	mg/kg	0.00134 %	✓	
5		barium { barium oxide } 215-127-9 / 1304-28-5		85	mg/kg	1.117	85.413	mg/kg	0.00854 %	✓	
6		cadmium { cadmium oxide } 048-002-00-0 / 215-146-2 / 1306-19-0		1.1	mg/kg	1.142	1.131	mg/kg	0.000113 %	✓	
7		molybdenum { molybdenum(VI) oxide } 042-001-00-9 / 215-204-7 / 1313-27-5		2.4	mg/kg	1.5	3.24	mg/kg	0.000324 %	✓	
8		antimony { antimony compounds, with the exception of the tetroxide (Sb2O4), pentoxide (Sb2O5), trisulphide (Sb2S3), pentasulphide (Sb2S5) and those specified elsewhere in this Annex } 051-003-00-9	1	<2	mg/kg		<2	mg/kg	<0.0002 %		<LOD
9		arsenic { arsenic } 033-001-00-X / 231-148-6 / 7440-38-2		17	mg/kg		15.3	mg/kg	0.00153 %	✓	
10		granulated copper; [particle length: from 0,9 mm to 6,0 mm; particle width: from 0,494 to 0,949 mm] 029-024-00-X / 231-159-6 / 7440-50-8		110	mg/kg		99	mg/kg	0.0099 %	✓	
11		mercury { mercury } 080-001-00-0 / 231-106-7 / 7439-97-6		0.54	mg/kg		0.486	mg/kg	0.0000486 %	✓	
12		nickel { nickel(II) oxide (nickel monoxide) } 028-003-00-2 / 215-215-7 [1] 234-323-5 [2] - [3] / 1313-99-1 [1] 11099-02-8 [2] 34492-97-2 [3]		29	mg/kg	1.273	33.215	mg/kg	0.00332 %	✓	
13		lead { lead compounds with the exception of those specified elsewhere in this Annex } 082-001-00-6	1	180	mg/kg		162	mg/kg	0.0162 %	✓	

#	Determinand	CLP index number	EC Number	CAS Number	CLP Note	User entered data		Conv. Factor	Compound conc.		Classification value	MC Applied	Conc. Not Used
14	selenium { selenium compounds with the exception of cadmium sulphoselenide and those specified elsewhere in this Annex }	034-002-00-8				0.73	mg/kg	1.405	0.923	mg/kg	0.0000923 %	✓	
15	zinc { zinc oxide }	030-013-00-7	215-222-5	1314-13-2		120	mg/kg	1.245	134.429	mg/kg	0.0134 %	✓	
16	chromium in chromium(III) compounds { chromium(III) oxide }		215-160-9	1308-38-9		17	mg/kg	1.462	22.362	mg/kg	0.00224 %	✓	
17	chromium in chromium(VI) compounds { chromium(VI) oxide }	024-001-00-0	215-607-8	1333-82-0		<0.5	mg/kg	1.923	<0.962	mg/kg	<0.0000962 %		<LOD
18	TPH (C6 to C40) petroleum group			TPH		<10	mg/kg		<10	mg/kg	<0.001 %		<LOD
19	benzene	601-020-00-8	200-753-7	71-43-2		<1	µg/kg		<0.001	mg/kg	<0.0000001 %		<LOD
20	toluene	601-021-00-3	203-625-9	108-88-3		<1	µg/kg		<0.001	mg/kg	<0.0000001 %		<LOD
21	ethylbenzene	601-023-00-4	202-849-4	100-41-4		<1	µg/kg		<0.001	mg/kg	<0.0000001 %		<LOD
22	tert-butyl methyl ether; MTBE; 2-methoxy-2-methylpropane	603-181-00-X	216-653-1	1634-04-4		<1	µg/kg		<0.001	mg/kg	<0.0000001 %		<LOD
23	naphthalene	601-052-00-2	202-049-5	91-20-3		<0.1	mg/kg		<0.1	mg/kg	<0.00001 %		<LOD
24	acenaphthylene		205-917-1	208-96-8		<0.1	mg/kg		<0.1	mg/kg	<0.00001 %		<LOD
25	acenaphthene		201-469-6	83-32-9		<0.1	mg/kg		<0.1	mg/kg	<0.00001 %		<LOD
26	fluorene		201-695-5	86-73-7		<0.1	mg/kg		<0.1	mg/kg	<0.00001 %		<LOD
27	phenanthrene		201-581-5	85-01-8		0.83	mg/kg		0.747	mg/kg	0.0000747 %	✓	
28	anthracene		204-371-1	120-12-7		0.17	mg/kg		0.153	mg/kg	0.0000153 %	✓	
29	fluoranthene		205-912-4	206-44-0		1	mg/kg		0.9	mg/kg	0.00009 %	✓	
30	pyrene		204-927-3	129-00-0		0.95	mg/kg		0.855	mg/kg	0.0000855 %	✓	
31	benzo[a]anthracene	601-033-00-9	200-280-6	56-55-3		0.58	mg/kg		0.522	mg/kg	0.0000522 %	✓	
32	chrysene	601-048-00-0	205-923-4	218-01-9		0.63	mg/kg		0.567	mg/kg	0.0000567 %	✓	
33	benzo[b]fluoranthene	601-034-00-4	205-911-9	205-99-2		0.72	mg/kg		0.648	mg/kg	0.0000648 %	✓	
34	benzo[k]fluoranthene	601-036-00-5	205-916-6	207-08-9		0.21	mg/kg		0.189	mg/kg	0.0000189 %	✓	
35	benzo[a]pyrene; benzo[def]chrysene	601-032-00-3	200-028-5	50-32-8		0.63	mg/kg		0.567	mg/kg	0.0000567 %	✓	
36	indeno[123-cd]pyrene		205-893-2	193-39-5		<0.1	mg/kg		<0.1	mg/kg	<0.00001 %		<LOD
37	dibenz[a,h]anthracene	601-041-00-2	200-181-8	53-70-3		<0.1	mg/kg		<0.1	mg/kg	<0.00001 %		<LOD
38	benzo[ghi]perylene		205-883-8	191-24-2		<0.1	mg/kg		<0.1	mg/kg	<0.00001 %		<LOD
39	coronene		205-881-7	191-07-1		<0.1	mg/kg		<0.1	mg/kg	<0.00001 %		<LOD
40	polychlorobiphenyls; PCB	602-039-00-4	215-648-1	1336-36-3		<0.1	mg/kg		<0.1	mg/kg	<0.00001 %		<LOD

#		Determinand			CLP Note	User entered data		Conv. Factor	Compound conc.		Classification value	MC Applied	Conc. Not Used
		CLP index number	EC Number	CAS Number									
41	●	monohydric phenols		P1186		<0.1	mg/kg		<0.1	mg/kg	<0.00001 %		<LOD
42		xylene 601-022-00-9	202-422-2 [1] 203-396-5 [2] 203-576-3 [3] 215-535-7 [4]	95-47-6 [1] 106-42-3 [2] 108-38-3 [3] 1330-20-7 [4]		<2	µg/kg		<0.002	mg/kg	<0.0000002 %		<LOD
										Total:	0.0599 %		

Key

(yellow)	User supplied data
(grey)	Determinand values ignored for classification, see column 'Conc. Not Used' for reason
●	Determinand defined or amended by HazWasteOnline (see Appendix A)
	Speciated Deteminand - Unless the Determinand is Note 1, the Conversion Factor is used to calculate the compound concentration
<LOD	Below limit of detection
ND	Not detected
CLP: Note 1	Only the metal concentration has been used for classification

WAC results for sample: TP16-0.30

WAC Settings: samples in this Job constitute a single population.

WAC limits used to evaluate this sample: "Ireland"
The WAC used in this report are the WAC defined for the inert and non-hazardous classes of landfill in the Republic of Ireland. You should check the actual acceptance criteria when the disposal site is identified as they may differ from the generic WAC used in this report.

The sample FAILS the Inert (Inert waste landfill) criteria.

The sample PASSES the Non Haz (Non hazardous waste landfill) criteria.

WAC Determinands

Solid Waste Analysis				Landfill Waste Acceptance Criteria Limits	
#	Determinand		User entered data	Inert waste landfill	Non hazardous waste landfill
1	TOC (total organic carbon)	%	4.7	3	5
2	LOI (loss on ignition)	%	9	-	-
3	BTEX (benzene, toluene, ethylbenzene and xylenes)	mg/kg	<0.01	6	-
4	PCBs (polychlorinated biphenyls, 7 congeners)	mg/kg	<0.1	1	-
5	Mineral oil (C10 to C40)	mg/kg	<10	500	-
6	PAHs (polycyclic aromatic hydrocarbons)	mg/kg	5.7	100	-
7	pH	pH	8.2	-	>6
8	ANC (acid neutralisation capacity)	mol/kg	<0.002	-	-
Eluate Analysis 10:1					
9	arsenic	mg/kg	0.068	0.5	2
10	barium	mg/kg	0.075	20	100
11	cadmium	mg/kg	<0.0001	0.04	1
12	chromium	mg/kg	<0.0005	0.5	10
13	copper	mg/kg	0.072	2	50
14	mercury	mg/kg	<5.0e-05	0.01	0.2
15	molybdenum	mg/kg	0.046	0.5	10
16	nickel	mg/kg	0.01	0.4	10
17	lead	mg/kg	0.0078	0.5	10
18	antimony	mg/kg	0.01	0.06	0.7
19	selenium	mg/kg	0.011	0.1	0.5
20	zinc	mg/kg	<0.0025	4	50
21	chloride	mg/kg	<10	800	15,000
22	fluoride	mg/kg	2.5	10	150
23	sulphate	mg/kg	<10	1,000	20,000
24	phenol index	mg/kg	<0.3	1	-
25	DOC (dissolved organic carbon)	mg/kg	59	500	800
26	TDS (total dissolved solids)	mg/kg	1400	4,000	60,000

Key

User supplied data

Inert WAC criteria fail

Classification of sample: TP16-0.60

Non Hazardous Waste
Classified as **17 05 04**
in the List of Waste

Sample details

Sample name:
TP16-0.60
Sample Depth:
0.60-0.60 m
Moisture content:
9.7%
(wet weight correction)

LoW Code:
Chapter: 17: Construction and Demolition Wastes (including excavated soil from contaminated sites)
Entry: 17 05 04 (Soil and stones other than those mentioned in 17 05 03)

Hazard properties

None identified

Determinands

Moisture content: 9.7% Wet Weight Moisture Correction applied (MC)

#	Determinand	CLP index number	EC Number	CAS Number	CLP Note	User entered data	Conv. Factor	Compound conc.	Classification value	MC Applied	Conc. Not Used
1	pH			PH		8.6 pH		8.6 pH	8.6 pH		
2	boron { diboron trioxide; boric oxide }	005-008-00-8	215-125-8	1303-86-2		0.88 mg/kg	3.22	2.559 mg/kg	0.000256 %	✓	
3	sulfur { sulfur }	016-094-00-1	231-722-6	7704-34-9		<1 mg/kg		<1 mg/kg	<0.0001 %		<LOD
4	cyanides { salts of hydrogen cyanide with the exception of complex cyanides such as ferrocyanides, ferricyanides and mercuric oxycyanide and those specified elsewhere in this Annex }	006-007-00-5				18 mg/kg	1.884	30.623 mg/kg	0.00306 %	✓	
5	barium { barium oxide }		215-127-9	1304-28-5		57 mg/kg	1.117	57.468 mg/kg	0.00575 %	✓	
6	cadmium { cadmium oxide }	048-002-00-0	215-146-2	1306-19-0		1.3 mg/kg	1.142	1.341 mg/kg	0.000134 %	✓	
7	molybdenum { molybdenum(VI) oxide }	042-001-00-9	215-204-7	1313-27-5		2.4 mg/kg	1.5	3.251 mg/kg	0.000325 %	✓	
8	antimony { antimony compounds, with the exception of the tetroxide (Sb2O4), pentoxide (Sb2O5), trisulphide (Sb2S3), pentasulphide (Sb2S5) and those specified elsewhere in this Annex }	051-003-00-9			1	<2 mg/kg		<2 mg/kg	<0.0002 %		<LOD
9	arsenic { arsenic }	033-001-00-X	231-148-6	7440-38-2		10 mg/kg		9.03 mg/kg	0.000903 %	✓	
10	granulated copper; [particle length: from 0,9 mm to 6,0 mm; particle width: from 0,494 to 0,949 mm]	029-024-00-X	231-159-6	7440-50-8		58 mg/kg		52.374 mg/kg	0.00524 %	✓	
11	mercury { mercury }	080-001-00-0	231-106-7	7439-97-6		0.12 mg/kg		0.108 mg/kg	0.0000108 %	✓	
12	nickel { nickel(II) oxide (nickel monoxide) }	028-003-00-2	215-215-7 [1] 234-323-5 [2] - [3]	1313-99-1 [1] 11099-02-8 [2] 34492-97-2 [3]		25 mg/kg	1.273	28.729 mg/kg	0.00287 %	✓	
13	lead { lead compounds with the exception of those specified elsewhere in this Annex }	082-001-00-6			1	36 mg/kg		32.508 mg/kg	0.00325 %	✓	

#	Determinand	CLP index number	EC Number	CAS Number	CLP Note	User entered data		Conv. Factor	Compound conc.		Classification value	MC Applied	Conc. Not Used
14	selenium { selenium compounds with the exception of cadmium sulphoselenide and those specified elsewhere in this Annex }	034-002-00-8				0.34	mg/kg	1.405	0.431	mg/kg	0.0000431 %	✓	
15	zinc { zinc oxide }	030-013-00-7	215-222-5	1314-13-2		74	mg/kg	1.245	83.174	mg/kg	0.00832 %	✓	
16	chromium in chromium(III) compounds { chromium(III) oxide }		215-160-9	1308-38-9		15	mg/kg	1.462	19.797	mg/kg	0.00198 %	✓	
17	chromium in chromium(VI) compounds { chromium(VI) oxide }	024-001-00-0	215-607-8	1333-82-0		<0.5	mg/kg	1.923	<0.962	mg/kg	<0.0000962 %		<LOD
18	TPH (C6 to C40) petroleum group			TPH		<10	mg/kg		<10	mg/kg	<0.001 %		<LOD
19	benzene	601-020-00-8	200-753-7	71-43-2		<1	µg/kg		<0.001	mg/kg	<0.0000001 %		<LOD
20	toluene	601-021-00-3	203-625-9	108-88-3		<1	µg/kg		<0.001	mg/kg	<0.0000001 %		<LOD
21	ethylbenzene	601-023-00-4	202-849-4	100-41-4		<1	µg/kg		<0.001	mg/kg	<0.0000001 %		<LOD
22	tert-butyl methyl ether; MTBE; 2-methoxy-2-methylpropane	603-181-00-X	216-653-1	1634-04-4		<1	µg/kg		<0.001	mg/kg	<0.0000001 %		<LOD
23	naphthalene	601-052-00-2	202-049-5	91-20-3		<0.1	mg/kg		<0.1	mg/kg	<0.00001 %		<LOD
24	acenaphthylene		205-917-1	208-96-8		<0.1	mg/kg		<0.1	mg/kg	<0.00001 %		<LOD
25	acenaphthene		201-469-6	83-32-9		<0.1	mg/kg		<0.1	mg/kg	<0.00001 %		<LOD
26	fluorene		201-695-5	86-73-7		<0.1	mg/kg		<0.1	mg/kg	<0.00001 %		<LOD
27	phenanthrene		201-581-5	85-01-8		<0.1	mg/kg		<0.1	mg/kg	<0.00001 %		<LOD
28	anthracene		204-371-1	120-12-7		<0.1	mg/kg		<0.1	mg/kg	<0.00001 %		<LOD
29	fluoranthene		205-912-4	206-44-0		<0.1	mg/kg		<0.1	mg/kg	<0.00001 %		<LOD
30	pyrene		204-927-3	129-00-0		<0.1	mg/kg		<0.1	mg/kg	<0.00001 %		<LOD
31	benzo[a]anthracene	601-033-00-9	200-280-6	56-55-3		<0.1	mg/kg		<0.1	mg/kg	<0.00001 %		<LOD
32	chrysene	601-048-00-0	205-923-4	218-01-9		<0.1	mg/kg		<0.1	mg/kg	<0.00001 %		<LOD
33	benzo[b]fluoranthene	601-034-00-4	205-911-9	205-99-2		<0.1	mg/kg		<0.1	mg/kg	<0.00001 %		<LOD
34	benzo[k]fluoranthene	601-036-00-5	205-916-6	207-08-9		<0.1	mg/kg		<0.1	mg/kg	<0.00001 %		<LOD
35	benzo[a]pyrene; benzo[def]chrysene	601-032-00-3	200-028-5	50-32-8		<0.1	mg/kg		<0.1	mg/kg	<0.00001 %		<LOD
36	indeno[123-cd]pyrene		205-893-2	193-39-5		<0.1	mg/kg		<0.1	mg/kg	<0.00001 %		<LOD
37	dibenz[a,h]anthracene	601-041-00-2	200-181-8	53-70-3		<0.1	mg/kg		<0.1	mg/kg	<0.00001 %		<LOD
38	benzo[ghi]perylene		205-883-8	191-24-2		<0.1	mg/kg		<0.1	mg/kg	<0.00001 %		<LOD
39	coronene		205-881-7	191-07-1		<0.1	mg/kg		<0.1	mg/kg	<0.00001 %		<LOD
40	polychlorobiphenyls; PCB	602-039-00-4	215-648-1	1336-36-3		<0.1	mg/kg		<0.1	mg/kg	<0.00001 %		<LOD

#		Determinand CLP index number / EC Number / CAS Number	CLP Note	User entered data	Conv. Factor	Compound conc.	Classification value	MC Applied	Conc. Not Used
41	●	monohydric phenols P1186		<0.1 mg/kg		<0.1 mg/kg	<0.00001 %		<LOD
42		xylene 601-022-00-9 / 202-422-2 [1], 203-396-5 [2], 203-576-3 [3], 215-535-7 [4] / 95-47-6 [1], 106-42-3 [2], 108-38-3 [3], 1330-20-7 [4]		<2 µg/kg		<0.002 mg/kg	<0.0000002 %		<LOD
						Total:	0.0337 %		

Key

(yellow)	User supplied data
(grey)	Determinand values ignored for classification, see column 'Conc. Not Used' for reason
●	Determinand defined or amended by HazWasteOnline (see Appendix A)
	Speciated Deteminand - Unless the Determinand is Note 1, the Conversion Factor is used to calculate the compound concentration
<LOD	Below limit of detection
ND	Not detected
CLP: Note 1	Only the metal concentration has been used for classification

WAC results for sample: TP16-0.60

WAC Settings: samples in this Job constitute a single population.

WAC limits used to evaluate this sample: "Ireland"
The WAC used in this report are the WAC defined for the inert and non-hazardous classes of landfill in the Republic of Ireland. You should check the actual acceptance criteria when the disposal site is identified as they may differ from the generic WAC used in this report.

The sample PASSES the Inert (Inert waste landfill) criteria.

The sample PASSES the Non Haz (Non hazardous waste landfill) criteria.

WAC Determinands

Solid Waste Analysis				Landfill Waste Acceptance Criteria Limits	
#	Determinand		User entered data	Inert waste landfill	Non hazardous waste landfill
1	TOC (total organic carbon)	%	1.1	3	5
2	LOI (loss on ignition)	%	3.6	-	-
3	BTEX (benzene, toluene, ethylbenzene and xylenes)	mg/kg	<0.01	6	-
4	PCBs (polychlorinated biphenyls, 7 congeners)	mg/kg	<0.1	1	-
5	Mineral oil (C10 to C40)	mg/kg	<10	500	-
6	PAHs (polycyclic aromatic hydrocarbons)	mg/kg	<2	100	-
7	pH	pH	8.6	-	>6
8	ANC (acid neutralisation capacity)	mol/kg	0.011	-	-
Eluate Analysis 10:1					
9	arsenic	mg/kg	0.012	0.5	2
10	barium	mg/kg	<0.0005	20	100
11	cadmium	mg/kg	<0.0001	0.04	1
12	chromium	mg/kg	0.015	0.5	10
13	copper	mg/kg	0.017	2	50
14	mercury	mg/kg	<5.0e-05	0.01	0.2
15	molybdenum	mg/kg	0.23	0.5	10
16	nickel	mg/kg	<0.0005	0.4	10
17	lead	mg/kg	<0.0005	0.5	10
18	antimony	mg/kg	0.0077	0.06	0.7
19	selenium	mg/kg	0.0064	0.1	0.5
20	zinc	mg/kg	<0.0025	4	50
21	chloride	mg/kg	<10	800	15,000
22	fluoride	mg/kg	3.4	10	150
23	sulphate	mg/kg	<10	1,000	20,000
24	phenol index	mg/kg	<0.3	1	-
25	DOC (dissolved organic carbon)	mg/kg	53	500	800
26	TDS (total dissolved solids)	mg/kg	1300	4,000	60,000

Key
User supplied data

Classification of sample: TP17-0.30

Non Hazardous Waste
Classified as **17 05 04**
in the List of Waste

Sample details

Sample name:		LoW Code:	
TP17-0.30		Chapter:	17: Construction and Demolition Wastes (including excavated soil from contaminated sites)
Sample Depth:			
0.30-0.30 m		Entry:	17 05 04 (Soil and stones other than those mentioned in 17 05 03)
Moisture content:			
7.7% (wet weight correction)			

Hazard properties

None identified

Determinands

Moisture content: 7.7% Wet Weight Moisture Correction applied (MC)

#	Determinand	CLP index number	EC Number	CAS Number	CLP Note	User entered data		Conv. Factor	Compound conc.		Classification value	MC Applied	Conc. Not Used
1	pH			PH		8.3	pH		8.3	pH	8.3 pH		
2	boron { diboron trioxide; boric oxide }	005-008-00-8	215-125-8	1303-86-2		1.8	mg/kg	3.22	5.35	mg/kg	0.000535 %	✓	
3	sulfur { sulfur }	016-094-00-1	231-722-6	7704-34-9		10	mg/kg		9.23	mg/kg	0.000923 %	✓	
4	cyanides { salts of hydrogen cyanide with the exception of complex cyanides such as ferrocyanides, ferricyanides and mercuric oxycyanide and those specified elsewhere in this Annex }	006-007-00-5				1.2	mg/kg	1.884	2.087	mg/kg	0.000209 %	✓	
5	barium { barium oxide }		215-127-9	1304-28-5		87	mg/kg	1.117	89.657	mg/kg	0.00897 %	✓	
6	cadmium { cadmium oxide }	048-002-00-0	215-146-2	1306-19-0		1.1	mg/kg	1.142	1.16	mg/kg	0.000116 %	✓	
7	molybdenum { molybdenum(VI) oxide }	042-001-00-9	215-204-7	1313-27-5		2.7	mg/kg	1.5	3.739	mg/kg	0.000374 %	✓	
8	antimony { antimony compounds, with the exception of the tetroxide (Sb2O4), pentoxide (Sb2O5), trisulphide (Sb2S3), pentasulphide (Sb2S5) and those specified elsewhere in this Annex }	051-003-00-9			1	2	mg/kg		1.846	mg/kg	0.000185 %	✓	
9	arsenic { arsenic }	033-001-00-X	231-148-6	7440-38-2		22	mg/kg		20.306	mg/kg	0.00203 %	✓	
10	granulated copper; [particle length: from 0,9 mm to 6,0 mm; particle width: from 0,494 to 0,949 mm]	029-024-00-X	231-159-6	7440-50-8		110	mg/kg		101.53	mg/kg	0.0102 %	✓	
11	mercury { mercury }	080-001-00-0	231-106-7	7439-97-6		0.57	mg/kg		0.526	mg/kg	0.0000526 %	✓	
12	nickel { nickel(II) oxide (nickel monoxide) }	028-003-00-2	215-215-7 [1] 234-323-5 [2] - [3]	1313-99-1 [1] 11099-02-8 [2] 34492-97-2 [3]		34	mg/kg	1.273	39.937	mg/kg	0.00399 %	✓	
13	lead { lead compounds with the exception of those specified elsewhere in this Annex }	082-001-00-6			1	160	mg/kg		147.68	mg/kg	0.0148 %	✓	

#	Determinand	CLP index number	EC Number	CAS Number	CLP Note	User entered data		Conv. Factor	Compound conc.		Classification value	MC Applied	Conc. Not Used
14	selenium { selenium compounds with the exception of cadmium sulphoselenide and those specified elsewhere in this Annex }	034-002-00-8				0.47	mg/kg	1.405	0.61	mg/kg	0.000061 %	✓	
15	zinc { zinc oxide }	030-013-00-7	215-222-5	1314-13-2		120	mg/kg	1.245	137.865	mg/kg	0.0138 %	✓	
16	chromium in chromium(III) compounds { chromium(III) oxide }		215-160-9	1308-38-9		18	mg/kg	1.462	24.282	mg/kg	0.00243 %	✓	
17	chromium in chromium(VI) compounds { chromium(VI) oxide }	024-001-00-0	215-607-8	1333-82-0		<0.5	mg/kg	1.923	<0.962	mg/kg	<0.0000962 %		<LOD
18	TPH (C6 to C40) petroleum group			TPH		<10	mg/kg		<10	mg/kg	<0.001 %		<LOD
19	benzene	601-020-00-8	200-753-7	71-43-2		<1	µg/kg		<0.001	mg/kg	<0.0000001 %		<LOD
20	toluene	601-021-00-3	203-625-9	108-88-3		<1	µg/kg		<0.001	mg/kg	<0.0000001 %		<LOD
21	ethylbenzene	601-023-00-4	202-849-4	100-41-4		<1	µg/kg		<0.001	mg/kg	<0.0000001 %		<LOD
22	tert-butyl methyl ether; MTBE; 2-methoxy-2-methylpropane	603-181-00-X	216-653-1	1634-04-4		<1	µg/kg		<0.001	mg/kg	<0.0000001 %		<LOD
23	naphthalene	601-052-00-2	202-049-5	91-20-3		<0.1	mg/kg		<0.1	mg/kg	<0.00001 %		<LOD
24	acenaphthylene		205-917-1	208-96-8		<0.1	mg/kg		<0.1	mg/kg	<0.00001 %		<LOD
25	acenaphthene		201-469-6	83-32-9		<0.1	mg/kg		<0.1	mg/kg	<0.00001 %		<LOD
26	fluorene		201-695-5	86-73-7		<0.1	mg/kg		<0.1	mg/kg	<0.00001 %		<LOD
27	phenanthrene		201-581-5	85-01-8		3.4	mg/kg		3.138	mg/kg	0.000314 %	✓	
28	anthracene		204-371-1	120-12-7		0.5	mg/kg		0.461	mg/kg	0.0000461 %	✓	
29	fluoranthene		205-912-4	206-44-0		4.2	mg/kg		3.877	mg/kg	0.000388 %	✓	
30	pyrene		204-927-3	129-00-0		3.6	mg/kg		3.323	mg/kg	0.000332 %	✓	
31	benzo[a]anthracene	601-033-00-9	200-280-6	56-55-3		1.8	mg/kg		1.661	mg/kg	0.000166 %	✓	
32	chrysene	601-048-00-0	205-923-4	218-01-9		1.9	mg/kg		1.754	mg/kg	0.000175 %	✓	
33	benzo[b]fluoranthene	601-034-00-4	205-911-9	205-99-2		1.9	mg/kg		1.754	mg/kg	0.000175 %	✓	
34	benzo[k]fluoranthene	601-036-00-5	205-916-6	207-08-9		0.67	mg/kg		0.618	mg/kg	0.0000618 %	✓	
35	benzo[a]pyrene; benzo[def]chrysene	601-032-00-3	200-028-5	50-32-8		1.4	mg/kg		1.292	mg/kg	0.000129 %	✓	
36	indeno[123-cd]pyrene		205-893-2	193-39-5		0.87	mg/kg		0.803	mg/kg	0.0000803 %	✓	
37	dibenz[a,h]anthracene	601-041-00-2	200-181-8	53-70-3		0.24	mg/kg		0.222	mg/kg	0.0000222 %	✓	
38	benzo[ghi]perylene		205-883-8	191-24-2		1.2	mg/kg		1.108	mg/kg	0.000111 %	✓	
39	coronene		205-881-7	191-07-1		<0.1	mg/kg		<0.1	mg/kg	<0.00001 %		<LOD
40	polychlorobiphenyls; PCB	602-039-00-4	215-648-1	1336-36-3		<0.1	mg/kg		<0.1	mg/kg	<0.00001 %		<LOD

#		Determinand			CLP Note	User entered data		Conv. Factor	Compound conc.		Classification value	MC Applied	Conc. Not Used
		CLP index number	EC Number	CAS Number									
41	●	monohydric phenols				<0.1	mg/kg		<0.1	mg/kg	<0.00001 %		**<LOD**
				P1186									
42		xylene				<2	µg/kg		<0.002	mg/kg	<0.0000002 %		**<LOD**
		601-022-00-9	202-422-2 [1] 203-396-5 [2] 203-576-3 [3] 215-535-7 [4]	95-47-6 [1] 106-42-3 [2] 108-38-3 [3] 1330-20-7 [4]									
										Total:	0.0617 %		

Key

(yellow)	User supplied data
(grey)	Determinand values ignored for classification, see column 'Conc. Not Used' for reason
●	Determinand defined or amended by HazWasteOnline (see Appendix A)
	Speciated Deteminand - Unless the Determinand is Note 1, the Conversion Factor is used to calculate the compound concentration
<LOD	Below limit of detection
ND	Not detected
CLP: Note 1	Only the metal concentration has been used for classification

WAC results for sample: TP17-0.30

WAC Settings: samples in this Job constitute a single population.

WAC limits used to evaluate this sample: "Ireland"
The WAC used in this report are the WAC defined for the inert and non-hazardous classes of landfill in the Republic of Ireland. You should check the actual acceptance criteria when the disposal site is identified as they may differ from the generic WAC used in this report.

The sample FAILS the Inert (Inert waste landfill) criteria.

The sample PASSES the Non Haz (Non hazardous waste landfill) criteria.

WAC Determinands

Solid Waste Analysis				Landfill Waste Acceptance Criteria Limits	
#	Determinand		User entered data	Inert waste landfill	Non hazardous waste landfill
1	TOC (total organic carbon)	%	3	3	5
2	LOI (loss on ignition)	%	6.7	-	-
3	BTEX (benzene, toluene, ethylbenzene and xylenes)	mg/kg	<0.01	6	-
4	PCBs (polychlorinated biphenyls, 7 congeners)	mg/kg	<0.1	1	-
5	Mineral oil (C10 to C40)	mg/kg	<10	500	-
6	PAHs (polycyclic aromatic hydrocarbons)	mg/kg	22	100	-
7	pH	pH	8.3	-	>6
8	ANC (acid neutralisation capacity)	mol/kg	0.008	-	-
Eluate Analysis 10:1					
9	arsenic	mg/kg	0.16	0.5	2
10	barium	mg/kg	<0.0005	20	100
11	cadmium	mg/kg	<0.0001	0.04	1
12	chromium	mg/kg	<0.0005	0.5	10
13	copper	mg/kg	0.036	2	50
14	mercury	mg/kg	<5.0e-05	0.01	0.2
15	molybdenum	mg/kg	0.058	0.5	10
16	nickel	mg/kg	0.0084	0.4	10
17	lead	mg/kg	<0.0005	0.5	10
18	antimony	mg/kg	0.025	0.06	0.7
19	selenium	mg/kg	0.0094	0.1	0.5
20	zinc	mg/kg	<0.0025	4	50
21	chloride	mg/kg	<10	800	15,000
22	fluoride	mg/kg	3.1	10	150
23	sulphate	mg/kg	<10	1,000	20,000
24	phenol index	mg/kg	<0.3	1	-
25	DOC (dissolved organic carbon)	mg/kg	78	500	800
26	TDS (total dissolved solids)	mg/kg	1200	4,000	60,000

Key

(yellow)	User supplied data
(blue)	Inert WAC criteria fail

Classification of sample: TP17-0.60

Non Hazardous Waste
Classified as **17 05 04**
in the List of Waste

Sample details

Sample name:		LoW Code:	
TP17-0.60		Chapter:	17: Construction and Demolition Wastes (including excavated soil from contaminated sites)
Sample Depth:			
0.60-0.60 m		Entry:	17 05 04 (Soil and stones other than those mentioned in 17 05 03)
Moisture content:			
6.7% (wet weight correction)			

Hazard properties

None identified

Determinands

Moisture content: 6.7% Wet Weight Moisture Correction applied (MC)

#	Determinand	CLP index number	EC Number	CAS Number	CLP Note	User entered data		Conv. Factor	Compound conc.		Classification value	MC Applied	Conc. Not Used
1	pH			PH		8.3	pH		8.3	pH	8.3 pH		
2	boron { diboron trioxide; boric oxide }	005-008-00-8	215-125-8	1303-86-2		0.43	mg/kg	3.22	1.292	mg/kg	0.000129 %	✓	
3	sulfur { sulfur }	016-094-00-1	231-722-6	7704-34-9		<1	mg/kg		<1	mg/kg	<0.0001 %		<LOD
4	cyanides { salts of hydrogen cyanide with the exception of complex cyanides such as ferrocyanides, ferricyanides and mercuric oxycyanide and those specified elsewhere in this Annex }	006-007-00-5				<0.5	mg/kg	1.884	<0.942	mg/kg	<0.0000942 %		<LOD
5	barium { barium oxide }		215-127-9	1304-28-5		63	mg/kg	1.117	65.627	mg/kg	0.00656 %	✓	
6	cadmium { cadmium oxide }	048-002-00-0	215-146-2	1306-19-0		1.4	mg/kg	1.142	1.492	mg/kg	0.000149 %	✓	
7	molybdenum { molybdenum(VI) oxide }	042-001-00-9	215-204-7	1313-27-5		2.7	mg/kg	1.5	3.779	mg/kg	0.000378 %	✓	
8	antimony { antimony compounds, with the exception of the tetroxide (Sb_2O_4), pentoxide (Sb_2O_5), trisulphide (Sb_2S_3), pentasulphide (Sb_2S_5) and those specified elsewhere in this Annex }	051-003-00-9			1	<2	mg/kg		<2	mg/kg	<0.0002 %		<LOD
9	arsenic { arsenic }	033-001-00-X	231-148-6	7440-38-2		15	mg/kg		13.995	mg/kg	0.0014 %	✓	
10	granulated copper; [particle length: from 0,9 mm to 6,0 mm; particle width: from 0,494 to 0,949 mm]	029-024-00-X	231-159-6	7440-50-8		58	mg/kg		54.114	mg/kg	0.00541 %	✓	
11	mercury { mercury }	080-001-00-0	231-106-7	7439-97-6		0.16	mg/kg		0.149	mg/kg	0.0000149 %	✓	
12	nickel { nickel(II) oxide (nickel monoxide) }	028-003-00-2	215-215-7 [1] 234-323-5 [2] - [3]	1313-99-1 [1] 11099-02-8 [2] 34492-97-2 [3]		44	mg/kg	1.273	52.242	mg/kg	0.00522 %	✓	
13	lead { lead compounds with the exception of those specified elsewhere in this Annex }	082-001-00-6			1	37	mg/kg		34.521	mg/kg	0.00345 %	✓	

#	Determinand	CLP index number	EC Number	CAS Number	CLP Note	User entered data		Conv. Factor	Compound conc.		Classification value	MC Applied	Conc. Not Used
14	selenium { selenium compounds with the exception of cadmium sulphoselenide and those specified elsewhere in this Annex }	034-002-00-8				0.34	mg/kg	1.405	0.446	mg/kg	0.0000446 %	✓	
15	zinc { zinc oxide }	030-013-00-7	215-222-5	1314-13-2		88	mg/kg	1.245	102.196	mg/kg	0.0102 %	✓	
16	chromium in chromium(III) compounds { chromium(III) oxide }		215-160-9	1308-38-9		29	mg/kg	1.462	39.545	mg/kg	0.00395 %	✓	
17	chromium in chromium(VI) compounds { chromium(VI) oxide }	024-001-00-0	215-607-8	1333-82-0		<0.5	mg/kg	1.923	<0.962	mg/kg	<0.0000962 %		<LOD
18	TPH (C6 to C40) petroleum group			TPH		<10	mg/kg		<10	mg/kg	<0.001 %		<LOD
19	benzene	601-020-00-8	200-753-7	71-43-2		<1	µg/kg		<0.001	mg/kg	<0.0000001 %		<LOD
20	toluene	601-021-00-3	203-625-9	108-88-3		<1	µg/kg		<0.001	mg/kg	<0.0000001 %		<LOD
21	ethylbenzene	601-023-00-4	202-849-4	100-41-4		<1	µg/kg		<0.001	mg/kg	<0.0000001 %		<LOD
22	tert-butyl methyl ether; MTBE; 2-methoxy-2-methylpropane	603-181-00-X	216-653-1	1634-04-4		<1	µg/kg		<0.001	mg/kg	<0.0000001 %		<LOD
23	naphthalene	601-052-00-2	202-049-5	91-20-3		<0.1	mg/kg		<0.1	mg/kg	<0.00001 %		<LOD
24	acenaphthylene		205-917-1	208-96-8		<0.1	mg/kg		<0.1	mg/kg	<0.00001 %		<LOD
25	acenaphthene		201-469-6	83-32-9		<0.1	mg/kg		<0.1	mg/kg	<0.00001 %		<LOD
26	fluorene		201-695-5	86-73-7		<0.1	mg/kg		<0.1	mg/kg	<0.00001 %		<LOD
27	phenanthrene		201-581-5	85-01-8		<0.1	mg/kg		<0.1	mg/kg	<0.00001 %		<LOD
28	anthracene		204-371-1	120-12-7		<0.1	mg/kg		<0.1	mg/kg	<0.00001 %		<LOD
29	fluoranthene		205-912-4	206-44-0		<0.1	mg/kg		<0.1	mg/kg	<0.00001 %		<LOD
30	pyrene		204-927-3	129-00-0		<0.1	mg/kg		<0.1	mg/kg	<0.00001 %		<LOD
31	benzo[a]anthracene	601-033-00-9	200-280-6	56-55-3		<0.1	mg/kg		<0.1	mg/kg	<0.00001 %		<LOD
32	chrysene	601-048-00-0	205-923-4	218-01-9		<0.1	mg/kg		<0.1	mg/kg	<0.00001 %		<LOD
33	benzo[b]fluoranthene	601-034-00-4	205-911-9	205-99-2		<0.1	mg/kg		<0.1	mg/kg	<0.00001 %		<LOD
34	benzo[k]fluoranthene	601-036-00-5	205-916-6	207-08-9		<0.1	mg/kg		<0.1	mg/kg	<0.00001 %		<LOD
35	benzo[a]pyrene; benzo[def]chrysene	601-032-00-3	200-028-5	50-32-8		<0.1	mg/kg		<0.1	mg/kg	<0.00001 %		<LOD
36	indeno[123-cd]pyrene		205-893-2	193-39-5		<0.1	mg/kg		<0.1	mg/kg	<0.00001 %		<LOD
37	dibenz[a,h]anthracene	601-041-00-2	200-181-8	53-70-3		<0.1	mg/kg		<0.1	mg/kg	<0.00001 %		<LOD
38	benzo[ghi]perylene		205-883-8	191-24-2		<0.1	mg/kg		<0.1	mg/kg	<0.00001 %		<LOD
39	coronene		205-881-7	191-07-1		<0.1	mg/kg		<0.1	mg/kg	<0.00001 %		<LOD
40	polychlorobiphenyls; PCB	602-039-00-4	215-648-1	1336-36-3		<0.1	mg/kg		<0.1	mg/kg	<0.00001 %		<LOD

#		Determinand			CLP Note	User entered data		Conv. Factor	Compound conc.		Classification value	MC Applied	Conc. Not Used
		CLP index number	EC Number	CAS Number									
41	●	monohydric phenols				<0.1	mg/kg		<0.1	mg/kg	<0.00001 %		<LOD
				P1186									
42		xylene				<2	µg/kg		<0.002	mg/kg	<0.0000002 %		<LOD
		601-022-00-9	202-422-2 [1] 203-396-5 [2] 203-576-3 [3] 215-535-7 [4]	95-47-6 [1] 106-42-3 [2] 108-38-3 [3] 1330-20-7 [4]									
										Total:	0.0386 %		

Key

(yellow)	User supplied data
(grey)	Determinand values ignored for classification, see column 'Conc. Not Used' for reason
●	Determinand defined or amended by HazWasteOnline (see Appendix A)
	Speciated Deteminand - Unless the Determinand is Note 1, the Conversion Factor is used to calculate the compound concentration
<LOD	Below limit of detection
ND	Not detected
CLP: Note 1	Only the metal concentration has been used for classification

WAC results for sample: TP17-0.60

WAC Settings: samples in this Job constitute a single population.

WAC limits used to evaluate this sample: "Ireland"
The WAC used in this report are the WAC defined for the inert and non-hazardous classes of landfill in the Republic of Ireland. You should check the actual acceptance criteria when the disposal site is identified as they may differ from the generic WAC used in this report.

The sample PASSES the Inert (Inert waste landfill) criteria.

The sample PASSES the Non Haz (Non hazardous waste landfill) criteria.

WAC Determinands

Solid Waste Analysis				Landfill Waste Acceptance Criteria Limits	
#	Determinand		User entered data	Inert waste landfill	Non hazardous waste landfill
1	TOC (total organic carbon)	%	0.76	3	5
2	LOI (loss on ignition)	%	3.1	-	-
3	BTEX (benzene, toluene, ethylbenzene and xylenes)	mg/kg	<0.01	6	-
4	PCBs (polychlorinated biphenyls, 7 congeners)	mg/kg	<0.1	1	-
5	Mineral oil (C10 to C40)	mg/kg	<10	500	-
6	PAHs (polycyclic aromatic hydrocarbons)	mg/kg	<2	100	-
7	pH	pH	8.3	-	>6
8	ANC (acid neutralisation capacity)	mol/kg	0.006	-	-
Eluate Analysis 10:1					
9	arsenic	mg/kg	0.073	0.5	2
10	barium	mg/kg	<0.0005	20	100
11	cadmium	mg/kg	<0.0001	0.04	1
12	chromium	mg/kg	0.0053	0.5	10
13	copper	mg/kg	0.018	2	50
14	mercury	mg/kg	<5.0e-05	0.01	0.2
15	molybdenum	mg/kg	0.11	0.5	10
16	nickel	mg/kg	0.0064	0.4	10
17	lead	mg/kg	<0.0005	0.5	10
18	antimony	mg/kg	0.015	0.06	0.7
19	selenium	mg/kg	0.0062	0.1	0.5
20	zinc	mg/kg	<0.0025	4	50
21	chloride	mg/kg	<10	800	15,000
22	fluoride	mg/kg	2	10	150
23	sulphate	mg/kg	<10	1,000	20,000
24	phenol index	mg/kg	<0.3	1	-
25	DOC (dissolved organic carbon)	mg/kg	190	500	800
26	TDS (total dissolved solids)	mg/kg	410	4,000	60,000

Key

User supplied data

Classification of sample: TP18-0.30

Non Hazardous Waste
Classified as **17 05 04**
in the List of Waste

Sample details

Sample name:		LoW Code:	
TP18-0.30		Chapter:	17: Construction and Demolition Wastes (including excavated soil from contaminated sites)
Sample Depth:			
0.30-0.30 m		Entry:	17 05 04 (Soil and stones other than those mentioned in 17 05 03)
Moisture content:			
8.9% (wet weight correction)			

Hazard properties

None identified

Determinands

Moisture content: 8.9% Wet Weight Moisture Correction applied (MC)

#		Determinand CLP index number	EC Number	CAS Number	CLP Note	User entered data		Conv. Factor	Compound conc.		Classification value	MC Applied	Conc. Not Used
1		pH 		PH		8.2	pH		8.2	pH	8.2 pH		
2		boron { diboron trioxide; boric oxide } 005-008-00-8	215-125-8	1303-86-2		1.7	mg/kg	3.22	4.987	mg/kg	0.000499 %	✓	
3		sulfur { sulfur } 016-094-00-1	231-722-6	7704-34-9		7	mg/kg		6.377	mg/kg	0.000638 %	✓	
4		cyanides { salts of hydrogen cyanide with the exception of complex cyanides such as ferrocyanides, ferricyanides and mercuric oxycyanide and those specified elsewhere in this Annex } 006-007-00-5				<0.5	mg/kg	1.884	<0.942	mg/kg	<0.0000942 %		**<LOD**
5		barium { barium oxide } 	215-127-9	1304-28-5		110	mg/kg	1.117	111.885	mg/kg	0.0112 %	✓	
6		cadmium { cadmium oxide } 048-002-00-0	215-146-2	1306-19-0		1.3	mg/kg	1.142	1.353	mg/kg	0.000135 %	✓	
7		molybdenum { molybdenum(VI) oxide } 042-001-00-9	215-204-7	1313-27-5		3.3	mg/kg	1.5	4.51	mg/kg	0.000451 %	✓	
8		antimony { antimony compounds, with the exception of the tetroxide (Sb_2O_4), pentoxide (Sb_2O_5), trisulphide (Sb_2S_3), pentasulphide (Sb_2S_5) and those specified elsewhere in this Annex } 051-003-00-9			1	3.1	mg/kg		2.824	mg/kg	0.000282 %	✓	
9		arsenic { arsenic } 033-001-00-X	231-148-6	7440-38-2		24	mg/kg		21.864	mg/kg	0.00219 %	✓	
10		granulated copper; [particle length: from 0,9 mm to 6,0 mm; particle width: from 0,494 to 0,949 mm] 029-024-00-X	231-159-6	7440-50-8		72	mg/kg		65.592	mg/kg	0.00656 %	✓	
11		mercury { mercury } 080-001-00-0	231-106-7	7439-97-6		0.51	mg/kg		0.465	mg/kg	0.0000465 %	✓	
12		nickel { nickel(II) oxide (nickel monoxide) } 028-003-00-2	215-215-7 [1] 234-323-5 [2] - [3]	1313-99-1 [1] 11099-02-8 [2] 34492-97-2 [3]		40	mg/kg	1.273	46.373	mg/kg	0.00464 %	✓	
13		lead { lead compounds with the exception of those specified elsewhere in this Annex } 082-001-00-6			1	180	mg/kg		163.98	mg/kg	0.0164 %	✓	

#	Determinand	CLP index number	EC Number	CAS Number	CLP Note	User entered data		Conv. Factor	Compound conc.		Classification value	MC Applied	Conc. Not Used
14	selenium { selenium compounds with the exception of cadmium sulphoselenide and those specified elsewhere in this Annex }	034-002-00-8				0.55	mg/kg	1.405	0.704	mg/kg	0.0000704 %	✓	
15	zinc { zinc oxide }	030-013-00-7	215-222-5	1314-13-2		200	mg/kg	1.245	226.787	mg/kg	0.0227 %	✓	
16	chromium in chromium(III) compounds { chromium(III) oxide }		215-160-9	1308-38-9		24	mg/kg	1.462	31.955	mg/kg	0.0032 %	✓	
17	chromium in chromium(VI) compounds { chromium(VI) oxide }	024-001-00-0	215-607-8	1333-82-0		<0.5	mg/kg	1.923	<0.962	mg/kg	<0.0000962 %		<LOD
18	TPH (C6 to C40) petroleum group			TPH		430	mg/kg		391.73	mg/kg	0.0392 %	✓	
19	benzene	601-020-00-8	200-753-7	71-43-2		<1	µg/kg		<0.001	mg/kg	<0.0000001 %		<LOD
20	toluene	601-021-00-3	203-625-9	108-88-3		<1	µg/kg		<0.001	mg/kg	<0.0000001 %		<LOD
21	ethylbenzene	601-023-00-4	202-849-4	100-41-4		<1	µg/kg		<0.001	mg/kg	<0.0000001 %		<LOD
22	tert-butyl methyl ether; MTBE; 2-methoxy-2-methylpropane	603-181-00-X	216-653-1	1634-04-4		<1	µg/kg		<0.001	mg/kg	<0.0000001 %		<LOD
23	naphthalene	601-052-00-2	202-049-5	91-20-3		<0.1	mg/kg		<0.1	mg/kg	<0.00001 %		<LOD
24	acenaphthylene		205-917-1	208-96-8		<0.1	mg/kg		<0.1	mg/kg	<0.00001 %		<LOD
25	acenaphthene		201-469-6	83-32-9		<0.1	mg/kg		<0.1	mg/kg	<0.00001 %		<LOD
26	fluorene		201-695-5	86-73-7		<0.1	mg/kg		<0.1	mg/kg	<0.00001 %		<LOD
27	phenanthrene		201-581-5	85-01-8		3	mg/kg		2.733	mg/kg	0.000273 %	✓	
28	anthracene		204-371-1	120-12-7		0.44	mg/kg		0.401	mg/kg	0.0000401 %	✓	
29	fluoranthene		205-912-4	206-44-0		3.7	mg/kg		3.371	mg/kg	0.000337 %	✓	
30	pyrene		204-927-3	129-00-0		3.1	mg/kg		2.824	mg/kg	0.000282 %	✓	
31	benzo[a]anthracene	601-033-00-9	200-280-6	56-55-3		1.6	mg/kg		1.458	mg/kg	0.000146 %	✓	
32	chrysene	601-048-00-0	205-923-4	218-01-9		1.8	mg/kg		1.64	mg/kg	0.000164 %	✓	
33	benzo[b]fluoranthene	601-034-00-4	205-911-9	205-99-2		2	mg/kg		1.822	mg/kg	0.000182 %	✓	
34	benzo[k]fluoranthene	601-036-00-5	205-916-6	207-08-9		0.63	mg/kg		0.574	mg/kg	0.0000574 %	✓	
35	benzo[a]pyrene; benzo[def]chrysene	601-032-00-3	200-028-5	50-32-8		1.5	mg/kg		1.366	mg/kg	0.000137 %	✓	
36	indeno[123-cd]pyrene		205-893-2	193-39-5		0.87	mg/kg		0.793	mg/kg	0.0000793 %	✓	
37	dibenz[a,h]anthracene	601-041-00-2	200-181-8	53-70-3		0.36	mg/kg		0.328	mg/kg	0.0000328 %	✓	
38	benzo[ghi]perylene		205-883-8	191-24-2		0.96	mg/kg		0.875	mg/kg	0.0000875 %	✓	
39	coronene		205-881-7	191-07-1		<0.1	mg/kg		<0.1	mg/kg	<0.00001 %		<LOD
40	polychlorobiphenyls; PCB	602-039-00-4	215-648-1	1336-36-3		<0.1	mg/kg		<0.1	mg/kg	<0.00001 %		<LOD

#		Determinand			CLP Note	User entered data		Conv. Factor	Compound conc.		Classification value	MC Applied	Conc. Not Used
		CLP index number	EC Number	CAS Number									
41	●	monohydric phenols		P1186		<0.1	mg/kg		<0.1	mg/kg	<0.00001 %		<LOD
42		xylene 601-022-00-9	202-422-2 [1] 203-396-5 [2] 203-576-3 [3] 215-535-7 [4]	95-47-6 [1] 106-42-3 [2] 108-38-3 [3] 1330-20-7 [4]		<2	µg/kg		<0.002	mg/kg	<0.0000002 %		<LOD
										Total:	0.11 %		

Key

(yellow)	User supplied data
(grey)	Determinand values ignored for classification, see column 'Conc. Not Used' for reason
●	Determinand defined or amended by HazWasteOnline (see Appendix A)
	Speciated Deteminand - Unless the Determinand is Note 1, the Conversion Factor is used to calculate the compound concentration
<LOD	Below limit of detection
ND	Not detected
CLP: Note 1	Only the metal concentration has been used for classification

Supplementary Hazardous Property Information

HP 3(i): Flammable "flammable liquid waste: liquid waste having a flash point below 60°C or waste gas oil, diesel and light heating oils having a flash point > 55°C and <= 75°C"
Force this Hazardous property to non hazardous because HP 3 can be discounted as this is a solid waste without a free draining liquid phase.

Hazard Statements hit:

Flam. Liq. 3; H226 "Flammable liquid and vapour."

Because of determinand:

TPH (C6 to C40) petroleum group: (conc.: 0.0392%)

WAC results for sample: TP18-0.30

WAC Settings: samples in this Job constitute a single population.

WAC limits used to evaluate this sample: "Ireland"
The WAC used in this report are the WAC defined for the inert and non-hazardous classes of landfill in the Republic of Ireland. You should check the actual acceptance criteria when the disposal site is identified as they may differ from the generic WAC used in this report.

The sample FAILS the Inert (Inert waste landfill) criteria.

The sample PASSES the Non Haz (Non hazardous waste landfill) criteria.

WAC Determinands

Solid Waste Analysis				Landfill Waste Acceptance Criteria Limits	
#	Determinand		User entered data	Inert waste landfill	Non hazardous waste landfill
1	TOC (total organic carbon)	%	3.6	3	5
2	LOI (loss on ignition)	%	6.5	-	-
3	BTEX (benzene, toluene, ethylbenzene and xylenes)	mg/kg	<0.01	6	-
4	PCBs (polychlorinated biphenyls, 7 congeners)	mg/kg	<0.1	1	-
5	Mineral oil (C10 to C40)	mg/kg	430	500	-
6	PAHs (polycyclic aromatic hydrocarbons)	mg/kg	20	100	-
7	pH	pH	8.2	-	>6
8	ANC (acid neutralisation capacity)	mol/kg	0.013	-	-
Eluate Analysis 10:1					
9	arsenic	mg/kg	0.11	0.5	2
10	barium	mg/kg	<0.0005	20	100
11	cadmium	mg/kg	<0.0001	0.04	1
12	chromium	mg/kg	<0.0005	0.5	10
13	copper	mg/kg	0.032	2	50
14	mercury	mg/kg	<5.0e-05	0.01	0.2
15	molybdenum	mg/kg	0.1	0.5	10
16	nickel	mg/kg	0.0054	0.4	10
17	lead	mg/kg	<0.0005	0.5	10
18	antimony	mg/kg	0.044	0.06	0.7
19	selenium	mg/kg	0.008	0.1	0.5
20	zinc	mg/kg	<0.0025	4	50
21	chloride	mg/kg	<10	800	15,000
22	fluoride	mg/kg	2.3	10	150
23	sulphate	mg/kg	<10	1,000	20,000
24	phenol index	mg/kg	<0.3	1	-
25	DOC (dissolved organic carbon)	mg/kg	62	500	800
26	TDS (total dissolved solids)	mg/kg	1200	4,000	60,000

Key

(yellow)	User supplied data
(blue)	Inert WAC criteria fail

Classification of sample: TP18-1.00

Non Hazardous Waste
Classified as **17 05 04**
in the List of Waste

Sample details

Sample name:		LoW Code:	
TP18-1.00		Chapter:	17: Construction and Demolition Wastes (including excavated soil from contaminated sites)
Sample Depth:			
1.00-1.00 m		Entry:	17 05 04 (Soil and stones other than those mentioned in 17 05 03)
Moisture content:			
6.7% (wet weight correction)			

Hazard properties

None identified

Determinands

Moisture content: 6.7% Wet Weight Moisture Correction applied (MC)

#	Determinand	CLP index number	EC Number	CAS Number	CLP Note	User entered data		Conv. Factor	Compound conc.		Classification value	MC Applied	Conc. Not Used
1	pH			PH		8.6	pH		8.6	pH	8.6 pH		
2	boron { diboron trioxide; boric oxide }	005-008-00-8	215-125-8	1303-86-2		<0.4	mg/kg	3.22	<1.288	mg/kg	<0.000129 %		<LOD
3	sulfur { sulfur }	016-094-00-1	231-722-6	7704-34-9		<1	mg/kg		<1	mg/kg	<0.0001 %		<LOD
4	cyanides { salts of hydrogen cyanide with the exception of complex cyanides such as ferrocyanides, ferricyanides and mercuric oxycyanide and those specified elsewhere in this Annex }	006-007-00-5				<0.5	mg/kg	1.884	<0.942	mg/kg	<0.0000942 %		<LOD
5	barium { barium oxide }		215-127-9	1304-28-5		68	mg/kg	1.117	70.836	mg/kg	0.00708 %	✓	
6	cadmium { cadmium oxide }	048-002-00-0	215-146-2	1306-19-0		2.9	mg/kg	1.142	3.091	mg/kg	0.000309 %	✓	
7	molybdenum { molybdenum(VI) oxide }	042-001-00-9	215-204-7	1313-27-5		4	mg/kg	1.5	5.599	mg/kg	0.00056 %	✓	
8	antimony { antimony compounds, with the exception of the tetroxide (Sb_2O_4), pentoxide (Sb_2O_5), trisulphide (Sb_2S_3), pentasulphide (Sb_2S_5) and those specified elsewhere in this Annex }	051-003-00-9			1	2.6	mg/kg		2.426	mg/kg	0.000243 %	✓	
9	arsenic { arsenic }	033-001-00-X	231-148-6	7440-38-2		22	mg/kg		20.526	mg/kg	0.00205 %	✓	
10	granulated copper; [particle length: from 0,9 mm to 6,0 mm; particle width: from 0,494 to 0,949 mm]	029-024-00-X	231-159-6	7440-50-8		66	mg/kg		61.578	mg/kg	0.00616 %	✓	
11	mercury { mercury }	080-001-00-0	231-106-7	7439-97-6		0.12	mg/kg		0.112	mg/kg	0.0000112 %	✓	
12	nickel { nickel(II) oxide (nickel monoxide) }	028-003-00-2	215-215-7 [1] 234-323-5 [2] - [3]	1313-99-1 [1] 11099-02-8 [2] 34492-97-2 [3]		61	mg/kg	1.273	72.427	mg/kg	0.00724 %	✓	
13	lead { lead compounds with the exception of those specified elsewhere in this Annex }	082-001-00-6			1	36	mg/kg		33.588	mg/kg	0.00336 %	✓	

#	Determinand	CLP index number	EC Number	CAS Number	CLP Note	User entered data	Conv. Factor	Compound conc.	Classification value	MC Applied	Conc. Not Used
14	selenium { selenium compounds with the exception of cadmium sulphoselenide and those specified elsewhere in this Annex }	034-002-00-8				0.27 mg/kg	1.405	0.354 mg/kg	0.0000354 %	✓	
15	zinc { zinc oxide }	030-013-00-7	215-222-5	1314-13-2		94 mg/kg	1.245	109.164 mg/kg	0.0109 %	✓	
16	chromium in chromium(III) compounds { chromium(III) oxide }		215-160-9	1308-38-9		21 mg/kg	1.462	28.636 mg/kg	0.00286 %	✓	
17	chromium in chromium(VI) compounds { chromium(VI) oxide }	024-001-00-0	215-607-8	1333-82-0		<0.5 mg/kg	1.923	<0.962 mg/kg	<0.0000962 %		<LOD
18	TPH (C6 to C40) petroleum group			TPH		<10 mg/kg		<10 mg/kg	<0.001 %		<LOD
19	benzene	601-020-00-8	200-753-7	71-43-2		<1 µg/kg		<0.001 mg/kg	<0.0000001 %		<LOD
20	toluene	601-021-00-3	203-625-9	108-88-3		<1 µg/kg		<0.001 mg/kg	<0.0000001 %		<LOD
21	ethylbenzene	601-023-00-4	202-849-4	100-41-4		<1 µg/kg		<0.001 mg/kg	<0.0000001 %		<LOD
22	tert-butyl methyl ether; MTBE; 2-methoxy-2-methylpropane	603-181-00-X	216-653-1	1634-04-4		<1 µg/kg		<0.001 mg/kg	<0.0000001 %		<LOD
23	naphthalene	601-052-00-2	202-049-5	91-20-3		<0.1 mg/kg		<0.1 mg/kg	<0.00001 %		<LOD
24	acenaphthylene		205-917-1	208-96-8		<0.1 mg/kg		<0.1 mg/kg	<0.00001 %		<LOD
25	acenaphthene		201-469-6	83-32-9		<0.1 mg/kg		<0.1 mg/kg	<0.00001 %		<LOD
26	fluorene		201-695-5	86-73-7		<0.1 mg/kg		<0.1 mg/kg	<0.00001 %		<LOD
27	phenanthrene		201-581-5	85-01-8		<0.1 mg/kg		<0.1 mg/kg	<0.00001 %		<LOD
28	anthracene		204-371-1	120-12-7		<0.1 mg/kg		<0.1 mg/kg	<0.00001 %		<LOD
29	fluoranthene		205-912-4	206-44-0		0.26 mg/kg		0.243 mg/kg	0.0000243 %	✓	
30	pyrene		204-927-3	129-00-0		0.24 mg/kg		0.224 mg/kg	0.0000224 %	✓	
31	benzo[a]anthracene	601-033-00-9	200-280-6	56-55-3		<0.1 mg/kg		<0.1 mg/kg	<0.00001 %		<LOD
32	chrysene	601-048-00-0	205-923-4	218-01-9		<0.1 mg/kg		<0.1 mg/kg	<0.00001 %		<LOD
33	benzo[b]fluoranthene	601-034-00-4	205-911-9	205-99-2		<0.1 mg/kg		<0.1 mg/kg	<0.00001 %		<LOD
34	benzo[k]fluoranthene	601-036-00-5	205-916-6	207-08-9		<0.1 mg/kg		<0.1 mg/kg	<0.00001 %		<LOD
35	benzo[a]pyrene; benzo[def]chrysene	601-032-00-3	200-028-5	50-32-8		<0.1 mg/kg		<0.1 mg/kg	<0.00001 %		<LOD
36	indeno[123-cd]pyrene		205-893-2	193-39-5		<0.1 mg/kg		<0.1 mg/kg	<0.00001 %		<LOD
37	dibenz[a,h]anthracene	601-041-00-2	200-181-8	53-70-3		<0.1 mg/kg		<0.1 mg/kg	<0.00001 %		<LOD
38	benzo[ghi]perylene		205-883-8	191-24-2		<0.1 mg/kg		<0.1 mg/kg	<0.00001 %		<LOD
39	coronene		205-881-7	191-07-1		<0.1 mg/kg		<0.1 mg/kg	<0.00001 %		<LOD
40	polychlorobiphenyls; PCB	602-039-00-4	215-648-1	1336-36-3		<0.1 mg/kg		<0.1 mg/kg	<0.00001 %		<LOD

#		Determinand CLP index number / EC Number / CAS Number	CLP Note	User entered data		Conv. Factor	Compound conc.		Classification value	MC Applied	Conc. Not Used
41	●	monohydric phenols P1186		<0.1	mg/kg		<0.1	mg/kg	<0.00001 %		<LOD
42		xylene 601-022-00-9 / 202-422-2 [1] 203-396-5 [2] 203-576-3 [3] 215-535-7 [4] / 95-47-6 [1] 106-42-3 [2] 108-38-3 [3] 1330-20-7 [4]		<2	µg/kg		<0.002	mg/kg	<0.0000002 %		<LOD
								Total:	0.0425 %		

Key

(yellow)	User supplied data
(grey)	Determinand values ignored for classification, see column 'Conc. Not Used' for reason
●	Determinand defined or amended by HazWasteOnline (see Appendix A)
	Speciated Deteminand - Unless the Determinand is Note 1, the Conversion Factor is used to calculate the compound concentration
<LOD	Below limit of detection
ND	Not detected
CLP: Note 1	Only the metal concentration has been used for classification

WAC results for sample: TP18-1.00

WAC Settings: samples in this Job constitute a single population.

WAC limits used to evaluate this sample: "Ireland"
The WAC used in this report are the WAC defined for the inert and non-hazardous classes of landfill in the Republic of Ireland. You should check the actual acceptance criteria when the disposal site is identified as they may differ from the generic WAC used in this report.

The sample PASSES the Inert (Inert waste landfill) criteria.

The sample PASSES the Non Haz (Non hazardous waste landfill) criteria.

WAC Determinands

Solid Waste Analysis				Landfill Waste Acceptance Criteria Limits	
#	Determinand		User entered data	Inert waste landfill	Non hazardous waste landfill
1	TOC (total organic carbon)	%	0.37	3	5
2	LOI (loss on ignition)	%	2.2	-	-
3	BTEX (benzene, toluene, ethylbenzene and xylenes)	mg/kg	<0.01	6	-
4	PCBs (polychlorinated biphenyls, 7 congeners)	mg/kg	<0.1	1	-
5	Mineral oil (C10 to C40)	mg/kg	<10	500	-
6	PAHs (polycyclic aromatic hydrocarbons)	mg/kg	<2	100	-
7	pH	pH	8.6	-	>6
8	ANC (acid neutralisation capacity)	mol/kg	0.008	-	-
Eluate Analysis 10:1					
9	arsenic	mg/kg	0.053	0.5	2
10	barium	mg/kg	<0.0005	20	100
11	cadmium	mg/kg	<0.0001	0.04	1
12	chromium	mg/kg	0.0094	0.5	10
13	copper	mg/kg	0.012	2	50
14	mercury	mg/kg	<5.0e-05	0.01	0.2
15	molybdenum	mg/kg	0.27	0.5	10
16	nickel	mg/kg	<0.0005	0.4	10
17	lead	mg/kg	<0.0005	0.5	10
18	antimony	mg/kg	0.019	0.06	0.7
19	selenium	mg/kg	<0.0005	0.1	0.5
20	zinc	mg/kg	<0.0025	4	50
21	chloride	mg/kg	<10	800	15,000
22	fluoride	mg/kg	2.3	10	150
23	sulphate	mg/kg	<10	1,000	20,000
24	phenol index	mg/kg	<0.3	1	-
25	DOC (dissolved organic carbon)	mg/kg	<50	500	800
26	TDS (total dissolved solids)	mg/kg	980	4,000	60,000

Key

User supplied data

Classification of sample: TP19-0.30

Non Hazardous Waste
Classified as **17 05 04**
in the List of Waste

Sample details

Sample name:
TP19-0.30
Sample Depth:
0.30-0.30 m
Moisture content:
9.1%
(wet weight correction)

LoW Code:
Chapter: 17: Construction and Demolition Wastes (including excavated soil from contaminated sites)
Entry: 17 05 04 (Soil and stones other than those mentioned in 17 05 03)

Hazard properties

None identified

Determinands

Moisture content: 9.1% Wet Weight Moisture Correction applied (MC)

#	Determinand	CLP index number	EC Number	CAS Number	CLP Note	User entered data		Conv. Factor	Compound conc.		Classification value	MC Applied	Conc. Not Used
1	pH			PH		8.3	pH		8.3	pH	8.3 pH		
2	boron { diboron trioxide; boric oxide }	005-008-00-8	215-125-8	1303-86-2		2.2	mg/kg	3.22	6.439	mg/kg	0.000644 %	✓	
3	sulfur { sulfur }	016-094-00-1	231-722-6	7704-34-9		8.7	mg/kg		7.908	mg/kg	0.000791 %	✓	
4	cyanides { salts of hydrogen cyanide with the exception of complex cyanides such as ferrocyanides, ferricyanides and mercuric oxycyanide and those specified elsewhere in this Annex }	006-007-00-5				<0.5	mg/kg	1.884	<0.942	mg/kg	<0.0000942 %		<LOD
5	barium { barium oxide }		215-127-9	1304-28-5		140	mg/kg	1.117	142.087	mg/kg	0.0142 %	✓	
6	cadmium { cadmium oxide }	048-002-00-0	215-146-2	1306-19-0		1.4	mg/kg	1.142	1.454	mg/kg	0.000145 %	✓	
7	molybdenum { molybdenum(VI) oxide }	042-001-00-9	215-204-7	1313-27-5		3.7	mg/kg	1.5	5.046	mg/kg	0.000505 %	✓	
8	antimony { antimony compounds, with the exception of the tetroxide (Sb2O4), pentoxide (Sb2O5), trisulphide (Sb2S3), pentasulphide (Sb2S5) and those specified elsewhere in this Annex }	051-003-00-9			1	3.9	mg/kg		3.545	mg/kg	0.000355 %	✓	
9	arsenic { arsenic }	033-001-00-X	231-148-6	7440-38-2		31	mg/kg		28.179	mg/kg	0.00282 %	✓	
10	granulated copper; [particle length: from 0,9 mm to 6,0 mm; particle width: from 0,494 to 0,949 mm]	029-024-00-X	231-159-6	7440-50-8		92	mg/kg		83.628	mg/kg	0.00836 %	✓	
11	mercury { mercury }	080-001-00-0	231-106-7	7439-97-6		0.82	mg/kg		0.745	mg/kg	0.0000745 %	✓	
12	nickel { nickel(II) oxide (nickel monoxide) }	028-003-00-2	215-215-7 [1] 234-323-5 [2] - [3]	1313-99-1 [1] 11099-02-8 [2] 34492-97-2 [3]		46	mg/kg	1.273	53.212	mg/kg	0.00532 %	✓	
13	lead { lead compounds with the exception of those specified elsewhere in this Annex }	082-001-00-6			1	260	mg/kg		236.34	mg/kg	0.0236 %	✓	

#	Determinand	CLP index number	EC Number	CAS Number	CLP Note	User entered data	Conv. Factor	Compound conc.	Classification value	MC Applied	Conc. Not Used
14	selenium { selenium compounds with the exception of cadmium sulphoselenide and those specified elsewhere in this Annex }	034-002-00-8				0.49 mg/kg	1.405	0.626 mg/kg	0.0000626 %	✓	
15	zinc { zinc oxide }	030-013-00-7	215-222-5	1314-13-2		260 mg/kg	1.245	294.176 mg/kg	0.0294 %	✓	
16	chromium in chromium(III) compounds { chromium(III) oxide }		215-160-9	1308-38-9		23 mg/kg	1.462	30.557 mg/kg	0.00306 %	✓	
17	chromium in chromium(VI) compounds { chromium(VI) oxide }	024-001-00-0	215-607-8	1333-82-0		<0.5 mg/kg	1.923	<0.962 mg/kg	<0.0000962 %		<LOD
18	TPH (C6 to C40) petroleum group			TPH		<10 mg/kg		<10 mg/kg	<0.001 %		<LOD
19	benzene	601-020-00-8	200-753-7	71-43-2		<1 µg/kg		<0.001 mg/kg	<0.0000001 %		<LOD
20	toluene	601-021-00-3	203-625-9	108-88-3		<1 µg/kg		<0.001 mg/kg	<0.0000001 %		<LOD
21	ethylbenzene	601-023-00-4	202-849-4	100-41-4		<1 µg/kg		<0.001 mg/kg	<0.0000001 %		<LOD
22	tert-butyl methyl ether; MTBE; 2-methoxy-2-methylpropane	603-181-00-X	216-653-1	1634-04-4		<1 µg/kg		<0.001 mg/kg	<0.0000001 %		<LOD
23	naphthalene	601-052-00-2	202-049-5	91-20-3		<0.1 mg/kg		<0.1 mg/kg	<0.00001 %		<LOD
24	acenaphthylene		205-917-1	208-96-8		<0.1 mg/kg		<0.1 mg/kg	<0.00001 %		<LOD
25	acenaphthene		201-469-6	83-32-9		<0.1 mg/kg		<0.1 mg/kg	<0.00001 %		<LOD
26	fluorene		201-695-5	86-73-7		<0.1 mg/kg		<0.1 mg/kg	<0.00001 %		<LOD
27	phenanthrene		201-581-5	85-01-8		1.5 mg/kg		1.364 mg/kg	0.000136 %	✓	
28	anthracene		204-371-1	120-12-7		0.24 mg/kg		0.218 mg/kg	0.0000218 %	✓	
29	fluoranthene		205-912-4	206-44-0		1.8 mg/kg		1.636 mg/kg	0.000164 %	✓	
30	pyrene		204-927-3	129-00-0		1.6 mg/kg		1.454 mg/kg	0.000145 %	✓	
31	benzo[a]anthracene	601-033-00-9	200-280-6	56-55-3		0.83 mg/kg		0.754 mg/kg	0.0000754 %	✓	
32	chrysene	601-048-00-0	205-923-4	218-01-9		0.96 mg/kg		0.873 mg/kg	0.0000873 %	✓	
33	benzo[b]fluoranthene	601-034-00-4	205-911-9	205-99-2		1 mg/kg		0.909 mg/kg	0.0000909 %	✓	
34	benzo[k]fluoranthene	601-036-00-5	205-916-6	207-08-9		0.45 mg/kg		0.409 mg/kg	0.0000409 %	✓	
35	benzo[a]pyrene; benzo[def]chrysene	601-032-00-3	200-028-5	50-32-8		0.89 mg/kg		0.809 mg/kg	0.0000809 %	✓	
36	indeno[123-cd]pyrene		205-893-2	193-39-5		0.58 mg/kg		0.527 mg/kg	0.0000527 %	✓	
37	dibenz[a,h]anthracene	601-041-00-2	200-181-8	53-70-3		0.24 mg/kg		0.218 mg/kg	0.0000218 %	✓	
38	benzo[ghi]perylene		205-883-8	191-24-2		0.62 mg/kg		0.564 mg/kg	0.0000564 %	✓	
39	coronene		205-881-7	191-07-1		<0.1 mg/kg		<0.1 mg/kg	<0.00001 %		<LOD
40	polychlorobiphenyls; PCB	602-039-00-4	215-648-1	1336-36-3		<0.1 mg/kg		<0.1 mg/kg	<0.00001 %		<LOD

#		Determinand			CLP Note	User entered data		Conv. Factor	Compound conc.		Classification value	MC Applied	Conc. Not Used
		CLP index number	EC Number	CAS Number									
41	●	monohydric phenols				<0.1	mg/kg		<0.1	mg/kg	<0.00001 %		**<LOD**
				P1186									
42		xylene				<2	µg/kg		<0.002	mg/kg	<0.0000002 %		**<LOD**
		601-022-00-9	202-422-2 [1] 203-396-5 [2] 203-576-3 [3] 215-535-7 [4]	95-47-6 [1] 106-42-3 [2] 108-38-3 [3] 1330-20-7 [4]									
										Total:	0.0916 %		

Key

(yellow)	User supplied data
(grey)	Determinand values ignored for classification, see column 'Conc. Not Used' for reason
●	Determinand defined or amended by HazWasteOnline (see Appendix A)
	Speciated Deteminand - Unless the Determinand is Note 1, the Conversion Factor is used to calculate the compound concentration
<LOD	Below limit of detection
ND	Not detected
CLP: Note 1	Only the metal concentration has been used for classification

WAC results for sample: TP19-0.30

WAC Settings: samples in this Job constitute a single population.

WAC limits used to evaluate this sample: "Ireland"
The WAC used in this report are the WAC defined for the inert and non-hazardous classes of landfill in the Republic of Ireland. You should check the actual acceptance criteria when the disposal site is identified as they may differ from the generic WAC used in this report.

The sample FAILS the Inert (Inert waste landfill) criteria.

The sample PASSES the Non Haz (Non hazardous waste landfill) criteria.

WAC Determinands

Solid Waste Analysis				Landfill Waste Acceptance Criteria Limits	
#	Determinand		User entered data	Inert waste landfill	Non hazardous waste landfill
1	TOC (total organic carbon)	%	4.7	3	5
2	LOI (loss on ignition)	%	7.9	-	-
3	BTEX (benzene, toluene, ethylbenzene and xylenes)	mg/kg	<0.01	6	-
4	PCBs (polychlorinated biphenyls, 7 congeners)	mg/kg	<0.1	1	-
5	Mineral oil (C10 to C40)	mg/kg	<10	500	-
6	PAHs (polycyclic aromatic hydrocarbons)	mg/kg	11	100	-
7	pH	pH	8.3	-	>6
8	ANC (acid neutralisation capacity)	mol/kg	<0.002	-	-
Eluate Analysis 10:1					
9	arsenic	mg/kg	0.25	0.5	2
10	barium	mg/kg	<0.0005	20	100
11	cadmium	mg/kg	<0.0001	0.04	1
12	chromium	mg/kg	<0.0005	0.5	10
13	copper	mg/kg	0.033	2	50
14	mercury	mg/kg	<5.0e-05	0.01	0.2
15	molybdenum	mg/kg	0.083	0.5	10
16	nickel	mg/kg	0.0056	0.4	10
17	lead	mg/kg	<0.0005	0.5	10
18	antimony	mg/kg	0.055	0.06	0.7
19	selenium	mg/kg	0.01	0.1	0.5
20	zinc	mg/kg	0.03	4	50
21	chloride	mg/kg	<10	800	15,000
22	fluoride	mg/kg	2.4	10	150
23	sulphate	mg/kg	<10	1,000	20,000
24	phenol index	mg/kg	<0.3	1	-
25	DOC (dissolved organic carbon)	mg/kg	<50	500	800
26	TDS (total dissolved solids)	mg/kg	1100	4,000	60,000

Key

(yellow)	User supplied data
(blue)	Inert WAC criteria fail

Classification of sample: TP19-0.80

Non Hazardous Waste
Classified as **17 05 04**
in the List of Waste

Sample details

Sample name:		LoW Code:	
TP19-0.80		Chapter:	17: Construction and Demolition Wastes (including excavated soil from contaminated sites)
Sample Depth:			
0.80-0.80 m		Entry:	17 05 04 (Soil and stones other than those mentioned in 17 05 03)
Moisture content:			
13% (wet weight correction)			

Hazard properties

None identified

Determinands

Moisture content: 13% Wet Weight Moisture Correction applied (MC)

#	Determinand	CLP index number	EC Number	CAS Number	CLP Note	User entered data		Conv. Factor	Compound conc.		Classification value	MC Applied	Conc. Not Used
1	pH			PH		8.6	pH		8.6	pH	8.6 pH		
2	boron { diboron trioxide; boric oxide }	005-008-00-8	215-125-8	1303-86-2		0.52	mg/kg	3.22	1.457	mg/kg	0.000146 %	✓	
3	sulfur { sulfur }	016-094-00-1	231-722-6	7704-34-9		2.4	mg/kg		2.088	mg/kg	0.000209 %	✓	
4	cyanides { salts of hydrogen cyanide with the exception of complex cyanides such as ferrocyanides, ferricyanides and mercuric oxycyanide and those specified elsewhere in this Annex }	006-007-00-5				<0.5	mg/kg	1.884	<0.942	mg/kg	<0.0000942 %		<LOD
5	barium { barium oxide }		215-127-9	1304-28-5		51	mg/kg	1.117	49.539	mg/kg	0.00495 %	✓	
6	cadmium { cadmium oxide }	048-002-00-0	215-146-2	1306-19-0		1.4	mg/kg	1.142	1.391	mg/kg	0.000139 %	✓	
7	molybdenum { molybdenum(VI) oxide }	042-001-00-9	215-204-7	1313-27-5		3.6	mg/kg	1.5	4.699	mg/kg	0.00047 %	✓	
8	antimony { antimony compounds, with the exception of the tetroxide (Sb2O4), pentoxide (Sb2O5), trisulphide (Sb2S3), pentasulphide (Sb2S5) and those specified elsewhere in this Annex }	051-003-00-9			1	2.8	mg/kg		2.436	mg/kg	0.000244 %	✓	
9	arsenic { arsenic }	033-001-00-X	231-148-6	7440-38-2		15	mg/kg		13.05	mg/kg	0.00131 %	✓	
10	granulated copper; [particle length: from 0,9 mm to 6,0 mm; particle width: from 0,494 to 0,949 mm]	029-024-00-X	231-159-6	7440-50-8		56	mg/kg		48.72	mg/kg	0.00487 %	✓	
11	mercury { mercury }	080-001-00-0	231-106-7	7439-97-6		0.15	mg/kg		0.13	mg/kg	0.000013 %	✓	
12	nickel { nickel(II) oxide (nickel monoxide) }	028-003-00-2	215-215-7 [1] 234-323-5 [2] - [3]	1313-99-1 [1] 11099-02-8 [2] 34492-97-2 [3]		36	mg/kg	1.273	39.858	mg/kg	0.00399 %	✓	
13	lead { lead compounds with the exception of those specified elsewhere in this Annex }	082-001-00-6			1	40	mg/kg		34.8	mg/kg	0.00348 %	✓	

#	Determinand	CLP index number	EC Number	CAS Number	CLP Note	User entered data		Conv. Factor	Compound conc.		Classification value	MC Applied	Conc. Not Used
14	selenium { selenium compounds with the exception of cadmium sulphoselenide and those specified elsewhere in this Annex }	034-002-00-8				0.35	mg/kg	1.405	0.428	mg/kg	0.0000428 %	✓	
15	zinc { zinc oxide }	030-013-00-7	215-222-5	1314-13-2		75	mg/kg	1.245	81.218	mg/kg	0.00812 %	✓	
16	chromium in chromium(III) compounds { chromium(III) oxide }		215-160-9	1308-38-9		17	mg/kg	1.462	21.616	mg/kg	0.00216 %	✓	
17	chromium in chromium(VI) compounds { chromium(VI) oxide }	024-001-00-0	215-607-8	1333-82-0		<0.5	mg/kg	1.923	<0.962	mg/kg	<0.0000962 %		<LOD
18	TPH (C6 to C40) petroleum group			TPH		<10	mg/kg		<10	mg/kg	<0.001 %		<LOD
19	benzene	601-020-00-8	200-753-7	71-43-2		<1	µg/kg		<0.001	mg/kg	<0.0000001 %		<LOD
20	toluene	601-021-00-3	203-625-9	108-88-3		<1	µg/kg		<0.001	mg/kg	<0.0000001 %		<LOD
21	ethylbenzene	601-023-00-4	202-849-4	100-41-4		<1	µg/kg		<0.001	mg/kg	<0.0000001 %		<LOD
22	tert-butyl methyl ether; MTBE; 2-methoxy-2-methylpropane	603-181-00-X	216-653-1	1634-04-4		<1	µg/kg		<0.001	mg/kg	<0.0000001 %		<LOD
23	naphthalene	601-052-00-2	202-049-5	91-20-3		<0.1	mg/kg		<0.1	mg/kg	<0.00001 %		<LOD
24	acenaphthylene		205-917-1	208-96-8		<0.1	mg/kg		<0.1	mg/kg	<0.00001 %		<LOD
25	acenaphthene		201-469-6	83-32-9		<0.1	mg/kg		<0.1	mg/kg	<0.00001 %		<LOD
26	fluorene		201-695-5	86-73-7		<0.1	mg/kg		<0.1	mg/kg	<0.00001 %		<LOD
27	phenanthrene		201-581-5	85-01-8		<0.1	mg/kg		<0.1	mg/kg	<0.00001 %		<LOD
28	anthracene		204-371-1	120-12-7		<0.1	mg/kg		<0.1	mg/kg	<0.00001 %		<LOD
29	fluoranthene		205-912-4	206-44-0		0.26	mg/kg		0.226	mg/kg	0.0000226 %	✓	
30	pyrene		204-927-3	129-00-0		0.24	mg/kg		0.209	mg/kg	0.0000209 %	✓	
31	benzo[a]anthracene	601-033-00-9	200-280-6	56-55-3		0.14	mg/kg		0.122	mg/kg	0.0000122 %	✓	
32	chrysene	601-048-00-0	205-923-4	218-01-9		0.15	mg/kg		0.13	mg/kg	0.000013 %	✓	
33	benzo[b]fluoranthene	601-034-00-4	205-911-9	205-99-2		<0.1	mg/kg		<0.1	mg/kg	<0.00001 %		<LOD
34	benzo[k]fluoranthene	601-036-00-5	205-916-6	207-08-9		<0.1	mg/kg		<0.1	mg/kg	<0.00001 %		<LOD
35	benzo[a]pyrene; benzo[def]chrysene	601-032-00-3	200-028-5	50-32-8		<0.1	mg/kg		<0.1	mg/kg	<0.00001 %		<LOD
36	indeno[123-cd]pyrene		205-893-2	193-39-5		<0.1	mg/kg		<0.1	mg/kg	<0.00001 %		<LOD
37	dibenz[a,h]anthracene	601-041-00-2	200-181-8	53-70-3		<0.1	mg/kg		<0.1	mg/kg	<0.00001 %		<LOD
38	benzo[ghi]perylene		205-883-8	191-24-2		<0.1	mg/kg		<0.1	mg/kg	<0.00001 %		<LOD
39	coronene		205-881-7	191-07-1		<0.1	mg/kg		<0.1	mg/kg	<0.00001 %		<LOD
40	polychlorobiphenyls; PCB	602-039-00-4	215-648-1	1336-36-3		<0.1	mg/kg		<0.1	mg/kg	<0.00001 %		<LOD

#		Determinand CLP index number | EC Number | CAS Number	CLP Note	User entered data		Conv. Factor	Compound conc.		Classification value	MC Applied	Conc. Not Used
41	●	monohydric phenols P1186		<0.1	mg/kg		<0.1	mg/kg	<0.00001 %		**<LOD**
42		xylene 601-022-00-9 | 202-422-2 [1] 203-396-5 [2] 203-576-3 [3] 215-535-7 [4] | 95-47-6 [1] 106-42-3 [2] 108-38-3 [3] 1330-20-7 [4]		<2	µg/kg		<0.002	mg/kg	<0.0000002 %		**<LOD**
								Total:	0.0316 %		

Key

(yellow)	User supplied data
(grey)	Determinand values ignored for classification, see column 'Conc. Not Used' for reason
●	Determinand defined or amended by HazWasteOnline (see Appendix A)
	Speciated Deteminand - Unless the Determinand is Note 1, the Conversion Factor is used to calculate the compound concentration
<LOD	Below limit of detection
ND	Not detected
CLP: Note 1	Only the metal concentration has been used for classification

WAC results for sample: TP19-0.80

WAC Settings: samples in this Job constitute a single population.

WAC limits used to evaluate this sample: "Ireland"
The WAC used in this report are the WAC defined for the inert and non-hazardous classes of landfill in the Republic of Ireland. You should check the actual acceptance criteria when the disposal site is identified as they may differ from the generic WAC used in this report.

The sample FAILS the Inert (Inert waste landfill) criteria.

The sample PASSES the Non Haz (Non hazardous waste landfill) criteria.

