Strategic Housing Development, For Alterations to Shoreline GA1 Lands at Baldoyle, Dublin 13

Environmental Impact Assessment Report (EIAR) - Volume 3 Appendices

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Appendix A8.1 Winter Bird Survey Report 2019/2020

Project Shoreline Bird Surveys, Baldoyle, North Co. Dublin

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1. INTRODUCTION

McCarthy Keville O'Sullivan (MKO) was appointed to carry out bird survey works at Baldoyle, north County Dublin during the period from December 2019 to March 2020 inclusive. The proposed development scheme consists of a large housing development on a greenfield site dominated by agricultural grassland. The site is approximately 50.7 ha in area and is located between Clongriffin Dart Station to the west and the Coast Road to the east. 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 Baldoyle, north County Dublin for the period from December 2019 to March 2020 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. See Figure 1 and Figure 2 in Appendix 2 for a map of the areas surveyed between December 2019 and March 2020.

The report is supported by Technical Appendix 1 which contains the raw data from the winter bird surveys in 2019/2020. This includes detail on survey times, weather conditions, surveyors, survey results and other additional information. Flight lines and significant flocks recorded during surveys are shown in Appendix 2.

The report is structured as follows:

- An introduction providing a description of the background and statement of authority regarding ornithological works.
- A description of the desktop study carried out with regards 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 best available guidance (SNH 2016 and McGuinness et.al 2015).

1.1 Statement of Authority

This report has been prepared by Patrick Manley (B.Sc.) an Ornithologist with MKO, Ian Hynes (B.Sc.) and Senior Ornithologist, Padraig Cregg (M.Sc.). The field surveys were undertaken in the 2019 breeding season by Padraig Cregg, Eric Dempsey and Susan Doyle, all 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 2019 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), Irish Wetland Bird Survey I-WeBS.
- Review of Birds of Conservation Concern (BoCCI) in Ireland 2014-2019 (Colhoun & Cummins, 2013)

2.2 Desk Study Results

2.2.1 Identification of Designated Sites within the Likely Zone of Influence

Using GIS software, sites designated for nature conservation within the potential ZOI of the proposed development were identified. Baldoyle SPA is located directly to the east of the proposed development opposite the R106. The SPA is a narrow estuary totalling 262ha in area and is separated from the sea by sand dunes on its eastern boundary. Two small rivers, the Mayne River and the Sluice River, flow into the inner part of the estuary. The Mayne River runs from west to east along the northern boundary of the proposed development site. At low tide, large areas of intertidal mud flats are exposed. These mud flats comprise mostly of sands but grade to muds in the more sheltered parts of the estuary.

In addition, and in the absence of any specific European or Irish guidance, the Scottish Natural Heritage (SNH) Guidance, 'Assessing Connectivity with Special Protection Areas (SPA)' (2016) was consulted. This document provides guidance in relation to 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.

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 20/04/2020)	Conservation Objectives	Zone of Influence Determination & Identification of Pathways for Effect
Special Protection Areas (SPA)				
Baldoyle Bay SPA (004016)	0.07m to the east 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]	This site has detailed conservation objectives for each species listed as Qualifying Interests of the SPA: "To maintain 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.	The proposed development site is directly adjacent to the Baldoyle SPA and is therefore located within the potential foraging range of all the SCI species associated with the SPA.

2.2.2 Irish Wetland Bird Survey (IWeBS) Records

The study area is not covered by an I-WeBS site, but the nearest site is located directly adjacent to the proposed development site to the east at Baldoyle Bay SPA. Data from this I-WeBS site has been used to estimate the population of waterbirds in the area surrounding the proposed development area. The dataset for Baldoyle Bay SPA was downloaded from www.birdwatchireland.ie and reviewed. The most recent 5-season period and mean counts for this period are presented in Table 2-2. I-WeBS surveys for the 2011/12 and the 2012/13 survey seasons were not undertaken and no data is available for these years.