WAC Determinands

Solid Waste Analysis				Landfill Waste Acceptance Criteria Limits	
#	Determinand		User entered data	Inert waste landfill	Non hazardous waste landfill
1	TOC (total organic carbon)	%	3.9	3	5
2	LOI (loss on ignition)	%	2.7	-	-
3	BTEX (benzene, toluene, ethylbenzene and xylenes)	mg/kg	<0.01	6	-
4	PCBs (polychlorinated biphenyls, 7 congeners)	mg/kg	<0.1	1	-
5	Mineral oil (C10 to C40)	mg/kg	<10	500	-
6	PAHs (polycyclic aromatic hydrocarbons)	mg/kg	<2	100	-
7	pH	pH	8.6	-	>6
8	ANC (acid neutralisation capacity)	mol/kg	<0.002	-	-
Eluate Analysis 10:1					
9	arsenic	mg/kg	0.093	0.5	2
10	barium	mg/kg	<0.0005	20	100
11	cadmium	mg/kg	<0.0001	0.04	1
12	chromium	mg/kg	<0.0005	0.5	10
13	copper	mg/kg	0.019	2	50
14	mercury	mg/kg	<5.0e-05	0.01	0.2
15	molybdenum	mg/kg	0.21	0.5	10
16	nickel	mg/kg	<0.0005	0.4	10
17	lead	mg/kg	<0.0005	0.5	10
18	antimony	mg/kg	0.032	0.06	0.7
19	selenium	mg/kg	0.0086	0.1	0.5
20	zinc	mg/kg	<0.0025	4	50
21	chloride	mg/kg	<10	800	15,000
22	fluoride	mg/kg	2.4	10	150
23	sulphate	mg/kg	<10	1,000	20,000
24	phenol index	mg/kg	<0.3	1	-
25	DOC (dissolved organic carbon)	mg/kg	120	500	800
26	TDS (total dissolved solids)	mg/kg	1400	4,000	60,000

Key

User supplied data

Inert WAC criteria fail

Classification of sample: TP20-0.40

Non Hazardous Waste
Classified as **17 05 04**
in the List of Waste

Sample details

Sample name:		LoW Code:	
TP20-0.40		Chapter:	17: Construction and Demolition Wastes (including excavated soil from contaminated sites)
Sample Depth:			
0.40-0.40 m		Entry:	17 05 04 (Soil and stones other than those mentioned in 17 05 03)
Moisture content:			
6.3% (wet weight correction)			

Hazard properties

None identified

Determinands

Moisture content: 6.3% Wet Weight Moisture Correction applied (MC)

#	Determinand	CLP index number	EC Number	CAS Number	CLP Note	User entered data		Conv. Factor	Compound conc.		Classification value	MC Applied	Conc. Not Used
1	pH			PH		8.5	pH		8.5	pH	8.5 pH		
2	boron { diboron trioxide; boric oxide }	005-008-00-8	215-125-8	1303-86-2		<0.4	mg/kg	3.22	<1.288	mg/kg	<0.000129 %		<LOD
3	sulfur { sulfur }	016-094-00-1	231-722-6	7704-34-9		2.7	mg/kg		2.53	mg/kg	0.000253 %	✓	
4	cyanides { salts of hydrogen cyanide with the exception of complex cyanides such as ferrocyanides, ferricyanides and mercuric oxycyanide and those specified elsewhere in this Annex }	006-007-00-5				<0.5	mg/kg	1.884	<0.942	mg/kg	<0.0000942 %		<LOD
5	barium { barium oxide }		215-127-9	1304-28-5		86	mg/kg	1.117	89.97	mg/kg	0.009 %	✓	
6	cadmium { cadmium oxide }	048-002-00-0	215-146-2	1306-19-0		1.5	mg/kg	1.142	1.606	mg/kg	0.000161 %	✓	
7	molybdenum { molybdenum(VI) oxide }	042-001-00-9	215-204-7	1313-27-5		3	mg/kg	1.5	4.217	mg/kg	0.000422 %	✓	
8	antimony { antimony compounds, with the exception of the tetroxide (Sb2O4), pentoxide (Sb2O5), trisulphide (Sb2S3), pentasulphide (Sb2S5) and those specified elsewhere in this Annex }	051-003-00-9			1	2.2	mg/kg		2.061	mg/kg	0.000206 %	✓	
9	arsenic { arsenic }	033-001-00-X	231-148-6	7440-38-2		41	mg/kg		38.417	mg/kg	0.00384 %	✓	
10	granulated copper; [particle length: from 0,9 mm to 6,0 mm; particle width: from 0,494 to 0,949 mm]	029-024-00-X	231-159-6	7440-50-8		63	mg/kg		59.031	mg/kg	0.0059 %	✓	
11	mercury { mercury }	080-001-00-0	231-106-7	7439-97-6		0.47	mg/kg		0.44	mg/kg	0.000044 %	✓	
12	nickel { nickel(II) oxide (nickel monoxide) }	028-003-00-2	215-215-7 [1] 234-323-5 [2] - [3]	1313-99-1 [1] 11099-02-8 [2] 34492-97-2 [3]		42	mg/kg	1.273	50.082	mg/kg	0.00501 %	✓	
13	lead { lead compounds with the exception of those specified elsewhere in this Annex }	082-001-00-6			1	140	mg/kg		131.18	mg/kg	0.0131 %	✓	

#	Determinand	CLP index number	EC Number	CAS Number	CLP Note	User entered data		Conv. Factor	Compound conc.		Classification value	MC Applied	Conc. Not Used
14	selenium { selenium compounds with the exception of cadmium sulphoselenide and those specified elsewhere in this Annex }	034-002-00-8				0.51	mg/kg	1.405	0.671	mg/kg	0.0000671 %	✓	
15	zinc { zinc oxide }	030-013-00-7	215-222-5	1314-13-2		120	mg/kg	1.245	139.956	mg/kg	0.014 %	✓	
16	chromium in chromium(III) compounds { chromium(III) oxide }		215-160-9	1308-38-9		23	mg/kg	1.462	31.498	mg/kg	0.00315 %	✓	
17	chromium in chromium(VI) compounds { chromium(VI) oxide }	024-001-00-0	215-607-8	1333-82-0		<0.5	mg/kg	1.923	<0.962	mg/kg	<0.0000962 %		<LOD
18	TPH (C6 to C40) petroleum group			TPH		<10	mg/kg		<10	mg/kg	<0.001 %		<LOD
19	benzene	601-020-00-8	200-753-7	71-43-2		<1	µg/kg		<0.001	mg/kg	<0.0000001 %		<LOD
20	toluene	601-021-00-3	203-625-9	108-88-3		<1	µg/kg		<0.001	mg/kg	<0.0000001 %		<LOD
21	ethylbenzene	601-023-00-4	202-849-4	100-41-4		<1	µg/kg		<0.001	mg/kg	<0.0000001 %		<LOD
22	tert-butyl methyl ether; MTBE; 2-methoxy-2-methylpropane	603-181-00-X	216-653-1	1634-04-4		<1	µg/kg		<0.001	mg/kg	<0.0000001 %		<LOD
23	naphthalene	601-052-00-2	202-049-5	91-20-3		<0.1	mg/kg		<0.1	mg/kg	<0.00001 %		<LOD
24	acenaphthylene		205-917-1	208-96-8		<0.1	mg/kg		<0.1	mg/kg	<0.00001 %		<LOD
25	acenaphthene		201-469-6	83-32-9		<0.1	mg/kg		<0.1	mg/kg	<0.00001 %		<LOD
26	fluorene		201-695-5	86-73-7		<0.1	mg/kg		<0.1	mg/kg	<0.00001 %		<LOD
27	phenanthrene		201-581-5	85-01-8		<0.1	mg/kg		<0.1	mg/kg	<0.00001 %		<LOD
28	anthracene		204-371-1	120-12-7		<0.1	mg/kg		<0.1	mg/kg	<0.00001 %		<LOD
29	fluoranthene		205-912-4	206-44-0		<0.1	mg/kg		<0.1	mg/kg	<0.00001 %		<LOD
30	pyrene		204-927-3	129-00-0		<0.1	mg/kg		<0.1	mg/kg	<0.00001 %		<LOD
31	benzo[a]anthracene	601-033-00-9	200-280-6	56-55-3		<0.1	mg/kg		<0.1	mg/kg	<0.00001 %		<LOD
32	chrysene	601-048-00-0	205-923-4	218-01-9		<0.1	mg/kg		<0.1	mg/kg	<0.00001 %		<LOD
33	benzo[b]fluoranthene	601-034-00-4	205-911-9	205-99-2		<0.1	mg/kg		<0.1	mg/kg	<0.00001 %		<LOD
34	benzo[k]fluoranthene	601-036-00-5	205-916-6	207-08-9		<0.1	mg/kg		<0.1	mg/kg	<0.00001 %		<LOD
35	benzo[a]pyrene; benzo[def]chrysene	601-032-00-3	200-028-5	50-32-8		<0.1	mg/kg		<0.1	mg/kg	<0.00001 %		<LOD
36	indeno[123-cd]pyrene		205-893-2	193-39-5		<0.1	mg/kg		<0.1	mg/kg	<0.00001 %		<LOD
37	dibenz[a,h]anthracene	601-041-00-2	200-181-8	53-70-3		<0.1	mg/kg		<0.1	mg/kg	<0.00001 %		<LOD
38	benzo[ghi]perylene		205-883-8	191-24-2		<0.1	mg/kg		<0.1	mg/kg	<0.00001 %		<LOD
39	coronene		205-881-7	191-07-1		<0.1	mg/kg		<0.1	mg/kg	<0.00001 %		<LOD
40	polychlorobiphenyls; PCB	602-039-00-4	215-648-1	1336-36-3		<0.1	mg/kg		<0.1	mg/kg	<0.00001 %		<LOD

#		Determinand			CLP Note	User entered data		Conv. Factor	Compound conc.		Classification value	MC Applied	Conc. Not Used
		CLP index number	EC Number	CAS Number									
41	●	monohydric phenols				<0.1	mg/kg		<0.1	mg/kg	<0.00001 %		<LOD
				P1186									
42		xylene				<2	µg/kg		<0.002	mg/kg	<0.0000002 %		<LOD
		601-022-00-9	202-422-2 [1] 203-396-5 [2] 203-576-3 [3] 215-535-7 [4]	95-47-6 [1] 106-42-3 [2] 108-38-3 [3] 1330-20-7 [4]									
										Total:	0.0567 %		

Key

	User supplied data
	Determinand values ignored for classification, see column 'Conc. Not Used' for reason
●	Determinand defined or amended by HazWasteOnline (see Appendix A)
	Speciated Deteminand - Unless the Determinand is Note 1, the Conversion Factor is used to calculate the compound concentration
<LOD	Below limit of detection
ND	Not detected
CLP: Note 1	Only the metal concentration has been used for classification

WAC results for sample: TP20-0.40

WAC Settings: samples in this Job constitute a single population.

WAC limits used to evaluate this sample: "Ireland"
The WAC used in this report are the WAC defined for the inert and non-hazardous classes of landfill in the Republic of Ireland. You should check the actual acceptance criteria when the disposal site is identified as they may differ from the generic WAC used in this report.

The sample PASSES the Inert (Inert waste landfill) criteria.

The sample PASSES the Non Haz (Non hazardous waste landfill) criteria.

WAC Determinands

Solid Waste Analysis				Landfill Waste Acceptance Criteria Limits	
#	Determinand		User entered data	Inert waste landfill	Non hazardous waste landfill
1	TOC (total organic carbon)	%	1.4	3	5
2	LOI (loss on ignition)	%	6.6	-	-
3	BTEX (benzene, toluene, ethylbenzene and xylenes)	mg/kg	<0.01	6	-
4	PCBs (polychlorinated biphenyls, 7 congeners)	mg/kg	<0.1	1	-
5	Mineral oil (C10 to C40)	mg/kg	<10	500	-
6	PAHs (polycyclic aromatic hydrocarbons)	mg/kg	<2	100	-
7	pH	pH	8.5	-	>6
8	ANC (acid neutralisation capacity)	mol/kg	0.013	-	-
Eluate Analysis 10:1					
9	arsenic	mg/kg	0.016	0.5	2
10	barium	mg/kg	<0.0005	20	100
11	cadmium	mg/kg	<0.0001	0.04	1
12	chromium	mg/kg	0.0069	0.5	10
13	copper	mg/kg	0.024	2	50
14	mercury	mg/kg	<5.0e-05	0.01	0.2
15	molybdenum	mg/kg	0.076	0.5	10
16	nickel	mg/kg	<0.0005	0.4	10
17	lead	mg/kg	<0.0005	0.5	10
18	antimony	mg/kg	0.0077	0.06	0.7
19	selenium	mg/kg	0.0063	0.1	0.5
20	zinc	mg/kg	<0.0025	4	50
21	chloride	mg/kg	<10	800	15,000
22	fluoride	mg/kg	2.8	10	150
23	sulphate	mg/kg	20	1,000	20,000
24	phenol index	mg/kg	<0.3	1	-
25	DOC (dissolved organic carbon)	mg/kg	55	500	800
26	TDS (total dissolved solids)	mg/kg	1000	4,000	60,000

Key
User supplied data

Classification of sample: TP20-0.80

Non Hazardous Waste
Classified as **17 05 04**
in the List of Waste

Sample details

Sample name:
TP20-0.80
Sample Depth:
0.80-0.80 m
Moisture content:
14%
(wet weight correction)

LoW Code:
Chapter: 17: Construction and Demolition Wastes (including excavated soil from contaminated sites)
Entry: 17 05 04 (Soil and stones other than those mentioned in 17 05 03)

Hazard properties

None identified

Determinands

Moisture content: 14% Wet Weight Moisture Correction applied (MC)

#	Determinand	CLP index number	EC Number	CAS Number	CLP Note	User entered data		Conv. Factor	Compound conc.		Classification value	MC Applied	Conc. Not Used
1	pH			PH		8.4	pH		8.4	pH	8.4 pH		
2	boron { diboron trioxide; boric oxide }	005-008-00-8	215-125-8	1303-86-2		0.68	mg/kg	3.22	1.883	mg/kg	0.000188 %	✓	
3	sulfur { sulfur }	016-094-00-1	231-722-6	7704-34-9		<1	mg/kg		<1	mg/kg	<0.0001 %		<LOD
4	cyanides { salts of hydrogen cyanide with the exception of complex cyanides such as ferrocyanides, ferricyanides and mercuric oxycyanide and those specified elsewhere in this Annex }	006-007-00-5				<0.5	mg/kg	1.884	<0.942	mg/kg	<0.0000942 %		<LOD
5	barium { barium oxide }		215-127-9	1304-28-5		55	mg/kg	1.117	52.811	mg/kg	0.00528 %	✓	
6	cadmium { cadmium oxide }	048-002-00-0	215-146-2	1306-19-0		1	mg/kg	1.142	0.982	mg/kg	0.0000982 %	✓	
7	molybdenum { molybdenum(VI) oxide }	042-001-00-9	215-204-7	1313-27-5		<2	mg/kg	1.5	<3	mg/kg	<0.0003 %		<LOD
8	antimony { antimony compounds, with the exception of the tetroxide (Sb2O4), pentoxide (Sb2O5), trisulphide (Sb2S3), pentasulphide (Sb2S5) and those specified elsewhere in this Annex }	051-003-00-9			1	<2	mg/kg		<2	mg/kg	<0.0002 %		<LOD
9	arsenic { arsenic }	033-001-00-X	231-148-6	7440-38-2		13	mg/kg		11.18	mg/kg	0.00112 %	✓	
10	granulated copper; [particle length: from 0,9 mm to 6,0 mm; particle width: from 0,494 to 0,949 mm]	029-024-00-X	231-159-6	7440-50-8		37	mg/kg		31.82	mg/kg	0.00318 %	✓	
11	mercury { mercury }	080-001-00-0	231-106-7	7439-97-6		0.25	mg/kg		0.215	mg/kg	0.0000215 %	✓	
12	nickel { nickel(II) oxide (nickel monoxide) }	028-003-00-2	215-215-7 [1] 234-323-5 [2] - [3]	1313-99-1 [1] 11099-02-8 [2] 34492-97-2 [3]		32	mg/kg	1.273	35.022	mg/kg	0.0035 %	✓	
13	lead { lead compounds with the exception of those specified elsewhere in this Annex }	082-001-00-6			1	28	mg/kg		24.08	mg/kg	0.00241 %	✓	

#	Determinand	CLP index number	EC Number	CAS Number	CLP Note	User entered data	Conv. Factor	Compound conc.	Classification value	MC Applied	Conc. Not Used
14	selenium { selenium compounds with the exception of cadmium sulphoselenide and those specified elsewhere in this Annex }	034-002-00-8				<0.2 mg/kg	1.405	<0.281 mg/kg	<0.0000281 %		<LOD
15	zinc { zinc oxide }	030-013-00-7	215-222-5	1314-13-2		75 mg/kg	1.245	80.284 mg/kg	0.00803 %	✓	
16	chromium in chromium(III) compounds { chromium(III) oxide }		215-160-9	1308-38-9		21 mg/kg	1.462	26.396 mg/kg	0.00264 %	✓	
17	chromium in chromium(VI) compounds { chromium(VI) oxide }	024-001-00-0	215-607-8	1333-82-0		<0.5 mg/kg	1.923	<0.962 mg/kg	<0.0000962 %		<LOD
18	TPH (C6 to C40) petroleum group			TPH		<10 mg/kg		<10 mg/kg	<0.001 %		<LOD
19	benzene	601-020-00-8	200-753-7	71-43-2		<1 µg/kg		<0.001 mg/kg	<0.0000001 %		<LOD
20	toluene	601-021-00-3	203-625-9	108-88-3		<1 µg/kg		<0.001 mg/kg	<0.0000001 %		<LOD
21	ethylbenzene	601-023-00-4	202-849-4	100-41-4		<1 µg/kg		<0.001 mg/kg	<0.0000001 %		<LOD
22	tert-butyl methyl ether; MTBE; 2-methoxy-2-methylpropane	603-181-00-X	216-653-1	1634-04-4		<1 µg/kg		<0.001 mg/kg	<0.0000001 %		<LOD
23	naphthalene	601-052-00-2	202-049-5	91-20-3		<0.1 mg/kg		<0.1 mg/kg	<0.00001 %		<LOD
24	acenaphthylene		205-917-1	208-96-8		<0.1 mg/kg		<0.1 mg/kg	<0.00001 %		<LOD
25	acenaphthene		201-469-6	83-32-9		<0.1 mg/kg		<0.1 mg/kg	<0.00001 %		<LOD
26	fluorene		201-695-5	86-73-7		<0.1 mg/kg		<0.1 mg/kg	<0.00001 %		<LOD
27	phenanthrene		201-581-5	85-01-8		<0.1 mg/kg		<0.1 mg/kg	<0.00001 %		<LOD
28	anthracene		204-371-1	120-12-7		<0.1 mg/kg		<0.1 mg/kg	<0.00001 %		<LOD
29	fluoranthene		205-912-4	206-44-0		<0.1 mg/kg		<0.1 mg/kg	<0.00001 %		<LOD
30	pyrene		204-927-3	129-00-0		<0.1 mg/kg		<0.1 mg/kg	<0.00001 %		<LOD
31	benzo[a]anthracene	601-033-00-9	200-280-6	56-55-3		<0.1 mg/kg		<0.1 mg/kg	<0.00001 %		<LOD
32	chrysene	601-048-00-0	205-923-4	218-01-9		<0.1 mg/kg		<0.1 mg/kg	<0.00001 %		<LOD
33	benzo[b]fluoranthene	601-034-00-4	205-911-9	205-99-2		<0.1 mg/kg		<0.1 mg/kg	<0.00001 %		<LOD
34	benzo[k]fluoranthene	601-036-00-5	205-916-6	207-08-9		<0.1 mg/kg		<0.1 mg/kg	<0.00001 %		<LOD
35	benzo[a]pyrene; benzo[def]chrysene	601-032-00-3	200-028-5	50-32-8		<0.1 mg/kg		<0.1 mg/kg	<0.00001 %		<LOD
36	indeno[123-cd]pyrene		205-893-2	193-39-5		<0.1 mg/kg		<0.1 mg/kg	<0.00001 %		<LOD
37	dibenz[a,h]anthracene	601-041-00-2	200-181-8	53-70-3		<0.1 mg/kg		<0.1 mg/kg	<0.00001 %		<LOD
38	benzo[ghi]perylene		205-883-8	191-24-2		<0.1 mg/kg		<0.1 mg/kg	<0.00001 %		<LOD
39	coronene		205-881-7	191-07-1		<0.1 mg/kg		<0.1 mg/kg	<0.00001 %		<LOD
40	polychlorobiphenyls; PCB	602-039-00-4	215-648-1	1336-36-3		<0.1 mg/kg		<0.1 mg/kg	<0.00001 %		<LOD

#		Determinand CLP index number	EC Number	CAS Number	CLP Note	User entered data	Conv. Factor	Compound conc.	Classification value	MC Applied	Conc. Not Used
41	●	monohydric phenols		P1186		<0.1 mg/kg		<0.1 mg/kg	<0.00001 %		**<LOD**
42		xylene 601-022-00-9	202-422-2 [1] 203-396-5 [2] 203-576-3 [3] 215-535-7 [4]	95-47-6 [1] 106-42-3 [2] 108-38-3 [3] 1330-20-7 [4]		<2 µg/kg		<0.002 mg/kg	<0.0000002 %		**<LOD**
								Total:	0.0285 %		

Key

	User supplied data
	Determinand values ignored for classification, see column 'Conc. Not Used' for reason
●	Determinand defined or amended by HazWasteOnline (see Appendix A)
	Speciated Deteminand - Unless the Determinand is Note 1, the Conversion Factor is used to calculate the compound concentration
<LOD	Below limit of detection
ND	Not detected
CLP: Note 1	Only the metal concentration has been used for classification

WAC results for sample: TP20-0.80

WAC Settings: samples in this Job constitute a single population.

WAC limits used to evaluate this sample: "Ireland"
The WAC used in this report are the WAC defined for the inert and non-hazardous classes of landfill in the Republic of Ireland. You should check the actual acceptance criteria when the disposal site is identified as they may differ from the generic WAC used in this report.

The sample PASSES the Inert (Inert waste landfill) criteria.

The sample PASSES the Non Haz (Non hazardous waste landfill) criteria.

WAC Determinands

Solid Waste Analysis				Landfill Waste Acceptance Criteria Limits	
#	Determinand		User entered data	Inert waste landfill	Non hazardous waste landfill
1	TOC (total organic carbon)	%	1.1	3	5
2	LOI (loss on ignition)	%	3.6	-	-
3	BTEX (benzene, toluene, ethylbenzene and xylenes)	mg/kg	<0.01	6	-
4	PCBs (polychlorinated biphenyls, 7 congeners)	mg/kg	<0.1	1	-
5	Mineral oil (C10 to C40)	mg/kg	<10	500	-
6	PAHs (polycyclic aromatic hydrocarbons)	mg/kg	<2	100	-
7	pH	pH	8.4	-	>6
8	ANC (acid neutralisation capacity)	mol/kg	0.004	-	-
Eluate Analysis 10:1					
9	arsenic	mg/kg	0.0034	0.5	2
10	barium	mg/kg	<0.0005	20	100
11	cadmium	mg/kg	<0.0001	0.04	1
12	chromium	mg/kg	0.0079	0.5	10
13	copper	mg/kg	0.011	2	50
14	mercury	mg/kg	<5.0e-05	0.01	0.2
15	molybdenum	mg/kg	0.11	0.5	10
16	nickel	mg/kg	<0.0005	0.4	10
17	lead	mg/kg	<0.0005	0.5	10
18	antimony	mg/kg	0.0059	0.06	0.7
19	selenium	mg/kg	<0.0005	0.1	0.5
20	zinc	mg/kg	<0.0025	4	50
21	chloride	mg/kg	<10	800	15,000
22	fluoride	mg/kg	2.8	10	150
23	sulphate	mg/kg	<10	1,000	20,000
24	phenol index	mg/kg	<0.3	1	-
25	DOC (dissolved organic carbon)	mg/kg	<50	500	800
26	TDS (total dissolved solids)	mg/kg	710	4,000	60,000

Key

User supplied data

Classification of sample: TP22-0.30

Non Hazardous Waste
Classified as **17 05 04**
in the List of Waste

Sample details

Sample name:		LoW Code:	
TP22-0.30		Chapter:	17: Construction and Demolition Wastes (including excavated soil from contaminated sites)
Sample Depth:			
0.30-0.30 m		Entry:	17 05 04 (Soil and stones other than those mentioned in 17 05 03)
Moisture content:			
8.1% (wet weight correction)			

Hazard properties

None identified

Determinands

Moisture content: 8.1% Wet Weight Moisture Correction applied (MC)

#		Determinand (CLP index number / EC Number / CAS Number)	CLP Note	User entered data		Conv. Factor	Compound conc.		Classification value	MC Applied	Conc. Not Used
1		pH PH		8.7	pH		8.7	pH	8.7 pH		
2		boron { diboron trioxide; boric oxide } 005-008-00-8 / 215-125-8 / 1303-86-2		1.8	mg/kg	3.22	5.326	mg/kg	0.000533 %	✓	
3		sulfur { sulfur } 016-094-00-1 / 231-722-6 / 7704-34-9		8.2	mg/kg		7.536	mg/kg	0.000754 %	✓	
4		cyanides { salts of hydrogen cyanide with the exception of complex cyanides such as ferrocyanides, ferricyanides and mercuric oxycyanide and those specified elsewhere in this Annex } 006-007-00-5		<0.5	mg/kg	1.884	<0.942	mg/kg	<0.0000942 %		<LOD
5		barium { barium oxide } 215-127-9 / 1304-28-5		190	mg/kg	1.117	194.953	mg/kg	0.0195 %	✓	
6		cadmium { cadmium oxide } 048-002-00-0 / 215-146-2 / 1306-19-0		1.8	mg/kg	1.142	1.89	mg/kg	0.000189 %	✓	
7		molybdenum { molybdenum(VI) oxide } 042-001-00-9 / 215-204-7 / 1313-27-5		5.9	mg/kg	1.5	8.134	mg/kg	0.000813 %	✓	
8		antimony { antimony compounds, with the exception of the tetroxide (Sb2O4), pentoxide (Sb2O5), trisulphide (Sb2S3), pentasulphide (Sb2S5) and those specified elsewhere in this Annex } 051-003-00-9	1	5.2	mg/kg		4.779	mg/kg	0.000478 %	✓	
9		arsenic { arsenic } 033-001-00-X / 231-148-6 / 7440-38-2		49	mg/kg		45.031	mg/kg	0.0045 %	✓	
10		granulated copper; [particle length: from 0,9 mm to 6,0 mm; particle width: from 0,494 to 0,949 mm] 029-024-00-X / 231-159-6 / 7440-50-8		160	mg/kg		147.04	mg/kg	0.0147 %	✓	
11		mercury { mercury } 080-001-00-0 / 231-106-7 / 7439-97-6		0.93	mg/kg		0.855	mg/kg	0.0000855 %	✓	
12		nickel { nickel(II) oxide (nickel monoxide) } 028-003-00-2 / 215-215-7 [1] 234-323-5 [2] - [3] / 1313-99-1 [1] 11099-02-8 [2] 34492-97-2 [3]		62	mg/kg	1.273	72.51	mg/kg	0.00725 %	✓	
13		lead { lead compounds with the exception of those specified elsewhere in this Annex } 082-001-00-6	1	360	mg/kg		330.84	mg/kg	0.0331 %	✓	

#	Determinand	CLP index number	EC Number	CAS Number	CLP Note	User entered data	Conv. Factor	Compound conc.	Classification value	MC Applied	Conc. Not Used
14	selenium { selenium compounds with the exception of cadmium sulphoselenide and those specified elsewhere in this Annex }	034-002-00-8				0.73 mg/kg	1.405	0.943 mg/kg	0.0000943 %	✓	
15	zinc { zinc oxide }	030-013-00-7	215-222-5	1314-13-2		370 mg/kg	1.245	423.24 mg/kg	0.0423 %	✓	
16	chromium in chromium(III) compounds { chromium(III) oxide }		215-160-9	1308-38-9		25 mg/kg	1.462	33.579 mg/kg	0.00336 %	✓	
17	chromium in chromium(VI) compounds { chromium(VI) oxide }	024-001-00-0	215-607-8	1333-82-0		<0.5 mg/kg	1.923	<0.962 mg/kg	<0.0000962 %		<LOD
18	TPH (C6 to C40) petroleum group			TPH		<10 mg/kg		<10 mg/kg	<0.001 %		<LOD
19	benzene	601-020-00-8	200-753-7	71-43-2		<1 µg/kg		<0.001 mg/kg	<0.0000001 %		<LOD
20	toluene	601-021-00-3	203-625-9	108-88-3		<1 µg/kg		<0.001 mg/kg	<0.0000001 %		<LOD
21	ethylbenzene	601-023-00-4	202-849-4	100-41-4		<1 µg/kg		<0.001 mg/kg	<0.0000001 %		<LOD
22	tert-butyl methyl ether; MTBE; 2-methoxy-2-methylpropane	603-181-00-X	216-653-1	1634-04-4		<1 µg/kg		<0.001 mg/kg	<0.0000001 %		<LOD
23	naphthalene	601-052-00-2	202-049-5	91-20-3		0.19 mg/kg		0.175 mg/kg	0.0000175 %	✓	
24	acenaphthylene		205-917-1	208-96-8		<0.1 mg/kg		<0.1 mg/kg	<0.00001 %		<LOD
25	acenaphthene		201-469-6	83-32-9		0.15 mg/kg		0.138 mg/kg	0.0000138 %	✓	
26	fluorene		201-695-5	86-73-7		0.12 mg/kg		0.11 mg/kg	0.000011 %	✓	
27	phenanthrene		201-581-5	85-01-8		1.4 mg/kg		1.287 mg/kg	0.000129 %	✓	
28	anthracene		204-371-1	120-12-7		0.22 mg/kg		0.202 mg/kg	0.0000202 %	✓	
29	fluoranthene		205-912-4	206-44-0		1.8 mg/kg		1.654 mg/kg	0.000165 %	✓	
30	pyrene		204-927-3	129-00-0		1.7 mg/kg		1.562 mg/kg	0.000156 %	✓	
31	benzo[a]anthracene	601-033-00-9	200-280-6	56-55-3		0.93 mg/kg		0.855 mg/kg	0.0000855 %	✓	
32	chrysene	601-048-00-0	205-923-4	218-01-9		1 mg/kg		0.919 mg/kg	0.0000919 %	✓	
33	benzo[b]fluoranthene	601-034-00-4	205-911-9	205-99-2		1.2 mg/kg		1.103 mg/kg	0.00011 %	✓	
34	benzo[k]fluoranthene	601-036-00-5	205-916-6	207-08-9		0.38 mg/kg		0.349 mg/kg	0.0000349 %	✓	
35	benzo[a]pyrene; benzo[def]chrysene	601-032-00-3	200-028-5	50-32-8		0.88 mg/kg		0.809 mg/kg	0.0000809 %	✓	
36	indeno[123-cd]pyrene		205-893-2	193-39-5		0.56 mg/kg		0.515 mg/kg	0.0000515 %	✓	
37	dibenz[a,h]anthracene	601-041-00-2	200-181-8	53-70-3		0.18 mg/kg		0.165 mg/kg	0.0000165 %	✓	
38	benzo[ghi]perylene		205-883-8	191-24-2		0.61 mg/kg		0.561 mg/kg	0.0000561 %	✓	
39	coronene		205-881-7	191-07-1		<0.1 mg/kg		<0.1 mg/kg	<0.00001 %		<LOD
40	polychlorobiphenyls; PCB	602-039-00-4	215-648-1	1336-36-3		<0.1 mg/kg		<0.1 mg/kg	<0.00001 %		<LOD

#		Determinand CLP index number / EC Number / CAS Number	CLP Note	User entered data		Conv. Factor	Compound conc.		Classification value	MC Applied	Conc. Not Used
41	●	monohydric phenols / / P1186		<0.1	mg/kg		<0.1	mg/kg	<0.00001 %		<LOD
42		xylene 601-022-00-9 / 202-422-2 [1], 203-396-5 [2], 203-576-3 [3], 215-535-7 [4] / 95-47-6 [1], 106-42-3 [2], 108-38-3 [3], 1330-20-7 [4]		<2	µg/kg		<0.002	mg/kg	<0.0000002 %		<LOD
								Total:	0.13 %		

Key

(yellow)	User supplied data
(grey)	Determinand values ignored for classification, see column 'Conc. Not Used' for reason
●	Determinand defined or amended by HazWasteOnline (see Appendix A)
	Speciated Deteminand - Unless the Determinand is Note 1, the Conversion Factor is used to calculate the compound concentration
<LOD	Below limit of detection
ND	Not detected
CLP: Note 1	Only the metal concentration has been used for classification

WAC results for sample: TP22-0.30

WAC Settings: samples in this Job constitute a single population.

WAC limits used to evaluate this sample: "Ireland"
The WAC used in this report are the WAC defined for the inert and non-hazardous classes of landfill in the Republic of Ireland. You should check the actual acceptance criteria when the disposal site is identified as they may differ from the generic WAC used in this report.

The sample FAILS the Inert (Inert waste landfill) criteria.

The sample FAILS the Non Haz (Non hazardous waste landfill) criteria.

WAC Determinands

Solid Waste Analysis				Landfill Waste Acceptance Criteria Limits	
#	Determinand		User entered data	Inert waste landfill	Non hazardous waste landfill
1	TOC (total organic carbon)	%	6	3	5
2	LOI (loss on ignition)	%	10	-	-
3	BTEX (benzene, toluene, ethylbenzene and xylenes)	mg/kg	<0.01	6	-
4	PCBs (polychlorinated biphenyls, 7 congeners)	mg/kg	<0.1	1	-
5	Mineral oil (C10 to C40)	mg/kg	<10	500	-
6	PAHs (polycyclic aromatic hydrocarbons)	mg/kg	11	100	-
7	pH	pH	8.7	-	>6
8	ANC (acid neutralisation capacity)	mol/kg	0.004	-	-
Eluate Analysis 10:1					
9	arsenic	mg/kg	0.3	0.5	2
10	barium	mg/kg	<0.0005	20	100
11	cadmium	mg/kg	<0.0001	0.04	1
12	chromium	mg/kg	<0.0005	0.5	10
13	copper	mg/kg	0.044	2	50
14	mercury	mg/kg	<5.0e-05	0.01	0.2
15	molybdenum	mg/kg	0.056	0.5	10
16	nickel	mg/kg	0.0091	0.4	10
17	lead	mg/kg	<0.0005	0.5	10
18	antimony	mg/kg	0.049	0.06	0.7
19	selenium	mg/kg	0.012	0.1	0.5
20	zinc	mg/kg	<0.0025	4	50
21	chloride	mg/kg	<10	800	15,000
22	fluoride	mg/kg	2.2	10	150
23	sulphate	mg/kg	<10	1,000	20,000
24	phenol index	mg/kg	<0.3	1	-
25	DOC (dissolved organic carbon)	mg/kg	53	500	800
26	TDS (total dissolved solids)	mg/kg	1000	4,000	60,000

Key

User supplied data
Inert WAC criteria fail
Non Hazardous WAC criteria fail

Classification of sample: TP22-1.00

Non Hazardous Waste
Classified as **17 05 04**
in the List of Waste

Sample details

Sample name:		LoW Code:	
TP22-1.00		Chapter:	17: Construction and Demolition Wastes (including excavated soil from contaminated sites)
Sample Depth:			
1.00-1.00 m		Entry:	17 05 04 (Soil and stones other than those mentioned in 17 05 03)
Moisture content:			
6.9% (wet weight correction)			

Hazard properties

None identified

Determinands

Moisture content: 6.9% Wet Weight Moisture Correction applied (MC)

#		Determinand / CLP index number	EC Number	CAS Number	CLP Note	User entered data		Conv. Factor	Compound conc.		Classification value	MC Applied	Conc. Not Used
1		pH		PH		8.3	pH		8.3	pH	8.3 pH		
2		boron { diboron trioxide; boric oxide } 005-008-00-8	215-125-8	1303-86-2		<0.4	mg/kg	3.22	<1.288	mg/kg	<0.000129 %		<LOD
3		sulfur { sulfur } 016-094-00-1	231-722-6	7704-34-9		<1	mg/kg		<1	mg/kg	<0.0001 %		<LOD
4		cyanides { salts of hydrogen cyanide with the exception of complex cyanides such as ferrocyanides, ferricyanides and mercuric oxycyanide and those specified elsewhere in this Annex } 006-007-00-5				<0.5	mg/kg	1.884	<0.942	mg/kg	<0.0000942 %		<LOD
5		barium { barium oxide }	215-127-9	1304-28-5		78	mg/kg	1.117	81.078	mg/kg	0.00811 %	✓	
6		cadmium { cadmium oxide } 048-002-00-0	215-146-2	1306-19-0		1.7	mg/kg	1.142	1.808	mg/kg	0.000181 %	✓	
7		molybdenum { molybdenum(VI) oxide } 042-001-00-9	215-204-7	1313-27-5		3	mg/kg	1.5	4.19	mg/kg	0.000419 %	✓	
8		antimony { antimony compounds, with the exception of the tetroxide (Sb2O4), pentoxide (Sb2O5), trisulphide (Sb2S3), pentasulphide (Sb2S5) and those specified elsewhere in this Annex } 051-003-00-9			1	<2	mg/kg		<2	mg/kg	<0.0002 %		<LOD
9		arsenic { arsenic } 033-001-00-X	231-148-6	7440-38-2		23	mg/kg		21.413	mg/kg	0.00214 %	✓	
10		granulated copper; [particle length: from 0,9 mm to 6,0 mm; particle width: from 0,494 to 0,949 mm] 029-024-00-X	231-159-6	7440-50-8		52	mg/kg		48.412	mg/kg	0.00484 %	✓	
11		mercury { mercury } 080-001-00-0	231-106-7	7439-97-6		<0.1	mg/kg		<0.1	mg/kg	<0.00001 %		<LOD
12		nickel { nickel(II) oxide (nickel monoxide) } 028-003-00-2	215-215-7 [1] 234-323-5 [2] - [3]	1313-99-1 [1] 11099-02-8 [2] 34492-97-2 [3]		46	mg/kg	1.273	54.5	mg/kg	0.00545 %	✓	
13		lead { lead compounds with the exception of those specified elsewhere in this Annex } 082-001-00-6			1	36	mg/kg		33.516	mg/kg	0.00335 %	✓	

#	Determinand	CLP index number	EC Number	CAS Number	CLP Note	User entered data	Conv. Factor	Compound conc.	Classification value	MC Applied	Conc. Not Used
14	selenium { selenium compounds with the exception of cadmium sulphoselenide and those specified elsewhere in this Annex }	034-002-00-8				<0.2 mg/kg	1.405	<0.281 mg/kg	<0.0000281 %		<LOD
15	zinc { zinc oxide }	030-013-00-7	215-222-5	1314-13-2		63 mg/kg	1.245	73.006 mg/kg	0.0073 %	✓	
16	chromium in chromium(III) compounds { chromium(III) oxide }		215-160-9	1308-38-9		22 mg/kg	1.462	29.936 mg/kg	0.00299 %	✓	
17	chromium in chromium(VI) compounds { chromium(VI) oxide }	024-001-00-0	215-607-8	1333-82-0		<0.5 mg/kg	1.923	<0.962 mg/kg	<0.0000962 %		<LOD
18	TPH (C6 to C40) petroleum group			TPH		<10 mg/kg		<10 mg/kg	<0.001 %		<LOD
19	benzene	601-020-00-8	200-753-7	71-43-2		<1 µg/kg		<0.001 mg/kg	<0.0000001 %		<LOD
20	toluene	601-021-00-3	203-625-9	108-88-3		<1 µg/kg		<0.001 mg/kg	<0.0000001 %		<LOD
21	ethylbenzene	601-023-00-4	202-849-4	100-41-4		<1 µg/kg		<0.001 mg/kg	<0.0000001 %		<LOD
22	tert-butyl methyl ether; MTBE; 2-methoxy-2-methylpropane	603-181-00-X	216-653-1	1634-04-4		<1 µg/kg		<0.001 mg/kg	<0.0000001 %		<LOD
23	naphthalene	601-052-00-2	202-049-5	91-20-3		<0.1 mg/kg		<0.1 mg/kg	<0.00001 %		<LOD
24	acenaphthylene		205-917-1	208-96-8		<0.1 mg/kg		<0.1 mg/kg	<0.00001 %		<LOD
25	acenaphthene		201-469-6	83-32-9		<0.1 mg/kg		<0.1 mg/kg	<0.00001 %		<LOD
26	fluorene		201-695-5	86-73-7		<0.1 mg/kg		<0.1 mg/kg	<0.00001 %		<LOD
27	phenanthrene		201-581-5	85-01-8		<0.1 mg/kg		<0.1 mg/kg	<0.00001 %		<LOD
28	anthracene		204-371-1	120-12-7		<0.1 mg/kg		<0.1 mg/kg	<0.00001 %		<LOD
29	fluoranthene		205-912-4	206-44-0		<0.1 mg/kg		<0.1 mg/kg	<0.00001 %		<LOD
30	pyrene		204-927-3	129-00-0		<0.1 mg/kg		<0.1 mg/kg	<0.00001 %		<LOD
31	benzo[a]anthracene	601-033-00-9	200-280-6	56-55-3		<0.1 mg/kg		<0.1 mg/kg	<0.00001 %		<LOD
32	chrysene	601-048-00-0	205-923-4	218-01-9		<0.1 mg/kg		<0.1 mg/kg	<0.00001 %		<LOD
33	benzo[b]fluoranthene	601-034-00-4	205-911-9	205-99-2		<0.1 mg/kg		<0.1 mg/kg	<0.00001 %		<LOD
34	benzo[k]fluoranthene	601-036-00-5	205-916-6	207-08-9		<0.1 mg/kg		<0.1 mg/kg	<0.00001 %		<LOD
35	benzo[a]pyrene; benzo[def]chrysene	601-032-00-3	200-028-5	50-32-8		<0.1 mg/kg		<0.1 mg/kg	<0.00001 %		<LOD
36	indeno[123-cd]pyrene		205-893-2	193-39-5		<0.1 mg/kg		<0.1 mg/kg	<0.00001 %		<LOD
37	dibenz[a,h]anthracene	601-041-00-2	200-181-8	53-70-3		<0.1 mg/kg		<0.1 mg/kg	<0.00001 %		<LOD
38	benzo[ghi]perylene		205-883-8	191-24-2		<0.1 mg/kg		<0.1 mg/kg	<0.00001 %		<LOD
39	coronene		205-881-7	191-07-1		<0.1 mg/kg		<0.1 mg/kg	<0.00001 %		<LOD
40	polychlorobiphenyls; PCB	602-039-00-4	215-648-1	1336-36-3		<0.1 mg/kg		<0.1 mg/kg	<0.00001 %		<LOD

#		Determinand			CLP Note	User entered data		Conv. Factor	Compound conc.		Classification value	MC Applied	Conc. Not Used
		CLP index number	EC Number	CAS Number									
41	●	monohydric phenols P1186				<0.1	mg/kg		<0.1	mg/kg	<0.00001 %		<LOD
42		xylene				<2	µg/kg		<0.002	mg/kg	<0.0000002 %		<LOD
		601-022-00-9	202-422-2 [1] 203-396-5 [2] 203-576-3 [3] 215-535-7 [4]	95-47-6 [1] 106-42-3 [2] 108-38-3 [3] 1330-20-7 [4]									
										Total:	0.0366 %		

Key

(yellow)	User supplied data
(grey)	Determinand values ignored for classification, see column 'Conc. Not Used' for reason
●	Determinand defined or amended by HazWasteOnline (see Appendix A)
	Speciated Deteminand - Unless the Determinand is Note 1, the Conversion Factor is used to calculate the compound concentration
<LOD	Below limit of detection
ND	Not detected
CLP: Note 1	Only the metal concentration has been used for classification

WAC results for sample: TP22-1.00

WAC Settings: samples in this Job constitute a single population.

WAC limits used to evaluate this sample: "Ireland"
The WAC used in this report are the WAC defined for the inert and non-hazardous classes of landfill in the Republic of Ireland. You should check the actual acceptance criteria when the disposal site is identified as they may differ from the generic WAC used in this report.

The sample PASSES the Inert (Inert waste landfill) criteria.

The sample PASSES the Non Haz (Non hazardous waste landfill) criteria.

WAC Determinands

Solid Waste Analysis				Landfill Waste Acceptance Criteria Limits	
#	Determinand		User entered data	Inert waste landfill	Non hazardous waste landfill
1	TOC (total organic carbon)	%	1.4	3	5
2	LOI (loss on ignition)	%	0.96	-	-
3	BTEX (benzene, toluene, ethylbenzene and xylenes)	mg/kg	<0.01	6	-
4	PCBs (polychlorinated biphenyls, 7 congeners)	mg/kg	<0.1	1	-
5	Mineral oil (C10 to C40)	mg/kg	<10	500	-
6	PAHs (polycyclic aromatic hydrocarbons)	mg/kg	<2	100	-
7	pH	pH	8.3	-	>6
8	ANC (acid neutralisation capacity)	mol/kg	<0.002	-	-
Eluate Analysis 10:1					
9	arsenic	mg/kg	0.0078	0.5	2
10	barium	mg/kg	<0.0005	20	100
11	cadmium	mg/kg	<0.0001	0.04	1
12	chromium	mg/kg	0.0093	0.5	10
13	copper	mg/kg	0.011	2	50
14	mercury	mg/kg	<5.0e-05	0.01	0.2
15	molybdenum	mg/kg	0.2	0.5	10
16	nickel	mg/kg	<0.0005	0.4	10
17	lead	mg/kg	<0.0005	0.5	10
18	antimony	mg/kg	0.006	0.06	0.7
19	selenium	mg/kg	0.0077	0.1	0.5
20	zinc	mg/kg	0.027	4	50
21	chloride	mg/kg	<10	800	15,000
22	fluoride	mg/kg	3.3	10	150
23	sulphate	mg/kg	16	1,000	20,000
24	phenol index	mg/kg	<0.3	1	-
25	DOC (dissolved organic carbon)	mg/kg	<50	500	800
26	TDS (total dissolved solids)	mg/kg	1800	4,000	60,000

Key

User supplied data

Classification of sample: TP23-0.30

Non Hazardous Waste
Classified as **17 05 04**
in the List of Waste

Sample details

Sample name:		LoW Code:	
TP23-0.30		Chapter:	17: Construction and Demolition Wastes (including excavated soil from contaminated sites)
Sample Depth:			
0.30-0.30 m		Entry:	17 05 04 (Soil and stones other than those mentioned in 17 05 03)
Moisture content:			
8.1% (wet weight correction)			

Hazard properties

None identified

Determinands

Moisture content: 8.1% Wet Weight Moisture Correction applied (MC)

#	Determinand	CLP index number	EC Number	CAS Number	CLP Note	User entered data		Conv. Factor	Compound conc.		Classification value	MC Applied	Conc. Not Used
1	pH			PH		8.2	pH		8.2	pH	8.2 pH		
2	boron { diboron trioxide; boric oxide }	005-008-00-8	215-125-8	1303-86-2		2.6	mg/kg	3.22	7.694	mg/kg	0.000769 %	✓	
3	sulfur { sulfur }	016-094-00-1	231-722-6	7704-34-9		12	mg/kg		11.028	mg/kg	0.0011 %	✓	
4	cyanides { salts of hydrogen cyanide with the exception of complex cyanides such as ferrocyanides, ferricyanides and mercuric oxycyanide and those specified elsewhere in this Annex }	006-007-00-5				<0.5	mg/kg	1.884	<0.942	mg/kg	<0.0000942 %		<LOD
5	barium { barium oxide }		215-127-9	1304-28-5		120	mg/kg	1.117	123.128	mg/kg	0.0123 %	✓	
6	cadmium { cadmium oxide }	048-002-00-0	215-146-2	1306-19-0		1.1	mg/kg	1.142	1.155	mg/kg	0.000115 %	✓	
7	molybdenum { molybdenum(VI) oxide }	042-001-00-9	215-204-7	1313-27-5		3.1	mg/kg	1.5	4.274	mg/kg	0.000427 %	✓	
8	antimony { antimony compounds, with the exception of the tetroxide (Sb2O4), pentoxide (Sb2O5), trisulphide (Sb2S3), pentasulphide (Sb2S5) and those specified elsewhere in this Annex }	051-003-00-9			1	2.3	mg/kg		2.114	mg/kg	0.000211 %	✓	
9	arsenic { arsenic }	033-001-00-X	231-148-6	7440-38-2		24	mg/kg		22.056	mg/kg	0.00221 %	✓	
10	granulated copper; [particle length: from 0,9 mm to 6,0 mm; particle width: from 0,494 to 0,949 mm]	029-024-00-X	231-159-6	7440-50-8		94	mg/kg		86.386	mg/kg	0.00864 %	✓	
11	mercury { mercury }	080-001-00-0	231-106-7	7439-97-6		0.6	mg/kg		0.551	mg/kg	0.0000551 %	✓	
12	nickel { nickel(II) oxide (nickel monoxide) }	028-003-00-2	215-215-7 [1] 234-323-5 [2] - [3]	1313-99-1 [1] 11099-02-8 [2] 34492-97-2 [3]		38	mg/kg	1.273	44.441	mg/kg	0.00444 %	✓	
13	lead { lead compounds with the exception of those specified elsewhere in this Annex }	082-001-00-6			1	460	mg/kg		422.74	mg/kg	0.0423 %	✓	

#		Determinand CLP index number / EC Number / CAS Number	CLP Note	User entered data		Conv. Factor	Compound conc.		Classification value	MC Applied	Conc. Not Used
14		selenium { selenium compounds with the exception of cadmium sulphoselenide and those specified elsewhere in this Annex } 034-002-00-8		0.84	mg/kg	1.405	1.085	mg/kg	0.000108 %	✓	
15		zinc { zinc oxide } 030-013-00-7 / 215-222-5 / 1314-13-2		170	mg/kg	1.245	194.462	mg/kg	0.0194 %	✓	
16		chromium in chromium(III) compounds { chromium(III) oxide } 215-160-9 / 1308-38-9		17	mg/kg	1.462	22.834	mg/kg	0.00228 %	✓	
17		chromium in chromium(VI) compounds { chromium(VI) oxide } 024-001-00-0 / 215-607-8 / 1333-82-0		<0.5	mg/kg	1.923	<0.962	mg/kg	<0.0000962 %		<LOD
18		TPH (C6 to C40) petroleum group TPH		100	mg/kg		91.9	mg/kg	0.00919 %	✓	
19		benzene 601-020-00-8 / 200-753-7 / 71-43-2		<1	µg/kg		<0.001	mg/kg	<0.0000001 %		<LOD
20		toluene 601-021-00-3 / 203-625-9 / 108-88-3		<1	µg/kg		<0.001	mg/kg	<0.0000001 %		<LOD
21		ethylbenzene 601-023-00-4 / 202-849-4 / 100-41-4		<1	µg/kg		<0.001	mg/kg	<0.0000001 %		<LOD
22		tert-butyl methyl ether; MTBE; 2-methoxy-2-methylpropane 603-181-00-X / 216-653-1 / 1634-04-4		<1	µg/kg		<0.001	mg/kg	<0.0000001 %		<LOD
23		naphthalene 601-052-00-2 / 202-049-5 / 91-20-3		0.19	mg/kg		0.175	mg/kg	0.0000175 %	✓	
24		acenaphthylene 205-917-1 / 208-96-8		0.11	mg/kg		0.101	mg/kg	0.0000101 %	✓	
25		acenaphthene 201-469-6 / 83-32-9		0.39	mg/kg		0.358	mg/kg	0.0000358 %	✓	
26		fluorene 201-695-5 / 86-73-7		0.28	mg/kg		0.257	mg/kg	0.0000257 %	✓	
27		phenanthrene 201-581-5 / 85-01-8		3.6	mg/kg		3.308	mg/kg	0.000331 %	✓	
28		anthracene 204-371-1 / 120-12-7		0.44	mg/kg		0.404	mg/kg	0.0000404 %	✓	
29		fluoranthene 205-912-4 / 206-44-0		4.9	mg/kg		4.503	mg/kg	0.00045 %	✓	
30		pyrene 204-927-3 / 129-00-0		4.3	mg/kg		3.952	mg/kg	0.000395 %	✓	
31		benzo[a]anthracene 601-033-00-9 / 200-280-6 / 56-55-3		2.1	mg/kg		1.93	mg/kg	0.000193 %	✓	
32		chrysene 601-048-00-0 / 205-923-4 / 218-01-9		2.4	mg/kg		2.206	mg/kg	0.000221 %	✓	
33		benzo[b]fluoranthene 601-034-00-4 / 205-911-9 / 205-99-2		2.7	mg/kg		2.481	mg/kg	0.000248 %	✓	
34		benzo[k]fluoranthene 601-036-00-5 / 205-916-6 / 207-08-9		0.88	mg/kg		0.809	mg/kg	0.0000809 %	✓	
35		benzo[a]pyrene; benzo[def]chrysene 601-032-00-3 / 200-028-5 / 50-32-8		2	mg/kg		1.838	mg/kg	0.000184 %	✓	
36		indeno[123-cd]pyrene 205-893-2 / 193-39-5		1.3	mg/kg		1.195	mg/kg	0.000119 %	✓	
37		dibenz[a,h]anthracene 601-041-00-2 / 200-181-8 / 53-70-3		0.31	mg/kg		0.285	mg/kg	0.0000285 %	✓	
38		benzo[ghi]perylene 205-883-8 / 191-24-2		1.4	mg/kg		1.287	mg/kg	0.000129 %	✓	
39		coronene 205-881-7 / 191-07-1		<0.1	mg/kg		<0.1	mg/kg	<0.00001 %		<LOD
40		polychlorobiphenyls; PCB 602-039-00-4 / 215-648-1 / 1336-36-3		<0.1	mg/kg		<0.1	mg/kg	<0.00001 %		<LOD

#		Determinand			CLP Note	User entered data	Conv. Factor	Compound conc.	Classification value	MC Applied	Conc. Not Used
		CLP index number	EC Number	CAS Number							
41	●	monohydric phenols				<0.1 mg/kg		<0.1 mg/kg	<0.00001 %		<LOD
				P1186							
42		xylene				<2 µg/kg		<0.002 mg/kg	<0.0000002 %		<LOD
		601-022-00-9	202-422-2 [1] 203-396-5 [2] 203-576-3 [3] 215-535-7 [4]	95-47-6 [1] 106-42-3 [2] 108-38-3 [3] 1330-20-7 [4]							
								Total:	0.106 %		

Key

(yellow)	User supplied data
(grey)	Determinand values ignored for classification, see column 'Conc. Not Used' for reason
●	Determinand defined or amended by HazWasteOnline (see Appendix A)
	Speciated Deteminand - Unless the Determinand is Note 1, the Conversion Factor is used to calculate the compound concentration
<LOD	Below limit of detection
ND	Not detected
CLP: Note 1	Only the metal concentration has been used for classification

Supplementary Hazardous Property Information

HP 3(i): Flammable "flammable liquid waste: liquid waste having a flash point below 60°C or waste gas oil, diesel and light heating oils having a flash point > 55°C and <= 75°C"

Force this Hazardous property to non hazardous because HP 3 can be discounted as this is a solid waste without a free draining liquid phase.

Hazard Statements hit:

Flam. Liq. 3; H226 "Flammable liquid and vapour."

Because of determinand:

TPH (C6 to C40) petroleum group: (conc.: 0.00919%)

WAC results for sample: TP23-0.30

WAC Settings: samples in this Job constitute a single population.

WAC limits used to evaluate this sample: "Ireland"
The WAC used in this report are the WAC defined for the inert and non-hazardous classes of landfill in the Republic of Ireland. You should check the actual acceptance criteria when the disposal site is identified as they may differ from the generic WAC used in this report.

The sample FAILS the Inert (Inert waste landfill) criteria.

The sample FAILS the Non Haz (Non hazardous waste landfill) criteria.

WAC Determinands

Solid Waste Analysis				Landfill Waste Acceptance Criteria Limits	
#	Determinand		User entered data	Inert waste landfill	Non hazardous waste landfill
1	TOC (total organic carbon)	%	7.2	3	5
2	LOI (loss on ignition)	%	9.3	-	-
3	BTEX (benzene, toluene, ethylbenzene and xylenes)	mg/kg	<0.01	6	-
4	PCBs (polychlorinated biphenyls, 7 congeners)	mg/kg	<0.1	1	-
5	Mineral oil (C10 to C40)	mg/kg	100	500	-
6	PAHs (polycyclic aromatic hydrocarbons)	mg/kg	27	100	-
7	pH	pH	8.2	-	>6
8	ANC (acid neutralisation capacity)	mol/kg	<0.002	-	-
Eluate Analysis 10:1					
9	arsenic	mg/kg	0.16	0.5	2
10	barium	mg/kg	0.062	20	100
11	cadmium	mg/kg	<0.0001	0.04	1
12	chromium	mg/kg	<0.0005	0.5	10
13	copper	mg/kg	0.046	2	50
14	mercury	mg/kg	<5.0e-05	0.01	0.2
15	molybdenum	mg/kg	0.072	0.5	10
16	nickel	mg/kg	0.0083	0.4	10
17	lead	mg/kg	<0.0005	0.5	10
18	antimony	mg/kg	0.025	0.06	0.7
19	selenium	mg/kg	0.012	0.1	0.5
20	zinc	mg/kg	0.025	4	50
21	chloride	mg/kg	<10	800	15,000
22	fluoride	mg/kg	3.2	10	150
23	sulphate	mg/kg	<10	1,000	20,000
24	phenol index	mg/kg	<0.3	1	-
25	DOC (dissolved organic carbon)	mg/kg	51	500	800
26	TDS (total dissolved solids)	mg/kg	1100	4,000	60,000

Key

	User supplied data
	Inert WAC criteria fail
	Non Hazardous WAC criteria fail

Classification of sample: TP23-0.80

Non Hazardous Waste
Classified as **17 05 04**
in the List of Waste

Sample details

Sample name:		LoW Code:	
TP23-0.80		Chapter:	17: Construction and Demolition Wastes (including excavated soil from contaminated sites)
Sample Depth:			
0.80-0.80 m		Entry:	17 05 04 (Soil and stones other than those mentioned in 17 05 03)
Moisture content:			
17% (wet weight correction)			

Hazard properties

None identified

Determinands

Moisture content: 17% Wet Weight Moisture Correction applied (MC)

#	Determinand	CLP index number	EC Number	CAS Number	CLP Note	User entered data		Conv. Factor	Compound conc.		Classification value	MC Applied	Conc. Not Used
1	pH			PH		8.5	pH		8.5	pH	8.5 pH		
2	boron { diboron trioxide; boric oxide }	005-008-00-8	215-125-8	1303-86-2		0.72	mg/kg	3.22	1.924	mg/kg	0.000192 %	✓	
3	sulfur { sulfur }	016-094-00-1	231-722-6	7704-34-9		1.5	mg/kg		1.245	mg/kg	0.000125 %	✓	
4	cyanides { salts of hydrogen cyanide with the exception of complex cyanides such as ferrocyanides, ferricyanides and mercuric oxycyanide and those specified elsewhere in this Annex }	006-007-00-5				<0.5	mg/kg	1.884	<0.942	mg/kg	<0.0000942 %		<LOD
5	barium { barium oxide }		215-127-9	1304-28-5		68	mg/kg	1.117	63.016	mg/kg	0.0063 %	✓	
6	cadmium { cadmium oxide }	048-002-00-0	215-146-2	1306-19-0		1.3	mg/kg	1.142	1.233	mg/kg	0.000123 %	✓	
7	molybdenum { molybdenum(VI) oxide }	042-001-00-9	215-204-7	1313-27-5		3.1	mg/kg	1.5	3.86	mg/kg	0.000386 %	✓	
8	antimony { antimony compounds, with the exception of the tetroxide (Sb2O4), pentoxide (Sb2O5), trisulphide (Sb2S3), pentasulphide (Sb2S5) and those specified elsewhere in this Annex }	051-003-00-9			1	<2	mg/kg		<2	mg/kg	<0.0002 %		<LOD
9	arsenic { arsenic }	033-001-00-X	231-148-6	7440-38-2		12	mg/kg		9.96	mg/kg	0.000996 %	✓	
10	granulated copper; [particle length: from 0,9 mm to 6,0 mm; particle width: from 0,494 to 0,949 mm]	029-024-00-X	231-159-6	7440-50-8		47	mg/kg		39.01	mg/kg	0.0039 %	✓	
11	mercury { mercury }	080-001-00-0	231-106-7	7439-97-6		0.14	mg/kg		0.116	mg/kg	0.0000116 %	✓	
12	nickel { nickel(II) oxide (nickel monoxide) }	028-003-00-2	215-215-7 [1] 234-323-5 [2] - [3]	1313-99-1 [1] 11099-02-8 [2] 34492-97-2 [3]		36	mg/kg	1.273	38.025	mg/kg	0.0038 %	✓	
13	lead { lead compounds with the exception of those specified elsewhere in this Annex }	082-001-00-6			1	35	mg/kg		29.05	mg/kg	0.00291 %	✓	

#	Determinand	CLP index number	EC Number	CAS Number	CLP Note	User entered data		Conv. Factor	Compound conc.		Classification value	MC Applied	Conc. Not Used
14	selenium { selenium compounds with the exception of cadmium sulphoselenide and those specified elsewhere in this Annex }	034-002-00-8				0.31	mg/kg	1.405	0.362	mg/kg	0.0000362 %	✓	
15	zinc { zinc oxide }	030-013-00-7	215-222-5	1314-13-2		90	mg/kg	1.245	92.98	mg/kg	0.0093 %	✓	
16	chromium in chromium(III) compounds { chromium(III) oxide }		215-160-9	1308-38-9		21	mg/kg	1.462	25.475	mg/kg	0.00255 %	✓	
17	chromium in chromium(VI) compounds { chromium(VI) oxide }	024-001-00-0	215-607-8	1333-82-0		<0.5	mg/kg	1.923	<0.962	mg/kg	<0.0000962 %		<LOD
18	TPH (C6 to C40) petroleum group			TPH		<10	mg/kg		<10	mg/kg	<0.001 %		<LOD
19	benzene	601-020-00-8	200-753-7	71-43-2		<1	µg/kg		<0.001	mg/kg	<0.0000001 %		<LOD
20	toluene	601-021-00-3	203-625-9	108-88-3		<1	µg/kg		<0.001	mg/kg	<0.0000001 %		<LOD
21	ethylbenzene	601-023-00-4	202-849-4	100-41-4		<1	µg/kg		<0.001	mg/kg	<0.0000001 %		<LOD
22	tert-butyl methyl ether; MTBE; 2-methoxy-2-methylpropane	603-181-00-X	216-653-1	1634-04-4		<1	µg/kg		<0.001	mg/kg	<0.0000001 %		<LOD
23	naphthalene	601-052-00-2	202-049-5	91-20-3		<0.1	mg/kg		<0.1	mg/kg	<0.00001 %		<LOD
24	acenaphthylene		205-917-1	208-96-8		<0.1	mg/kg		<0.1	mg/kg	<0.00001 %		<LOD
25	acenaphthene		201-469-6	83-32-9		<0.1	mg/kg		<0.1	mg/kg	<0.00001 %		<LOD
26	fluorene		201-695-5	86-73-7		<0.1	mg/kg		<0.1	mg/kg	<0.00001 %		<LOD
27	phenanthrene		201-581-5	85-01-8		<0.1	mg/kg		<0.1	mg/kg	<0.00001 %		<LOD
28	anthracene		204-371-1	120-12-7		<0.1	mg/kg		<0.1	mg/kg	<0.00001 %		<LOD
29	fluoranthene		205-912-4	206-44-0		0.5	mg/kg		0.415	mg/kg	0.0000415 %	✓	
30	pyrene		204-927-3	129-00-0		0.41	mg/kg		0.34	mg/kg	0.000034 %	✓	
31	benzo[a]anthracene	601-033-00-9	200-280-6	56-55-3		0.19	mg/kg		0.158	mg/kg	0.0000158 %	✓	
32	chrysene	601-048-00-0	205-923-4	218-01-9		0.13	mg/kg		0.108	mg/kg	0.0000108 %	✓	
33	benzo[b]fluoranthene	601-034-00-4	205-911-9	205-99-2		<0.1	mg/kg		<0.1	mg/kg	<0.00001 %		<LOD
34	benzo[k]fluoranthene	601-036-00-5	205-916-6	207-08-9		<0.1	mg/kg		<0.1	mg/kg	<0.00001 %		<LOD
35	benzo[a]pyrene; benzo[def]chrysene	601-032-00-3	200-028-5	50-32-8		<0.1	mg/kg		<0.1	mg/kg	<0.00001 %		<LOD
36	indeno[123-cd]pyrene		205-893-2	193-39-5		<0.1	mg/kg		<0.1	mg/kg	<0.00001 %		<LOD
37	dibenz[a,h]anthracene	601-041-00-2	200-181-8	53-70-3		<0.1	mg/kg		<0.1	mg/kg	<0.00001 %		<LOD
38	benzo[ghi]perylene		205-883-8	191-24-2		<0.1	mg/kg		<0.1	mg/kg	<0.00001 %		<LOD
39	coronene		205-881-7	191-07-1		<0.1	mg/kg		<0.1	mg/kg	<0.00001 %		<LOD
40	polychlorobiphenyls; PCB	602-039-00-4	215-648-1	1336-36-3		<0.1	mg/kg		<0.1	mg/kg	<0.00001 %		<LOD

#		Determinand CLP index number | EC Number | CAS Number	CLP Note	User entered data	Conv. Factor	Compound conc.	Classification value	MC Applied	Conc. Not Used
41	●	monohydric phenols P1186		<0.1 mg/kg		<0.1 mg/kg	<0.00001 %		**<LOD**
42		xylene 601-022-00-9 | 202-422-2 [1] 203-396-5 [2] 203-576-3 [3] 215-535-7 [4] | 95-47-6 [1] 106-42-3 [2] 108-38-3 [3] 1330-20-7 [4]		<2 µg/kg		<0.002 mg/kg	<0.0000002 %		**<LOD**
						Total:	0.0323 %		

Key

(yellow)	User supplied data
(grey)	Determinand values ignored for classification, see column 'Conc. Not Used' for reason
●	Determinand defined or amended by HazWasteOnline (see Appendix A)
	Speciated Deteminand - Unless the Determinand is Note 1, the Conversion Factor is used to calculate the compound concentration
<LOD	Below limit of detection
ND	Not detected
CLP: Note 1	Only the metal concentration has been used for classification

WAC results for sample: TP23-0.80

WAC Settings: samples in this Job constitute a single population.

WAC limits used to evaluate this sample: "Ireland"
The WAC used in this report are the WAC defined for the inert and non-hazardous classes of landfill in the Republic of Ireland. You should check the actual acceptance criteria when the disposal site is identified as they may differ from the generic WAC used in this report.

The sample PASSES the Inert (Inert waste landfill) criteria.

The sample PASSES the Non Haz (Non hazardous waste landfill) criteria.

WAC Determinands

Solid Waste Analysis				Landfill Waste Acceptance Criteria Limits	
#	Determinand		User entered data	Inert waste landfill	Non hazardous waste landfill
1	TOC (total organic carbon)	%	1.4	3	5
2	LOI (loss on ignition)	%	3.3	-	-
3	BTEX (benzene, toluene, ethylbenzene and xylenes)	mg/kg	<0.01	6	-
4	PCBs (polychlorinated biphenyls, 7 congeners)	mg/kg	<0.1	1	-
5	Mineral oil (C10 to C40)	mg/kg	<10	500	-
6	PAHs (polycyclic aromatic hydrocarbons)	mg/kg	<2	100	-
7	pH	pH	8.5	-	>6
8	ANC (acid neutralisation capacity)	mol/kg	0.015	-	-
Eluate Analysis 10:1					
9	arsenic	mg/kg	0.017	0.5	2
10	barium	mg/kg	<0.0005	20	100
11	cadmium	mg/kg	<0.0001	0.04	1
12	chromium	mg/kg	0.012	0.5	10
13	copper	mg/kg	0.016	2	50
14	mercury	mg/kg	<5.0e-05	0.01	0.2
15	molybdenum	mg/kg	0.3	0.5	10
16	nickel	mg/kg	<0.0005	0.4	10
17	lead	mg/kg	<0.0005	0.5	10
18	antimony	mg/kg	0.013	0.06	0.7
19	selenium	mg/kg	<0.0005	0.1	0.5
20	zinc	mg/kg	<0.0025	4	50
21	chloride	mg/kg	<10	800	15,000
22	fluoride	mg/kg	2.6	10	150
23	sulphate	mg/kg	<10	1,000	20,000
24	phenol index	mg/kg	<0.3	1	-
25	DOC (dissolved organic carbon)	mg/kg	91	500	800
26	TDS (total dissolved solids)	mg/kg	710	4,000	60,000

Key

User supplied data

Classification of sample: TP24-0.30

Non Hazardous Waste
Classified as **17 05 04**
in the List of Waste

Sample details

Sample name:		LoW Code:	
TP24-0.30		Chapter:	17: Construction and Demolition Wastes (including excavated soil from contaminated sites)
Sample Depth:			
0.30-0.30 m		Entry:	17 05 04 (Soil and stones other than those mentioned in 17 05 03)
Moisture content:			
8% (wet weight correction)			

Hazard properties

None identified

Determinands

Moisture content: 8% Wet Weight Moisture Correction applied (MC)

#	Determinand	CLP index number	EC Number	CAS Number	CLP Note	User entered data	Conv. Factor	Compound conc.	Classification value	MC Applied	Conc. Not Used
1	pH			PH		8.5 pH		8.5 pH	8.5 pH		
2	boron { diboron trioxide; boric oxide }	005-008-00-8	215-125-8	1303-86-2		2 mg/kg	3.22	5.925 mg/kg	0.000592 %	✓	
3	sulfur { sulfur }	016-094-00-1	231-722-6	7704-34-9		5.8 mg/kg		5.336 mg/kg	0.000534 %	✓	
4	cyanides { salts of hydrogen cyanide with the exception of complex cyanides such as ferrocyanides, ferricyanides and mercuric oxycyanide and those specified elsewhere in this Annex }	006-007-00-5				<0.5 mg/kg	1.884	<0.942 mg/kg	<0.0000942 %		<LOD
5	barium { barium oxide }		215-127-9	1304-28-5		160 mg/kg	1.117	164.35 mg/kg	0.0164 %	✓	
6	cadmium { cadmium oxide }	048-002-00-0	215-146-2	1306-19-0		1.8 mg/kg	1.142	1.892 mg/kg	0.000189 %	✓	
7	molybdenum { molybdenum(VI) oxide }	042-001-00-9	215-204-7	1313-27-5		3.9 mg/kg	1.5	5.383 mg/kg	0.000538 %	✓	
8	antimony { antimony compounds, with the exception of the tetroxide (Sb2O4), pentoxide (Sb2O5), trisulphide (Sb2S3), pentasulphide (Sb2S5) and those specified elsewhere in this Annex }	051-003-00-9			1	5.4 mg/kg		4.968 mg/kg	0.000497 %	✓	
9	arsenic { arsenic }	033-001-00-X	231-148-6	7440-38-2		31 mg/kg		28.52 mg/kg	0.00285 %	✓	
10	granulated copper; [particle length: from 0,9 mm to 6,0 mm; particle width: from 0,494 to 0,949 mm]	029-024-00-X	231-159-6	7440-50-8		82 mg/kg		75.44 mg/kg	0.00754 %	✓	
11	mercury { mercury }	080-001-00-0	231-106-7	7439-97-6		0.48 mg/kg		0.442 mg/kg	0.0000442 %	✓	
12	nickel { nickel(II) oxide (nickel monoxide) }	028-003-00-2	215-215-7 [1] 234-323-5 [2] - [3]	1313-99-1 [1] 11099-02-8 [2] 34492-97-2 [3]		44 mg/kg	1.273	51.515 mg/kg	0.00515 %	✓	
13	lead { lead compounds with the exception of those specified elsewhere in this Annex }	082-001-00-6			1	260 mg/kg		239.2 mg/kg	0.0239 %	✓	

#	Determinand	CLP index number	EC Number	CAS Number	CLP Note	User entered data	Conv. Factor	Compound conc.	Classification value	MC Applied	Conc. Not Used
14	selenium { selenium compounds with the exception of cadmium sulphoselenide and those specified elsewhere in this Annex }	034-002-00-8				0.98 mg/kg	1.405	1.267 mg/kg	0.000127 %	✓	
15	zinc { zinc oxide }	030-013-00-7	215-222-5	1314-13-2		310 mg/kg	1.245	354.992 mg/kg	0.0355 %	✓	
16	chromium in chromium(III) compounds { chromium(III) oxide }		215-160-9	1308-38-9		20 mg/kg	1.462	26.893 mg/kg	0.00269 %	✓	
17	chromium in chromium(VI) compounds { chromium(VI) oxide }	024-001-00-0	215-607-8	1333-82-0		<0.5 mg/kg	1.923	<0.962 mg/kg	<0.0000962 %		<LOD
18	TPH (C6 to C40) petroleum group			TPH		<10 mg/kg		<10 mg/kg	<0.001 %		<LOD
19	benzene	601-020-00-8	200-753-7	71-43-2		<1 µg/kg		<0.001 mg/kg	<0.0000001 %		<LOD
20	toluene	601-021-00-3	203-625-9	108-88-3		<1 µg/kg		<0.001 mg/kg	<0.0000001 %		<LOD
21	ethylbenzene	601-023-00-4	202-849-4	100-41-4		<1 µg/kg		<0.001 mg/kg	<0.0000001 %		<LOD
22	tert-butyl methyl ether; MTBE; 2-methoxy-2-methylpropane	603-181-00-X	216-653-1	1634-04-4		<1 µg/kg		<0.001 mg/kg	<0.0000001 %		<LOD
23	naphthalene	601-052-00-2	202-049-5	91-20-3		<0.1 mg/kg		<0.1 mg/kg	<0.00001 %		<LOD
24	acenaphthylene		205-917-1	208-96-8		<0.1 mg/kg		<0.1 mg/kg	<0.00001 %		<LOD
25	acenaphthene		201-469-6	83-32-9		<0.1 mg/kg		<0.1 mg/kg	<0.00001 %		<LOD
26	fluorene		201-695-5	86-73-7		<0.1 mg/kg		<0.1 mg/kg	<0.00001 %		<LOD
27	phenanthrene		201-581-5	85-01-8		1.2 mg/kg		1.104 mg/kg	0.00011 %	✓	
28	anthracene		204-371-1	120-12-7		0.25 mg/kg		0.23 mg/kg	0.000023 %	✓	
29	fluoranthene		205-912-4	206-44-0		1.7 mg/kg		1.564 mg/kg	0.000156 %	✓	
30	pyrene		204-927-3	129-00-0		1.4 mg/kg		1.288 mg/kg	0.000129 %	✓	
31	benzo[a]anthracene	601-033-00-9	200-280-6	56-55-3		0.81 mg/kg		0.745 mg/kg	0.0000745 %	✓	
32	chrysene	601-048-00-0	205-923-4	218-01-9		0.87 mg/kg		0.8 mg/kg	0.00008 %	✓	
33	benzo[b]fluoranthene	601-034-00-4	205-911-9	205-99-2		1.1 mg/kg		1.012 mg/kg	0.000101 %	✓	
34	benzo[k]fluoranthene	601-036-00-5	205-916-6	207-08-9		0.34 mg/kg		0.313 mg/kg	0.0000313 %	✓	
35	benzo[a]pyrene; benzo[def]chrysene	601-032-00-3	200-028-5	50-32-8		0.74 mg/kg		0.681 mg/kg	0.0000681 %	✓	
36	indeno[123-cd]pyrene		205-893-2	193-39-5		0.53 mg/kg		0.488 mg/kg	0.0000488 %	✓	
37	dibenz[a,h]anthracene	601-041-00-2	200-181-8	53-70-3		0.12 mg/kg		0.11 mg/kg	0.000011 %	✓	
38	benzo[ghi]perylene		205-883-8	191-24-2		0.5 mg/kg		0.46 mg/kg	0.000046 %	✓	
39	coronene		205-881-7	191-07-1		<0.1 mg/kg		<0.1 mg/kg	<0.00001 %		<LOD
40	polychlorobiphenyls; PCB	602-039-00-4	215-648-1	1336-36-3		<0.1 mg/kg		<0.1 mg/kg	<0.00001 %		<LOD

#		Determinand			CLP Note	User entered data		Conv. Factor	Compound conc.		Classification value	MC Applied	Conc. Not Used
		CLP index number	EC Number	CAS Number									
41	●	monohydric phenols				<0.1	mg/kg		<0.1	mg/kg	<0.00001 %		**<LOD**
				P1186									
42		xylene				<2	µg/kg		<0.002	mg/kg	<0.0000002 %		**<LOD**
		601-022-00-9	202-422-2 [1] 203-396-5 [2] 203-576-3 [3] 215-535-7 [4]	95-47-6 [1] 106-42-3 [2] 108-38-3 [3] 1330-20-7 [4]									
										Total:	0.0988 %		

Key

(yellow)	User supplied data
(grey)	Determinand values ignored for classification, see column 'Conc. Not Used' for reason
●	Determinand defined or amended by HazWasteOnline (see Appendix A)
	Speciated Deteminand - Unless the Determinand is Note 1, the Conversion Factor is used to calculate the compound concentration
<LOD	Below limit of detection
ND	Not detected
CLP: Note 1	Only the metal concentration has been used for classification

WAC results for sample: TP24-0.30

WAC Settings: samples in this Job constitute a single population.

WAC limits used to evaluate this sample: "Ireland"
The WAC used in this report are the WAC defined for the inert and non-hazardous classes of landfill in the Republic of Ireland. You should check the actual acceptance criteria when the disposal site is identified as they may differ from the generic WAC used in this report.

The sample FAILS the Inert (Inert waste landfill) criteria.

The sample FAILS the Non Haz (Non hazardous waste landfill) criteria.

WAC Determinands

Solid Waste Analysis				Landfill Waste Acceptance Criteria Limits	
#	Determinand		User entered data	Inert waste landfill	Non hazardous waste landfill
1	TOC (total organic carbon)	%	5.4	3	5
2	LOI (loss on ignition)	%	11	-	-
3	BTEX (benzene, toluene, ethylbenzene and xylenes)	mg/kg	<0.01	6	-
4	PCBs (polychlorinated biphenyls, 7 congeners)	mg/kg	<0.1	1	-
5	Mineral oil (C10 to C40)	mg/kg	<10	500	-
6	PAHs (polycyclic aromatic hydrocarbons)	mg/kg	9.6	100	-
7	pH	pH	8.5	-	>6
8	ANC (acid neutralisation capacity)	mol/kg	0.054	-	-
Eluate Analysis 10:1					
9	arsenic	mg/kg	0.13	0.5	2
10	barium	mg/kg	0.12	20	100
11	cadmium	mg/kg	<0.0001	0.04	1
12	chromium	mg/kg	<0.0005	0.5	10
13	copper	mg/kg	0.039	2	50
14	mercury	mg/kg	<5.0e-05	0.01	0.2
15	molybdenum	mg/kg	0.12	0.5	10
16	nickel	mg/kg	0.0072	0.4	10
17	lead	mg/kg	<0.0005	0.5	10
18	antimony	mg/kg	0.048	0.06	0.7
19	selenium	mg/kg	0.0078	0.1	0.5
20	zinc	mg/kg	0.027	4	50
21	chloride	mg/kg	<10	800	15,000
22	fluoride	mg/kg	2.1	10	150
23	sulphate	mg/kg	<10	1,000	20,000
24	phenol index	mg/kg	<0.3	1	-
25	DOC (dissolved organic carbon)	mg/kg	60	500	800
26	TDS (total dissolved solids)	mg/kg	1300	4,000	60,000

Key
User supplied data
Inert WAC criteria fail
Non Hazardous WAC criteria fail

Classification of sample: TP24-1.00

Non Hazardous Waste
Classified as **17 05 04**
in the List of Waste

Sample details

Sample name:		LoW Code:	
TP24-1.00		Chapter:	17: Construction and Demolition Wastes (including excavated soil from contaminated sites)
Sample Depth:			
1.00-1.00 m		Entry:	17 05 04 (Soil and stones other than those mentioned in 17 05 03)
Moisture content:			
5% (wet weight correction)			

Hazard properties

None identified

Determinands

Moisture content: 5% Wet Weight Moisture Correction applied (MC)

#	Determinand	CLP index number	EC Number	CAS Number	CLP Note	User entered data		Conv. Factor	Compound conc.		Classification value	MC Applied	Conc. Not Used
1	pH			PH		8.4	pH		8.4	pH	8.4 pH		
2	boron { diboron trioxide; boric oxide }	005-008-00-8	215-125-8	1303-86-2		1.2	mg/kg	3.22	3.671	mg/kg	0.000367 %	✓	
3	sulfur { sulfur }	016-094-00-1	231-722-6	7704-34-9		11	mg/kg		10.45	mg/kg	0.00105 %	✓	
4	cyanides { salts of hydrogen cyanide with the exception of complex cyanides such as ferrocyanides, ferricyanides and mercuric oxycyanide and those specified elsewhere in this Annex }	006-007-00-5				<0.5	mg/kg	1.884	<0.942	mg/kg	<0.0000942 %		**<LOD**
5	barium { barium oxide }		215-127-9	1304-28-5		73	mg/kg	1.117	77.43	mg/kg	0.00774 %	✓	
6	cadmium { cadmium oxide }	048-002-00-0	215-146-2	1306-19-0		1.1	mg/kg	1.142	1.194	mg/kg	0.000119 %	✓	
7	molybdenum { molybdenum(VI) oxide }	042-001-00-9	215-204-7	1313-27-5		2.9	mg/kg	1.5	4.133	mg/kg	0.000413 %	✓	
8	antimony { antimony compounds, with the exception of the tetroxide (Sb2O4), pentoxide (Sb2O5), trisulphide (Sb2S3), pentasulphide (Sb2S5) and those specified elsewhere in this Annex }	051-003-00-9			1	2.6	mg/kg		2.47	mg/kg	0.000247 %	✓	
9	arsenic { arsenic }	033-001-00-X	231-148-6	7440-38-2		19	mg/kg		18.05	mg/kg	0.00181 %	✓	
10	granulated copper; [particle length: from 0,9 mm to 6,0 mm; particle width: from 0,494 to 0,949 mm]	029-024-00-X	231-159-6	7440-50-8		56	mg/kg		53.2	mg/kg	0.00532 %	✓	
11	mercury { mercury }	080-001-00-0	231-106-7	7439-97-6		0.32	mg/kg		0.304	mg/kg	0.0000304 %	✓	
12	nickel { nickel(II) oxide (nickel monoxide) }	028-003-00-2	215-215-7 [1] 234-323-5 [2] - [3]	1313-99-1 [1] 11099-02-8 [2] 34492-97-2 [3]		30	mg/kg	1.273	36.269	mg/kg	0.00363 %	✓	
13	lead { lead compounds with the exception of those specified elsewhere in this Annex }	082-001-00-6			1	110	mg/kg		104.5	mg/kg	0.0104 %	✓	

#		Determinand			CLP Note	User entered data		Conv. Factor	Compound conc.		Classification value	MC Applied	Conc. Not Used
		CLP index number	EC Number	CAS Number									
14		selenium { selenium compounds with the exception of cadmium sulphoselenide and those specified elsewhere in this Annex }				0.48	mg/kg	1.405	0.641	mg/kg	0.0000641 %	✓	
		034-002-00-8											
15		zinc { zinc oxide }				110	mg/kg	1.245	130.073	mg/kg	0.013 %	✓	
		030-013-00-7	215-222-5	1314-13-2									
16		chromium in chromium(III) compounds { chromium(III) oxide }				17	mg/kg	1.462	23.604	mg/kg	0.00236 %	✓	
			215-160-9	1308-38-9									
17		chromium in chromium(VI) compounds { chromium(VI) oxide }				<0.5	mg/kg	1.923	<0.962	mg/kg	<0.0000962 %		<LOD
		024-001-00-0	215-607-8	1333-82-0									
18		TPH (C6 to C40) petroleum group				20	mg/kg		19	mg/kg	0.0019 %	✓	
				TPH									
19		benzene				<1	µg/kg		<0.001	mg/kg	<0.0000001 %		<LOD
		601-020-00-8	200-753-7	71-43-2									
20		toluene				<1	µg/kg		<0.001	mg/kg	<0.0000001 %		<LOD
		601-021-00-3	203-625-9	108-88-3									
21		ethylbenzene				<1	µg/kg		<0.001	mg/kg	<0.0000001 %		<LOD
		601-023-00-4	202-849-4	100-41-4									
22		tert-butyl methyl ether; MTBE; 2-methoxy-2-methylpropane				<1	µg/kg		<0.001	mg/kg	<0.0000001 %		<LOD
		603-181-00-X	216-653-1	1634-04-4									
23		naphthalene				0.14	mg/kg		0.133	mg/kg	0.0000133 %	✓	
		601-052-00-2	202-049-5	91-20-3									
24		acenaphthylene				0.12	mg/kg		0.114	mg/kg	0.0000114 %	✓	
			205-917-1	208-96-8									
25		acenaphthene				0.75	mg/kg		0.713	mg/kg	0.0000712 %	✓	
			201-469-6	83-32-9									
26		fluorene				0.6	mg/kg		0.57	mg/kg	0.000057 %	✓	
			201-695-5	86-73-7									
27		phenanthrene				7.4	mg/kg		7.03	mg/kg	0.000703 %	✓	
			201-581-5	85-01-8									
28		anthracene				2.3	mg/kg		2.185	mg/kg	0.000218 %	✓	
			204-371-1	120-12-7									
29		fluoranthene				11	mg/kg		10.45	mg/kg	0.00105 %	✓	
			205-912-4	206-44-0									
30		pyrene				8.9	mg/kg		8.455	mg/kg	0.000846 %	✓	
			204-927-3	129-00-0									
31		benzo[a]anthracene				4.7	mg/kg		4.465	mg/kg	0.000447 %	✓	
		601-033-00-9	200-280-6	56-55-3									
32		chrysene				4.4	mg/kg		4.18	mg/kg	0.000418 %	✓	
		601-048-00-0	205-923-4	218-01-9									
33		benzo[b]fluoranthene				5	mg/kg		4.75	mg/kg	0.000475 %	✓	
		601-034-00-4	205-911-9	205-99-2									
34		benzo[k]fluoranthene				1.8	mg/kg		1.71	mg/kg	0.000171 %	✓	
		601-036-00-5	205-916-6	207-08-9									
35		benzo[a]pyrene; benzo[def]chrysene				4.1	mg/kg		3.895	mg/kg	0.000389 %	✓	
		601-032-00-3	200-028-5	50-32-8									
36		indeno[123-cd]pyrene				2.6	mg/kg		2.47	mg/kg	0.000247 %	✓	
			205-893-2	193-39-5									
37		dibenz[a,h]anthracene				0.52	mg/kg		0.494	mg/kg	0.0000494 %	✓	
		601-041-00-2	200-181-8	53-70-3									
38		benzo[ghi]perylene				2.2	mg/kg		2.09	mg/kg	0.000209 %	✓	
			205-883-8	191-24-2									
39		coronene				<0.1	mg/kg		<0.1	mg/kg	<0.00001 %		<LOD
			205-881-7	191-07-1									
40		polychlorobiphenyls; PCB				<0.1	mg/kg		<0.1	mg/kg	<0.00001 %		<LOD
		602-039-00-4	215-648-1	1336-36-3									

#		Determinand CLP index number	EC Number	CAS Number	CLP Note	User entered data	Conv. Factor	Compound conc.	Classification value	MC Applied	Conc. Not Used
41	●	monohydric phenols		P1186		<0.1 mg/kg		<0.1 mg/kg	<0.00001 %		**<LOD**
42		xylene 601-022-00-9	202-422-2 [1] 203-396-5 [2] 203-576-3 [3] 215-535-7 [4]	95-47-6 [1] 106-42-3 [2] 108-38-3 [3] 1330-20-7 [4]		<2 µg/kg		<0.002 mg/kg	<0.0000002 %		**<LOD**
								Total:	0.0541 %		

Key

(yellow)	User supplied data
(grey)	Determinand values ignored for classification, see column 'Conc. Not Used' for reason
●	Determinand defined or amended by HazWasteOnline (see Appendix A)
	Speciated Deteminand - Unless the Determinand is Note 1, the Conversion Factor is used to calculate the compound concentration
<LOD	Below limit of detection
ND	Not detected
CLP: Note 1	Only the metal concentration has been used for classification

Supplementary Hazardous Property Information

HP 3(i): Flammable "flammable liquid waste: liquid waste having a flash point below 60°C or waste gas oil, diesel and light heating oils having a flash point > 55°C and <= 75°C"

Force this Hazardous property to non hazardous because HP 3 can be discounted as this is a solid waste without a free draining liquid phase.

Hazard Statements hit:

Flam. Liq. 3; H226 "Flammable liquid and vapour."

Because of determinand:

TPH (C6 to C40) petroleum group: (conc.: 0.0019%)

WAC results for sample: TP24-1.00

WAC Settings: samples in this Job constitute a single population.

WAC limits used to evaluate this sample: "Ireland"
The WAC used in this report are the WAC defined for the inert and non-hazardous classes of landfill in the Republic of Ireland. You should check the actual acceptance criteria when the disposal site is identified as they may differ from the generic WAC used in this report.

The sample FAILS the Inert (Inert waste landfill) criteria.

The sample PASSES the Non Haz (Non hazardous waste landfill) criteria.

WAC Determinands

Solid Waste Analysis				Landfill Waste Acceptance Criteria Limits	
#	Determinand		User entered data	Inert waste landfill	Non hazardous waste landfill
1	TOC (total organic carbon)	%	3.7	3	5
2	LOI (loss on ignition)	%	5.3	-	-
3	BTEX (benzene, toluene, ethylbenzene and xylenes)	mg/kg	<0.01	6	-
4	PCBs (polychlorinated biphenyls, 7 congeners)	mg/kg	<0.1	1	-
5	Mineral oil (C10 to C40)	mg/kg	20	500	-
6	PAHs (polycyclic aromatic hydrocarbons)	mg/kg	57	100	-
7	pH	pH	8.4	-	>6
8	ANC (acid neutralisation capacity)	mol/kg	0.022	-	-
Eluate Analysis 10:1					
9	arsenic	mg/kg	0.093	0.5	2
10	barium	mg/kg	0.053	20	100
11	cadmium	mg/kg	<0.0001	0.04	1
12	chromium	mg/kg	0.0062	0.5	10
13	copper	mg/kg	0.037	2	50
14	mercury	mg/kg	<5.0e-05	0.01	0.2
15	molybdenum	mg/kg	0.16	0.5	10
16	nickel	mg/kg	<0.0005	0.4	10
17	lead	mg/kg	<0.0005	0.5	10
18	antimony	mg/kg	0.026	0.06	0.7
19	selenium	mg/kg	0.007	0.1	0.5
20	zinc	mg/kg	<0.0025	4	50
21	chloride	mg/kg	<10	800	15,000
22	fluoride	mg/kg	2.7	10	150
23	sulphate	mg/kg	<10	1,000	20,000
24	phenol index	mg/kg	<0.3	1	-
25	DOC (dissolved organic carbon)	mg/kg	73	500	800
26	TDS (total dissolved solids)	mg/kg	1100	4,000	60,000

Key

User supplied data

Inert WAC criteria fail

Classification of sample: TP25-0.30

Non Hazardous Waste
Classified as **17 05 04**
in the List of Waste

Sample details

Sample name:
TP25-0.30
Sample Depth:
0.30-0.30 m
Moisture content:
3.5%
(wet weight correction)

LoW Code:
Chapter: 17: Construction and Demolition Wastes (including excavated soil from contaminated sites)
Entry: 17 05 04 (Soil and stones other than those mentioned in 17 05 03)

Hazard properties

None identified

Determinands

Moisture content: 3.5% Wet Weight Moisture Correction applied (MC)

#	Determinand	CLP index number	EC Number	CAS Number	CLP Note	User entered data		Conv. Factor	Compound conc.		Classification value	MC Applied	Conc. Not Used
1	pH			PH		8.7	pH		8.7	pH	8.7 pH		
2	boron { diboron trioxide; boric oxide }	005-008-00-8	215-125-8	1303-86-2		<0.4	mg/kg	3.22	<1.288	mg/kg	<0.000129 %		<LOD
3	sulfur { sulfur }	016-094-00-1	231-722-6	7704-34-9		11	mg/kg		10.615	mg/kg	0.00106 %	✓	
4	cyanides { salts of hydrogen cyanide with the exception of complex cyanides such as ferrocyanides, ferricyanides and mercuric oxycyanide and those specified elsewhere in this Annex }	006-007-00-5				<0.5	mg/kg	1.884	<0.942	mg/kg	<0.0000942 %		<LOD
5	barium { barium oxide }		215-127-9	1304-28-5		150	mg/kg	1.117	161.614	mg/kg	0.0162 %	✓	
6	cadmium { cadmium oxide }	048-002-00-0	215-146-2	1306-19-0		1.5	mg/kg	1.142	1.654	mg/kg	0.000165 %	✓	
7	molybdenum { molybdenum(VI) oxide }	042-001-00-9	215-204-7	1313-27-5		4	mg/kg	1.5	5.791	mg/kg	0.000579 %	✓	
8	antimony { antimony compounds, with the exception of the tetroxide (Sb2O4), pentoxide (Sb2O5), trisulphide (Sb2S3), pentasulphide (Sb2S5) and those specified elsewhere in this Annex }	051-003-00-9			1	3.1	mg/kg		2.992	mg/kg	0.000299 %	✓	
9	arsenic { arsenic }	033-001-00-X	231-148-6	7440-38-2		29	mg/kg		27.985	mg/kg	0.0028 %	✓	
10	granulated copper; [particle length: from 0,9 mm to 6,0 mm; particle width: from 0,494 to 0,949 mm]	029-024-00-X	231-159-6	7440-50-8		130	mg/kg		125.45	mg/kg	0.0125 %	✓	
11	mercury { mercury }	080-001-00-0	231-106-7	7439-97-6		0.83	mg/kg		0.801	mg/kg	0.0000801 %	✓	
12	nickel { nickel(II) oxide (nickel monoxide) }	028-003-00-2	215-215-7 [1] 234-323-5 [2] - [3]	1313-99-1 [1] 11099-02-8 [2] 34492-97-2 [3]		52	mg/kg	1.273	63.859	mg/kg	0.00639 %	✓	
13	lead { lead compounds with the exception of those specified elsewhere in this Annex }	082-001-00-6			1	280	mg/kg		270.2	mg/kg	0.027 %	✓	

#	Determinand	CLP index number	EC Number	CAS Number	CLP Note	User entered data	Conv. Factor	Compound conc.	Classification value	MC Applied	Conc. Not Used
14	selenium { selenium compounds with the exception of cadmium sulphoselenide and those specified elsewhere in this Annex }	034-002-00-8				0.8 mg/kg	1.405	1.085 mg/kg	0.000108 %	✓	
15	zinc { zinc oxide }	030-013-00-7	215-222-5	1314-13-2		210 mg/kg	1.245	252.241 mg/kg	0.0252 %	✓	
16	chromium in chromium(III) compounds { chromium(III) oxide }		215-160-9	1308-38-9		26 mg/kg	1.462	36.67 mg/kg	0.00367 %	✓	
17	chromium in chromium(VI) compounds { chromium(VI) oxide }	024-001-00-0	215-607-8	1333-82-0		<0.5 mg/kg	1.923	<0.962 mg/kg	<0.0000962 %		<LOD
18	TPH (C6 to C40) petroleum group			TPH		<10 mg/kg		<10 mg/kg	<0.001 %		<LOD
19	benzene	601-020-00-8	200-753-7	71-43-2		<1 µg/kg		<0.001 mg/kg	<0.0000001 %		<LOD
20	toluene	601-021-00-3	203-625-9	108-88-3		<1 µg/kg		<0.001 mg/kg	<0.0000001 %		<LOD
21	ethylbenzene	601-023-00-4	202-849-4	100-41-4		<1 µg/kg		<0.001 mg/kg	<0.0000001 %		<LOD
22	tert-butyl methyl ether; MTBE; 2-methoxy-2-methylpropane	603-181-00-X	216-653-1	1634-04-4		<1 µg/kg		<0.001 mg/kg	<0.0000001 %		<LOD
23	naphthalene	601-052-00-2	202-049-5	91-20-3		0.32 mg/kg		0.309 mg/kg	0.0000309 %	✓	
24	acenaphthylene		205-917-1	208-96-8		0.14 mg/kg		0.135 mg/kg	0.0000135 %	✓	
25	acenaphthene		201-469-6	83-32-9		0.17 mg/kg		0.164 mg/kg	0.0000164 %	✓	
26	fluorene		201-695-5	86-73-7		0.12 mg/kg		0.116 mg/kg	0.0000116 %	✓	
27	phenanthrene		201-581-5	85-01-8		1.7 mg/kg		1.64 mg/kg	0.000164 %	✓	
28	anthracene		204-371-1	120-12-7		0.49 mg/kg		0.473 mg/kg	0.0000473 %	✓	
29	fluoranthene		205-912-4	206-44-0		3.4 mg/kg		3.281 mg/kg	0.000328 %	✓	
30	pyrene		204-927-3	129-00-0		2.8 mg/kg		2.702 mg/kg	0.00027 %	✓	
31	benzo[a]anthracene	601-033-00-9	200-280-6	56-55-3		1.7 mg/kg		1.64 mg/kg	0.000164 %	✓	
32	chrysene	601-048-00-0	205-923-4	218-01-9		1.6 mg/kg		1.544 mg/kg	0.000154 %	✓	
33	benzo[b]fluoranthene	601-034-00-4	205-911-9	205-99-2		2.2 mg/kg		2.123 mg/kg	0.000212 %	✓	
34	benzo[k]fluoranthene	601-036-00-5	205-916-6	207-08-9		0.82 mg/kg		0.791 mg/kg	0.0000791 %	✓	
35	benzo[a]pyrene; benzo[def]chrysene	601-032-00-3	200-028-5	50-32-8		1.7 mg/kg		1.64 mg/kg	0.000164 %	✓	
36	indeno[123-cd]pyrene		205-893-2	193-39-5		1 mg/kg		0.965 mg/kg	0.0000965 %	✓	
37	dibenz[a,h]anthracene	601-041-00-2	200-181-8	53-70-3		0.28 mg/kg		0.27 mg/kg	0.000027 %	✓	
38	benzo[ghi]perylene		205-883-8	191-24-2		1.2 mg/kg		1.158 mg/kg	0.000116 %	✓	
39	coronene		205-881-7	191-07-1		<0.1 mg/kg		<0.1 mg/kg	<0.00001 %		<LOD
40	polychlorobiphenyls; PCB	602-039-00-4	215-648-1	1336-36-3		<0.1 mg/kg		<0.1 mg/kg	<0.00001 %		<LOD

#		Determinand CLP index number	EC Number	CAS Number	CLP Note	User entered data		Conv. Factor	Compound conc.		Classification value	MC Applied	Conc. Not Used
41	●	monohydric phenols		P1186		<0.1	mg/kg		<0.1	mg/kg	<0.00001 %		**<LOD**
42		xylene 601-022-00-9	202-422-2 [1] 203-396-5 [2] 203-576-3 [3] 215-535-7 [4]	95-47-6 [1] 106-42-3 [2] 108-38-3 [3] 1330-20-7 [4]		<2	µg/kg		<0.002	mg/kg	<0.0000002 %		**<LOD**
										Total:	0.0993 %		

Key

	User supplied data
	Determinand values ignored for classification, see column 'Conc. Not Used' for reason
●	Determinand defined or amended by HazWasteOnline (see Appendix A)
	Speciated Deteminand - Unless the Determinand is Note 1, the Conversion Factor is used to calculate the compound concentration
<LOD	Below limit of detection
ND	Not detected
CLP: Note 1	Only the metal concentration has been used for classification

WAC results for sample: TP25-0.30

WAC Settings: samples in this Job constitute a single population.

WAC limits used to evaluate this sample: "Ireland"
The WAC used in this report are the WAC defined for the inert and non-hazardous classes of landfill in the Republic of Ireland. You should check the actual acceptance criteria when the disposal site is identified as they may differ from the generic WAC used in this report.

The sample FAILS the Inert (Inert waste landfill) criteria.

The sample FAILS the Non Haz (Non hazardous waste landfill) criteria.

WAC Determinands

Solid Waste Analysis				Landfill Waste Acceptance Criteria Limits	
#	Determinand		User entered data	Inert waste landfill	Non hazardous waste landfill
1	TOC (total organic carbon)	%	6.3	3	5
2	LOI (loss on ignition)	%	5.3	-	-
3	BTEX (benzene, toluene, ethylbenzene and xylenes)	mg/kg	<0.01	6	-
4	PCBs (polychlorinated biphenyls, 7 congeners)	mg/kg	<0.1	1	-
5	Mineral oil (C10 to C40)	mg/kg	<10	500	-
6	PAHs (polycyclic aromatic hydrocarbons)	mg/kg	20	100	-
7	pH	pH	8.7	-	>6
8	ANC (acid neutralisation capacity)	mol/kg	0.03	-	-
Eluate Analysis 10:1					
9	arsenic	mg/kg	0.11	0.5	2
10	barium	mg/kg	0.11	20	100
11	cadmium	mg/kg	<0.0001	0.04	1
12	chromium	mg/kg	<0.0005	0.5	10
13	copper	mg/kg	0.14	2	50
14	mercury	mg/kg	<5.0e-05	0.01	0.2
15	molybdenum	mg/kg	0.078	0.5	10
16	nickel	mg/kg	0.0067	0.4	10
17	lead	mg/kg	<0.0005	0.5	10
18	antimony	mg/kg	0.02	0.06	0.7
19	selenium	mg/kg	0.01	0.1	0.5
20	zinc	mg/kg	0.04	4	50
21	chloride	mg/kg	<10	800	15,000
22	fluoride	mg/kg	4	10	150
23	sulphate	mg/kg	<10	1,000	20,000
24	phenol index	mg/kg	<0.3	1	-
25	DOC (dissolved organic carbon)	mg/kg	54	500	800
26	TDS (total dissolved solids)	mg/kg	1400	4,000	60,000

Key

User supplied data
Inert WAC criteria fail
Non Hazardous WAC criteria fail

Classification of sample: TP25-1.00

Non Hazardous Waste
Classified as **17 05 04**
in the List of Waste

Sample details

Sample name:
TP25-1.00
Sample Depth:
1.00-1.00 m
Moisture content:
4.4%
(wet weight correction)

LoW Code:
Chapter: 17: Construction and Demolition Wastes (including excavated soil from contaminated sites)
Entry: 17 05 04 (Soil and stones other than those mentioned in 17 05 03)

Hazard properties

None identified

Determinands

Moisture content: 4.4% Wet Weight Moisture Correction applied (MC)

#		Determinand			CLP Note	User entered data		Conv. Factor	Compound conc.		Classification value	MC Applied	Conc. Not Used
		CLP index number	EC Number	CAS Number									
1		pH		PH		8.5	pH		8.5	pH	8.5 pH		
2		boron { diboron trioxide; boric oxide } 005-008-00-8	215-125-8	1303-86-2		<0.4	mg/kg	3.22	<1.288	mg/kg	<0.000129 %		<LOD
3		sulfur { sulfur } 016-094-00-1	231-722-6	7704-34-9		1.5	mg/kg		1.434	mg/kg	0.000143 %	✓	
4		cyanides { salts of hydrogen cyanide with the exception of complex cyanides such as ferrocyanides, ferricyanides and mercuric oxycyanide and those specified elsewhere in this Annex } 006-007-00-5				<0.5	mg/kg	1.884	<0.942	mg/kg	<0.0000942 %		<LOD
5		barium { barium oxide }	215-127-9	1304-28-5		76	mg/kg	1.117	81.121	mg/kg	0.00811 %	✓	
6		cadmium { cadmium oxide } 048-002-00-0	215-146-2	1306-19-0		1.6	mg/kg	1.142	1.747	mg/kg	0.000175 %	✓	
7		molybdenum { molybdenum(VI) oxide } 042-001-00-9	215-204-7	1313-27-5		3.8	mg/kg	1.5	5.45	mg/kg	0.000545 %	✓	
8		antimony { antimony compounds, with the exception of the tetroxide (Sb2O4), pentoxide (Sb2O5), trisulphide (Sb2S3), pentasulphide (Sb2S5) and those specified elsewhere in this Annex } 051-003-00-9			1	2.3	mg/kg		2.199	mg/kg	0.00022 %	✓	
9		arsenic { arsenic } 033-001-00-X	231-148-6	7440-38-2		26	mg/kg		24.856	mg/kg	0.00249 %	✓	
10		granulated copper; [particle length: from 0,9 mm to 6,0 mm; particle width: from 0,494 to 0,949 mm] 029-024-00-X	231-159-6	7440-50-8		74	mg/kg		70.744	mg/kg	0.00707 %	✓	
11		mercury { mercury } 080-001-00-0	231-106-7	7439-97-6		0.32	mg/kg		0.306	mg/kg	0.0000306 %	✓	
12		nickel { nickel(II) oxide (nickel monoxide) } 028-003-00-2	215-215-7 [1] 234-323-5 [2] - [3]	1313-99-1 [1] 11099-02-8 [2] 34492-97-2 [3]		47	mg/kg	1.273	57.18	mg/kg	0.00572 %	✓	
13		lead { lead compounds with the exception of those specified elsewhere in this Annex } 082-001-00-6			1	84	mg/kg		80.304	mg/kg	0.00803 %	✓	

#	Determinand	CLP index number	EC Number	CAS Number	CLP Note	User entered data		Conv. Factor	Compound conc.		Classification value	MC Applied	Conc. Not Used
14	selenium { selenium compounds with the exception of cadmium sulphoselenide and those specified elsewhere in this Annex }	034-002-00-8				0.35	mg/kg	1.405	0.47	mg/kg	0.000047 %	✓	
15	zinc { zinc oxide }	030-013-00-7	215-222-5	1314-13-2		140	mg/kg	1.245	166.593	mg/kg	0.0167 %	✓	
16	chromium in chromium(III) compounds { chromium(III) oxide }		215-160-9	1308-38-9		27	mg/kg	1.462	37.726	mg/kg	0.00377 %	✓	
17	chromium in chromium(VI) compounds { chromium(VI) oxide }	024-001-00-0	215-607-8	1333-82-0		<0.5	mg/kg	1.923	<0.962	mg/kg	<0.0000962 %		<LOD
18	TPH (C6 to C40) petroleum group			TPH		<10	mg/kg		<10	mg/kg	<0.001 %		<LOD
19	benzene	601-020-00-8	200-753-7	71-43-2		<1	µg/kg		<0.001	mg/kg	<0.0000001 %		<LOD
20	toluene	601-021-00-3	203-625-9	108-88-3		<1	µg/kg		<0.001	mg/kg	<0.0000001 %		<LOD
21	ethylbenzene	601-023-00-4	202-849-4	100-41-4		<1	µg/kg		<0.001	mg/kg	<0.0000001 %		<LOD
22	tert-butyl methyl ether; MTBE; 2-methoxy-2-methylpropane	603-181-00-X	216-653-1	1634-04-4		<1	µg/kg		<0.001	mg/kg	<0.0000001 %		<LOD
23	naphthalene	601-052-00-2	202-049-5	91-20-3		<0.1	mg/kg		<0.1	mg/kg	<0.00001 %		<LOD
24	acenaphthylene		205-917-1	208-96-8		<0.1	mg/kg		<0.1	mg/kg	<0.00001 %		<LOD
25	acenaphthene		201-469-6	83-32-9		<0.1	mg/kg		<0.1	mg/kg	<0.00001 %		<LOD
26	fluorene		201-695-5	86-73-7		<0.1	mg/kg		<0.1	mg/kg	<0.00001 %		<LOD
27	phenanthrene		201-581-5	85-01-8		<0.1	mg/kg		<0.1	mg/kg	<0.00001 %		<LOD
28	anthracene		204-371-1	120-12-7		<0.1	mg/kg		<0.1	mg/kg	<0.00001 %		<LOD
29	fluoranthene		205-912-4	206-44-0		0.27	mg/kg		0.258	mg/kg	0.0000258 %	✓	
30	pyrene		204-927-3	129-00-0		0.2	mg/kg		0.191	mg/kg	0.0000191 %	✓	
31	benzo[a]anthracene	601-033-00-9	200-280-6	56-55-3		0.12	mg/kg		0.115	mg/kg	0.0000115 %	✓	
32	chrysene	601-048-00-0	205-923-4	218-01-9		0.14	mg/kg		0.134	mg/kg	0.0000134 %	✓	
33	benzo[b]fluoranthene	601-034-00-4	205-911-9	205-99-2		<0.1	mg/kg		<0.1	mg/kg	<0.00001 %		<LOD
34	benzo[k]fluoranthene	601-036-00-5	205-916-6	207-08-9		<0.1	mg/kg		<0.1	mg/kg	<0.00001 %		<LOD
35	benzo[a]pyrene; benzo[def]chrysene	601-032-00-3	200-028-5	50-32-8		<0.1	mg/kg		<0.1	mg/kg	<0.00001 %		<LOD
36	indeno[123-cd]pyrene		205-893-2	193-39-5		<0.1	mg/kg		<0.1	mg/kg	<0.00001 %		<LOD
37	dibenz[a,h]anthracene	601-041-00-2	200-181-8	53-70-3		<0.1	mg/kg		<0.1	mg/kg	<0.00001 %		<LOD
38	benzo[ghi]perylene		205-883-8	191-24-2		<0.1	mg/kg		<0.1	mg/kg	<0.00001 %		<LOD
39	coronene		205-881-7	191-07-1		<0.1	mg/kg		<0.1	mg/kg	<0.00001 %		<LOD
40	polychlorobiphenyls; PCB	602-039-00-4	215-648-1	1336-36-3		<0.1	mg/kg		<0.1	mg/kg	<0.00001 %		<LOD

#		Determinand			CLP Note	User entered data		Conv. Factor	Compound conc.		Classification value	MC Applied	Conc. Not Used
		CLP index number	EC Number	CAS Number									
41	●	monohydric phenols				<0.1	mg/kg		<0.1	mg/kg	<0.00001 %		**<LOD**
				P1186									
42		xylene				<2	µg/kg		<0.002	mg/kg	<0.0000002 %		**<LOD**
		601-022-00-9	202-422-2 [1] 203-396-5 [2] 203-576-3 [3] 215-535-7 [4]	95-47-6 [1] 106-42-3 [2] 108-38-3 [3] 1330-20-7 [4]									
										Total:	0.0546 %		

Key

(yellow)	User supplied data
(grey)	Determinand values ignored for classification, see column 'Conc. Not Used' for reason
●	Determinand defined or amended by HazWasteOnline (see Appendix A)
	Speciated Deteminand - Unless the Determinand is Note 1, the Conversion Factor is used to calculate the compound concentration
<LOD	Below limit of detection
ND	Not detected
CLP: Note 1	Only the metal concentration has been used for classification

WAC results for sample: TP25-1.00

WAC Settings: samples in this Job constitute a single population.

WAC limits used to evaluate this sample: "Ireland"
The WAC used in this report are the WAC defined for the inert and non-hazardous classes of landfill in the Republic of Ireland. You should check the actual acceptance criteria when the disposal site is identified as they may differ from the generic WAC used in this report.

The sample PASSES the Inert (Inert waste landfill) criteria.

The sample PASSES the Non Haz (Non hazardous waste landfill) criteria.

WAC Determinands

Solid Waste Analysis				Landfill Waste Acceptance Criteria Limits	
#	Determinand		User entered data	Inert waste landfill	Non hazardous waste landfill
1	TOC (total organic carbon)	%	2.7	3	5
2	LOI (loss on ignition)	%	4.2	-	-
3	BTEX (benzene, toluene, ethylbenzene and xylenes)	mg/kg	<0.01	6	-
4	PCBs (polychlorinated biphenyls, 7 congeners)	mg/kg	<0.1	1	-
5	Mineral oil (C10 to C40)	mg/kg	<10	500	-
6	PAHs (polycyclic aromatic hydrocarbons)	mg/kg	<2	100	-
7	pH	pH	8.5	-	>6
8	ANC (acid neutralisation capacity)	mol/kg	0.016	-	-
Eluate Analysis 10:1					
9	arsenic	mg/kg	0.032	0.5	2
10	barium	mg/kg	<0.0005	20	100
11	cadmium	mg/kg	<0.0001	0.04	1
12	chromium	mg/kg	0.0063	0.5	10
13	copper	mg/kg	0.025	2	50
14	mercury	mg/kg	<5.0e-05	0.01	0.2
15	molybdenum	mg/kg	0.42	0.5	10
16	nickel	mg/kg	<0.0005	0.4	10
17	lead	mg/kg	<0.0005	0.5	10
18	antimony	mg/kg	0.018	0.06	0.7
19	selenium	mg/kg	0.0071	0.1	0.5
20	zinc	mg/kg	<0.0025	4	50
21	chloride	mg/kg	<10	800	15,000
22	fluoride	mg/kg	2.8	10	150
23	sulphate	mg/kg	<10	1,000	20,000
24	phenol index	mg/kg	<0.3	1	-
25	DOC (dissolved organic carbon)	mg/kg	67	500	800
26	TDS (total dissolved solids)	mg/kg	1100	4,000	60,000

Key

User supplied data

Classification of sample: TP26-0.30

Non Hazardous Waste
Classified as **17 05 04**
in the List of Waste

Sample details

Sample name:		LoW Code:	
TP26-0.30		Chapter:	17: Construction and Demolition Wastes (including excavated soil from contaminated sites)
Sample Depth:			
0.30-0.30 m		Entry:	17 05 04 (Soil and stones other than those mentioned in 17 05 03)
Moisture content:			
6.2% (wet weight correction)			

Hazard properties

None identified

Determinands

Moisture content: 6.2% Wet Weight Moisture Correction applied (MC)

#	Determinand	CLP index number	EC Number	CAS Number	CLP Note	User entered data		Conv. Factor	Compound conc.		Classification value	MC Applied	Conc. Not Used
1	pH			PH		8.6	pH		8.6	pH	8.6 pH		
2	boron { diboron trioxide; boric oxide }	005-008-00-8	215-125-8	1303-86-2		0.83	mg/kg	3.22	2.507	mg/kg	0.000251 %	✓	
3	sulfur { sulfur }	016-094-00-1	231-722-6	7704-34-9		4	mg/kg		3.752	mg/kg	0.000375 %	✓	
4	cyanides { salts of hydrogen cyanide with the exception of complex cyanides such as ferrocyanides, ferricyanides and mercuric oxycyanide and those specified elsewhere in this Annex }	006-007-00-5				<0.5	mg/kg	1.884	<0.942	mg/kg	<0.0000942 %		<LOD
5	barium { barium oxide }		215-127-9	1304-28-5		98	mg/kg	1.117	102.634	mg/kg	0.0103 %	✓	
6	cadmium { cadmium oxide }	048-002-00-0	215-146-2	1306-19-0		1.4	mg/kg	1.142	1.5	mg/kg	0.00015 %	✓	
7	molybdenum { molybdenum(VI) oxide }	042-001-00-9	215-204-7	1313-27-5		2.9	mg/kg	1.5	4.081	mg/kg	0.000408 %	✓	
8	antimony { antimony compounds, with the exception of the tetroxide (Sb_2O_4), pentoxide (Sb_2O_5), trisulphide (Sb_2S_3), pentasulphide (Sb_2S_5) and those specified elsewhere in this Annex }	051-003-00-9			1	<2	mg/kg		<2	mg/kg	<0.0002 %		<LOD
9	arsenic { arsenic }	033-001-00-X	231-148-6	7440-38-2		25	mg/kg		23.45	mg/kg	0.00235 %	✓	
10	granulated copper; [particle length: from 0,9 mm to 6,0 mm; particle width: from 0,494 to 0,949 mm]	029-024-00-X	231-159-6	7440-50-8		85	mg/kg		79.73	mg/kg	0.00797 %	✓	
11	mercury { mercury }	080-001-00-0	231-106-7	7439-97-6		0.4	mg/kg		0.375	mg/kg	0.0000375 %	✓	
12	nickel { nickel(II) oxide (nickel monoxide) }	028-003-00-2	215-215-7 [1] 234-323-5 [2] - [3]	1313-99-1 [1] 11099-02-8 [2] 34492-97-2 [3]		36	mg/kg	1.273	42.973	mg/kg	0.0043 %	✓	
13	lead { lead compounds with the exception of those specified elsewhere in this Annex }	082-001-00-6			1	200	mg/kg		187.6	mg/kg	0.0188 %	✓	

#	Determinand	CLP index number	EC Number	CAS Number	CLP Note	User entered data	Conv. Factor	Compound conc.	Classification value	MC Applied	Conc. Not Used
14	selenium { selenium compounds with the exception of cadmium sulphoselenide and those specified elsewhere in this Annex }	034-002-00-8				0.34 mg/kg	1.405	0.448 mg/kg	0.0000448 %	✓	
15	zinc { zinc oxide }	030-013-00-7	215-222-5	1314-13-2		110 mg/kg	1.245	128.43 mg/kg	0.0128 %	✓	
16	chromium in chromium(III) compounds { chromium(III) oxide }		215-160-9	1308-38-9		19 mg/kg	1.462	26.048 mg/kg	0.0026 %	✓	
17	chromium in chromium(VI) compounds { chromium(VI) oxide }	024-001-00-0	215-607-8	1333-82-0		<0.5 mg/kg	1.923	<0.962 mg/kg	<0.0000962 %		<LOD
18	TPH (C6 to C40) petroleum group			TPH		<10 mg/kg		<10 mg/kg	<0.001 %		<LOD
19	benzene	601-020-00-8	200-753-7	71-43-2		<1 µg/kg		<0.001 mg/kg	<0.0000001 %		<LOD
20	toluene	601-021-00-3	203-625-9	108-88-3		<1 µg/kg		<0.001 mg/kg	<0.0000001 %		<LOD
21	ethylbenzene	601-023-00-4	202-849-4	100-41-4		<1 µg/kg		<0.001 mg/kg	<0.0000001 %		<LOD
22	tert-butyl methyl ether; MTBE; 2-methoxy-2-methylpropane	603-181-00-X	216-653-1	1634-04-4		<1 µg/kg		<0.001 mg/kg	<0.0000001 %		<LOD
23	naphthalene	601-052-00-2	202-049-5	91-20-3		<0.1 mg/kg		<0.1 mg/kg	<0.00001 %		<LOD
24	acenaphthylene		205-917-1	208-96-8		<0.1 mg/kg		<0.1 mg/kg	<0.00001 %		<LOD
25	acenaphthene		201-469-6	83-32-9		<0.1 mg/kg		<0.1 mg/kg	<0.00001 %		<LOD
26	fluorene		201-695-5	86-73-7		<0.1 mg/kg		<0.1 mg/kg	<0.00001 %		<LOD
27	phenanthrene		201-581-5	85-01-8		0.33 mg/kg		0.31 mg/kg	0.000031 %	✓	
28	anthracene		204-371-1	120-12-7		<0.1 mg/kg		<0.1 mg/kg	<0.00001 %		<LOD
29	fluoranthene		205-912-4	206-44-0		0.4 mg/kg		0.375 mg/kg	0.0000375 %	✓	
30	pyrene		204-927-3	129-00-0		0.37 mg/kg		0.347 mg/kg	0.0000347 %	✓	
31	benzo[a]anthracene	601-033-00-9	200-280-6	56-55-3		0.18 mg/kg		0.169 mg/kg	0.0000169 %	✓	
32	chrysene	601-048-00-0	205-923-4	218-01-9		0.29 mg/kg		0.272 mg/kg	0.0000272 %	✓	
33	benzo[b]fluoranthene	601-034-00-4	205-911-9	205-99-2		0.29 mg/kg		0.272 mg/kg	0.0000272 %	✓	
34	benzo[k]fluoranthene	601-036-00-5	205-916-6	207-08-9		<0.1 mg/kg		<0.1 mg/kg	<0.00001 %		<LOD
35	benzo[a]pyrene; benzo[def]chrysene	601-032-00-3	200-028-5	50-32-8		0.22 mg/kg		0.206 mg/kg	0.0000206 %	✓	
36	indeno[123-cd]pyrene		205-893-2	193-39-5		<0.1 mg/kg		<0.1 mg/kg	<0.00001 %		<LOD
37	dibenz[a,h]anthracene	601-041-00-2	200-181-8	53-70-3		<0.1 mg/kg		<0.1 mg/kg	<0.00001 %		<LOD
38	benzo[ghi]perylene		205-883-8	191-24-2		<0.1 mg/kg		<0.1 mg/kg	<0.00001 %		<LOD
39	coronene		205-881-7	191-07-1		<0.1 mg/kg		<0.1 mg/kg	<0.00001 %		<LOD
40	polychlorobiphenyls; PCB	602-039-00-4	215-648-1	1336-36-3		<0.1 mg/kg		<0.1 mg/kg	<0.00001 %		<LOD

#		Determinand			CLP Note	User entered data		Conv. Factor	Compound conc.		Classification value	MC Applied	Conc. Not Used
		CLP index number	EC Number	CAS Number									
41	●	monohydric phenols				<0.1	mg/kg		<0.1	mg/kg	<0.00001 %		<LOD
				P1186									
42		xylene				<2	µg/kg		<0.002	mg/kg	<0.0000002 %		<LOD
		601-022-00-9	202-422-2 [1] 203-396-5 [2] 203-576-3 [3] 215-535-7 [4]	95-47-6 [1] 106-42-3 [2] 108-38-3 [3] 1330-20-7 [4]									
										Total:	0.0621 %		

Key

(yellow)	User supplied data
(grey)	Determinand values ignored for classification, see column 'Conc. Not Used' for reason
●	Determinand defined or amended by HazWasteOnline (see Appendix A)
	Speciated Deteminand - Unless the Determinand is Note 1, the Conversion Factor is used to calculate the compound concentration
<LOD	Below limit of detection
ND	Not detected
CLP: Note 1	Only the metal concentration has been used for classification

WAC results for sample: TP26-0.30

WAC Settings: samples in this Job constitute a single population.

WAC limits used to evaluate this sample: "Ireland"
The WAC used in this report are the WAC defined for the inert and non-hazardous classes of landfill in the Republic of Ireland. You should check the actual acceptance criteria when the disposal site is identified as they may differ from the generic WAC used in this report.

The sample PASSES the Inert (Inert waste landfill) criteria.

The sample PASSES the Non Haz (Non hazardous waste landfill) criteria.

WAC Determinands

Solid Waste Analysis				Landfill Waste Acceptance Criteria Limits	
#	Determinand		User entered data	Inert waste landfill	Non hazardous waste landfill
1	TOC (total organic carbon)	%	2.8	3	5
2	LOI (loss on ignition)	%	4.9	-	-
3	BTEX (benzene, toluene, ethylbenzene and xylenes)	mg/kg	<0.01	6	-
4	PCBs (polychlorinated biphenyls, 7 congeners)	mg/kg	<0.1	1	-
5	Mineral oil (C10 to C40)	mg/kg	<10	500	-
6	PAHs (polycyclic aromatic hydrocarbons)	mg/kg	2.1	100	-
7	pH	pH	8.6	-	>6
8	ANC (acid neutralisation capacity)	mol/kg	0.038	-	-
Eluate Analysis 10:1					
9	arsenic	mg/kg	0.031	0.5	2
10	barium	mg/kg	0.065	20	100
11	cadmium	mg/kg	<0.0001	0.04	1
12	chromium	mg/kg	0.0084	0.5	10
13	copper	mg/kg	0.025	2	50
14	mercury	mg/kg	<5.0e-05	0.01	0.2
15	molybdenum	mg/kg	0.11	0.5	10
16	nickel	mg/kg	<0.0005	0.4	10
17	lead	mg/kg	<0.0005	0.5	10
18	antimony	mg/kg	0.01	0.06	0.7
19	selenium	mg/kg	0.0054	0.1	0.5
20	zinc	mg/kg	<0.0025	4	50
21	chloride	mg/kg	<10	800	15,000
22	fluoride	mg/kg	3	10	150
23	sulphate	mg/kg	<10	1,000	20,000
24	phenol index	mg/kg	<0.3	1	-
25	DOC (dissolved organic carbon)	mg/kg	<50	500	800
26	TDS (total dissolved solids)	mg/kg	1200	4,000	60,000

Key

User supplied data

Classification of sample: TP26-1.20

Non Hazardous Waste
Classified as **17 05 04**
in the List of Waste

Sample details

Sample name:		LoW Code:	
TP26-1.20		Chapter:	17: Construction and Demolition Wastes (including excavated soil from contaminated sites)
Sample Depth:			
1.20-1.20 m		Entry:	17 05 04 (Soil and stones other than those mentioned in 17 05 03)
Moisture content:			
9.3% (wet weight correction)			

Hazard properties

None identified

Determinands

Moisture content: 9.3% Wet Weight Moisture Correction applied (MC)

#		Determinand			CLP Note	User entered data		Conv. Factor	Compound conc.		Classification value	MC Applied	Conc. Not Used
		CLP index number	EC Number	CAS Number									
1		pH		PH		8.5	pH		8.5	pH	8.5 pH		
2		boron { diboron trioxide; boric oxide } 005-008-00-8	215-125-8	1303-86-2		1.5	mg/kg	3.22	4.381	mg/kg	0.000438 %	✓	
3		sulfur { sulfur } 016-094-00-1	231-722-6	7704-34-9		3	mg/kg		2.721	mg/kg	0.000272 %	✓	
4		cyanides { salts of hydrogen cyanide with the exception of complex cyanides such as ferrocyanides, ferricyanides and mercuric oxycyanide and those specified elsewhere in this Annex } 006-007-00-5				<0.5	mg/kg	1.884	<0.942	mg/kg	<0.0000942 %		<LOD
5		barium { barium oxide }	215-127-9	1304-28-5		73	mg/kg	1.117	73.925	mg/kg	0.00739 %	✓	
6		cadmium { cadmium oxide } 048-002-00-0	215-146-2	1306-19-0		1	mg/kg	1.142	1.036	mg/kg	0.000104 %	✓	
7		molybdenum { molybdenum(VI) oxide } 042-001-00-9	215-204-7	1313-27-5		2.5	mg/kg	1.5	3.402	mg/kg	0.00034 %	✓	
8		antimony { antimony compounds, with the exception of the tetroxide (Sb2O4), pentoxide (Sb2O5), trisulphide (Sb2S3), pentasulphide (Sb2S5) and those specified elsewhere in this Annex } 051-003-00-9			1	<2	mg/kg		<2	mg/kg	<0.0002 %		<LOD
9		arsenic { arsenic } 033-001-00-X	231-148-6	7440-38-2		13	mg/kg		11.791	mg/kg	0.00118 %	✓	
10		granulated copper; [particle length: from 0,9 mm to 6,0 mm; particle width: from 0,494 to 0,949 mm] 029-024-00-X	231-159-6	7440-50-8		38	mg/kg		34.466	mg/kg	0.00345 %	✓	
11		mercury { mercury } 080-001-00-0	231-106-7	7439-97-6		0.26	mg/kg		0.236	mg/kg	0.0000236 %	✓	
12		nickel { nickel(II) oxide (nickel monoxide) } 028-003-00-2	215-215-7 [1] 234-323-5 [2] - [3]	1313-99-1 [1] 11099-02-8 [2] 34492-97-2 [3]		26	mg/kg	1.273	30.01	mg/kg	0.003 %	✓	
13		lead { lead compounds with the exception of those specified elsewhere in this Annex } 082-001-00-6			1	57	mg/kg		51.699	mg/kg	0.00517 %	✓	

#	Determinand	CLP index number	EC Number	CAS Number	CLP Note	User entered data		Conv. Factor	Compound conc.		Classification value	MC Applied	Conc. Not Used
14	selenium { selenium compounds with the exception of cadmium sulphoselenide and those specified elsewhere in this Annex }	034-002-00-8				0.26	mg/kg	1.405	0.331	mg/kg	0.0000331 %	✓	
15	zinc { zinc oxide }	030-013-00-7	215-222-5	1314-13-2		64	mg/kg	1.245	72.253	mg/kg	0.00723 %	✓	
16	chromium in chromium(III) compounds { chromium(III) oxide }		215-160-9	1308-38-9		17	mg/kg	1.462	22.536	mg/kg	0.00225 %	✓	
17	chromium in chromium(VI) compounds { chromium(VI) oxide }	024-001-00-0	215-607-8	1333-82-0		<0.5	mg/kg	1.923	<0.962	mg/kg	<0.0000962 %		<LOD
18	TPH (C6 to C40) petroleum group			TPH		<10	mg/kg		<10	mg/kg	<0.001 %		<LOD
19	benzene	601-020-00-8	200-753-7	71-43-2		<1	µg/kg		<0.001	mg/kg	<0.0000001 %		<LOD
20	toluene	601-021-00-3	203-625-9	108-88-3		<1	µg/kg		<0.001	mg/kg	<0.0000001 %		<LOD
21	ethylbenzene	601-023-00-4	202-849-4	100-41-4		<1	µg/kg		<0.001	mg/kg	<0.0000001 %		<LOD
22	tert-butyl methyl ether; MTBE; 2-methoxy-2-methylpropane	603-181-00-X	216-653-1	1634-04-4		<1	µg/kg		<0.001	mg/kg	<0.0000001 %		<LOD
23	naphthalene	601-052-00-2	202-049-5	91-20-3		<0.1	mg/kg		<0.1	mg/kg	<0.00001 %		<LOD
24	acenaphthylene		205-917-1	208-96-8		<0.1	mg/kg		<0.1	mg/kg	<0.00001 %		<LOD
25	acenaphthene		201-469-6	83-32-9		<0.1	mg/kg		<0.1	mg/kg	<0.00001 %		<LOD
26	fluorene		201-695-5	86-73-7		<0.1	mg/kg		<0.1	mg/kg	<0.00001 %		<LOD
27	phenanthrene		201-581-5	85-01-8		0.21	mg/kg		0.19	mg/kg	0.000019 %	✓	
28	anthracene		204-371-1	120-12-7		<0.1	mg/kg		<0.1	mg/kg	<0.00001 %		<LOD
29	fluoranthene		205-912-4	206-44-0		0.24	mg/kg		0.218	mg/kg	0.0000218 %	✓	
30	pyrene		204-927-3	129-00-0		0.22	mg/kg		0.2	mg/kg	0.00002 %	✓	
31	benzo[a]anthracene	601-033-00-9	200-280-6	56-55-3		0.13	mg/kg		0.118	mg/kg	0.0000118 %	✓	
32	chrysene	601-048-00-0	205-923-4	218-01-9		0.17	mg/kg		0.154	mg/kg	0.0000154 %	✓	
33	benzo[b]fluoranthene	601-034-00-4	205-911-9	205-99-2		<0.1	mg/kg		<0.1	mg/kg	<0.00001 %		<LOD
34	benzo[k]fluoranthene	601-036-00-5	205-916-6	207-08-9		<0.1	mg/kg		<0.1	mg/kg	<0.00001 %		<LOD
35	benzo[a]pyrene; benzo[def]chrysene	601-032-00-3	200-028-5	50-32-8		<0.1	mg/kg		<0.1	mg/kg	<0.00001 %		<LOD
36	indeno[123-cd]pyrene		205-893-2	193-39-5		<0.1	mg/kg		<0.1	mg/kg	<0.00001 %		<LOD
37	dibenz[a,h]anthracene	601-041-00-2	200-181-8	53-70-3		<0.1	mg/kg		<0.1	mg/kg	<0.00001 %		<LOD
38	benzo[ghi]perylene		205-883-8	191-24-2		<0.1	mg/kg		<0.1	mg/kg	<0.00001 %		<LOD
39	coronene		205-881-7	191-07-1		<0.1	mg/kg		<0.1	mg/kg	<0.00001 %		<LOD
40	polychlorobiphenyls; PCB	602-039-00-4	215-648-1	1336-36-3		<0.1	mg/kg		<0.1	mg/kg	<0.00001 %		<LOD

#		Determinand			CLP Note	User entered data		Conv. Factor	Compound conc.		Classification value	MC Applied	Conc. Not Used
		CLP index number	EC Number	CAS Number									
41	●	monohydric phenols		P1186		<0.1	mg/kg		<0.1	mg/kg	<0.00001 %		<LOD
42		xylene 601-022-00-9	202-422-2 [1] 203-396-5 [2] 203-576-3 [3] 215-535-7 [4]	95-47-6 [1] 106-42-3 [2] 108-38-3 [3] 1330-20-7 [4]		<2	µg/kg		<0.002	mg/kg	<0.0000002 %		<LOD
										Total:	0.0325 %		

Key

(yellow)	User supplied data
(grey)	Determinand values ignored for classification, see column 'Conc. Not Used' for reason
●	Determinand defined or amended by HazWasteOnline (see Appendix A)
	Speciated Deteminand - Unless the Determinand is Note 1, the Conversion Factor is used to calculate the compound concentration
<LOD	Below limit of detection
ND	Not detected
CLP: Note 1	Only the metal concentration has been used for classification

WAC results for sample: TP26-1.20

WAC Settings: samples in this Job constitute a single population.

WAC limits used to evaluate this sample: "Ireland"
The WAC used in this report are the WAC defined for the inert and non-hazardous classes of landfill in the Republic of Ireland. You should check the actual acceptance criteria when the disposal site is identified as they may differ from the generic WAC used in this report.

The sample PASSES the Inert (Inert waste landfill) criteria.

The sample PASSES the Non Haz (Non hazardous waste landfill) criteria.

WAC Determinands

Solid Waste Analysis				Landfill Waste Acceptance Criteria Limits	
#	Determinand		User entered data	Inert waste landfill	Non hazardous waste landfill
1	TOC (total organic carbon)	%	2.6	3	5
2	LOI (loss on ignition)	%	5.6	-	-
3	BTEX (benzene, toluene, ethylbenzene and xylenes)	mg/kg	<0.01	6	-
4	PCBs (polychlorinated biphenyls, 7 congeners)	mg/kg	<0.1	1	-
5	Mineral oil (C10 to C40)	mg/kg	<10	500	-
6	PAHs (polycyclic aromatic hydrocarbons)	mg/kg	<2	100	-
7	pH	pH	8.5	-	>6
8	ANC (acid neutralisation capacity)	mol/kg	0.03	-	-
Eluate Analysis 10:1					
9	arsenic	mg/kg	0.022	0.5	2
10	barium	mg/kg	<0.0005	20	100
11	cadmium	mg/kg	<0.0001	0.04	1
12	chromium	mg/kg	0.012	0.5	10
13	copper	mg/kg	0.015	2	50
14	mercury	mg/kg	<5.0e-05	0.01	0.2
15	molybdenum	mg/kg	0.4	0.5	10
16	nickel	mg/kg	<0.0005	0.4	10
17	lead	mg/kg	<0.0005	0.5	10
18	antimony	mg/kg	0.011	0.06	0.7
19	selenium	mg/kg	0.0057	0.1	0.5
20	zinc	mg/kg	<0.0025	4	50
21	chloride	mg/kg	<10	800	15,000
22	fluoride	mg/kg	2.2	10	150
23	sulphate	mg/kg	<10	1,000	20,000
24	phenol index	mg/kg	<0.3	1	-
25	DOC (dissolved organic carbon)	mg/kg	120	500	800
26	TDS (total dissolved solids)	mg/kg	780	4,000	60,000

Key

User supplied data

Classification of sample: TP27-0.30

Non Hazardous Waste
Classified as **17 05 04**
in the List of Waste

Sample details

Sample name:		LoW Code:	
TP27-0.30		Chapter:	17: Construction and Demolition Wastes (including excavated soil from contaminated sites)
Sample Depth:			
0.30-0.30 m		Entry:	17 05 04 (Soil and stones other than those mentioned in 17 05 03)
Moisture content:			
20% (wet weight correction)			

Hazard properties

None identified

Determinands

Moisture content: 20% Wet Weight Moisture Correction applied (MC)

#		Determinand CLP index number	EC Number	CAS Number	CLP Note	User entered data		Conv. Factor	Compound conc.		Classification value	MC Applied	Conc. Not Used
1		pH 		PH		8.4	pH		8.4	pH	8.4 pH		
2		boron { diboron trioxide; boric oxide } 005-008-00-8	215-125-8	1303-86-2		1.6	mg/kg	3.22	4.121	mg/kg	0.000412 %	✓	
3		sulfur { sulfur } 016-094-00-1	231-722-6	7704-34-9		4.8	mg/kg		3.84	mg/kg	0.000384 %	✓	
4		cyanides { salts of hydrogen cyanide with the exception of complex cyanides such as ferrocyanides, ferricyanides and mercuric oxycyanide and those specified elsewhere in this Annex } 006-007-00-5				<0.5	mg/kg	1.884	<0.942	mg/kg	<0.0000942 %		<LOD
5		barium { barium oxide } 	215-127-9	1304-28-5		76	mg/kg	1.117	67.884	mg/kg	0.00679 %	✓	
6		cadmium { cadmium oxide } 048-002-00-0	215-146-2	1306-19-0		1.1	mg/kg	1.142	1.005	mg/kg	0.000101 %	✓	
7		molybdenum { molybdenum(VI) oxide } 042-001-00-9	215-204-7	1313-27-5		3.5	mg/kg	1.5	4.201	mg/kg	0.00042 %	✓	
8		antimony { antimony compounds, with the exception of the tetroxide (Sb2O4), pentoxide (Sb2O5), trisulphide (Sb2S3), pentasulphide (Sb2S5) and those specified elsewhere in this Annex } 051-003-00-9			1	2.5	mg/kg		2	mg/kg	0.0002 %	✓	
9		arsenic { arsenic } 033-001-00-X	231-148-6	7440-38-2		20	mg/kg		16	mg/kg	0.0016 %	✓	
10		granulated copper; [particle length: from 0,9 mm to 6,0 mm; particle width: from 0,494 to 0,949 mm] 029-024-00-X	231-159-6	7440-50-8		71	mg/kg		56.8	mg/kg	0.00568 %	✓	
11		mercury { mercury } 080-001-00-0	231-106-7	7439-97-6		0.63	mg/kg		0.504	mg/kg	0.0000504 %	✓	
12		nickel { nickel(II) oxide (nickel monoxide) } 028-003-00-2	215-215-7 [1] 234-323-5 [2] - [3]	1313-99-1 [1] 11099-02-8 [2] 34492-97-2 [3]		37	mg/kg	1.273	37.669	mg/kg	0.00377 %	✓	
13		lead { lead compounds with the exception of those specified elsewhere in this Annex } 082-001-00-6			1	120	mg/kg		96	mg/kg	0.0096 %	✓	

#		Determinand / CLP index number / EC Number / CAS Number	CLP Note	User entered data		Conv. Factor	Compound conc.		Classification value	MC Applied	Conc. Not Used
14		selenium { selenium compounds with the exception of cadmium sulphoselenide and those specified elsewhere in this Annex } 034-002-00-8		0.5	mg/kg	1.405	0.562	mg/kg	0.0000562 %	✓	
15		zinc { zinc oxide } 030-013-00-7 / 215-222-5 / 1314-13-2		100	mg/kg	1.245	99.577	mg/kg	0.00996 %	✓	
16		chromium in chromium(III) compounds { chromium(III) oxide } 215-160-9 / 1308-38-9		22	mg/kg	1.462	25.723	mg/kg	0.00257 %	✓	
17		chromium in chromium(VI) compounds { chromium(VI) oxide } 024-001-00-0 / 215-607-8 / 1333-82-0		<0.5	mg/kg	1.923	<0.962	mg/kg	<0.0000962 %		<LOD
18		TPH (C6 to C40) petroleum group TPH		<10	mg/kg		<10	mg/kg	<0.001 %		<LOD
19		benzene 601-020-00-8 / 200-753-7 / 71-43-2		<1	µg/kg		<0.001	mg/kg	<0.0000001 %		<LOD
20		toluene 601-021-00-3 / 203-625-9 / 108-88-3		<1	µg/kg		<0.001	mg/kg	<0.0000001 %		<LOD
21		ethylbenzene 601-023-00-4 / 202-849-4 / 100-41-4		<1	µg/kg		<0.001	mg/kg	<0.0000001 %		<LOD
22		tert-butyl methyl ether; MTBE; 2-methoxy-2-methylpropane 603-181-00-X / 216-653-1 / 1634-04-4		<1	µg/kg		<0.001	mg/kg	<0.0000001 %		<LOD
23		naphthalene 601-052-00-2 / 202-049-5 / 91-20-3		<0.1	mg/kg		<0.1	mg/kg	<0.00001 %		<LOD
24		acenaphthylene 205-917-1 / 208-96-8		<0.1	mg/kg		<0.1	mg/kg	<0.00001 %		<LOD
25		acenaphthene 201-469-6 / 83-32-9		<0.1	mg/kg		<0.1	mg/kg	<0.00001 %		<LOD
26		fluorene 201-695-5 / 86-73-7		<0.1	mg/kg		<0.1	mg/kg	<0.00001 %		<LOD
27		phenanthrene 201-581-5 / 85-01-8		<0.1	mg/kg		<0.1	mg/kg	<0.00001 %		<LOD
28		anthracene 204-371-1 / 120-12-7		<0.1	mg/kg		<0.1	mg/kg	<0.00001 %		<LOD
29		fluoranthene 205-912-4 / 206-44-0		0.12	mg/kg		0.096	mg/kg	0.0000096 %	✓	
30		pyrene 204-927-3 / 129-00-0		0.1	mg/kg		0.08	mg/kg	0.000008 %	✓	
31		benzo[a]anthracene 601-033-00-9 / 200-280-6 / 56-55-3		<0.1	mg/kg		<0.1	mg/kg	<0.00001 %		<LOD
32		chrysene 601-048-00-0 / 205-923-4 / 218-01-9		<0.1	mg/kg		<0.1	mg/kg	<0.00001 %		<LOD
33		benzo[b]fluoranthene 601-034-00-4 / 205-911-9 / 205-99-2		<0.1	mg/kg		<0.1	mg/kg	<0.00001 %		<LOD
34		benzo[k]fluoranthene 601-036-00-5 / 205-916-6 / 207-08-9		<0.1	mg/kg		<0.1	mg/kg	<0.00001 %		<LOD
35		benzo[a]pyrene; benzo[def]chrysene 601-032-00-3 / 200-028-5 / 50-32-8		<0.1	mg/kg		<0.1	mg/kg	<0.00001 %		<LOD
36		indeno[123-cd]pyrene 205-893-2 / 193-39-5		<0.1	mg/kg		<0.1	mg/kg	<0.00001 %		<LOD
37		dibenz[a,h]anthracene 601-041-00-2 / 200-181-8 / 53-70-3		<0.1	mg/kg		<0.1	mg/kg	<0.00001 %		<LOD
38		benzo[ghi]perylene 205-883-8 / 191-24-2		<0.1	mg/kg		<0.1	mg/kg	<0.00001 %		<LOD
39		coronene 205-881-7 / 191-07-1		<0.1	mg/kg		<0.1	mg/kg	<0.00001 %		<LOD
40		polychlorobiphenyls; PCB 602-039-00-4 / 215-648-1 / 1336-36-3		<0.1	mg/kg		<0.1	mg/kg	<0.00001 %		<LOD

#		Determinand CLP index number / EC Number / CAS Number	CLP Note	User entered data		Conv. Factor	Compound conc.		Classification value	MC Applied	Conc. Not Used
41	●	monohydric phenols P1186		<0.1	mg/kg		<0.1	mg/kg	<0.00001 %		**<LOD**
42		xylene 601-022-00-9 202-422-2 [1] 95-47-6 [1] 203-396-5 [2] 106-42-3 [2] 203-576-3 [3] 108-38-3 [3] 215-535-7 [4] 1330-20-7 [4]		<2	µg/kg		<0.002	mg/kg	<0.0000002 %		**<LOD**
								Total:	0.043 %		

Key

(yellow)	User supplied data
(grey)	Determinand values ignored for classification, see column 'Conc. Not Used' for reason
●	Determinand defined or amended by HazWasteOnline (see Appendix A)
	Speciated Deteminand - Unless the Determinand is Note 1, the Conversion Factor is used to calculate the compound concentration
<LOD	Below limit of detection
ND	Not detected
CLP: Note 1	Only the metal concentration has been used for classification

WAC results for sample: TP27-0.30

WAC Settings: samples in this Job constitute a single population.

WAC limits used to evaluate this sample: "Ireland"
The WAC used in this report are the WAC defined for the inert and non-hazardous classes of landfill in the Republic of Ireland. You should check the actual acceptance criteria when the disposal site is identified as they may differ from the generic WAC used in this report.

The sample FAILS the Inert (Inert waste landfill) criteria.

The sample PASSES the Non Haz (Non hazardous waste landfill) criteria.

WAC Determinands

Solid Waste Analysis				Landfill Waste Acceptance Criteria Limits	
#	Determinand		User entered data	Inert waste landfill	Non hazardous waste landfill
1	TOC (total organic carbon)	%	3.1	3	5
2	LOI (loss on ignition)	%	6.1	-	-
3	BTEX (benzene, toluene, ethylbenzene and xylenes)	mg/kg	<0.01	6	-
4	PCBs (polychlorinated biphenyls, 7 congeners)	mg/kg	<0.1	1	-
5	Mineral oil (C10 to C40)	mg/kg	<10	500	-
6	PAHs (polycyclic aromatic hydrocarbons)	mg/kg	<2	100	-
7	pH	pH	8.4	-	>6
8	ANC (acid neutralisation capacity)	mol/kg	0.057	-	-
Eluate Analysis 10:1					
9	arsenic	mg/kg	0.031	0.5	2
10	barium	mg/kg	<0.0005	20	100
11	cadmium	mg/kg	<0.0001	0.04	1
12	chromium	mg/kg	0.0087	0.5	10
13	copper	mg/kg	0.023	2	50
14	mercury	mg/kg	<5.0e-05	0.01	0.2
15	molybdenum	mg/kg	0.37	0.5	10
16	nickel	mg/kg	<0.0005	0.4	10
17	lead	mg/kg	<0.0005	0.5	10
18	antimony	mg/kg	0.018	0.06	0.7
19	selenium	mg/kg	0.0079	0.1	0.5
20	zinc	mg/kg	<0.0025	4	50
21	chloride	mg/kg	<10	800	15,000
22	fluoride	mg/kg	2.8	10	150
23	sulphate	mg/kg	<10	1,000	20,000
24	phenol index	mg/kg	<0.3	1	-
25	DOC (dissolved organic carbon)	mg/kg	150	500	800
26	TDS (total dissolved solids)	mg/kg	1300	4,000	60,000

Key

User supplied data

Inert WAC criteria fail

Classification of sample: TP27-1.00

Non Hazardous Waste
Classified as **17 05 04**
in the List of Waste

Sample details

Sample name:		LoW Code:	
TP27-1.00		Chapter:	17: Construction and Demolition Wastes (including excavated soil from contaminated sites)
Sample Depth:			
1.00-1.00 m		Entry:	17 05 04 (Soil and stones other than those mentioned in 17 05 03)
Moisture content:			
17% (wet weight correction)			

Hazard properties

None identified

Determinands

Moisture content: 17% Wet Weight Moisture Correction applied (MC)

#	Determinand	CLP index number	EC Number	CAS Number	CLP Note	User entered data		Conv. Factor	Compound conc.		Classification value	MC Applied	Conc. Not Used
1	pH			PH		8.4	pH		8.4	pH	8.4 pH		
2	boron { diboron trioxide; boric oxide }	005-008-00-8	215-125-8	1303-86-2		0.43	mg/kg	3.22	1.149	mg/kg	0.000115 %	✓	
3	sulfur { sulfur }	016-094-00-1	231-722-6	7704-34-9		2.2	mg/kg		1.826	mg/kg	0.000183 %	✓	
4	cyanides { salts of hydrogen cyanide with the exception of complex cyanides such as ferrocyanides, ferricyanides and mercuric oxycyanide and those specified elsewhere in this Annex }	006-007-00-5				<0.5	mg/kg	1.884	<0.942	mg/kg	<0.0000942 %		<LOD
5	barium { barium oxide }		215-127-9	1304-28-5		41	mg/kg	1.117	37.995	mg/kg	0.0038 %	✓	
6	cadmium { cadmium oxide }	048-002-00-0	215-146-2	1306-19-0		0.88	mg/kg	1.142	0.834	mg/kg	0.0000834 %	✓	
7	molybdenum { molybdenum(VI) oxide }	042-001-00-9	215-204-7	1313-27-5		3	mg/kg	1.5	3.735	mg/kg	0.000374 %	✓	
8	antimony { antimony compounds, with the exception of the tetroxide (Sb2O4), pentoxide (Sb2O5), trisulphide (Sb2S3), pentasulphide (Sb2S5) and those specified elsewhere in this Annex }	051-003-00-9			1	<2	mg/kg		<2	mg/kg	<0.0002 %		<LOD
9	arsenic { arsenic }	033-001-00-X	231-148-6	7440-38-2		11	mg/kg		9.13	mg/kg	0.000913 %	✓	
10	granulated copper; [particle length: from 0,9 mm to 6,0 mm; particle width: from 0,494 to 0,949 mm]	029-024-00-X	231-159-6	7440-50-8		23	mg/kg		19.09	mg/kg	0.00191 %	✓	
11	mercury { mercury }	080-001-00-0	231-106-7	7439-97-6		<0.1	mg/kg		<0.1	mg/kg	<0.00001 %		<LOD
12	nickel { nickel(II) oxide (nickel monoxide) }	028-003-00-2	215-215-7 [1] 234-323-5 [2] - [3]	1313-99-1 [1] 11099-02-8 [2] 34492-97-2 [3]		26	mg/kg	1.273	27.463	mg/kg	0.00275 %	✓	
13	lead { lead compounds with the exception of those specified elsewhere in this Annex }	082-001-00-6			1	18	mg/kg		14.94	mg/kg	0.00149 %	✓	

#	Determinand	CLP index number	EC Number	CAS Number	CLP Note	User entered data	Conv. Factor	Compound conc.	Classification value	MC Applied	Conc. Not Used
14	selenium { selenium compounds with the exception of cadmium sulphoselenide and those specified elsewhere in this Annex }	034-002-00-8				<0.2 mg/kg	1.405	<0.281 mg/kg	<0.0000281 %		<LOD
15	zinc { zinc oxide }	030-013-00-7	215-222-5	1314-13-2		58 mg/kg	1.245	59.921 mg/kg	0.00599 %	✓	
16	chromium in chromium(III) compounds { chromium(III) oxide }		215-160-9	1308-38-9		15 mg/kg	1.462	18.196 mg/kg	0.00182 %	✓	
17	chromium in chromium(VI) compounds { chromium(VI) oxide }	024-001-00-0	215-607-8	1333-82-0		<0.5 mg/kg	1.923	<0.962 mg/kg	<0.0000962 %		<LOD
18	TPH (C6 to C40) petroleum group			TPH		<10 mg/kg		<10 mg/kg	<0.001 %		<LOD
19	benzene	601-020-00-8	200-753-7	71-43-2		<1 µg/kg		<0.001 mg/kg	<0.0000001 %		<LOD
20	toluene	601-021-00-3	203-625-9	108-88-3		<1 µg/kg		<0.001 mg/kg	<0.0000001 %		<LOD
21	ethylbenzene	601-023-00-4	202-849-4	100-41-4		<1 µg/kg		<0.001 mg/kg	<0.0000001 %		<LOD
22	tert-butyl methyl ether; MTBE; 2-methoxy-2-methylpropane	603-181-00-X	216-653-1	1634-04-4		<1 µg/kg		<0.001 mg/kg	<0.0000001 %		<LOD
23	naphthalene	601-052-00-2	202-049-5	91-20-3		<0.1 mg/kg		<0.1 mg/kg	<0.00001 %		<LOD
24	acenaphthylene		205-917-1	208-96-8		<0.1 mg/kg		<0.1 mg/kg	<0.00001 %		<LOD
25	acenaphthene		201-469-6	83-32-9		<0.1 mg/kg		<0.1 mg/kg	<0.00001 %		<LOD
26	fluorene		201-695-5	86-73-7		<0.1 mg/kg		<0.1 mg/kg	<0.00001 %		<LOD
27	phenanthrene		201-581-5	85-01-8		<0.1 mg/kg		<0.1 mg/kg	<0.00001 %		<LOD
28	anthracene		204-371-1	120-12-7		<0.1 mg/kg		<0.1 mg/kg	<0.00001 %		<LOD
29	fluoranthene		205-912-4	206-44-0		<0.1 mg/kg		<0.1 mg/kg	<0.00001 %		<LOD
30	pyrene		204-927-3	129-00-0		<0.1 mg/kg		<0.1 mg/kg	<0.00001 %		<LOD
31	benzo[a]anthracene	601-033-00-9	200-280-6	56-55-3		<0.1 mg/kg		<0.1 mg/kg	<0.00001 %		<LOD
32	chrysene	601-048-00-0	205-923-4	218-01-9		<0.1 mg/kg		<0.1 mg/kg	<0.00001 %		<LOD
33	benzo[b]fluoranthene	601-034-00-4	205-911-9	205-99-2		<0.1 mg/kg		<0.1 mg/kg	<0.00001 %		<LOD
34	benzo[k]fluoranthene	601-036-00-5	205-916-6	207-08-9		<0.1 mg/kg		<0.1 mg/kg	<0.00001 %		<LOD
35	benzo[a]pyrene; benzo[def]chrysene	601-032-00-3	200-028-5	50-32-8		<0.1 mg/kg		<0.1 mg/kg	<0.00001 %		<LOD
36	indeno[123-cd]pyrene		205-893-2	193-39-5		<0.1 mg/kg		<0.1 mg/kg	<0.00001 %		<LOD
37	dibenz[a,h]anthracene	601-041-00-2	200-181-8	53-70-3		<0.1 mg/kg		<0.1 mg/kg	<0.00001 %		<LOD
38	benzo[ghi]perylene		205-883-8	191-24-2		<0.1 mg/kg		<0.1 mg/kg	<0.00001 %		<LOD
39	coronene		205-881-7	191-07-1		<0.1 mg/kg		<0.1 mg/kg	<0.00001 %		<LOD
40	polychlorobiphenyls; PCB	602-039-00-4	215-648-1	1336-36-3		<0.1 mg/kg		<0.1 mg/kg	<0.00001 %		<LOD

#		Determinand			CLP Note	User entered data		Conv. Factor	Compound conc.		Classification value	MC Applied	Conc. Not Used
		CLP index number	EC Number	CAS Number									
41	●	monohydric phenols				<0.1	mg/kg		<0.1	mg/kg	<0.00001 %		<LOD
				P1186									
42		xylene				<2	µg/kg		<0.002	mg/kg	<0.0000002 %		<LOD
		601-022-00-9	202-422-2 [1] 203-396-5 [2] 203-576-3 [3] 215-535-7 [4]	95-47-6 [1] 106-42-3 [2] 108-38-3 [3] 1330-20-7 [4]									
										Total:	0.021 %		

Key

(yellow)	User supplied data
(grey)	Determinand values ignored for classification, see column 'Conc. Not Used' for reason
●	Determinand defined or amended by HazWasteOnline (see Appendix A)
	Speciated Determinand - Unless the Determinand is Note 1, the Conversion Factor is used to calculate the compound concentration
<LOD	Below limit of detection
ND	Not detected
CLP: Note 1	Only the metal concentration has been used for classification

WAC results for sample: TP27-1.00

WAC Settings: samples in this Job constitute a single population.

WAC limits used to evaluate this sample: "Ireland"
The WAC used in this report are the WAC defined for the inert and non-hazardous classes of landfill in the Republic of Ireland. You should check the actual acceptance criteria when the disposal site is identified as they may differ from the generic WAC used in this report.

The sample PASSES the Inert (Inert waste landfill) criteria.

The sample PASSES the Non Haz (Non hazardous waste landfill) criteria.

WAC Determinands

Solid Waste Analysis				Landfill Waste Acceptance Criteria Limits	
#	Determinand		User entered data	Inert waste landfill	Non hazardous waste landfill
1	TOC (total organic carbon)	%	0.4	3	5
2	LOI (loss on ignition)	%	7.3	-	-
3	BTEX (benzene, toluene, ethylbenzene and xylenes)	mg/kg	<0.01	6	-
4	PCBs (polychlorinated biphenyls, 7 congeners)	mg/kg	<0.1	1	-
5	Mineral oil (C10 to C40)	mg/kg	<10	500	-
6	PAHs (polycyclic aromatic hydrocarbons)	mg/kg	<2	100	-
7	pH	pH	8.4	-	>6
8	ANC (acid neutralisation capacity)	mol/kg	0.049	-	-
Eluate Analysis 10:1					
9	arsenic	mg/kg	0.005	0.5	2
10	barium	mg/kg	<0.0005	20	100
11	cadmium	mg/kg	<0.0001	0.04	1
12	chromium	mg/kg	0.0088	0.5	10
13	copper	mg/kg	0.011	2	50
14	mercury	mg/kg	<5.0e-05	0.01	0.2
15	molybdenum	mg/kg	0.29	0.5	10
16	nickel	mg/kg	<0.0005	0.4	10
17	lead	mg/kg	<0.0005	0.5	10
18	antimony	mg/kg	0.0069	0.06	0.7
19	selenium	mg/kg	0.0065	0.1	0.5
20	zinc	mg/kg	<0.0025	4	50
21	chloride	mg/kg	<10	800	15,000
22	fluoride	mg/kg	3.2	10	150
23	sulphate	mg/kg	36	1,000	20,000
24	phenol index	mg/kg	<0.3	1	-
25	DOC (dissolved organic carbon)	mg/kg	62	500	800
26	TDS (total dissolved solids)	mg/kg	840	4,000	60,000

Key

User supplied data

Classification of sample: TP28-0.20

Non Hazardous Waste
Classified as **17 05 04**
in the List of Waste

Sample details

Sample name:
TP28-0.20
Sample Depth:
0.20-0.30 m
Moisture content:
8%
(wet weight correction)

LoW Code:
Chapter: 17: Construction and Demolition Wastes (including excavated soil from contaminated sites)
Entry: 17 05 04 (Soil and stones other than those mentioned in 17 05 03)

Hazard properties

None identified

Determinands

Moisture content: 8% Wet Weight Moisture Correction applied (MC)

#	Determinand	CLP index number	EC Number	CAS Number	CLP Note	User entered data		Conv. Factor	Compound conc.		Classification value	MC Applied	Conc. Not Used
1	pH			PH		8.5	pH		8.5	pH	8.5 pH		
2	boron { diboron trioxide; boric oxide }	005-008-00-8	215-125-8	1303-86-2		0.68	mg/kg	3.22	2.014	mg/kg	0.000201 %	✓	
3	sulfur { sulfur }	016-094-00-1	231-722-6	7704-34-9		4.9	mg/kg		4.508	mg/kg	0.000451 %	✓	
4	cyanides { salts of hydrogen cyanide with the exception of complex cyanides such as ferrocyanides, ferricyanides and mercuric oxycyanide and those specified elsewhere in this Annex }	006-007-00-5				<0.5	mg/kg	1.884	<0.942	mg/kg	<0.0000942 %		<LOD
5	barium { barium oxide }		215-127-9	1304-28-5		120	mg/kg	1.117	123.262	mg/kg	0.0123 %	✓	
6	cadmium { cadmium oxide }	048-002-00-0	215-146-2	1306-19-0		1.3	mg/kg	1.142	1.366	mg/kg	0.000137 %	✓	
7	molybdenum { molybdenum(VI) oxide }	042-001-00-9	215-204-7	1313-27-5		3.2	mg/kg	1.5	4.417	mg/kg	0.000442 %	✓	
8	antimony { antimony compounds, with the exception of the tetroxide (Sb2O4), pentoxide (Sb2O5), trisulphide (Sb2S3), pentasulphide (Sb2S5) and those specified elsewhere in this Annex }	051-003-00-9			1	2.4	mg/kg		2.208	mg/kg	0.000221 %	✓	
9	arsenic { arsenic }	033-001-00-X	231-148-6	7440-38-2		25	mg/kg		23	mg/kg	0.0023 %	✓	
10	granulated copper; [particle length: from 0,9 mm to 6,0 mm; particle width: from 0,494 to 0,949 mm]	029-024-00-X	231-159-6	7440-50-8		110	mg/kg		101.2	mg/kg	0.0101 %	✓	
11	mercury { mercury }	080-001-00-0	231-106-7	7439-97-6		0.62	mg/kg		0.57	mg/kg	0.000057 %	✓	
12	nickel { nickel(II) oxide (nickel monoxide) }	028-003-00-2	215-215-7 [1] 234-323-5 [2] - [3]	1313-99-1 [1] 11099-02-8 [2] 34492-97-2 [3]		44	mg/kg	1.273	51.515	mg/kg	0.00515 %	✓	
13	lead { lead compounds with the exception of those specified elsewhere in this Annex }	082-001-00-6			1	160	mg/kg		147.2	mg/kg	0.0147 %	✓	

#	Determinand	CLP index number	EC Number	CAS Number	CLP Note	User entered data		Conv. Factor	Compound conc.		Classification value	MC Applied	Conc. Not Used
14	selenium { selenium compounds with the exception of cadmium sulphoselenide and those specified elsewhere in this Annex }	034-002-00-8				0.51	mg/kg	1.405	0.659	mg/kg	0.0000659 %	✓	
15	zinc { zinc oxide }	030-013-00-7	215-222-5	1314-13-2		130	mg/kg	1.245	148.868	mg/kg	0.0149 %	✓	
16	chromium in chromium(III) compounds { chromium(III) oxide }		215-160-9	1308-38-9		23	mg/kg	1.462	30.927	mg/kg	0.00309 %	✓	
17	chromium in chromium(VI) compounds { chromium(VI) oxide }	024-001-00-0	215-607-8	1333-82-0		<0.5	mg/kg	1.923	<0.962	mg/kg	<0.0000962 %		<LOD
18	TPH (C6 to C40) petroleum group			TPH		<10	mg/kg		<10	mg/kg	<0.001 %		<LOD
19	benzene	601-020-00-8	200-753-7	71-43-2		<1	µg/kg		<0.001	mg/kg	<0.0000001 %		<LOD
20	toluene	601-021-00-3	203-625-9	108-88-3		<1	µg/kg		<0.001	mg/kg	<0.0000001 %		<LOD
21	ethylbenzene	601-023-00-4	202-849-4	100-41-4		<1	µg/kg		<0.001	mg/kg	<0.0000001 %		<LOD
22	tert-butyl methyl ether; MTBE; 2-methoxy-2-methylpropane	603-181-00-X	216-653-1	1634-04-4		<1	µg/kg		<0.001	mg/kg	<0.0000001 %		<LOD
23	naphthalene	601-052-00-2	202-049-5	91-20-3		0.27	mg/kg		0.248	mg/kg	0.0000248 %	✓	
24	acenaphthylene		205-917-1	208-96-8		<0.1	mg/kg		<0.1	mg/kg	<0.00001 %		<LOD
25	acenaphthene		201-469-6	83-32-9		0.42	mg/kg		0.386	mg/kg	0.0000386 %	✓	
26	fluorene		201-695-5	86-73-7		0.28	mg/kg		0.258	mg/kg	0.0000258 %	✓	
27	phenanthrene		201-581-5	85-01-8		3.6	mg/kg		3.312	mg/kg	0.000331 %	✓	
28	anthracene		204-371-1	120-12-7		0.48	mg/kg		0.442	mg/kg	0.0000442 %	✓	
29	fluoranthene		205-912-4	206-44-0		3.7	mg/kg		3.404	mg/kg	0.00034 %	✓	
30	pyrene		204-927-3	129-00-0		3.4	mg/kg		3.128	mg/kg	0.000313 %	✓	
31	benzo[a]anthracene	601-033-00-9	200-280-6	56-55-3		1.5	mg/kg		1.38	mg/kg	0.000138 %	✓	
32	chrysene	601-048-00-0	205-923-4	218-01-9		1.8	mg/kg		1.656	mg/kg	0.000166 %	✓	
33	benzo[b]fluoranthene	601-034-00-4	205-911-9	205-99-2		2	mg/kg		1.84	mg/kg	0.000184 %	✓	
34	benzo[k]fluoranthene	601-036-00-5	205-916-6	207-08-9		0.62	mg/kg		0.57	mg/kg	0.000057 %	✓	
35	benzo[a]pyrene; benzo[def]chrysene	601-032-00-3	200-028-5	50-32-8		1.4	mg/kg		1.288	mg/kg	0.000129 %	✓	
36	indeno[123-cd]pyrene		205-893-2	193-39-5		0.8	mg/kg		0.736	mg/kg	0.0000736 %	✓	
37	dibenz[a,h]anthracene	601-041-00-2	200-181-8	53-70-3		0.25	mg/kg		0.23	mg/kg	0.000023 %	✓	
38	benzo[ghi]perylene		205-883-8	191-24-2		1.1	mg/kg		1.012	mg/kg	0.000101 %	✓	
39	coronene		205-881-7	191-07-1		<0.1	mg/kg		<0.1	mg/kg	<0.00001 %		<LOD
40	polychlorobiphenyls; PCB	602-039-00-4	215-648-1	1336-36-3		<0.1	mg/kg		<0.1	mg/kg	<0.00001 %		<LOD

#		Determinand			CLP Note	User entered data		Conv. Factor	Compound conc.		Classification value	MC Applied	Conc. Not Used
		CLP index number	EC Number	CAS Number									
41	●	monohydric phenols				<0.1	mg/kg		<0.1	mg/kg	<0.00001 %		<LOD
				P1186									
42		xylene				<2	µg/kg		<0.002	mg/kg	<0.0000002 %		<LOD
		601-022-00-9	202-422-2 [1] 203-396-5 [2] 203-576-3 [3] 215-535-7 [4]	95-47-6 [1] 106-42-3 [2] 108-38-3 [3] 1330-20-7 [4]									
										Total:	0.0674 %		

Key

(yellow)	User supplied data
(grey)	Determinand values ignored for classification, see column 'Conc. Not Used' for reason
●	Determinand defined or amended by HazWasteOnline (see Appendix A)
	Speciated Deteminand - Unless the Determinand is Note 1, the Conversion Factor is used to calculate the compound concentration
<LOD	Below limit of detection
ND	Not detected
CLP: Note 1	Only the metal concentration has been used for classification

WAC results for sample: TP28-0.20

WAC Settings: samples in this Job constitute a single population.

WAC limits used to evaluate this sample: "Ireland"
The WAC used in this report are the WAC defined for the inert and non-hazardous classes of landfill in the Republic of Ireland. You should check the actual acceptance criteria when the disposal site is identified as they may differ from the generic WAC used in this report.

The sample FAILS the Inert (Inert waste landfill) criteria.

The sample PASSES the Non Haz (Non hazardous waste landfill) criteria.

WAC Determinands

Solid Waste Analysis				Landfill Waste Acceptance Criteria Limits	
#	Determinand		User entered data	Inert waste landfill	Non hazardous waste landfill
1	TOC (total organic carbon)	%	3.9	3	5
2	LOI (loss on ignition)	%	4	-	-
3	BTEX (benzene, toluene, ethylbenzene and xylenes)	mg/kg	<0.01	6	-
4	PCBs (polychlorinated biphenyls, 7 congeners)	mg/kg	<0.1	1	-
5	Mineral oil (C10 to C40)	mg/kg	57	500	-
6	PAHs (polycyclic aromatic hydrocarbons)	mg/kg	22	100	-
7	pH	pH	8.5	-	>6
8	ANC (acid neutralisation capacity)	mol/kg	0.021	-	-
Eluate Analysis 10:1					
9	arsenic	mg/kg	0.1	0.5	2
10	barium	mg/kg	<0.0005	20	100
11	cadmium	mg/kg	<0.0001	0.04	1
12	chromium	mg/kg	0.0056	0.5	10
13	copper	mg/kg	0.042	2	50
14	mercury	mg/kg	<5.0e-05	0.01	0.2
15	molybdenum	mg/kg	0.22	0.5	10
16	nickel	mg/kg	0.0052	0.4	10
17	lead	mg/kg	<0.0005	0.5	10
18	antimony	mg/kg	0.031	0.06	0.7
19	selenium	mg/kg	0.0066	0.1	0.5
20	zinc	mg/kg	<0.0025	4	50
21	chloride	mg/kg	<10	800	15,000
22	fluoride	mg/kg	3.9	10	150
23	sulphate	mg/kg	<10	1,000	20,000
24	phenol index	mg/kg	<0.3	1	-
25	DOC (dissolved organic carbon)	mg/kg	50	500	800
26	TDS (total dissolved solids)	mg/kg	2000	4,000	60,000

Key

User supplied data

Inert WAC criteria fail

Classification of sample: TP28-1.00

Non Hazardous Waste
Classified as **17 05 04**
in the List of Waste

Sample details

Sample name:		LoW Code:	
TP28-1.00		Chapter:	17: Construction and Demolition Wastes (including excavated soil from contaminated sites)
Sample Depth:			
1.00-1.00 m		Entry:	17 05 04 (Soil and stones other than those mentioned in 17 05 03)
Moisture content:			
9.1% (wet weight correction)			

Hazard properties

None identified

Determinands

Moisture content: 9.1% Wet Weight Moisture Correction applied (MC)

#	Determinand	CLP index number	EC Number	CAS Number	CLP Note	User entered data	Conv. Factor	Compound conc.	Classification value	MC Applied	Conc. Not Used
1	pH			PH		8.7 pH		8.7 pH	8.7 pH		
2	boron { diboron trioxide; boric oxide }	005-008-00-8	215-125-8	1303-86-2		<0.4 mg/kg	3.22	<1.288 mg/kg	<0.000129 %		**<LOD**
3	sulfur { sulfur }	016-094-00-1	231-722-6	7704-34-9		3 mg/kg		2.727 mg/kg	0.000273 %	✓	
4	cyanides { salts of hydrogen cyanide with the exception of complex cyanides such as ferrocyanides, ferricyanides and mercuric oxycyanide and those specified elsewhere in this Annex }	006-007-00-5				<0.5 mg/kg	1.884	<0.942 mg/kg	<0.0000942 %		**<LOD**
5	barium { barium oxide }		215-127-9	1304-28-5		74 mg/kg	1.117	75.103 mg/kg	0.00751 %	✓	
6	cadmium { cadmium oxide }	048-002-00-0	215-146-2	1306-19-0		2.6 mg/kg	1.142	2.7 mg/kg	0.00027 %	✓	
7	molybdenum { molybdenum(VI) oxide }	042-001-00-9	215-204-7	1313-27-5		4.1 mg/kg	1.5	5.591 mg/kg	0.000559 %	✓	
8	antimony { antimony compounds, with the exception of the tetroxide (Sb2O4), pentoxide (Sb2O5), trisulphide (Sb2S3), pentasulphide (Sb2S5) and those specified elsewhere in this Annex }	051-003-00-9			1	2 mg/kg		1.818 mg/kg	0.000182 %	✓	
9	arsenic { arsenic }	033-001-00-X	231-148-6	7440-38-2		19 mg/kg		17.271 mg/kg	0.00173 %	✓	
10	granulated copper; [particle length: from 0,9 mm to 6,0 mm; particle width: from 0,494 to 0,949 mm]	029-024-00-X	231-159-6	7440-50-8		44 mg/kg		39.996 mg/kg	0.004 %	✓	
11	mercury { mercury }	080-001-00-0	231-106-7	7439-97-6		0.11 mg/kg		0.1 mg/kg	0.00001 %	✓	
12	nickel { nickel(II) oxide (nickel monoxide) }	028-003-00-2	215-215-7 [1] 234-323-5 [2] - [3]	1313-99-1 [1] 11099-02-8 [2] 34492-97-2 [3]		54 mg/kg	1.273	62.466 mg/kg	0.00625 %	✓	
13	lead { lead compounds with the exception of those specified elsewhere in this Annex }	082-001-00-6			1	29 mg/kg		26.361 mg/kg	0.00264 %	✓	

#		Determinand	CLP index number	EC Number	CAS Number	CLP Note	User entered data	Conv. Factor	Compound conc.	Classification value	MC Applied	Conc. Not Used
14		selenium { selenium compounds with the exception of cadmium sulphoselenide and those specified elsewhere in this Annex }	034-002-00-8				0.28 mg/kg	1.405	0.358 mg/kg	0.0000358 %	✓	
15		zinc { zinc oxide }	030-013-00-7	215-222-5	1314-13-2		76 mg/kg	1.245	85.99 mg/kg	0.0086 %	✓	
16		chromium in chromium(III) compounds { chromium(III) oxide }		215-160-9	1308-38-9		19 mg/kg	1.462	25.243 mg/kg	0.00252 %	✓	
17		chromium in chromium(VI) compounds { chromium(VI) oxide }	024-001-00-0	215-607-8	1333-82-0		<0.5 mg/kg	1.923	<0.962 mg/kg	<0.0000962 %		<LOD
18		TPH (C6 to C40) petroleum group			TPH		<10 mg/kg		<10 mg/kg	<0.001 %		<LOD
19		benzene	601-020-00-8	200-753-7	71-43-2		<1 µg/kg		<0.001 mg/kg	<0.0000001 %		<LOD
20		toluene	601-021-00-3	203-625-9	108-88-3		<1 µg/kg		<0.001 mg/kg	<0.0000001 %		<LOD
21		ethylbenzene	601-023-00-4	202-849-4	100-41-4		<1 µg/kg		<0.001 mg/kg	<0.0000001 %		<LOD
22		tert-butyl methyl ether; MTBE; 2-methoxy-2-methylpropane	603-181-00-X	216-653-1	1634-04-4		<1 µg/kg		<0.001 mg/kg	<0.0000001 %		<LOD
23		naphthalene	601-052-00-2	202-049-5	91-20-3		<0.1 mg/kg		<0.1 mg/kg	<0.00001 %		<LOD
24		acenaphthylene		205-917-1	208-96-8		<0.1 mg/kg		<0.1 mg/kg	<0.00001 %		<LOD
25		acenaphthene		201-469-6	83-32-9		<0.1 mg/kg		<0.1 mg/kg	<0.00001 %		<LOD
26		fluorene		201-695-5	86-73-7		<0.1 mg/kg		<0.1 mg/kg	<0.00001 %		<LOD
27		phenanthrene		201-581-5	85-01-8		<0.1 mg/kg		<0.1 mg/kg	<0.00001 %		<LOD
28		anthracene		204-371-1	120-12-7		<0.1 mg/kg		<0.1 mg/kg	<0.00001 %		<LOD
29		fluoranthene		205-912-4	206-44-0		<0.1 mg/kg		<0.1 mg/kg	<0.00001 %		<LOD
30		pyrene		204-927-3	129-00-0		<0.1 mg/kg		<0.1 mg/kg	<0.00001 %		<LOD
31		benzo[a]anthracene	601-033-00-9	200-280-6	56-55-3		<0.1 mg/kg		<0.1 mg/kg	<0.00001 %		<LOD
32		chrysene	601-048-00-0	205-923-4	218-01-9		<0.1 mg/kg		<0.1 mg/kg	<0.00001 %		<LOD
33		benzo[b]fluoranthene	601-034-00-4	205-911-9	205-99-2		<0.1 mg/kg		<0.1 mg/kg	<0.00001 %		<LOD
34		benzo[k]fluoranthene	601-036-00-5	205-916-6	207-08-9		<0.1 mg/kg		<0.1 mg/kg	<0.00001 %		<LOD
35		benzo[a]pyrene; benzo[def]chrysene	601-032-00-3	200-028-5	50-32-8		<0.1 mg/kg		<0.1 mg/kg	<0.00001 %		<LOD
36		indeno[123-cd]pyrene		205-893-2	193-39-5		<0.1 mg/kg		<0.1 mg/kg	<0.00001 %		<LOD
37		dibenz[a,h]anthracene	601-041-00-2	200-181-8	53-70-3		<0.1 mg/kg		<0.1 mg/kg	<0.00001 %		<LOD
38		benzo[ghi]perylene		205-883-8	191-24-2		<0.1 mg/kg		<0.1 mg/kg	<0.00001 %		<LOD
39		coronene		205-881-7	191-07-1		<0.1 mg/kg		<0.1 mg/kg	<0.00001 %		<LOD
40		polychlorobiphenyls; PCB	602-039-00-4	215-648-1	1336-36-3		<0.1 mg/kg		<0.1 mg/kg	<0.00001 %		<LOD

#		Determinand CLP index number / EC Number / CAS Number	CLP Note	User entered data		Conv. Factor	Compound conc.		Classification value	MC Applied	Conc. Not Used
41	●	monohydric phenols P1186		<0.1	mg/kg		<0.1	mg/kg	<0.00001 %		**<LOD**
42		xylene 601-022-00-9 / 202-422-2 [1], 203-396-5 [2], 203-576-3 [3], 215-535-7 [4] / 95-47-6 [1], 106-42-3 [2], 108-38-3 [3], 1330-20-7 [4]		<2	µg/kg		<0.002	mg/kg	<0.0000002 %		**<LOD**
								Total:	0.0361 %		

Key

(yellow)	User supplied data
(grey)	Determinand values ignored for classification, see column 'Conc. Not Used' for reason
●	Determinand defined or amended by HazWasteOnline (see Appendix A)
	Speciated Deteminand - Unless the Determinand is Note 1, the Conversion Factor is used to calculate the compound concentration
<LOD	Below limit of detection
ND	Not detected
CLP: Note 1	Only the metal concentration has been used for classification

WAC results for sample: TP28-1.00

WAC Settings: samples in this Job constitute a single population.

WAC limits used to evaluate this sample: "Ireland"
The WAC used in this report are the WAC defined for the inert and non-hazardous classes of landfill in the Republic of Ireland. You should check the actual acceptance criteria when the disposal site is identified as they may differ from the generic WAC used in this report.

The sample PASSES the Inert (Inert waste landfill) criteria.

The sample PASSES the Non Haz (Non hazardous waste landfill) criteria.