Table 2-2 IWeBS data for Baldoyle Bay SPA

Species	2011/12	2012/13	2013/14	2014/15	2015/16	5-season mean (2011/12-2015/16)
Mute Swan	-	-			2	2
Light-bellied Brent Goose	-	-	580	588	342	503
Egyptian Goose	-	-			1	1
Shelduck	-	-	52	97	88	79
Wigeon	-	-	54	54	32	47
Teal	-	-	145	160	108	138
Mallard	-	-	67	102	106	92
Pintail	-	-	4	4		4
Common Scoter	-	-	16	7		12
Red-breasted Merganser	-	-	6	5	2	4
Red-throated Diver	-	-	14	64		39
Great Northern Diver	-	-	1	2		2
Little Grebe	-	-	1			1
Great Crested Grebe	-	-	124	189		156
Cormorant	-	-	10	4	3	6
Shag	-	-	7			7
Little Egret	-	-	18	3	7	9
Grey Heron	-	-	5	7	7	6
Moorhen	-	-				
Oystercatcher	-	-	277	1113	219	536
Ringed Plover	-	-	34	59	123	72
Golden Plover	-	-	2500	450	2000	1650
Grey Plover	-	-	55	28	8	30
Lapwing	-	-	372	300	137	270
Knot	-	-	553		19	286
Sanderling	-	-	6			6
Dunlin	-	-	750	233	300	428
Snipe	-	-				
Black-tailed Godwit	-	-	389	139	296	275
Bar-tailed Godwit	-	-	162	150	48	120
Curlew	-	-	90	61	106	86
Greenshank	-	-	6	11	3	7

Species	2011/12	2012/13	2013/14	2014/15	2015/16	5-season mean (2011/12-2015/16)
Redshank	-	-	144	152	125	140
Turnstone	-	-	17	12	13	14
Black-headed Gull	-	-	242	281	52	192
Common Gull	-	-	64	11	4	26
Lesser Black-backed Gull	-	-	4	18	1	8
Herring Gull	-	-	47	91	58	65
Great Black-backed Gull	-	-	7	15	10	11

'-' indicates where no data was available.

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 in accordance with relevant survey guidance, e.g. I-WeBS methods. 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.

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 December 2019 – March 2020 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 Walkover Surveys

Winter walkover surveys were undertaken to determine the presence of bird species of high conservation concern within areas of potential suitable habitat in the study area. The walkover survey was undertaken within the redline boundary.

Transect routes were devised to ensure coverage of different habitat complexes within the study area, during each survey visit. The survey was undertaken (onsite) within two hours of high tide, as this is the period when birds from the estuary 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 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 Baldoyle Bay SPA Surveys

Surveys of Balydoyle Bay SPA were broadly based on I-WeBS methodology. On each survey of the SPA a total count of each water bird species present was recorded. Information on behaviour (i.e. foraging or roosting) and habitat was also collected. During these surveys, estuarine habitats were described as intertidal, subtidal, supratidal or terrestrial.

Survey effort, including details of survey duration and weather conditions, is presented in Appendix 1, Table 1-1. Figure 2 in Appendix 1 shows the surveyed area.

3.1.4 Survey Justification

A comprehensive suite of bird surveys was undertaken at the site between December 2019 and March 2020, 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 18th of December 2019 and 24th of March 2020. Two visits a month were undertaken during this period. Table 3-1 shows the survey effort for the 2019/2020 winter season.

Table 3-1 Survey Effort

Survey Date	Survey Location	Survey Duration	Surveyor
18/12/2019	Site and SPA	05:00 starting at 09:30	PC
23/12/2019	Site and SPA	02:35 starting at 09:20	ED
15/01/2020	SPA	02:20 starting at 10:00	SD
15/01/2020	Site	01:20 starting at 13:10	SD
28/01/2020	SPA	02:35 starting at 08:40	SD
28/01/2020	Site	01:45 starting at 11:40	SD
10/02/2020	Site	02:00 starting at 10:00	SD
10/02/2020	SPA	02:05 starting at 12:10	SD
24/02/2020	Site	02:00 starting at 09:55	SD
24/02/2020	SPA	02:00 starting at 12:30	SD
11/03/2020	SPA	01:55 starting at 12:45	SD
11/03/2020	Site	02:00 starting at 10:20	SD
24/03/2020	SPA	02:15 starting at 11:45	SD
24/03/2020	Site	02:00 starting at 09:30	SD

3.2.2 Walkover Survey Results

Walkover surveys were undertaken at the site between December 2019 and March 2020 inclusive. Summary results from the walkover surveys are presented below in Table 3-2 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 on site during walkover surveys (Peak Counts for each species are presented in bold)