WAC Determinands

Solid Waste Analysis				Landfill Waste Acceptance Criteria Limits	
#	Determinand		User entered data	Inert waste landfill	Non hazardous waste landfill
1	TOC (total organic carbon)	%	0.7	3	5
2	LOI (loss on ignition)	%	0.91	-	-
3	BTEX (benzene, toluene, ethylbenzene and xylenes)	mg/kg	<0.01	6	-
4	PCBs (polychlorinated biphenyls, 7 congeners)	mg/kg	<0.1	1	-
5	Mineral oil (C10 to C40)	mg/kg	28	500	-
6	PAHs (polycyclic aromatic hydrocarbons)	mg/kg	<2	100	-
7	pH	pH	8.7	-	>6
8	ANC (acid neutralisation capacity)	mol/kg	0.019	-	-
Eluate Analysis 10:1					
9	arsenic	mg/kg	0.0045	0.5	2
10	barium	mg/kg	<0.0005	20	100
11	cadmium	mg/kg	<0.0001	0.04	1
12	chromium	mg/kg	0.0067	0.5	10
13	copper	mg/kg	0.011	2	50
14	mercury	mg/kg	<5.0e-05	0.01	0.2
15	molybdenum	mg/kg	0.17	0.5	10
16	nickel	mg/kg	<0.0005	0.4	10
17	lead	mg/kg	<0.0005	0.5	10
18	antimony	mg/kg	<0.0005	0.06	0.7
19	selenium	mg/kg	<0.0005	0.1	0.5
20	zinc	mg/kg	<0.0025	4	50
21	chloride	mg/kg	<10	800	15,000
22	fluoride	mg/kg	3.7	10	150
23	sulphate	mg/kg	<10	1,000	20,000
24	phenol index	mg/kg	<0.3	1	-
25	DOC (dissolved organic carbon)	mg/kg	<50	500	800
26	TDS (total dissolved solids)	mg/kg	710	4,000	60,000

Key

User supplied data

Classification of sample: TP30-0.30

Non Hazardous Waste
Classified as **17 05 04**
in the List of Waste

Sample details

Sample name:	LoW Code:		
TP30-0.30	Chapter:	17: Construction and Demolition Wastes (including excavated soil from contaminated sites)	
Sample Depth:			
0.30-0.30 m	Entry:	17 05 04 (Soil and stones other than those mentioned in 17 05 03)	
Moisture content:			
8.1% (wet weight correction)			

Hazard properties

None identified

Determinands

Moisture content: 8.1% Wet Weight Moisture Correction applied (MC)

#	Determinand	CLP index number	EC Number	CAS Number	CLP Note	User entered data		Conv. Factor	Compound conc.		Classification value	MC Applied	Conc. Not Used
1	pH			PH		8.4	pH		8.4	pH	8.4 pH		
2	boron { diboron trioxide; boric oxide }	005-008-00-8	215-125-8	1303-86-2		1.6	mg/kg	3.22	4.735	mg/kg	0.000473 %	✓	
3	sulfur { sulfur }	016-094-00-1	231-722-6	7704-34-9		5.7	mg/kg		5.238	mg/kg	0.000524 %	✓	
4	cyanides { salts of hydrogen cyanide with the exception of complex cyanides such as ferrocyanides, ferricyanides and mercuric oxycyanide and those specified elsewhere in this Annex }	006-007-00-5				<0.5	mg/kg	1.884	<0.942	mg/kg	<0.0000942 %		<LOD
5	barium { barium oxide }		215-127-9	1304-28-5		130	mg/kg	1.117	133.389	mg/kg	0.0133 %	✓	
6	cadmium { cadmium oxide }	048-002-00-0	215-146-2	1306-19-0		1.6	mg/kg	1.142	1.68	mg/kg	0.000168 %	✓	
7	molybdenum { molybdenum(VI) oxide }	042-001-00-9	215-204-7	1313-27-5		3.3	mg/kg	1.5	4.55	mg/kg	0.000455 %	✓	
8	antimony { antimony compounds, with the exception of the tetroxide (Sb2O4), pentoxide (Sb2O5), trisulphide (Sb2S3), pentasulphide (Sb2S5) and those specified elsewhere in this Annex }	051-003-00-9			1	2.5	mg/kg		2.298	mg/kg	0.00023 %	✓	
9	arsenic { arsenic }	033-001-00-X	231-148-6	7440-38-2		28	mg/kg		25.732	mg/kg	0.00257 %	✓	
10	granulated copper; [particle length: from 0,9 mm to 6,0 mm; particle width: from 0,494 to 0,949 mm]	029-024-00-X	231-159-6	7440-50-8		110	mg/kg		101.09	mg/kg	0.0101 %	✓	
11	mercury { mercury }	080-001-00-0	231-106-7	7439-97-6		0.66	mg/kg		0.607	mg/kg	0.0000607 %	✓	
12	nickel { nickel(II) oxide (nickel monoxide) }	028-003-00-2	215-215-7 [1] 234-323-5 [2] - [3]	1313-99-1 [1] 11099-02-8 [2] 34492-97-2 [3]		44	mg/kg	1.273	51.459	mg/kg	0.00515 %	✓	
13	lead { lead compounds with the exception of those specified elsewhere in this Annex }	082-001-00-6			1	250	mg/kg		229.75	mg/kg	0.023 %	✓	

#	Determinand	CLP index number	EC Number	CAS Number	CLP Note	User entered data		Conv. Factor	Compound conc.		Classification value	MC Applied	Conc. Not Used
14	selenium { selenium compounds with the exception of cadmium sulphoselenide and those specified elsewhere in this Annex }	034-002-00-8				0.76	mg/kg	1.405	0.981	mg/kg	0.0000981 %	✓	
15	zinc { zinc oxide }	030-013-00-7	215-222-5	1314-13-2		180	mg/kg	1.245	205.901	mg/kg	0.0206 %	✓	
16	chromium in chromium(III) compounds { chromium(III) oxide }		215-160-9	1308-38-9		24	mg/kg	1.462	32.236	mg/kg	0.00322 %	✓	
17	chromium in chromium(VI) compounds { chromium(VI) oxide }	024-001-00-0	215-607-8	1333-82-0		<0.5	mg/kg	1.923	<0.962	mg/kg	<0.0000962 %		<LOD
18	TPH (C6 to C40) petroleum group			TPH		<10	mg/kg		<10	mg/kg	<0.001 %		<LOD
19	benzene	601-020-00-8	200-753-7	71-43-2		<1	µg/kg		<0.001	mg/kg	<0.0000001 %		<LOD
20	toluene	601-021-00-3	203-625-9	108-88-3		<1	µg/kg		<0.001	mg/kg	<0.0000001 %		<LOD
21	ethylbenzene	601-023-00-4	202-849-4	100-41-4		<1	µg/kg		<0.001	mg/kg	<0.0000001 %		<LOD
22	tert-butyl methyl ether; MTBE; 2-methoxy-2-methylpropane	603-181-00-X	216-653-1	1634-04-4		<1	µg/kg		<0.001	mg/kg	<0.0000001 %		<LOD
23	naphthalene	601-052-00-2	202-049-5	91-20-3		0.16	mg/kg		0.147	mg/kg	0.0000147 %	✓	
24	acenaphthylene		205-917-1	208-96-8		0.1	mg/kg		0.0919	mg/kg	0.00000919 %	✓	
25	acenaphthene		201-469-6	83-32-9		0.13	mg/kg		0.119	mg/kg	0.0000119 %	✓	
26	fluorene		201-695-5	86-73-7		0.12	mg/kg		0.11	mg/kg	0.000011 %	✓	
27	phenanthrene		201-581-5	85-01-8		1.4	mg/kg		1.287	mg/kg	0.000129 %	✓	
28	anthracene		204-371-1	120-12-7		0.26	mg/kg		0.239	mg/kg	0.0000239 %	✓	
29	fluoranthene		205-912-4	206-44-0		1.7	mg/kg		1.562	mg/kg	0.000156 %	✓	
30	pyrene		204-927-3	129-00-0		1.5	mg/kg		1.379	mg/kg	0.000138 %	✓	
31	benzo[a]anthracene	601-033-00-9	200-280-6	56-55-3		0.83	mg/kg		0.763	mg/kg	0.0000763 %	✓	
32	chrysene	601-048-00-0	205-923-4	218-01-9		0.99	mg/kg		0.91	mg/kg	0.000091 %	✓	
33	benzo[b]fluoranthene	601-034-00-4	205-911-9	205-99-2		1.1	mg/kg		1.011	mg/kg	0.000101 %	✓	
34	benzo[k]fluoranthene	601-036-00-5	205-916-6	207-08-9		0.35	mg/kg		0.322	mg/kg	0.0000322 %	✓	
35	benzo[a]pyrene; benzo[def]chrysene	601-032-00-3	200-028-5	50-32-8		0.84	mg/kg		0.772	mg/kg	0.0000772 %	✓	
36	indeno[123-cd]pyrene		205-893-2	193-39-5		0.49	mg/kg		0.45	mg/kg	0.000045 %	✓	
37	dibenz[a,h]anthracene	601-041-00-2	200-181-8	53-70-3		<0.1	mg/kg		<0.1	mg/kg	<0.00001 %		<LOD
38	benzo[ghi]perylene		205-883-8	191-24-2		0.5	mg/kg		0.46	mg/kg	0.0000459 %	✓	
39	coronene		205-881-7	191-07-1		<0.1	mg/kg		<0.1	mg/kg	<0.00001 %		<LOD
40	polychlorobiphenyls; PCB	602-039-00-4	215-648-1	1336-36-3		<0.1	mg/kg		<0.1	mg/kg	<0.00001 %		<LOD

#		Determinand			CLP Note	User entered data		Conv. Factor	Compound conc.		Classification value	MC Applied	Conc. Not Used
		CLP index number	EC Number	CAS Number									
41	●	monohydric phenols				<0.1	mg/kg		<0.1	mg/kg	<0.00001 %		<LOD
				P1186									
42		xylene				<2	µg/kg		<0.002	mg/kg	<0.0000002 %		<LOD
		601-022-00-9	202-422-2 [1] 203-396-5 [2] 203-576-3 [3] 215-535-7 [4]	95-47-6 [1] 106-42-3 [2] 108-38-3 [3] 1330-20-7 [4]									
										Total:	0.0822 %		

Key

(yellow)	User supplied data
(grey)	Determinand values ignored for classification, see column 'Conc. Not Used' for reason
●	Determinand defined or amended by HazWasteOnline (see Appendix A)
	Speciated Deteminand - Unless the Determinand is Note 1, the Conversion Factor is used to calculate the compound concentration
<LOD	Below limit of detection
ND	Not detected
CLP: Note 1	Only the metal concentration has been used for classification

WAC results for sample: TP30-0.30

WAC Settings: samples in this Job constitute a single population.

WAC limits used to evaluate this sample: "Ireland"
The WAC used in this report are the WAC defined for the inert and non-hazardous classes of landfill in the Republic of Ireland. You should check the actual acceptance criteria when the disposal site is identified as they may differ from the generic WAC used in this report.

The sample FAILS the Inert (Inert waste landfill) criteria.

The sample FAILS the Non Haz (Non hazardous waste landfill) criteria.

WAC Determinands

Solid Waste Analysis				Landfill Waste Acceptance Criteria Limits	
#	Determinand		User entered data	Inert waste landfill	Non hazardous waste landfill
1	TOC (total organic carbon)	%	6.2	3	5
2	LOI (loss on ignition)	%	9.1	-	-
3	BTEX (benzene, toluene, ethylbenzene and xylenes)	mg/kg	<0.01	6	-
4	PCBs (polychlorinated biphenyls, 7 congeners)	mg/kg	<0.1	1	-
5	Mineral oil (C10 to C40)	mg/kg	180	500	-
6	PAHs (polycyclic aromatic hydrocarbons)	mg/kg	11	100	-
7	pH	pH	8.4	-	>6
8	ANC (acid neutralisation capacity)	mol/kg	0.017	-	-
Eluate Analysis 10:1					
9	arsenic	mg/kg	0.04	0.5	2
10	barium	mg/kg	0.092	20	100
11	cadmium	mg/kg	<0.0001	0.04	1
12	chromium	mg/kg	<0.0005	0.5	10
13	copper	mg/kg	0.062	2	50
14	mercury	mg/kg	<5.0e-05	0.01	0.2
15	molybdenum	mg/kg	0.059	0.5	10
16	nickel	mg/kg	0.0074	0.4	10
17	lead	mg/kg	<0.0005	0.5	10
18	antimony	mg/kg	0.0099	0.06	0.7
19	selenium	mg/kg	0.0087	0.1	0.5
20	zinc	mg/kg	<0.0025	4	50
21	chloride	mg/kg	<10	800	15,000
22	fluoride	mg/kg	3	10	150
23	sulphate	mg/kg	<10	1,000	20,000
24	phenol index	mg/kg	<0.3	1	-
25	DOC (dissolved organic carbon)	mg/kg	62	500	800
26	TDS (total dissolved solids)	mg/kg	1600	4,000	60,000

Key

User supplied data
Inert WAC criteria fail
Non Hazardous WAC criteria fail

Classification of sample: TP30-0.90

Non Hazardous Waste
Classified as **17 05 04**
in the List of Waste

Sample details

Sample name:		LoW Code:	
TP30-0.90		Chapter:	17: Construction and Demolition Wastes (including excavated soil from contaminated sites)
Sample Depth:			
0.90-0.90 m		Entry:	17 05 04 (Soil and stones other than those mentioned in 17 05 03)
Moisture content:			
10% (wet weight correction)			

Hazard properties

None identified

Determinands

Moisture content: 10% Wet Weight Moisture Correction applied (MC)

#	Determinand	CLP index number	EC Number	CAS Number	CLP Note	User entered data	Conv. Factor	Compound conc.	Classification value	MC Applied	Conc. Not Used
1	pH			PH		8.6 pH		8.6 pH	8.6 pH		
2	boron { diboron trioxide; boric oxide }	005-008-00-8	215-125-8	1303-86-2		0.4 mg/kg	3.22	1.159 mg/kg	0.000116 %	✓	
3	sulfur { sulfur }	016-094-00-1	231-722-6	7704-34-9		1.5 mg/kg		1.35 mg/kg	0.000135 %	✓	
4	cyanides { salts of hydrogen cyanide with the exception of complex cyanides such as ferrocyanides, ferricyanides and mercuric oxycyanide and those specified elsewhere in this Annex }	006-007-00-5				<0.5 mg/kg	1.884	<0.942 mg/kg	<0.0000942 %		<LOD
5	barium { barium oxide }		215-127-9	1304-28-5		68 mg/kg	1.117	68.33 mg/kg	0.00683 %	✓	
6	cadmium { cadmium oxide }	048-002-00-0	215-146-2	1306-19-0		1.6 mg/kg	1.142	1.645 mg/kg	0.000164 %	✓	
7	molybdenum { molybdenum(VI) oxide }	042-001-00-9	215-204-7	1313-27-5		2.2 mg/kg	1.5	2.97 mg/kg	0.000297 %	✓	
8	antimony { antimony compounds, with the exception of the tetroxide (Sb2O4), pentoxide (Sb2O5), trisulphide (Sb2S3), pentasulphide (Sb2S5) and those specified elsewhere in this Annex }	051-003-00-9			1	<2 mg/kg		<2 mg/kg	<0.0002 %		<LOD
9	arsenic { arsenic }	033-001-00-X	231-148-6	7440-38-2		14 mg/kg		12.6 mg/kg	0.00126 %	✓	
10	granulated copper; [particle length: from 0,9 mm to 6,0 mm; particle width: from 0,494 to 0,949 mm]	029-024-00-X	231-159-6	7440-50-8		36 mg/kg		32.4 mg/kg	0.00324 %	✓	
11	mercury { mercury }	080-001-00-0	231-106-7	7439-97-6		0.15 mg/kg		0.135 mg/kg	0.0000135 %	✓	
12	nickel { nickel(II) oxide (nickel monoxide) }	028-003-00-2	215-215-7 [1] 234-323-5 [2] - [3]	1313-99-1 [1] 11099-02-8 [2] 34492-97-2 [3]		36 mg/kg	1.273	41.232 mg/kg	0.00412 %	✓	
13	lead { lead compounds with the exception of those specified elsewhere in this Annex }	082-001-00-6			1	41 mg/kg		36.9 mg/kg	0.00369 %	✓	

#	Determinand	CLP index number	EC Number	CAS Number	CLP Note	User entered data	Conv. Factor	Compound conc.	Classification value	MC Applied	Conc. Not Used
14	selenium { selenium compounds with the exception of cadmium sulphoselenide and those specified elsewhere in this Annex }	034-002-00-8				<0.2 mg/kg	1.405	<0.281 mg/kg	<0.0000281 %		<LOD
15	zinc { zinc oxide }	030-013-00-7	215-222-5	1314-13-2		67 mg/kg	1.245	75.056 mg/kg	0.00751 %	✓	
16	chromium in chromium(III) compounds { chromium(III) oxide }		215-160-9	1308-38-9		17 mg/kg	1.462	22.362 mg/kg	0.00224 %	✓	
17	chromium in chromium(VI) compounds { chromium(VI) oxide }	024-001-00-0	215-607-8	1333-82-0		<0.5 mg/kg	1.923	<0.962 mg/kg	<0.0000962 %		<LOD
18	TPH (C6 to C40) petroleum group			TPH		<10 mg/kg		<10 mg/kg	<0.001 %		<LOD
19	benzene	601-020-00-8	200-753-7	71-43-2		<1 µg/kg		<0.001 mg/kg	<0.0000001 %		<LOD
20	toluene	601-021-00-3	203-625-9	108-88-3		<1 µg/kg		<0.001 mg/kg	<0.0000001 %		<LOD
21	ethylbenzene	601-023-00-4	202-849-4	100-41-4		<1 µg/kg		<0.001 mg/kg	<0.0000001 %		<LOD
22	tert-butyl methyl ether; MTBE; 2-methoxy-2-methylpropane	603-181-00-X	216-653-1	1634-04-4		<1 µg/kg		<0.001 mg/kg	<0.0000001 %		<LOD
23	naphthalene	601-052-00-2	202-049-5	91-20-3		<0.1 mg/kg		<0.1 mg/kg	<0.00001 %		<LOD
24	acenaphthylene		205-917-1	208-96-8		<0.1 mg/kg		<0.1 mg/kg	<0.00001 %		<LOD
25	acenaphthene		201-469-6	83-32-9		<0.1 mg/kg		<0.1 mg/kg	<0.00001 %		<LOD
26	fluorene		201-695-5	86-73-7		<0.1 mg/kg		<0.1 mg/kg	<0.00001 %		<LOD
27	phenanthrene		201-581-5	85-01-8		<0.1 mg/kg		<0.1 mg/kg	<0.00001 %		<LOD
28	anthracene		204-371-1	120-12-7		<0.1 mg/kg		<0.1 mg/kg	<0.00001 %		<LOD
29	fluoranthene		205-912-4	206-44-0		0.36 mg/kg		0.324 mg/kg	0.0000324 %	✓	
30	pyrene		204-927-3	129-00-0		0.32 mg/kg		0.288 mg/kg	0.0000288 %	✓	
31	benzo[a]anthracene	601-033-00-9	200-280-6	56-55-3		0.16 mg/kg		0.144 mg/kg	0.0000144 %	✓	
32	chrysene	601-048-00-0	205-923-4	218-01-9		0.19 mg/kg		0.171 mg/kg	0.0000171 %	✓	
33	benzo[b]fluoranthene	601-034-00-4	205-911-9	205-99-2		<0.1 mg/kg		<0.1 mg/kg	<0.00001 %		<LOD
34	benzo[k]fluoranthene	601-036-00-5	205-916-6	207-08-9		<0.1 mg/kg		<0.1 mg/kg	<0.00001 %		<LOD
35	benzo[a]pyrene; benzo[def]chrysene	601-032-00-3	200-028-5	50-32-8		<0.1 mg/kg		<0.1 mg/kg	<0.00001 %		<LOD
36	indeno[123-cd]pyrene		205-893-2	193-39-5		<0.1 mg/kg		<0.1 mg/kg	<0.00001 %		<LOD
37	dibenz[a,h]anthracene	601-041-00-2	200-181-8	53-70-3		<0.1 mg/kg		<0.1 mg/kg	<0.00001 %		<LOD
38	benzo[ghi]perylene		205-883-8	191-24-2		<0.1 mg/kg		<0.1 mg/kg	<0.00001 %		<LOD
39	coronene		205-881-7	191-07-1		<0.1 mg/kg		<0.1 mg/kg	<0.00001 %		<LOD
40	polychlorobiphenyls; PCB	602-039-00-4	215-648-1	1336-36-3		<0.1 mg/kg		<0.1 mg/kg	<0.00001 %		<LOD

#		Determinand			CLP Note	User entered data		Conv. Factor	Compound conc.		Classification value	MC Applied	Conc. Not Used
		CLP index number	EC Number	CAS Number									
41	●	monohydric phenols				<0.1	mg/kg		<0.1	mg/kg	<0.00001 %		<LOD
				P1186									
42		xylene				<2	µg/kg		<0.002	mg/kg	<0.0000002 %		<LOD
		601-022-00-9	202-422-2 [1] 203-396-5 [2] 203-576-3 [3] 215-535-7 [4]	95-47-6 [1] 106-42-3 [2] 108-38-3 [3] 1330-20-7 [4]									
										Total:	0.0313 %		

Key

(yellow)	User supplied data
(grey)	Determinand values ignored for classification, see column 'Conc. Not Used' for reason
●	Determinand defined or amended by HazWasteOnline (see Appendix A)
	Speciated Deteminand - Unless the Determinand is Note 1, the Conversion Factor is used to calculate the compound concentration
<LOD	Below limit of detection
ND	Not detected
CLP: Note 1	Only the metal concentration has been used for classification

WAC results for sample: TP30-0.90

WAC Settings: samples in this Job constitute a single population.

WAC limits used to evaluate this sample: "Ireland"
The WAC used in this report are the WAC defined for the inert and non-hazardous classes of landfill in the Republic of Ireland. You should check the actual acceptance criteria when the disposal site is identified as they may differ from the generic WAC used in this report.

The sample PASSES the Inert (Inert waste landfill) criteria.

The sample PASSES the Non Haz (Non hazardous waste landfill) criteria.

WAC Determinands

Solid Waste Analysis				Landfill Waste Acceptance Criteria Limits	
#	Determinand		User entered data	Inert waste landfill	Non hazardous waste landfill
1	TOC (total organic carbon)	%	1.4	3	5
2	LOI (loss on ignition)	%	1.6	-	-
3	BTEX (benzene, toluene, ethylbenzene and xylenes)	mg/kg	<0.01	6	-
4	PCBs (polychlorinated biphenyls, 7 congeners)	mg/kg	<0.1	1	-
5	Mineral oil (C10 to C40)	mg/kg	<10	500	-
6	PAHs (polycyclic aromatic hydrocarbons)	mg/kg	<2	100	-
7	pH	pH	8.6	-	>6
8	ANC (acid neutralisation capacity)	mol/kg	0.009	-	-
Eluate Analysis 10:1					
9	arsenic	mg/kg	0.013	0.5	2
10	barium	mg/kg	<0.0005	20	100
11	cadmium	mg/kg	<0.0001	0.04	1
12	chromium	mg/kg	0.01	0.5	10
13	copper	mg/kg	0.016	2	50
14	mercury	mg/kg	<5.0e-05	0.01	0.2
15	molybdenum	mg/kg	0.16	0.5	10
16	nickel	mg/kg	<0.0005	0.4	10
17	lead	mg/kg	<0.0005	0.5	10
18	antimony	mg/kg	0.0068	0.06	0.7
19	selenium	mg/kg	<0.0005	0.1	0.5
20	zinc	mg/kg	<0.0025	4	50
21	chloride	mg/kg	<10	800	15,000
22	fluoride	mg/kg	3.7	10	150
23	sulphate	mg/kg	<10	1,000	20,000
24	phenol index	mg/kg	<0.3	1	-
25	DOC (dissolved organic carbon)	mg/kg	<50	500	800
26	TDS (total dissolved solids)	mg/kg	910	4,000	60,000

Key
User supplied data

Classification of sample: TP31-0.30

Non Hazardous Waste
Classified as **17 05 04**
in the List of Waste

Sample details

Sample name:
TP31-0.30
Sample Depth:
0.30-0.30 m
Moisture content:
8.7%
(wet weight correction)

LoW Code:
Chapter: 17: Construction and Demolition Wastes (including excavated soil from contaminated sites)
Entry: 17 05 04 (Soil and stones other than those mentioned in 17 05 03)

Hazard properties

None identified

Determinands

Moisture content: 8.7% Wet Weight Moisture Correction applied (MC)

#	Determinand	CLP index number	EC Number	CAS Number	CLP Note	User entered data		Conv. Factor	Compound conc.		Classification value	MC Applied	Conc. Not Used
1	pH			PH		8.3	pH		8.3	pH	8.3 pH		
2	boron { diboron trioxide; boric oxide }	005-008-00-8	215-125-8	1303-86-2		1.9	mg/kg	3.22	5.586	mg/kg	0.000559 %	✓	
3	sulfur { sulfur }	016-094-00-1	231-722-6	7704-34-9		7.6	mg/kg		6.939	mg/kg	0.000694 %	✓	
4	cyanides { salts of hydrogen cyanide with the exception of complex cyanides such as ferrocyanides, ferricyanides and mercuric oxycyanide and those specified elsewhere in this Annex }	006-007-00-5				<0.5	mg/kg	1.884	<0.942	mg/kg	<0.0000942 %		<LOD
5	barium { barium oxide }		215-127-9	1304-28-5		90	mg/kg	1.117	91.743	mg/kg	0.00917 %	✓	
6	cadmium { cadmium oxide }	048-002-00-0	215-146-2	1306-19-0		1.1	mg/kg	1.142	1.147	mg/kg	0.000115 %	✓	
7	molybdenum { molybdenum(VI) oxide }	042-001-00-9	215-204-7	1313-27-5		2.4	mg/kg	1.5	3.287	mg/kg	0.000329 %	✓	
8	antimony { antimony compounds, with the exception of the tetroxide (Sb2O4), pentoxide (Sb2O5), trisulphide (Sb2S3), pentasulphide (Sb2S5) and those specified elsewhere in this Annex }	051-003-00-9			1	<2	mg/kg		<2	mg/kg	<0.0002 %		<LOD
9	arsenic { arsenic }	033-001-00-X	231-148-6	7440-38-2		18	mg/kg		16.434	mg/kg	0.00164 %	✓	
10	granulated copper; [particle length: from 0,9 mm to 6,0 mm; particle width: from 0,494 to 0,949 mm]	029-024-00-X	231-159-6	7440-50-8		69	mg/kg		62.997	mg/kg	0.0063 %	✓	
11	mercury { mercury }	080-001-00-0	231-106-7	7439-97-6		0.46	mg/kg		0.42	mg/kg	0.000042 %	✓	
12	nickel { nickel(II) oxide (nickel monoxide) }	028-003-00-2	215-215-7 [1] 234-323-5 [2] - [3]	1313-99-1 [1] 11099-02-8 [2] 34492-97-2 [3]		32	mg/kg	1.273	37.18	mg/kg	0.00372 %	✓	
13	lead { lead compounds with the exception of those specified elsewhere in this Annex }	082-001-00-6			1	150	mg/kg		136.95	mg/kg	0.0137 %	✓	

#	Determinand	CLP index number	EC Number	CAS Number	CLP Note	User entered data		Conv. Factor	Compound conc.		Classification value	MC Applied	Conc. Not Used
14	selenium { selenium compounds with the exception of cadmium sulphoselenide and those specified elsewhere in this Annex }	034-002-00-8				0.5	mg/kg	1.405	0.641	mg/kg	0.0000641 %	✓	
15	zinc { zinc oxide }	030-013-00-7	215-222-5	1314-13-2		130	mg/kg	1.245	147.735	mg/kg	0.0148 %	✓	
16	chromium in chromium(III) compounds { chromium(III) oxide }		215-160-9	1308-38-9		16	mg/kg	1.462	21.35	mg/kg	0.00214 %	✓	
17	chromium in chromium(VI) compounds { chromium(VI) oxide }	024-001-00-0	215-607-8	1333-82-0		<0.5	mg/kg	1.923	<0.962	mg/kg	<0.0000962 %		<LOD
18	TPH (C6 to C40) petroleum group			TPH		<10	mg/kg		<10	mg/kg	<0.001 %		<LOD
19	benzene	601-020-00-8	200-753-7	71-43-2		<1	µg/kg		<0.001	mg/kg	<0.0000001 %		<LOD
20	toluene	601-021-00-3	203-625-9	108-88-3		<1	µg/kg		<0.001	mg/kg	<0.0000001 %		<LOD
21	ethylbenzene	601-023-00-4	202-849-4	100-41-4		<1	µg/kg		<0.001	mg/kg	<0.0000001 %		<LOD
22	tert-butyl methyl ether; MTBE; 2-methoxy-2-methylpropane	603-181-00-X	216-653-1	1634-04-4		<1	µg/kg		<0.001	mg/kg	<0.0000001 %		<LOD
23	naphthalene	601-052-00-2	202-049-5	91-20-3		<0.1	mg/kg		<0.1	mg/kg	<0.00001 %		<LOD
24	acenaphthylene		205-917-1	208-96-8		<0.1	mg/kg		<0.1	mg/kg	<0.00001 %		<LOD
25	acenaphthene		201-469-6	83-32-9		<0.1	mg/kg		<0.1	mg/kg	<0.00001 %		<LOD
26	fluorene		201-695-5	86-73-7		<0.1	mg/kg		<0.1	mg/kg	<0.00001 %		<LOD
27	phenanthrene		201-581-5	85-01-8		1.2	mg/kg		1.096	mg/kg	0.00011 %	✓	
28	anthracene		204-371-1	120-12-7		0.23	mg/kg		0.21	mg/kg	0.000021 %	✓	
29	fluoranthene		205-912-4	206-44-0		1.7	mg/kg		1.552	mg/kg	0.000155 %	✓	
30	pyrene		204-927-3	129-00-0		1.6	mg/kg		1.461	mg/kg	0.000146 %	✓	
31	benzo[a]anthracene	601-033-00-9	200-280-6	56-55-3		0.81	mg/kg		0.74	mg/kg	0.000074 %	✓	
32	chrysene	601-048-00-0	205-923-4	218-01-9		0.93	mg/kg		0.849	mg/kg	0.0000849 %	✓	
33	benzo[b]fluoranthene	601-034-00-4	205-911-9	205-99-2		1.1	mg/kg		1.004	mg/kg	0.0001 %	✓	
34	benzo[k]fluoranthene	601-036-00-5	205-916-6	207-08-9		0.31	mg/kg		0.283	mg/kg	0.0000283 %	✓	
35	benzo[a]pyrene; benzo[def]chrysene	601-032-00-3	200-028-5	50-32-8		0.78	mg/kg		0.712	mg/kg	0.0000712 %	✓	
36	indeno[123-cd]pyrene		205-893-2	193-39-5		0.54	mg/kg		0.493	mg/kg	0.0000493 %	✓	
37	dibenz[a,h]anthracene	601-041-00-2	200-181-8	53-70-3		0.13	mg/kg		0.119	mg/kg	0.0000119 %	✓	
38	benzo[ghi]perylene		205-883-8	191-24-2		0.64	mg/kg		0.584	mg/kg	0.0000584 %	✓	
39	coronene		205-881-7	191-07-1		<0.1	mg/kg		<0.1	mg/kg	<0.00001 %		<LOD
40	polychlorobiphenyls; PCB	602-039-00-4	215-648-1	1336-36-3		<0.1	mg/kg		<0.1	mg/kg	<0.00001 %		<LOD

#		Determinand			CLP Note	User entered data		Conv. Factor	Compound conc.		Classification value	MC Applied	Conc. Not Used
		CLP index number	EC Number	CAS Number									
41	●	monohydric phenols		P1186		<0.1	mg/kg		<0.1	mg/kg	<0.00001 %		**<LOD**
42		xylene 601-022-00-9	202-422-2 [1] 203-396-5 [2] 203-576-3 [3] 215-535-7 [4]	95-47-6 [1] 106-42-3 [2] 108-38-3 [3] 1330-20-7 [4]		<2	µg/kg		<0.002	mg/kg	<0.0000002 %		**<LOD**
										Total:	0.0556 %		

Key

(yellow)	User supplied data
(grey)	Determinand values ignored for classification, see column 'Conc. Not Used' for reason
●	Determinand defined or amended by HazWasteOnline (see Appendix A)
	Speciated Deteminand - Unless the Determinand is Note 1, the Conversion Factor is used to calculate the compound concentration
<LOD	Below limit of detection
ND	Not detected
CLP: Note 1	Only the metal concentration has been used for classification

WAC results for sample: TP31-0.30

WAC Settings: samples in this Job constitute a single population.

WAC limits used to evaluate this sample: "Ireland"
The WAC used in this report are the WAC defined for the inert and non-hazardous classes of landfill in the Republic of Ireland. You should check the actual acceptance criteria when the disposal site is identified as they may differ from the generic WAC used in this report.

The sample FAILS the Inert (Inert waste landfill) criteria.

The sample FAILS the Non Haz (Non hazardous waste landfill) criteria.

WAC Determinands

Solid Waste Analysis				Landfill Waste Acceptance Criteria Limits	
#	Determinand		User entered data	Inert waste landfill	Non hazardous waste landfill
1	TOC (total organic carbon)	%	7.5	3	5
2	LOI (loss on ignition)	%	11	-	-
3	BTEX (benzene, toluene, ethylbenzene and xylenes)	mg/kg	<0.01	6	-
4	PCBs (polychlorinated biphenyls, 7 congeners)	mg/kg	<0.1	1	-
5	Mineral oil (C10 to C40)	mg/kg	35	500	-
6	PAHs (polycyclic aromatic hydrocarbons)	mg/kg	10	100	-
7	pH	pH	8.3	-	>6
8	ANC (acid neutralisation capacity)	mol/kg	0.004	-	-
Eluate Analysis 10:1					
9	arsenic	mg/kg	0.051	0.5	2
10	barium	mg/kg	0.098	20	100
11	cadmium	mg/kg	<0.0001	0.04	1
12	chromium	mg/kg	<0.0005	0.5	10
13	copper	mg/kg	0.064	2	50
14	mercury	mg/kg	<5.0e-05	0.01	0.2
15	molybdenum	mg/kg	0.037	0.5	10
16	nickel	mg/kg	0.008	0.4	10
17	lead	mg/kg	<0.0005	0.5	10
18	antimony	mg/kg	0.0074	0.06	0.7
19	selenium	mg/kg	0.0064	0.1	0.5
20	zinc	mg/kg	<0.0025	4	50
21	chloride	mg/kg	<10	800	15,000
22	fluoride	mg/kg	2.8	10	150
23	sulphate	mg/kg	<10	1,000	20,000
24	phenol index	mg/kg	<0.3	1	-
25	DOC (dissolved organic carbon)	mg/kg	73	500	800
26	TDS (total dissolved solids)	mg/kg	1600	4,000	60,000

Key

User supplied data
Inert WAC criteria fail
Non Hazardous WAC criteria fail

Classification of sample: TP31-1.50

Non Hazardous Waste
Classified as **17 05 04**
in the List of Waste

Sample details

Sample name:		LoW Code:	
TP31-1.50		Chapter:	17: Construction and Demolition Wastes (including excavated soil from contaminated sites)
Sample Depth:			
1.50-1.50 m		Entry:	17 05 04 (Soil and stones other than those mentioned in 17 05 03)
Moisture content:			
12% (wet weight correction)			

Hazard properties

None identified

Determinands

Moisture content: 12% Wet Weight Moisture Correction applied (MC)

#	Determinand / CLP index number	EC Number	CAS Number	CLP Note	User entered data		Conv. Factor	Compound conc.		Classification value	MC Applied	Conc. Not Used
1	pH		PH		8.5	pH		8.5	pH	8.5 pH		
2	boron { diboron trioxide; boric oxide } 005-008-00-8	215-125-8	1303-86-2		0.52	mg/kg	3.22	1.473	mg/kg	0.000147 %	✓	
3	sulfur { sulfur } 016-094-00-1	231-722-6	7704-34-9		<1	mg/kg		<1	mg/kg	<0.0001 %		<LOD
4	cyanides { salts of hydrogen cyanide with the exception of complex cyanides such as ferrocyanides, ferricyanides and mercuric oxycyanide and those specified elsewhere in this Annex } 006-007-00-5				<0.5	mg/kg	1.884	<0.942	mg/kg	<0.0000942 %		<LOD
5	barium { barium oxide }	215-127-9	1304-28-5		53	mg/kg	1.117	52.074	mg/kg	0.00521 %	✓	
6	cadmium { cadmium oxide } 048-002-00-0	215-146-2	1306-19-0		0.83	mg/kg	1.142	0.834	mg/kg	0.0000834 %	✓	
7	molybdenum { molybdenum(VI) oxide } 042-001-00-9	215-204-7	1313-27-5		2.6	mg/kg	1.5	3.432	mg/kg	0.000343 %	✓	
8	antimony { antimony compounds, with the exception of the tetroxide (Sb2O4), pentoxide (Sb2O5), trisulphide (Sb2S3), pentasulphide (Sb2S5) and those specified elsewhere in this Annex } 051-003-00-9			1	<2	mg/kg		<2	mg/kg	<0.0002 %		<LOD
9	arsenic { arsenic } 033-001-00-X	231-148-6	7440-38-2		8.9	mg/kg		7.832	mg/kg	0.000783 %	✓	
10	granulated copper; [particle length: from 0,9 mm to 6,0 mm; particle width: from 0,494 to 0,949 mm] 029-024-00-X	231-159-6	7440-50-8		17	mg/kg		14.96	mg/kg	0.0015 %	✓	
11	mercury { mercury } 080-001-00-0	231-106-7	7439-97-6		0.13	mg/kg		0.114	mg/kg	0.0000114 %	✓	
12	nickel { nickel(II) oxide (nickel monoxide) } 028-003-00-2	215-215-7 [1] 234-323-5 [2] - [3]	1313-99-1 [1] 11099-02-8 [2] 34492-97-2 [3]		24	mg/kg	1.273	26.877	mg/kg	0.00269 %	✓	
13	lead { lead compounds with the exception of those specified elsewhere in this Annex } 082-001-00-6			1	28	mg/kg		24.64	mg/kg	0.00246 %	✓	

#	Determinand	CLP index number	EC Number	CAS Number	CLP Note	User entered data	Conv. Factor	Compound conc.	Classification value	MC Applied	Conc. Not Used
14	selenium { selenium compounds with the exception of cadmium sulphoselenide and those specified elsewhere in this Annex }	034-002-00-8				<0.2 mg/kg	1.405	<0.281 mg/kg	<0.0000281 %		<LOD
15	zinc { zinc oxide }	030-013-00-7	215-222-5	1314-13-2		91 mg/kg	1.245	99.677 mg/kg	0.00997 %	✓	
16	chromium in chromium(III) compounds { chromium(III) oxide }		215-160-9	1308-38-9		23 mg/kg	1.462	29.582 mg/kg	0.00296 %	✓	
17	chromium in chromium(VI) compounds { chromium(VI) oxide }	024-001-00-0	215-607-8	1333-82-0		<0.5 mg/kg	1.923	<0.962 mg/kg	<0.0000962 %		<LOD
18	TPH (C6 to C40) petroleum group			TPH		<10 mg/kg		<10 mg/kg	<0.001 %		<LOD
19	benzene	601-020-00-8	200-753-7	71-43-2		<1 µg/kg		<0.001 mg/kg	<0.0000001 %		<LOD
20	toluene	601-021-00-3	203-625-9	108-88-3		<1 µg/kg		<0.001 mg/kg	<0.0000001 %		<LOD
21	ethylbenzene	601-023-00-4	202-849-4	100-41-4		<1 µg/kg		<0.001 mg/kg	<0.0000001 %		<LOD
22	tert-butyl methyl ether; MTBE; 2-methoxy-2-methylpropane	603-181-00-X	216-653-1	1634-04-4		<1 µg/kg		<0.001 mg/kg	<0.0000001 %		<LOD
23	naphthalene	601-052-00-2	202-049-5	91-20-3		<0.1 mg/kg		<0.1 mg/kg	<0.00001 %		<LOD
24	acenaphthylene		205-917-1	208-96-8		<0.1 mg/kg		<0.1 mg/kg	<0.00001 %		<LOD
25	acenaphthene		201-469-6	83-32-9		<0.1 mg/kg		<0.1 mg/kg	<0.00001 %		<LOD
26	fluorene		201-695-5	86-73-7		<0.1 mg/kg		<0.1 mg/kg	<0.00001 %		<LOD
27	phenanthrene		201-581-5	85-01-8		<0.1 mg/kg		<0.1 mg/kg	<0.00001 %		<LOD
28	anthracene		204-371-1	120-12-7		<0.1 mg/kg		<0.1 mg/kg	<0.00001 %		<LOD
29	fluoranthene		205-912-4	206-44-0		<0.1 mg/kg		<0.1 mg/kg	<0.00001 %		<LOD
30	pyrene		204-927-3	129-00-0		<0.1 mg/kg		<0.1 mg/kg	<0.00001 %		<LOD
31	benzo[a]anthracene	601-033-00-9	200-280-6	56-55-3		<0.1 mg/kg		<0.1 mg/kg	<0.00001 %		<LOD
32	chrysene	601-048-00-0	205-923-4	218-01-9		<0.1 mg/kg		<0.1 mg/kg	<0.00001 %		<LOD
33	benzo[b]fluoranthene	601-034-00-4	205-911-9	205-99-2		<0.1 mg/kg		<0.1 mg/kg	<0.00001 %		<LOD
34	benzo[k]fluoranthene	601-036-00-5	205-916-6	207-08-9		<0.1 mg/kg		<0.1 mg/kg	<0.00001 %		<LOD
35	benzo[a]pyrene; benzo[def]chrysene	601-032-00-3	200-028-5	50-32-8		<0.1 mg/kg		<0.1 mg/kg	<0.00001 %		<LOD
36	indeno[123-cd]pyrene		205-893-2	193-39-5		<0.1 mg/kg		<0.1 mg/kg	<0.00001 %		<LOD
37	dibenz[a,h]anthracene	601-041-00-2	200-181-8	53-70-3		<0.1 mg/kg		<0.1 mg/kg	<0.00001 %		<LOD
38	benzo[ghi]perylene		205-883-8	191-24-2		<0.1 mg/kg		<0.1 mg/kg	<0.00001 %		<LOD
39	coronene		205-881-7	191-07-1		<0.1 mg/kg		<0.1 mg/kg	<0.00001 %		<LOD
40	polychlorobiphenyls; PCB	602-039-00-4	215-648-1	1336-36-3		<0.1 mg/kg		<0.1 mg/kg	<0.00001 %		<LOD

#		Determinand			CLP Note	User entered data		Conv. Factor	Compound conc.		Classification value	MC Applied	Conc. Not Used
		CLP index number	EC Number	CAS Number									
41	●	monohydric phenols		P1186		<0.1	mg/kg		<0.1	mg/kg	<0.00001 %		<LOD
42		xylene 601-022-00-9	202-422-2 [1] 203-396-5 [2] 203-576-3 [3] 215-535-7 [4]	95-47-6 [1] 106-42-3 [2] 108-38-3 [3] 1330-20-7 [4]		<2	µg/kg		<0.002	mg/kg	<0.0000002 %		<LOD
										Total:	0.0279 %		

Key

	User supplied data
	Determinand values ignored for classification, see column 'Conc. Not Used' for reason
●	Determinand defined or amended by HazWasteOnline (see Appendix A)
	Speciated Deteminand - Unless the Determinand is Note 1, the Conversion Factor is used to calculate the compound concentration
<LOD	Below limit of detection
ND	Not detected
CLP: Note 1	Only the metal concentration has been used for classification

WAC results for sample: TP31-1.50

WAC Settings: samples in this Job constitute a single population.

WAC limits used to evaluate this sample: "Ireland"
The WAC used in this report are the WAC defined for the inert and non-hazardous classes of landfill in the Republic of Ireland. You should check the actual acceptance criteria when the disposal site is identified as they may differ from the generic WAC used in this report.

The sample PASSES the Inert (Inert waste landfill) criteria.

The sample PASSES the Non Haz (Non hazardous waste landfill) criteria.

WAC Determinands

Solid Waste Analysis				Landfill Waste Acceptance Criteria Limits	
#	Determinand		User entered data	Inert waste landfill	Non hazardous waste landfill
1	TOC (total organic carbon)	%	0.66	3	5
2	LOI (loss on ignition)	%	2.1	-	-
3	BTEX (benzene, toluene, ethylbenzene and xylenes)	mg/kg	<0.01	6	-
4	PCBs (polychlorinated biphenyls, 7 congeners)	mg/kg	<0.1	1	-
5	Mineral oil (C10 to C40)	mg/kg	<10	500	-
6	PAHs (polycyclic aromatic hydrocarbons)	mg/kg	<2	100	-
7	pH	pH	8.5	-	>6
8	ANC (acid neutralisation capacity)	mol/kg	0.015	-	-
Eluate Analysis 10:1					
9	arsenic	mg/kg	0.0055	0.5	2
10	barium	mg/kg	<0.0005	20	100
11	cadmium	mg/kg	<0.0001	0.04	1
12	chromium	mg/kg	0.0052	0.5	10
13	copper	mg/kg	0.011	2	50
14	mercury	mg/kg	<5.0e-05	0.01	0.2
15	molybdenum	mg/kg	0.2	0.5	10
16	nickel	mg/kg	<0.0005	0.4	10
17	lead	mg/kg	<0.0005	0.5	10
18	antimony	mg/kg	<0.0005	0.06	0.7
19	selenium	mg/kg	<0.0005	0.1	0.5
20	zinc	mg/kg	<0.0025	4	50
21	chloride	mg/kg	<10	800	15,000
22	fluoride	mg/kg	3.1	10	150
23	sulphate	mg/kg	<10	1,000	20,000
24	phenol index	mg/kg	<0.3	1	-
25	DOC (dissolved organic carbon)	mg/kg	100	500	800
26	TDS (total dissolved solids)	mg/kg	780	4,000	60,000

Key

User supplied data

Classification of sample: TP32-0.30

Non Hazardous Waste
Classified as **17 05 04**
in the List of Waste

Sample details

Sample name:		LoW Code:	
TP32-0.30		Chapter:	17: Construction and Demolition Wastes (including excavated soil from contaminated sites)
Sample Depth:			
0.30-0.30 m		Entry:	17 05 04 (Soil and stones other than those mentioned in 17 05 03)
Moisture content:			
10% (wet weight correction)			

Hazard properties

None identified

Determinands

Moisture content: 10% Wet Weight Moisture Correction applied (MC)

#		Determinand CLP index number / EC Number / CAS Number	CLP Note	User entered data		Conv. Factor	Compound conc.		Classification value	MC Applied	Conc. Not Used
1		pH – / – / PH		8.4	pH		8.4	pH	8.4 pH		
2		boron { diboron trioxide; boric oxide } 005-008-00-8 / 215-125-8 / 1303-86-2		1.9	mg/kg	3.22	5.506	mg/kg	0.000551 %	✓	
3		sulfur { sulfur } 016-094-00-1 / 231-722-6 / 7704-34-9		7.1	mg/kg		6.39	mg/kg	0.000639 %	✓	
4		cyanides { salts of hydrogen cyanide with the exception of complex cyanides such as ferrocyanides, ferricyanides and mercuric oxycyanide and those specified elsewhere in this Annex } 006-007-00-5		<0.5	mg/kg	1.884	<0.942	mg/kg	<0.0000942 %		<LOD
5		barium { barium oxide } – / 215-127-9 / 1304-28-5		160	mg/kg	1.117	160.777	mg/kg	0.0161 %	✓	
6		cadmium { cadmium oxide } 048-002-00-0 / 215-146-2 / 1306-19-0		1.6	mg/kg	1.142	1.645	mg/kg	0.000164 %	✓	
7		molybdenum { molybdenum(VI) oxide } 042-001-00-9 / 215-204-7 / 1313-27-5		4.9	mg/kg	1.5	6.616	mg/kg	0.000662 %	✓	
8		antimony { antimony compounds, with the exception of the tetroxide (Sb2O4), pentoxide (Sb2O5), trisulphide (Sb2S3), pentasulphide (Sb2S5) and those specified elsewhere in this Annex } 051-003-00-9	1	3.9	mg/kg		3.51	mg/kg	0.000351 %	✓	
9		arsenic { arsenic } 033-001-00-X / 231-148-6 / 7440-38-2		43	mg/kg		38.7	mg/kg	0.00387 %	✓	
10		granulated copper; [particle length: from 0,9 mm to 6,0 mm; particle width: from 0,494 to 0,949 mm] 029-024-00-X / 231-159-6 / 7440-50-8		110	mg/kg		99	mg/kg	0.0099 %	✓	
11		mercury { mercury } 080-001-00-0 / 231-106-7 / 7439-97-6		0.87	mg/kg		0.783	mg/kg	0.0000783 %	✓	
12		nickel { nickel(II) oxide (nickel monoxide) } 028-003-00-2 / 215-215-7 [1] 234-323-5 [2] - [3] / 1313-99-1 [1] 11099-02-8 [2] 34492-97-2 [3]		65	mg/kg	1.273	74.447	mg/kg	0.00744 %	✓	
13		lead { lead compounds with the exception of those specified elsewhere in this Annex } 082-001-00-6	1	760	mg/kg		684	mg/kg	0.0684 %	✓	

#		Determinand	CLP index number	EC Number	CAS Number	CLP Note	User entered data		Conv. Factor	Compound conc.		Classification value	MC Applied	Conc. Not Used
14		selenium { selenium compounds with the exception of cadmium sulphoselenide and those specified elsewhere in this Annex }	034-002-00-8				0.62	mg/kg	1.405	0.784	mg/kg	0.0000784 %	✓	
15		zinc { zinc oxide }	030-013-00-7	215-222-5	1314-13-2		210	mg/kg	1.245	235.251	mg/kg	0.0235 %	✓	
16		chromium in chromium(III) compounds { chromium(III) oxide }		215-160-9	1308-38-9		39	mg/kg	1.462	51.301	mg/kg	0.00513 %	✓	
17		chromium in chromium(VI) compounds { chromium(VI) oxide }	024-001-00-0	215-607-8	1333-82-0		<0.5	mg/kg	1.923	<0.962	mg/kg	<0.0000962 %		<LOD
18		TPH (C6 to C40) petroleum group			TPH		<10	mg/kg		<10	mg/kg	<0.001 %		<LOD
19		benzene	601-020-00-8	200-753-7	71-43-2		<1	µg/kg		<0.001	mg/kg	<0.0000001 %		<LOD
20		toluene	601-021-00-3	203-625-9	108-88-3		<1	µg/kg		<0.001	mg/kg	<0.0000001 %		<LOD
21		ethylbenzene	601-023-00-4	202-849-4	100-41-4		<1	µg/kg		<0.001	mg/kg	<0.0000001 %		<LOD
22		tert-butyl methyl ether; MTBE; 2-methoxy-2-methylpropane	603-181-00-X	216-653-1	1634-04-4		<1	µg/kg		<0.001	mg/kg	<0.0000001 %		<LOD
23		naphthalene	601-052-00-2	202-049-5	91-20-3		<0.1	mg/kg		<0.1	mg/kg	<0.00001 %		<LOD
24		acenaphthylene		205-917-1	208-96-8		<0.1	mg/kg		<0.1	mg/kg	<0.00001 %		<LOD
25		acenaphthene		201-469-6	83-32-9		<0.1	mg/kg		<0.1	mg/kg	<0.00001 %		<LOD
26		fluorene		201-695-5	86-73-7		<0.1	mg/kg		<0.1	mg/kg	<0.00001 %		<LOD
27		phenanthrene		201-581-5	85-01-8		1.3	mg/kg		1.17	mg/kg	0.000117 %	✓	
28		anthracene		204-371-1	120-12-7		0.17	mg/kg		0.153	mg/kg	0.0000153 %	✓	
29		fluoranthene		205-912-4	206-44-0		1.4	mg/kg		1.26	mg/kg	0.000126 %	✓	
30		pyrene		204-927-3	129-00-0		1.3	mg/kg		1.17	mg/kg	0.000117 %	✓	
31		benzo[a]anthracene	601-033-00-9	200-280-6	56-55-3		0.67	mg/kg		0.603	mg/kg	0.0000603 %	✓	
32		chrysene	601-048-00-0	205-923-4	218-01-9		0.76	mg/kg		0.684	mg/kg	0.0000684 %	✓	
33		benzo[b]fluoranthene	601-034-00-4	205-911-9	205-99-2		0.79	mg/kg		0.711	mg/kg	0.0000711 %	✓	
34		benzo[k]fluoranthene	601-036-00-5	205-916-6	207-08-9		0.27	mg/kg		0.243	mg/kg	0.0000243 %	✓	
35		benzo[a]pyrene; benzo[def]chrysene	601-032-00-3	200-028-5	50-32-8		0.58	mg/kg		0.522	mg/kg	0.0000522 %	✓	
36		indeno[123-cd]pyrene		205-893-2	193-39-5		0.26	mg/kg		0.234	mg/kg	0.0000234 %	✓	
37		dibenz[a,h]anthracene	601-041-00-2	200-181-8	53-70-3		0.1	mg/kg		0.09	mg/kg	0.000009 %	✓	
38		benzo[ghi]perylene		205-883-8	191-24-2		0.46	mg/kg		0.414	mg/kg	0.0000414 %	✓	
39		coronene		205-881-7	191-07-1		<0.1	mg/kg		<0.1	mg/kg	<0.00001 %		<LOD
40		polychlorobiphenyls; PCB	602-039-00-4	215-648-1	1336-36-3		<0.1	mg/kg		<0.1	mg/kg	<0.00001 %		<LOD

#		Determinand			CLP Note	User entered data		Conv. Factor	Compound conc.		Classification value	MC Applied	Conc. Not Used
		CLP index number	EC Number	CAS Number									
41	●	monohydric phenols				<0.1	mg/kg		<0.1	mg/kg	<0.00001 %		<LOD
				P1186									
42		xylene				<2	µg/kg		<0.002	mg/kg	<0.0000002 %		<LOD
		601-022-00-9	202-422-2 [1] 203-396-5 [2] 203-576-3 [3] 215-535-7 [4]	95-47-6 [1] 106-42-3 [2] 108-38-3 [3] 1330-20-7 [4]									
										Total:	0.139 %		

Key

(yellow)	User supplied data
(grey)	Determinand values ignored for classification, see column 'Conc. Not Used' for reason
●	Determinand defined or amended by HazWasteOnline (see Appendix A)
	Speciated Deteminand - Unless the Determinand is Note 1, the Conversion Factor is used to calculate the compound concentration
<LOD	Below limit of detection
ND	Not detected
CLP: Note 1	Only the metal concentration has been used for classification

WAC results for sample: TP32-0.30

WAC Settings: samples in this Job constitute a single population.

WAC limits used to evaluate this sample: "Ireland"
The WAC used in this report are the WAC defined for the inert and non-hazardous classes of landfill in the Republic of Ireland. You should check the actual acceptance criteria when the disposal site is identified as they may differ from the generic WAC used in this report.

The sample FAILS the Inert (Inert waste landfill) criteria.

The sample PASSES the Non Haz (Non hazardous waste landfill) criteria.

WAC Determinands

Solid Waste Analysis				Landfill Waste Acceptance Criteria Limits	
#	Determinand		User entered data	Inert waste landfill	Non hazardous waste landfill
1	TOC (total organic carbon)	%	3.7	3	5
2	LOI (loss on ignition)	%	6.4	-	-
3	BTEX (benzene, toluene, ethylbenzene and xylenes)	mg/kg	<0.01	6	-
4	PCBs (polychlorinated biphenyls, 7 congeners)	mg/kg	<0.1	1	-
5	Mineral oil (C10 to C40)	mg/kg	48	500	-
6	PAHs (polycyclic aromatic hydrocarbons)	mg/kg	8.1	100	-
7	pH	pH	8.4	-	>6
8	ANC (acid neutralisation capacity)	mol/kg	0.008	-	-
Eluate Analysis 10:1					
9	arsenic	mg/kg	0.17	0.5	2
10	barium	mg/kg	<0.0005	20	100
11	cadmium	mg/kg	<0.0001	0.04	1
12	chromium	mg/kg	<0.0005	0.5	10
13	copper	mg/kg	0.047	2	50
14	mercury	mg/kg	<5.0e-05	0.01	0.2
15	molybdenum	mg/kg	0.035	0.5	10
16	nickel	mg/kg	0.0061	0.4	10
17	lead	mg/kg	0.0052	0.5	10
18	antimony	mg/kg	0.015	0.06	0.7
19	selenium	mg/kg	<0.0005	0.1	0.5
20	zinc	mg/kg	<0.0025	4	50
21	chloride	mg/kg	57	800	15,000
22	fluoride	mg/kg	3.2	10	150
23	sulphate	mg/kg	33	1,000	20,000
24	phenol index	mg/kg	<0.3	1	-
25	DOC (dissolved organic carbon)	mg/kg	120	500	800
26	TDS (total dissolved solids)	mg/kg	970	4,000	60,000

Key

User supplied data

Inert WAC criteria fail

Classification of sample: TP32-1.00

Non Hazardous Waste
Classified as **17 05 04**
in the List of Waste

Sample details

Sample name:	LoW Code:	
TP32-1.00	Chapter:	17: Construction and Demolition Wastes (including excavated soil from contaminated sites)
Sample Depth:		
1.00-1.00 m	Entry:	17 05 04 (Soil and stones other than those mentioned in 17 05 03)
Moisture content:		
11% (wet weight correction)		

Hazard properties

None identified

Determinands

Moisture content: 11% Wet Weight Moisture Correction applied (MC)

#	Determinand	CLP index number	EC Number	CAS Number	CLP Note	User entered data	Conv. Factor	Compound conc.	Classification value	MC Applied	Conc. Not Used
1	pH			PH		8.7 pH		8.7 pH	8.7 pH		
2	boron { diboron trioxide; boric oxide }	005-008-00-8	215-125-8	1303-86-2		<0.4 mg/kg	3.22	<1.288 mg/kg	<0.000129 %		<LOD
3	sulfur { sulfur }	016-094-00-1	231-722-6	7704-34-9		<1 mg/kg		<1 mg/kg	<0.0001 %		<LOD
4	cyanides { salts of hydrogen cyanide with the exception of complex cyanides such as ferrocyanides, ferricyanides and mercuric oxycyanide and those specified elsewhere in this Annex }	006-007-00-5				<0.5 mg/kg	1.884	<0.942 mg/kg	<0.0000942 %		<LOD
5	barium { barium oxide }		215-127-9	1304-28-5		97 mg/kg	1.117	96.388 mg/kg	0.00964 %	✓	
6	cadmium { cadmium oxide }	048-002-00-0	215-146-2	1306-19-0		2.9 mg/kg	1.142	2.948 mg/kg	0.000295 %	✓	
7	molybdenum { molybdenum(VI) oxide }	042-001-00-9	215-204-7	1313-27-5		5.2 mg/kg	1.5	6.943 mg/kg	0.000694 %	✓	
8	antimony { antimony compounds, with the exception of the tetroxide (Sb2O4), pentoxide (Sb2O5), trisulphide (Sb2S3), pentasulphide (Sb2S5) and those specified elsewhere in this Annex }	051-003-00-9			1	2.5 mg/kg		2.225 mg/kg	0.000223 %	✓	
9	arsenic { arsenic }	033-001-00-X	231-148-6	7440-38-2		27 mg/kg		24.03 mg/kg	0.0024 %	✓	
10	granulated copper; [particle length: from 0,9 mm to 6,0 mm; particle width: from 0,494 to 0,949 mm]	029-024-00-X	231-159-6	7440-50-8		61 mg/kg		54.29 mg/kg	0.00543 %	✓	
11	mercury { mercury }	080-001-00-0	231-106-7	7439-97-6		0.18 mg/kg		0.16 mg/kg	0.000016 %	✓	
12	nickel { nickel(II) oxide (nickel monoxide) }	028-003-00-2	215-215-7 [1] 234-323-5 [2] - [3]	1313-99-1 [1] 11099-02-8 [2] 34492-97-2 [3]		65 mg/kg	1.273	73.619 mg/kg	0.00736 %	✓	
13	lead { lead compounds with the exception of those specified elsewhere in this Annex }	082-001-00-6			1	52 mg/kg		46.28 mg/kg	0.00463 %	✓	

#	Determinand	CLP index number	EC Number	CAS Number	CLP Note	User entered data		Conv. Factor	Compound conc.		Classification value	MC Applied	Conc. Not Used
14	selenium { selenium compounds with the exception of cadmium sulphoselenide and those specified elsewhere in this Annex }	034-002-00-8				0.42	mg/kg	1.405	0.525	mg/kg	0.0000525 %	✓	
15	zinc { zinc oxide }	030-013-00-7	215-222-5	1314-13-2		97	mg/kg	1.245	107.456	mg/kg	0.0107 %	✓	
16	chromium in chromium(III) compounds { chromium(III) oxide }		215-160-9	1308-38-9		26	mg/kg	1.462	33.82	mg/kg	0.00338 %	✓	
17	chromium in chromium(VI) compounds { chromium(VI) oxide }	024-001-00-0	215-607-8	1333-82-0		<0.5	mg/kg	1.923	<0.962	mg/kg	<0.0000962 %		<LOD
18	TPH (C6 to C40) petroleum group			TPH		16	mg/kg		14.24	mg/kg	0.00142 %	✓	
19	benzene	601-020-00-8	200-753-7	71-43-2		<1	µg/kg		<0.001	mg/kg	<0.0000001 %		<LOD
20	toluene	601-021-00-3	203-625-9	108-88-3		<1	µg/kg		<0.001	mg/kg	<0.0000001 %		<LOD
21	ethylbenzene	601-023-00-4	202-849-4	100-41-4		<1	µg/kg		<0.001	mg/kg	<0.0000001 %		<LOD
22	tert-butyl methyl ether; MTBE; 2-methoxy-2-methylpropane	603-181-00-X	216-653-1	1634-04-4		<1	µg/kg		<0.001	mg/kg	<0.0000001 %		<LOD
23	naphthalene	601-052-00-2	202-049-5	91-20-3		<0.1	mg/kg		<0.1	mg/kg	<0.00001 %		<LOD
24	acenaphthylene		205-917-1	208-96-8		<0.1	mg/kg		<0.1	mg/kg	<0.00001 %		<LOD
25	acenaphthene		201-469-6	83-32-9		<0.1	mg/kg		<0.1	mg/kg	<0.00001 %		<LOD
26	fluorene		201-695-5	86-73-7		<0.1	mg/kg		<0.1	mg/kg	<0.00001 %		<LOD
27	phenanthrene		201-581-5	85-01-8		<0.1	mg/kg		<0.1	mg/kg	<0.00001 %		<LOD
28	anthracene		204-371-1	120-12-7		<0.1	mg/kg		<0.1	mg/kg	<0.00001 %		<LOD
29	fluoranthene		205-912-4	206-44-0		0.14	mg/kg		0.125	mg/kg	0.0000125 %	✓	
30	pyrene		204-927-3	129-00-0		0.16	mg/kg		0.142	mg/kg	0.0000142 %	✓	
31	benzo[a]anthracene	601-033-00-9	200-280-6	56-55-3		<0.1	mg/kg		<0.1	mg/kg	<0.00001 %		<LOD
32	chrysene	601-048-00-0	205-923-4	218-01-9		<0.1	mg/kg		<0.1	mg/kg	<0.00001 %		<LOD
33	benzo[b]fluoranthene	601-034-00-4	205-911-9	205-99-2		<0.1	mg/kg		<0.1	mg/kg	<0.00001 %		<LOD
34	benzo[k]fluoranthene	601-036-00-5	205-916-6	207-08-9		<0.1	mg/kg		<0.1	mg/kg	<0.00001 %		<LOD
35	benzo[a]pyrene; benzo[def]chrysene	601-032-00-3	200-028-5	50-32-8		<0.1	mg/kg		<0.1	mg/kg	<0.00001 %		<LOD
36	indeno[123-cd]pyrene		205-893-2	193-39-5		<0.1	mg/kg		<0.1	mg/kg	<0.00001 %		<LOD
37	dibenz[a,h]anthracene	601-041-00-2	200-181-8	53-70-3		<0.1	mg/kg		<0.1	mg/kg	<0.00001 %		<LOD
38	benzo[ghi]perylene		205-883-8	191-24-2		<0.1	mg/kg		<0.1	mg/kg	<0.00001 %		<LOD
39	coronene		205-881-7	191-07-1		<0.1	mg/kg		<0.1	mg/kg	<0.00001 %		<LOD
40	polychlorobiphenyls; PCB	602-039-00-4	215-648-1	1336-36-3		<0.1	mg/kg		<0.1	mg/kg	<0.00001 %		<LOD

#		Determinand			CLP Note	User entered data		Conv. Factor	Compound conc.		Classification value	MC Applied	Conc. Not Used
		CLP index number	EC Number	CAS Number									
41	●	monohydric phenols		P1186		<0.1	mg/kg		<0.1	mg/kg	<0.00001 %		**<LOD**
42		xylene 601-022-00-9	202-422-2 [1] 203-396-5 [2] 203-576-3 [3] 215-535-7 [4]	95-47-6 [1] 106-42-3 [2] 108-38-3 [3] 1330-20-7 [4]		<2	µg/kg		<0.002	mg/kg	<0.0000002 %		**<LOD**
										Total:	0.0469 %		

Key

(yellow)	User supplied data
(grey)	Determinand values ignored for classification, see column 'Conc. Not Used' for reason
●	Determinand defined or amended by HazWasteOnline (see Appendix A)
	Speciated Deteminand - Unless the Determinand is Note 1, the Conversion Factor is used to calculate the compound concentration
<LOD	Below limit of detection
ND	Not detected
CLP: Note 1	Only the metal concentration has been used for classification

Supplementary Hazardous Property Information

HP 3(i): Flammable "flammable liquid waste: liquid waste having a flash point below 60°C or waste gas oil, diesel and light heating oils having a flash point > 55°C and <= 75°C"

Force this Hazardous property to non hazardous because HP 3 can be discounted as this is a solid waste without a free draining liquid phase.

Hazard Statements hit:

Flam. Liq. 3; H226 "Flammable liquid and vapour."

Because of determinand:

TPH (C6 to C40) petroleum group: (conc.: 0.00142%)

WAC results for sample: TP32-1.00

WAC Settings: samples in this Job constitute a single population.

WAC limits used to evaluate this sample: "Ireland"
The WAC used in this report are the WAC defined for the inert and non-hazardous classes of landfill in the Republic of Ireland. You should check the actual acceptance criteria when the disposal site is identified as they may differ from the generic WAC used in this report.

The sample PASSES the Inert (Inert waste landfill) criteria.

The sample PASSES the Non Haz (Non hazardous waste landfill) criteria.

WAC Determinands

Solid Waste Analysis				Landfill Waste Acceptance Criteria Limits	
#	Determinand		User entered data	Inert waste landfill	Non hazardous waste landfill
1	TOC (total organic carbon)	%	0.73	3	5
2	LOI (loss on ignition)	%	1.5	-	-
3	BTEX (benzene, toluene, ethylbenzene and xylenes)	mg/kg	<0.01	6	-
4	PCBs (polychlorinated biphenyls, 7 congeners)	mg/kg	<0.1	1	-
5	Mineral oil (C10 to C40)	mg/kg	<10	500	-
6	PAHs (polycyclic aromatic hydrocarbons)	mg/kg	<2	100	-
7	pH	pH	8.7	-	>6
8	ANC (acid neutralisation capacity)	mol/kg	0.008	-	-
Eluate Analysis 10:1					
9	arsenic	mg/kg	0.011	0.5	2
10	barium	mg/kg	<0.0005	20	100
11	cadmium	mg/kg	<0.0001	0.04	1
12	chromium	mg/kg	0.0063	0.5	10
13	copper	mg/kg	0.012	2	50
14	mercury	mg/kg	<5.0e-05	0.01	0.2
15	molybdenum	mg/kg	0.18	0.5	10
16	nickel	mg/kg	<0.0005	0.4	10
17	lead	mg/kg	<0.0005	0.5	10
18	antimony	mg/kg	0.007	0.06	0.7
19	selenium	mg/kg	0.0053	0.1	0.5
20	zinc	mg/kg	<0.0025	4	50
21	chloride	mg/kg	<10	800	15,000
22	fluoride	mg/kg	3.4	10	150
23	sulphate	mg/kg	<10	1,000	20,000
24	phenol index	mg/kg	<0.3	1	-
25	DOC (dissolved organic carbon)	mg/kg	87	500	800
26	TDS (total dissolved solids)	mg/kg	840	4,000	60,000

Key

User supplied data

Appendix A: Classifier defined and non CLP determinands

pH (CAS Number: PH)

Description/Comments: Appendix C4
Data source: WM3 1st Edition 2015
Data source date: 25 May 2015
Hazard Statements: None.

salts of hydrogen cyanide with the exception of complex cyanides such as ferrocyanides, ferricyanides and mercuric oxycyanide and those specified elsewhere in this Annex

CLP index number: 006-007-00-5
Description/Comments: Conversion factor based on a worst case compound: sodium cyanide
Data source: Commission Regulation (EC) No 790/2009 - 1st Adaptation to Technical Progress for Regulation (EC) No 1272/2008. (ATP1)
Additional Hazard Statement(s): EUH032 >= 0.2 %
Reason for additional Hazards Statement(s):
14 Dec 2015 - EUH032 >= 0.2 % hazard statement sourced from: WM3, Table C12.2

barium oxide (EC Number: 215-127-9, CAS Number: 1304-28-5)

Description/Comments: Data from ECHA's C&L Inventory Database, Sigma Aldrich SDS dated 6/2/20
Data source: https://echa.europa.eu/information-on-chemicals/cl-inventory-database/-/discli/details/88825
Data source date: 02 Apr 2020
Hazard Statements: Acute Tox. 3 H301 , Skin Corr. 1B H314 , Eye Dam. 1 H318 , Acute Tox. 1 H332

arsenic (EC Number: 231-148-6, CAS Number: 7440-38-2)

CLP index number: 033-001-00-X
Description/Comments: Worst Case: IARC considers arsenic Group 1; Carcinogenic to humans
Data source: Regulation 1272/2008/EC - Classification, labelling and packaging of substances and mixtures. (CLP)
Additional Hazard Statement(s): Carc. 1A H350
Reason for additional Hazards Statement(s):
29 Sep 2015 - Carc. 1A H350 hazard statement sourced from: IARC Group 1 (23, Sup 7, 100C) 2012

lead compounds with the exception of those specified elsewhere in this Annex

CLP index number: 082-001-00-6
Description/Comments: Least-worst case: IARC considers lead compounds Group 2A; Probably carcinogenic to humans; Lead REACH Consortium, following CLP protocols, considers many simple lead compounds to be Carcinogenic category 2
Data source: Regulation 1272/2008/EC - Classification, labelling and packaging of substances and mixtures. (CLP)
Additional Hazard Statement(s): Carc. 2 H351
Reason for additional Hazards Statement(s):
03 Jun 2015 - Carc. 2 H351 hazard statement sourced from: IARC Group 2A (Sup 7, 87) 2006; Lead REACH Consortium www.reach-lead.eu/substanceinformation.html. Review date 29/09/2015

chromium(III) oxide (EC Number: 215-160-9, CAS Number: 1308-38-9)

Description/Comments: Data from ECHA's C&L inventory database
Data source: https://echa.europa.eu/information-on-chemicals/cl-inventory-database/-/discli/details/33806
Data source date: 30 Apr 2020
Hazard Statements: Acute Tox. 4 H302 , Skin Sens. 1 H317 , Eye Irrit. 2 H319

TPH (C6 to C40) petroleum group (CAS Number: TPH)

Description/Comments: Hazard statements taken from WM3 1st Edition 2015; Risk phrases: WM2 3rd Edition 2013
Data source: WM3 1st Edition 2015
Data source date: 25 May 2015
Hazard Statements: Flam. Liq. 3 H226 , Asp. Tox. 1 H304 , STOT RE 2 H373 , Muta. 1B H340 , Carc. 1B H350 , Repr. 2 H361d , Aquatic Chronic 2 H411

ethylbenzene (EC Number: 202-849-4, CAS Number: 100-41-4)

CLP index number: 601-023-00-4
Description/Comments:
Data source: Commission Regulation (EU) No 605/2014 – 6th Adaptation to Technical Progress for Regulation (EC) No 1272/2008. (ATP6)
Additional Hazard Statement(s): Carc. 2 H351
Reason for additional Hazards Statement(s):
03 Jun 2015 - Carc. 2 H351 hazard statement sourced from: IARC Group 2B (77) 2000

acenaphthylene (EC Number: 205-917-1, CAS Number: 208-96-8)

Description/Comments: Data from C&L Inventory Database
Data source: http://echa.europa.eu/web/guest/information-on-chemicals/cl-inventory-database
Data source date: 17 Jul 2015
Hazard Statements: Acute Tox. 4 H302 , Acute Tox. 1 H330 , Acute Tox. 1 H310 , Eye Irrit. 2 H319 , STOT SE 3 H335 , Skin Irrit. 2 H315

acenaphthene (EC Number: 201-469-6, CAS Number: 83-32-9)

Description/Comments: Data from C&L Inventory Database
Data source: http://echa.europa.eu/web/guest/information-on-chemicals/cl-inventory-database
Data source date: 17 Jul 2015
Hazard Statements: Eye Irrit. 2 H319 , STOT SE 3 H335 , Skin Irrit. 2 H315 , Aquatic Acute 1 H400 , Aquatic Chronic 1 H410 , Aquatic Chronic 2 H411

fluorene (EC Number: 201-695-5, CAS Number: 86-73-7)

Description/Comments: Data from C&L Inventory Database
Data source: http://echa.europa.eu/web/guest/information-on-chemicals/cl-inventory-database
Data source date: 06 Aug 2015
Hazard Statements: Aquatic Acute 1 H400 , Aquatic Chronic 1 H410

phenanthrene (EC Number: 201-581-5, CAS Number: 85-01-8)

Description/Comments: Data from C&L Inventory Database
Data source: http://echa.europa.eu/web/guest/information-on-chemicals/cl-inventory-database
Data source date: 06 Aug 2015
Hazard Statements: Acute Tox. 4 H302 , Eye Irrit. 2 H319 , STOT SE 3 H335 , Carc. 2 H351 , Skin Sens. 1 H317 , Aquatic Acute 1 H400 , Aquatic Chronic 1 H410 , Skin Irrit. 2 H315

anthracene (EC Number: 204-371-1, CAS Number: 120-12-7)

Description/Comments: Data from C&L Inventory Database
Data source: http://echa.europa.eu/web/guest/information-on-chemicals/cl-inventory-database
Data source date: 17 Jul 2015
Hazard Statements: Eye Irrit. 2 H319 , STOT SE 3 H335 , Skin Irrit. 2 H315 , Skin Sens. 1 H317 , Aquatic Acute 1 H400 , Aquatic Chronic 1 H410

fluoranthene (EC Number: 205-912-4, CAS Number: 206-44-0)

Description/Comments: Data from C&L Inventory Database
Data source: http://echa.europa.eu/web/guest/information-on-chemicals/cl-inventory-database
Data source date: 21 Aug 2015
Hazard Statements: Acute Tox. 4 H302 , Aquatic Acute 1 H400 , Aquatic Chronic 1 H410

pyrene (EC Number: 204-927-3, CAS Number: 129-00-0)

Description/Comments: Data from C&L Inventory Database; SDS Sigma Aldrich 2014
Data source: http://echa.europa.eu/web/guest/information-on-chemicals/cl-inventory-database
Data source date: 21 Aug 2015
Hazard Statements: Skin Irrit. 2 H315 , Eye Irrit. 2 H319 , STOT SE 3 H335 , Aquatic Acute 1 H400 , Aquatic Chronic 1 H410

indeno[123-cd]pyrene (EC Number: 205-893-2, CAS Number: 193-39-5)

Description/Comments: Data from C&L Inventory Database
Data source: http://echa.europa.eu/web/guest/information-on-chemicals/cl-inventory-database
Data source date: 06 Aug 2015
Hazard Statements: Carc. 2 H351

benzo[ghi]perylene (EC Number: 205-883-8, CAS Number: 191-24-2)

Description/Comments: Data from C&L Inventory Database; SDS Sigma Aldrich 28/02/2015
Data source: http://echa.europa.eu/web/guest/information-on-chemicals/cl-inventory-database
Data source date: 23 Jul 2015
Hazard Statements: Aquatic Acute 1 H400 , Aquatic Chronic 1 H410

coronene (EC Number: 205-881-7, CAS Number: 191-07-1)

Description/Comments: Data from C&L Inventory Database; no entries in Registered Substances or Pesticides Properties databases; SDS: Sigma Aldrich, 1907/2006 compliant, dated 2012 - no entries; IARC – Group 3, not carcinogenic.
Data source: http://clp-inventory.echa.europa.eu/SummaryOfClassAndLabelling.aspx?SubstanceID=17010&HarmOnly=no?fc=true&lang=en
Data source date: 16 Jun 2014
Hazard Statements: STOT SE 2 H371

polychlorobiphenyls; PCB (EC Number: 215-648-1, CAS Number: 1336-36-3)

CLP index number: 602-039-00-4
Description/Comments: Worst Case: IARC considers PCB Group 1; Carcinogenic to humans; POP specific threshold from ATP1 (Regulation 756/2010/EU) to POPs Regulation (Regulation 850/2004/EC). Where applicable, the calculation method laid down in European standards EN 12766-1 and EN 12766-2 shall be applied.
Data source: Regulation 1272/2008/EC - Classification, labelling and packaging of substances and mixtures. (CLP)
Additional Hazard Statement(s): Carc. 1A H350
Reason for additional Hazards Statement(s):
29 Sep 2015 - Carc. 1A H350 hazard statement sourced from: IARC Group 1 (23, Sup 7, 100C) 2012

monohydric phenols (CAS Number: P1186)

Description/Comments: Combined hazards statements from harmonised entries in CLP for phenol, cresols and xylenols (604-001-00-2, 604-004-00-9, 604-006-00-X)
Data source: CLP combined data
Data source date: 26 Mar 2019
Hazard Statements: Acute Tox. 3 H301 , Acute Tox. 3 H311 , Acute Tox. 3 H331 , Skin Corr. 1B H314 , Skin Corr. 1B H314 >= 3 %, Skin Irrit. 2 H315 1 £ conc. < 3 %, Eye Irrit. 2 H319 1 £ conc. < 3 %, Muta. 2 H341 , STOT RE 2 H373 , Aquatic Chronic 2 H411

Appendix B: Rationale for selection of metal species

boron {diboron trioxide; boric oxide}

Diboron trioxide used as the most hazardous species.

sulfur {sulfur}

chemtest reports Elemental sulfur using this CAS

cyanides {salts of hydrogen cyanide with the exception of complex cyanides such as ferrocyanides, ferricyanides and mercuric oxycyanide and those specified elsewhere in this Annex}

Available species

barium {barium oxide}

Chromium VII at limits of detection. Barium oxide used as the next most hazardous species. No chromate present.

cadmium {cadmium oxide}

Chromium VII at limits of detection. Cadmium oxide used as the next most hazardous species. No chromate present.

molybdenum {molybdenum(VI) oxide}

Worst case CLP species based on hazard statements/molecular weight.

antimony {antimony compounds, with the exception of the tetroxide (Sb2O4), pentoxide (Sb2O5), trisulphide (Sb2S3), pentasulphide (Sb2S5) and those specified elsewhere in this Annex}

Chromium VI at limits of detection. Antimony compounds used as the next most hazardous species. No chromate present.

arsenic {arsenic}

Worst Case Scenario

mercury {mercury}

Worst case CLP species based on hazard statements/molecular weight

nickel {nickel(II) oxide (nickel monoxide)}

Chromium VI at limits of detection. Nickel oxide used as the next most hazardous species. No chromate present.

lead {lead compounds with the exception of those specified elsewhere in this Annex}

Chromium VI at limits of detection. Lead compounds used as the next most hazardous species. No chromate present.

selenium {selenium compounds with the exception of cadmium sulphoselenide and those specified elsewhere in this Annex}

Harmonised group entry used as most reasonable case. Pigment cadmium sulphoselenide not likely to be present in this soil. No evidence for the other CLP entries: sodium selenite, nickel II selenite and nickel selenide, to be present in this soil.

zinc {zinc oxide}

Chromium VI at limits of detection. Zinc oxide used as the next most hazardous species. No chromate present.

chromium in chromium(III) compounds {chromium(III) oxide}

Reasonable case species based on hazard statements/molecular weight. Industrial sources include: tanning, pigment in paint, inks and glass

chromium in chromium(VI) compounds {chromium(VI) oxide}

Worst case CLP species based on hazard statements/molecular weight. Industrial sources include: production stainless steel, electroplating, wood preservation, anti-corrosion agents or coatings, pigments.

Appendix C: Version

HazWasteOnline Classification Engine: WM3 1st Edition v1.1, May 2018
HazWasteOnline Classification Engine Version: 2021.246.4869.9247 (05 Sep 2021)
HazWasteOnline Database: 2021.246.4869.9247 (05 Sep 2021)

This classification utilises the following guidance and legislation:
WM3 v1.1 - Waste Classification - 1st Edition v1.1 - May 2018
CLP Regulation - Regulation 1272/2008/EC of 16 December 2008
1st ATP - Regulation 790/2009/EC of 10 August 2009
2nd ATP - Regulation 286/2011/EC of 10 March 2011
3rd ATP - Regulation 618/2012/EU of 10 July 2012
4th ATP - Regulation 487/2013/EU of 8 May 2013
Correction to 1st ATP - Regulation 758/2013/EU of 7 August 2013
5th ATP - Regulation 944/2013/EU of 2 October 2013
6th ATP - Regulation 605/2014/EU of 5 June 2014
WFD Annex III replacement - Regulation 1357/2014/EU of 18 December 2014
Revised List of Waste 2014 - Decision 2014/955/EU of 18 December 2014
7th ATP - Regulation 2015/1221/EU of 24 July 2015
8th ATP - Regulation (EU) 2016/918 of 19 May 2016
9th ATP - Regulation (EU) 2016/1179 of 19 July 2016
10th ATP - Regulation (EU) 2017/776 of 4 May 2017
HP14 amendment - Regulation (EU) 2017/997 of 8 June 2017
13th ATP - Regulation (EU) 2018/1480 of 4 October 2018
14th ATP - Regulation (EU) 2020/217 of 4 October 2019
15th ATP - Regulation (EU) 2020/1182 of 19 May 2020
The Chemicals (Health and Safety) and Genetically Modified Organisms (Contained Use)(Amendment etc.) (EU Exit) Regulations 2019 - UK: 2019 No. 720 of 27th March 2019
The Chemicals (Health and Safety) and Genetically Modified Organisms (Contained Use)(Amendment etc.) (EU Exit) Regulations 2020 - UK: 2020 No. 1567 of 16th December 2020
The Waste and Environmental Permitting etc. (Legislative Functions and Amendment etc.) (EU Exit) Regulations 2020 - UK: 2020 No. 1540 of 16th December 2020
POPs Regulation 2019 - Regulation (EU) 2019/1021 of 20 June 2019

Appendix 9
Survey Data

Survey Data

Location	Irish Transverse Mercator		Elevation	Irish National Grid	
	Easting	Northing		Easting	Northing
Boreholes					
BH01	716933.204	729245.309	41.09	317007.864	229217.978
BH02	716986.715	729198.826	43.22	317061.387	229171.485
BH03	717144.075	729269.977	44.80	317218.780	229242.652
BH04	717285.890	729232.584	43.11	317360.625	229205.252
BH05	717343.692	729264.246	41.44	317418.440	229236.922
BH06	716933.111	729145.958	43.98	317007.772	229118.605
BH07	717074.689	729141.537	45.20	317149.380	229114.184
BH08	717225.402	729148.228	43.24	317300.125	229120.878
BH09	717318.053	729168.875	42.05	317392.796	229141.530
BH10	717262.520	729108.428	43.35	317337.252	229081.069
BH11	717138.431	729040.155	45.15	317213.137	229012.780
BH12	717237.096	729035.114	44.05	317311.823	229007.739
BH13	717291.629	729059.971	43.64	317366.367	229032.602
BH14	717342.431	729045.867	43.50	317417.180	229018.495
BH15	717190.833	728984.102	44.51	317265.550	228956.716
BH16	717118.126	728960.452	45.00	317192.828	228933.060
Trial Pits					
TP01	717085.526	729239.061	44.25	317160.218	229211.729
TP02	717251.172	729280.658	43.99	317325.899	229253.336
TP03	717329.636	729286.17	41.57	317404.38	229258.85
TP04	716953.047	729241.32	41.79	317027.711	229213.988
TP05	716922.392	729191.442	43.63	316997.05	229164.099
TP06	716961.576	729197.572	42.92	317036.242	229170.231
TP07	717300.745	729245.984	42.50	317375.483	229218.655
TP08	717339.782	729253.814	40.92	317414.529	229226.487
TP09	716960.867	729152.35	43.95	317035.533	229124.999
TP10	717000.196	729150.369	44.08	317074.871	229123.018
TP11	717039.859	729149.313	44.70	317114.542	229121.962
TP12	717073.856	729116.202	45.63	317148.547	229088.844
TP13	717131.226	729149.861	44.70	317205.929	229122.51
TP14	717202.755	729166.921	44.28	317277.473	229139.574
TP15	717288.936	729191.894	42.38	317363.672	229164.553
TP16	717317.117	729219.44	41.56	317391.859	229192.106
TP17	717200.401	729124.677	43.46	317275.119	229097.321
TP18	717217.891	729130.297	43.22	317292.613	229102.943
TP19	717253.959	729136.456	42.93	317328.688	229109.103
TP20	717097.828	729043.115	45.17	317172.525	229015.741

Survey Data

Location	Irish Transverse Mercator		Elevation	Irish National Grid	
	Easting	Northing		Easting	Northing
TP22	717191.571	729077.467	43.94	317266.288	229050.101
TP23	717249.227	729086.732	43.57	317323.956	229059.368
TP24	717267.34	729099.545	43.92	317342.073	229072.184
TP25	717124.211	729009.977	44.91	317198.914	228982.596
TP26	717162.543	729028.032	44.86	317237.254	229000.655
TP27	717196.339	729050.889	43.80	317271.057	229023.517
TP28	717273.304	729052.714	43.86	317348.038	229025.343
TP29	717324.76	729067.262	43.40	317399.505	229039.895
TP30	717136.958	728977.26	44.78	317211.664	228949.872
TP31	717176.242	728991.286	44.56	317250.956	228963.901
TP32	717215.982	729002.741	44.27	317290.705	228975.359
TP33	717251.879	729014.955	44.29	317326.609	228987.576
TP34	717290.009	729024.903	44.02	317364.747	228997.526
TP35	717329.846	729039.443	43.64	317404.593	229012.07
TP36	717307.779	729278.564	41.83	317382.519	229251.242
Soakaway Tests					
SA01	716955.538	729264.316	40.94	317030.202	229236.989
SA02	717269.769	729264.111	43.74	317344.501	229236.786
SA03	717183.254	729165.050	44.35	317257.968	229137.703
SA04	717165.320	728959.599	44.76	317240.032	228932.207
Foundation Pits					
FI01	716910.225	729174.568	43.93	316984.880	229147.221
FI03	717262.068	729304.529	42.86	317336.798	229277.213
FI04	717351.212	729223.666	40.78	317425.961	229196.333
FI05	717356.448	729080.664	43.13	317431.200	229053.300
FI06	717192.237	728958.320	44.56	317266.955	228930.928
FI07	717092.842	728976.654	44.97	317167.538	228949.265
FI08	717065.834	729097.195	45.25	317140.523	229069.832
Slit Trenches					
ST01 Start	717223.751	729038.943	44.03	317298.475	229011.569
ST01 End	717233.063	729044.609	43.89	317307.789	229017.236
ST02 Start	717249.249	729028.909	44.06	317323.978	229001.533
ST02 End	717256.341	729035.083	44.14	317331.072	229007.708
ST03 Start	717270.538	729000.305	44.46	317345.272	228972.923
ST03 End	717279.130	729007.121	43.24	317353.866	228979.740
California Bearing Ratio Tests					
CBR01	717262.758	729221.112	43.02	317337.489	229193.778
CBR02	717238.412	729197.823	42.78	317313.138	229170.483

Survey Data

Location	Irish Transverse Mercator		Elevation	Irish National Grid	
	Easting	Northing		Easting	Northing
CBR03	716964.625	729260.612	41.53	317039.291	229233.284
CBR04	717088.711	729150.830	45.03	317163.405	229123.479
CBR05	717095.856	729046.323	45.14	317170.552	229018.950
CBR06	717292.107	729077.311	43.52	317366.845	229049.946

Legend Key

- Locations By Type - CP
- Locations By Type - DP
- Locations By Type - ICBR
- Locations By Type - IP
- Locations By Type - OP
- Locations By Type - TP

Contract No:	5811
Contract Name:	Dundrum Central Development
Location:	Dundrum, Dublin 14
Client:	Land Development Agency
Engineer:	Barrett Mahony
Title:	Site Plan
Scale:	1:2250
Drawn By:	SL

Site Investigations Ltd
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GEOPHYSICAL SURVEY REPORT

Central Mental Hospital,

Churchtown Lower, Dundrum,

County Dublin

Date:
12/04/2021

Licence: 21R0015

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GEOPHYSICAL SURVEY SUMMARY SHEET
CHURCHTOWN LOWER, DUNDRUM, COUNTY DUBLIN

Site Name	Central Mental Hospital	**Ref No.**	21001
Townland	Churchtown Lower	**Licence No.**	21-R-0015
County	Dublin	**Licence Holder**	Joanna Leigh
ITM (centre)	E717205, N729028	**Purpose**	Pre-planning
Client	IAC Ltd.	**Reference No.**	N/A

Ground Conditions Survey was conducted in six predefined areas within the grounds of the Central Mental Hospital. Ground conditions were very good and comprised short grass.

Survey Type Detailed gradiometer survey totalling c. 4.5 hectares.

Summary of Results

The geophysical survey has successfully identified traces of a possible rectilinear enclosure, also identified in satellite imagery. The rectilinear response measures c.12m x 9m. No internal responses were recorded.

Broad responses within a clearly defined area are indicative of rubble material. Although this may be modern in origin, it is possible that a former building or structure is represented here.

The remains of two former field boundaries have been recorded within the dataset which correlate with those depicted on OS 6inch mapping. A possible additional field division is also evident. Series of parallel trends are indicative of historic ploughing activity and/or drainage features.

Field Staff Joanna Leigh & Susan Curran

Report Date	12/04/2021	**Report Authors**	Joanna Leigh & Susan Curran

Contents

Geophysical Survey Report
Churchtown Lower, Dundrum, County Dublin

1 Introduction

1.1 A geophysical survey has been conducted by J. M. Leigh Surveys Ltd. at a site at the Central Mental Hospital campus in the townland of Churchtown Lower, Dundrum, County Dublin. The survey was requested by IAC Ltd. and forms part of a wider pre-planning archaeological investigation.

1.2 The geophysical survey was conducted in all available green spaces within the campus of the hospital. In total, six areas (Areas A-F) were subject to a detailed gradiometer survey.

1.3 Area A lies to the west of the main buildings, adjacent to the entrance, Areas B and C lie to the south, and Areas D, E and F are located to the east. Figure 1 presents the site and survey location at a scale of 1:3,000.

1.4 There are no recorded monuments within the application area. The closest recorded monuments lie c. 560m to the south-west. These comprise of an 'Ecclesiastical enclosure' (DU022-016001), a 'Church' (DU022-016002), and a 'Graveyard' (DU022-016003) with two recorded 'Graveslabs' (DU022-016004 & DU022-016005).

1.5 An archaeological assessment by IAC Ltd. (Corbett, 2020) identified potential archaeological features in the northwest of the site. These were identified through a series of satellite images from 2016 and 2018. The images suggest the location of a large circular enclosure feature with a diameter of 25m, and up to seven further circular features that vary in diameter from 5-20. A sub-rectangular feature is depicted to the northeast of the larger possible enclosure. It is possible that all the features are archaeological in origin, although the smaller features may have been caused by fungus within the grass (Corbett, 2020).

1.6 The main aim of the survey was to investigate the potential archaeological features which were identified through satellite imagery and to identify any further responses which may represent previously unknown archaeological remains within the application area.

1.7 The detailed gradiometer survey was conducted under licence 21R0015 issued by the Department of Housing, Local Government and Heritage.

2 Survey ground conditions and further information

2.1 Geophysical survey was conducted in the available and suitable green spaces within the grounds of the Central Mental Hospital. Detailed gradiometer survey was undertaken in six areas (Areas A -F) and is presented in Figure 1 at a scale of 1:3,000.

2.2 Detailed survey Area A is located northwest in the area identified as of potential interest in the desk based archaeological study (Corbet 2020). Area A lies immediately inside the main entrance to the site. It is surrounded by the high perimeter wall on its western and southern sides and by substantial metal fencing in the northern corner. The area comprised short grass with some mature trees along the north-eastern extent. Manhole covers and services run along the eastern extent of the survey area.

2.3 Areas B is situated to the south of the site. It is bounded by the high perimeter wall along the west and south. Gravel and tarmac sports grounds lie immediately to the north. The western half of Area B comprised of a playing pitch with goalposts and metal benches. These have resulted in localised magnetic disturbance.

2.4 Area C lies immediately east of Area B, separated by metal fencing. The area is bounded by the high perimeter wall along its southern and eastern extents. Area C comprised of short grass.

2.5 Area D is located to the north of Area B. An orchard lies to the south and mature trees and flower beds were positioned around the perimeter.

2.6 Area E is located immediately north of Area C, separated by a small stream and tree-lined boundary. A temporary car park is located to the north of Area E.

2.7 Area F is situated in the north-eastern corner of the hospital grounds, immediately east of the main buildings. This area comprised short grass with outbuildings to the north. The south of Area F was inaccessible at the time of survey, containing long grass and several donkeys.

3 Survey Methodology

3.1 A detailed gradiometer survey detects subtle variations in the local magnetic field and measurements are recorded in nano-Tesla (nT). Some archaeological features such as ditches, large pits and fired features have an enhanced magnetic signal and can be detected through recorded survey.

3.2 Data was collected with a Bartington Grad 601-2 instrument. This is a specifically designed gradiometer for use in archaeological prospection. The gradiometer operates with a dual sensor capacity making survey fast and effective.

3.3 The instrument is calibrated in the field to ensure a constant high quality of data. Extremely sensitive, these instruments can detect variations in soil magnetism to 0.01nT, affording diverse application throughout a variety of archaeological, soil morphological and geological conditions.