Species	Conservation Status	December		January		February		March		Figure No.
		18th	23rd	15th	28th	10th	24th	11th	24th	
Bar-tailed Godwit (SCI of Baldoyle SPA)	Annex I; BoCCI Amber Listed (Wintering Populations)						**35**			
Light-bellied Brent Goose (SCI of Baldoyle SPA)	BoCCI Amber Listed (Wintering Populations)	12	40	49	7	11	**80**			1.1
Shelduck (SCI of Baldoyle SPA)	BoCCI Amber Listed						2		**4**	1.2
Black-headed Gull	BoCCI Red Listed (Breeding Populations)		1	13	15	8	**68**	1		1.3
Black-tailed Godwit	BoCCI Amber Listed (Wintering Populations)		12						**35**	1.4
Common Gull	BoCCI Amber Listed (Breeding Populations)	**24**							1	1.5
Common Snipe	BoCCI Amber Listed	4	1		**6**	4	3	3	5	1.6
Cormorant	BoCCI Amber Listed						**1**			
Great Black-backed Gull	BoCCI Amber Listed (Breeding Populations)					**1**				
Grey Heron	BoCCI Green Listed	**2**	1		1	1			1	1.7
Herring Gull	BoCCI Red Listed (Breeding Populations)		8	14	**21**	8	2	7	10	1.8
Lapwing	BoCCI Red Listed					**100**	30			1.9
Lesser Black-backed Gull	BoCCI Amber Listed (Breeding Populations)						**1**			
Little Egret	Annex I; BoCCI Green Listed								1	1.10
Mallard	BoCCI Green Listed				2	**20**	6	2	8	1.11
Moorhen	BoCCI Green Listed	**3**							1	1.12
Oystercatcher	BoCCI Amber Listed	**86**								1.13
Teal	BoCCI Amber Listed								**4**	1.14

3.2.3 SPA Survey Results

The SPA surveys were undertaken at Baldoyle Bay SPA between December 2019 and March 2020 inclusive. Summary results from there surveys are presented below. Table 3-3 shoes the total number of each SCI species during each survey. Table 3-4 shows the total number of birds present for all species within the SPA and Table 3-5 shows the total number of each non-SCI species recorded during the SPA surveys. These results are discussed in further detail in Section 4 of this report.

Table 3-3 Total number of each SCI species recorded within the Baldoyle Bay SPA during the SPA surveys (Peak Counts for each species are presented in bold)

Species and Conservation Status	Conservation Status	December		January		February		March	
		18th	23rd	15th	28th	10th	24th	11th	24th
Bar-tailed Godwit (SCI of Baldoyle SPA)	Annex I; BoCCI Amber Listed (Wintering Populations)	**47**			18	1			
Golden Plover (SCI of Baldoyle SPA)	Annex I; BoCCI Red Listed	**50**							
Grey Plover (SCI of Baldoyle SPA)	BoCCI Amber Listed (Wintering Populations)	**4**							
Light-bellied Brent Goose (SCI of Baldoyle SPA)	BoCCI Amber Listed (Wintering Populations)	69		29	398	227	167	**891**	538
Ringed Plover (SCI of Baldoyle SPA)	BoCCI Green Listed			12	**50**				
Shelduck (SCI of Baldoyle SPA)	BoCCI Amber Listed	53	26	47	**122**	45	41	30	12

Table 3-4 Overall number of birds per month within the Baldoyle Bay SPA

Survey Date	All Species	SCI Species
18th December	890	223
23rd December	76	26
15th January	685	88
28th January	1859	588
10th February	612	273
24th February	432	208
11th March	1236	937
24th March	1078	552

Table 3-5 Total number of each non-SCI species recorded within the Baldoyle Bay SPA during the SPA surveys (Peak Counts for each species are presented in bold)

Species	Conservation Status	December		January		February		March	
		18th	23rd	15th	28th	10th	24th	11th	24th
Black-headed Gull	BoCCI Red Listed (Breeding Populations)	32	6	47	**129**	63	101	16	2
Black-tailed Godwit	BoCCI Amber Listed (Wintering Populations)								**126**
Common Gull	BoCCI Amber Listed (Breeding Populations)	**9**	1		1				1
Cormorant	BoCCI Amber Listed			2	1	**6**	1		
Curlew	BoCCI Red Listed	35		57	**67**	1	3	6	4
Dunlin	Annex I; BoCCI Red Listed	**20**							
Gannet	BoCCI Amber Listed (Breeding Populations)								**6**
Great Black-backed Gull	BoCCI Amber Listed (Breeding Populations)	**16**	2	2	11			1	1
Great Crested Grebe	BoCCI Amber Listed				2	**6**	1	1	1
Greenshank	BoCCI Green Listed	1		1	**2**				
Grey Heron	BoCCI Green Listed	1	**1**						
Herring Gull	BoCCI Red Listed (Breeding Populations)	**136**		41	101	23	14	22	51
Knot	BoCCI Amber Listed (Wintering Populations)				**160**	53		25	
Lapwing	BoCCI Red Listed	1	7	38	**144**	11			
Lesser Black-backed Gull	BoCCI Amber Listed (Breeding Populations)				1	**2**			
Little Egret	Annex I; BoCCI Green Listed		1			1		6	**8**
Little Grebe	BoCCI Amber Listed			**1**					
Long-tailed Duck	BoCCI Red Listed (Wintering Populations)	1				**3**			
Mallard	BoCCI Green Listed	**53**		2	14	2	12	33	19
Oystercatcher	BoCCI Amber Listed	155		244	**538**	15	21	49	250
Red-breasted Merganser	BoCCI Green Listed	10	1	7	3	**15**	1	5	7
Redshank	BoCCI Red Listed	80	3	108	65	**115**	48	**115**	29