3.4 All data was collected in 'zigzag' traverses. Grid orientation was positioned to best facilitate site work and ground conditions.

3.5 Data was collected with a sample interval of 0.25m and a traverse interval of 1m, providing 6400 readings per 40m x 40m grid. The survey grid was set out using a GPS VRS unit. Survey tie-in information is available upon request.

3.6 The survey methodology, data presentation and report content adheres to the European Archaeological Council (EAC) (2016) 'Guidelines for the use of Geophysics in Archaeology'.

4 Data display

4.1 A summary greyscale image and accompanying interpretation diagram are presented in Figures 2 and 3, at a scale of 1:1,500.

4.2 Numbers in parenthesis in the text refer to specific responses highlighted in the interpretation diagram (Figure 3).

4.3 Isolated ferrous responses highlighted in the interpretation diagram most likely represent modern ferrous litter and debris and are not of archaeological interest. These are not discussed in the text unless considered relevant.

4.4 The raw gradiometer data is presented in archive format in Appendix A1.01 and A1.02. The raw data is displayed as a greyscale image and xy-trace plot, both at a scale of 1:500. The archive plots are used to aid interpretation of the results and are used for reference only. They are available as PDF images upon request.

4.5 The display formats referred to above and the interpretation categories are discussed in the summary technical information section at the end of this report.

5 Survey Results

Area A

5.1 The perimeter of Area A is largely dominated by modern magnetic disturbance which may obscure more subtle archaeological responses. This is prominent in the south, which results from the adjacent flats, and along the eastern extent of survey where services are located.

5.2 Although the data is dominated by modern magnetic disturbance, a response (1) and trend are evident and form a rectilinear pattern measuring c.12m north to south and c.9m east to west. This corresponds with the location of a rectilinear cropmark which was identified on a 2016 Google satellite image (Corbett, 2020). This response may represent a rectilinear enclosure and is of potential archaeological interest.

5.3 Another response (2) measuring c.5m diameter forms a vague curvilinear pattern in the south of Area A. This response is less well-defined and may represent more recent activity. However, an archaeological interpretation must also be considered. It is possible that the remains of a small sub-circular ditched feature are represented here.

5.4 A series of parallel linear trends are evident in the western half of Area A. They are oriented approximately north/south and are indicative of agricultural activity, most likely historic ploughing activity. Some of the trends (3) are more prominent and may represent boundary divisions or drainage features.

Area B

5.5 Area B is also largely dominated by modern magnetic disturbance, particularly to the north where it is bordered by a gravelled sports area. The eastern half of Area B comprises of a sports playing field. Goal posts and benches have resulted in broad magnetic disturbance.

5.6 Within the playing pitch area, ground disturbance and landscaping activity have resulted in patches of heightened background responses (4). Within this, two faint linear trends (5) form a vague rectilinear pattern. It is speculated that these represent further modern ground disturbance and are not of archaeological interest. No clear archaeological pattern is evident.

5.7 Two linear responses (6) are evident at the northern and eastern extent of the playing pitch. These are consistent with the location of a former field boundary as depicted on the OS 6inch mapping. This also appears as a path or trackway on the OS 25inch mapping.

5.8 A negative linear response (7) runs approximately north/south to the east of (6). This may represent the remains of a former embanked or walled field boundary, although this is speculative.

5.9 A faint curvilinear trend (8) has been identified in the eastern half of the dataset, close to the boundary. This is poorly defined but may represent the remains of a former ditched feature. An archaeological interpretation is cautious, as it may equally represent more recent groundworks. No clear archaeological pattern is evident.

Area C

5.10 Area C is dominated by ferrous disturbance and areas of increased magnetic response which are likely to be modern in origin. These are not considered to be of archaeological potential.

5.11 A linear response (9) along the northern boundary of Area C is similar to (6) in Area B. This response may represent a continuation of the former boundary feature.

Area D

5.12 A linear response (10) runs approximately east/west across the northern half of Area D. This is consistent with the location of a former field boundary depicted on both the OS 6inch and 25inch maps. It currently runs adjacent and parallel to a hedgerow.

5.13 In the south of Area D, a modern services pipe is evident as a linear ferrous response.

5.14 Adjacent to the modern pipe, a short linear response (11) is evident. The magnetic signature of this response is suggestive of a ditched feature; however, it does not form a coherent pattern and an archaeological interpretation is unclear.

Area E

5.15 Area E comprises of modern disturbance and ferrous responses. No responses of interest were recorded.

Area F

5.16 The western half of Area F is dominated by numerous broad responses with large magnetic signatures, all located within a well-defined area of increased magnetic response (12). Although the responses may represent a spread of modern material, it is possible that a spread of rubble or structural material is represented here. It is speculated that the responses represent the remains of a former structure or building.

6 Conclusion

6.1 The Central Mental Hospital was established in 1850 and the grounds have undergone extensive landscaping in the intervening decades. Moreover, the requirement for modern services within the grounds to service the various buildings has also led to considerable ground disturbance. This has resulted in pockets of magnetic disturbance throughout the site, particularly around the perimeter, which may obscure more subtle archaeological responses.

6.2 The survey has identified traces of the possible rectilinear feature (1) which was noted on 2016 satellite imagery (Corbett, 2020). Although it is possible that this represents more recent landscaping activity, the response is indicative of a ditched feature and may be of archaeological interest.

6.3 The survey was inconclusive in relation to the large circular cropmark identified on the 2016 satellite imagery (Corbett, 2020). However, a small curvilinear response (2) does lie within this general area, albeit much smaller in scale. An archaeological interpretation of the response is unclear.

6.4 Plough trends and possible drainage features in Area A are indicative of former agricultural activity.

6.5 Areas B and D revealed two former field boundaries (6 & 9) which correspond with the location of field boundaries on OS 6inch mapping. A possible third boundary (7) has also been identified in Area B.

6.6 A possible ditched feature (Area D) and several poorly defined trends have been identified in the data. They do not form coherent patterns and may be the result of natural variations in the subsoil. An archaeological interpretation is cautious.

6.7 In Area F, broad responses within a well-defined area are of potential interest. Although these may represent modern disturbance, the responses are typical of rubble or structural material. It is speculated the remains of a former structure may be represented here.

6.8 Consultation with a licensed archaeologist and with the Department of Housing, Local Government and Heritage is recommended to establish if any additional archaeological works are required.

7 Technical Information Section

Instrumentation & Methodology

Detailed Gradiometer Survey

Detailed gradiometer survey can either be targeted across a specific area of interest or conducted as a blanket survey across an entire application area, often as a standalone methodology.

Sampling methodologies can vary but a typical survey is conducted with a sample interval of 0.25m and a traverse interval of 1m. This allows detection of potential archaeological responses. Data is often collected in grids measuring 40m x 40m, with the data displayed accordingly. A more detailed survey methodology may be applied where archaeological remains are thought likely. This can sometimes produce results with a more detailed resolution. A survey with a grid size of 20m x 20m and a traverse interval of 0.5m will provide a data set with high resolution.

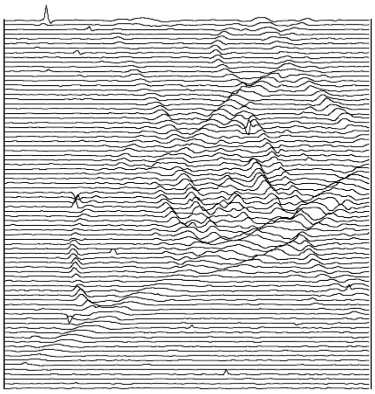
Bartington GRAD 601-2

The Bartington Grad 601-2 instrument is a specifically designed gradiometer for use in archaeological prospection. The gradiometer operates with a dual sensor capacity making survey very fast and effective. The sensors have a separation of 1m allowing greater sensitivity.

Frequent realignment of the instruments and zero drift correction ensure a constant high quality of data. Extremely sensitive, these instruments can detect variations in soil magnetism to 0.1nT, affording diverse application throughout a variety of archaeological, soil morphological and geological conditions.

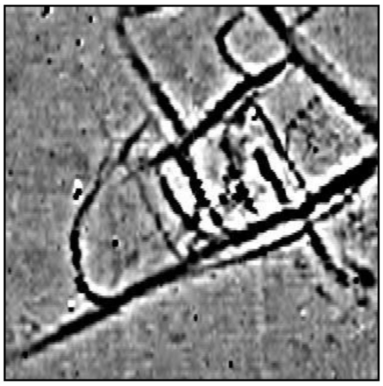
Gradiometer Data Display & Presentation

XY Trace



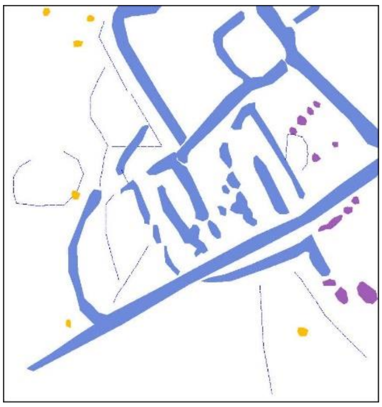
The data are presented as a series of linear traces, enabling a semi-profile display of the respective anomalies along the X and Y-axes. This display option is essential for distinguishing between modern ferrous materials (buried metal debris) and potential archaeological responses. The XY trace plot provides a linear display of the magnitude of the response within a given data set.

Greyscale*



As with dot density plots, the greyscale format assigns a cell to each datum according to its location on the grid. The display of each data point is conducted at very fine increments, allowing the full range of values to be displayed within the given data set. This display method also enables the identification of discrete responses that may be at the limits of instrument detection. In the summary diagrams processed, interpolated data is presented. Raw un-interpolated data is presented in the archive drawings along with the xy-trace plots.

Interpretation



An interpretation of the data is made using many of the plots presented in the final report, in addition to examination of the raw and processed data. The project managers' knowledge and experience allows a detailed interpretation of the survey results with respect to archaeological potential.

**XY Trace and raw greyscale plots are presented in archive form for display of the raw survey data. Summary greyscale images of the interpolated data are included for presentation purposes and to assist interpretation. The archive plots are provided as PDF images upon request.*

Glossary of Interpretation Terms

Categories of responses may vary for different data sets. The list below are the most commonly used categories for describing geophysical responses, as presented in the summary interpretation diagrams.

Archaeology

This category refers to responses which are interpreted as of clear archaeological potential and are supported by further archaeological evidence such as aerial photography or excavation. The term is generally associated with significant concentrations of former settlement, such as ditched enclosures, pits and associated features.

?Archaeology

This term corresponds to anomalies that display typical archaeological patterns where no record of comparative archaeological evidence is available. In some cases, it may prove difficult to distinguish between these and evidence of more recent activity also visible in the data.

Area of Increased Magnetic Response

These responses often lack any distinctive archaeological form, and it is therefore difficult to assign any specific interpretation. The resulting responses are site specific, possibly associated with concentrations of archaeological debris or more recent disturbance to underlying archaeological features.

Trend

This category refers to low-level magnetic responses barely visible above the magnetic background of the soil. Interpretation is tentative, as these anomalies are often at the limits of instrument detection.

Ploughing/Ridge & Furrow

Visible as a series of linear responses, these anomalies equate with recent or archaeological cultivation activity.

?Natural

A broad response resulting from localised natural variations in the magnetic background of the subsoil; presenting as broad amorphous responses most likely resulting from geological features.

Ferrous Response

These anomalies exhibit a typically strong magnetic response, often referred to as 'iron spikes,' and are the result of modern metal debris located within the topsoil.

Area of Magnetic Disturbance

This term refers to large-scale magnetic interference from existing services or structures. The extent of this interference may in some cases obscure anomalies of potential archaeological interest.

Bibliography

Corbett, G. (2000) '*Archaeological assessment at Central Mental Hospital, Dundrum Road, Dublin*' Unpublished archaeological report.

European Archaeological Council (EAC) (2016) '*Guidelines for the use of Geophysics in Archaeology*' by Armin Schmidt, Paul Linford, Neil Linford, Andrew David, Chris Gaffney, Apostolos Sarris and Jörg Fassbinder.

English Heritage (2008) '*Geophysical guidelines: Geophysical Survey in Archaeological Field Evaluation*.' Second Edition.

Gaffney, C. Gater, J. & Ovenden, S. (2006) '*The use of Geophysical Techniques in Archaeological Evaluations.*' IFA Paper No. 6.

Gaffney, C & Gater, J (2003). '*Revealing the buried past: Geophysics for Archaeologists*.' Tempus Publishing Limited.

National Soil Survey of Ireland (1980) *General soil map second edition (1:575,000)*. An Foras Taluntais.

List of Figures

Archive Data Supplied as a PDF Upon Request

Gradiometer survey | Buildings | Walled Garden | Donkey Paddock

0 metres 120

Client:	Project:	Title:		
IAC Ltd.	Geophysical Survey Churchtown Lower, Dundrum, County Dublin	Site & Survey Location	J.M. Leigh Surveys Ltd. www.jmlsurveys.com	Scale @ A4: 1:3,000 Figure: 1 Licence No.: 21R0015 Issue Date: 12.04.21

0 metres 60

Client: IAC Ltd.

Project: Geophysical Survey
Churchtown Lower,
Dundrum, County Dublin

Title: Summary Greyscale Image

J.M. Leigh Surveys Ltd.
www.jmlsurveys.com

Scale @ A3:	1:1,500
Figure:	2
Licence No.:	21R0015
Issue Date:	12.04.2021

Client: IAC Ltd.

Project: Geophysical Survey Churchtown Lower, Dundrum, County Dublin

Title: Summary Interpretation

J.M. Leigh Surveys Ltd.
www.jmlsurveys.com

Scale @ A3:	1:1,500
Figure:	3
Licence No.:	21R0015
Issue Date:	12.04.2021

IAC Archaeology

ARCHAEOLOGICAL ASSESSMENT AT CENTRAL MENTAL HOSPITAL, DUNDRUM ROAD, DUBLIN

LICENCE: 21E0610

I.T.M.: 717168, 729141

LICENCEE: MARC PIERA
AUTHOR: MARC PIERA

REPORT STATUS: FINAL
FEBRUARY 2022

IAC PROJECT REF.: J3676

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DOCUMENT CONTROL SHEET

DATE	DOCUMENT TITLE	REV.	PREPARED BY	REVIEWED BY	APPROVED BY
05.12.21	Archaeological Assessment at Central Mental Hospital, Dundrum Road, Dundrum, Dublin	0	Marc Piera	Tim Coughlan	Tim Coughlan

ABSTRACT

IAC Archaeology has prepared this report on to study the impact, if any, on the archaeological and historical resource of proposed development, which is located at Central Mental Hospital, Dundrum Road, Dublin (ITM 717168, 729141). The report was undertaken by Marc Piera of IAC Archaeology under licence 21E0610. An earlier pre-planning Archaeological Impact Assessment was caried out by IAC Archaeology in September 2020. A geophysical survey has been carried out by Joanna Leigh in April 2021 (21R0015).

Archaeological testing was carried out over the course of five days from 26th of October 2021 using a mechanical excavator fitted with a flat grading bucket. The trenches targeted geophysical anomalies and open green space to fully investigate the archaeological potential of the site. A total of 21 trenches (T1-5 and T23-38) were excavated. A further 17 trenches (T6-22) originally proposed for excavation were located in areas of current use for the Central Mental Hospital patients and were not excavated, however these were in areas that previous geophysics had indicated had no archaeological significance.

Testing revealed 5 areas of archaeological significance, which have been designated as Archaeological Areas AA1-AA5. These comprise two small enclosures dating to the post-medieval era (AA1-2), a kiln (AA3), an isolated pit (AA4) and a cluster of hearths with postholes (AA5).

It is recommended that the area of impact in AA1-AA5 should be preserved by record through full archaeological excavation. It is recommended that all ground disturbances associated with the proposed development be monitored by a suitably qualified archaeologist. If any features of archaeological potential are discovered during the course of the works further archaeological mitigation may be required, such as preservation in-situ or by record. Any further mitigation will require approval from the National Monuments Service of the DoHLGH.

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1 INTRODUCTION

1.1 GENERAL

The following report details the results of a programme of archaeological testing undertaken at Central Mental Hospital, Dundrum Road, Co. Dublin, prior to proposed development. This assessment has been carried out to ascertain the potential impact of the proposed development on the archaeological resource that may exist within the proposed development area. The assessment was undertaken by Marc Piera of IAC Archaeology (IAC), under Licence 21E0610, as issued by the National Monuments Service of the Department of Housing, Local Government and Heritage (DoHLGH)

Test trenching commenced at the site on 26th of October 2021 and continued for five days. This was carried out using a 13 tonne 360 degree tracked excavator, with a flat, toothless bucket, under strict archaeological supervision. A total of 21 trenches (T1-5 and T23-38) were excavated, measuring 973 linear metres in total. A further 17 trenches (T6-22) originally proposed for excavation were located in areas of current use for the Central Mental Hospital patients and were not excavated, however these were in areas that previous geophysics had indicated had no archaeological significance. This report follows on from an earlier pre-planning Archaeological Impact Assessment was caried out by IAC Archaeology in September 2020. A geophysical survey has been carried out by Joanna Leigh in April 2021 (21R0015).

Testing revealed 5 areas of archaeological significance, which have been designated as Archaeological Areas AA1-AA5. These comprise two small enclosures dating to the post-medieval times (AA1-2), a kiln (AA3), an isolated pit (AA4) and a cluster of hearths with postholes (AA5).

2 ARCHAEOLOGICAL AND HISTORICAL BACKGROUND

2.1 BACKGROUND

The proposed development area is located at the Central Mental Hospital campus, directly east of Dundrum Road, County Dublin. There are no recorded monuments located within the site, with the closest being the site of an ecclesiastical enclosure located c. 540m to the southwest (DU022-016001).

The proposed development area is surrounded by residential development on all sides, with a soccer pitch also located directly to the south. The site itself is occupied by a range of buildings associated with the Hospital at its northern end, with open green spaces at the east, west and south and a small formal garden towards the southeast (Figure 5).

2.2 SUMMARY OF PREVIOUS ARCHAEOLOGICAL FIELDWORK

A review of the Excavations Bulletin (1970–2019) has revealed that while no previous archaeological investigations have been carried out within the site boundary, seven have taken place within the study area.

Archaeological geophysical survey (Bolger and Harrison 2005, Licence Ref. 05R063) two phases of testing (Bolger and Harrison 2005, Licence Ref. 05E0847 and Lohan 2007, Licence Ref. 06E1153) and archaeological excavation (O'Donovan 2007, Licence Ref. 07E0116) at Notre Dame de Missions School, Dundrum c.650m south southwest of the proposed development area revealed remains of a partially truncated ditch dating to the early medieval period and associated with the ecclesiastical enclosure to the east (DU022-016001). The remains of a second ditch were also identified which is thought to date to the 12th-15th centuries (O'Donovan 2007 p.2). Subsequent archaeological monitoring for a renewed planning application in this area in 2017 did not reveal anything of archaeological significance (Bennett 2017:144, Licence Ref. 17E0308).

Nothing of archaeological significance was identified during monitoring on Churchtown Road, c. 540m south of the proposed development area (Bennett 2015:151, Licence Ref. 15E0231) or on Dundrum Main Street, c. 750m south of the site (Sheehan and Halpin 2012, Licence Ref. 12E219).

2.3 CARTOGRAPHIC ANALYSIS

Down Survey Map, Barony of Rathdown, Parish of Donnybrook and Taney, 1655-6

A castle is depicted in Dundrum, with a path leading from there to Milltown bridge to the north. The precise location of the proposed development area is not clear on this map.

John Rocque's Map of the City and County of Dublin, 1756 (Figure 2)

By the time of this map, it appears that the proposed development area is located across agricultural fields to the east of Dundrum Road and the Slang Stream. A paper mill is depicted along the Slang Stream, to the northwest of the site.

First Edition Ordnance Survey Map, 1837, scale 1:10,560 (Figure 2)

This is the first accurate historic mapping coverage of the area containing the proposed development area. The site is located across a number of agricultural fields to the east of Anna Villa and its associated demesne. There are no features of note located within the site boundary.

Ordnance Survey Map, 1872, scale 1:10,560 (Figure 3)

By the time of this map the Central Lunatic Asylum has been constructed at the northern end of the site, with associated formal gardens extending from the building southwards. The east and west sides of the site appear to be open ground.

Ordnance Survey Map, 1907, scale 1:2,500 (Figure 3)

By the time of this map there have been a number of additions to the Central Lunatic Asylum, including a Roman Catholic chapel to the west of the main building, extensions to the main building itself and the addition of a number of out buildings. A mortuary building is labelled at the northwest corner of the site, in the location of a smaller building recorded on the 1872 map. A new tree lined access road has been added which leads from Dundrum Road south eastwards towards the Asylum, while the formal gardens at the southern end of the site appear to have been removed.

2.4 SUMMARY OF GEOPHYSICAL RESULTS

Six Areas (A-D) were investigated during the geophysical survey in April 2021. The geophysical survey identified traces of possible penannular and rectilinear enclosures in Area A, that were previously identified in satellite imagery. The rectilinear response measures c.12m x 9m. No internal responses were recorded. Plough trends and possible drainage features in Area A are indicative of former agricultural activity.

Broad responses within a clearly defined area are indicative of rubble material. Although this may be modern in origin, it is possible that a former building or structure is represented here. The remains of two former field boundaries have been recorded in Areas B and D which correlate with those depicted on OS 6inch mapping. A possible additional field division is also evident in Area B. Also identified was a series of parallel trends are indicative of historic ploughing activity and/or drainage features.

2.5 AERIAL PHOTOGRAPHIC ANALYSIS

Inspection of the aerial photographic coverage of the proposed development area held by the Ordnance Survey (1995-2013), Google Earth (2005-2019), and Bing Maps (2020) revealed that the present structures on site have remained unchanged since at1995. The greenfield areas of the site contain a number of small garden areas, nature trees and larger open green spaces.

Satellite imagery from 2018 shows a circular enclosure feature with a diameter of 25m in the northwest corner of the site. The slightly earlier coverage from 2016 shows the same feature accompanied by at least seven other circular features that vary in diameter from 5-20m. A sub-rectangular feature is also depicted to the northeast.

2.6 TOPOGRAPHICAL FILES

Information on artefact finds from the study area in Dublin has been recorded by the National Museum of Ireland since the late 18th century. Location information relating to these finds is important in establishing prehistoric and historic activity in the study area. A review of the topographical files for the townland of Friarland, Co. Dublin has shown that there were no stray finds identified in the area.

3 ARCHAEOLOGICAL TESTING

3.1 GENERAL

Test trenching took place on 26 October 2021 and continued for five days, using a 13 tonne 360 degree tracked excavator equipped with a flat, toothless bucket under strict archaeological supervision. Any investigated deposits were preserved by record. This was by means of written, drawn and photographic records.

The site located in the Central Mental Hospital campus was divided in six green field areas -A, B, C, D, E and F (Figure 5). Archaeological testing was undertaken in areas C, D, E, F and western half of area A. A total of 21 trenches (T1-5 and T23-38) were excavated across the site measuring 973 linear metres (Figures 5-9, Plates 1-16). The eastern half of area A and area B were green areas in use for the Central Mental Hospital patients and were not investigated, with a total of 17 proposed trenches not excavated (T6-22).

The test trenches were excavated to determine, as far as reasonably possible, the location, extent, date, character, condition, significance and quality of any surviving archaeological remains threatened by the proposed development. Test trenching was also carried out to clarify the nature and extent of existing disturbance and intrusions and to assess the degree of archaeological survival in order to formulate further mitigation strategies. These are designed to reduce or offset the impact of the proposed development scheme.

3.2 TESTING RESULTS

Topsoil was generally a dark brown sandy clay reaching usually 0.4-0.5m in depth, but some varieties of depths were also recorded in individual trenches (see appendix 1).

The subsoil was broadly consistent across the site and generally consisting of a light brown silty clay with moderate small stone into. At the area A the subsoil was slightly sandy and with much gravel and cobble inclusion and occasional small boulders.

Detailed trench results are presented in Appendix 1 and relevant contexts in Appendix 2.

Archaeological Features

A total of 5 archaeological areas (AA1-AA5) were identified across the site. AA1-AA2 are located in the northwest (Area A) while AA3 is located in the centre (Area E) and AA4-AA5 in the northeast (Area F).

AA1

Two shallow linear features (C3 and C5) were identified in Trench 2. Small sherds of brown glazed pottery and red fabric pottery were observed from the fills, suggesting a post-medieval date. They identified features broadly correspond to the location of a curvilinear geophysical anomaly which was targeted in Trench 2. The plan of the geophysical anomaly indicates a penannular feature circa 4.5-5m in diameter. It is interpreted that may represent the a small post-medieval penannular enclosure of unknown function.

AA2

Two linear features (C7 and C9) were identified in Trench 4. Sherds of pottery were observed within the fills of the features suggesting a post-medieval date. Staffordshire slipware sherds (late 17th or early 18th Century in date) were identified in linear feature C9 and a tin glazed earthenware sherd pottery (18th Century) was identified in linear feature C7. The features broadly correspond to the location of the rectangular geophysical anomaly which was targeted in Trench 4. The plan of the geophysical anomaly shows a rectangular structure of 12m long by 9m wide. It may represent a post-medieval rectangular enclosure/building footing.

AA3

An isolated kiln (C11) was identified in Trench 29, at the north of the Area E. Remnants of scorched burnt clay was observed on the edges and base of the feature and substantial quantity of charcoal was evident in the fill (C12). It is interpreted as a kiln.

AA4

An isolated pit (C15) was identified in Trench 33, at the south of Area F. It was filled by dark silty clay with shattered orangish red burnt stones and substantial among of charcoal (C16). This fill consisted of material usually associated to *Fulacht fiadh*/Burnt mound site activity. This type of site usually comprises large spreads or low mound of pyrotechnic refuse material with a trough and pits around. While no associated mound was identified during testing there is a possibility of further Burnt Mound/*Fulacht fiadh* remains in the vicinity of the pit.

AA5

A cluster of small possible postholes and an area if *in situ* burning, possibly a hearth, were identified in Trench 34 at southwest of Area F. These features produced evidence of scorched burnt clay and charcoal and may indicate a localised area of burning activity.

Non-Archaeological Features

Test trenches T27, T28 and T28ext targeted a geophysical anomaly in the centre of the site (Area D). The geophysical anomaly shows a linear feature running north-south (Figures 4 and 8). The testing identified a linear feature (C13) running north-south in that location. It was investigated and being interpreted as a drainage or agricultural furrow, with no archaeological significance.

Three ditches C27, C29 and C31 were recorded in area F, at the northeast of site (Figure 9). These ditches were 2m wide and 0.5m in depth, with exception of ditch C27 which reach 1.1 m deep. They were filled by sterile sandy clays with gravel and interpreted as made for agricultural purpose. They may represent relict field boundaries or drainage ditches.

3.3 CONCLUSIONS

A total of 21 trenches were excavated from the 38 originally proposed trenches. The remaining 17 trenches located in areas of current use for the Central Mental Hospital patients and were not excavated, however these were in areas that previous geophysics had indicated had no archaeological significance (Figure 5).

Testing revealed 5 localised areas of archaeological significance, which have been designated as Archaeological Areas AA1-AA5. These comprise two small enclosures dating to the post-medieval period (AA1-2), a kiln (AA3), an isolated pit (AA4) and a cluster of postholes with a small possible hearth (AA5).

4 IMPACT ASSESSMENT AND MITIGATION STRATEGY

Impacts can be identified from detailed information about a project, the nature of the area affected and the range of archaeological resources potentially affected. Archaeological sites can be affected adversely in a number of ways: disturbance by excavation, topsoil stripping; disturbance by vehicles working in unsuitable conditions; and burial of sites, limiting access for future archaeological investigation.

4.1 IMPACT ASSESSMENT

- There will be an adverse impact on the identified archaeological features in AA1-AA5. This will be caused by ground disturbances associated with the proposed development, which will act to truncate or remove the archaeological remains.

- There may be an adverse impact on previously unrecorded archaeological features or deposits that have the potential to survive beneath the current ground level. This will be caused by ground disturbances associated with the proposed development.

4.2 MITIGATION

We recommend the following actions in mitigation of the impacts above.

- It is recommended that the areas of impact in AA1-AA5 should be preserved by record through full archaeological excavation. The work should be carried out under licence to the National Monuments Service of the DoHLGH.

- It is recommended that all ground disturbances associated with the proposed development be monitored by a suitably qualified archaeologist. If any features of archaeological potential are discovered during the course of the works further archaeological mitigation may be required, such as preservation *in-situ* or by record. Any further mitigation will require approval from the National Monuments Service of the DHLGH.

It is the developer's responsibility to ensure full provision is made available for the resolution of any archaeological remains, both on site and during the post excavation process, should that be deemed the appropriate manner in which to proceed.

Please note that all recommendations are subject to approval by the National Monuments Service of the Heritage and Planning Division, Department of Housing, Local Government and Heritage (DoHLGH).

5 REFERENCES

Bennett, I. (ed.) 1987-2010. Excavations: Summary Accounts of Archaeological Excavations in Ireland. Bray. Wordwell.

Corbett, G. (2000) 'Archaeological assessment at Central Mental Hospital, Dundrum Road, Dublin' Unpublished archaeological report.

Chartered Institute for Archaeologists. 2020a. Standards & Guidance for Field Evaluation.

Chartered Institute for Archaeologists. 2020b. Standards & Guidance for Archaeological Excavation.

Chartered Institution of Field Archaeologists. 2020c. Standards & Guidance for an Archaeological Watching Brief (Monitoring).

Department of Arts, Heritage, Gaeltacht and the Islands. 1999a. *Framework and Principles for the Protection of the Archaeological Heritage*. Government Publications Office, Dublin.

Department of Arts, Heritage, Gaeltacht and the Islands. 1999b. *Policy and Guidelines on Archaeological Excavation*. Government Publications Office, Dublin.

Environmental Protection Agency. 2017. *Draft Advice Notes on Current Practice (in the preparation of Environmental Impact Statements)*. Government Publications Office, Dublin.

Environmental Protection Agency. 2017. *Draft Guidelines on the Information to be Contained in Environmental Impact Statements*. Government Publications Office, Dublin.

National Monuments Service, Department of Culture, Heritage and the Gaeltacht. *Sites and Monuments Record*, County Dublin.

Leigh, J 2021. Geophysical Survey Report Central Mental Hospital, Churchtown Lower, Dundrum County Dublin. Unpublished report

National Museum of Ireland. *Topographical Files*, County Dublin.

CARTOGRAPHIC SOURCES

Down Survey Map, Barony of Rathdown, Parish of Donnybrook and Taney, 1655-6

John Rocque's Exact survey of the city and suburbs of Dublin, 1760

Ordnance Survey maps of County Dublin, 1837, 1872, 1911 and 1938

ELECTRONIC SOURCES

www.excavations.ie – Summary of archaeological excavation from 1970□2020.

www.archaeology.ie – DoHLGH website listing all SMR/RMP sites.

www.osiemaps.ie – Ordnance Survey aerial photographs dating to 1995, 2000, and 2005 and 6-inch/25-inch OS maps.

www.heritagemaps.ie – The Heritage Council web-based spatial data viewer which focuses on the built, cultural and natural heritage.

www.googleearth.com – Satellite imagery of the proposed development area.

www.bingmaps.com - Satellite imagery of the proposed development area.

APPENDICES

APPENDIX 1 TEST TRENCH RESULTS

TRENCH	LENGTH (m)	WIDTH (m)	DEPTH (m)	ORIENTATION	DETAILS
1	40	1.8	0.6	West–east	No archaeology found. Topsoil consisting of dark brown sandy clay. The natural subsoil consists of a mid-greyish brown gravel sand with cobbles
2	43	1.8	0.4	West-east	**Possible archaeology found**. Geophysical curvilinear anomaly was targeted at the west side of the trench. Two linear features C3 and C5 were identified in that specific location. Small fragments of pottery were observed within the fills of the features, suggesting a postmedieval chronology. It is interpreted as a small circular enclosure. Further shallow furrows and drains were observed across the trench. The natural subsoil consists in a mid-reddish brown sandy clay with gravel.
3	40	1.8	0.4	West-east	No archaeology found. Few shallow furrows and drains without archaeological significance were observed across the trench. The natural subsoil consists in a mid-reddish brown sandy clay with gravel.
4	20	1.8	0.35	West-east	Possible archaeology found. Geophysical rectangular anomaly was targeted at the centre of the trench. Two linear features C7 and C9 were identified in that specific location. Few fragments of pottery were observed within the fills of the features, suggesting a postmedieval chronology. It is interpreted as a rectangular enclosure. Further shallow furrows and drains were observed across the trench. The natural subsoil consists in a mid-reddish brown sandy clay with gravel and stones.
5	30	1.8	0.5-1	West-east	No archaeology found. A modern disturbance 1m deep was observed at the west side of the trench filled with rubble material, gravel, stone, red brick and modern pottery. The natural subsoil changes from the mid reddish brown sandy clay to a grey cobble gravel.
23	60	1.8	0.5	West-east	No archaeology found. Shallow furrows were observed across the trench. The natural subsoil consists of yellowish-brown silty clay with small stone.
24	60	1.8	0.5	West-east	No archaeology found. A stony drain and shallow furrows without archaeological significance were observed across the trench. The natural subsoil consists of yellowish-brown silty clay with small stone.
25	80	1.8	0.5	West-east	No archaeology found. A stony drain and shallow furrows without archaeological significance were observed across the trench. The natural subsoil consists of yellowish-brown silty clay with small stone.
26	60	1.8	0.5	West-east	No archaeology found. A stony drain and shallow furrow without archaeological significance were observed across the

TRENCH	LENGTH (m)	WIDTH (m)	DEPTH (m)	ORIENTATION	DETAILS
					trench. The natural subsoil consists of light brown silty clay with small stone.
27	27	1.8	0.5	West-east	No archaeology found. Targeting a geophysical anomaly at the eastern side of the trench. An agricultural drainage/furrow C13 was observed across the eastern side of the trench without archaeological significance. An iron pipe service was identified across the centre of the trench and modern rubble with concrete was observed at the western end of the trench. The natural subsoil consists of light orangish brown silty clay.
28	30	1.8	0.8	West-east	No archaeology found. Targeting a geophysical anomaly at the eastern side of the trench. An agricultural drainage/furrow C13 was observed in that location without archaeological significance. An iron pipe was identified at the centre of the trench and modern rubble with concrete at the western end of the trench. The natural subsoil consists of light yellowish brown silty clay with small stone.
28ext	10	1.8	0.5	West-east	No archaeology found. The trench was targeting the geophysical anomaly and an agricultural drainage/furrow C13 without archaeological significance was observed. The natural subsoil consists of light yellowish silty clay with small stone.
29	40	1.8	0.65	West-east	**Archaeology found.** An isolated kiln C11 was identified at the centre of the trench. It had scorched orangish red burnt clay and frequent charcoal within. The natural subsoil consists of light yellowish brown silty clay.
30	40	1.8	0.6	West-east	No archaeology found. The natural subsoil consists of light yellowish brown silty clay with stone.
31	40	1.8	0.4	West-east	No archaeology found. Small modern disturbances, possible tree bowls, were observed at the centre of the trench without archaeological significance. The natural subsoil consists of light brown silty clay.
32	18	1.8	1	West-east	No archaeology found. Few shallow furrows without archaeological significance were observed across the trench. The natural subsoil consists of light yellowish brown silty clay.
33	30	1.8	0.7	West-east	**Archaeology found**. An isolated pit C15 was recorded. Filled with dark brown silty clay with shattered burnt stones and frequent charcoal. It is interpreted as a pit probably related to the *fulacht fiadh* activity. The natural subsoil consists of light yellowish brown silty clay.
34	45	1.8	0.7	West-east	**Archaeology found**. A cluster of small hearths and postholes- C17-25 were identified at the western side of the trench. The hearths were defined by a scorched orangish red burnt clay with frequent charcoal and surrounded by small postholes. It is interpreted as a fire activity area. The natural consists of light yellowish brown silty clay.
35	50	1.8	0.7	West-east	No archaeology found. Small furrows across the trench and a modern disturbance at the western side of the trench were observed without archaeological significance. The modern disturbance was filled with a dark black sandy clay with frequent coal, red brick, stone and modern pottery, suggesting a possible rubble material or coal refuse deposit. The natural consists of light yellowish brown silty clay.

TRENCH	LENGTH (m)	WIDTH (m)	DEPTH (m)	ORIENTATION	DETAILS
36	70	1.8	0.8	West-east	No archaeology found. A linear feature C27 was identified running NW-SE reaching 1.6m deep and filled by bands of sterile sandy clay and sandy gravel. It may represent an agricultural ditch or natural stream. No archaeological significance was observed. A modern disturbance was identified at centre of the trench filled with black sandy clay with frequent coal and charcoal, suggesting a modern coal refuse deposit. The natural consists of light brown silty clay.
37	70	1.8	0.5	West-east	No archaeology found. A linear feature C29 across the trench at the eastern side. It was 2.2m wide and 0.5m deep, filled by mid brown sandy clay with gravel. Interpreted as an agricultural ditch without archaeological significance. Two modern disturbances about 2m long and reaching 1.3m deep were observed at the eastern side of the trench. Dark sandy clay deposits with frequent coal, charcoal and modern pottery were filing the disturbances, suggesting a modern coal refuse deposit. The natural consists of light brown silty clay.
38	70	1.8	0.7	West-east	No archaeology found. A linear feature C31 across the eastern side of the trench. It was 1.7m wide and 0.5m deep, filled with a mid-brown sandy clay. It is interpreted as agricultural ditch without archaeological significance. Two modern disturbances of 4 and 8m long were identified at the centre of the trench, one filled with black sandy clay with coal and the longer with rubble material as bricks and gravel with mortar. The natural consists of light brown silty clay with stone.

APPENDIX 2 CONTEXTS

CONTEXT NO.	TRENCH NO.	DESCRIPTION
1	T1-38	Topsoil. Mid brown sandy clay.
2	T1-38	Subsoil. Generally light brown silty clay with moderate small stone into along the site and sandy clay with cobble and gravel at area A.
3	T2	Linear feature orientated North-south with sloping sides and concave base. It was 0.45m wide, 0.14m deep and filled by C4. A sherd of pottery was observed suggesting a post-medieval chronology. It is considered as a part of the geophysical curvilinear anomaly. Interpreted as small circular enclosure. **Potential archaeology in AA1.**
4	T2	Fill of linear feature C3. Consist of a mid-grey sandy clay with animal bone, shell and charcoal inclusions. A tiny unglazed red fabric sherd of pottery was observed suggesting a post-medieval chronology. **Potential archaeology in AA1.**
5	T2	Linear feature orientated North-south with sloping sides and concave base. It was 0.7m wide, 0.21m deep and filled by C6. A sherd of pottery was observed suggesting a post-medieval chronology. It is considered as a part of the geophysical curvilinear anomaly.

		Interpreted as small circular enclosure. **Potential archaeology in AA1.**
6	T2	Fill of linear feature C5. Soft dark brown silty clay with charcoal and shells inclusions. A tiny brown glazed sherd of pottery was observed suggesting a postmedieval chronology. **Potential archaeology in AA1.**
7	T4	Linear feature orientated North-south with vertical sides and flat base. It was 1.4m wide, 0.25m deep and filled by C8. A sherd of pottery was observed suggesting a post-medieval chronology. It is considered as a part of the rectangular geophysical anomaly. Interpreted as a rectangular enclosure. **Potential archaeology in AA2.**
8	T4	Fill of linear feature C7. Soft mid brown silty clay with charcoal. A tin glazed earthenware sherd of pottery was observed suggesting a post-medieval chronology. **Potential archaeology in AA2.**
9	T4	Linear feature orientated North-south across the trench, with sloping sides and concave base. It was 0.5m wide, 0.1m deep and filled by C10. It is being identified as a part of the rectangular geophysical anomaly. Interpreted as a post-medieval enclosure. **Potential archaeology in AA2.**
10	T4	Fill of linear feature C9. Mid greyish sandy clay and charcoal. A Staffordshire slipware sherd of pottery was observed, suggesting a late 17 or 18 Century chronology. **Potential archaeology in AA2**
11	T29	Cut of kiln. It had an oval shape plan of 1.28m long, 0.8m wide and 0.1m deep. It had gradually sloping sides and flattish base. Scorched orangish red burnt clay was observed *in situ* at the edges. Interpreted as a kiln. **Archaeology in AA3.**
12	T29	Fill of kiln C11. It consists of dark brown silty clay with frequent charcoal and with orangish red burnt clay inclusion. **Archaeology in AA3.**
13	T27-28	Linear feature orientated North-south across trenches 27, 28 and 28 ext. Located at around geophysical anomaly. It was identified along 20m long, 0.6-1.2m wide and 0.12m deep. Filled by C14. Interpreted as an agricultural drainage or furrow. No archaeological significance.
14	T27-28	Fill of linear feature C13. Light greyish brown silty clay with moderate charcoal inclusion. No archaeological significance.
15	T33	Isolated circular pit of 1.3m in diameter, 0.15m depth and filled by C16. Probably associated with *fulacht fiadh* activity as filled shattered burnt stones and charcoal. **Archaeology in AA4.**
16	T33	Fill of pit C15. Dark brown-black silty clay with frequent charcoal and shattered burnt stone inclusion. The type of material relates to a *fulacht fiadh* deposit. **Archaeology in AA4.**
17	T34	Cut of posthole. It was a circular pit of 0.19 m in diameter and 0.07m of depth. It had vertical sides and concave base. Filled by C18. **Archaeology in AA5.**
18	T34	Fill of posthole C17. Dark silty clay with charcoal and burnt clay. **Archaeology in AA5.**
19	T34	Cut of posthole. It was a circular pit of 0.18m in diameter and 0.1m of depth. It had vertical sides and concave base. Filled by C20. **Archaeology in AA5**.

20	T34	Fill of posthole C19. Dark silty clay with charcoal and burnt clay. **Archaeology in AA5.**
21	T34	Cut of hearth. It had a L shape plan orientated West-east with 0.9m long, 0.4m wide and 0.2m deep. Filled by C22. **Archaeology in AA5.**
22	T34	Fill of hearth C21. Dark brown silty clay with frequent charcoal and scorched orangish red burnt clay. **Archaeology in AA5.**
23	T34	Cut of hearth. It had a circular shape of 0.65m in diameter and 0.07m of depth. Filled by C24. **Archaeology in AA5.**
24	T34	Fill of hearth C23. Reddish burnt clay and mid brown silty clay with frequent charcoal. **Archaeology in AA5.**
25	T34	Cut of posthole. It was a circular pit of 0.29m in diameter and 0.06m in depth. It had vertical sides and flat base. Filled by C26. **Archaeology in AA5.**
26	T34	Fill of posthole C25. Mid brown silty clay with occasional charcoal inclusions. **Archaeology in AA5.**
27	T36	Cut of linear feature running NW-SE across the trench. It was 2m wide and 1.6m deep measuring from the topsoil. It had sloping sides and concave base. Filled by C28. Interpreted as agricultural ditch or natural stream. No archaeological significance.
28	T36	Fill of linear feature C27. Bands of sterile brown sandy clay with gravel. No archaeological significance.
29	T37	Cut of linear feature running North-south across trench. It was 2.2m wide and 0.5m deep. It had sloping sides and slightly concave base. Filled by C30. Interpreted as agricultural ditch. No archaeological significance.
30	T37	Fill of linear feature C29. Mid brown sandy clay with gravel and occasional charcoal. No archaeological significance.
31	T38	Cut of linear feature running North-south across trench. It was 1.7m wide and 0.5m deep. It had sloping sides and slightly concave base. Filled by C32. Interpreted as agricultural ditch. No archaeological significance.
32	T38	Fill of linear feature. Mid brown soft sandy clay with occasional shell. No archaeological significance.

APPENDIX 3 RMP SITES WITHIN THE SURROUNDING AREA

SMR NO.	DU022-016001
RMP STATUS	Yes
LOCATION	Churchtown Road Upper
PARISH	Taney
BARONY	Rathdown
I.T.M.	716838, 728402
CLASSIFICATION	Ecclesiastical Enclosure
DIST. FROM DEVELOPMENT	c. 540m southwest
DESCRIPTION	The present St. Nahi's Church of Ireland (1760) at Taney occupies the site of an earlier church (DU022-016002-). A raised graveyard lies S of the present church (DU022-016003-). The ground falls away steeply to the NW and SW. Within the interior of the graveyard there is a distinct fall (D 3m), a berm with a further fall (5m) to the surrounding ground level. The distinct curvature in the SW section of the graveyard boundary may indicate the line of an early ecclesiastical enclosure. An Early Christian grave slab was recently exposed in the graveyard, fragments of which are kept in the present church(DU022-016005-).
REFERENCE	www.archaeology.ie/ SMR file

SMR NO.	DU022-016003
RMP STATUS	Yes
LOCATION	Churchtown Road Upper
PARISH	Taney
BARONY	Rathdown
I.T.M.	716849, 728407
CLASSIFICATION	Graveyard
DIST. FROM DEVELOPMENT	c. 540m southwest
DESCRIPTION	A raised graveyard lies S of the present church (DU022-016002-). The ground falls away steeply to the NW and SW. Within the interior of the graveyard there is a distinct fall (D 3m), a berm with a further fall (5m) to the surrounding ground level.
REFERENCE	www.archaeology.ie/ SMR file

SMR NO.	DU022-016005
RMP STATUS	Yes
LOCATION	Churchtown Road Upper
PARISH	Taney
BARONY	Rathdown
I.T.M.	716827, 728428

CLASSIFICATION	Grave slab
DIST. FROM DEVELOPMENT	c.570m southwest
DESCRIPTION	Found in 2004 in the SW quadrant of the graveyard (DU022-016003-) (Swords, K. ed. 2009, 100). Comprises a portion of a Rathdown slab (L 0.70m, Wth 0.44m, T 0.15m). Decorated with a flat-bottomed cup-mark enclosed by three concentric circles. Three shallow lines radiate from the outer circle to the end of the slab. At the broken end there is part of an arc of a circle. The slab is located in St. Nahi's church
REFERENCE	www.archaeology.ie/ SMR file

SMR NO.	DU022-016004
RMP STATUS	Yes
LOCATION	Churchtown Road Upper
PARISH	Taney
BARONY	Rathdown
I.T.M.	716827, 728428
CLASSIFICATION	Grave slab
DIST. FROM DEVELOPMENT	c.570m southwest
DESCRIPTION	An Early Christian grave slab was recently exposed in the graveyard, fragments of which are kept in the present St Nahi's church (L1.64m, Wth 0.46m, T 011-12m). The slab features an incised Saltire (?) cross formed by two sets of three lines radiating from a central cup mark. The central cup mark is quite faint (D 0.05m) (Corlett 220, 139-143).
REFERENCE	www.archaeology.ie/ SMR file

SMR NO.	DU022-016002
RMP STATUS	Yes
LOCATION	Churchtown Road Upper
PARISH	Taney
BARONY	Rathdown
I.T.M.	716818, 728414
CLASSIFICATION	Church
DIST. FROM DEVELOPMENT	c.580m southwest
DESCRIPTION	The present St. Nahi's Church of Ireland church (1760) at Taney occupies the site of an earlier church. Ball notes the association of this early church with St. Ossian and St. Lucan (1900, 191-192).
REFERENCE	www.archaeology.ie/ SMR file

SMR NO.	DU022-004006
RMP STATUS	Yes
LOCATION	Churchtown Road Upper
PARISH	Taney

BARONY	Rathdown
I.T.M.	716770, 730232
CLASSIFICATION	Mill – unclassified
DIST. FROM DEVELOPMENT	c. 920m north northwest
DESCRIPTION	A Deed dated 1718 mentions an ancient mill race and watercourse that leads to an iron mill at Milltown (pers comm. Rob Goodbody). Remains of an iron mill survive in the grounds of the last terraced house in Mill Lane at Bankside cottages. The mill pond has been largely back-filled for use as a car park but a portion of the mill pond is still extant. A mill race led to this mill from the Slang river at windy Arbour.
REFERENCE	www.archaeology.ie/ SMR file

SMR NO.	DU022-004006
RMP STATUS	Yes
LOCATION	Dundrum Road
PARISH	Taney
BARONY	Rathdown
I.T.M.	
CLASSIFICATION	Mill – unclassified
DIST. FROM DEVELOPMENT	c. 920m north northwest
DESCRIPTION	
REFERENCE	www.archaeology.ie/ SMR file

SMR NO.	DU022-004003
RMP STATUS	Yes
LOCATION	Dundrum Road
PARISH	Taney
BARONY	Rathdown
I.T.M.	716730, 730238
CLASSIFICATION	Water Mill – unclassified
DIST. FROM DEVELOPMENT	c. 925m north northwest
DESCRIPTION	In 1724 the owner of the brass mill (DU022-004002-) allowed a paper maker to construct a paper mill alongside his brass mill and to share the water supply at Bankside cottages.
REFERENCE	www.archaeology.ie/ SMR file

SMR NO.	DU022-097
RMP STATUS	Yes
LOCATION	Churchtown Road Lower
PARISH	Taney
BARONY	Rathdown

I.T.M.	716322, 730042
CLASSIFICATION	Bridge
DIST. FROM DEVELOPMENT	c. 940m northwest
DESCRIPTION	No information available
REFERENCE	www.archaeology.ie/ SMR file

SMR NO.	DU022-004002
RMP STATUS	Yes
LOCATION	Dundrum Road
PARISH	Taney
BARONY	Rathdown
I.T.M.	716733, 730241
CLASSIFICATION	Water Mill – unclassified
DIST. FROM DEVELOPMENT	c. 940m north northwest
DESCRIPTION	A deed of 1724 mentions a brass mill between Mill Lane and the Dodder at Bankside Cottages (pers comm. Rob Goodbody).
REFERENCE	www.archaeology.ie/ SMR file

SMR NO.	DU022-004001
RMP STATUS	Yes
LOCATION	Dundrum Road
PARISH	Taney
BARONY	Rathdown
I.T.M.	716730, 730245
CLASSIFICATION	Bridge
DIST. FROM DEVELOPMENT	c. 950m north northwest
DESCRIPTION	The present bridge at Milltown occupies the site of an earlier bridge that spanned the river Dodder. It is shown on the Down Survey (1655-6) map. This earlier was replaced by one of granite in relatively recent past. This bridge spans the River Dodder from the present Milltown Bridge. Both the central pier and its two abutments are founded on rock. Built of rubble masonry, randomly coursed with well-cut ashlar blocks. The arches are round with a cut-water on the S side. Along the parapet is a barrel-vaulted machiolation type step out. The parapets were repaired in the mid-18th century and further repairs undertaken in 1973 (Ball 1903, 2, 110-111; O'Keefe & Simington 1991, 211-214).
REFERENCE	www.archaeology.ie/ SMR file

APPENDIX 4 LEGISLATION PROTECTING THE ARCHAEOLOGICAL RESOURCE

PROTECTION OF CULTURAL HERITAGE

The cultural heritage in Ireland is safeguarded through national and international policy designed to secure the protection of the cultural heritage resource to the fullest possible extent (Department of Housing, Local Government and Heritage 1999, 35). This is undertaken in accordance with the provisions of the *European Convention on the Protection of the Archaeological Heritage* (Valletta Convention), ratified by Ireland in 1997.

THE ARCHAEOLOGICAL RESOURCE

The *National Monuments Act 1930 to 2014* and relevant provisions of the *National Cultural Institutions Act 1997* are the primary means of ensuring the satisfactory protection of archaeological remains, which includes all man-made structures of whatever form or date except buildings habitually used for ecclesiastical purposes. A National Monument is described as 'a monument or the remains of a monument the preservation of which is a matter of national importance by reason of the historical, architectural, traditional, artistic or archaeological interest attaching thereto' (National Monuments Act 1930 Section 2). A number of mechanisms under the National Monuments Act are applied to secure the protection of archaeological monuments. These include the Register of Historic Monuments, the Record of Monuments and Places, and the placing of Preservation Orders and Temporary Preservation Orders on endangered sites.

OWNERSHIP AND GUARDIANSHIP OF NATIONAL MONUMENTS

The Minister may acquire national monuments by agreement or by compulsory order. The state or local authority may assume guardianship of any national monument (other than dwellings). The owners of national monuments (other than dwellings) may also appoint the Minister or the local authority as guardian of that monument if the state or local authority agrees. Once the site is in ownership or guardianship of the state, it may not be interfered with without the written consent of the Minister.

REGISTER OF HISTORIC MONUMENTS

Section 5 of the 1987 Act requires the Minister to establish and maintain a Register of Historic Monuments. Historic monuments and archaeological areas present on the register are afforded statutory protection under the 1987 Act. Any interference with sites recorded on the register is illegal without the permission of the Minister. Two months' notice in writing is required prior to any work being undertaken on or in the vicinity of a registered monument. The register also includes sites under Preservation Orders and Temporary Preservation Orders. All registered monuments are included in the Record of Monuments and Places.

PRESERVATION ORDERS AND TEMPORARY PRESERVATION ORDERS

Sites deemed to be in danger of injury or destruction can be allocated Preservation Orders under the 1930 Act. Preservation Orders make any interference with the site illegal. Temporary Preservation Orders can be attached under the 1954 Act. These perform the same function as a Preservation Order but have a time limit of six months, after which the situation must be reviewed. Work may only be undertaken on or in the vicinity of sites under Preservation Orders with the written consent, and at the discretion, of the Minister.

RECORD OF MONUMENTS AND PLACES

Section 12(1) of the 1994 Act requires the Minister for Arts, Heritage, Gaeltacht and the Islands (now the Minister for Housing, Local Government and Heritage) to establish and maintain a record of monuments and places where the Minister believes that such monuments exist. The record comprises a list of monuments and relevant places and a map/s showing each monument and relevant place in respect of each county in the state. All sites recorded on the Record of Monuments and Places receive statutory protection under the National Monuments Act 1994. All recorded monuments on the proposed development site are represented on the accompanying maps.

Section 12(3) of the 1994 Act provides that 'where the owner or occupier (other than the Minister for Housing, Local Government and Heritage) of a monument or place included in the Record, or any other person, proposes to carry out, or to cause or permit the carrying out of, any work at or in relation to such a monument or place, he or she shall give notice in writing to the Minister of Housing, Local Government and Heritage to carry out work and shall not, except in case of urgent necessity and with the consent of the Minister, commence the work until two months after giving of notice'.

Under the National Monuments (Amendment) Act 2004, anyone who demolishes or in any way interferes with a recorded site is liable to a fine not exceeding €3,000 or imprisonment for up to 6 months. On summary conviction and on conviction of indictment, a fine not exceeding €10,000 or imprisonment for up to 5 years is the penalty. In addition, they are liable for costs for the repair of the damage caused.

In addition to this, under the *European Communities (Environmental Impact Assessment) Regulations 1989,* Environmental Impact Statements (EIS) are required for various classes and sizes of development project to assess the impact the proposed development will have on the existing environment, which includes the cultural, archaeological and built heritage resources. These document's recommendations are typically incorporated into the conditions under which the proposed development must proceed, and thus offer an additional layer of protection for monuments which have not been listed on the RMP.

THE PLANNING AND DEVELOPMENT ACT 2000

Under planning legislation, each local authority is obliged to draw up a Development Plan setting out their aims and policies with regard to the growth of the area over a five-year period. They cover a range of issues including archaeology and built heritage, setting out their policies and objectives with regard to the protection and enhancement of both. These policies can vary from county to county. The Planning and Development Act 2000 recognises that proper planning and sustainable development includes the protection of the archaeological heritage. Conditions relating to archaeology may be attached to individual planning permissions.

Dún Laoghaire-Rathdown County Development Plan, 2016-2022

The development plan contains the following policies with regard to the archaeological resource:

AH 1 Protection of Archaeological Heritage – It is Council policy to protect archaeological sites, national Monuments (and their setting), which have been identified in the Record of Monuments and Places (RMP), whilst at the same time reviewing and assessing the feasibility of improving public accessibility to the sites and monuments under the direct ownership or control of the Council or the state.

AH 2 Protection of Archaeological Material in-situ - It is Council policy to seek the preservation in-situ (or as a minimum, preservation by record) of all archaeological monuments included in the Record of Monuments and Places, and of previously unknown sites, features and objects of archaeological interest that become revealed through development activity. In respect of decision making on development proposals affecting sites listed in the Record of Monuments and Places, the Council will have regards to the advice and/or recommendations of the Department of the Environment, Heritage and Local Government (now Department of Arts, Heritage and the Gaeltacht).

AH 3 Protection of Historic Towns – It is Council policy to protect the Historic town of Dalkey as identified by the Department of the Environment, Heritage and Local Government (now Department of Arts, Heritage and the Gaeltacht).

AH 4 Designation of Archaeological Landscapes – It is Council policy to identify, designate and protect Archaeological landscapes in co-operation with relevant government departments.

AH 5 Historic Burial Grounds – It is Council policy to protect historic burial grounds within the County and encourage their maintenance in accordance with good conservation practice.

AH 6 Underwater Archaeology – It is Council policy for all developments, which have the potential to impact on riverine, inter-tidal and sub-tidal environments to require an archaeological assessment prior to works being carried out.

APPENDIX 5 IMPACT ASSESSMENT & THE CULTURAL HERITAGE RESOURCE

POTENTIAL IMPACTS ON ARCHAEOLOGICAL AND HISTORICAL REMAINS

Impacts are defined as 'the degree of change in an environment resulting from a development' (Environmental Protection Agency 2003: 31). They are described as profound, significant or slight impacts on archaeological remains. They may be negative, positive or neutral, direct, indirect or cumulative, temporary or permanent.

Impacts can be identified from detailed information about a project, the nature of the area affected and the range of archaeological and historical resources potentially affected. Development can affect the archaeological and historical resource of a given landscape in a number of ways.

- Permanent and temporary land-take, associated structures, landscape mounding, and their construction may result in damage to or loss of archaeological remains and deposits, or physical loss to the setting of historic monuments and to the physical coherence of the landscape.

- Archaeological sites can be affected adversely in a number of ways: disturbance by excavation, topsoil stripping and the passage of heavy machinery; disturbance by vehicles working in unsuitable conditions; or burial of sites, limiting accessibility for future archaeological investigation.

- Hydrological changes in groundwater or surface water levels can result from construction activities such as de-watering and spoil disposal, or longer-term changes in drainage patterns. These may desiccate archaeological remains and associated deposits.

- Visual impacts on the historic landscape sometimes arise from construction traffic and facilities, built earthworks and structures, landscape mounding and planting, noise, fences and associated works. These features can impinge directly on historic monuments and historic landscape elements as well as their visual amenity value.

- Landscape measures such as tree planting can damage sub-surface archaeological features, due to topsoil stripping and through the root action of trees and shrubs as they grow.

- Ground consolidation by construction activities or the weight of permanent embankments can cause damage to buried archaeological remains, especially in colluviums or peat deposits.

- Disruption due to construction also offers in general the potential for adversely affecting archaeological remains. This can include machinery, site offices, and service trenches.

Although not widely appreciated, positive impacts can accrue from developments. These can include positive resource management policies, improved maintenance and access to archaeological monuments, and the increased level of knowledge of a site or historic landscape as a result of archaeological assessment and fieldwork.

PREDICTED IMPACTS

The severity of a given level of land-take or visual intrusion varies with the type of monument, site or landscape features and its existing environment. Severity of impact can be judged taking the following into account:

- The proportion of the feature affected and how far physical characteristics fundamental to the understanding of the feature would be lost;

- Consideration of the type, date, survival/condition, fragility/vulnerability, rarity, potential and amenity value of the feature affected;

- Assessment of the levels of noise, visual and hydrological impacts, either in general or site-specific terms, as may be provided by other specialists.

APPENDIX 6 MITIGATION MEASURES & THE CULTURAL HERITAGE RESOURCE

POTENTIAL MITIGATION STRATEGIES FOR CULTURAL HERITAGE REMAINS

Mitigation is defined as features of the design or other measures of the proposed development that can be adopted to avoid, prevent, reduce or offset negative effects.

The best opportunities for avoiding damage to archaeological remains or intrusion on their setting and amenity arise when the site options for the development are being considered. Damage to the archaeological resource immediately adjacent to developments may be prevented by the selection of appropriate construction methods. Reducing adverse effects can be achieved by good design, for example by screening historic buildings or upstanding archaeological monuments or by burying archaeological sites undisturbed rather than destroying them. Offsetting adverse effects is probably best illustrated by the full investigation and recording of archaeological sites that cannot be preserved *in situ*.

DEFINITION OF MITIGATION STRATEGIES

ARCHAEOLOGICAL RESOURCE

The ideal mitigation for all archaeological sites is preservation *in situ*. This is not always a practical solution, however. Therefore, a series of recommendations are offered to provide ameliorative measures where avoidance and preservation *in situ* are not possible.

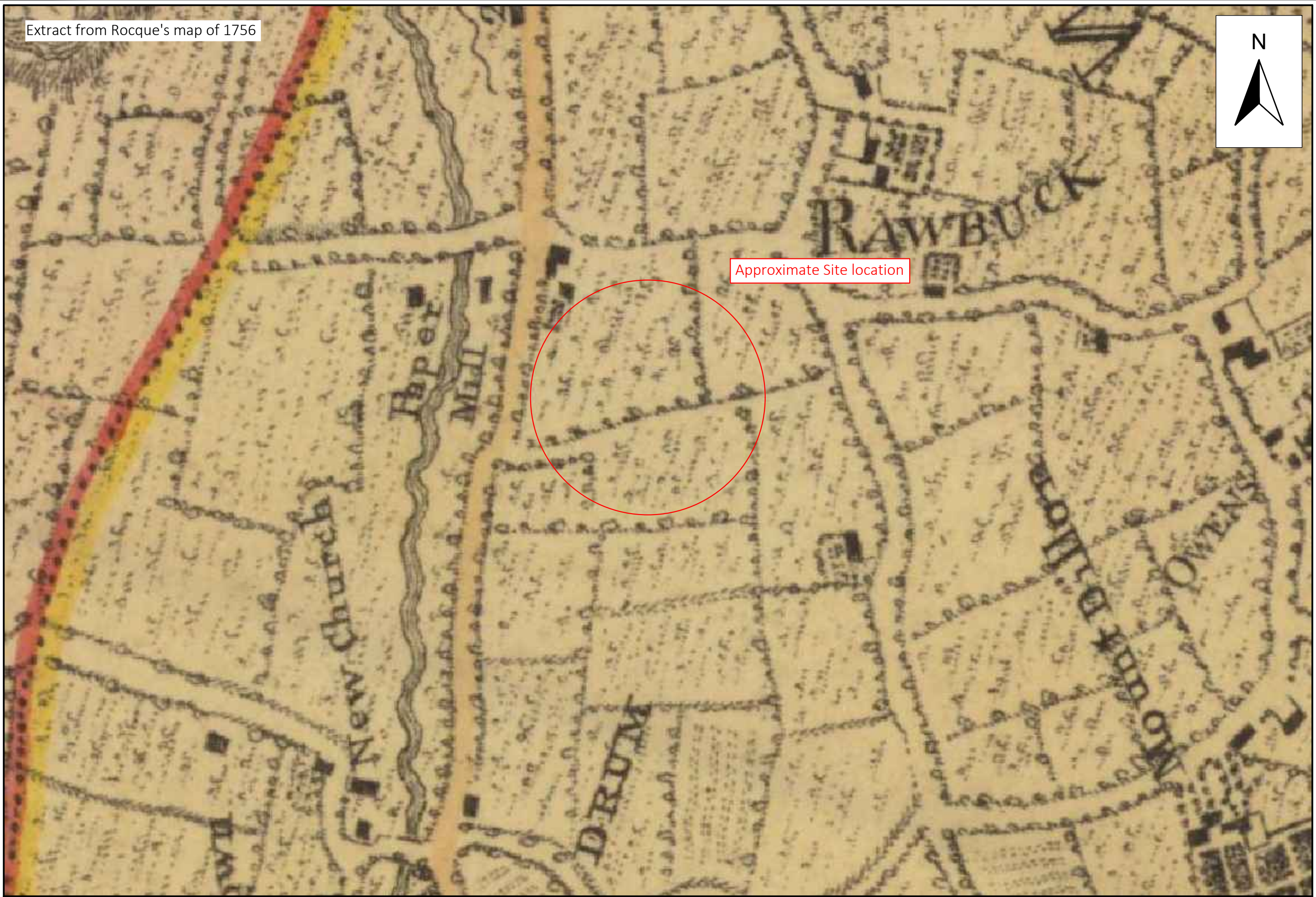
Full Archaeological Excavation involves the scientific removal and recording of all archaeological features, deposits and objects to the level of geological strata or the base level of any given development. Full archaeological excavation is recommended where initial investigation has uncovered evidence of archaeologically significant material or structures and where avoidance of the site is not possible. (CIfA 2014b)

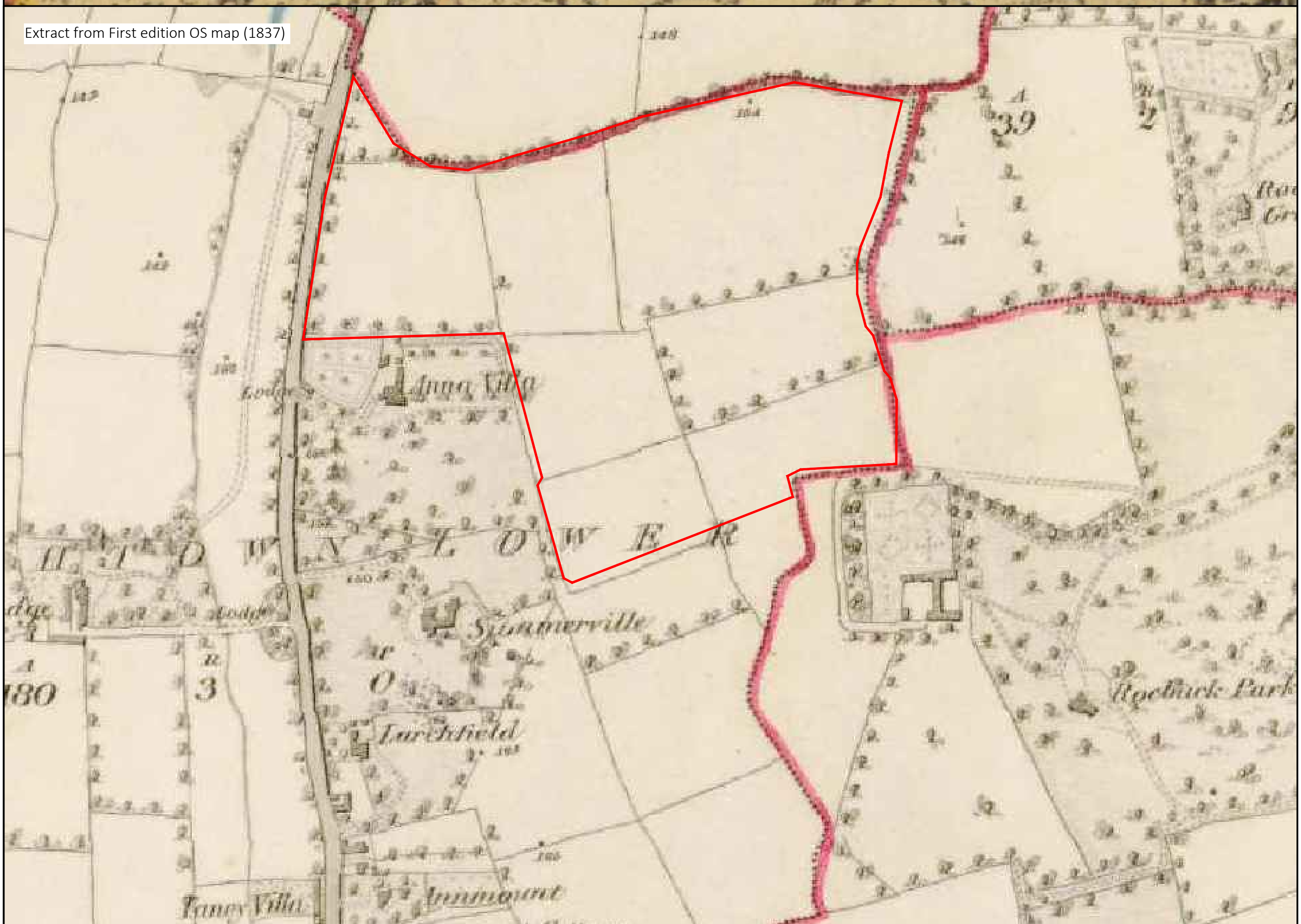
Archaeological Test Trenching can be defined as 'a limited programme... of intrusive fieldwork which determines the presence or absence of archaeological features, structures, deposits, artefacts or ecofacts within a specified area or site on land or underwater. If such archaeological remains are present test trenching defines their character and extent and relative quality.' (CIfA 2014a)

Archaeological Monitoring can be defined as a 'formal programme of observation and investigation conducted during any operation carried out for non-archaeological reasons within a specified area or site on land or underwater, where there is possibility that archaeological deposits may be disturbed or destroyed. The programme will result in the preparation of a report and ordered archive.' (CIfA 2014c)

IAC Archaeology

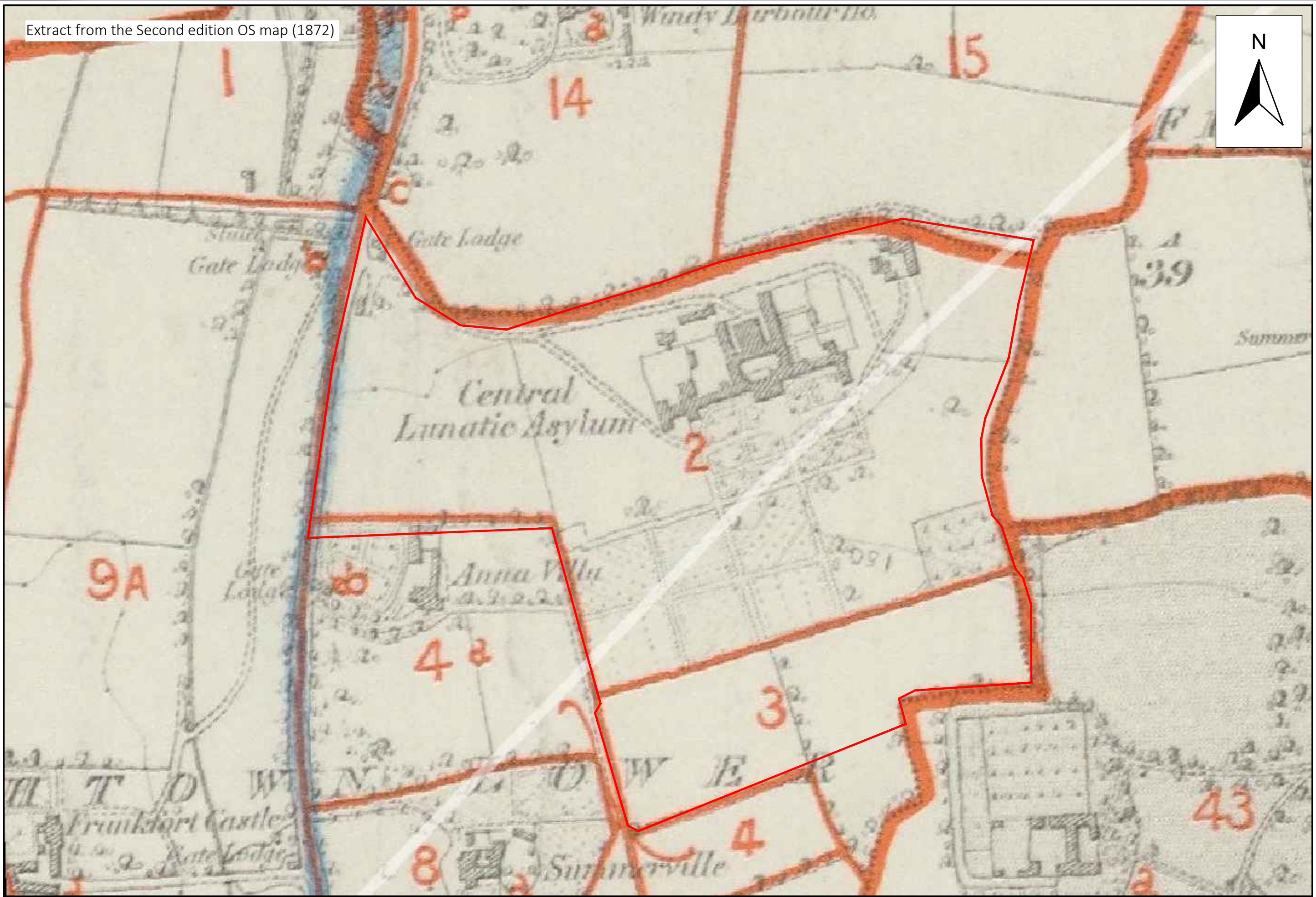
Title	Site location	Scale	1:4000@A4	Drawn by	KOM
Project	Central Mental Hospital, Dundrum Road, Dublin 14	Date	04/11/21	Checked by	MP
		Job no.	J3676	Fig. 1	Rev. -



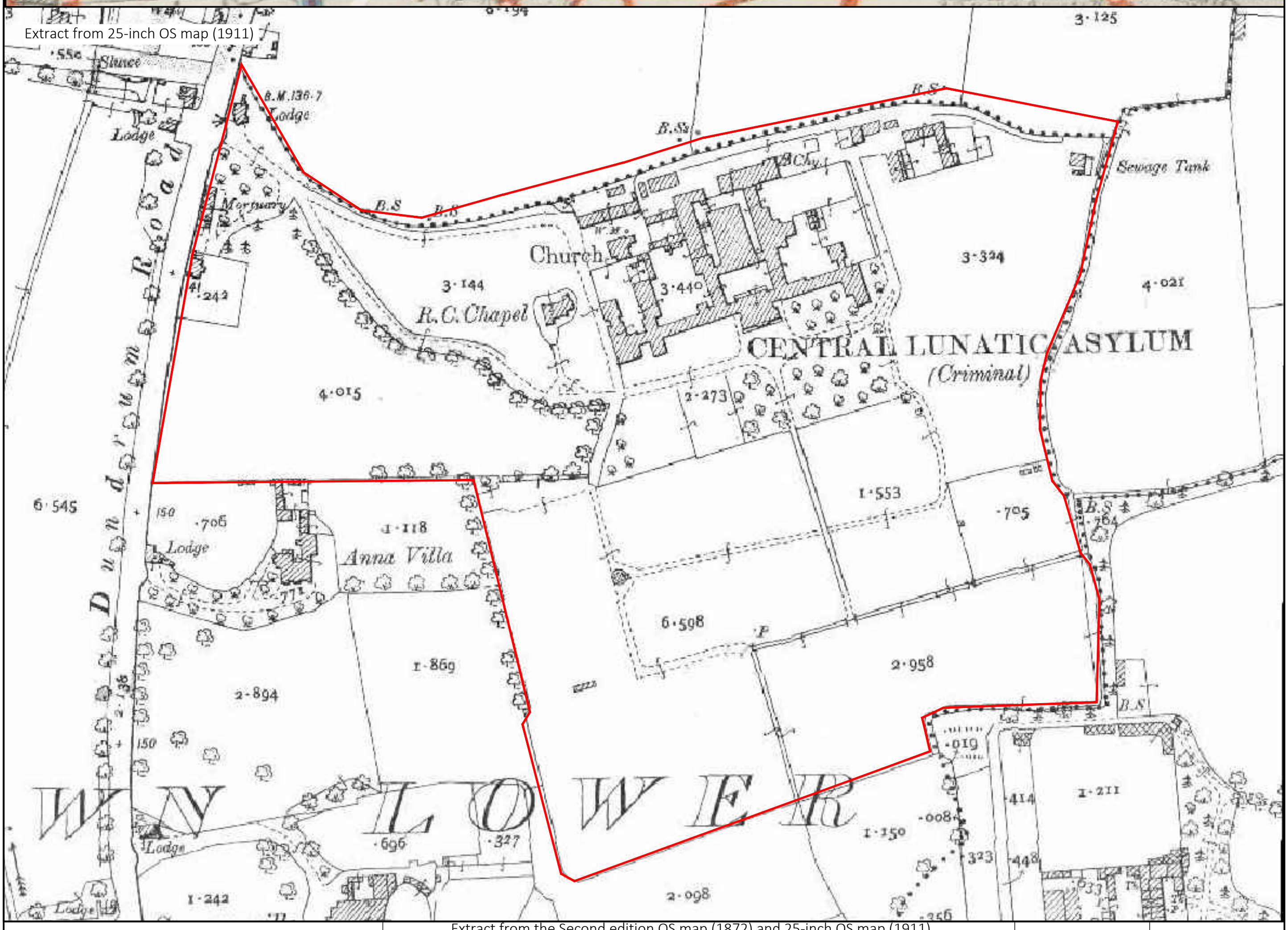


IAC Archaeology	Title	Extract from John Rocque's map (1756) and First edition OS map (1837) showing the proposed development	Scale	NTS@A4	Drawn by	KOM
	Project	Central Mental Hospital, Dundrum Road, Dublin 14	Date	04/11/21	Checked by	MP
			Job no.	J3676	Fig. 2	Rev. -

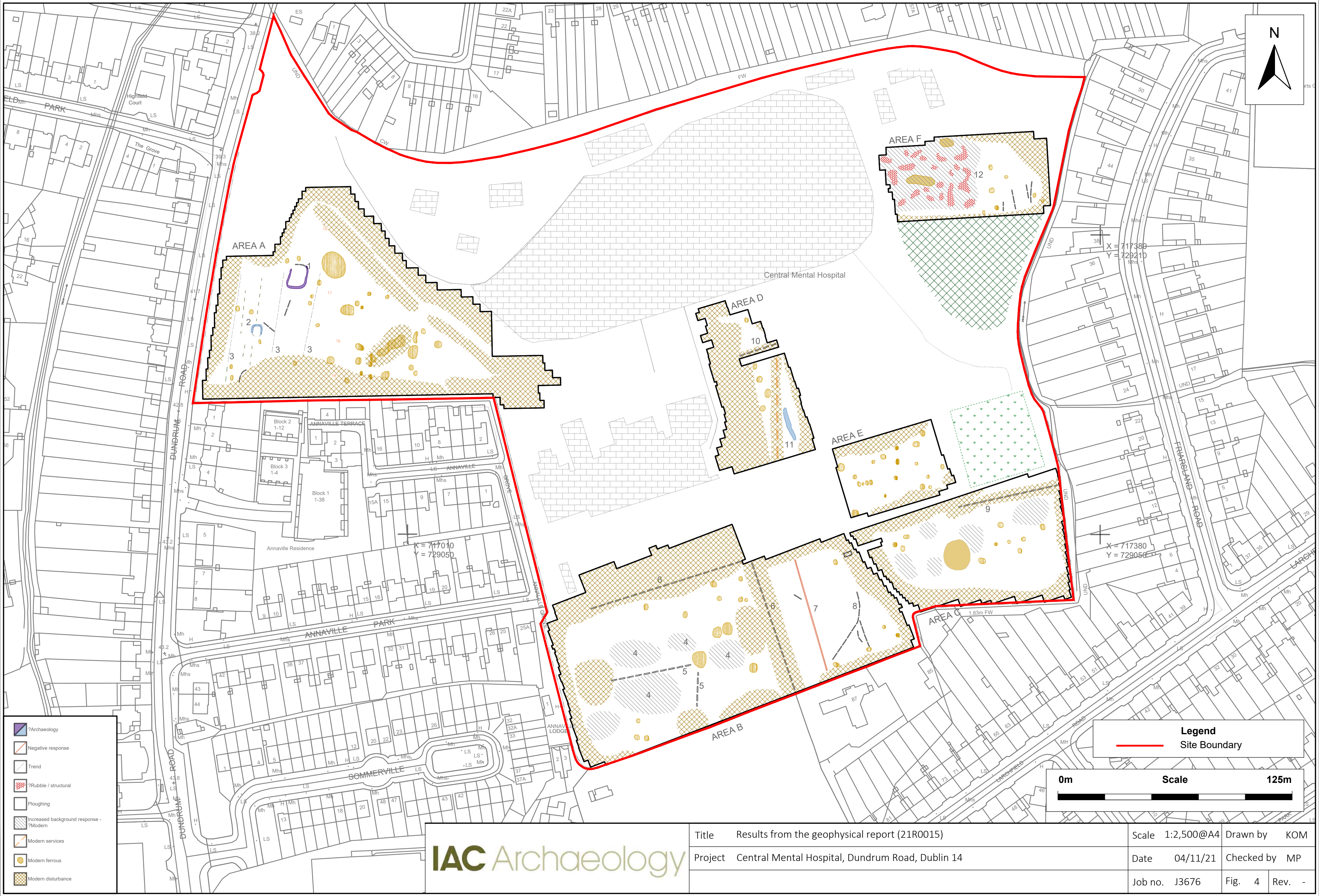
Extract from the Second edition OS map (1872)



Extract from 25-inch OS map (1911)



IAC Archaeology	Title	Extract from the Second edition OS map (1872) and 25-inch OS map (1911) showing the proposed development	Scale	NTS@A4	Drawn by	KOM	
	Project	Central Mental Hospital, Dundrum Road, Dublin 14	Date	04/11/21	Checked by	MP	
			Job no.	J3676	Fig.	3	Rev. -

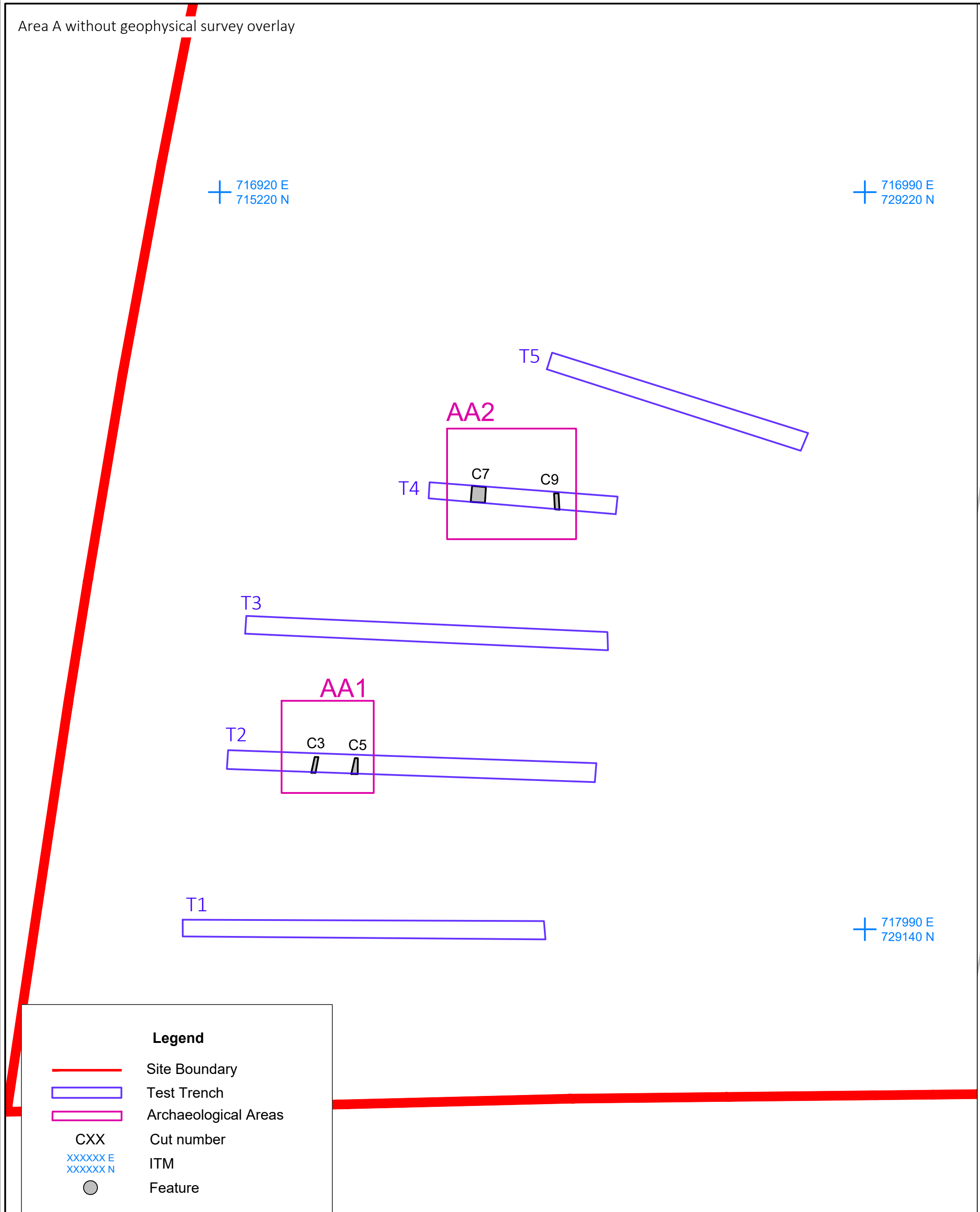


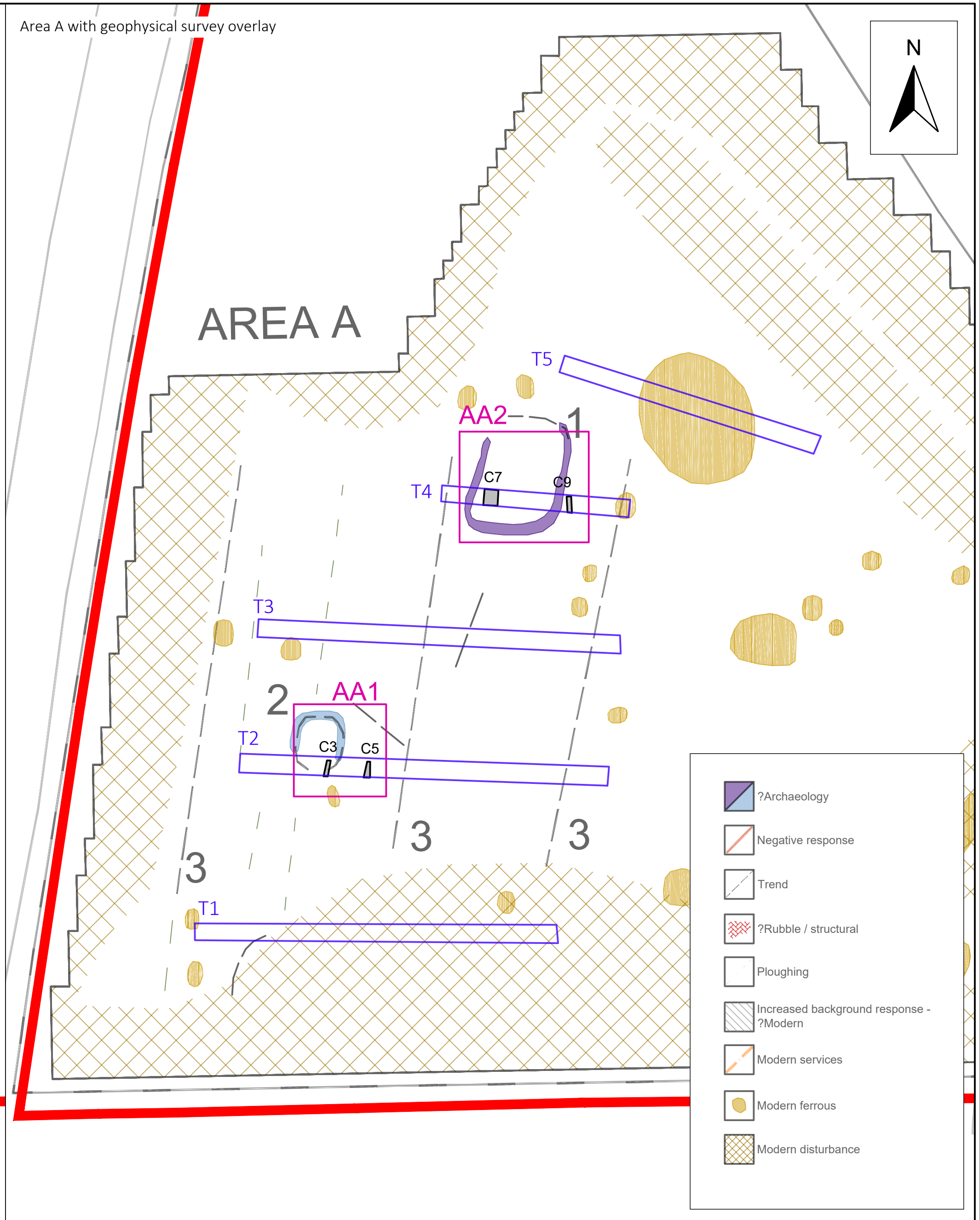
IAC Archaeology

Title	Results from the geophysical report (21R0015)	Scale	1:2,500@A4	Drawn by	KOM
Project	Central Mental Hospital, Dundrum Road, Dublin 14	Date	04/11/21	Checked by	MP
		Job no.	J3676	Fig. 4	Rev. -

IAC Archaeology

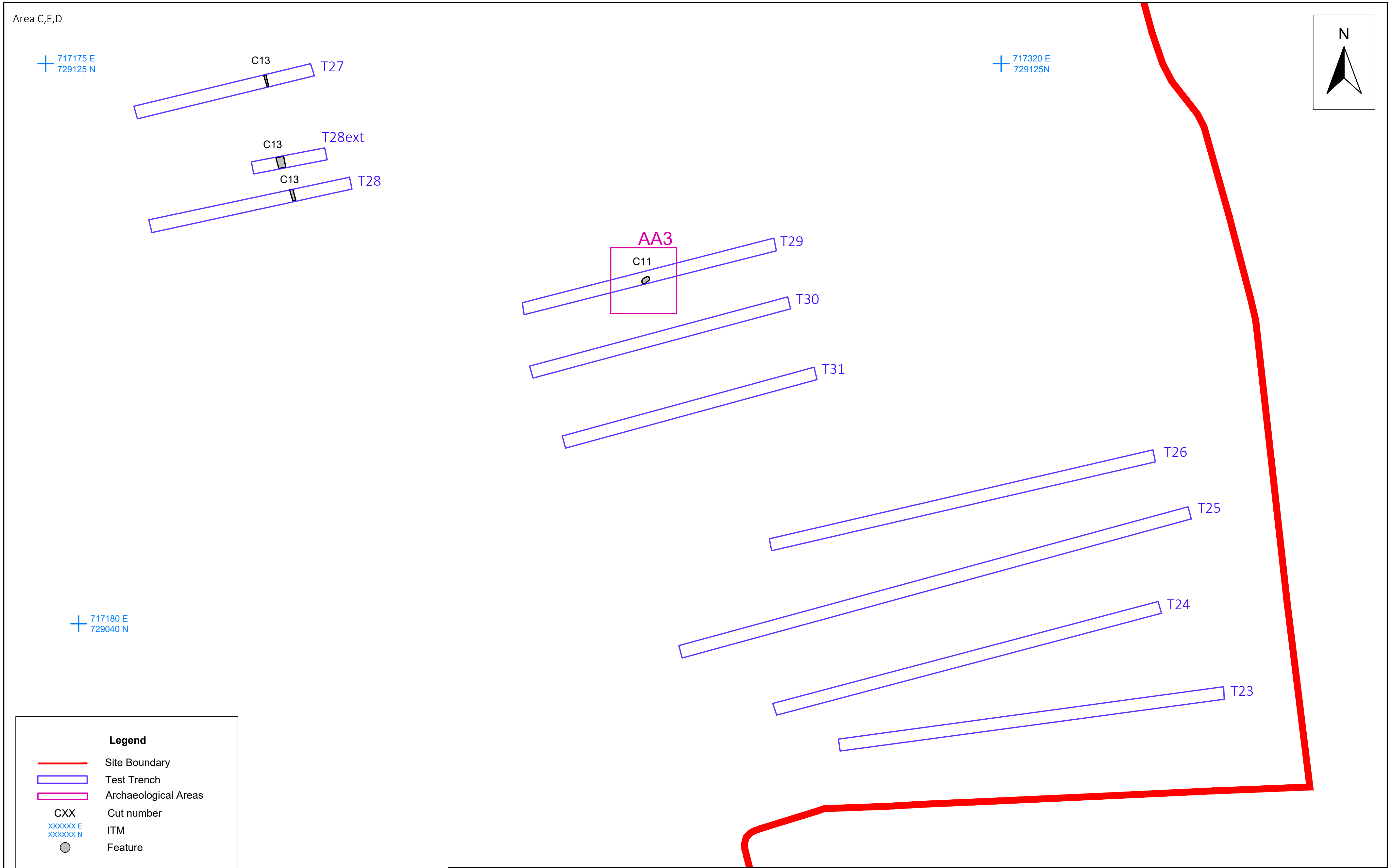
Title	Proposed test trench layout and test trenches excavated	Scale	1:2,500@A4	Drawn by	KOM
Project	Central Mental Hospital, Dundrum Road, Dublin 14	Date	04/11/21	Checked by	MP
		Job no.	J3676	Fig. 5	Rev. -





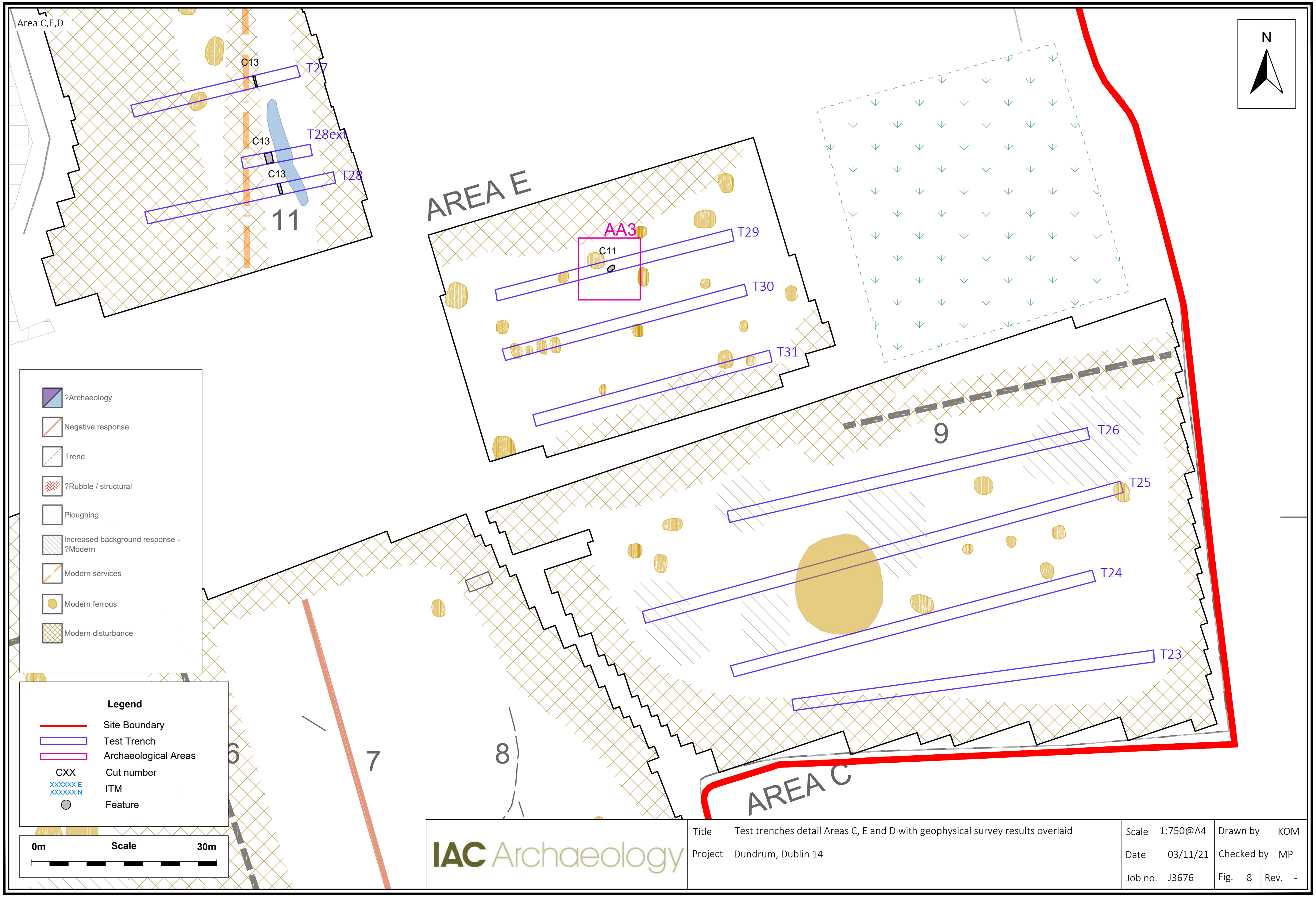
IAC Archaeology

Title	Test trenches detail Area A and Area A with geophysical survey results overlaid	Scale	1:750@A4	Drawn by	KOM
Project	Dundrum, Dublin 14	Date	03/11/21	Checked by	MP
		Job no.	J3676	Fig. 6	Rev. -



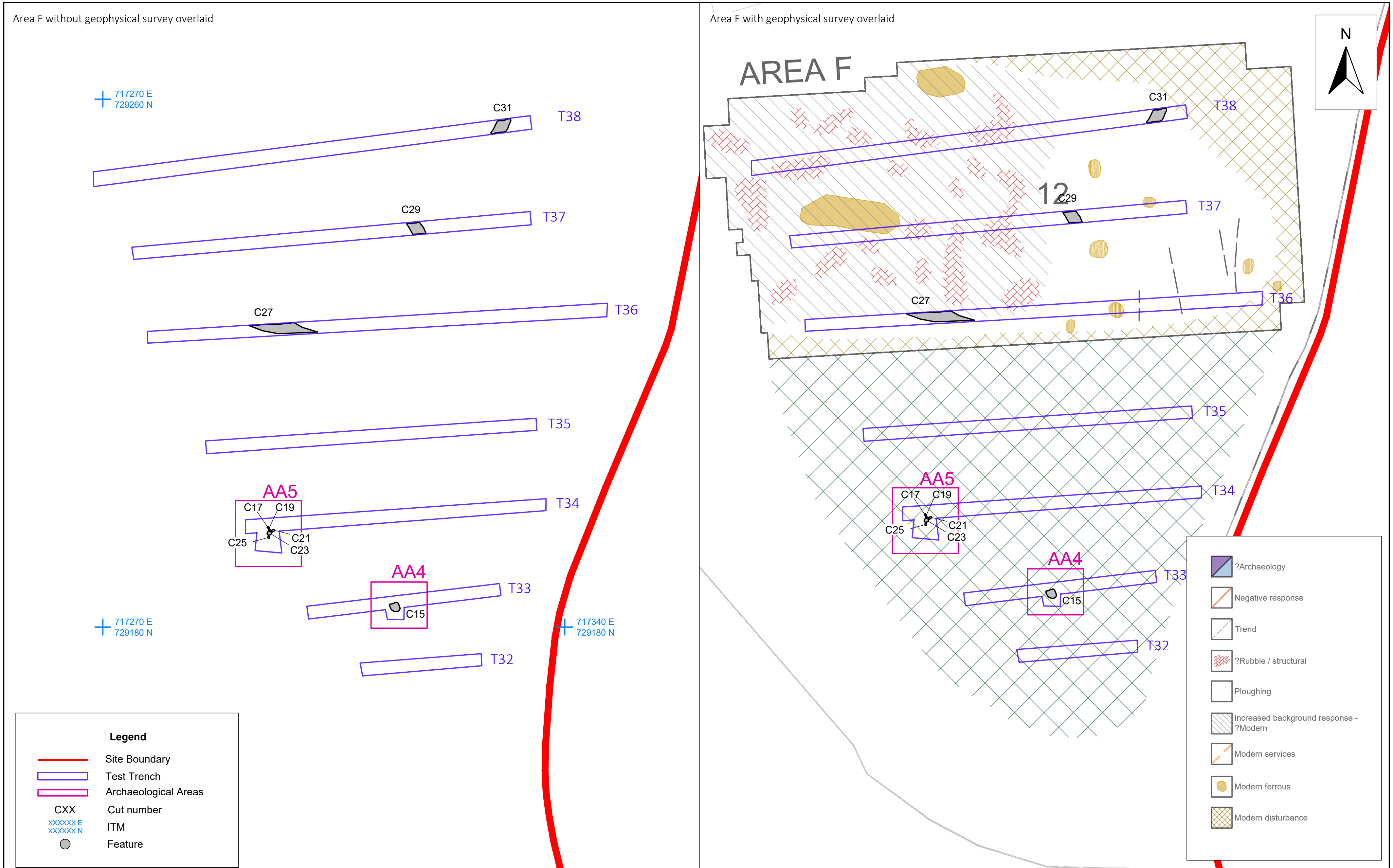
IAC Archaeology

Title	Test trenches detail Areas C, E and D	Scale	1:750@A4	Drawn by	KOM
Project	Dundrum, Dublin 14	Date	03/11/21	Checked by	MP
		Job no.	J3676	Fig. 7	Rev. -



IAC Archaeology

Title	Test trenches detail Areas C, E and D with geophysical survey results overlaid	Scale	1:750@A4	Drawn by	KOM
Project	Dundrum, Dublin 14	Date	03/11/21	Checked by	MP
		Job no.	J3676	Fig. 8	Rev. -



IAC Archaeology

Title	Test trenches detail Area F and Area F with geophysical survey results overlaid	Scale	1:750@A4	Drawn by	KOM
Project	Dundrum, Dublin 14	Date	03/11/21	Checked by	MP
		Job no.	J3676	Fig. 9	Rev. -

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IAC Archaeology

ARCHAEOLOGICAL ASSESSMENT
AT
CENTRAL MENTAL HOSPITAL,
DUNDRUM ROAD,
DUBLIN 14

LICENCE NO.: 21E0610EXT

ITM: 717168, 729141

LICENCEE: MARC PIERA
AUTHOR: MARC PIERA

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DOCUMENT CONTROL SHEET

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12.04.24	Archaeological Assessment at Central Mental Hospital, Dundrum Road, Dundrum, Dublin 14	0	M. Piera	P. Duffy	P. Duffy
23.04.24	Archaeological Assessment at Central Mental Hospital, Dundrum Road, Dundrum, Dublin 14	0	M. Piera	D. Lee & P. Duffy	P. Duffy

ABSTRACT

IAC Archaeology has prepared this report to study the impact, if any, on the archaeological and historical at the former Central Mental Hospital, Dundrum Road, Dublin (ITM 717168, 729141), prior to proposed development. The assessment was carried out by Marc Piera of IAC Archaeology under licence 21E0610ext. It follows on from a Cultural Heritage and Archaeology chapter of an EIAR carried out by IAC Archaeology in 2022 for a pervious development within the site boundary (Corbett 2022). This included the results of a geophysical survey carried out by Joanna Leigh in April 2021 (Licence No. 21R0015) and a programme of testing which identified five Archaeological Areas AA1-AA5 within the site (Piera 2022, Licence No. 21E0610).

Archaeological testing was carried out over the course of 2 days from 2 April 2024 using a mechanical excavator fitted with a flat grading bucket. The trenches targeted geophysical anomalies and open green space in order to fully investigate the archaeological potential of the site. Testing was focussed in two areas located at the northwest (Area A) and south (Area B) of the site which were not accessible in previous 2022 testing. No archaeological features have been identified in these two areas.

Previous testing revealed 5 areas of archaeological significance, which have been designated as Archaeological Areas AA1-AA5 (Piera 2022, Licence No. 21E0610). These comprise two small enclosures dating to the post-medieval era (AA1-2), a kiln (AA3), an isolated pit (AA4) and a cluster of hearths with postholes (AA5).

It is recommended that the area of impact in AA1-AA5 should be preserved by record through full archaeological excavation. It is recommended that all ground disturbances associated with the proposed development be monitored by a suitably qualified archaeologist.

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1 INTRODUCTION

1.1 GENERAL

The following report details the results of a programme of archaeological testing undertaken at the former Central Mental Hospital, Dundrum Road, Dublin 14, prior to proposed residential development (Figure 1, ITM 717168, 729141). This assessment has been carried out to ascertain the potential impact of the proposed development on the archaeological resource that may exist within the site. It was undertaken by Marc Piera of IAC Archaeology (IAC) under licence 21E0610ext as issued by the National Monuments Service of the Department of Housing, Local Government and Heritage (DoHLGH).

Test trenching commenced at the site on 2 April and continued for one day. This was carried out using a 13 tonne 360 degree tracked excavator, with a flat, toothless bucket, under strict archaeological supervision. A total of 15 trenches were mechanically investigated across the test area which measured 620 linear metres in total. This report follows on from a Cultural Heritage and Archaeology chapter of an EIAR carried out by IAC Archaeology in 2022 for a pervious development within the site boundary (Corbett 2022). This included the results of a geophysical survey carried out by Joanna Leigh in April 2021 (Licence No. 21R0015) and a programme of testing (Piera 2022, Licence No. 21E0610).

2 ARCHAEOLOGICAL AND HISTORICAL BACKGROUND

2.1 BACKGROUND

The proposed development area is located at the Central Mental Hospital campus, directly east of Dundrum Road, County Dublin. There are no recorded monuments located within the site, with the closest being the site of an ecclesiastical enclosure located c. 540m to the southwest (DU022-016001).

The proposed development area is surrounded by residential development on all sides, with a soccer pitch also located directly to the south. The site itself is occupied by a range of buildings associated with the Hospital at its northern end, with open green spaces at the east, west and south and a small formal garden towards the southeast (Figure 5).

Prehistoric Period

Mesolithic Period (c. 7000–4000BC)

Although very recent discoveries may push back the date of human activity by a number of millennia (Dowd and Carden, 2016), the Mesolithic period is the earliest time for which there is clear evidence for prehistoric activity in Ireland. During this period people hunted, foraged and gathered food and appear to have had led a primarily, but not exclusively, mobile lifestyle. The presence of Mesolithic communities is most commonly evidenced by scatters of worked flint material, a by-product from the production of flint implements.

The current archaeological evidence suggests that the environs around Dublin were first inhabited towards the later part of this period. At this time people made crude flint tools known as Larnian (or Bann) Flakes. Small numbers of these flakes have been found along coastal areas of County Dublin such as Dun Laoghaire, Dalkey Island, and Loughlinstown and may indicate small-scale transient settlement along the riverbanks and seashores (Corlett, 1999). Several Larnian Flakes are recorded in the Topographical Files of the National Museum of Ireland from along the Dodder suggesting that the river, its tributaries and the surrounding landscape, including Milltown to the north of the proposed development area, may have been exploited for their natural resources during this time.

Neolithic Period (c. 4000–2500BC)

During the Neolithic period communities became less mobile and their economy appears to have become based on the rearing of stock and cereal cultivation. This transition was accompanied by major social change. Agriculture demanded an altering of the physical landscape, with forests rapidly cleared and field boundaries constructed.

There are no previously recorded Neolithic sites within the immediate vicinity of the area of proposed redevelopment, however a stone axehead of possible Neolithic date was found to the northeast of the site (NMI No. 1935:38). It is likely that this area was inhabited during the prehistoric period due to the proximity of the River Dodder to the north and the Slang Stream to the west.

Bronze Age Period (c. 2500–800BC)

The Bronze Age was marked by the widespread use of metal for the first time in Ireland. As with the transition from Mesolithic to Neolithic the transition into the early Bronze Age was accompanied by changes in society. The construction of megalithic tombs went into decline and the burial of the individual became typical. Cremated or inhumed bodies were often placed in a cist, which is a stone-lined grave, usually built of slabs set upright to form a box-like construction and capped by a large slab or several smaller lintels (Buckley & Sweetman, 1991). Barrows and pit burials are also funerary monuments associated with this period. There is no firmly dated evidence for Bronze Age activity within the immediate vicinity of the proposed redevelopment area

Iron Age Period (c. 800BC – AD400)

Until recently, the dearth of evidence representing the Irish Iron Age led to it being among the most enigmatic and least understood periods in Irish prehistory. However, large scale commercial excavations carried out over the past two decades have produced large quantities of new data relating to Iron Age settlement and industry across the country. This raw excavation data is still being analysed and a picture of life during the Iron Age is being assembled (Becker 2012, 1). There is no firmly dated evidence for Iron Age activity within the immediate vicinity of the proposed redevelopment.

Early Medieval Period (AD400–1100)

An early name given to the whole of Dublin and Wicklow Mountains was *Cualu*. There is a tradition that the area was famous for its ale and was controlled by the *Dal Messin Corb*, a leading Leinster tribe. St. Kevin of Glendalough was a member of this tribe and also responsible for helping to spread Christianity during the 6th century. During the 8th century it was the *Ui Briuin* tribe that ruled much of southeast Dublin. They arrived from the north of Kildare, bringing with them the influence of the famous monastery in Kildare, which was devoted to St. Brigid c. AD 500.

This period was also characterised by the introduction of Christianity to Ireland. An early medieval ecclesiastical enclosure is recorded c. 540m southwest of the proposed redevelopment area (DU022-016001). The earlier church at this location was associated with St. Ossian and St. Lucan and an Early Christian grave slab (DU022-016005) was exposed within the graveyard (DU022-016003) of the present Church.

The Vikings arrived in Ireland in the 9th century and founded Dublin, their most important town, in AD 917. The development of Dublin as a major centre of trade and industry had implications on the lands to the south, which were known as *Dyflinarskiri* and extended as far as Greystones. Many Vikings settled in this area and by AD 980 most had converted to Christianity. Although there were attacks on the Vikings by the native Irish, it appears that the Scandinavians left a lasting impression within the Rathdown area, located to the immediate south of St. Vincent’s Hospital. Many place names such as 'Windgates' and 'Coolnagad' preserve the Norse word gata, meaning 'street'.

Secular habitation sites in the early medieval period include crannógs, cashels, and ringforts in addition to unenclosed settlements which are more difficult to identify in the archaeological record. The ringfort or rath is considered to be the most common indicator of settlement during the early medieval period. Ringforts are strongly associated with agricultural land and, as such, are rarely situated at higher altitudes. It is therefore surprising that there is not greater evidence for settlement in the form of ringforts, within the Rathdown area; however, owing to the consistent use of this land up to the modern period it is likely that above surface expressions of these monuments have been long since removed.

Medieval Period (AD1100–1600)

The beginning of the medieval period is characterised by political unrest that originated from the death of Brian Borumha in 1014. Diarmait MacMurchadha, deposed King of Leinster, sought the support of mercenaries from England, Wales and Flanders to assist him in his challenge for kingship. Norman involvement in Ireland began in 1169, when Richard de Clare and his followers landed in Wexford to support MacMurchadha. Two years later de Clare (Strongbow) inherited the Kingdom of Leinster and by the end of the 12th century the Normans had succeeded in conquering much of the country. The initial stage of the invasion of the country is marked by the construction of Motte and Bailey castles.

The earliest evidence of occupation in this area is Dundrum Castle which was constructed in the 13th century and possibly occupies the site of an earlier Dun or fort from which the place takes its name. After the landing of the Anglo-Normans in Ireland in 1169, inner and outer fortifications were established throughout Dublin. Dundrum Castle was part of this outer defence system and lead to the establishment of the suburb of Dundrum itself.

Following the Anglo-Norman conquest, the lands at Dundrum became the property of lay owners while those in other parts of Taney (currently Churchtown) became the property of the Church. The lands at Dundrum were assigned to the family of De Clahull, a family whose possessions extended to Kerry.

The lands at Dundrum were situated on the very extremity of the lands to the south of Dublin, afterwards enclosed within the pale and an earthwork that survives in the townland of Balally (which adjoins Dundrum to the southeast) may represent part of the Pale Boundary Earthwork. The area suffered frequently from attacks committed by enemies of the Irish Crown. Following the invasion of Edward Bruce at the beginning of the 14th century the lands around Dundrum were completely devastated.

The Fitzwilliam family subsequently assumed residency of the lands around the area and remained there until the latter half of the 17th century. The next major family to occupy the area were the Dobson family who undertook the restoration of Dundrum

Castle during the 18th century and during this period many of the village activities centred on the castle itself.

Post-medieval Period (AD1600-1900)

The 18th century witnessed a more pacified Ireland and during this time industry was developed in the landscape. In the area of Milltown to the north of the site, the water power of the River Dodder was utilised and fed numerous millraces to operate a multitude of mills. Deeds from 1718 and 1724 mention an ancient mill trace and watercourse leading to an iron mill at Milltown and a brass mill at Bankside Cottages that shared its water supply with a paper mill. These mills are not marked on the first edition OS map of 1843 and this may represent the beginning of the economic decline of the region mentioned by Lewis, possibly caused by the 1738 famine. Mills were also present along the Slang Stream to the west of the proposed development area, which are recorded on Rocque's map of 1760 (Figure 2).

From the beginning of the 18th century onwards Dundrum gained a reputation as a health resort and it was noted for its numerous herds of goats which 'browsing among the mountain pastures, afford milk of very excellent quality' (Lewis 1837, 164). In 1852, the population of Dundrum had grown to 550, with its one street boasting 94 houses most of which were cottages. The opening of the Bray-Harcourt Street Railway line in Dundrum had a major economic influence on the village. Large villas were constructed on the properties around the area and Dundrum became a hub of business and social activity.

The Central Lunatic Asylum was established at the site in 1850 and was the first secure hospital in Europe. The building was designed by Jacob Owen (1778-1870) and Frederick Villiers Clarendon (1820-1904) of the Board of Public Works. It was established as a result of recommendations of a parliamentary committee set up in 1843 un the Lord Chancellor. While the hospital is still functioning today, it is intended to relocate residents to a new purpose-built facility in 2022.

Full detail on the history of the Central Lunatic Asylum is given in Chapter 15 of this EIAR. It is acknowledged that the original asylum structures and its associated designed landscape are on cultural heritage value, especially from a social history perspective. Specific assets include (as detailed in Table 15.3) the main hospital building, perimeter wall, gate lodge, chapel, airing yards (20th century), hay barn and pig yards, farmyard buildings, walled garden including two covered entrances and the historic landscape. Whilst the overall cultural heritage of the site is considered in this chapter, the architectural heritage of the site, and potential impacts on same, is detailed in Chapter 15 and not repeated here.

2.2 SUMMARY OF PREVIOUS ARCHAEOLOGICAL FIELDWORK

A review of the Excavations Bulletin (1970–2024) has revealed that while one previous archaeological investigation has been carried out within the site boundary, seven have taken place within the wider study area.

Testing within the proposed development area revealed five localised areas of archaeological significance, which have been designated as Archaeological Areas AA1-AA5 (Piera 2022, Licence No. 21E0610). These comprise two small enclosures dating to the post-medieval period (AA1-2), a kiln (AA3), an isolated pit (AA4) and a cluster of postholes with a small possible hearth (AA5) (Figure 2). In all, 21 trenches were excavated from the 38 originally proposed trenches. Test trenches targeted all geophysical anomalies noted by Joanna Leigh in 2021 (Licence No. 21R0015).

A further programme of test trenching was carried out c. 464m to the southeast of the proposed development area. In all, 20 trenches measuring in total 2005m were excavated and did not reveal anything of archaeological significance (Bennett 2019:651, Licence No. 19E0524).

2.3 CARTOGRAPHIC ANALYSIS

Down Survey Map, Barony of Rathdown, Parish of Donnybrook and Taney, 1655-6

A castle is depicted in Dundrum, with a path leading form there to Milltown bridge to the north. The precise location of the proposed development area is not clear on this map.

John Rocque's Map of the City and County of Dublin, 1756

By the time of this map, it appears that the proposed development area is located across agricultural fields to the east of Dundrum Road and the Slang Stream. A paper mill is depicted along the Slang Stream, to the northwest of the site.

First Edition Ordnance Survey Map, 1837

This is the first accurate historic mapping coverage of the area containing the proposed development area. The site is located across a number of agricultural fields to the east of Anna Villa and its associated demesne. There are no features of note located within the site boundary.

Ordnance Survey Map, 1872, scale 1:10,560 (Figure 3)

By the time of this map the Central Lunatic Asylum has been constructed at the northern end of the site, with associated formal gardens extending from the building southwards. The east and west sides of the site appear to be open ground.

Ordnance Survey Map, 1911, scale 1:2,500 (Figure 3)

By the time of this map there have been a number of additions to the Central Lunatic Asylum, including a Roman Catholic chapel to the west of the main building, extensions to the main building itself and the addition of a number of out buildings. A mortuary building is labelled at the northwest corner of the site, in the location of a smaller building recorded on the 1872 map. A new tree lined access road has been added which leads from Dundrum Road south eastwards towards the Asylum, while the formal gardens at the southern end of the site appear to have been removed.

2.4 SUMMARY OF GEOPHYSICAL RESULTS

The geophysical survey undertaken in April 2021 investigated six Areas (A-F) (Leigh 2021, Licence No. 21R0015). The geophysical survey identified traces of possible penannular and rectilinear enclosures in Area A, that were previously identified as cropmarks in satellite imagery. The rectilinear response measures c. 12m x 9m. No internal responses were recorded. Plough trends and possible drainage features in Area A are indicative of former agricultural activity.

Broad responses within a clearly defined area are indicative of rubble material within Area F. Although this may be modern in origin, it is possible that a former building or structure is represented here. The remains of two former field boundaries have been recorded in Areas B and D which correlate with those depicted on OS 6inch mapping. A possible additional field division is also evident in Area B. Also identified across the site was a series of parallel trends are indicative of historic ploughing activity and/or drainage features.

2.5 AERIAL PHOTOGRAPHIC ANALYSIS

Inspection of the aerial photographic coverage of the proposed development area held by the Ordnance Survey (1995-2013), Google Earth (2005-2024) and Bing Maps (204) revealed that the present structures on site have remained unchanged since at least 1995. The greenfield areas of the site contain a number of small gardens, trees and larger open green spaces. Google Earth Imagery from July 2022 depicts the locations of the previously excavated test trenches (Figure 1).

2.6 TOPOGRAPHICAL FILES

Information on artefact finds from the study area in Dublin has been recorded by the National Museum of Ireland since the late 18th century. Location information relating to these finds is important in establishing prehistoric and historic activity in the study area. A review of the topographical files for the townland of Friarland, Co. Dublin has shown that there were no stray finds identified in the area.

3 ARCHAEOLOGICAL TESTING

3.1 GENERAL

Test trenching took place on 2 April 2024, using a 13-tonne 360-degree tracked excavator equipped with a flat, toothless bucket under strict archaeological supervision. Any investigated deposits were preserved by record. This was by means of written, drawn and photographic records.

A total of 15 trenches were excavated across the site measuring 620 linear metres (Figures 5-6, Plates 1-18). Four trenches (T6-9) were dug within Area A, which is located at the northwest of site. These were distributed mostly in parallel and orientated northwest-southeast, measuring a total of 260 linear meters. The area was a flat green field. Another eleven trenches (T12-22) were dug within Area B, which is located at the southern end of the site. These were distributed mostly in parallel and orientated north-south, with the exception of one small trench which was orientated east-west, measuring a total of 360 linear meters. The area was a rectangular shaped green field. Two proposed trenches (T10-11) were not dug as were currently inaccessible. These were orientated east-west at the north of Area B and were targeting green areas without geophysical anomalies.

The test trenches were excavated to determine, as far as reasonably possible, the location, extent, date, character, condition, significance and quality of any surviving archaeological remains threatened by the proposed development. Test trenching was also carried out to clarify the nature and extent of existing disturbance and intrusions and to assess the degree of archaeological survival in order to formulate further mitigation strategies. These are designed to reduce or offset the impact of the proposed development scheme.

3.2 TESTING RESULTS

Topsoil was a dark brown sandy clay layer in both areas investigated and was relatively deep in Area A reaching a depth of 0.8m and 0.6m in Area B. The natural subsoil was very similar in both areas consisting of a light, yellowish-brown soft clay changing in some small areas to a mid-greyish brown stony clay.

TABLE 1: Test Trench Results

TRENCH	LENGTH (m)	WIDTH (m)	DEPTH (m)	ORIENTATION	DETAILS
6	100	2	0.8	Northwest-southeast	No archaeology found. Located within Area A. Trench was targeting an area without geophysical anomalies. Modern disturbance was observed at the northwest end of the trench. A very shallow agricultural furrow was identified across the middle of the trench without archaeological significance.
7	80	2	0.8	Northwest-southeast	No archaeology found. Located within Area A. Trench was targeting an area without

TRENCH	LENGTH (m)	WIDTH (m)	DEPTH (m)	ORIENTATION	DETAILS
					geophysical anomalies. Two modern disturbances were observed at centre and northwest end of the trench. Two narrow linear features, 0.5m wide by 0.3m deep, were identified at the southeast of the trench. These were agricultural drains without archaeological significance.
8	40	2	0.8	Northwest-southeast	No archaeology found. Located within Area A. Trench was targeting an area without geophysical anomalies. Some modern disturbance was observed at centre of trench and a very shallow drain was identified at southeast end of the trench, without archaeological significance.
9	40	2	0.8	Northwest-southeast	No archaeology found. Located within Area A. Trench was targeting an area without geophysical anomalies. Two shallow drains were identified at the southeast of the trench, without archaeological significance.
10					Not accessible.
11					Not accessible.
12	30	2	0.6	North-south	No archaeology found. Located at Area B. Trench was targeting an area without geophysical anomalies. A shallow drain was identified at the south end of the trench, without archaeological significance. A yellow pipe traversed the southern end of the trench.
13	30	2	0.6	North-south	No archaeology found. Located at Area B. Trench was targeting a geophysical trend (5) and patches of heightened background responses (4). A modern yellow plastic pipe ran across the northern end of trench and may represent the geophysical trend (5). Another modern yellow plastic pipe ran across the southern end of the trench.
14	30	2	0.6	North-south	No archaeology found. Located at Area B. Trench was targeting a geophysical trend running east-west (5) and patches of heightened background responses (4). Two modern yellow plastic pipes were identified in each side of the trench. The northern one may represent the geophysical trend (5). Three stone drains containing shell and red-brick were observed within the trench. These may date to the 18-19th century and are made for agricultural purpose, and are without archaeological significance.

TRENCH	LENGTH (m)	WIDTH (m)	DEPTH (m)	ORIENTATION	DETAILS
15	10	2	0.6	East-West	No archaeology found. Located at Area B. Trench was targeting a geophysical trend running north-south (5). A yellow pipe was identified at the eastern end of the trench.
16	30	2	0.6	North-south	No archaeology found. Located at Area B. Trench was targeting an area without geophysical anomalies Two yellow plastic pipes across the trench by the northern and southern ends of the trench.
17	30	2	0.6	North-south	No archaeology found. Located at Area B. Trench was targeting geophysical patches of heightened background responses (4). Two modern yellow pipes were identified in each end of the trench.
18	30	2	0.6	North-south	No archaeology found. Located at Area B. Trench was targeting an area without geophysical anomalies. A modern yellow pipe was identified at the southern end of trench.
19	50	2	0.6	North-south	No archaeology found. Located at Area B. Trench was targeting an area without geophysical anomalies.
20	20	2	0.6	North-south	No archaeology found. Located at Area B. Trench was targeting a faint curvilinear geophysical trend running northeast-southwest (8). A stone drain was identified at centre of trench running northeast-southwest and may represent the geophysical trend. It is a narrow stone drainage made for agricultural purpose and is 18th-19th century in date, without archaeological significance.
21	50	2	0.6	North-south	No archaeology found. Located at Area B. Trench was targeting a faint curvilinear geophysical trend (8). Two stone drains were identified at the centre of the trench and may represent the geophysical trend. Two parallel shallow furrows were identified at the southern of the trench. All these features were made for agricultural purposes and are 18th-19th century in date, without archaeological significance.
22	50	2	0.6	North-south	No archaeology found. Located at Area B. Trench was targeting an area without geophysical anomalies. Four stone drains were identified along the trench. These date to the 18th-19th century, without archaeological significance.

Archaeological Features

No archaeological features found (Figures 5 & 6).

Non-archaeological Features

Some geophysical trends were targeted in the southern area of site (Area B). Test trenches 13, 14 and 17 were dug across some ground disturbance identified in geophysics as related to "landscaping activity in patches of heightened background responses (4)". Testing investigation didn't find anything that could be related to that geophysical anomaly (Figure 6).

Test trenches 13, 14 and 15 targeted geophysical trend number 5 "two faint linear trends". Testing confirmed that this trend represents a modern service consisting of a trench filled with gravel and with a yellow plastic pipe within. It was exposed running east-west at the northern side of the trenches and its trajectory matches with the geophysical trend location. Another yellow plastic pipe was identified running east-west at the south end of trenches 12, 13, 14, 15, 16, 17 and 18 which were not identified by geophysical survey (Figure 6).

Test trenches 20 and 21 targeted geophysical trend number 8 "a faint curvilinear trend". Testing confirmed that this trend relates to a narrow stone drain made for agricultural purpose, of likely 18th-19th century date and without archaeological significance (Figure 6).

Shallow linear features were identified in some of the trenches and were part of drains or furrows related to agricultural purpose and without archaeological significance.

3.3 CONCLUSIONS

A total of 15 trenches were excavated of the proposed 17 trenches for this second testing phase. No further areas of archaeological significance or archaeological features were identified (Figures 5 & 6).

Previous testing revealed 5 localised areas of archaeological significance, which have been designated as Archaeological Areas AA1-AA5 (Figure 7). These comprise two small enclosures dating to the post-medieval period (AA1-2), a kiln (AA3), an isolated pit (AA4) and a cluster of postholes with a small possible hearth (AA5).

4 IMPACT ASSESSMENT AND MITIGATION STRATEGY

Impacts can be identified from detailed information about a project, the nature of the area affected and the range of archaeological resources potentially affected. Archaeological sites can be affected adversely in a number of ways: disturbance by excavation, topsoil stripping; disturbance by vehicles working in unsuitable conditions; and burial of sites, limiting access for future archaeological investigation.

4.1 IMPACT ASSESSMENT

- There will be an adverse impact on the identified archaeological features in AA1-AA5. This will be caused by ground disturbances associated with the proposed development, which will act to truncate or remove the archaeological remains.

- There may be an adverse impact on previously unrecorded archaeological features or deposits that have the potential to survive beneath the current ground level. This will be caused by ground disturbances associated with the proposed development.

4.2 MITIGATION

We recommend the following actions in mitigation of the impacts above.

- It is recommended that the areas of impact in AA1-AA5 should be preserved by record through full archaeological excavation. The work should be carried out under licence to the National Monuments Service of the DoHLGH.

- It is recommended that all ground disturbances associated with the proposed development be monitored by a suitably qualified archaeologist. If any features of archaeological potential are discovered during the course of the works, further archaeological mitigation may be required, such as preservation *in-situ* or by record. Any further mitigation will require approval from the National Monuments Service of the DHLGH.

It is the developer's responsibility to ensure full provision is made available for the resolution of any archaeological remains, both on site and during the post excavation process, should that be deemed the appropriate manner in which to proceed.

Please note that all recommendations are subject to approval by the National Monuments Service of the Heritage and Planning Division, Department of Housing, Local Government and Heritage.

5 REFERENCES

Becker, K. 2012 'Redefining the Irish Iron Age' In: Potterton, M. and Corlett C. (eds) Life and death in Iron Age Ireland. Wordwell books, Bray, 1-14.

Bennett, I. (ed.) 1987–2010. *Excavations: Summary Accounts of Archaeological Excavations in Ireland*. Bray. Wordwell.

Bolger, T. and Harrison, D. 2005 Archaeological Assessment (including Geophysical Survey) and Impact Assessment, Notre Dame des Missions, Upper Churchtown Road, Dundrum, Co. Dublin, Licence No. 05E0847

Buckley, V. and Sweetman, P.D. 1991. Archaeological Survey of County Louth. Dublin.

Chartered Institute for Archaeologists. 2020a. Standards & Guidance for Field Evaluation.

Chartered Institute for Archaeologists. 2020b. Standards & Guidance for Archaeological Excavation.

Chartered Institution of Field Archaeologists. 2020c. Standards & Guidance for an Archaeological Watching Brief (Monitoring).

Corbett, G. 2022. Chapter 14, Cultural Heritage and Archaeology within EIAR AT Former Central Mental Hospital, Dundrum. Unpublished report by Tom Philips and Associates

Corlett, C. 1999. Antiquities of Old Rathdown: The Archaeology of South County Dublin and North County Wicklow. Bray. Wordwell.

Dowd, M. and Carden R. 2016. "First evidence of a Late Upper Palaeolithic human presence in Ireland." Quaternary Science Reviews 139: 158-163.

Department of Arts, Heritage, Gaeltacht and the Islands. 1999a. *Framework and Principles for the Protection of the Archaeological Heritage*. Dublin. Government Publications Office.

Department of Arts, Heritage, Gaeltacht and the Islands. 1999b. *Policy and Guidelines on Archaeological Excavation*. Dublin. Government Publications Office.

Environmental Protection Agency. 2017. *Draft Advice Notes on Current Practice (in the preparation of Environmental Impact Statements)*. Dublin. Government Publications Office.

Environmental Protection Agency. 2022. *Guidelines on the Information to be Contained in Environmental Impact Statements*. Dublin. Government Publications Office.

Koch, J. T., and. Cunliffe, B. W. 2013 (eds). Celtic from the West 2: Rethinking the Bronze Age and the Arrival of Indo-European in Atlantic Europe. Oxbow.

Leigh, J. 2021. Geophysical Survey Report Central Mental Hospital, Churchtown Lower, Dundrum County Dublin. Unpublished report prepared by J.M. Leigh Surveys Ltd for IAC Archaeology.

Lewis, S. 1837. Topographical Dictionary of Ireland (online edition).

Lohan, K. 2007 Archaeological Assessment Notre Dame des Missions, Upper Churchtown Road, Dundrum, Co. Dublin, Licence No. 06E1153

National Monuments Service, Department of Culture, Heritage and the Gaeltacht. *Sites and Monuments Record*, County Dublin

National Museum of Ireland. *Topographical Files*, County Dublin

O'Donovan, E. 2007 Archaeological Excavation, New Convent Building, Notre Dame des Missions, Upper Churchtown Road, Dundrum, Co. Dublin, Licence No. 07E0116

Raftery, B. 1994. Pagan Celtic Ireland: the enigma of the Irish Iron age. Thames and Hudson.

Sheehan, G. and Halpin, E. 2012 Report on Archaeological Monitoring at Dundrum Main Street, District Metered Area (DR001518), Dublin 14, Licence No. 12E219

Piera, M. 2022. Archaeological Assessment at Central Mental Hospital, Dundrum Road, Dundrum, Dublin. Licence No. 210610. Unpublished report by IAC Archaeology.

CARTOGRAPHIC SOURCES

William Petty, Down Survey Map, Barony of Rathdown, Parish of Donnybrook and Taney, 1655-6.

John Rocque, *An exact survey of the city and suburbs of Dublin*, 1760.

Ordnance Survey maps of County Dublin, 1837, 1872, 1911 and 1938.

ELECTRONIC SOURCES

www.excavations.ie – Summary of archaeological excavation from 1970–2024.

www.archaeology.ie – DoHLGH website listing all SMR/RMP sites.

www.heritagemaps.ie – The Heritage Council web-based spatial data viewer which focuses on the built, cultural and natural heritage.

www.geohive.ie– Ordnance Survey Ireland National Townland and Historical Map Viewer (including Aerial imagery 1995, 2000, 2005 and 2013)

www.googleearth.com – Satellite imagery (2005–2024).

www.apple.com/maps/ - Satellite imagery (2018)

www.booksulster.com/library/plnm/placenamesC.php - Contains the text from Irish Local Names Explained by P.W Joyce (1870).

www.logainm.ie – Placenames Database of Ireland, developed by Fiontar (DCU) and The Placenames Branch (DoTCAGSM).

APPENDIX 1 RMP SITES WITHIN THE SURROUNDING AREA

SMR NO.	DU022-016001
RMP STATUS	Yes
LOCATION	Churchtown Road Upper
PARISH	Taney
BARONY	Rathdown
I.T.M.	716838, 728402
CLASSIFICATION	Ecclesiastical Enclosure
DIST. FROM DEVELOPMENT	c. 540m southwest
DESCRIPTION	The present St. Nahi's Church of Ireland (1760) at Taney occupies the site of an earlier church (DU022-016002-). A raised graveyard lies S of the present church (DU022-016003-). The ground falls away steeply to the NW and SW. Within the interior of the graveyard there is a distinct fall (D 3m), a berm with a further fall (5m) to the surrounding ground level. The distinct curvature in the SW section of the graveyard boundary may indicate the line of an early ecclesiastical enclosure. An Early Christian grave slab was recently exposed in the graveyard, fragments of which are kept in the present church(DU022-016005-).
REFERENCE	www.archaeology.ie/ SMR file

SMR NO.	DU022-016003
RMP STATUS	Yes
LOCATION	Churchtown Road Upper
PARISH	Taney
BARONY	Rathdown
I.T.M.	716849, 728407
CLASSIFICATION	Graveyard
DIST. FROM DEVELOPMENT	c. 540m southwest
DESCRIPTION	A raised graveyard lies S of the present church (DU022-016002-). The ground falls away steeply to the NW and SW. Within the interior of the graveyard there is a distinct fall (D 3m), a berm with a further fall (5m) to the surrounding ground level.
REFERENCE	www.archaeology.ie/ SMR file

SMR NO.	DU022-016005
RMP STATUS	Yes
LOCATION	Churchtown Road Upper
PARISH	Taney
BARONY	Rathdown
I.T.M.	716827, 728428

CLASSIFICATION	Grave slab
DIST. FROM DEVELOPMENT	c. 570m southwest
DESCRIPTION	Found in 2004 in the SW quadrant of the graveyard (DU022-016003-) (Swords, K. ed. 2009, 100). Comprises a portion of a Rathdown slab (L 0.70m, Wth 0.44m, T 0.15m). Decorated with a flat-bottomed cup-mark enclosed by three concentric circles. Three shallow lines radiate from the outer circle to the end of the slab. At the broken end there is part of an arc of a circle. The slab is located in St. Nahi's church
REFERENCE	www.archaeology.ie/ SMR file

SMR NO.	DU022-016004
RMP STATUS	Yes
LOCATION	Churchtown Road Upper
PARISH	Taney
BARONY	Rathdown
I.T.M.	716827, 728428
CLASSIFICATION	Grave slab
DIST. FROM DEVELOPMENT	c. 570m southwest
DESCRIPTION	An Early Christian grave slab was recently exposed in the graveyard, fragments of which are kept in the present St Nahi's church (L1.64m, Wth 0.46m, T 011-12m). The slab features an incised Saltire (?) cross formed by two sets of three lines radiating from a central cup mark. The central cup mark is quite faint (D 0.05m) (Corlett 220, 139-143).
REFERENCE	www.archaeology.ie/ SMR file

SMR NO.	DU022-016002
RMP STATUS	Yes
LOCATION	Churchtown Road Upper
PARISH	Taney
BARONY	Rathdown
I.T.M.	716818, 728414
CLASSIFICATION	Church
DIST. FROM DEVELOPMENT	c. 580m southwest
DESCRIPTION	The present St. Nahi's Church of Ireland church (1760) at Taney occupies the site of an earlier church. Ball notes the association of this early church with St. Ossian and St. Lucan (1900, 191-192).
REFERENCE	www.archaeology.ie/ SMR file

APPENDIX 2 LEGISLATION PROTECTING THE ARCHAEOLOGICAL RESOURCE

PROTECTION OF CULTURAL HERITAGE

The cultural heritage in Ireland is safeguarded through national and international policy designed to secure the protection of the cultural heritage resource to the fullest possible extent (Department of Arts, Heritage, Gaeltacht and the Islands 1999, 35). This is undertaken in accordance with the provisions of the *European Convention on the Protection of the Archaeological Heritage* (Valletta Convention), ratified by Ireland in 1997.

THE ARCHAEOLOGICAL RESOURCE

The *National Monuments Act 1930 to 2014* and relevant provisions of the *National Cultural Institutions Act 1997* are the primary means of ensuring the satisfactory protection of archaeological remains, which includes all man-made structures of whatever form or date except buildings habitually used for ecclesiastical purposes. A National Monument is described as 'a monument or the remains of a monument the preservation of which is a matter of national importance by reason of the historical, architectural, traditional, artistic or archaeological interest attaching thereto' (National Monuments Act 1930 Section 2). A number of mechanisms under the National Monuments Act are applied to secure the protection of archaeological monuments. These include the Register of Historic Monuments, the Record of Monuments and Places, and the placing of Preservation Orders and Temporary Preservation Orders on endangered sites.

OWNERSHIP AND GUARDIANSHIP OF NATIONAL MONUMENTS

The Minister may acquire national monuments by agreement or by compulsory order. The state or local authority may assume guardianship of any national monument (other than dwellings). The owners of national monuments (other than dwellings) may also appoint the Minister or the local authority as guardian of that monument if the state or local authority agrees. Once the site is in ownership or guardianship of the state, it may not be interfered with without the written consent of the Minister.

REGISTER OF HISTORIC MONUMENTS

Section 5 of the 1987 Act requires the Minister to establish and maintain a Register of Historic Monuments. Historic monuments and archaeological areas present on the register are afforded statutory protection under the 1987 Act. Any interference with sites recorded on the register is illegal without the permission of the Minister. Two months notice in writing is required prior to any work being undertaken on or in the vicinity of a registered monument. The register also includes sites under Preservation Orders and Temporary Preservation Orders. All registered monuments are included in the Record of Monuments and Places.

PRESERVATION ORDERS AND TEMPORARY PRESERVATION ORDERS

Sites deemed to be in danger of injury or destruction can be allocated Preservation Orders under the 1930 Act. Preservation Orders make any interference with the site illegal. Temporary Preservation Orders can be attached under the 1954 Act. These perform the same function as a Preservation Order but have a time limit of six months, after which the situation must be reviewed. Work may only be undertaken on or in the vicinity of sites under Preservation Orders with the written consent, and at the discretion, of the Minister.

RECORD OF MONUMENTS AND PLACES

Section 12(1) of the 1994 Act requires the Minister for Arts, Heritage, Gaeltacht and the Islands (now the Minister for Housing, Local Government and Heritage) to establish and maintain a record of monuments and places where the Minister believes that such monuments exist. The record comprises a list of monuments and relevant places and a map/s showing each monument and relevant place in respect of each county in the state. All sites recorded on the Record of Monuments and Places receive statutory protection under the National Monuments Act 1994. All recorded monuments on the proposed development site are represented on the accompanying maps.

Section 12(3) of the 1994 Act provides that 'where the owner or occupier (other than the Minister for Housing, Local Government and Heritage) of a monument or place included in the Record, or any other person, proposes to carry out, or to cause or permit the carrying out of, any work at or in relation to such a monument or place, he or she shall give notice in writing to the Minister of Housing, Local Government and Heritage to carry out work and shall not, except in case of urgent necessity and with the consent of the Minister, commence the work until two months after giving of notice'.

Under the National Monuments (Amendment) Act 2004, anyone who demolishes or in any way interferes with a recorded site is liable to a fine not exceeding €3,000 or imprisonment for up to 6 months. On summary conviction and on conviction of indictment, a fine not exceeding €10,000 or imprisonment for up to 5 years is the penalty. In addition they are liable for costs for the repair of the damage caused.

In addition to this, under the *European Communities (Environmental Impact Assessment) Regulations 1989,* Environmental Impact Statements (EIS) are required for various classes and sizes of development project to assess the impact the proposed development will have on the existing environment, which includes the cultural, archaeological and built heritage resources. These document's recommendations are typically incorporated into the conditions under which the proposed development must proceed, and thus offer an additional layer of protection for monuments which have not been listed on the RMP.

THE PLANNING AND DEVELOPMENT ACT 2000

Under planning legislation, each local authority is obliged to draw up a Development Plan setting out their aims and policies with regard to the growth of the area over a five-year period. They cover a range of issues including archaeology and built heritage, setting out their policies and objectives with regard to the protection and enhancement of both. These policies can vary from county to county. The Planning and Development Act 2000 recognises that proper planning and sustainable development includes the protection of the archaeological heritage. Conditions relating to archaeology may be attached to individual planning permissions.

Dublin City Development Plan 2022–2028

It is the Policy of Dublin City Council:

BHA26- Archaeological Heritage

1. To protect and preserve Monuments and Places listed on the statutory Record of Monuments and Places (RMP) as established under Section 12 of the National Monuments (Amendment) Act 1994 which have been identified in the Record of Monuments and Places and the Historic Environment Viewer (www.archaeology.ie) and all wrecks over 100 years old including those in the Shipwreck Inventory of Ireland.
2. To protect archaeological material in situ by ensuring that only minimal impact on archaeological layers is allowed, by way of re-use of standing buildings, the construction of light buildings, low impact foundation design, or the omission of basements (except in exceptional circumstances) in the Monuments and Places listed on the statutory Record of Monuments and Places (RMP) as established under Section 12 of the National Monuments (Amendment) Act 1994.
3. To seek the preservation in situ (or where this is not possible or appropriate, as a minimum, preservation by record) of all archaeological monuments included in the Record of Monuments and Places; all wrecks and associated objects over 100 years old and of previously unknown sites, features and objects of archaeological interest that become revealed through development activity. In respect of decision making on development proposals affecting sites listed in the Record of Monuments and Places, the council will have regard to the advice and/or recommendations of the Department of Housing, Heritage and Local Government.
4. Development proposals within the Record of Monuments and Places (RMP) as established under Section 12 of the National Monuments (Amendment) Act 1994, notification of sites over 0.5 hectares size with potential underwater impacts and of sites listed in the Dublin City Industrial Heritage Record, will be subject to consultation with the City Archaeologist and archaeological assessment prior to a planning application being lodged.
5. To preserve known burial grounds and disused historic graveyards. Where disturbance of ancient or historic human remains is unavoidable, they will be excavated according to best archaeological practice and reburied or permanently curated.
6. Preserve the character, setting, and amenity of upstanding and below ground town wall defences.
7. Development proposals in marine, lacustrine and riverine environments and areas of reclaimed land, shall have regard to the Shipwreck Inventory

maintained by the Department of Housing, Local Government and Heritage and be subject to an appropriate level of archaeological assessment.

8. To have regard to national policy documents and guidelines relating to archaeology and to best practice guidance published by the Heritage Council, the Institute of Archaeologists of Ireland and Transport Infrastructure Ireland.

APPENDIX 3 IMPACT ASSESSMENT & THE CULTURAL HERITAGE RESOURCE

POTENTIAL IMPACTS ON ARCHAEOLOGICAL AND HISTORICAL REMAINS

Impacts are defined as 'the degree of change in an environment resulting from a development' (Environmental Protection Agency 2003: 31). They are described as profound, significant or slight impacts on archaeological remains. They may be negative, positive or neutral, direct, indirect or cumulative, temporary or permanent.

Impacts can be identified from detailed information about a project, the nature of the area affected and the range of archaeological and historical resources potentially affected. Development can affect the archaeological and historical resource of a given landscape in a number of ways.

- Permanent and temporary land-take, associated structures, landscape mounding, and their construction may result in damage to or loss of archaeological remains and deposits, or physical loss to the setting of historic monuments and to the physical coherence of the landscape.

- Archaeological sites can be affected adversely in a number of ways: disturbance by excavation, topsoil stripping and the passage of heavy machinery; disturbance by vehicles working in unsuitable conditions; or burial of sites, limiting accessibility for future archaeological investigation.

- Hydrological changes in groundwater or surface water levels can result from construction activities such as de-watering and spoil disposal, or longer-term changes in drainage patterns. These may desiccate archaeological remains and associated deposits.

- Visual impacts on the historic landscape sometimes arise from construction traffic and facilities, built earthworks and structures, landscape mounding and planting, noise, fences and associated works. These features can impinge directly on historic monuments and historic landscape elements as well as their visual amenity value.

- Landscape measures such as tree planting can damage sub-surface archaeological features, due to topsoil stripping and through the root action of trees and shrubs as they grow.

- Ground consolidation by construction activities or the weight of permanent embankments can cause damage to buried archaeological remains, especially in colluviums or peat deposits.

- Disruption due to construction also offers in general the potential for adversely affecting archaeological remains. This can include machinery, site offices, and service trenches.

Although not widely appreciated, positive impacts can accrue from developments. These can include positive resource management policies, improved maintenance and access to archaeological monuments, and the increased level of knowledge of a site or historic landscape as a result of archaeological assessment and fieldwork.

PREDICTED IMPACTS

The severity of a given level of land-take or visual intrusion varies with the type of monument, site or landscape features and its existing environment. Severity of impact can be judged taking the following into account:

- The proportion of the feature affected and how far physical characteristics fundamental to the understanding of the feature would be lost;

- Consideration of the type, date, survival/condition, fragility/vulnerability, rarity, potential and amenity value of the feature affected;

- Assessment of the levels of noise, visual and hydrological impacts, either in general or site specific terms, as may be provided by other specialists.

APPENDIX 4 MITIGATION MEASURES & THE CULTURAL HERITAGE RESOURCE

POTENTIAL MITIGATION STRATEGIES FOR CULTURAL HERITAGE REMAINS

Mitigation is defined as features of the design or other measures of the proposed development that can be adopted to avoid, prevent, reduce or offset negative effects.

The best opportunities for avoiding damage to archaeological remains or intrusion on their setting and amenity arise when the site options for the development are being considered. Damage to the archaeological resource immediately adjacent to developments may be prevented by the selection of appropriate construction methods. Reducing adverse effects can be achieved by good design, for example by screening historic buildings or upstanding archaeological monuments or by burying archaeological sites undisturbed rather than destroying them. Offsetting adverse effects is probably best illustrated by the full investigation and recording of archaeological sites that cannot be preserved *in situ*.

DEFINITION OF MITIGATION STRATEGIES

ARCHAEOLOGICAL RESOURCE

The ideal mitigation for all archaeological sites is preservation *in situ*. This is not always a practical solution, however. Therefore a series of recommendations are offered to provide ameliorative measures where avoidance and preservation *in situ* are not possible.

Full Archaeological Excavation involves the scientific removal and recording of all archaeological features, deposits and objects to the level of geological strata or the base level of any given development. Full archaeological excavation is recommended where initial investigation has uncovered evidence of archaeologically significant material or structures and where avoidance of the site is not possible. (CIfA 2014b)

Archaeological Test Trenching can be defined as 'a limited programme... of intrusive fieldwork which determines the presence or absence of archaeological features, structures, deposits, artefacts or ecofacts within a specified area or site on land or underwater. If such archaeological remains are present test trenching defines their character and extent and relative quality.' (CIfA 2014a)

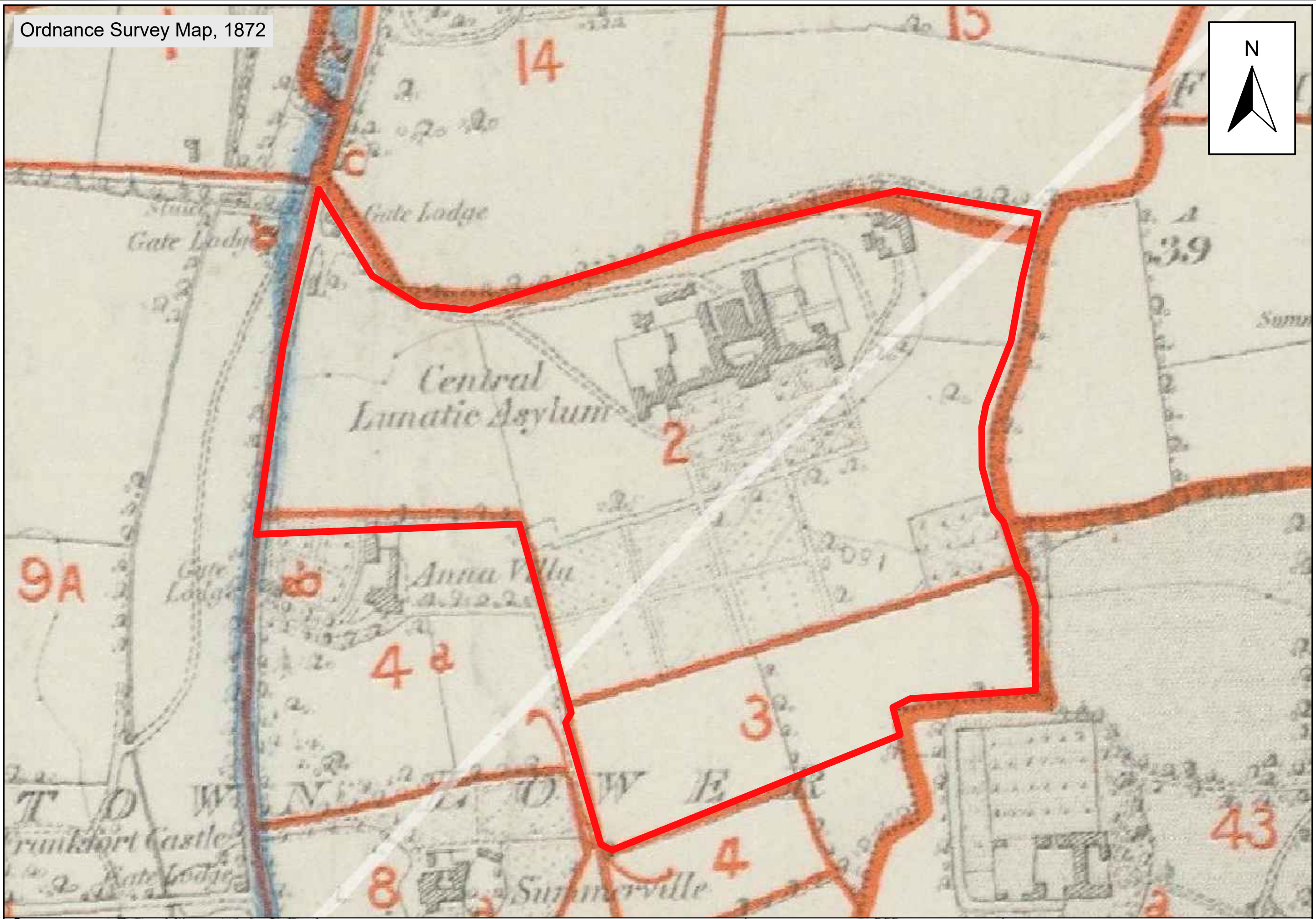
Archaeological Monitoring can be defined as a 'formal programme of observation and investigation conducted during any operation carried out for non-archaeological reasons within a specified area or site on land or underwater, where there is possibility that archaeological deposits may be disturbed or destroyed. The programme will result in the preparation of a report and ordered archive.' (CIfA 2014c)

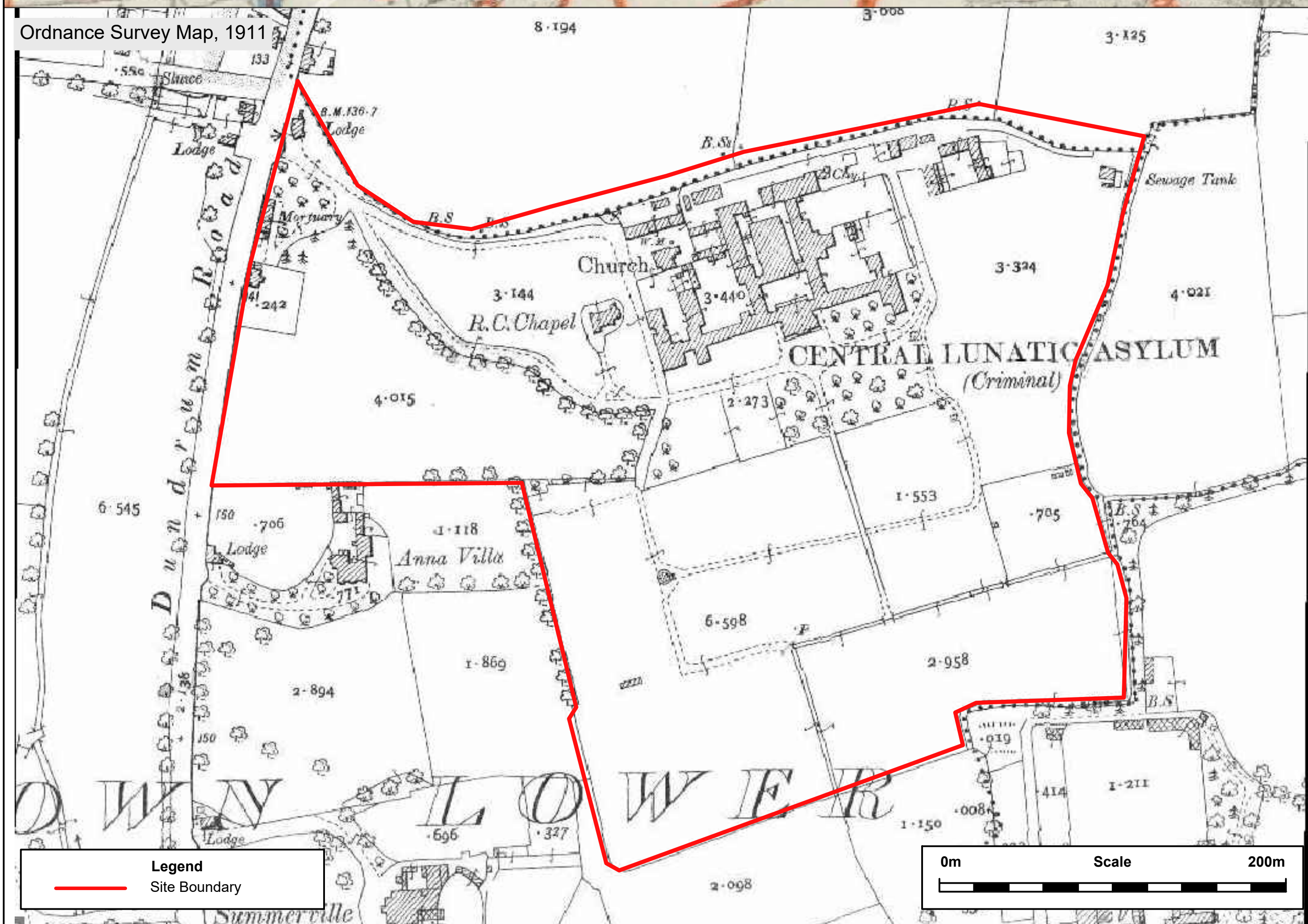
IAC Archaeology

Title	Site location	Scale 1:5000@A4	Drawn by RB
Project	Central Mental Hospital, Dundrum Road, Dublin 14	Date 12.04.24	Checked by MP
			Approved by Text
		Job no. J3676	Fig. 1 · Rev. -

IAC Archaeology

Title	Results of previous Archaeological testing (Piera 2022)	caleą 1:2500@A4	Drawn by RB
Project	Central Mental Hospital, Dundrum Road, Dublin 14	Date 12.04.24	Checked by MP
			Approved by Text
		Job no. J3676	Fig. 2 Rev. -





IAC Archaeology

Title	tract ro rdnance Srvey ap and howing the developent area	Scale A	Drawn by R
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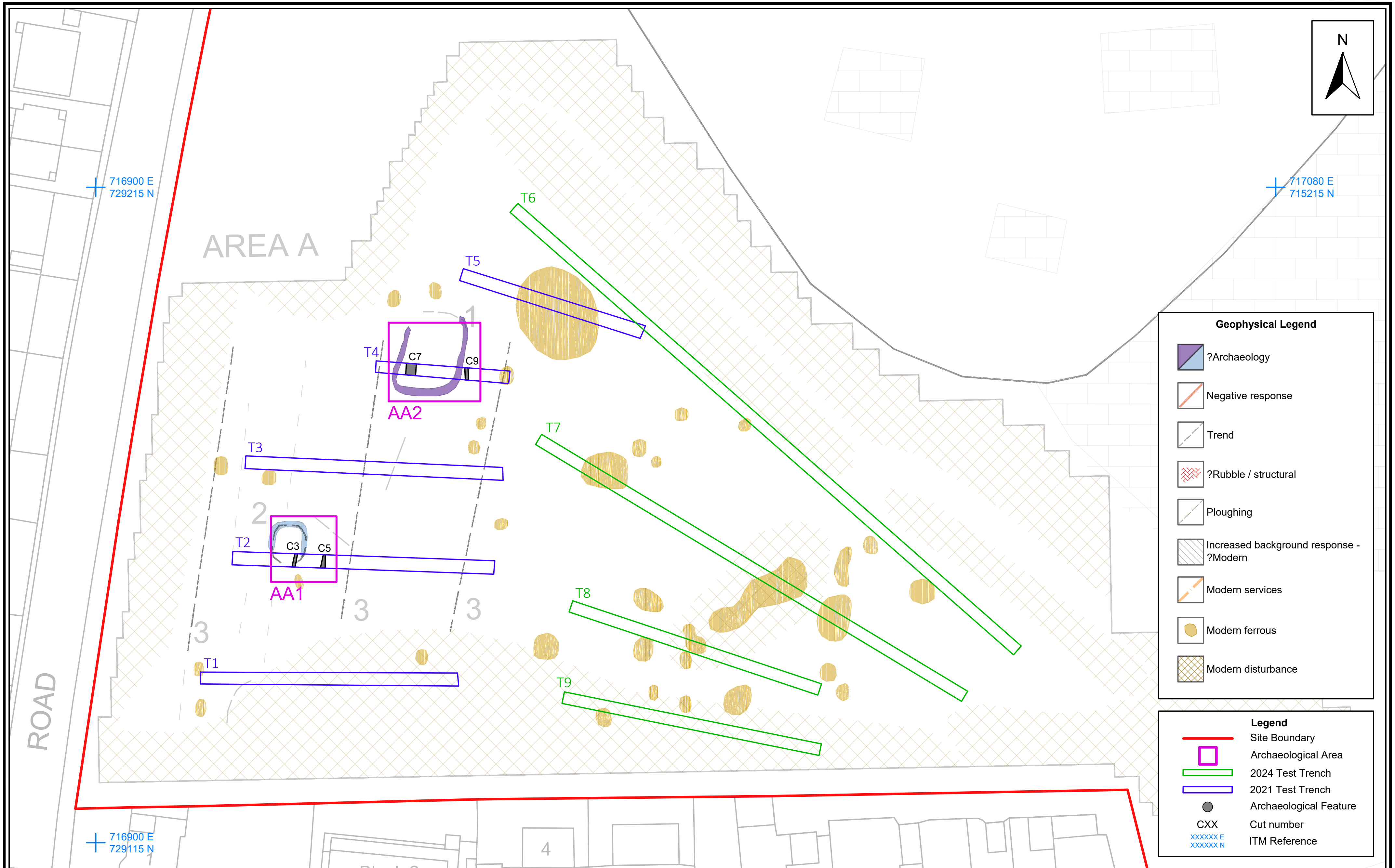
Project	Central ental opital Dndr Road Dblin	Date ..	Approved by Tet
		Job no. J	Fig. . Rev. -

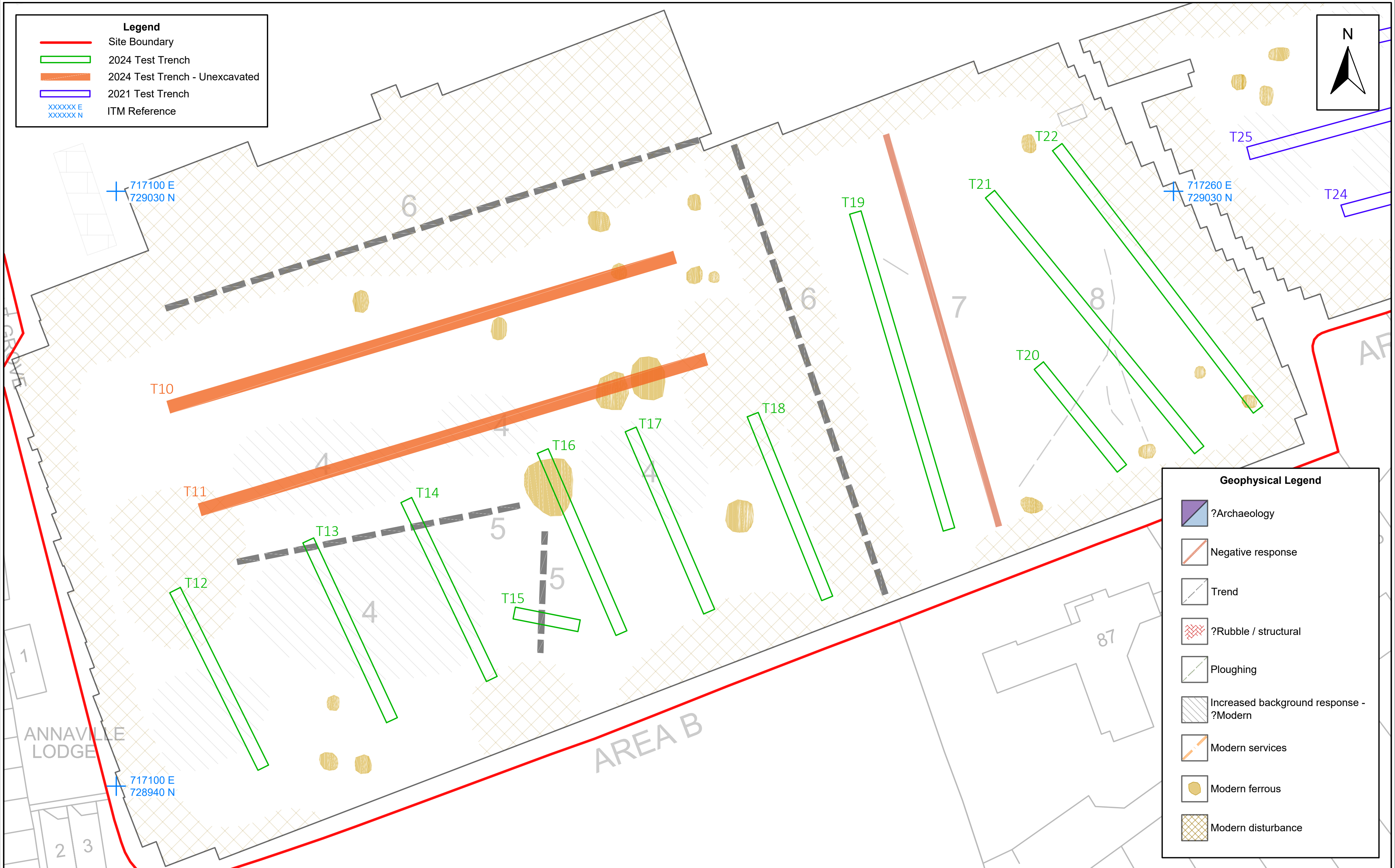
IAC Archaeology

Title	nterpretation o geophyical rvey	Scale A	Drawn by R
			Checked by P
Project	Central ental opital Dndr Road Dblin	Date ..	Approved by Tet
		Job no. J	Fig. . / Rev. -



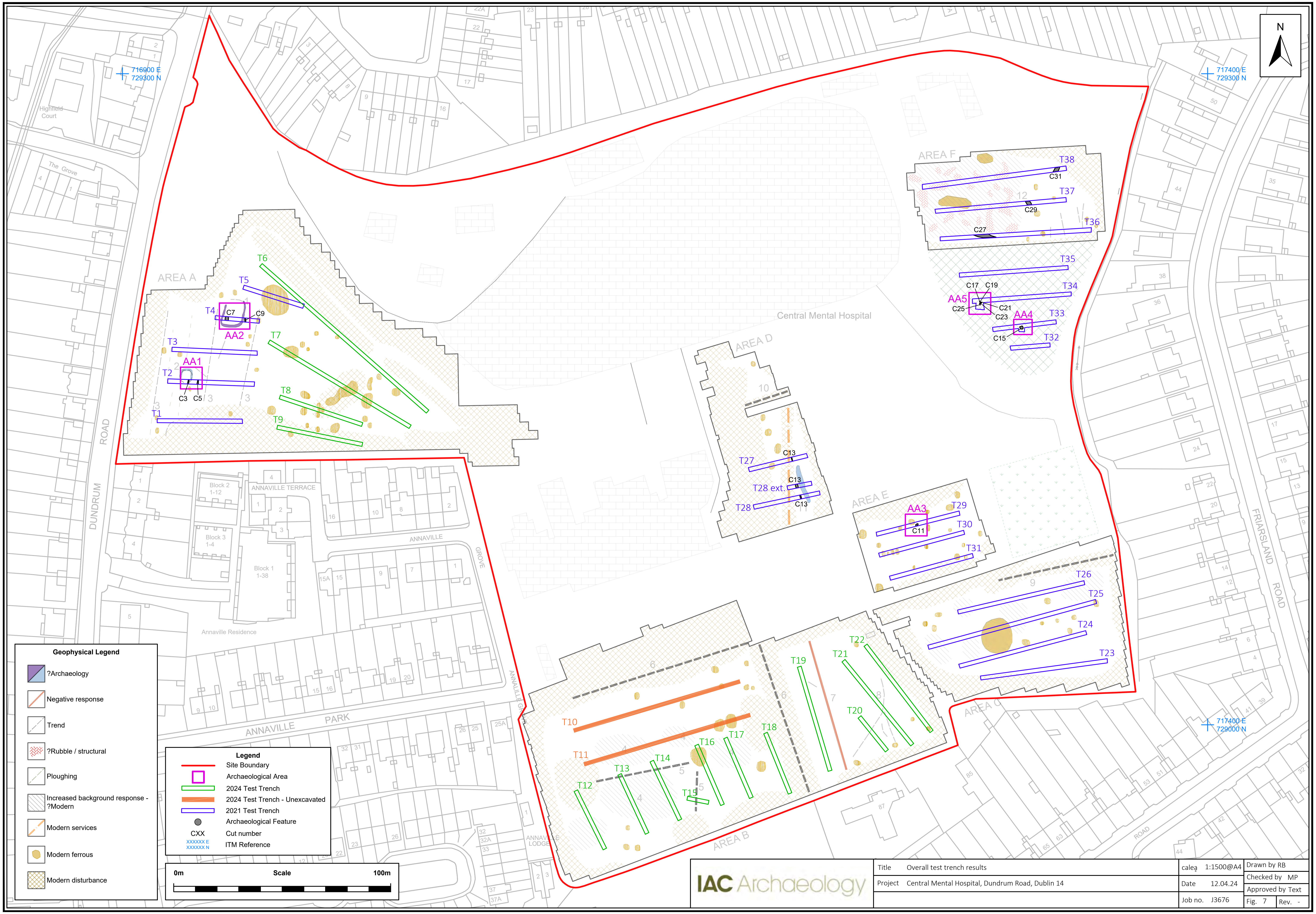
IAC Archaeology

Title	Test Trench Results - Area A	Scale 1:750@A4	Drawn by RB
Project	Central Mental Hospital, Dundrum Road, Dublin 14	Date 12.04.24	Checked by MP
			Approved by Text
		Job no. J3676	Fig. 5 Rev. -



IAC Archaeology

Title	Test Trench Results - Area B	Scale 1:750@A4	Drawn by RB
Project	Central Mental Hospital, Dundrum Road, Dublin 14	Date 12.04.24	Checked by MP
			Approved by Text
		Job no. J3676	Fig. 6 / Rev. -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AREA A
AREA D
AREA E
AREA F
AREA B
AREA C
Central Mental Hospital
DUNDRUM ROAD
FRIARSLAND ROAD
ANNAVILLE PARK
ANNAVILLE TERRACE
ANNAVILLE GROVE
Annaville Residence
Block 1 1-38
Block 2 1-12
Block 3 1-4
The Grove
Highfield Court
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AA2
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C21
C23
C25
C27
C29
C31
Geophysical Legend
?Archaeology
Negative response
Trend
?Rubble / structural
Ploughing
Increased background response - ?Modern
Modern services
Modern ferrous
Modern disturbance
Legend
Site Boundary
Archaeological Area
2024 Test Trench
2024 Test Trench - Unexcavated
2021 Test Trench
Archaeological Feature
CXX Cut number
XXXXXX E XXXXXX N ITM Reference
0m
Scale
100m
IAC Archaeology
Title Overall test trench results
Project Central Mental Hospital, Dundrum Road, Dublin 14
Scale 1:1500@A4
Date 12.04.24
Job no. J3676
Drawn by RB
Checked by MP
Approved by Text
Fig. 7
Rev. -

Plate 1 Trench 6, facing northwest

Plate 2 Trench 7, facing northwest

Plate 3 Trench 8, facing southeast

Plate 4 Trench 9, facing northwest

Plate 5 Trenches 6-9 in Area A, facing northwest

Plate 6 Trench 12, facing north

Plate 7 Trench 13, facing south

Plate 8 Trench 14, facing north

Plate 9 Trench 15, facing northwest

Plate 10 Trenches 13-16 in Area B, facing east

Plate 11 Trench 16, facing south

Plate 12 Trench 17, facing south


Plate 13 Trench 18, facing southeast


Plate 14 Trench 19, facing north


Plate 15 Trench 20, facing south


Plate 16 Trench 21, facing north

Plate 17 Stone drain in Trench 21, facing northwest

Plate 18 Trench 22, facing north

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RESOURCE & WASTE MANAGEMENT PLAN FOR A PROPOSED RESIDENTIAL DEVELOPMENT

FORMER CENTRAL MENTAL HOSPITAL, DUNDRUM, DUBLIN 14

APPENDIX 19.1

Report Prepared For

Dún Laoghaire Rathdown County Council (DLRCC) in partnership with the Land Development Agency (LDA)

Report Prepared By

Chonaill Bradley, Principal Environmental Consultant

Our Reference

CB/247501.0042WMR01

Date of Issue

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AWN Consulting Limited
Registered in Ireland No. 319812

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Details	Written by	Approved by
Signature		
Name	Chonaill Bradley	Fergal Callaghan
Title	Principal Environmental Consultant	Director
Date	03 September 2024	03 September 2024

CONTENTS

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1.0 INTRODUCTION

AWN Consulting Ltd. (AWN) has prepared this Construction & Demolition (C&D) Resource & Waste Management Plan (RWMP) on behalf of Dún Laoghaire Rathdown County Council (DLRCC), in partnership with The Land Development Agency (LDA), is seeking a ten year approval to carry out the following proposed development which is located on a total application site area of c. 9.7 ha, located on the former Central Mental Hospital, Dundrum Road, Dundrum, Dublin 14 and areas of Dundrum Road and St. Columbanus Road, Dublin 14. The subject site is in the immediate setting and curtilage of a number of protected structures, namely the 'Asylum' (RPS No. 2072), the 'Catholic Chapel' (RPS No. 2071) and the 'Hospital Building' (RPS No. 2073).

This plan will provide information necessary to ensure that the management of C&D waste at the site is undertaken in accordance with all current legal and industry standards including the *Waste Management Act 1996* as amended and associated Regulations [1], *Environmental Protection Agency Act 1992* as amended [2], *Litter Pollution Act 1997* as amended [3] and the National Waste Management Plan for a Circular Economy (NWMPCE) (2024) [4]. In particular, this plan aims to ensure maximum recycling, reuse and recovery of waste with diversion from landfill, wherever possible. It also provides appropriate measures in relation to the collection and transport of waste from the site to prevent issues associated with litter or more serious environmental pollution (e.g. contamination of soil and/or water).

This RWMP includes information on the legal and policy framework for C&D waste management in Ireland, estimates of the type and quantity of waste to be generated by the proposed development and prescribes measures for the management of different waste streams. The RWMP should be viewed as a live document and will be regularly revisited throughout the project's lifecycle so that opportunities to maximise waste reduction / efficiencies are exploited throughout, and that data is collected on an ongoing basis so that it is as accurate as possible.

2.0 C&D WASTE MANAGEMENT IN IRELAND

2.1 National Level

The Irish Government issued a policy statement in September 1998*, Changing Our Ways* [5], which identified objectives for the prevention, minimisation, reuse, recycling, recovery and disposal of waste in Ireland. The target for C&D waste in this report was to recycle at least 50% of C&D waste within a five year period (by 2003), with a progressive increase to at least 85% over fifteen years (i.e. 2018).

In response to the *Changing Our Ways* report, a task force (Task Force B4) representing the waste sector of the already established Forum for the Construction Industry, released a report entitled '*Recycling of Construction and Demolition Waste'* [6] concerning the development and implementation of a voluntary construction industry programme to meet the Government's objectives for the recovery of C&D waste.

In September 2020, the Irish Government published a policy document outlining a new action plan for Ireland to cover the period of 2020-2025. This plan, *'A Waste Action Plan for a Circular Economy'* [7] (WAPCE), replaces the previous national waste management plan, *"A Resource Opportunity"* (2012), and was prepared in response to the 'European

Green Deal' which sets a roadmap for a transition to an altered economical model, where climate and environmental challenges are turned into opportunities.

The WAPCE sets the direction for waste planning and management in Ireland up to 2025. This reorientates policy from a focus on managing waste to a much greater focus on creating circular patterns of production and consumption. Other policy statements of a number of public bodies already acknowledge the circular economy as a national policy priority.

The policy document contains over 200 measures across various waste areas including circular economy, municipal waste, consumer protection and citizen engagement, plastics and packaging, construction and demolition, textiles, green public procurement and waste enforcement.

One of the first actions to be taken was the development of the Whole of Government Circular Economy Strategy 2022-2023 'Living More, Using Less' (2021) [8] to set a course for Ireland to transition across all sectors and at all levels of Government toward circularity and was issued in December 2021. It is anticipated that the Strategy will be updated in full every 18 months to 2 years.

The Circular Economy and Miscellaneous Provisions Act 2022 [9] was signed into law in July 2022. The Act underpins Ireland's shift from a "take-make-waste" linear model to a more sustainable pattern of production and consumption, that retains the value of resources in our economy for as long as possible and that will work to significantly reduce our greenhouse gas emissions. The Act defines Circular Economy for the first time in Irish law, incentivises the use of recycled and reusable alternatives to wasteful, single-use disposable packaging, introduces a mandatory segregation and incentivised charging regime for commercial waste, streamlines the national processes for End-of-Waste and By-Products decisions, tackling the delays which can be encountered by industry, and supporting the availability of recycled secondary raw materials in the Irish market, and tackles illegal fly-tipping and littering.

The Environmental Protection Agency (EPA) of Ireland issued '*Best Practice Guidelines for the Preparation of Resource & Waste Management Plans for Construction & Demolition Projects'* in November 2021 [10]. These guidelines replace the previous 2006 guidelines issued by The National Construction and Demolition Waste Council (NCDWC) and the Department of the Environment, Heritage and Local Government (DoEHLG) in 2006 [11]. The guidelines provide a practical approach which is informed by best practice in the prevention and management of C&D wastes and resources from design to construction of a project, including consideration of the deconstruction of a project. These guidelines have been followed in the preparation of this document and include the following elements:

- Predicted C&D wastes and procedures to prevent, minimise, recycle and reuse wastes;
- Design teams roles and approach;
- Relevant EU, national and local waste policy, legislation and guidelines;
- Waste disposal/recycling of C&D wastes at the site;
- Provision of training for Resource Manager (RM) and site crew;
- Details of proposed record keeping system;
- Details of waste audit procedures and plan; and

- Details of consultation with relevant bodies i.e. waste recycling companies, Local Authority, etc.

Section 3 of the Guidelines identifies thresholds above which there is a requirement for the preparation of a RWMP for developments. The new guidance classifies developments on a two-tiered system. Developments which do not exceed any of =the following thresholds may be classed as Tier 1 development:

- New residential development of less than 10 dwellings.
- Retrofit of 20 dwellings or less.
- New commercial, industrial, infrastructural, institutional, educational, health and other developments with an aggregate floor area less than 1,250m^2.
- Retrofit of commercial, industrial, infrastructural, institutional, educational, health and other developments with an aggregate floor area less than 2,000m^2; and
- Demolition projects generating in total less than 100m^3 in volume of C&D waste.

A development which exceeds one or more of these thresholds is classed as a Tier-2 development .

This development requires a RWMP as a Tier 2 development as it is above following criterion:

- New residential developments of less than 10 dwellings;
- New commercial, industrial, infrastructural, institutional, educational, health and other developments with an aggregate floor area less than 1,250m^2; and
- Demolition projects generating in total less than 100m^3 in volume of C&D waste.

Other guidelines followed in the preparation of this report include *'Construction and Demolition Waste Management – a handbook for Contractors and Site Managers'* [12], published by FÁS and the Construction Industry Federation in 2002 and the previous guidelines, *'Best Practice Guidelines for the Preparation of Waste Management Plans for Construction and Demolition Projects' (2006).*

These guidance documents are considered to define best practice for C&D projects in Ireland and describe how C&D projects are to be undertaken such that environmental impacts and risks are minimised and maximum levels of waste recycling are achieved.

2.2 Regional Level

The proposed development is located in the Local Authority area of Dún Laoghaire Rathdown County Council (DLRCC). The Eastern Midlands Region (EMR) Waste Management Plan 2015 – 2021, which previously governed waste management policy in the DLRCC area, has been superseded as of March 2024 by the NWMPCE 2024 – 2030, the new national waste management plan for Ireland.

The NWMPCE does not dissolve the three regional waste areas. The NWCPCE sets the ambition of the plan to have a 0% total waste growth per person over the life of the Plan with an emphasis on non-household wastes including waste from commercial activities and the construction and demolition sector.

This Plan seeks to influence sustainable consumption and prevent the generation of waste, improve the capture of materials to optimise circularity and enable compliance with policy and legislation.

The national plan sets out the following strategic targets for waste management in the country that are relevant to the development:

Proposed National Targets

1B. (Construction Materials) 12% Reduction in Construction & Demolition Waste Generated by 2030.

3B. (Reuse Facilities) Provide for reuse at 10 Civic Amenity Sites, minimum

Municipal landfill charges in Ireland are based on the weight of waste disposed. In the Leinster Region, charges are approximately €140 - €160 per tonne of waste which includes an €85 per tonne landfill levy introduced under the *Waste Management (Landfill Levy) (Amendment) Regulations 2015 (as amended).*

The *Dún Laoghaire-Rathdown County Development Plan 2022 – 2028* [13] sets out a number of policies for the Dún Laoghaire-Rathdown area in line with the objectives of the regional waste management plan and the new circular economy strategy.

The policy objectives with a particular relevance to the proposed development are as follows:

Policy Objective EI11: Resource Management

It is a Policy Objective to implement the Eastern-Midlands Region Waste Management Plan 2015-2021 and subsequent plans, in supporting the transition from a waste management economy towards a circular economy, to enhance employment and increase the value recovery and recirculation of resources. Underpinning this objective is the requirement to conform to the European Union and National Waste Management Hierarchy of the most favoured options for waste as illustrated below subject to economic and technical feasibility and Environmental Assessment.

Policy Objective EI12: Waste Management Infrastructure, Prevention, Reduction, Reuse and Recycling

- To support the principles of the circular economy, good waste management and the implementation of best international practice in relation to waste management in order for the County and the Region to become self-sufficient in terms of resource and waste management and to provide a waste management infrastructure that supports this objective.

- To provide for civic amenity facilities and bring centres as part of an integrated waste collection system in accessible locations throughout the County and promote the importance of kerbside source segregated collection of household and commercial waste as the best method to ensure the quality of waste presented for recycling is preserved.

- To ensure any waste amenity facilities adhere to the Waste Regional Offices Waste Management Infrastructure siting guidelines.

- To develop a County wide network of multi material recycling centres, bring centres and a re-use centre and to require the provision of adequately-sized recycling facilities in new commercial and large-scale residential developments, where appropriate.

- To require the inclusion of such centres in all large retail developments to maximise access by the public. To ensure new developments are designed and constructed in line with the Council's Guidelines for Waste Storage Facilities.

Policy Objective EI13: Hazardous Waste

It is a Policy Objective to adhere to the recommendations of the 'National Hazardous Waste Management Plan 2014-2020' and any subsequent plan, and to co-operate with other agencies, to plan, organise, authorise and supervise the disposal of hazardous waste streams, including hazardous waste identified during construction and demolition projects.

2.3 Legislative Requirements

The primary legislative instruments that govern waste management in Ireland and applicable to the development are:

- Waste Management Act 1996 as amended.
- Waste Framework Directive (Directive 2008/98/EC)
- Environmental Protection Agency Act 1992 as amended.
- Litter Pollution Act 1997 as amended.
- Planning and Development Act 2000 as amended [14].
- Circular Economy and Miscellaneous Provisions Act 2022.

One of the guiding principles of European waste legislation, which has in turn been incorporated into the *Waste Management Act 1996* as amended and subsequent Irish legislation, is the principle of *"Duty of Care"*. This implies that the waste producer is responsible for waste from the time it is generated through until its legal recycling, recovery or disposal (including its method of disposal). As it is not practical in most cases for the waste producer to physically transfer all waste from where it is produced to the final destination, waste contractors will be employed to physically transport waste to the final destination. Following on from this is the concept of *"Polluter Pays"* whereby the waste producer is liable to be prosecuted for pollution incidents, which may arise from the incorrect management of waste produced, including the actions of any contractors engaged (e.g. for transportation and disposal/recovery/recycling of waste).

It is therefore imperative that the Developer ensures that the waste contractors engaged by construction contractors are legally compliant with respect to waste transportation, recycling, recovery and disposal. This includes the requirement that a contractor handle, transport and recycle/recover/dispose of waste in a manner that ensures that no adverse environmental impacts occur as a result of any of these activities.

A collection permit to transport waste must be held by each waste contractor which is issued by the National Waste Collection Permit Office (NWCPO). Waste receiving facilities must also be appropriately permitted or licensed. Operators of such facilities cannot receive any waste, unless in possession of a Certificate of Registration (COR) or waste permit granted by the relevant Local Authority under the *Waste Management (Facility Permit & Registration) Regulations 2007* as amended or a Waste or Industrial Emissions Licence granted by the EPA. The COR / permit / licence held will specify the type and quantity of waste able to be received, stored, sorted, recycled, recovered and/or disposed of at the specified site.

2.4 Local Authority Guidelines

DLRCC's Waste Management Division have issued *Guidance Notes for Environmental Design and Management of Construction Projects* (August 2022) [15] which provide good practice guidance for environmental design and construction of new build high density developments to assist developers in demonstrating to local planning and waste management authorities that they have considered how the design, construction and operation of the proposed development complies with best environmental management practice.

Waste planning shall take account of "Best Practice Guidelines for the preparation of resource & waste management plans for construction & demolition projects", published by the Environmental Protection Agency in 2021.

The objective of the guidelines is to allow developers and designers to demonstrate to local planning and waste management authorities that they have considered how the design and the operation of waste management services will enable construction and demolition contractors to effectively manage their wastes arisings.

The following list sets out the main points that are considered to be necessary to proper construction waste management:

- Identification, subject to site restrictions, of a dedicated and secure compound, containing bins and skips into which all waste generated by construction site activities will be placed and designation of a single person with responsibility for provision of signage and verbal instruction to ensure proper housekeeping, maintenance of records and segregation of construction waste materials.

- Measures to ensure tracking of all waste generated to final destination. The recording of gate receipts for the licenced facility to which excavation and demolition wastes are brought is essential to ensure that waste materials removed from sites are properly disposed of and that site management is in compliance with statutory obligations under the Waste Management Acts 1996, as amended.

- Analysis of the waste arisings/material surpluses; specific waste management objectives for the project; and proposals for prevention, reuse and recycling of waste, including applications under Article 27 of the European Communities (Waste Directive) Regulations, 2011 and planning for design of projects to facilitate maintenance, replacement and re-use of building materials, recycling of demolition material and the use of materials from renewable sources.

- In all developments in excess of 10 housing units and commercial developments in excess of 1000 sq.m, a materials source and management plan illustrating design for maintenance and replacement in addition to type of materials/proportion of re-use/recycled materials to be used shall be developed and implemented by the developer to support the development of the circular economy.

- Identification and management of any Hazardous Wastes likely to arise during the construction process. In the event that hazardous soil, or historically deposited hazardous waste is encountered during the work, the contractor must notify Dún Laoghaire Rathdown County Council, Environmental Enforcement Section, and provide a Hazardous/Contaminated Soil Management Plan, to include estimated tonnages, description of location, any relevant mitigation or monitoring proposed, and destinations for authorised disposal/treatment, in addition to information on the authorised waste collector(s).

- Identification and management of any invasive species found, including plans for eradication and follow up checks.

This RWMP has been prepared to demonstrate exactly that and aims to do that in a comprehensive manner.

3.0 Design Approach

The client and the design team have integrated the *'Best Practice Guidelines for the Preparation of Resource & Waste Management Plans for Construction & Demolition Projects'* guidelines into the design workshops, to help review processes, identify and evaluate resource reduction measures and investigate the impact on cost, time, quality, buildability, second life and management post demolition and construction. Further details on these design principals can be found within the aforementioned guidance document.

The design team have undertaken the design process in line with the international best practice principles to firstly prevent wastes, reuse where possible and thereafter sustainably reduce and recover materials. The below sections have been the focal point of the design process and material selections and will continued to be analysed and investigated throughout the design process and when selecting material.

The approaches presented are based on international principles of optimising resources and reducing waste on demolition and construction projects through:

- Prevention;
- Reuse;
- Recycling;
- Green Procurement Principles;
- Off-Site Construction;
- Materials Optimisation; and
- Flexibility and Deconstruction.

3.1 Designing For Prevention, Reuse and Recycling

Undertaken at the outset and during project feasibility and evaluation, the Client and Design Team considered:

- Establishing the potential for any reusable site assets (buildings, structures, equipment, materials, soils, etc.);
- The potential for refurbishment and refit of existing structures or buildings rather than demolition and new build;
- Assessing any existing buildings on the site that can be refurbished either in part or wholly to meet the Client requirements; and
- Enabling the optimum recovery of assets on site.

3.2 Designing for Green Procurement

Waste prevention and minimisation pre-procurement have been discussed and will be further discussed in this section. The Design Team will discuss proposed design solutions, encourage innovation in tenders and incentivise competitions to recognise sustainable approaches. They should also discuss options for packaging reduction with the main Contractor and subcontractors/suppliers using measures such as ‘Just-in-Time’ delivery and use ordering procedures that avoid excessive waste. The Green procurement extends from the planning stage into the detailed design and tender stage and will be an ongoing part of the long-term design and selection process for this development.

3.3 Designing for Off-Site Construction

Use of off-site manufacturing has been shown to reduce residual wastes by up to 90% (volumetric building versus traditional). The decision to use offsite construction is typically cost led but there are significant benefits for resource management. Some further considerations for procurement which are being investigated as part of the planning stage design process are listed as follows:

- Modular buildings as these can displace the use of concrete and the resource losses associated with concrete blocks such as broken blocks, mortars, etc.;
    - Modular buildings are typically pre-fitted with fixed plasterboard and installed insulation, eliminating these residual streams from site.
- Use of pre-cast structural concrete panels which can reduce the residual volumes of concrete blocks, mortars, plasters, etc.;
- The use of prefabricated composite panels for walls and roofing to reduce residual volumes of insulation and plasterboards;
- Using pre-cast hollow-core flooring instead of in-situ ready mix flooring or timber flooring to reduce the residual volumes of concrete/formwork and wood/packaging, respectively; and
- Designing for the preferential use of offsite modular units.

3.4 Designing for Materials Optimisation During Construction

To ensure manufacturers and construction companies adopt lean production models, including maximising the reuse of materials onsite as outlined in section 2.1. This helps to reduce the environmental impacts associated with transportation of materials and from waste management activities. This includes investigating the use of standardised sizes for certain materials to help reduce the amount of offcuts produced on site, focusing on promotion and development of off-site manufacture.

3.5 Designing for Flexibility and Deconstruction

Design flexibility has and will be investigated throughout the design process to ensure that where possible products (including buildings) only contain materials that can be recycled and are designed to be easily disassembled. Material efficiency is being considered for the duration and end of life of a building project to produce; flexible, adaptable spaces that enable a resource-efficient, low-waste future change of use; durability of materials and how they can be recovered effectively when maintenance and refurbishment are undertaken and during disassembly/deconstruction.

4.0 DESCRIPTION OF THE DEVELOPMENT

4.1 Location, Size and Scale of the Development

Dún Laoghaire Rathdown County Council, in partnership with The Land Development Agency, is seeking a ten year approval to carry out the following proposed development which is located on a total application site area of c. 9.7 ha, located on the former Central Mental Hospital, Dundrum Road, Dundrum, Dublin 14 and areas of Dundrum Road and St. Columbanus Road, Dublin 14. The subject site is in the immediate setting and curtilage of a number of protected structures, namely the 'Asylum' (RPS No. 2072), the 'Catholic Chapel' (RPS No. 2071) and the 'Hospital Building' (RPS No. 2073).

The development will consist of the construction of a residential scheme of 934 no. dwellings on an overall site of c. 9.7 ha.

The development will consist of the demolition of existing structures associated with the existing use (3,677 sq m), including:

- Single storey former swimming pool / sports hall and admissions unit (2,750 sq m);
- Two storey redbrick building (305 sq m);
- Single storey ancillary and temporary structures including portacabins (618sq m);
- Removal of existing internal sub-divisions/ fencing, including removal of security fence at Dundrum Road entrance;
- Demolition of section of porch and glazed screens at Gate Lodge building (4 sq m);
- Removal of walls adjacent to Main Hospital Building;
- Alterations and removal of section of wall to Walled Garden.
- The development will also consist of alterations and partial demolition of the perimeter wall, including:
- Alterations and removal of section of perimeter wall adjacent to Rosemount Green (south);
- Formation of a new opening in perimeter wall at Annaville Grove to provide a pedestrian and cyclist access;
- Alterations and removal of sections of wall adjacent to Dundrum Road (including removal of existing gates and entrance canopy), including reduction in height of section, widening of existing vehicular access, and provision of a new vehicle, cyclist and pedestrian access;
- Alterations and removal of section of perimeter wall adjacent to Mulvey Park to provide a pedestrian and cyclist access.

- The development with a total gross floor area of c. 94,058 sq m (c. 93,980 sq m excluding retained existing buildings), will consist of 934 no. residential units comprising:
- 926 no. apartments (consisting of 342 no. one bedroom units; 98 no. two bedroom (3 person) units; 352 no. two bedroom (4 person) units; and 134 no. three bedroom units) arranged in 9 blocks (Blocks 02-10) ranging between 2 and 8 storeys in height (with a lower ground floor to Blocks 02 and Block 10 and Basements in Blocks 03 and 04), together with private balconies and private terraces and communal amenity open space provision (including courtyards) and ancillary residential facilities, including an 130 sq m internal residential amenity area at the Ground Floor Level of Block 3;
- 6 no. three bedroom duplex apartments located at Block 02, together with private balconies and terraces.
- 2 no. 5 bedroom assisted living units and private rear gardens located at Block 02.

The development will also consist of 4,380 sq m of non-residential uses, comprising:

- Change of use and renovation of existing single storey Gate Lodge building (former reception/staff area) to provide a café unit (78 sq m);
- 1 no. restaurant unit (266 sq m) located at ground floor level at Block 03;
- 3 no. retail units (1,160 sq m) located at ground floor level at Blocks 03 and 07;
- 1 no. medical unit (288 sq m) located at ground floor level at Block 02;
- A new childcare facility (716 sq m) and associated outdoor play area located at lower ground and ground floor level at Block 10;
- A management suite (123 sq m) located at ground floor level at Block 10; and
- A new community centre facility, including a multi-purpose hall, changing rooms, meeting rooms, storage and associated facilities (1,749 sq m) located at ground and first floor level at Block 06.

Vehicular access to the site will be from a new signalised access off Dundrum Road to the south of the existing access and the existing access of Dundrum Road will be retained for emergency vehicle, pedestrian and cyclist access only. The development will also consist of the provision of public open space and related play areas; hard and soft landscaping including internal roads, cycle and pedestrian routes, active travel routes for cyclists and pedestrians, pathways and boundary treatments, street furniture, wetland features, part-basement, car parking (524 no. spaces in total, including car sharing and accessible spaces); motorcycle parking; electric vehicle charging points; bicycle parking (long and short stay spaces including stands); ESB substations, piped infrastructural services and connections (including connection into existing surface water sewer in St. Columbanus Road); ducting; plant (including external plant for Air Source Heat Pumps and associated internal heating plantrooms); waste management provision; SuDS measures (including green roofs, blue roofs, bio-retention areas); attenuation tanks; sustainability measures (including solar panels); signage; public lighting; any making good works to perimeter wall and all site development and excavation works above and below ground.

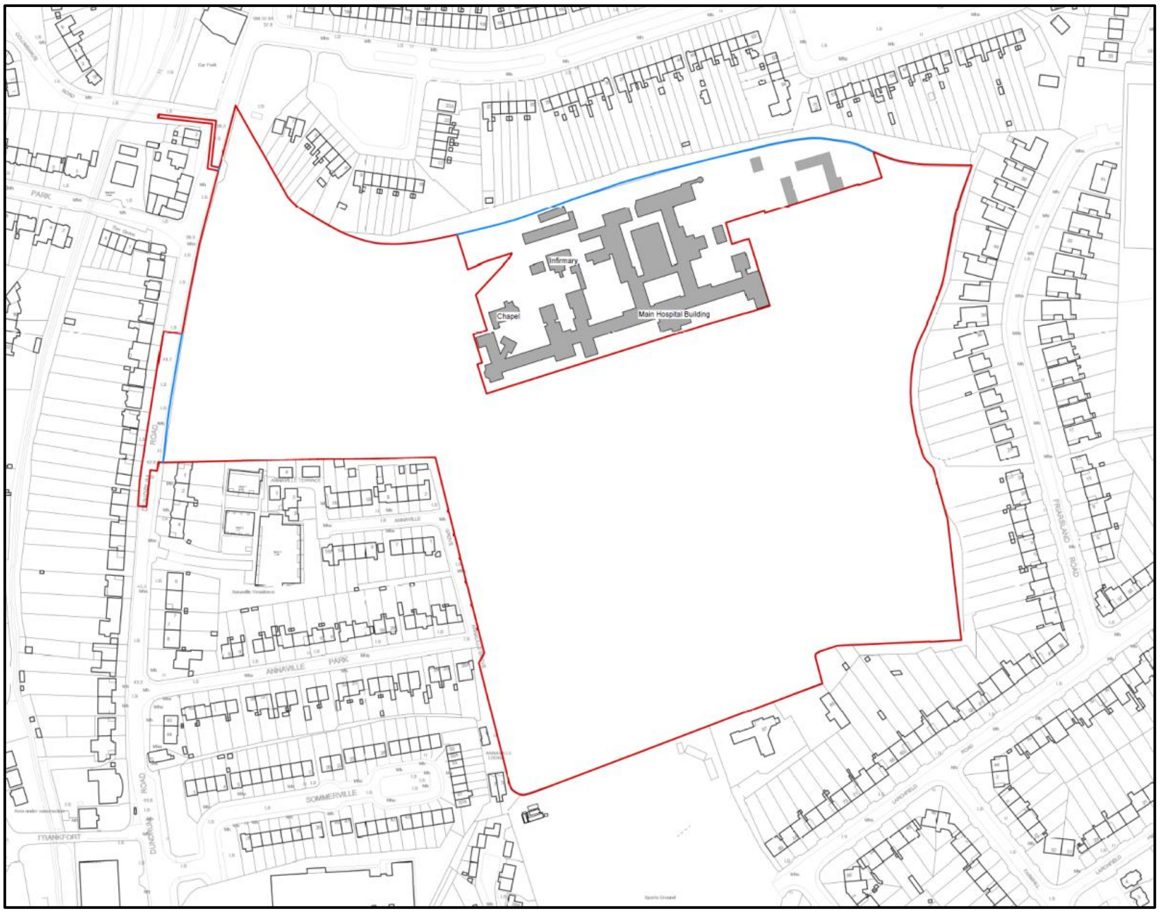

Figure 3.1 *Proposed site location (illustrated by red line boundary)*

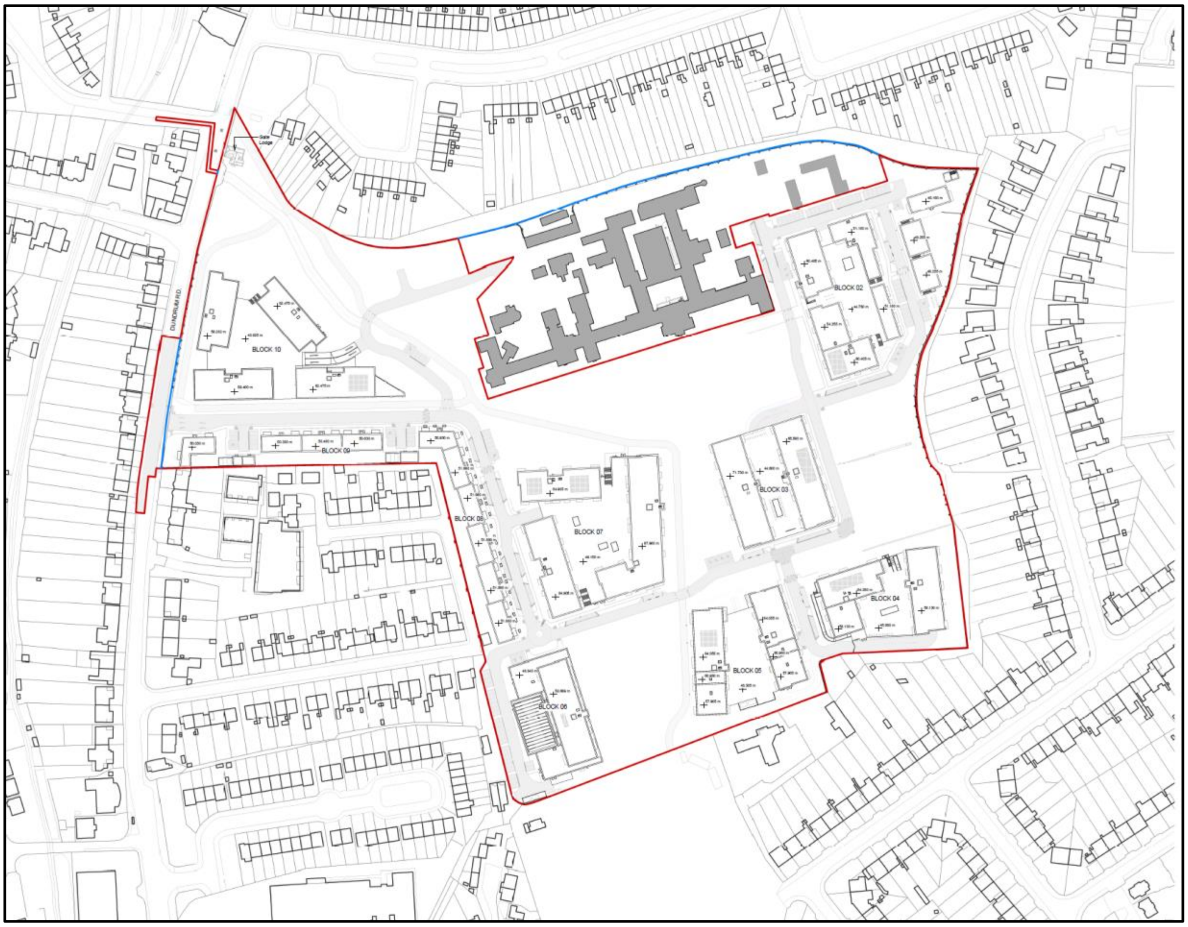

Figure 3.2 *Proposed site layout*

4.2 Details of the Non-Hazardous Wastes to be Produced

There will be waste materials generated from the demolition and refurbishment of some of the existing buildings and hardstanding areas on site, as well as from the further excavation of the building foundations. Further details can be found in section 3.1 project description or in chapter 5 Description of the Proposed Project of the EIAR. The volume of waste generated from demolition will be more difficult to segregate than waste generated from the construction phase, as many of the building materials will be bonded together or integrated i.e. plasterboard on timber ceiling joists, steel embedded in concrete, etc.

There will be soil, stones, gravel and made ground excavated to facilitate construction of new foundations and underground services. The project engineers (Barrett Mahony) have estimated that c. 78,000m^3 of material will need to be excavated to do so. It is currently envisaged that c. 7,000m^3 of excavated will be able to be retained and reused on site while the remaining c. 71,000m^{3}of excavated material will be required to be removed off site reuse, recycling or disposal.

During the construction phase there may be a surplus of building materials, such as timber off-cuts, broken concrete blocks, cladding, plastics, metals and tiles generated. There may also be excess concrete during construction which will need to be disposed of. Plastic and cardboard waste from packaging and supply of materials will also be generated. The contractor will be required to ensure that oversupply of materials is kept to a minimum and opportunities for reuse of suitable materials is maximised.

Waste will also be generated from construction workers e.g. organic / food waste, dry mixed recyclables (waste paper, newspaper, plastic bottles, packaging, aluminium cans, tins and Tetra Pak cartons), mixed non-recyclables and potentially sewage sludge from temporary welfare facilities provided on site during the construction phase. Waste printer / toner cartridges, waste electrical and electronic equipment (WEEE) and waste batteries may also be generated infrequently from site offices.

4.3 Potential Hazardous Wastes Arising

4.3.1 Contaminated Soil

Soil investigations were undertaken by Site Investigation Ltd. In March, August and September 2021, with 70 samples being sent for environmental testing and analysis against the Waste Acceptance Criteria (WAC). Following the receipt of results from testing a waste classification report was prepared by Site Investigations Ltd. in accordance with the EPA publication entitled *'Waste Classification: List of Waste & Determining if Waste is Hazardous or Non-Hazardous'* [16] using the *HazWasteOnline* application.

Of the 70 no. samples tested, 36 no. were within the Inert waste threshold, 23 no. were outside the Inert threshold but within the Non-Hazardous threshold and 11 no. were outside of the test limits for Non-Hazardous materials. In the 11 no. cases, the samples were taken at a shallow level between 0.2 & 0.4m bgl and all failed in the test for Total Organic Carbon Content only. This likely indicates the presence of wood in the samples.

In the event that contaminated material is found on site, this material will need to be segregated from clean/inert material, tested and classified as either non-hazardous or hazardous in accordance with the EPA publication entitled *'Waste Classification: List of Waste & Determining if Waste is Hazardous or Non-Hazardous'* [17] using the *HazWasteOnline* application (or similar approved classification method). The material will then need to be classified as clean, inert, non-hazardous or hazardous in accordance with the *EC Council Decision 2003/33/EC* [18], which establishes the criteria for the acceptance of waste at landfills.

In the event that Asbestos Containing Materials (ACMs) are found within the excavated material, the removal will only be carried out by a suitably permitted waste contractor, in accordance with *the Safety, Health and Welfare at Work (Exposure to Asbestos) Regulations 2006-2010 and the Best Practice Guidance for Handling Asbestos (2023)* [19]. All asbestos will be taken to a suitably licensed or permitted facility.

In the event that hazardous soil, or historically deposited waste is encountered during the construction phase, the contractor will notify DLRCC and provide a Hazardous/Contaminated Soil Management Plan, to include estimated tonnages, description of location, any relevant mitigation, destination for disposal/treatment, in addition to information on the authorised waste collector(s).

4.3.2 Fuel/Oils

Fuels and oils are classed as hazardous materials; any on-site storage of fuel / oil, and all storage tanks and all draw-off points will be bunded and located in a dedicated, secure area of the site. Provided that these requirements are adhered to and the site crew are trained in the appropriate refuelling techniques, it is not expected that there will be any fuel / oil waste generated at the site.

4.3.3 Invasive Plant Species

Multiple baseline ecological surveys were undertaken by Altmer Ltd, part of these surveys was designated to identify the presence and location of any invasive species (listed under the Third Schedule of the European Communities (Birds and Natural Habitats) Regulations 2011 (S.I. 477 of 2015)). No Japanese knotweed was located onsite however a patch of Himalayan balsam was located in the north west corner of the site beside the corner wall

If during the process of construction any schedule 3 invasive species are located on site an invasive species management plan will be prepared for the site to prevent the introduction or spread of any invasive species within the footprint of the works. An invasive species management plan, if required, will set out best practice control methods.

4.3.4 Asbestos

Asbestos refurbishment / demolition surveys will be undertaken prior to the refurbishment and demolition of any buildings onsite.

If ACMs are detected on site, the removal of asbestos or ACMs will be carried out by a suitably qualified contractor and ACMs will only be removed from site by a suitably permitted/licenced waste contractor. in accordance with *Safety, Health and Welfare at Work (Exposure to Asbestos) Regulations 2006-2010 and the Best Practice Guidance for Handling Asbestos (2023)*. All material will be taken to a suitably licensed or permitted facility.

4.3.5 Other Known Hazardous Substances

Paints, glues, adhesives and other known hazardous substances will be stored in designated areas. They will generally be present in small volumes only and associated waste volumes generated will be kept to a minimum. Wastes will be stored in appropriate receptacles pending collection by an authorised waste contractor.

In addition, WEEE (containing hazardous components), printer toner / cartridges, batteries (Lead, Ni-Cd or Mercury) and / or fluorescent tubes and other mercury containing waste may be generated from during C&D activities or temporary site offices. These wastes, if generated, will be stored in appropriate receptacles in designated areas of the site pending collection by an authorised waste contractor.

5.0 ROLES AND RESPONSIBILITIES

The *Best Practice Guidelines on the Preparation of Resource Waste Management Plans for Construction and Demolition Projects* promotes that suitably qualified Resource Manager (RM) with expertise in waste and resource management to implement the RWMP should be appointed. The RM may be performed by number of different individuals over the life-cycle of the Project, however it is intended to be a reliable person chosen from within the Planning/Design/Contracting Team, who is technically competent and appropriately trained, who takes the responsibility to ensure that the objectives and measures within the Project RWMP are complied with. The RM is assigned the requisite authority to meet the objective and obligations of the RWMP. The role will include the important activities of conducting waste checks/audits and adopting construction methodology that is designed to facilitate maximum reuse and/or recycling of waste.

5.1 Role of the Client

The Client are the body establishing the aims and the performance targets for the project.

- The Client has commissioned the preparation and submission of this RWMP as part of the design and planning submission;
- The Client is to commission the preparation and submission of an updated RWMP as part of the construction tendering process;
- The Client will ensure that the RWMP is agreed on and submitted to the local authority and their agreement obtained prior to commencement of works on site;
- The Client will request the end-of-project RWMP from the Contractor.

5.2 Role of the Client Advisory Team

The Client Advisory Team or Design Team is formed of architects, consultants, quantity surveyors and engineers and is responsible for:

- Drafting and maintaining the RWMP through the design, planning and procurement phases of the project;
- Appointing a RM to track and document the design process, inform the Design Team and prepare the RWMP.
- Including details and estimated quantities of all projected waste streams with the support of environmental consultants/scientists. This will also include data on waste types (e.g. waste characterisation data, contaminated land assessments, site investigation information) and prevention mechanisms (such as by-products) to illustrate the positive circular economy principles applied by the Design Team;
- Handing over of the RWMP to the selected Contractor upon commencement of construction of the development, in a similar fashion to how the safety file is handed over to the Contractor;
- Working with the Contractor as required to meet the performance targets for the project.

5.3 Future Role of the Contractor

The future demolition and construction contractors have not yet been decided upon for this RWMP. However, once selected they will have major roles to fulfil. They will be responsible for:

- Preparing, implementing and reviewing the (including the pre-demolition) RWMP throughout the construction phase (including the management of all suppliers and sub-contractors) as per the requirements of the EPA guidelines;
- Identifying a designated and suitably qualified RM who will be responsible for implementing the RWMP;
- Identifying all hauliers to be engaged to transport each of the resources / wastes off-site;
- Implementing waste management policies whereby waste materials generated on site are to be segregated as far as practicable;

- Renting and operating a mobile-crusher to crush concrete for temporary reuse onsite during construction and reduce the amount of HGV loads required to remove material from site;
- Applying for the appropriate waste permit to crush concrete onsite;
- Identifying all destinations for resources taken off-site. As above, any resource that is legally classified as a ‘waste’ must only be transported to an authorised waste facility;
- End-of-waste and by-product notifications addressed with the EPA where required;
- Clarification of any other statutory waste management obligations, which could include on-site processing;
- Full records of all resources (both wastes and other resources) will be maintained for the duration of the project; and
- Preparing a RWMP Implementation Review Report at project handover.

6.0 KEY MATERIALS & QUANTITIES

6.1 Project Resource Targets

Project specific resource and waste management targets for the site have not yet been set and this information will be updated for these targets once these targets have been confirmed by the client. However, it is expected for projects of this nature that a minimum of 70% of waste is fully re-used, recycled or recovered. Target setting will inform the setting of project-specific benchmarks to track target progress. Typical Key Performance Indicators (KPIs) that will be used to set targets include (as per the EPA guidelines):

- Weight (tonnes) or Volume (m^3) of waste generated per construction value;
- Weight (tonnes) or Volume (m^3) of waste generated per construction floor area (m^2);
- Fraction of resource reused on site;
- Fraction of resource notified as by-product;
- Fraction of waste segregated at source before being sent off-site for recycling/recovery; and
- Fraction of waste recovered, fraction of waste recycled, or fraction of waste disposed.

6.2 Main Construction & Demolition Waste Categories

The main non-hazardous and hazardous waste streams that could be generated by the construction activities at a typical site are shown in Table 6.1. The List of Waste (LoW) code (2018) for each waste stream is also shown.

Table 6.1 *Typical waste types generated and LoW codes (individual waste types may contain hazardous substances)*

Waste Material	LoW Code
Concrete, bricks, tiles, ceramics	17 01 01-03 & 07
Wood, glass and plastic	17 02 01-03
Treated wood, glass, plastic, containing hazardous substances	17-02-04*
Bituminous mixtures, coal tar and tarred products	17 03 01*, 02 & 03*
Metals (including their alloys) and cable	17 04 01-11
Soil and stones	17 05 03* & 04
Gypsum-based construction material	17 08 01* & 02
Paper and cardboard	20 01 01
Mixed C&D waste	17 09 04
Green waste	20 02 01
Electrical and electronic components	20 01 35 & 36
Batteries and accumulators	20 01 33 & 34
Liquid fuels	13 07 01-10
Chemicals (solvents, pesticides, paints, adhesives, detergents etc.)	20 01 13, 19, 27-30
Insulation materials	17 06 04
Organic (food) waste	20 01 08
Mixed Municipal Waste	20 03 01

* *Individual waste type may contain hazardous substances*

6.3 Demolition Waste Generation

There will be waste materials generated from the demolition and renovation of some of the existing buildings and hardstanding areas on site, as well as from the further excavation of the building foundations. Further details can be found in section 4.1 project description or in chapter 5 Description of the Proposed Project of the EIAR. The demolition areas are identified in the planning drawings provided with this application. The anticipated demolition waste and rates of reuse, recycling / recovery and disposal are shown in Table 7.1, below.

Table 7.1 Estimated off-site reuse, recycle and disposal rates for demolition waste

Waste Type	Tonnes	Reuse		Recycle / Recovery		Disposal	
		%	Tonnes	%	Tonnes	%	Tonnes
Glass	201.7	0	0.0	85	171.5	15	30.3
Concrete, Bricks, Tiles, Ceramics	1143.2	30	343.0	65	743.1	5	57.2
Plasterboard	89.7	30	26.9	60	53.8	10	9.0
Asphalts	22.4	0	0.0	25	5.6	75	16.8
Metals	336.2	5	16.8	80	269.0	15	50.4
Slate	179.3	0	0.0	85	152.4	15	26.9
Timber	269.0	10	26.9	60	161.4	30	80.7
Total	**2241.6**		**413.6**		**1556.8**		**271.2**

6.4 Construction Waste Generation

Table 7.2 shows the breakdown of C&D waste types produced on a typical site based on data from the EPA *National Waste Reports* [17] *and the joint EPA & GMIT study* [18].

Table 7.2 *Waste materials generated on a typical Irish construction site*

Waste Types	%
Mixed C&D	33
Timber	28
Plasterboard	10
Metals	8
Concrete	6
Other	15
Total	**100**

Table 7.3, below, shows the estimated construction waste generation for the proposed Project based on the gross floor area of construction and other information available to date, along with indicative targets for management of the waste streams. The estimated amounts for the main waste types (with the exception of soils and stones) are based on an average large-scale development waste generation rate per m^2, using the waste breakdown rates shown in Table 7.2. These have been calculated from the schedule of development areas provided by the architect.

Table 7.3 *Predicted on and off-site reuse, recycle and disposal rates for construction waste*

Waste Type	Tonnes	Reuse		Recycle/Recovery		Disposal	
		%	Tonnes	%	Tonnes	%	Tonnes
Mixed C&D	1931.3	10	193.1	80	1545.0	10	193.1
Timber	1638.7	40	655.5	55	901.3	5	81.9
Plasterboard	585.2	30	175.6	60	351.1	10	58.5
Metals	468.2	5	23.4	90	421.4	5	23.4
Concrete	351.1	30	105.3	65	228.2	5	17.6
Other	877.9	20	175.6	60	526.7	20	175.6
Total	**5852.4**		**1328.5**		**3973.8**		**550.1**

In addition to the waste streams in Table 6.3, there will be c. 78,000m^3 of soil and stone excavated. Of this it is currently envisaged that c. 7,000m^3 of excavated will be able to be retained and reused on site while the remaining c. 71,000m^3 of excavated material will be required to be removed off site reuse, recycling or disposal.

It should be noted that until final materials and detailed construction methodologies have been confirmed, it is difficult to predict with a high level of accuracy the construction waste that will be generated from the proposed works as the exact materials and quantities may be subject to some degree of change and variation during the construction process.

6.5 Proposed Resource and Waste Management Options

Waste materials generated will be segregated on-site, where it is practical. Where the on-site segregation of certain wastes types is not practical, off-site segregation will be carried out. There will be skips and receptacles provided to facilitate segregation at source, where feasible. All waste receptacles leaving the site will be covered or enclosed. The appointed waste contractor will collect and transfer the wastes as receptacles are filled. There are numerous waste contractors in the Dún Laoghaire-Rathdown region that provide this service.

All waste arisings will be handled by an approved waste contractor holding a current waste collection permit. All waste arisings requiring disposal off-site will be reused, recycled, recovered or disposed of at a facility holding the appropriate registration, permit or licence, as required.

National End-of-Waste Decision EoW-N001/2023 (Regulation 28), published by the EPA in September 2023, establishes criteria determining when recycled aggregate resulting from a recovery operation ceases to be waste. Material from this proposed development will be investigated to see if it can cease to be a waste under the requirements of the National End of Waste Criteria for Aggregates.

During construction, some of the sub-contractors on site will generate waste in relatively low quantities. The transportation of non-hazardous waste by persons who are not directly involved with the waste business, at weights less than or equal to 2 tonnes, and in vehicles not designed for the carriage of waste, are exempt from the requirement to have a waste collection permit (per Article 30 (1) (b) of the Waste Collection Permit Regulations 2007, as amended). Any sub-contractors engaged that do not generate more than 2 tonnes of waste at any one time can transport this waste off-site in their work vehicles (which are not designed for the carriage of waste). However, they are required to ensure that the receiving facility has the appropriate COR / permit / licence.

Written records will be maintained by the contractor(s), detailing the waste arising throughout the C&D phases, the classification of each waste type, waste collection permits for all waste contactors who collect waste from the site and COR / permit / licence for the receiving waste facility for all waste removed off-site for appropriate reuse, recycling, recovery and / or disposal.

Dedicated bunded storage containers will be provided for hazardous wastes which may arise, such as batteries, paints, oils, chemicals, if required.

The anticipated management of the main waste streams is outlined as follows:

Soil, Stone and Made Ground

The waste hierarchy states that the preferred option for waste management is prevention and minimisation of waste, followed by preparing for reuse and recycling / recovery, energy recovery (i.e. incineration) and, least favoured of all, disposal. The excavations are required to facilitate construction works so the preferred option (prevention and minimisation) cannot be accommodated for the excavation phase.

When material is removed off-site it could be reused as a by-product (and not as a waste). If this is done, it will be done in accordance with Regulation 27 of the European Communities (Waste Directive) Regulations 2011, as amended, which requires that certain conditions are met and that by-product notifications are made to the EPA via their online notification form. Excavated material should not be removed from site until approval from the EPA has been received. The potential to reuse material as a by-product will be confirmed during the course of the cavation works, with the objective of eliminating any unnecessary disposal of material.

The next option (beneficial reuse) may be appropriate for the excavated material, pending environmental testing to classify the material as hazardous or non-hazardous in accordance with the EPA *Waste Classification – List of Waste & Determining if Waste is Hazardous or Non-Hazardous* publication. Clean inert material may be used as fill material in other construction projects or engineering fill for waste licensed sites. Beneficial reuse of surplus excavation material as engineering fill may be subject to further testing to determine if materials meet the specific engineering standards for their proposed end use.

Any nearby sites requiring clean fill/capping material will be contacted to investigate reuse opportunities for clean and inert material. If any of the material is to be reused on another site as a by-product (and not as a waste), this will be done in accordance with Regulation 27. Similarly, if any soils/stones are imported onto the site from another construction site as a by-product, this will also be done in accordance with Regulation 27. Regulation 27 will be investigated to see if the material can be imported onto this site for beneficial reuse instead of using virgin materials.

If the material is deemed to be a waste, then removal and reuse / recovery / disposal of the material will be carried out in accordance with the Waste Framework Directive

(Directive 2008/98/EC), the Waste Management Act 1996 as amended, the Waste Management (Collection Permit) Regulations 2007 as amended and the Waste Management (Facility Permit & Registration) Regulations 2007 as amended. Once all available beneficial reuse options have been exhausted, the options of recycling and recovery at waste permitted and licensed sites will be considered.

In the event that contaminated material is encountered and subsequently classified as hazardous, this material will be stored separately to any non-hazardous material. It will require off-site treatment at a suitable facility or disposal abroad via Transfrontier Shipment of Wastes (TFS).

Bedrock

While it is not envisaged that bedrock will be encountered, if bedrock is encountered, it is anticipated that it will not be crushed on site. Any excavated rock is expected to be removed off-site for appropriate reuse, recovery and / or disposal. If bedrock is to be crushed on-site, the appropriate waste facility permit will be obtained from DLRCC.

Silt & Sludge

During the construction phase, silt and petrochemical interception will be carried out on run-off and pumped water from site works, where required. Sludge and silt will then be collected by a suitably licensed contractor and removed off-site.

Concrete Blocks, Bricks, Tiles & Ceramics

The majority of concrete blocks, bricks, tiles and ceramics generated as part of the construction works are expected to be clean, inert material and should be recycled, where possible. If concrete is to be crushed on-site, the appropriate mobile waste facility permit will be obtained from DLRCC.

Hard Plastic

As hard plastic is a highly recyclable material, much of the plastic generated will be primarily from material off-cuts. All recyclable plastic will be segregated and recycled, where possible.

Timber

Timber that is uncontaminated, i.e. free from paints, preservatives, glues, etc., will be disposed of in a separate skip and recycled off-site.

Metal

Metals will be segregated, where practical, and stored in skips. Metal is highly recyclable and there are numerous companies that will accept these materials.

Plasterboard

There are currently a number of recycling services for plasterboard in Ireland. Plasterboard from the construction phases will be stored in a separate skip, pending collection for recycling. The site Manager will ensure that oversupply of new plasterboard is carefully monitored to minimise waste.

Glass

Glass materials will be segregated for recycling, where possible.

Waste Electrical & Electronic Equipment (WEEE)

Any WEEE will be stored in dedicated covered cages / receptacles / pallets pending collection for recycling.

Other Recyclables

Where any other recyclable wastes, such as cardboard and soft plastic, are generated, these will be segregated at source into dedicated skips and removed off-site.

Non-Recyclable Waste

C&D waste which is not suitable for reuse or recovery, such as polystyrene, some plastics and some cardboards, will be placed in separate skips or other receptacles. Prior to removal from site, the non-recyclable waste skip / receptacle will be examined by a member of the waste team (see Section 9.0) to determine if recyclable materials have been placed in there by mistake. If this is the case, efforts will be made to determine the cause of the waste not being segregated correctly and recyclable waste will be removed and placed into the appropriate receptacle.

Asbestos Containing Materials

If any asbestos or ACM found on site, they will be removed by a suitably competent contractor and disposed of as asbestos waste before the demolition works begin. All asbestos removal work or encapsulation work must be carried out in accordance with S.I. No. 589 of 2010 Safety, Health and Welfare at Work (Exposure to Asbestos) Regulations 2006-2010.

Other Hazardous Wastes

On-site storage of any hazardous wastes produced (i.e. contaminated soil if encountered and / or waste fuels) will be kept to a minimum, with removal off-site organised on a regular basis. Storage of all hazardous wastes on-site will be undertaken so as to minimise exposure to on-site personnel and the public and to also minimise potential for environmental impacts. Hazardous wastes will be recovered, wherever possible, and failing this, disposed of appropriately.

On-Site Crushing

It is currently not envisaged that the crushing of waste materials will occur on-site. However, if the crushing of material is to be undertaken, a mobile waste facility permit will first be obtained from DLRCC and the destination of the accepting waste facility or if an application under regulation 28 will be made using National End-of-Waste Decision EoW-N001/2023, will be supplied to the DLRCC waste unit.

It should be noted that until a construction contractor is appointed it is not possible to provide information on the specific destinations of each construction waste stream. Prior to commencement of construction and removal of any waste offsite, details of the proposed destination of each waste stream will be provided to DLRCC by the project team.

6.6 Tracking and Documentation Procedures for Off-Site Waste

All waste will be documented prior to leaving the site. Waste will be weighed by the contractor, either by a weighing mechanism on the truck or at the receiving facility. These waste records will be maintained on site by the nominated project RM (see Section 9.0).

All movement of waste and the use of waste contractors will be undertaken in accordance with the Waste Framework Directive (Directive 2008/98/EC), the Waste Management Act 1996 as amended, Waste Management (Collection Permit) Regulations 2007 as amended and Waste Management (Facility Permit & Registration) Regulations 2007 and amended. This includes the requirement for all waste contractors to have a waste collection permit issued by the NWCPO. The nominated project RM (see Section 9.0) will maintain a copy of all waste collection permits on-site.

If the waste is being transported to another site, a copy of the Local Authority waste COR / permit or EPA Waste / Industrial Emissions Licence for that site will be provided to the nominated project RM (see Section 9.0). If the waste is being shipped abroad, a copy of the Transfrontier Shipping (TFS) notification document will be obtained from DLRCC (as the relevant authority on behalf of all Local Authorities in Ireland) and kept on-site along with details of the final destination (COR, permits, licences, etc.). A receipt from the final destination of the material will be kept as part of the on-site waste management records.

All information will be entered in a waste management recording system to be maintained on-site.

7.0 ESTIMATED COST OF WASTE MANAGEMENT

An outline of the costs associated with different aspects of waste management is outlined below. The total cost of C&D waste management will be measured and will take into account handling costs, storage costs, transportation costs, revenue from rebates and disposal costs.

7.1 Reuse

By reusing materials on site, there will be a reduction in the transport and recycle / recovery / disposal costs associated with the requirement for a waste contractor to take the material off-site. Clean and inert soils, gravel, stones, etc., which cannot be reused on-site may be used as access roads or capping material for landfill sites, etc. This material is often taken free of charge or at a reduced fee for such purposes, reducing final waste disposal costs.

7.2 Recycling

Salvageable metals will earn a rebate, which can be offset against the costs of collection and transportation of the skips.

Clean, uncontaminated cardboard and certain hard plastics can also be recycled. Waste contractors will charge considerably less to take segregated wastes, such as recyclable waste, from a site than mixed waste.

Timber can be recycled as chipboard. Again, waste contractors will charge considerably less to take segregated wastes, such as timber, from a site than mixed waste.

7.3 Disposal

Landfill charges are currently at around €140 - €160 per tonne which includes a €85 per tonne landfill levy specified in the *Waste Management (Landfill Levy) Regulations 2015*. In addition to disposal costs, waste contractors will also charge a collection fee for skips.

Collection of segregated C&D waste usually costs less than municipal waste. Specific C&D waste contractors take the waste off-site to a licensed or permitted facility and, where possible, remove salvageable items from the waste stream before disposing of the remainder to landfill. Clean soil, rubble, etc., is also used as fill / capping material, wherever possible.

8.0 DEMOLITION PROCEDURES

There will be waste materials generated from the demolition and renovation of some of the existing buildings and hardstanding areas on site, as well as from the further excavation of the building foundations. Further details can be found in section 4.1 project description or in chapter 5 Description of the Proposed Project of the EIAR. The demolition areas are identified in the planning drawings submitted as part of this application. The following sequence of works should be followed during the demolition stage, however this may be update based on compliance conditions issued for this project:

Waste Reduction Assessment

- Preparation of a pre-demolition audit detailing resource recovery best practice, i.e. deconstruction and disassembly where feasible and practicable. The demolition audit will be informed by the EU Guidelines for the waste audits before demolition and renovation works of buildings (May 2018) [20].

- Investigate the reduction and recycling potential of deconstructed components, elements and materials within the new build if it will be compliance with functionality, regulatory and performance requirements. The reuse and recycling of deconstructed components, elements and materials will be carried out in compliance with relevant requirements relating to by-product, end-of-waste and waste data reporting.

- Reuse and recycle deconstructed components, elements and materials from other projects off-site if in compliance with functionality, regulatory and performance requirements. The reuse and recycling of deconstructed components, elements and materials must be carried out in compliance with relevant requirements relating to by-product, end-of-waste and waste data reporting.

- A specific audit for potentially hazardous material (asbestos, polychlorinated biphenyls (PCBs), persistent organic pollutants (POPs), etc.) and document procedures for removal of same prior to main demolition works will be undertaken.

Check for Hazards

Prior to commencing works, buildings and structures to be demolished will be checked for any likely hazards including asbestos, ACMs, electrical power lines or cables, gas reticulation systems, telecommunications, unsafe structures and fire / explosion hazards, e.g. combustible dust, chemical hazards, oil, fuels and contamination.

Removal of Components

All hazardous materials will be removed first. All components from within the buildings that can be salvaged will be removed next. This will primarily be comprised of metal; however, may also include timbers, doors, windows, wiring and metal ducting, etc.

Removal of Roofing

Steel roof supports, beams, etc., will be dismantled and taken away for recycling / salvage.

Excavation of Services, Demolition of Walls and Concrete

Services will be removed from the ground and the breakdown of walls will be carried out once all salvageable or reusable materials have been taken from the buildings. Finally, any existing foundations and hard standing areas will be excavated.

9.0 TRAINING PROVISIONS

A member of the construction team will be appointed as the RM to ensure commitment, operational efficiency and accountability in relation to waste management during the C&D phases of the development.

9.1 Resource Waste Manager Training and Responsibilities

The nominated RM will be given responsibility and authority to select a waste team if required, i.e. members of the site crew that will aid them in the organisation, operation and recording of the waste management system implemented on site.

The RM will have overall responsibility to oversee, record and provide feedback to the client on everyday waste management at the site. Authority will be given to the RM to delegate responsibility to sub-contractors, where necessary, and to coordinate with suppliers, service providers and sub-contractors to prioritise waste prevention and material salvage.

The RM will be trained in how to set up and maintain a record keeping system, how to perform an audit and how to establish targets for waste management on site. The RM will also be trained in the best methods for segregation and storage of recyclable materials, have information on the materials that can be reused on site and be knowledgeable in how to implement this RWMP.

9.2 Site Crew Training

Training of site crew in relation to waste is the responsibility of the RM and, as such, a waste training program should be organised. A basic awareness course will be held for all site crew to outline the RWMP and to detail the segregation of waste materials at source. This may be incorporated with other site training needs such as general site induction, health and safety awareness and manual handling.

This basic course will describe the materials to be segregated, the storage methods and the location of the Waste Storage Areas (WSAs). A sub-section on hazardous wastes will be incorporated into the training program and the particular dangers of each hazardous waste will be explained.

10.0 TRACKING AND TRACING / RECORD KEEPING

Records should be kept for all waste material which leaves the site, either for reuse on another site, recycling or disposal. A recording system will be put in place to record the waste arisings on Site.

A waste tracking log should be used to track each waste movement from the site. On exit from the site, the waste collection vehicle driver should stop at the site office and sign out as a visitor and provide the security personnel or RM with a waste docket (or Waste Transfer Form (WTF) for hazardous waste) for the waste load collected. At this time, the security personnel should complete and sign the Waste Tracking Register with the following information:

- Date
- Time
- Waste Contractor
- Company waste contractor appointed by, e.g. Contractor or subcontractor name
- Collection Permit No.
- Vehicle Reg.
- Driver Name
- Docket No.
- Waste Type
- Quantity
- LoW

The waste vehicle will be checked by security personal or the RM to ensure it has the waste collection permit no. displayed and a copy of the waste collection permit in the vehicle before they are allowed to remove the waste from the site.

The waste transfer dockets will be transferred to the RM on a weekly basis and can be placed in the Waste Tracking Log file. This information will be forwarded onto the DLRCC Waste Regulation Unit when requested.

Each subcontractor that has engaged their own waste contractor will be required to maintain a similar waste tracking log with the waste dockets / WTF maintained on file and available for inspection on site by the main contractor as required. These subcontractor logs will be merged with the main waste log.

Waste receipts from the receiving waste facility will also be obtained by the site contractor(s) and retained. A copy of the Waste Collection Permits, CORs, Waste Facility Permits and Waste Licences will be maintained on site at all times and will be periodically checked by the RM. Subcontractors who have engaged their own waste contractors, should provide the main contractor with a copy of the waste collection permits and COR / permit / licence for the receiving waste facilities and maintain a copy on file, available for inspection on site as required.

11.0 OUTLINE WASTE AUDIT PROCEDURE

11.1 Responsibility for Waste Audit

The appointed RM will be responsible for conducting waste audits at the site during the C&D phase of the proposed Project.

Contact details for the nominated RM will be provided to the DLRCC Waste Regulation Unit after the main contractor is appointed and prior to any material being removed from site.

11.2 Review of Records and Identification of Corrective Actions

A review of all waste management costs and the records for the waste generated and transported off-site should be undertaken mid-way through the construction phase of the proposed Project.

If waste movements are not accounted for, the reasons for this should be established in order to see if and why the record keeping system has not been maintained. The waste records will be compared with the established recovery / reuse / recycling targets for the site. Each material type will be examined, in order to see where the largest percentage waste generation is occurring. The waste management methods for each material type will be reviewed in order to highlight how the targets can be achieved.

Upon completion of the C&D phase, a final report will be prepared, summarising the outcomes of waste management processes adopted and the total recycling / reuse / recovery figures for the development.

12.0 CONSULTATION WITH RELEVANT BODIES

12.1 Local Authority

Once construction contractors have been appointed and have appointed waste contractors, and prior to removal of any C&D waste materials off-site, details of the proposed destination of each waste stream will be provided to the DLRCC Waste Regulation Unit.

DLRCC will also be consulted, as required, throughout the excavation and construction phases in order to ensure that all available waste reduction, reuse and recycling opportunities are identified and utilised and that compliant waste management practices are carried out.

12.2 Recycling / Salvage Companies

The appointed waste contractor for the main waste streams managed by the construction contractors will be audited in order to ensure that relevant and up-to-date waste collection permits and facility registrations / permits / licences are held. In addition, information will be obtained regarding the feasibility of recycling each material, the costs of recycling / reclamation, the means by which the wastes will be collected and transported off-site, and the recycling / reclamation process each material will undergo off-site.

12.3 Pest Management

A pest control operator will be appointed as required to manage pest onsite during the construction phase of the project. Organic and food wastes generated by staff will not be stored in open skips, but in closed waste receptacles. Any waste receptacles will be carefully managed to prevent leaks, odours and pest problems.

13.0 CONCLUSION

Adherence to this plan will also ensure that waste management during the construction phase, at the development is carried out in accordance with the requirements in the EPA's Best Practice Guidelines for the Preparation of Resource & Waste Management Plans for Construction & Demolition Projects, the DLRCC Guidance Notes for Environmental Design and Management of Construction Projects and the DLRCC Waste Bye-Laws.

14.0 REFERENCES

1. Waste Management Act 1996 as amended.
2. Waste Framework Directive (Directive 2008/98/EC)
3. Environmental Protection Agency Act 1992 as amended.
4. Litter Pollution Act 1997 as amended.
5. Regional Waste Management Planning Offices, *The National Waste Management Plan for a Circular Economy 2024 - 2030 (2024).*
6. Department of Environment and Local Government (DoELG) *Waste Management – Changing Our Ways, A Policy Statement* (1998).
7. Forum for the Construction Industry – *Recycling of Construction and Demolition Waste.*
8. Department of Communications, Climate Action and Environment (DCCAE), *Waste Action Plan for the Circular Economy - Ireland's National Waste Policy 2020-2025* (Sept 2020).
9. DCCAE, *Whole of Government Circular Economy Strategy 2022-2023 'Living More, Using Less*' (2021).
10. Circular Economy and Miscellaneous Provisions Act 2022.
11. Environmental Protection Agency (EPA) *'Best Practice Guidelines for the Preparation of Resource and Waste Management Plans for Construction & Demolition Projects' (2021).*
12. Department of Environment, Heritage and Local Government, *Best Practice Guidelines on the Preparation of Waste Management Plans for Construction and Demolition Projects* (2006).
13. FÁS and the Construction Industry Federation (CIF), *Construction and Demolition Waste Management – a handbook for Contractors and* site *Managers* (2002).
14. *Dun Laoghaire-Rathdown County Council (DLRCC), Dún Laoghaire-Rathdown County Council Development Plan 2022 – 2028.*
15. Planning and Development Act 2000 (S.I. No. 30 of 2000) as amended.
16. EPA, *Waste Classification – List of Waste & Determining if Waste is Hazardous or Non-Hazardous* (2018).
17. DLRCC, *Guidance Notes for Environmental Design and Management of Construction Projects* (August 2022).
18. Council Decision 2003/33/EC, establishing criteria and procedures for the acceptance of waste at landfills pursuant to Article 16 of and Annex II to Directive 1999/31/EC.
19. Environmental Protection Agency (EPA), *National Waste Database Reports 1998 – 2020* and the Circular Economy and National Waste Database Report 2021 -.
20. EPA and Galway-Mayo Institute of Technology (GMIT), *EPA Research Report 146 – A Review of Design and Construction Waste Management Practices in Selected Case Studies – Lessons Learned* (2015).
21. Local Government Ireland, *the Best Practice Guidance for Handling Asbestos (2023).*
22. European Commission, *Guidelines for the waste audits before demolition and renovation works of buildings* (May 2018)

OPERATIONAL WASTE MANAGEMENT PLAN FOR A PROPOSED RESIDENTIAL DEVELOPMENT

FORMER CENTRAL MENTAL HOSPITAL, DUNDRUM, DUBLIN 14

APPENDIX 19.2

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Report Prepared For

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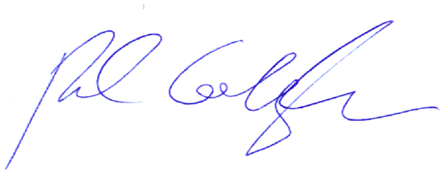
Signature		
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1.0 INTRODUCTION

AWN Consulting Ltd. (AWN) has prepared this Operational Waste Management Plan (OWMP) on behalf of Dún Laoghaire Rathdown County Council (DLRCC), in partnership with The Land Development Agency (LDA), is seeking a ten year approval to carry out the following proposed development which is located on a total application site area of c. 9.7 ha, located on the former Central Mental Hospital, Dundrum Road, Dundrum, Dublin 14 and areas of Dundrum Road and St. Columbanus Road, Dublin 14. The subject site is in the immediate setting and curtilage of a number of protected structures, namely the 'Asylum' (RPS No. 2072), the 'Catholic Chapel' (RPS No. 2071) and the 'Hospital Building' (RPS No. 2073).

This OWMP has been prepared to ensure that the management of waste during the operational phase of the proposed Development is undertaken in accordance with the current legal and industry standards including, the Waste Management Act 1996 as amended and associated Regulations [1], Environmental Protection Agency Act 1992 as amended [2], Litter Pollution Act 1997 as amended [3], *the* National Waste Management Plan for a Circular Economy 2024 - 2030 (NWMPCE) (2024) [4]*, The Dún Laoghaire Rathdown County Council (Segregation, Storage and Presentation of Household and Commercial) Bye-Laws (2019)* [5] and the *DLRCC Guidance Notes for Waste Management Planning for Residential and Commercial Developments (2023)* [6]*.* In particular, this OWMP aims to provide a robust strategy for storing, handling, collection and transport of the wastes generated at site.

In addition, the following guidelines were consulted for healthcare specific waste management practice:

- Health Service Executive (HSE), *Waste Policy* (2016) [7],
- HSE, *Waste Management Awareness Handbook* (2011) [8];
- HSE, and Department of Health and Children (DOHC), *Healthcare Risk Waste Management: Segregation, Packaging and Storage Guidelines for Healthcare Risk Waste, 4th Edition* (2010) [9]; and
- Environmental Protection Agency (EPA) Green Healthcare, best practice guides for the reduction and segregation of hospital waste [10].

This OWMP aims to ensure maximum recycling, reuse and recovery of waste with diversion from landfill, wherever possible. The OWMP also seeks to provide guidance on the appropriate collection and transport of waste to prevent issues associated with litter or more serious environmental pollution (e.g. contamination of soil or water resources). The plan estimates the type and quantity of waste to be generated from the proposed development during the operational phase and provides a strategy for managing the different waste streams.

At present, there are no specific guidelines in Ireland for the preparation of OWMPs. Therefore, in preparing this document, consideration has been given to the requirements of national and regional waste policy, legislation and other guidelines.

2.0 OVERVIEW OF WASTE MANAGEMENT IN IRELAND

2.1 National Level

The Government issued a policy statement in September 1998 titled as *'Changing Our Ways'* [11] which identified objectives for the prevention, minimisation, reuse, recycling, recovery and disposal of waste in Ireland. A heavy emphasis was placed on reducing reliance on landfill and finding alternative methods for managing waste. Amongst other things, Changing Our Ways stated a target of at least 35% recycling of municipal (i.e. household, commercial and non-process industrial) waste.

A further policy document *'Preventing and Recycling Waste – Delivering Change'* was published in 2002 [12]. This document proposed a number of programmes to increase recycling of waste and allow diversion from landfill. The need for waste minimisation at source was considered a priority.

This view was also supported by a review of sustainable development policy in Ireland and achievements to date, which was conducted in 2002, entitled *'Making Irelands Development Sustainable – Review, Assessment and Future Action'* [13]. This document also stressed the need to break the link between economic growth and waste generation, again through waste minimisation and reuse of discarded material.

In order to establish the progress of the Government policy document *Changing Our Ways*, a review document was published in April 2004 entitled *'Taking Stock and Moving Forward'* [14]. Covering the period 1998 – 2003, the aim of this document was to assess progress to date with regard to waste management in Ireland, to consider developments since the policy framework and the local authority waste management plans were put in place, and to identify measures that could be undertaken to further support progress towards the objectives outlined in *Changing Our Ways*.

In particular, *Taking Stock and Moving Forward* noted a significant increase in the amount of waste being brought to local authority landfills. The report noted that one of the significant challenges in the coming years was the extension of the dry recyclable collection services.

In September 2020, the Irish Government published a new policy document outlining a new action plan for Ireland to cover the period of 2020-2025. This plan *'A Waste Action Plan for a Circular Economy'* [15] (WAPCE), was prepared in response to the 'European Green Deal' which sets a roadmap for a transition to a new economy, where climate and environmental challenges are turned into opportunities, replacing the previous national waste management plan *"A Resource Opportunity"* (2012).

The WAPCE sets the direction for waste planning and management in Ireland up to 2025. This reorientates policy from a focus on managing waste to a much greater focus on creating circular patterns of production and consumption. Other policy statements of a number of public bodies already acknowledge the circular economy as a national policy priority.

The policy document contains over 200 measures across various waste areas including circular economy, municipal waste, consumer protection and citizen engagement, plastics and packaging, construction and demolition, textiles, green public procurement and waste enforcement.

One of the first actions to be taken was the development of the Whole of Government Circular Economy Strategy 2022-2023 'Living More, Using Less' (2021) [16] to set a course for Ireland to transition across all sectors and at all levels of Government toward circularity and was issued in December 2021. It is anticipated that the Strategy will be updated in full every 18 months to 2 years.

The Circular Economy and Miscellaneous Provisions Act 2022 [17] was signed into law in July 2022. The Act underpins Ireland's shift from a "take-make-waste" linear model to a more sustainable pattern of production and consumption, that retains the value of resources in our economy for as long as possible and that will to significantly reduce our greenhouse gas emissions. The Act defines Circular Economy for the first time in Irish law, incentivises the use of recycled and reusable alternatives to wasteful, single-use disposable packaging, introduces a mandatory segregation and incentivised charging regime for commercial waste, streamlines the national processes for End-of-Waste and By-Products decisions, tackling the delays which can be encountered by industry, and supporting the availability of recycled secondary raw materials in the Irish market, and tackles illegal fly-tipping and littering.

Since 1998, the Environmental Protection Agency (EPA) has produced periodic *'National Waste (Database) Reports'* which as of 2023 have been renamed *Circular Economy and Waste Statistics Highlight Reports* [18] detailing, among other things, estimates for household and commercial (municipal) waste generation in Ireland and the level of recycling, recovery and disposal of these materials. The 2021 National Circular Economy and Waste Statistics web resource, which is the most recent study published, along with the national waste statistics web resource (November 2023) reported the following key statistics for 2020:

- **Generated –** Ireland produced 3,170,000 t of municipal waste in 2021. This is a 1% decrease since 2020. This means that the average person living in Ireland generated 630 kg of municipal waste in 2021.
- **Managed –** Waste collected and treated by the waste industry. In 2020, a total of 3,137,000 t of municipal waste was managed and treated.
- **Unmanaged** – An estimated 33,000 tonnes of this was unmanaged waste i.e., not disposed of in the correct manner in 2021.
- **Recovered –** The amount of waste recycled, used as a fuel in incinerators, or used to cover landfilled waste. In Ireland 42% of Municipal waste was treated by energy recovery through incineration in 2021.
- **Recycled** – Just over 1.3 million tonnes of municipal waste generated in Ireland was recycled in 2021, resulting in a recycling rate of 41 per cent. The recycling rate remains unchanged from 2020 and indicates that we face significant challenges to meet the upcoming EU recycling targets of 55% by 2025 and 65% by 2035.
- **Disposed** – The proportion of municipal waste sent to landfill also remains unchanged at 16% the same as 2020.
- **Reuse –** 54,800 tonnes of second-hand products we estimated by the EPA to have been reused in Ireland in 2021. The average annual Reuse rate per person in Ireland is 10.6 kg per person.

2.2 Regional Level

The development is located in the Local Authority area of Dún Laoghaire Rathdown County Council (DLRCC).

The Eastern Midlands Region (EMR) Waste Management Plan 2015 – 2021 has been superseded as of March 2024 by the NWMPCE 2024 - 2030. The NWMPCE is the national waste management plan for Ireland and superseded the three regional waste management plans.

The NWMPCE does not dissolve the three regional waste areas. The NWCPCE sets the ambition of the plan to have a 0% total waste growth per person over the life of the Plan with an emphasis on non-household wastes including waste from commercial activities and the construction and demolition sector.

This Plan seeks to influence sustainable consumption and prevent the generation of waste, improve the capture of materials to optimise circularity and enable compliance with policy and legislation.

The national plan sets out the following strategic targets for waste management in the country that are relevant to the development:

Proposed National Targets

1A. (Residual Municipal Waste) 6% Reduction in Residual Municipal Waste per person by 2030

2A. (Contamination of Materials) 90% of Material in Compliance in the Dry Recycling Bin

2B. (Material Compliance Residual) 10% per annum increase in Material Compliance in the residual bin. (90% by the end of 2030)

3A. (Reuse of Materials) 20kg Per person / year – Reuse of materials like cloths or furniture to prevent waste. Municipal landfill charges in Ireland are based on the weight of waste disposed. In the Leinster Region, charges are approximately €140-160 per tonne of waste, which includes a €85 per tonne landfill levy introduced under the Waste Management (Landfill Levy) (Amendment) Regulations 2015.

The *Dún Laoghaire-Rathdown County Development Plan 2022 – 2028* [19] sets out a number of policies for the Dún Laoghaire-Rathdown area in line with the objectives of the waste management plan.

Proposed waste policies with a particular relevance to the development are as follows:

Policy Objective EI11: Resource Management

It is a Policy Objective to implement the Eastern-Midlands Region Waste Management Plan 2015-2021 and subsequent plans, in supporting the transition from a waste management economy towards a circular economy, to enhance employment and increase the value recovery and recirculation of resources. Underpinning this objective is the requirement to conform to the European Union and National Waste Management Hierarchy of the most favoured options for waste as illustrated below subject to economic and technical feasibility and Environmental Assessment.

Policy Objective EI12: Waste Management Infrastructure, Prevention, Reduction, Reuse and Recycling

- To support the principles of the circular economy, good waste management and the implementation of best international practice in relation to waste management in order for the County and the Region to become self-sufficient in terms of resource and waste management and to provide a waste management infrastructure that supports this objective.

- To provide for civic amenity facilities and bring centres as part of an integrated waste collection system in accessible locations throughout the County and promote the importance of kerbside source segregated collection of household and commercial waste as the best method to ensure the quality of waste presented for recycling is preserved.

- To ensure any waste amenity facilities adhere to the Waste Regional Offices Waste Management Infrastructure siting guidelines.

- To develop a County wide network of multi material recycling centres, bring centres and a re-use centre and to require the provision of adequately-sized recycling facilities in new commercial and large-scale residential developments, where appropriate.

- To require the inclusion of such centres in all large retail developments to maximise access by the public. To ensure new developments are designed and constructed in line with the Council’s Guidelines for Waste Storage Facilities

Policy Objective EI13: Hazardous Waste

It is a Policy Objective to adhere to the recommendations of the 'National Hazardous Waste Management Plan 2014-2020' and any subsequent plan, and to co-operate with other agencies, to plan, organise, authorise and supervise the disposal of hazardous waste streams, including hazardous waste identified during construction and demolition projects.

2.3 Legislative Requirements

The primary legislative instruments that govern waste management in Ireland and applicable to the project are:

- Waste Management Act 1996 as amended;
- Environmental Protection Agency Act 1992 as amended;
- Litter Pollution Act 1997 as amended;
- Planning and Development Act 2000 as amended [20]; and
- The Circular Economy and Miscellaneous Provisions Act 2022

These Acts and subordinate Regulations enable the transposition of relevant European Union Policy and Directives into Irish law.

One of the guiding principles of European waste legislation, which has in turn been incorporated into the *Waste Management Act 1996 - 2011* and subsequent Irish legislation, is the principle of *"Duty of Care"*. This implies that the waste producer is responsible for waste from the time it is generated through until its legal disposal (including its method of disposal.) As it is not practical in most cases for the waste producer to physically transfer all waste from where it is produced to the final disposal area, waste contractors will be employed to physically transport waste to the final waste disposal site.

It is therefore imperative that the residents, tenants and the proposed facility management company undertake on-site management of waste in accordance with all legal requirements and employ suitably permitted/licenced contractors to undertake off-site management of their waste in accordance with all legal requirements. This includes the requirement that a waste contactor handle, transport and reuse/recover/recycle/dispose of waste in a manner that ensures that no adverse environmental impacts occur as a result of any of these activities.

A collection permit to transport waste must be held by each waste contractor which is issued by the National Waste Collection Permit Office (NWCPO). Waste receiving facilities must also be appropriately permitted or licensed. Operators of such facilities cannot receive any waste, unless in possession of a Certificate of Registration (COR) or waste permit granted by the relevant Local Authority under the *Waste Management (Facility Permit & Registration) Regulations 2007* as amended or a waste or IE (Industrial Emissions) licence granted by the EPA. The COR/permit/licence held will specify the type and quantity of waste able to be received, stored, sorted, recycled, recovered and/or disposed of at the specified site.

2.3.1 Dún Laoghaire-Rathdown County Council Waste Bye-Laws

*The DLRCC "*Dún Laoghaire-Rathdown County Council *(Storage, Presentation and Segregation of Household and Commercial Waste) Bye-Laws (2019)"* were bought into force on the 1st of February 2020. These Bye-laws repeal the previous DLRCC waste Bye-laws. The Bye-laws set a number of enforceable requirements on waste holders with regard to storage, separation and presentation of waste within the DLRCC functional area. Key requirements under these Bye-laws of relevance to the proposed development include the following:

- Kerbside waste presented for collection shall not be presented for collection earlier than 6.00 pm on the day immediately preceding the designated waste collection day;
- All containers used for the presentation of kerbside waste and any uncollected waste shall be removed from any roadway, footway, footpath or any other public place no later than 10:00am on the day following the designated waste collection day, unless an alternative arrangement has been approved in accordance with bye-law 4;
- Documentation, including receipts, is obtained and retained for a period of no less than one year to provide proof that any waste removed from the premises has been managed in a manner that conforms to these bye-laws, to the Waste Management Act and, where such legislation is applicable to that person, to the European Union (Household Food Waste and Bio-Waste) Regulations 2015; and
- Adequate access and egress onto and from the premises by waste collection vehicles is maintained.

Provisions affecting Multi-user Buildings, Apartment Blocks, etc.

A management company, or another person if there is no such company, who exercises control and supervision of residential and/or commercial activities in multi-unit developments, mixed-use developments, flats or apartment blocks, combined living/working spaces or other similar complexes shall ensure that:

a. *separate receptacles of adequate size and number are provided for the proper segregation, storage and collection of recyclable kerbside waste, residual kerbside waste and food waste,*
b. *the receptacles referred to in paragraph (a) are located both within any individual apartment and at the place where waste is stored prior to its collection,*
c. *any place where waste is to be stored prior to collection is secure, accessible at all times by tenants and other occupiers and is not accessible by any other person other than an authorised waste collector,*
d. *written information is provided to each tenant or other occupier about the arrangements for waste separation, segregation, storage and presentation prior to collection,*
e. *an authorised waste collector is engaged to service the receptacles referred to in this section of these bye-laws, with documentary evidence, such as receipts, statements or other proof of payment, demonstrating the existence of this engagement being retained for a period of no less than two years. Such evidence shall be presented to an authorised person within a time specified in a written request from either that person or from another authorised person employed by Dún Laoghaire-Rathdown County Council,*
f. *receptacles for kerbside waste are presented for collection on the designated waste collection day,*
g. *adequate access and egress onto and from the premises by waste collection vehicles is maintained.*

The full text of the Waste Bye-Laws is available from the DLRCC website.

2.4 Health Service Executive Waste Policy

The Health Service Executive (HSE) has stipulated within its *Waste Policy* that Waste Management Plans (WMPs) for healthcare facilities should include:

- Strategies to minimise the quantities of healthcare waste generated.
- Methods of segregating, packaging, labelling, storing, and transporting each waste type, both on-site and off-site.

These guidelines will be used to complete this OWMP.

2.5 Local Authority Guidelines

DLRCC's Waste Management Division have issued *Guidance Notes for Waste Management Planning for Residential and Commercial Developments* (2023) [6] which provide good practice guidance for the storage and collection of waste for new build high density developments. The objective of this advice is to provide good practice guidance for the storage and collection of waste for new build high density developments to allow developers to demonstrate to local planning and waste management authorities that they have considered how the design and operation of waste management services will enable the occupiers and managing agents of new developments to manage waste arising through the lifetime of the development.

The document is designed to assist developers in considering measures required to maximise the reuse, recycling and recovery of waste in the operational lifetime of the development and give specific reference to best practice and associated legislation including minimising the carbon footprint of occupiers and services provided.

The ultimate goal of the guidelines is that the implemented waste strategy will achieve a 70% reuse and recovery target in accordance with the European Commission's proposal to introduce 70% reuse and recycling targets for municipal waste by 2030 and while also providing sufficient flexibility to support future targets and legislative requirements.

Waste storage issues should be considered at the initial apartment design stage, taking full account of this guidance note, to ensure access for all (including people with disabilities) in a brightly lit, safe and well-signed area, spacious enough for easy manoeuvrability, good ventilation and ready access if required for the control of potential vermin.

Where storage is provided in a basement area, sufficient access and egress must be provided to enable receptacles to be moved easily from the storage area to an appropriate bin staging point within the curtilage of the development in accordance with the *Dún Laoghaire-Rathdown County Council (Segregation, Storage And Presentation Of Household And Commercial Waste) Bye-Laws 2019*, Section 9, or any revision thereof.

The guidance notes provide requirements for five main areas of operational waste management:

1. Common Waste Storage Area Design
2. Requirements Within Residential units
3. Initial Waste Management
4. Waste Collection System
5. Requirements for Selection of Separate Staging Area for Bin Collection Where Required.

This OWMP has been prepared to demonstrate exactly that and aims to do that in a comprehensive manner.

The guidelines and form are available on the DLRCC website.

2.6 Regional Waste Management Service Providers and Facilities

Various contractors offer waste collection services for the in the DLRCC region. Details of waste collection permits (granted, pending and withdrawn) for the region are available from the NWCPO.

As outlined in the regional waste management plan, there is a decreasing number of landfills available in the region. Only three municipal solid waste landfills remain operational and are all operated by the private sector. There are a number of other licensed and permitted facilities in operation in the region including waste transfer stations, hazardous waste facilities and integrated waste management facilities. There are two existing thermal treatment facilities, one in Duleek, Co. Meath and a second facility in Poolbeg in Dublin.

The DCC Gulistan Terrace Bring Centre (Recycling Centre) is located approximately 4km to the north, which can be utilised by the residents of the development for other household waste streams. While the closest bring bank is located on Sweetmount Avenue Dundrum, c. 1.3km to the south of the proposed development.

A copy of all CORs and waste permits issued by the Local Authorities are available from the NWCPO website and all waste/IE licenses issued are available from the EPA.

3.0 DESCRIPTION OF THE PROJECT

3.1 Location, Size and Scale of the Development

Dún Laoghaire Rathdown County Council, in partnership with The Land Development Agency, is seeking a ten year approval to carry out the following proposed development which is located on a total application site area of c. 9.7 ha, located on the former Central Mental Hospital, Dundrum Road, Dundrum, Dublin 14 and areas of Dundrum Road and St. Columbanus Road, Dublin 14. The subject site is in the immediate setting and curtilage of a number of protected structures, namely the 'Asylum' (RPS No. 2072), the 'Catholic Chapel' (RPS No. 2071) and the 'Hospital Building' (RPS No. 2073).

The development will consist of the construction of a residential scheme of 934 no. dwellings on an overall site of c. 9.7 ha.

The development will consist of the demolition of existing structures associated with the existing use (3,677 sq m), including:

- Single storey former swimming pool / sports hall and admissions unit (2,750 sq m);
- Two storey redbrick building (305 sq m);
- Single storey ancillary and temporary structures including portacabins (618sq m);
- Removal of existing internal sub-divisions/ fencing, including removal of security fence at Dundrum Road entrance;
- Demolition of section of porch and glazed screens at Gate Lodge building (4 sq m);
- Removal of walls adjacent to Main Hospital Building;
- Alterations and removal of section of wall to Walled Garden.
- The development will also consist of alterations and partial demolition of the perimeter wall, including:
- Alterations and removal of section of perimeter wall adjacent to Rosemount Green (south);
- Formation of a new opening in perimeter wall at Annaville Grove to provide a pedestrian and cyclist access;

- Alterations and removal of sections of wall adjacent to Dundrum Road (including removal of existing gates and entrance canopy), including reduction in height of section, widening of existing vehicular access, and provision of a new vehicle, cyclist and pedestrian access;
- Alterations and removal of section of perimeter wall adjacent to Mulvey Park to provide a pedestrian and cyclist access.
- The development with a total gross floor area of c. 94,058 sq m (c. 93,980 sq m excluding retained existing buildings), will consist of 934 no. residential units comprising:
- 926 no. apartments (consisting of 342 no. one bedroom units; 98 no. two bedroom (3 person) units; 352 no. two bedroom (4 person) units; and 134 no. three bedroom units) arranged in 9 blocks (Blocks 02-10) ranging between 2 and 8 storeys in height (with a lower ground floor to Blocks 02 and Block 10 and Basements in Blocks 03 and 04), together with private balconies and private terraces and communal amenity open space provision (including courtyards) and ancillary residential facilities, including an 130 sq m internal residential amenity area at the Ground Floor Level of Block 3;
- 6 no. three bedroom duplex apartments located at Block 02, together with private balconies and terraces.
- 2 no. 5 bedroom assisted living units and private rear gardens located at Block 02.

The development will also consist of 4,380 sq m of non-residential uses, comprising:

- Change of use and renovation of existing single storey Gate Lodge building (former reception/staff area) to provide a café unit (78 sq m);
- 1 no. restaurant unit (266 sq m) located at ground floor level at Block 03;
- 3 no. retail units (1,160 sq m) located at ground floor level at Blocks 03 and 07;
- 1 no. medical unit (288 sq m) located at ground floor level at Block 02;
- A new childcare facility (716 sq m) and associated outdoor play area located at lower ground and ground floor level at Block 10;
- A management suite (123 sq m) located at ground floor level at Block 10; and
- A new community centre facility, including a multi-purpose hall, changing rooms, meeting rooms, storage and associated facilities (1,749 sq m) located at ground and first floor level at Block 06.

Vehicular access to the site will be from a new signalised access off Dundrum Road to the south of the existing access and the existing access of Dundrum Road will be retained for emergency vehicle, pedestrian and cyclist access only. The development will also consist of the provision of public open space and related play areas; hard and soft landscaping including internal roads, cycle and pedestrian routes, active travel routes for cyclists and pedestrians, pathways and boundary treatments, street furniture, wetland features, part-basement, car parking (524 no. spaces in total, including car sharing and accessible spaces); motorcycle parking; electric vehicle charging points; bicycle parking (long and short stay spaces including stands); ESB substations, piped infrastructural services and connections (including connection into existing surface water sewer in St. Columbanus Road); ducting; plant (including external plant for Air Source Heat Pumps and associated internal heating plantrooms); waste management provision; SuDS measures (including green roofs, blue roofs, bio-retention areas); attenuation tanks; sustainability measures (including solar panels);

signage; public lighting; any making good works to perimeter wall and all site development and excavation works above and below ground.

3.2 Typical Waste Categories

The typical non-hazardous and hazardous wastes that will be generated at the proposed development will include the following:

- Dry Mixed Recyclables (DMR) - includes wastepaper (including newspapers, magazines, brochures, catalogues, leaflets), cardboard and plastic packaging, metal cans, plastic bottles, aluminium cans, tins and Tetra Pak cartons;
- Organic waste – food waste and green waste generated from plants/flowers;
- Glass; and
- Mixed Non-Recyclable (MNR)/General Waste.

In addition to the typical waste materials that will be generated at the development on a daily basis, there will be some additional waste types generated in small quantities which will need to be managed separately including:

- Green/garden waste may be generated from internal plants and external landscaping;
- Batteries (both hazardous and non-hazardous);
- Waste electrical and electronic equipment (WEEE) (both hazardous and non-hazardous);
- Printer cartridges/toners;
- Chemicals (paints, adhesives, resins, detergents, etc.);
- Light bulbs;
- Textiles (rags);
- Waste cooking oil (if any generated by the residents or tenants);
- Furniture (and from time to time other bulky wastes); and
- Abandoned bicycles.

Wastes should be segregated into the above waste types to ensure compliance with waste legislation and guidance while maximising the re-use, recycling and recovery of waste with diversion from landfill wherever possible.

3.3 Typical Waste Categories and Waste Minimisation/Segregation

The proposed development will give rise to a wide variety of waste streams during operations. Healthcare waste is defined in the HSE and DOHC *Healthcare Risk Waste Management* publication as *“solid or liquid waste arising from healthcare”*. Waste materials generated will fall into two main categories, namely healthcare non-risk waste (i.e. non-clinical healthcare waste) and HCRW (hazardous) as illustrated in Figure 3.1. Hazardous waste has been further subdivided in this plan into non-clinical hazardous waste and clinical/risk waste.

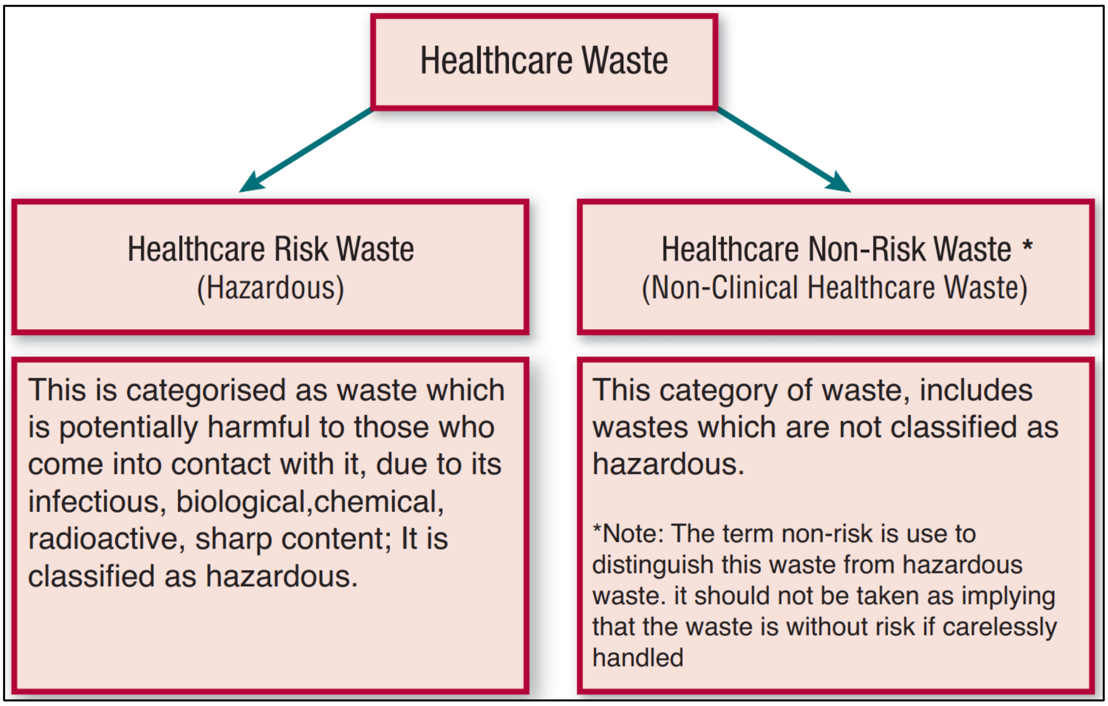


Figure 3.1 Healthcare Waste Categories (Source: HSE, *Waste Management Awareness Handbook* (2010)

3.3.1 Healthcare Non-Risk Waste

The typical non-risk/non clinical non-hazardous waste streams that will be generated at the proposed development will include the following:

- Dry Mixed Recyclables (DMR) – includes cardboard, non-confidential paper, newspaper, leaflets plastic packaging and bottles, aluminium cans, tins and Tetra Pak cartons;
- Confidential paper;
- Mixed Non-Recyclable /General Waste (MNR);
- Organic (food/catering) waste; and
- Glass.

In addition to the typical non-risk/non-clinical non-hazardous waste materials that will be generated at the development on a daily basis, there will be some additional waste types generated less frequently / in smaller quantities which will need to be managed separately including:

- Green / garden waste may be generated from external landscaping;
- Batteries (non-hazardous) *note: hazardous batteries may also be generated which are referred to in Section 3.2.2*;
- Waste electrical and electronic equipment (WEEE) including computers, printers and other ICT equipment (non-hazardous) *note: WEEE containing hazardous components may also be generated which are referred to in Section 3.2.2*;
- Metals, timber and mixed C&D waste generated from operational maintenance activities;
- Polystyrene;
- Textiles;
- Waste cooking oil (if any generated by the commercial tenant); and
- Furniture (and, from time to time, other bulky wastes).

Wastes should be segregated into the above waste types to ensure compliance with waste legislation and guidance while maximising the re-use, recycling and recovery of waste with diversion from landfill wherever possible.

3.3.1.1 <u>Reducing and Segregating Healthcare Non-Risk Waste</u>

The following steps have been outlined to contribute towards the minimisation and segregation within this waste stream:

- Review your current recycling policy and system
- Make it clear what can be placed in the recycling bags
- Ensure recycling bags are placed in the right location
- Make the recycling bins easy to use
- Use different colour bins for each type of waste
- Prevent contamination with liquid and food

For full details on how to minimise and segregation healthcare non-risk waste, please see *Best Practice Guide Maximise Recycling and Reduce Landfill Waste* [9]*.*

3.3.2 <u>Non-Clinical Hazardous Waste</u>

The typical non-clinical hazardous waste streams that will be generated will include the following:

- Printer/toner cartridges;
- Batteries (hazardous) *note: non-hazardous batteries may also be generated which are referred to in Section 3.2.1*;
- Waste electrical and electronic equipment (WEEE) including computers, printers and other ICT equipment (containing hazardous components) *note: WEEE not containing hazardous components may also be generated which are referred to in Section 3.2.1*;
- Cleaning chemicals (solvents, pesticides, paints, adhesives, resins, detergents, etc.); and
- Fluorescent bulb tubes and other mercury containing waste.

3.3.3 <u>Healthcare Risk Waste (Hazardous)</u>

HCRW will be generated from any clinical treatment and consultation rooms. Figure 3.2 over shows the classification and colour coding of HCRW as presented in the HSE guidance document.

The HCRW generated at the medical use/ healthcare facility will comprise waste disposed of in yellow bags (such as dressings, swabs, bandages, gloves etc.) and yellow sharps buckets (for waste such as surgical kits, needles, syringes, razors, stitch cutters etc.).

Figure 3.2 Segregation of HCRW (Source: HSE and DOHC, *Healthcare Risk Waste Management* (2010) and HSE, *Waste Management Awareness Handbook* (2011))

3.3.3.1 *Reducing Healthcare Risk Waste*

The following steps can be taken to reduce the quantity of non-risk waste incorrectly placed in the HCRW bins:

- Review your facility's HCRW classification policy.
- Ensure staff know what is and is not HCRW
- Remove HCRW bins from public access areas e.g. multi-bed wards

On average, 20% of risk waste generated in healthcare facilities is generated in operating theatres. To reduce the amount of risk waste generated these steps have been outlined:

- Prevent the generation of waste – by reviewing what materials and instruments are often not used in a surgical kit during specific treatments, etc.
- Review the HCRW classification policy
- Increase the segregation of recyclables and minimise the non-risk waste content in the healthcare risk waste

For full detail on methods to minimise HCRW please see *Best Practice Guide Healthcare Risk Waste Reduction* and *Best Practice Guide Healthcare Risk Waste Reduction in the Theatre*.

3.4 European Waste Codes

In 1994, the *European Waste Catalogue* [22] and *Hazardous Waste List* [23] were published by the European Commission. In 2002, the EPA published a document titled the *European Waste Catalogue and Hazardous Waste List* [24], which was a condensed version of the original two documents and their subsequent amendments. This document has recently been replaced by the EPA '*Waste Classification – List of Waste & Determining if Waste is Hazardous or Non-Hazardous'* [25] 2018. This waste classification system applies across the EU and is the basis for all national and international waste reporting, such as those associated with waste collection permits, COR's, permits and licences and EPA National Waste Database.

Under the classification system, different types of wastes are fully defined by a code. The List of Waste (LoW) code (also referred to as European Waste Code or EWC) for typical waste materials expected to be generated during the operation of the proposed development are provided in Table 3.1 below.

Table 3.1 Typical Waste Types Generated and LoW Codes

Waste Material	**LoW/EWC Code**
Paper and Cardboard	20 01 01
Plastics	20 01 39
Metals	20 01 40
Mixed Non-Recyclable Waste	20 03 01
Glass	20 01 02
Biodegradable Kitchen Waste	20 01 08
Oils and Fats	20 01 25
Textiles	20 01 11
Batteries and Accumulators*	20 01 33* - 34
Printer Toner/Cartridges*	20 01 27* - 28
Green Waste	20 02 01
WEEE*	20 01 35*-36
Chemicals (solvents, pesticides, paints & adhesives, detergents, etc) *	20 01 13*/19*/27*/28/29*30
Bulky Wastes	20 03 07

** Individual waste type may contain hazardous materials*

4.0 ESTIMATED WASTE ARISINGS

A waste generation model (WGM) developed by AWN, has been used to predict waste types, weights and volumes arising from operations within the proposed development. The WGM incorporates building area and use and combines these with other data including Irish and US EPA waste generation rates.

The estimated quantum/volume of waste that will be generated from the residential and assisted living units has been determined based on the predicted occupancy of the units. While the floor area uses m^2 has been used to estimate the waste that will be generated by the retail, café, restaurant, community and creche units (All classed as commercial) in the development.

Waste from residential amenities has been calculated within the residential waste figures and waste will be stored within the closet residential waste store.

The estimated waste generation for the development for the main waste types is presented in Table 4.1, 4.2, 4.3, 4.4 and 4.5.

Waste type	Waste Volume (m^3/week)			
	Residential Duplex/House 2 - Bed (Individual)	Residential Duplex/House 3 - Bed (Individual)	Assisted Living 5 - Bed - Block 2 (Combined)	Residential Block 2 (Combined)
Organic Waste	0.02	0.02	0.06	1.49
DMR	0.12	0.14	0.44	10.56
Glass	<0.00	<0.00	0.01	0.29
MNR	0.06	0.07	0.21	5.55
Total	**0.20**	**0.23**	**0.72**	**17.90**

Table 4.1 Estimated waste generation for the proposed development for the main waste types

Waste type	Waste Volume (m^3/week)			
	Residential Block 3 (Combined)	Residential Block 4 (Combined)	Residential Block 5 (Combined)	Residential Block 6 (Combined)
Organic Waste	2.42	1.42	1.67	0.55
DMR	16.54	10.05	11.81	3.87
Glass	0.47	0.27	0.32	0.11
MNR	9.62	5.28	6.21	2.03
Total	**29.05**	**17.02**	**20.00**	**6.56**

Table 4.2 Estimated waste generation for the proposed development for the main waste types

Waste type	Waste Volume (m^3/week)			
	Residential Block 7 (Combined)	Residential Duplex Block 8 (Combined)	Residential Duplex Block 9 (Combined)	Residential Block 10 (Combined)
Organic Waste	3.28	0.45	0.31	2.57
DMR	23.28	3.21	2.16	18.21
Glass	0.64	0.09	0.06	0.50
MNR	12.24	1.69	1.14	9.57
Total	**39.44**	**5.44**	**3.66**	**30.85**

Table 4.3 Estimated waste generation for the proposed development for the main waste types

Waste type	Waste Volume (m^3/week)			
	Medical Unit (Block 2) (Individual)	Retail / Restaurant (Block 3) (Combined)	Community Centre Facility (Block 6) (Individual)	Retail (Block 7) (Combined)
Organic Waste	0.03	0.31	0.30	0.26
DMR	0.69	2.91	1.88	5.15
Glass	0.02	0.06	0.20	0.14
MNR	0.30	1.66	2.30	2.15
Confidential Paper	0.28	-	-	-
Medical Waste	0.63	-	-	-
Total	**1.93**	**4.94**	**4.78**	**7.70**

Table 4.4 Estimated waste generation for the proposed development for the main waste types

Waste type	Waste Volume (m^3/week)	
	Childcare Unit / Management Suite (Block 10) (Combined)	Cafe (Gate Lodge) (Individual)
Organic Waste	0.07	0.08
DMR	2.71	0.18
Glass	0.01	0.01
MNR	1.48	0.24
Total	**4.27**	**0.51**

Table 4.4 Estimated waste generation for the proposed development for the main waste types

The DLR Pre-Planning Waste Management Form recommends calculating residential waste using Section 4.7 of *BS5906:2005 Waste Management in Buildings – Code of Practice* [26]*.* The predicted total waste generated from the residential units based on the Code of Practice is c. 147.63m^3 per week for the residential units. Whereas the AWN waste generation model estimates c. 180.88m^3 per week from the residential units. AWN's modelling methodology is based on data from recent published data and data from numerous other similar developments in Ireland and based on AWN's experience it is a more representative estimate of the likely waste arisings from the development.

5.0 WASTE STORAGE AND COLLECTION

This section provides information on how waste generated within the development will be stored and how the waste will be collected from the development. This has been prepared with due consideration of the proposed site layout as well as best practice standards, local and national waste management requirements including those of DLRCC. In particular, consideration has been given to the following documents:

- BS 5906:2005 Waste Management in Buildings – Code of Practice;
- DLRCC Guidance Notes for Waste Management Planning for Residential and Commercial Developments (2023);
- DLRCC, Dún Laoghaire Rathdown County Council Segregation, Storage and Presentation of Household and Commercial Waste) Bye-laws (2019).
- The NWMPCE 2024 - 2030;
- DoHLGH, Sustainable Urban Housing: Design Standards for New Apartments, Guidelines for Planning Authorities (2023) [27].
- DoHLGH, Design Manual for Urban Roads and Streets (2019) [28]

Waste Storage Areas

Duplex Units Block 2

1 no. WSA has been allocated for use by the duplex units in this block. The WSA is located in external location to the northeast of the block.

Assisted Living Units Block 2

2 no. shared communal Waste Storage Areas (WSAs) have been allocated within the development design for the assisted living unit blocks. All WSAs have been strategically located on the ground in an external location, in close proximity to the buildings.

Unit Blocks 2-7 & 10

15 no. shared communal Waste Storage Areas (WSAs) have been allocated within the development design for the residential apartment blocks. All WSAs have been strategically located on the ground and basement floor levels, in close proximity to cores.

Duplex/Unit Blocks 8 & 9

Duplex units will have their own individual WSAs allocated at the rear of their buildings where external access to the rear yard is possible. When external access to the rear of the property is unavailable, bins will be stored at the front of the unit, shielded from view of the road.

Medical Unit Block 2

1 no. WSA has been allocated for use by the medical unit. The medical unit will have their own individual WSA for the storage of general and medical waste at ground floor level in Block 2

Commercial Units Block 3

2 no. WSAs have been allocated for use by the commercial units in Block 3. These WSAs have been allocated on ground floor level in close proximity to the commercial units within Block 3.

Community Unit Block 6

1 no. WSA has been allocated in the development design for use by the Community unit in Block 6.

Commercial Units Block 7

2 no. WSAs have been allocated for use by the commercial units in Block 7. These WSAs have been allocated on ground floor level in close proximity to the commercial units within Block 7.

Childcare and Management Units Block 10

The Childcare and Management units will have a shared WSA allocated on ground floor level in Block 10.

Café Gatehouse Unit

The café will be required to allocate space within their own unit for the storage of segregated waste.

Facilities management will supply all tenants with a document that shall clearly state the methods of source waste segregation, storage, reuse and recycling initiatives that shall apply within the development.

The waste receptacles from the shared WSAs will be collected by facilities management, immediately prior to collection and brought to where the bins will be staged temporarily awaiting collection. The staging areas are such that it will not obstruct traffic or pedestrians (allowing a footway path of at least 1.8m, the space needed for two wheelchairs to pass each other) as is recommended in the *Design Manual for Urban Roads and Streets* (2019).

Using the estimated waste generation volumes in Table 4.1, the waste receptacle requirements for MNR, DMR, organic waste and glass have been established for the residential WSA. These are presented in Table 5.1.

Table 5.1 Waste storage requirements for the proposed development

Area/Use	Bins Required					Equipment
	MNR*	DMR**	Organic	Glass	Bales	
Houses / Duplex (Individual)	1 x 240L	1 x 240L	1 x 120L	Bottle Bank	-	-
Residential Apartment Block 2 (Shared)	5 x 1100L	10 x 1100L	7 x 240L	2 x 240L	-	-
Residential Assisted Living Block 2 (Shared)	2 x 240L	4 x 240L	2 x 120L	2 x 120L	-	-
Residential Duplex Block (Shared)	1 x 1100L	1 x 1100L	1 x 240L	1 x 120L		
Residential Apartment Block 3 (Shared)	9 x 1100L	15 x 1100L	10 x 240L	2 x 240L	-	-
Residential Apartment Block 4 (Shared)	5 x 1100L	10 x 1100L	6 x 240L	2 x 240L	-	-
Residential Apartment Block 5 (Shared)	6 x 1100L	11 x 1100L	7 x 240L	2 x 240L	-	-

Area/Use	Bins Required					Equipment
	MNR*	DMR**	Organic	Glass	Bales	
Residential Apartment Block 6 (Shared)	2 x 1100L	4 x 1100L	1 x 240L	1 x 120L	-	-
Residential Apartment Block 7 (Shared)	12 x 1100L	22 x 1100L	14 x 240L	3 x 240L	-	-
Medical Unit Block 2 (Individual)	2 x 240L	1 x 1100L	1 x 120L	1 x 120L	-	Medical Waste bin Sharps Container
Commercial Units Block 3 (Shared)	2 x 1100L	3 x 1100L	2 x 240L	1 x 120L	-	-
Community Unit Block 6 (Individual)	3 x 1100L	2 x 1100L	2 x 240L	2 x 240L	-	-
Commercial Units Block 7 (Shared)	2 x 1100L	5 x 1100L	2x 240L	1 x 120L	-	-
Childcare & Management Units Block 10 (Shared)	2 x 1100L	3 x 1100L	1 x 120L	1 x 120L	-	-
Café Gate Lodge (Individual)	1 x 240L	1 x 240L	1 x 120L	Bottle Bag	-	-

Note: ** = Mixed Non-Recyclables*
*** = Dry Mixed Recyclables*

The waste receptacle requirements have been established from distribution of the total weekly waste generation estimate into the holding capacity of each receptacle type.

Waste storage receptacles as per Table 5.1 above (or similar appropriate approved containers) will be provided by the facility management company in the shared WSA.

The types of bins used will vary in size, design and colour dependent on the appointed waste contractor. However, examples of typical receptacles to be provided in the WSA are shown in Figure 5.1. All waste receptacles used will comply with the IS EN 840 2012 standard for performance requirements of mobile waste containers, where appropriate. Signage should be posted above or on the bins to show exactly which waste can be put in each.

Figure 5.1 Typical waste receptacles of varying size (240L and 1100L)

5.1 Waste Storage – Residential Units

Residents in apartments, duplexes and houses will be required to segregate their waste into the following main waste categories within their own units:

- Organic waste;
- DMR;
- Glass; and
- MNR.

Residents have been allocated either shared external WSAs, which are located on the ground level or individual WSAs which will be located in rear yards for those with external access, while units without external access to their rear yard will be supplied with shielded bin stores at the front of their unit.

Provision will be made in all residential units to accommodate 3 no. bin types to facilitate waste segregation at source. An example of a potential 3 bin storage system is provided in Figure 5.2 below.

Figure 5.2 Example three bin storage system to be provided within the unit design

Each bin/container in the WSAs will be clearly labelled and colour coded to avoid cross contamination of the different waste streams. Signage will be posted above or on the bins to show exactly which waste types can be placed in each bin.

Access to the residential shared WSAs will be restricted to authorised residents, facilities management and waste contractors by means of a key or electronic fob access.

It is anticipated that DMR, MNR, glass and organic waste will be collected on a weekly basis.

Other waste materials such as plastic bottle, textiles, batteries, printer toner/cartridges and WEEE may be generated infrequently by the residents. Residents will be required to identify suitable temporary storage areas for these waste items within their own units and dispose of them appropriately. Further details on additional waste types can be found in Section 5.5.

5.2 Waste Storage – Childcare / Retail / Café / Management Suite /Community Centre Units

Staff will be required to segregate their waste into the following waste categories within their own units:

- Organic waste;
- DMR;
- Glass; and
- MNR.

As required, the staff will need to bring segregated DMR, MNR, glass and organic waste to their dedicated commercial WSAs as covered in section 5.0.

Suppliers for the tenants should be requested by the tenants to make deliveries in reusable containers, minimize packaging or to remove any packaging after delivery where possible, to reduce waste generated by the development.

If any kitchens/food preparation areas are allocated in unit areas, this will contribute a significant portion of the volume of waste generated on a daily basis, and as such it is important that adequate provision is made for the storage and transfer of waste from these areas to the WSA.

If kitchens are required it is anticipated that waste will be generated in kitchens throughout the day, primarily at the following locations:

- Food Storage Areas (i.e. cold stores, dry store, freezer stores and stores for decanting of deliveries);
- Meat Preparation Area;
- Vegetable Preparation Area;
- Cooking Area;

Small bins will be placed adjacent to each of these areas for temporary storage of waste generated during the day.

Each bin/container in the WSAs will be clearly labelled and colour coded to avoid cross contamination of the different waste streams. Signage will be posted above or on the bins to show exactly which waste types can be placed in each bin.

Access to the WSAs will be restricted to authorised staff, facilities management and waste contractors by means of a key or electronic fob access.

Based on the recommended bin requirements in Table 5.1, DMR, MNR, glass and organic waste will be required to be collected weekly.

Other waste materials such as textiles, batteries, printer toner/cartridges and WEEE may be generated infrequently by the residents. Tenants will be required to identify suitable temporary storage areas for these waste items within their own units and dispose of them appropriately. Further details on additional waste types can be found in Section 5.5.

5.3 Waste Storage – Medical Unit

Waste will be generated from a wide variety of activities throughout the proposed medical centre. Healthcare risk wastes will typically be generated in the doctor surgeries, consulting rooms and treatment rooms. DMR and MNR waste will be generated throughout the building. Confidential and non-confidential paper waste will mainly be generated in offices and staff workstations.

Organic (food) waste will be generated from staff lunches, micro kitchen areas and food brought into the building.

Appropriate colour coded, labelled and secured receptacles will be required for healthcare risk waste generated in the building as set out in the HSE, *Waste*

Management Awareness Handbook (and illustrated in Figure 3.2). The required healthcare risk waste receptacles will be:

- Yellow bags (stored in rigid bins e.g. 60L pedal bin)
- Yellow rigid buckets with yellow lid

These waste receptacles will be stored in designated treatment rooms, doctor surgeries, consulting rooms and treatment rooms areas. Facilities or cleaning staff will transfer the risk waste bags/buckets on a regular basis to a dedicated clinical waste room in a segregated area of the medical WSA. This area will have at least 1 no. 770L litre yellow clinical waste bin and 1 no. roll cages.

In addition, clinical waste bags and sharps buckets may be temporarily transferred to utility stores located across the unit during the day prior to transfer to the clinical waste room. Where required, these temporary storage locations should have 60/80 litre pedal bins for yellow risk waste bags and shelf storage for sharps buckets. Facilities or cleaning staff will transfer this waste to the dedicated Clinical Waste Room on a daily basis.

Non-risk waste receptacles for DMR and MNR will be strategically positioned in the treatment rooms, consulting rooms and offices as necessary.

Where suitable, it is proposed that office and work station areas will utilise area waste stations (AWSs) for non-risk waste streams as opposed to using individual receptacles at desks. AWSs should be conveniently located within 10-15m of workstations, where possible, and would typically include:

- 1 no. 60/80 litre receptacle for dry mixed recyclables;
- 1 no. 60/80 litre receptacle for mixed non-recyclables; and
- 1 no. 60/80 litre receptacle for confidential paper.

In addition, smaller bins or caddies for organic and glass waste should be located in the micro kitchen areas.

Other waste materials such as batteries, WEEE, lightbulbs and printer toner/cartridges will be generated less frequently. The tenant will be required to store these waste types within their own unit and arrange collection with an appropriately licensed waste contractor. Facilties management may arrange collection depending on the agreement. Further details on additional waste types can be found in Section 5.5.

5.4 Waste Collection

There are numerous private contractors that provide waste collection services in the DLRCC area. All waste contractors servicing the proposed development must hold a valid waste collection permit for the specific waste types collected. All waste collected must be transported to registered/permitted/licensed facilities only.

Bins from the development will be brought to collection points by the waste contractor or facilities management, immediately prior to collection. The undercroft and basement level carparks are insufficient in height for a waste truck to access; therefore, all waste will be collected from staging areas. All locations for collection can be viewed on the drawings submitted with the planning application under separate cover and in appendix 19.1 of this OWMP.

HCRW from the Healthcare centre will be collected directly from the healthcare risk WSA by a waste contractor appointed directly by the HSE.

The confidential waste paper bin(s) will be collected/emptied directly from the building by an appointed waste contractor.

Following collection, bins will promptly be returned to the WSAs by personnel nominated by the facilities management company (or waste contractor, depending on arrangement).

Residents with their own individual WSAs will be responsible for moving their bins to the curtilage for collection and removal after emptying, in line with the DLRCC waste by-law requirements.

Suitable access and egress has been provided to enable the bins to be moved easily from the WSA to the waste collection vehicles on the appropriate days. Waste will be collected at agreed days and times by the nominated waste contractors.

It is recommended that bin collection times/days are staggered to reduce the number of bins required to be emptied at once and the time the waste vehicle is onsite. This will be determined during the process of appointment of a waste contractor.

5.5 Additional Waste Materials

In addition to the typical waste materials that are generated on a daily basis, there will be some additional waste types generated from time to time that will need to be managed separately. A non-exhaustive list is presented below.

Deposit Return Scheme

Most drinks containers can be recycled via the deposit return scheme, such as bottles, cans and tins made from plastic, aluminium or steel can be returned once they are between 150ml and 3 litres in size and have the Re-turn logo on them.

At the shops you can either return the containers:

- Using a Reverse Vending Machine (RVM)
- Manually in the shop

If a shop does not have a RVM but they sell containers with the Re-turn logo, the shop may allow you to manually return containers in store, unless they have a take back exemption.

Locations of RVM machines can be found via the Re-turn website (www.re-turn.ie)

Green waste
Green waste may be generated from gardens, external landscaping and internal plants/flowers. Green waste generated from landscaping of external areas will be removed by external landscape contractors. Green waste generated from gardens internal plants/flowers can be placed in the organic waste bins.

Batteries
A take-back service for waste batteries and accumulators (e.g. rechargeable batteries) is in place in order to comply with the Waste Management Batteries and Accumulators Regulations 2014 as amended. In accordance with these regulations consumers are able to bring their waste batteries to their local civic amenity centre or can return them free of charge to retailers which supply the equivalent type of battery, regardless of whether or not the batteries were purchased at the retail outlet and regardless of whether or not the person depositing the waste battery purchases any product or products from the retail outlet.

The commercial tenants cannot use the civic amenity centre. They must segregate their waste batteries and either avail of the take-back service provided by retailers or arrange for recycling/recovery of their waste batteries by a suiltably permited/licenced contractor. Facilties management may arrange collection depending on the agreement.

Waste Electrical and Electronic Equipment (WEEE)
The *WEEE Directive 2002/96/EC* and associated Waste Management (WEEE) Regulations have been enacted to ensure a high level of recycling of electronic and electrical equipment. In accordance with the regulations, consumers can bring their waste electrical and electronic equipment to their local recycling centre. In addition consumers can bring back WEEE within 15 days to retailers when they purchase new equipment on a like for like basis. Retailers are also obliged to collect WEEE within 15 days of delivery of a new item, provided the item is disconnected from all mains, does not pose a health and safety risk and is readily available for collection.

As noted above, the commercial tenants cannot use the civic amenity centre. They must segregate their WEEE and either avail of the take-back/collection service provided by retailers or arrange for recycling/recovery of their WEEE by a suiltably permited/licenced contractor. Facilties management may arrange collection depending on the agreement.

Printer Cartridge/Toners
It is recommended that a printer cartridge/toner bin is provided in the commercial units, where appropriate. The commercial tenants tenants will be required to store this waste within their unit and arrange for return to retailers or collection by an authorised waste contractor, as required.

Waste printer cartridge/toners generated by residents can usually be returned to the supplier free of charge or can be brought to a civic amenity centre.

Chemicals (solvents, paints, adhesives, resins, detergents etc)
Chemicals (such as solvents, paints etc) are largely generated from building maintenance works. Such works are usually completed by external contractors who are responsible for the off-site removal and appropriate recovery/recycling/disposal of any waste materials generated.
Any waste cleaning products or waste packaging from cleaning products generated in the commercial units that is classed as hazardous (if they arise) will be appropriately stored within the tenants own space. Facilties management may arrange collection depending on the agreement.

Any waste cleaning products or waste packaging from cleaning products that are classed as hazardous (if they arise) generated by the residents should be brought to a civic amenity centre.

Light Bulbs (Fluorescent Tubes, Long Life, LED and Lilament bulbs)
Waste light bulbs may be generated by lighting at the commercial tenants. It is anticipated that commercial tenants will be responsible for the off-site removal and appropriate recovery/disposal of these wastes. Facilties management may arrange collection depending on the agreement.

Light bulbs generated by residents should be taken to the nearest civic amenity centre for appropriate storage and recovery/disposal.

Textiles
Where possible, waste textiles should be recycled or donated to a charity organisation for reuse.

Waste Cooking Oil
If the comercial tenants use cooking oil, waste cooking oil will need to be stored within the unit on a bunded area or spill pallet and regular collections by a dedicated waste contractor will need to be organised as required. Under sink grease traps will be installed in any cooking space.

If the residents generate waste cooking oil, this can be brought to a civic amenity centre.

Furniture (and other bulky wastes)
Furniture and other bulky waste items (such as carpet etc.) may occasionally be generated by the commercial tenants. The collection of bulky waste will be arranged as required by the tenant. If residents wish to dispose of furniture, this can be brought a civic amenity centre.

Abandoned Bicycles
Bicycle parking areas are planned for the development. As happens in other developments, residents sometimes abandon faulty or unused bicycles and it can be difficult to determine their ownership. Abandoned bicycles should be donated to charity if they arise.

5.6 Waste Storage Area Design

The shared WSAs should be designed and fitted-out to meet the requirements of relevant design Standards, including:

- Be fitted with a non-slip floor surface;
- Provide ventilation to reduce the potential for generation of odours;
- Provide suitable lighting – a minimum Lux rating of 220 is recommended;
- Appropriate sensor controlled lighting;
- Be easily accessible for people with limited mobility;
- Be restricted to access by nominated personnel only;
- Be supplied with hot or cold water for disinfection and washing of bins;
- Be fitted with suitable power supply for power washers;
- Have a sloped floor to a central foul drain for bins washing run-off;
- Have appropriate graphical and written signage placed above and on bins indicating correct use;
- Have access for potential control of vermin, if required;
- Robust design of doors to bin area incorporating steel sheet covering where appropriate; and
- Be fitted with CCTV for monitoring.

The facility management company will be required to maintain bins and storage areas in good condition as required by the DLRCC *Waste Bye*-Laws.

Access to the Healthcare Risk WSA at ground level should be restricted to authorised staff, be sufficient to allow a 770 litre bin to pass easily into and out of the room for transfer via the service walkway to the waste collection zone. 770 litre bins used in the healthcare waste industry are typically 770mm wide.

In accordance with the HSE publication *National Hospital Office – National Cleaning Manual Appendices*, the following specifications are also required:

- The waste receptacle including all component parts should be clean and well-maintained with no blood or body substances, rust, dust, dirt, debris and spillages.

- Bins should be emptied as appropriate, with fresh liners fitted in accordance with local and national policy. Bags should be removed and labelled/tagged when no more than ¾ full and stored appropriately in a secure location.
- There should be an agreed schedule in operation for replacement of sani-bins in place.
- The sani-bin/nappy bin, including all component parts should be clean and well-maintained with no blood or body substances, rust, dust, dirt, debris and spillages.

The project Architects (Reddy Architecture and Urbanism) site layout plan indicates the indicative site and building layout, including waste storage areas for planning purposes, more detailed layouts will be produced as part of the detailed design process. The waste storage areas identified on the plans are sufficiently sized to accommodate the waste which will be generated within the development and are appropriately located to allow for collection of this waste.

5.7 Facility Management Responsibilities

It shall be the responsibility of the Facilities Management Company to ensure that all domestic waste generated by apartment residents and commercial tenants is managed to ensure correct storage prior to collection by an appropriately permitted waste management company.

Facilities Management should provide the following items in accordance with the DLRCC *the Guidance Notes for Waste Management in Residential and Commercial Developments:*

- Provision of a Waste Management Plan document, prepared by the Facilities Management Company to all residential units and commercial tenants, which shall clearly state the methods of source waste segregation, storage, reuse and recycling initiatives that shall apply to the management of the development;
- Provision and maintenance of appropriate graphical signage to inform residents and tenants of their obligation to reduce waste, segregate waste and in the correct bin;
- Preparation of an annual waste management report for all residential units and commercial tenants;
- Designation of access routes to common waste storage areas to ensure safe access from the apartment units by mobility impaired persons (See Appendix A);
- Provision of an appropriately qualified and experienced staff member, who will be responsible for all aspects of waste management at the development;
- Daily inspection of waste storage areas and signing of a daily check list, which shall be displayed within the area; and
- Maintenance of a weekly register, detailing the quantities and breakdown of wastes collected from the development and provision of supporting documentation by the waste collector to allow tracking of waste recycling rates.

5.8 Pest Management

A pest control operator will be appointed as required to manage pests onsite during the operational phase of this development. All waste generated within the development will be stored in closed waste receptacles both within units and within the WSAs. Any waste receptacles will be carefully managed to prevent leaks, odours and pest problems.

All WSAs will have access for potential control of vermin, if required, be supplied with hot or cold water, drainage point and will be regularly inspected by facilities management to deter pests.

6.0 CONCLUSIONS

In summary, this OWMP presents a waste strategy that complies with all legal requirements, waste policies and best practice guidelines and demonstrates that the required storage areas have been incorporated into the design of the development.

Implementation of this OWMP will ensure a high level of recycling, reuse and recovery at the development. All recyclable materials will be segregated at source to reduce waste contractor costs and ensure maximum diversion of materials from landfill, thus achieving the targets set out in the *NWMPCE 2024 – 2030.*

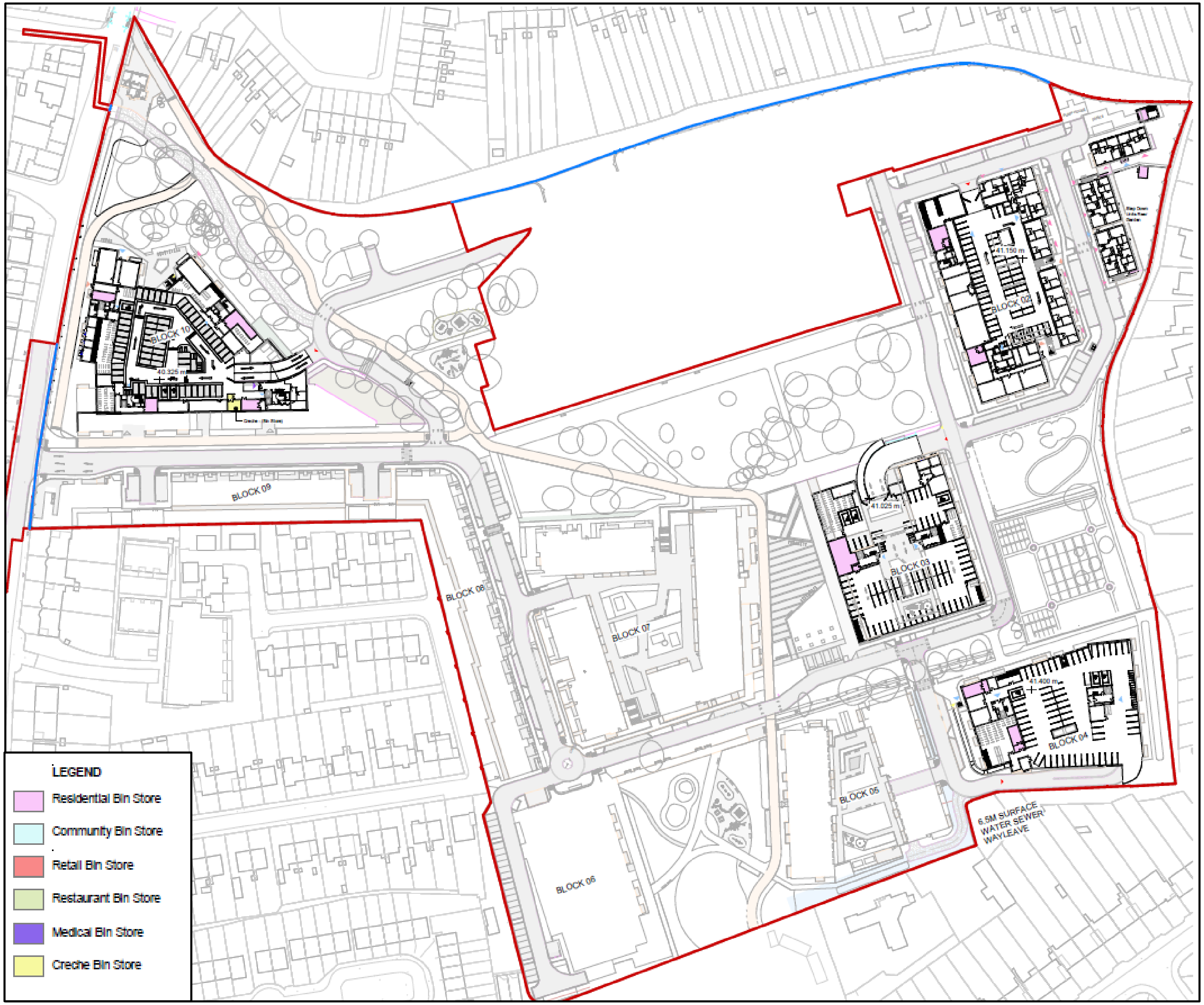
Adherence to this plan will also ensure that waste management at the development is carried out in accordance with the requirements outlined in the DLRCC Guidance Notes for Waste Management Planning for Residential and Commercial Developments and the *DLRCC Waste Bye-Laws*.

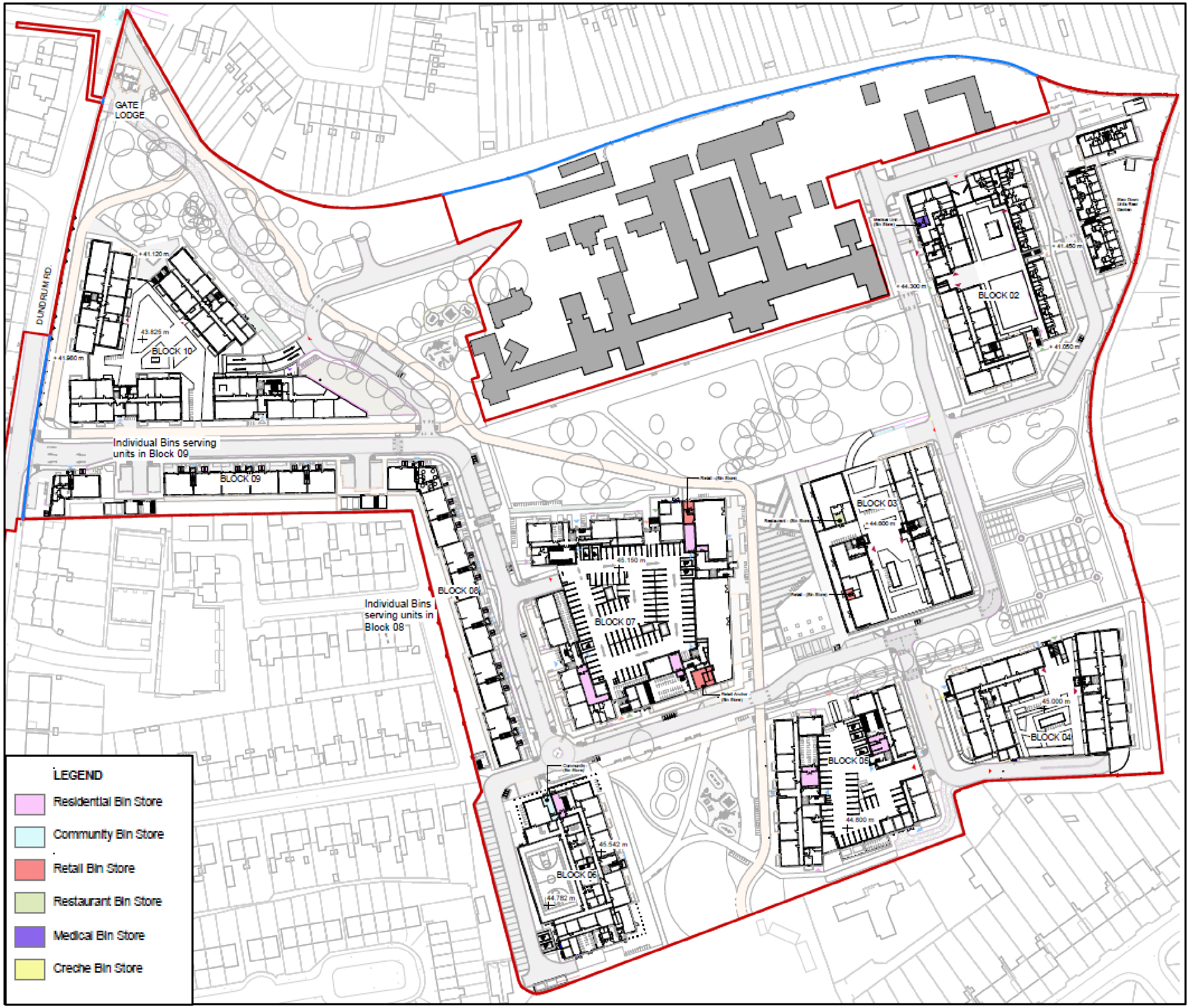
The waste strategy presented in this document will provide sufficient storage capacity for the estimated quantity of segregated waste. The designated area for waste storage will provide sufficient room for the required receptacles in accordance with the details of this strategy.

7.0 REFERENCES

1. Waste Management Act 1996 as amended.
2. Environmental Protection Agency Act 1992 as amended.
2. Litter Pollution Act 1997 (Act No. 12 of 1997) as amended;
3. Regional Waste Management Planning Offices, *The National Waste Management Plan for a Circular Economy 2024 - 2030 (2024).*
4. Dún Laoghaire Rathdown County Council (DLRCC), Dún Laoghaire Rathdown County Council Segregation, Storage and Presentation of Household and Commercial Waste) Bye-laws (2019).
5. DLRCC Guidance Notes for Waste Management Planning for Residential and Commercial Developments (2023).
6. Health Service Executive (HSE), *Waste Policy* (2016)
7. Health Service Executive (HSE), *Waste Management Awareness Handbook* (2011)
8. HSE and Department of Health and Children (DOHC), *Healthcare Risk Waste Management: Segregation, Packaging and Storage Guidelines for Healthcare Risk Waste, 4th Edition* (2010)
9. Environmental Protection Agency (EPA) Green Healthcare, best practice guides for the reduction of hospital waste:
   - EPA Green Healthcare, *Best practice Guide on Healthcare Risk Waste Reduction*
   - EPA Green Healthcare, *Best Practice Guide on healthcare Risk Waste Reduction in Theatres*
   - EPA Green Healthcare, Best Practice Guide Maximise Recycling And Reduce Landfill Waste
10. Department of Environment and Local Government (DoELG) *Waste Management – Changing Our Ways, A Policy Statement* (1998).
11. Departmnt of Environment, Heritage and Local Government (DoEHLG) *Preventing and Recycling Waste - Delivering Change* (2002).
12. DoELG, *Making Ireland's Development Sustainable – Review, Assessment and Future Action (World Summit on Sustainable Development)* (2002).
13. DoEHLG, *Taking Stock and Moving Forward* (2004).
14. Department of Communications, Climate Action and Environment (DCCAE), *Waste Action Plan for the Circular Economy - Ireland's National Waste Policy 2020-2025* (Sept 2020).
15. DCCAE, *Whole of Government Circular Economy Strategy 2022-2023 'Living More, Using Less*' (2021).
16. Circular Economy and Miscellaneous Provisions Act 2022.
17. Environmental Protection Agency (EPA), *National Waste Database Reports 1998 – 2020* and the *Circular Economy and National Waste Database Report 2021*.
18. DLRCC, *Dún Laoghaire Rathdown County Council Development Plan 2022 – 2028.*
19. Planning and Development Act 2000 (S.I. No. 30 of 2000) as amended 2010 (S.I. No. 30 of 2010) and 2015 (S.I. No. 310 of 2015).
20. European Waste Catalogue - Council Decision 94/3/EC (as per Council Directive 75/442/EC).
21. Hazardous Waste List - Council Decision 94/904/EC (as per Council Directive 91/689/EEC).
22. EPA, *European Waste Catalogue and Hazardous Waste List* (2002).
23. EPA, *Waste Classification – List of Waste & Determining if Waste is Hazardous or Non-Hazardous* (2018).
24. BS 5906:2005 Waste Management in Buildings – Code of Practice.
25. DoHLGH, Sustainable Urban Housing: Design Standards for New Apartments, Guidelines for Planning Authorities (2023).
26. Department of Transport, Tourism and Sport and Department of Housing, Planning and Local Government, *Design Manual for Urban Roads and Streets* (2019).

8.0 LOCATION OF WASTE STORAGE AREAS


BLOCK 10
BLOCK 09
BLOCK 08
BLOCK 07
BLOCK 06
BLOCK 05
BLOCK 04
BLOCK 03
BLOCK 02
6.5M SURFACE WATER SEWER WAYLEAVE
LEGEND
Residential Bin Store
Community Bin Store
Retail Bin Store
Restaurant Bin Store
Medical Bin Store
Creche Bin Store


GATE LODGE
DUNDRUM RD.
BLOCK 10
Individual Bins serving units in Block 09
BLOCK 09
BLOCK 08
Individual Bins serving units in Block 08
BLOCK 07
BLOCK 06
BLOCK 05
BLOCK 04
BLOCK 03
BLOCK 02
LEGEND
Residential Bin Store
Community Bin Store
Retail Bin Store
Restaurant Bin Store
Medical Bin Store
Creche Bin Store

9.0 LOCATION STAGING/COLLECTION POINTS

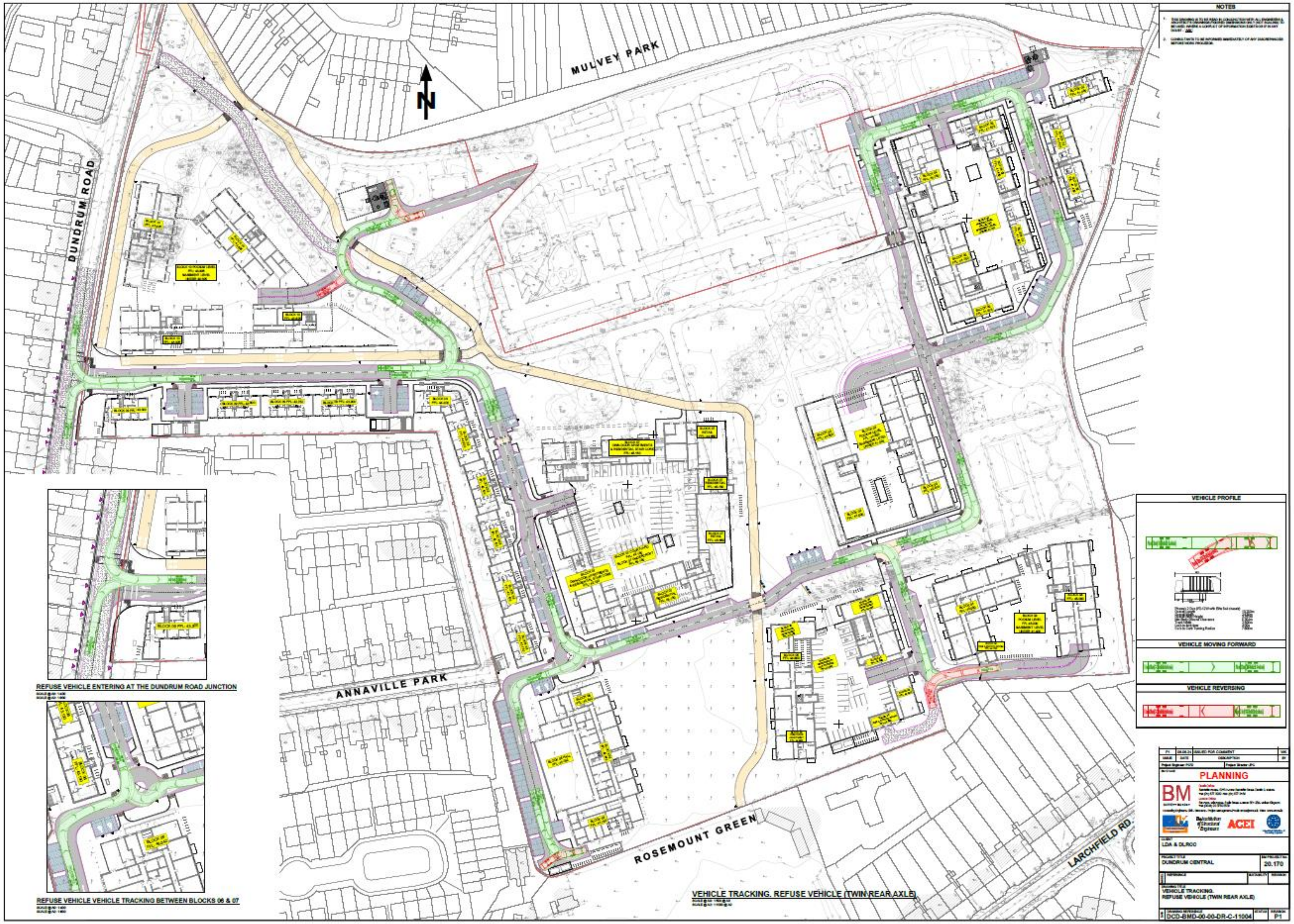

+41.140
+42.000
+43.610
+43.890
+45.020
PEDESTRIAN CROSSNG
FFL 43.825
FFL 43.825
RAISED PLANTER
WITH TREES ON
PODIUM
WOODLAND THEMED
PLAYGROUND
NATURAL PLAY AREA
CRECHE OUTDOOR SPACE
FFL 43.325
CRECHE BOUNDARY
STEEL FENCE AND
HEDGEROW
FFL 43.825
ACTIVE TRAVEL ROUTE
FFL 43.300
FFL 43.600
FFL 43.750
FFL 43.900
FFL 44.200
FFL 44.950
BIN STORES


STREET TREES AND RAINGARDENS
PUMP HOUSE
SCREENING PLANTING TO UNDERGROUND PARKING VENTS
COURTYARD PLANTING
CENTRAL MENTAL HOSPITAL
GRASS
PLAY
RETAIN
WOOD
BIORETENTION AREAS
GRASSED OPEN SPACE IN HISTORIC CORE
GRASSED OPEN SPACE IN HISTORIC CORE
BADGER PROTECTION FENCE
GAP BETWEEN FENCE, HEDGE AND WALL TO ALLOW ACCESS FOR AN ECOLOGICAL CORRIDOR
MIXED NATIVE HEDGE
2 LEAF MAINTENANCE GATE
SELF CLOSING TIME-LOCK PEDESTRIAN GATE
VEHICLE ACCESS
WETLAND
RAISED PLANTING WITH TREES
RAISED PLANTER WITH TREES ON PODIUM
LAWN
MIXED NATIVE HEDGE
FFL 41.450
FFL 41.875
FFL 44.750
FFL 44.600
FFL 45.650

RAISED PLANTING WITH TREES
VEHICLE ACCESS
RAISED PLANTER WITH TREES ON PODIUM
LAWN
RAISED PLANTER WITH TREES ON PODIUM
RAINGARDENS WITH FEATURE TREES
VEHICLE ACCESS
GRASS
PLANTING AND SEATING
GRID OF FEATURE TREES
PLAY
WETLAND
PLAY AREA
ACTIVE TRAVEL ROUTE
RAISING PLANTER ON PODIUM
GRASS
PLAY
GRASSED OPEN SPACE
TREE PLANTING TO BOUNDARY
AND SHRUB PLANTING TO BREAK EXPANSE


RAISED PLANTER WITH TREES ON PODIUM
RAINGARDENS WITH FEATURE TREES
GRASS
PLANTING AND SEATING
LAWN
GRID OF FEATURE TREES
PLAY
TRANSITION PLANTING ZONE TO PRIVATE PATIOS
RAISED PLANTER WITH TREES ON PODIUM
VEHICLE ACCESS
WETLAND
PLAY AREA
ACTIVE TRAVEL ROUTE
RAISING PLANTER ON PODIUM
GRASS
PLAY
GRASSED OPEN SPACE
GRASS
PLAY
ECO-CORRIDOR: EXISTING TREE PLANTING RETAINED AND PROTECTED. EXISTING DITCH TO BE ENHANCED WITH WILDFLOWER SEED AND ADDITIONAL TREES PROPOSED WHERE POSSIBLE

10.0 WASTE VEHCILE ROAD SWEEP ANALYSIS


MULVEY PARK
DUNDRUM ROAD
ANNAVILLE PARK
ROSEMOUNT GREEN
LARCHFIELD RD.
NOTES
VEHICLE PROFILE
VEHICLE MOVING FORWARD
VEHICLE REVERSING
REFUSE VEHICLE ENTERING AT THE DUNDRUM ROAD JUNCTION
REFUSE VEHICLE VEHICLE TRACKING BETWEEN BLOCKS 06 & 07
VEHICLE TRACKING, REFUSE VEHICLE (TWIN REAR AXLE)
PLANNING
BM
ACEI
LDA & DLRCC
DUNDRUM CENTRAL
20.170
VEHICLE TRACKING.
REFUSE VEHICLE (TWIN REAR AXLE)
DCD-BMD-00-00-DR-C-11004
P1

APPENDIX 24.1

Mitigation/Monitoring No.	Description of Mitigation/Environmental Commitment	Phase
Population and Human Health (Chapter 7)		
Mitigation		
P_1	The construction contractor will establish a feedback mechanism for residents to report any concerns or issues related to construction activities. By establishing this feedback mechanism, the construction contractor will engage with the community to address concerns and provide updates on mitigation efforts.	Construction
P_2	All excavated materials will be visually assessed by suitably qualified persons for signs of possible contamination such as staining or strong odours. Should any unusual staining or odour be noticed, samples of this soil will be analysed for the presence of potential contaminants to ensure that historical pollution of the soil has not occurred. Should it be determined that any of the soil excavated is contaminated, this will be segregated and appropriately disposed of by a suitably permitted / licensed waste disposal contractor. All sampling and soil handling will be undertaken by suitably qualified and trained persons using suitable personal protective equipment to avoid risks to human health.	Construction
P_3	The mitigation measures set out in Chapter 9: Land, Soils, Geology and Hydrogeology, Section 9.5.1 and Chapter 10: Hydrology, Section 10.6.1, will be implemented during the construction works for the protection of human health and populations. These measures relate to controlling sediment runoff, preventing spillage of hydrocarbons, soil excavation and other chemicals and groundwater dewatering works.	Construction
P_4	In order to mitigate the potential dust-related health impacts during the Construction Phase, dust related mitigation measures have been provided in Chapter 11 Air Quality of this EIAR. The mitigation measures draw on best practice guidance from Ireland (DCC, 2018), the UK (IAQM (2023), BRE (2003), The Scottish Office (1996), UK ODPM (2002)) and the USA (USEPA, 1997). These measures will be incorporated into the overall Construction Environmental Management Plan (CEMP) prepared for the Site.	Construction
P_5	Best practice noise and vibration control measures will be employed by the contractor during the Construction Phase in order to avoid significant impacts at the nearest sensitive buildings. The best practice measures set out in *BS 5228-1:2009+A1:2014 Code of Practice for Noise and Vibration Control on Construction and Open Sites - Noise* and the European Communities (Noise Emission by Equipment for Use Outdoors) Regulations, 2001 will be complied with. Further details are provided in Chapter 13: Noise & Vibration.	Construction

P_6	The mitigation measures set out in Chapter 18: Materials Assets (Roads and Traffic) will be implemented to mitigate against traffic relates impacts to human health.	Construction
P_7	Measures incorporated into the development design to mitigate the potential effects on hydrology will be implemented, as outlined in Chapter 10 Hydrology. Design measures to minimise the likelihood of any spills entering the water environment includes the design of the car park with hydrocarbon interceptors.	Construction
P_8	The best practice noise control techniques outlined in Chapter 13 Noise and Vibration will be reviewed and implemented as appropriate. This will ensure that noise levels are acceptable for the protection of human health.	Construction
P_9	The mitigation measures set out in Chapter 18: Materials Assets (Roads and Traffic) should be implemented to mitigate against traffic relates impacts to human health. This includes the implementation of a Mobility Management Plan.	Construction

Mitigation/Monitoring No.	Description of Mitigation/Environmental Commitment	Phase
Biodiversity (Chapter 8)		
Mitigation		
B_1	An Ecological Clerk of Works will oversee the project and will operate in consultation with NPWS and the DLR biodiversity officer.	Construction
B_2	A pre-construction inspection for terrestrial mammals will be carried out.	Construction
B_3	An Ecological Clerk of Works (ECoW) will be appointed to oversee the construction phase and to oversee the implementation of all mitigation including compliance with Wildlife Acts and Water Pollution Acts and ensure that biodiversity in neighbouring areas including birds will not be impacted.	Construction
B_4	Relevant guidelines and legislation (Section 40 of the Wildlife Acts, 1976 to 2012) in relation to the removal of trees and timing of nesting birds will be followed e.g. do not remove trees or shrubs during the nesting season (1^{st} March to 31^{st} August). If removal is required during this season the removal of woody material will be carried out under the supervision of an ecologist. If nesting birds are present NPWS will be contacted and removal will be subject to conditions outlined by NPWS.	Construction
B_5	Lighting during construction will be carried out in consultation with the project ecologist.	Construction

B_6	Removal of deciduous trees. Should any mature broadleaved tree be scheduled for removal as part of the development plans, it will first be surveyed for bat presence by a suitably experienced specialist. If bats are found, an application for a derogation licence should be made to the National Parks and Wildlife Service to allow its legal removal. Such trees will be felled in the period late August to late October, or early November, in order to avoid disturbance of any roosting bats as per National Roads Authority guidelines (NRA 2006a and 2006b) and also to avoid the bird breeding seasons. Any tree felling will be completed by mid-November at the latest as bats roosting in trees are very vulnerable to disturbance during their hibernation period (November – April). Trees may be removed at other times but the likelihood of encountering bats during works will be higher. Trees with ivy-cover, once felled, will be left intact onsite for 24 hours prior to disposal to allow any bats beneath foliage to escape overnight. A derogation licence for bats for bat roosts on site is seen in Appendix 2 of Appendix 8.6.	Construction
B_7	Trees to be retained. Several species of bats roost in trees. Where possible, treelines and mature trees that are located immediately adjacent to planned construction areas or are not directly impacted will be avoided and retained intact. Retained trees will be protected from root damage by machinery by an exclusion zone of at least 5 metres or equivalent to canopy height. Such protected trees should be fenced off by adequate temporary fencing prior to other works commencing.	Construction
B_8	A pre-construction bat assessment will be carried out on all buildings to be demolished.	Construction
B_9	Native species will be chosen in all landscaping schemes. Planting schemes will attempt to link in with existing wildlife corridors (hedgerows and treelines), both onsite and off, to provide continuity of wildlife corridors. Retention of boundary hedgerows and treelines will also serve to screen the development.	Construction
B_10	Lighting restrictions. In general, artificial light creates a barrier to bats so lighting will be avoided where possible. Where lighting is required, directional lighting (i.e. lighting which only shines on work areas and not nearby countryside) will be used to prevent overspill during construction. This can be achieved by the design of the luminaire and by using accessories such as hoods, cowls, louvers and shields to direct the light to the intended area only. Mature trees will not be directly lit during construction or operation of the proposed development.	Construction
B_11	45 bird boxes and 10 bat boxes will be placed on site as an enhancement and mitigation measure. The position of these boxes will be carried out in consultation with an ecologist.	Construction
B_12	Control measures will be carried out on the Himalayan balsam on site as outlined in the CEMP.	Construction

B_13	Measures and recommendations outlined in Appendix 8.7. Badger Survey Assessment and Mitigation Measures will be followed in consultation with NPWS. Mitigation measures outlined in the Badger Conservation Management Plan (Appendix 8.8) will be carried out.	Construction
B_14	The measures outlines in the Invasive Species management Plan (Appendix 8.10) will be followed.	Construction
B_15	A post construction inspection of drainage connections to the onsite drain will be carried out by the project ecologist to ensure that the petrochemical interceptor is in place and working.	Operational
B_16	A post construction inspection of drainage connections to the onsite drain will be carried out by the project ecologist to ensure that the petrochemical interceptor is in place and working.	Operational
B_17	A Habitat Management Plan will be in place and monitored by the project ecologist. The Habitat Management Plan (Appendix 8.9) has been prepared by Altemar with the support of AECOM Ireland Ltd. It involves the implementation of significant Habitat Management measures in line with the Dun Laoghaire Rathdown County Council Development Plan 2022-2028.	Operational

Mitigation/Monitoring No.	Description of Mitigation/Environmental Commitment	Phase
Land, Soils, Geology and Hydrogeology (Chapter 9)		
Mitigation		
LS_1	To prevent the accidental release of hazardous materials (fuels, paints, cleaning agents, etc.) during construction site activity all hazardous materials will be stored within secondary containment designed to retain at least 110% of the storage contents. Temporary bunds for oil/diesel storage tanks will be used on the site during the construction phase of the project. Safe materials handling of all potentially hazardous materials will be emphasised to all construction personnel employed during this phase of the project.	Construction
LS_2	Sediment runoff will be minimised by sediment skirts around soil stockpiles, sediment retention barriers in temporary surface water drains and the use of adequate construction roads.	Construction
LS_3	The provision of wheel wash areas at the construction entrances to the development will minimise the amount of soil deposited on the surrounding road network.	Construction
LS_4	Measures will be implemented throughout the construction stage to minimise the risk of contamination of the soil from accidental oil and petrol leakage from site plant. All lock up/storage areas will have a metal or	Construction

	concrete leak proof floor. Any accidental chemical spillages will be cleaned up and disposed of in an approved landfill site in accordance with the chemical manufacturer's recommendations.	
LS_5	Exposed soil surfaces to be protected with 150mm stone hardcore layer	Construction

Mitigation/Monitoring No.	Description of Mitigation/Environmental Commitment	Phase
Hydrology (Chapter 10)		
Mitigation		
H_1	Any run-off will be intercepted on site, where the ground falls towards adjoining properties or public roads/footpaths. This will be achieved with open drains or French drains and collected for treatment based on the conditions of a DLRCC and/or Irish Water licence, prior to pumping to the surface sewer network.	Construction
H_2	Should any discharge of construction water be required during the construction phase, discharge will be to foul sewer. Pre-treatment and silt reduction measures on site will include a combination of silt fencing, settlement measures (silt traps, 20 m buffer zone between machinery and watercourses/ stormwater sewer/ drainage ditch, refuelling of machinery off site) and hydrocarbon interceptors.	Construction
H_3	Any minor ingress of groundwater and collected rainfall in the excavation will be pumped out during construction. It is estimated that the inflow rate of groundwater will be low and limited to localised perched water. It is therefore proposed that the water be discharged via the existing stormwater sewer network. Extensive monitoring will be adopted to ensure that the water is of sufficient quality to discharge to the sewer. The use of slit traps and an oil interceptor (if required) will be adopted if the monitoring indicates the requirements for the same with no silt or contaminated water permitted to discharge to the sewer. There may be localised pumping of surface run-off from the excavations during and after heavy rainfall events to ensure that the excavations are kept relatively dry. Due to the very low permeability of the Dublin Boulder Clay and the relative shallow nature for excavations, infiltration to the underlying aquifer is not anticipated. Based on SI information (Site Investigations Ltd, 2021), it is not anticipated that there will be rock removal required for the proposed single storey basements in the development, for building foundations, for service trenches or for any other works.	Construction
H_4	Run-off water containing silt will be contained on site via settlement tanks and treated to ensure adequate silt removal. Silt reduction measures on site will include a combination of silt fencing and settlement measures (silt traps, silt sacks and settlement tanks/ponds).	Construction

H_5	The temporary storage of soil will be carefully managed. Stockpiles will be tightly compacted to reduce runoff and graded to aid in runoff collection. This will prevent any potential negative impact on the stormwater drainage and the material will be stored away from any surface water drains. Movement of material will be minimised to reduce the degradation of soil structure and generation of dust. Excavations will remain open for as little time as possible before the placement of fill. This will help to minimise the potential for water ingress into excavations. Soil from works will be stored away from existing drainage features to remove any potential impact.	Construction
H_6	Weather conditions will be considered when planning construction activities to minimise the risk of run-off from the site and the suitable distance of topsoil piles from surface water drains will be maintained.	Construction
H_7	To minimise any impact on the underlying subsurface strata from material spillages, all oils, solvents and paints used during construction will be stored within temporary bunded areas. Oil and fuel storage tanks shall be stored in designated areas, and these areas shall be bunded to a volume of 110% of the capacity of the largest tank/container within the bunded area(s) (plus an allowance of 30 mm for rainwater ingress). Drainage from the bunded area(s) shall be diverted for collection and safe disposal.	Construction
H_8	Refuelling of construction vehicles and the addition of hydraulic oils or lubricants to vehicles will take place in a designated area (or where possible off the site) which will be away from surface water gulleys, the existing open ditch or drains. In the event of a machine requiring refuelling outside of this area, fuel will be transported in a mobile double skinned tank. An adequate supply of spill kits and hydrocarbon adsorbent packs will be stored in this area. All relevant personnel will be fully trained in the use of this equipment. Guidelines such as “Control of Water Pollution from Construction Sites, Guidance for Consultants and Contractors” (CIRIA 532, 2001) will be complied with.	Construction
H_9	Where feasible all ready-mixed concrete will be brought to site by truck. A suitable risk assessment for wet concreting will be completed prior to works being carried out which will include measures to prevent discharge of alkaline wastewaters or contaminated storm water to the underlying subsoil. Wash down and washout of concrete transporting vehicles will take place at an appropriate facility offsite.	
H_10	In the case of drummed fuel or other chemical which may be used during construction, containers should be stored in a dedicated internally bunded chemical storage cabinet and labelled clearly to allow appropriate remedial action in the event of a spillage.	Construction
H_11	Temporary storage of soil will be carefully managed in such a way as to prevent any potential negative impact on the receiving environment. The material will be stored away from any surface water drains (see Surface	Construction

	Water Run-off section above). Movement of material will be minimised to reduce degradation of soil structure and generation of dust.	
H_12	All excavated materials will be visually assessed for signs of possible contamination such as staining or strong odours. Should any unusual staining or odour be noticed, samples of this soil will be analysed for the presence of potential contaminants to ensure that historical pollution of the soil has not occurred. Should it be determined that any of the soil excavated is contaminated, this will be segregated and appropriately disposed of by a suitably permitted/licensed waste disposal contractor.	Construction
H_13	Site investigations carried out at the site in 2021 found no residual contamination on site. Nonetheless, all excavated materials will be visually assessed for signs of possible contamination such as staining or strong odours. Should any unusual staining or odour be noticed, samples of this soil will be analysed for the presence of potential contaminants to ensure that historical pollution of the soil has not occurred. Should it be determined that any of the soil excavated is contaminated, this will be segregated and appropriately disposed of by a suitably permitted/licensed waste disposal contractor.	Construction

Mitigation/Monitoring No.	Description of Mitigation/Environmental Commitment	Phase
	Air Quality (Chapter 11)	
	Mitigation	
A_1	Communications • Prior to construction works commencing on site, develop and implement a stakeholder communications plan that includes community engagement. Community engagement includes explaining the nature and duration of the works to local residents and businesses. The name and contact details of a person to contact regarding air quality and dust issues shall be displayed on the site boundary, this notice board will also include head/regional office contact details.	Construction
A_2	Site Management	Construction

	• During working hours, dust control methods will be monitored as appropriate, depending on the prevailing meteorological conditions. Dry and windy conditions are favourable to dust suspension; therefore, mitigations must be implemented if undertaking dust generating activities during these weather conditions. • A complaints register will be kept on site detailing all telephone calls and letters of complaint received in connection with dust nuisance or air quality concerns, together with details of any remedial actions carried out. The complaints log will be made available to the local authority when asked. • Any exceptional incidents that cause dust and/or air emissions, either on- or off-site, and the action taken to resolve the situation will be recorded in the log book. • Regular liaison meetings will be held with other high risk construction sites within 250 m of the site boundary where feasible, to ensure plans are co-ordinated and dust and particulate matter emissions are minimised. It is important to understand the interactions of the off-site transport/deliveries which might be using the same strategic road network routes.	
A_3	Preparing and Maintaining the Site • The site layout will be planned so that machinery and dust causing activities are located away from receptors, as far as is possible. • solid screens or barriers will be erected around dusty activities or the site boundary that are at least as high as any stockpiles on site. • site runoff of water or mud will be avoided. • site fencing, barriers and scaffolding will be kept clean using wet methods. • materials that have a potential to produce dust from site will be removed as soon as possible, unless being re-used on site. If they are being re-used on-site cover as described below. • stockpiles will be covered, seeded or fenced to prevent wind whipping.	Construction
A_4	Operating Vehicles/Machinery and Sustainable Travel	Construction

	• all vehicles engines will be switched off when stationary - no idling vehicles. • the use of diesel or petrol powered generators will be avoided and mains electricity or battery powered equipment used where practicable. • a maximum-speed-limit of 15 kph will be imposed and signposted on haul roads and work areas (if long haul routes are required these speeds may be increased with suitable additional control measures provided, subject to the approval of the nominated undertaker and with the agreement of the local authority, where appropriate). • a Construction Logistics Plan will be produced to manage the sustainable delivery of goods and materials. • a Travel Plan will be implemented that supports and encourages sustainable travel (public transport, cycling, walking, and car-sharing)	
A_5	Operations • Only cutting, grinding or sawing equipment fitted or in conjunction with suitable dust suppression techniques such as water sprays or local extraction, e.g., suitable local exhaust ventilation systems will be used • Ensure an adequate water supply on the site for effective dust/particulate matter suppression/mitigation, using non-potable water where possible and appropriate. • enclosed chutes and conveyors and covered skips will be used • drop heights will be minimised from conveyors, loading shovels, hoppers and other loading or handling equipment and use fine water sprays on such equipment wherever appropriate. • Ensure equipment is readily available on site to clean any dry spillages and clean up spillages as soon as reasonably practicable after the event using wet cleaning methods.	Construction
A_6	Waste Management • No bonfires or burning of waste materials.	Construction
A_7	Measures Specific to Demolition	Construction

	• Prior to demolition blocks will be soft striped inside buildings (retaining walls and windows in the rest of the building where possible, to provide a screen against dust). • During the demolition process, water suppression will be used, preferably with a hand-held spray. Only the use of cutting, grinding or sawing equipment fitted or used in conjunction with a suitable dust suppression technique such as water sprays/local extraction should be used. • Drop heights from conveyors, loading shovels, hoppers and other loading equipment will be minimised, if necessary fine water sprays will be employed. • explosive blasting will be avoided, using appropriate manual or mechanical alternatives.	
A_8	Measures Specific to Earthworks • earthworks and exposed areas/soil stockpiles will be re-vegetated to stabilise surfaces as soon as practicable. • Hessian, mulches or trackifiers will be used where it is not possible to re-vegetate or cover with topsoil, as soon as practicable. • the cover in small areas will only be removed during work and not all at once. • During dry and windy periods, and when there is a likelihood of dust nuisance, a bowser will operate to ensure moisture content is high enough to increase the stability of the soil and thus suppress dust.	Construction
A_9	Measures Specific to Construction • Ensure sand and other aggregates are stored in bunded areas and are not allowed to dry out, unless this is required for a particular process, in which case ensure that appropriate additional control measures are in place. • Ensure bulk cement and other fine powder materials are delivered in enclosed tankers and stored in silos with suitable emission control systems to prevent escape of material and overfilling during delivery.	Construction

	• For smaller supplies of fine power materials ensure bags are sealed after use and stored appropriately to prevent dust.	
A_10	Measures Specific to Trackout • A speed restriction of 15 kph will be applied as an effective control measure for dust for on-site vehicles. • dry sweeping of large areas will be avoided. • Ensure vehicles entering and leaving sites are covered to prevent escape of materials during transport. • on-site haul routes will be inspected for integrity and instigate necessary repairs to the surface as soon as reasonably practicable. • all inspections of haul routes and any subsequent action in a site will be recorded in log book. • hard surfaced haul routes will be installed, which are regularly damped down with fixed or mobile sprinkler systems, or mobile water bowsers and regularly cleaned. • a wheel washing system will be implemented (with rumble grids to dislodge accumulated dust and mud prior to leaving the site where reasonably practicable). • Ensure there is an adequate area of hard surfaced road between the wheel wash facility and the site exit, wherever site size and layout permits. • Access gates will be located at least 10 m from receptors where possible.	Construction
A_11	Monitoring • daily on-site and off-site inspections will be undertaken, where receptors (including roads) are nearby, to monitor dust, record inspection results in the site inspection log. This will include regular dust soiling checks of surfaces such as street furniture, cars and windowsills within 100 m of site boundary, with cleaning to be provided if necessary. regular site inspections will be carried out to monitor compliance with the CEMP, record inspection results, and make an inspection log available to the local authority when asked.	Construction

	• the frequency of site inspections will be increased by the person accountable for air quality and dust issues on site when activities with a high potential to produce dust are being carried out and during prolonged dry or windy conditions. dust deposition monitoring locations will be agreed with the relevant environmental management official within Dún Laoghaire-Rathdown County Council. Where possible commence baseline monitoring at least three months before work commences on site or, if it a large site, before work on a phase commences. Refer to Section 11.7.1 of the EIAR for more detail on this monitoring.	

Mitigation/Monitoring No.	Description of Mitigation/Environmental Commitment	Phase
Climate (Chapter 12)		
Mitigation		
Embodied carbon of materials and construction activities will be the primary source of climate impacts during the construction phase. During the construction phase the following best practice measures shall be implemented on site to prevent significant GHG emissions and reduce impacts to climate:		
C_1	Creating a demolition and construction program which allows for sufficient time to determine reuse and recycling opportunities for demolition wastes	Construction
C_2	Appointing a suitably competent demolition contractor who will undertake a pre-demolition audit detailing resource recovery best practice and identify materials/building components that can be reused/recycled	Construction
C_3	Materials will be reused on site where possible	Construction
C_4	Prevention of on-site or delivery vehicles from leaving engines idling, even over short periods	Construction
C_5	Ensure all plant and machinery are well maintained and inspected regularly	Construction
C_6	Minimising waste of materials due to poor timing or over ordering on site will aid to minimise the embodied carbon footprint of the site	Construction

C_7	Waste materials will be re-used on site where possible and where re-use is not possible on-site they will be sent off-site for recycling, re-use or recovery	Construction
C_8	Material choices and quantities will be reviewed during detailed design, to identify and implement lower embodied carbon options where feasible	Construction
C_9	Sourcing materials locally where possible to reduce transport related CO_2 emissions	Construction
C_10	The project shall review and determine compliance with the requirements set out in the EU Taxonomy Regulation (Regulation (EU) 2020/852 of the European Parliament and of the Council of 18 June 2020 on the establishment of a framework to facilitate sustainable investment, and amending Regulation (EU) 2019/2088 (Text with EEA relevance)) in relation to circular economy. This is specific to reuse, recycling and material recovery of demolition and construction wastes	Construction
C_11	Based on the waste volumes and disposal methods presented in Ch. 19 Material Assets – Waste, an estimated total of approx. 12,686 tonnes of excavated material generated during the construction phase of the development site can be reused. This will be further refined at detailed design and construction stage. This material re-use represents GHG savings of 53.4 tCO_2e;	Construction
C_12	Other materials such as concrete, bricks, tiles and ceramics, metals and timber may be diverted from waste processing by recycling or disposal in landfill, and can instead be reused on-site. This will reduce the associated CO_2 by approximately 20.6 tonnes	Construction
C_13	The residential units will aim to achieve a minimum Building Energy Ratio (BER) of A2 (25-50 $kwh/m^2/yr$ with CO_2 emissions <10 kg CO_2/m^2 per year)	Operational
C_14	Achieve air permeability performance of 3 $m^3/m^2/hr$ @ 50 Pa	Operational
C_15	Ensure thermal bridging details are designed to achieve thermal bridging factors of $0.08W/m^2K$	Operational
C_16	Energy Performance Coefficient (EPC) < 0.30	Operational
C_17	Carbon Performance Coefficient (CPC) < 0.35	Operational
C_18	Meet or exceed minimum U-Value standards identified in Part L 2022 Dwellings	Operational

C_19	A combination of low energy strategies such as air to water heat pumps, a continuous whole-house ventilation system and solar photovoltaic energy will be decided and implemented to achieve A2 BER Rating	Operational
C_20	Provide an appropriate combination of technologies to ensure energy consumption is in line with Part L 2022 Dwellings requirements	Operational
C_21	Use of natural daylight will be maximised to reduce the need for artificial lighting	Operational
C_22	Where artificial lighting is required this will be in the form of energy efficient light fittings within in the dwellings and common areas, with latter being on dusk-dawn profiles	Operational
C_23	Solar gains will be optimised to reduce space heating demands during the winter months, whilst limiting summertime solar gains to reduce space cooling demands	Operational
C_24	Natural/passive ventilation in circulation areas, car parks and other common areas removes need for mechanical ventilation	Operational
C_25	All in-curtilage parking spaces will be capable of being fitted with EV charging points. All off-curtilage spaces will be ducted for EV charging, with 10% fitted out from the outset	Operational
C_26	High quality secure short-term and long-term bicycle parking facilities will be provided and the connectivity of onsite pedestrian and cycle infrastructure has been incorporated into the design of the proposed development	Operational
C_27	The proposed development location maximises connectivity to existing and proposed public transport bus and Luas services, providing sustainable alternative to private vehicles	Operational

Mitigation/Monitoring No.	Description of Mitigation/Environmental Commitment	Phase
Noise and Vibration (Chapter 13)		
Mitigation		
N_1	Selection of quiet plant is recommended in relation to static plant such as compressors and generators. It is recommended that these units be supplied with manufacturers' proprietary acoustic enclosures. The potential for any item of plant to generate noise will be assessed prior to the item being brought onto the site. The least noisy item will be selected wherever possible. Should a particular item of plant already on the site be found	Construction

	to generate excessive noise levels, the first action will be to identify whether or not said item can be replaced with a quieter alternative.	
N_2	If replacing a noisy item of plant is not a viable or practical option, consideration will be given to noise control at source. This refers to the modification of an item of plant or the application of improved sound reduction methods in consultation with the supplier. For example, resonance effects in panel work or cover plates can be reduced through stiffening or application of damping compounds; rattling and grinding noises can often be controlled by fixing resilient materials in between the surfaces in contact. The following best practice migration measures will be employed : • Site compounds will be located away from noise sensitive boundaries within the site constraints. • The lifting of bulky items, dropping and loading of materials within these areas will be restricted to normal working hours. • For mobile plant items such as cranes, dump trucks, excavators and loaders, , utilising an acoustic canopy to replace the normal engine cover and/or ensuring the enclosure panels are closed during operation can reduce noise levels over normal operation. Mobile plant will be switched off when not in use and not left idling. • For steady continuous noise, such as that generated by diesel engines, noise control measures include fitting a more effective exhaust silencer system to reduce the noise emitted. • For percussive tools such as pneumatic breakers, a number of noise control measures include fitting muffler or sound reducing equipment to the breaker tool and ensuring any leaks in the air lines are sealed. • Erecting localised screens around breaker or drill bit when in operation in close proximity to noise sensitive boundaries. • For concrete mixers, control measures will be employed during cleaning to ensure no impulsive hammering is undertaken at the mixer drum. • For all materials handling, materials will not be dropped from excessive heights, lining drops chutes and dump trucks with resilient materials. • For compressors, generators and pumps, these will be surrounded by acoustic lagging or enclosed within acoustic enclosures providing air ventilation.	Construction

	• All items of plant will be subject to regular maintenance. Such maintenance can prevent unnecessary increases in plant noise and can serve to prolong the effectiveness of noise control measures.	
N_3	Screening is an effective method of reducing the noise level at a receiver location and can be used successfully as an additional measure to all other forms of noise control. Standard construction site hoarding (2.4m in height) with a mass per unit of surface area greater than 7 kg/m^2 can provide adequate sound insulation. This will be required, as a minimum around the site perimeter.	Construction
N_4	A designated Community Liaison Officer (CLO) will be appointed to site during construction works. Any noise complaints will be logged and followed up in a prompt fashion by the CLO. In addition, prior to particularly noisy construction activity (e.g. demolition), the CLO will inform the nearest noise sensitive locations of the time and expected duration of the noisy works.	Construction
N_5	The phasing programme will be arranged so as to control the amount of disturbance in noise and vibration sensitive areas at times that are considered of greatest sensitivity. If piling works are in progress on another site at the same time as other works of construction that themselves may generate significant noise and vibration, the working programme will be phased so as to ensure noise limits are not exceeded due to cumulative activities. This will be reviewed in relation to other potential cumulative works occurring on adjacent construction site in close proximity to noise sensitive properties which have the potential to lead to significant construction noise impacts.	Construction
N_6	The assessment outlined previously has specified noise limits at the nearest noise sensitive properties that must be achieved in order to ensure the impact is acceptable, summarised in Section 13.2.2.1 of Chapter 13 Noise and Vibration To achieve these noise limits, it will be necessary to review (at the detailed design stage) the variety of mitigation measures and forms of noise control techniques that will be applicable. Some example of these measures are as follows: • Duct-mounted attenuators on the atmosphere side of air moving plant; • Splitter attenuators or acoustic louvres providing free ventilation to internal plant areas; • Solid barriers screening any external plant; and • Anti-vibration mounts on reciprocating plant.	Operational

	In addition to the above, the following measures will be adopted to minimise potential noise disturbance for neighbours: • All mechanical plant items (e.g. motors, pumps etc.) shall be regularly maintained to ensure that excessive noise generated by any worn or rattling components is minimised; • Any new or replacement mechanical plant items, including plant located inside new or existing buildings, shall be designed so that all noise emissions from site do not exceed the noise limits outlined in this document; and • Plant items will be selected such that site noise emissions do not contain tonal or impulsive characteristics at nearby noise sensitive locations.	
N_7	Taking into account that sensitive receivers within the development are much closer than off-site sensitive receivers, once the relevant noise criteria included in Section 13.6.2 of the Noise and Vibration Chapter (i.e. design criterion is the order of **40dB $L_{Aeq,15min}$** during daytime periods and **35dB $L_{Aeq,15min}$** at night at the façades of the nearest noise sensitive locations). It is expected that there will be no negative impact at sensitive receivers on or off site, and therefore no further mitigation required.	Operational
N_8	The British Standard BS EN 12354-3: 2000: *Building acoustics – Estimation of acoustic performance of buildings from the performance of elements – Part 3: Airborne sound insulation against outdoor sound* provides a calculation methodology for determining the sound insulation performance of the external envelope of a building. The method is based on an elemental analysis of the building envelope and can take into account both the direct and flanking transmission paths. The Standard allows the acoustic performance of the building to be assessed taking into account the following: • Construction type of each element (i.e. windows, walls, etc.); • Area of each element; • Shape of the façade, and; • Characteristics of the receiving room. The principals outlined in BS EN 12354-3 are also referred to in BS8233 and Annex G of BS8233 provides a calculation method to determine the internal noise level within a building using the composite sound insulation performance calculated using the methods outlined in BS EN 12354-3. The methodology outlined in Annex G of BS8233 has been adopted here to determine the required performance of the building facades.	Operational

Mitigation/Monitoring No.	Description of Mitigation/Environmental Commitment	Phase
Landscape and Visual (Chapter 14)		
Mitigation		
	No specific Mitigation measures required	

Mitigation/Monitoring No.	Description of Mitigation/Environmental Commitment	Phase
Microclimate (Chapter 15)		
Mitigation		
	No specific Mitigation measures required	

Mitigation/Monitoring No.	Description of Mitigation/Environmental Commitment	Phase
Cultural Heritage and Archaeology (Chapter 16)		
Mitigation		
CA_1	Whilst it is acknowledged that preservation in-situ is the preferred method to conserve the archaeological resource, the layout of the proposed blocks, as designed, cannot avoid the predicted direct impacts. As such, prior to the commencement of construction, AA1-AA5 will be preserved by record through full archaeological excavation. The work will be carried out under licence to the National Monuments Service of the DoHLGH	Construction
CA_2	All topsoil stripping associated with the proposed development will be monitored by a suitably qualified archaeologist. If any features of archaeological potential are discovered during the course of the works, further archaeological mitigation may be required, such as preservation in-situ or by record. Any further mitigation will require approval from the National Monuments Service of the DoHLGH	Construction
CA_3	Detailed mitigation is provided in the Architectural Heritage chapter (17) in relation to the historic landscape and is not repeated here. Aspects of the landscape have been retained as part of the proposed	Construction

	development, including the hospital buildings to the immediate north, access drive and gate lodge, walled gardens, farm outbuildings, chapel and the perimeter wall	
CA_4	Detailed mitigation is provided in the Architectural Heritage chapter in relation to the historic landscape and is not repeated here. Aspects of the landscape have been retained as part of the proposed development, including the hospital buildings to the immediate north, access drive and gate lodge, walled gardens, farm outbuildings, chapel and the perimeter wall	Operational

Mitigation/Monitoring No.	Description of Mitigation/Environmental Commitment	Phase
	Architectural Heritage (Chapter 17)	
	Mitigation	
CH_1	The heights of Block 2 to the immediate east of the Main Hospital Building have been set to ensure that the dominance of the Main Hospital Building is retained.	Operational
CH_2	The historic landscape to the immediate south of the Main Hospital Building will be retained and enhanced. The main car-park and the C20 swimming-pool building are both proposed for removal and the areas of landscaping reinstated	Operational
CH_3	Where sections of the wall are being removed, and where it is feasible to do so, the wall will not be removed in full but reduced to a height of 1200mm	Operational
CH_4	Where sections of wall are being removed completely, and where it is feasible to do so, the former position of the wall will be indicated in the landscaping by use of natural stone as the paving material	Operational
CH_5	Where sections of the wall are removed completely, the retained sections will be terminated in such a fashion as to indicate that the wall did not merely terminate there but has been purposely interrupted, e.g. by the use of sensitively and appropriately detailed piers in masonry, concrete or metal	Operational
CH_6	The historic landscape in the immediate environs of the Chapel will be retained and enhanced	Operational
CH_7	Changing the site from being a private demesne to a publicly accessible area brings with it the possibility of the Chapel acquiring a larger congregation and playing a productive part in the lives of more people	Operational
CH_8	The proposed road alignment in proximity to the farmstead preserves the ability to view and appreciate the complex of buildings	Operational

Mitigation/Monitoring No.	Description of Mitigation/Environmental Commitment	Phase
Material Assets – Roads and Traffic (Chapter 18)		
Mitigation		
RT_1	Tracked excavators will be moved to and from the Site on low-loaders and will not be permitted to drive onto the adjacent roadway	Construction
RT_2	The applicant shall at all times keep all public and private roads and footpaths entirely free of excavated materials, debris and rubbish	Construction
RT_3	Public roads outside the Site shall be regularly inspected for cleanliness, as a minimum on a daily basis, and cleaned as necessary. A road sweeper will be made available to ensure that public roads are kept free of debris	Construction
RT_4	The applicant shall be responsible for and make good any damages to existing roads or footpaths caused by his own contractors or suppliers transporting to and from the Site	Construction
RT_5	The contractor shall confine his activities to the area of the Site occupied by the works and the builders' compound, as far as practicably possible, during any particular phase of the works	Construction
RT_6	All construction workers will be encouraged to use public transport, and also to car share where appropriate. On site staff car parking can also be provided to ensure no construction workers will be required to park on adjacent roads or streets	Construction
RT_7	No daytime or night-time parking of site vehicles or construction staff vehicles will be permitted outside agreed areas.	Construction
RT_8	Construction work will be limited to normal working hours; that are 08.00 – 19.00 on weekdays and 08.00 – 14.00 on Saturdays. All deliveries of materials, plant and machinery to the Site and removals of waste or other material will take place within the permitted hours of work. Vehicle movements will be planned to ensure arrival and departure times are maintained inside the agreed working hours.	Construction
RT_9	Deliveries will be co-ordinated to prevent queuing of vehicles adversely affecting traffic flow and to minimise disruption to local traffic. They will be timed and coordinated to avoid conflict with collection of waste, other deliveries (particularly to adjoining owners), and rush hour traffic. Large deliveries will be scheduled outside peak traffic hours to minimise disruption.	Construction
RT_10	Properly designed and designated access and egress points to the construction site will be used to minimise impact on external traffic	Construction

RT_11	Firm, level, and well-drained pedestrian walkways will be provided	Construction
RT_12	Adequate visibility will be provided at the proposed access point to the proposed development off Dundrum Road	Construction
RT_13	Footpaths will not be blocked resulting in pedestrians having to step onto the carriageway	Construction
RT_14	The final Construction Traffic Management Plan with be submitted and agreed with the planning department prior to the commencement of any development	Construction
RT_15	A Mobility Management Plan has been prepared for the proposed development which includes recommended mitigation measures to reduce usage of private cars and increase the use by residents and patrons within the development of more sustainable modes of travel, such as including good cycle parking provision, will further promote the greater use of sustainable travel modes. It is projected that successful implementation of the mobility management plan measures included will reduce the vehicular trip generation from the proposed development below that included for in the Traffic Impact Assessment for the proposed development.	Operational
RT_16	A Stage 2 Road Safety Audit (RSA) will be undertaken at the detailed design stage to ensure that the final design is in accordance with the TII Road Safety Audit Guidelines (December 2017) prior to the commencement of construction. A Stage 3 post construction and pre-opening of the proposed development in accordance with RSA guidelines to address any potential road safety issues related to the completed scheme.	Operational
RT_17	During the operational phase of the development, it is projected that the adjoining road network can readily accommodate the additional traffic from the proposed development	Operational
RT_18	The recent improvement to the Luas has significantly increased the capacity of the route and the Luas is future proofed to accommodate further capacity increases to 2030. The bus network capacity is also proposed to be increased city wide over the coming years up to 2030.	Operational
RT_19	DLR have updated the Dundrum LAP and the overall transport network proposed for the proposed development is consistent with the LAP. This will further promote sustainable travel modes in the area	Operational
RT_20	Wider national, regional and local policy objectives combined with planned investment in sustainable travel modes will further mitigate the impact of the development over time	Operational

Mitigation/Monitoring No.	Description of Mitigation/Environmental Commitment	Phase
Material Assets – Waste (Chapter 19)		
Mitigation		
WM_1	A project specific RWMP has been prepared in line with the requirements of the requirements of the EPA 'Best Practice Guidelines for the Preparation of Resource and Waste Management Plans for Construction & Demolition Projects' (2021) and is included as Appendix 19.1. The mitigation measures outlined in the RWMP will be implemented in full and form part of the mitigation strategy for the site. The mitigation measures presented in this RWMP will ensure effective waste management and minimisation, reuse, recycling, recovery and disposal of waste material generated during the excavation and construction phases of the proposed development. • Prior to commencement, the appointed Contractor(s) will be required to refine / update the RWMP (Appendix 19.1) in agreement with DLRCC and in compliance with any planning conditions, or submit an addendum to the RWMP to DLRCC, detailing specific measures to minimise waste generation and resource consumption, and provide details of the proposed waste contractors and destinations of each waste stream. • The Contractor will implement the RWMP throughout the duration of the proposed excavation and construction phases.	Construction
WM_2	A quantity of topsoil and sub soil will need to be excavated to facilitate the proposed development. The Development Engineers have estimated that the majority excavated material will need to be removed off-site. Correct classification and segregation of the excavated material is required to ensure that any potentially contaminated materials are identified and handled in a way that will not impact negatively on workers as well as on water and soil environments, both on and off-site.	Construction
WM_3	Building materials will be chosen to 'design out waste'	Construction
WM_4	On-site segregation of waste materials will be carried out to increase opportunities for off-site reuse, recycling and recovery. The following waste types, at a minimum, will be segregated: ○ Concrete rubble (including ceramics, tiles and bricks);	Construction

	○ Plasterboard; ○ Metals; ○ Glass; and ○ Timber.	
WM_5	Left over materials (e.g. timber off-cuts, broken concrete blocks / bricks) and any suitable construction materials shall be re-used on-site, where possible; (alternatively, the waste will be sorted for recycling, recovery or disposal)	Construction
WM_6	All waste materials will be stored in skips or other suitable receptacles in designated areas of the site	Construction
WM_7	Any hazardous wastes generated (such as chemicals, solvents, glues, fuels, oils) will also be segregated and will be stored in appropriate receptacles (in suitably bunded areas, where required);	Construction
WM_8	A Resource Manager will be appointed by the main Contractor(s) to ensure effective management of waste during the excavation and construction works	Construction
WM_9	All construction staff will be provided with training regarding the waste management procedures	Construction
WM_10	All waste leaving site will be reused, recycled or recovered, where possible, to avoid material designated for disposal	Construction
WM_11	All waste leaving the site will be transported by suitably permitted contractors and taken to suitably registered, permitted or licenced facilities	Construction
WM_12	All waste leaving the site will be recorded and copies of relevant documentation maintained	Construction
WM_13	Nearby sites requiring clean fill material will be contacted to investigate reuse opportunities for clean and inert material, if required. If any of the material is to be reused on another site as by-product (and not as a	Construction

	waste), this will be done in accordance with Regulation 27 (By-products), as amended, European Union (Waste Directive) Regulations 2011-2020. EPA approval will be obtained prior to moving material as a by-product.	
WM_14	All waste materials will be segregated into appropriate categories and will be temporarily stored in appropriate bins or other suitable receptacles in a designated, easily accessible areas of the site.	Operational
WM_15	A project specific OWMP has been prepared and is included as Appendix 19.2. The mitigation measures outlined in the OWMP will be implemented in full and form part of the mitigation strategy for the site. Implementation of this OWMP will ensure a high level of recycling, reuse and recovery at the development. All recyclable materials will be segregated at source to reduce waste contractor costs and ensure maximum diversion of materials from landfill, thus achieving the targets set out in the NWMPCE , Waste Action Plan for a Circular Economy – Waste Management Policy in Ireland and the DLRCC waste bye-laws. The Facilities Management Company / Residents and Tenants of the site during the operational phase will be responsible for ensuring – allocating personnel and resources, as needed – the ongoing implementation of this OWMP, ensuring a high level of recycling, reuse and recovery at the site of the proposed development.	Operational
WM_16	On-site segregation of all waste materials into appropriate categories including (but not limited to): ○ Organic waste; ○ Dry Mixed Recyclables; ○ Mixed Non-Recyclable Waste; ○ Glass; ○ Waste electrical and electronic equipment (WEEE); ○ Batteries (non-hazardous and hazardous); ○ Cooking oil; ○ Light bulbs;	Operational

	○ Cleaning chemicals (pesticides, paints, adhesives, resins, detergents, etc.); ○ Furniture (and from time to time other bulky waste); and ○ Abandoned bicycles	
WM_17	The Facilities Management Company / Residents and Tenants will ensure that all waste materials will be stored in colour coded bins or other suitable receptacles in designated, easily accessible locations. Bins will be clearly identified with the approved waste type to ensure there is no cross contamination of waste materials.	Operational
WM_18	The Facilities Management Company / Residents and Tenants will ensure that all waste collected from the Site of the proposed development will be reused, recycled or recovered, where possible, with the exception of those waste streams where appropriate facilities are currently not available	Operational
WM_19	The Facilities Management Company / Residents and Tenants will ensure that all waste leaving the site will be transported by suitable permitted contractors and taken to suitably registered, permitted or licensed facilities	Operational

Mitigation/Monitoring No.	**Description of Mitigation/Environmental Commitment**	**Phase**
	Material Assets – Built Services (Chapter 20)	
	Mitigation	
BS_1	A method statement for all works to be carried out will be prepared by the contractor and agreed with the various service providers prior to commencement of works to outline what measures are to be taken to ensure there is no loss of service during the works or to ensure such losses are minimised when they are unavoidable.	Construction
BS_2	Dewatering measures will only be employed where necessary.	Construction
BS_3	If concrete mixing is carried out on site, the mixing plant will be sited in a designated area with an impervious surface	Construction

BS_4	The existing surface drainage channel within the lands that serve adjacent lands will be retained for as long as possible.	Construction
BS_5	Construction methods used will comply with the noise and dust requirements as set out in the relevant EIAR chapters to reduce, as much as possible, dust and noise pollution	Construction
BS_6	Comprehensive traffic management procedures, including the provision of access to all roads, and access/egress points will be prepared and agreed with the DLRCC. These traffic management measures will be implemented at times when traffic disruption may be experienced.	Construction
BS_7	Road sweeping and/or wheel wash facilities will be provided, as required	Construction
BS_8	All oils/diesel stored on site for construction equipment will be located in appropriately bunded areas.	Construction
BS_9	Filters and silt traps will be used to prevent rain washing silts and other materials into the surface water network and creating blockages	Construction
BS_10	All onsite sewers will be tested and surveyed prior to connection to the public sewer to prevent any possibility of ingress of ground water.	Construction
BS_11	All sewers will be inspected and where necessary sealed to ensure that uncontrolled ground water inflow does not occur	Construction
BS_12	Any leakage from the foul sewer will be cordoned off and the contaminated effluent and soil collected and disposed by licensed contractors	Construction
BS_13	The contractor will adhere to any specific requirements, required by the local authority when introducing a new watermain connection	Construction
BS_14	Commissioning of the system to be carried out in accordance with the engineering specifications set out in the drawings and specifications document	Construction
BS_15	Provision of Utilities will be carried out in accordance with the recommendations of the relevant statutory bodies (ESB, Gas Networks Ireland, Irish Water, EIR, Virgin, City and County Councils etc.)	Construction
BS_16	The watermain connection to the public system is to be in accordance with the Uisce Éireann requirements to avoid any contamination risk	Construction
BS_17	SuDS measures on site include green roofs, blue roofs, attenuation tanks/soakaway's, permeable paving and detention basins	Operational
BS_18	Dual & low flush toilets and water economy outlets will be used to reduce flows from the development and water demand	Operational

BS_19	The site water main system will be metered as directed by Uisce Éireann to facilitate detection of leakage and the prevention of water loss	Operational

Mitigation/Monitoring No.	**Description of Mitigation/Environmental Commitment**	**Phase**
Major Accidents and Disasters (Chapter 21)		
Mitigation		
RM_1	A Site Emergency Response Plan will be developed prior to the commencement of operations and will include detailed procedures in the event of a major accident. This plan will contain detailed plans for the response to emergencies such as loss of containment of natural gas, fuel oil, fires and severe weather events. A stock of emergency equipment such as spill kits will be maintained on site in particular around the fuel storage areas.	Operational