Species	Conservation Status	December		January		February		March	
		18th	23rd	15th	28th	10th	24th	11th	24th
Teal	BoCCI Amber Listed	15	11	14	28	16	22	**32**	16
Turnstone	BoCCI Green Listed	**22**		21	2	7			
Whooper Swan	Annex I; BoCCI Amber Listed (Wintering Populations)	**1**							
Wigeon	BoCCI Red Listed (Wintering Populations)	**79**	17	12	2			4	7

3.2.4 Other Observations

A number of observations of non-target species were recorded during the survey period. The most significant of these observations are detailed in Table 3-6 below and discussed in further detail in Section 4 of this report.

Table 3-6 Other observations during surveys

Species	Survey Type	Observations recorded during surveys	Activity of note
Buzzard	Walkover Survey	5	Calling from treeline, at potential nest site
Kestrel	Walkover Survey	1	None
Buzzard	SPA Survey	1	None

4. DISCUSSION

The following provides a synopsis of the findings of the surveys undertaken between December 2019 and March 2020.

Within the proposed development site and/or within 500m of the site, there were six main areas of importance to birds. These areas are presented in Appendix 2, Figure 3 and listed below:

- There was a roost site (including lapwing, black-tailed godwit, black-headed gull and teal) along the north-eastern margins of the proposed development area. This roost was partially within the proposed development site and extended to 160m from the proposed development site boundary.
- Light-bellied brent geese were observed foraging in two amenity areas adjacent to the proposed development site. One area was immediately adjacent to the proposed development site and the second area was within 30m of the proposed development site. There was one observation of this species at each amenity area.
- A potential buzzard nest site was located within mature trees along the boundary of the proposed development area.
- There were two areas in which common snipe were regularly observed within the proposed development site boundary.

During the SPA surveys, significant flocks were mapped during each survey; these maps are presented in Appendix 2, Figures 2.1 to 2.4, with one map per month of survey. From these maps, four areas of importance for birds were identified. These areas are presented in Appendix 2, Figure 4 and listed below:

- There was an area frequently used by light-bellied brent goose at the southern end of the Baldoyle Bay SPA. This location was particularly used in very windy conditions. This site was located 1.5 km to the south-east of the proposed development area at its closet point.
- Large flocks of light-bellied brent geese were found in an area on the western side of Baldoyle Bay SPA within 170m of the proposed development site, at its closest point.
- Oystercatcher and curlew were observed roosting along the eastern shoreline of the Baldoyle Bay SPA on multiple occasions.
- At the north-western edge of the Baldoyle Bay SPA, there is an important area for roosting waders (including lapwing, redshank and black-tailed godwits), that has been observed being utilised on multiple occasions. This site is located approximately 850m from the proposed development site at its closet point.

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

The site consists of amenity grassland, improved agricultural grassland and areas of scrub. Of the SCI species from the Baldoyle Bay SPA, brent geese are considered the most likely to make use of the proposed development site. However, during the survey period much of grassland onsite was overgrown and did not offer the short grazing favoured by this species. There are two light-bellied brent goose foraging areas within close proximity (1m and 30m, at its closest point) of the development area to the south within amenity grassland habitats. Within the Baldoyle Bay SPA, there is one area of importance for light-bellied brent goose within 300m of the development site. This is a large area of mudflats frequently used by this species which is approximately 170m from the development boundary at its closest point. There is potential for disturbance during the construction phase of the proposed development at these locations.

A wader roost to the north-east of the proposed development site, at the mouth of the Mayne River, lies partially within the development site boundary. Habitat loss for this roost site can therefore not be ruled out and should be considered further in the EIAR.

In addition, the site was found to be utilized by wintering snipe and may contain a buzzard nest in a treeline along the site boundary. Direct habitat loss for these species cannot be ruled out.

5. CONCLUSION

As previously discussed, the proposed development area is not within the Baldoyle Bay SPA, however given the proximity of the SPA to the development, there is potential for impacts to result during construction and operational phases of the proposed development. These potential impacts could include:

- Loss of roosting habitat within/along the boundary of the redline at the mouth of the Mayne River.
- Disturbance during construction works and the operational phase to Special Conservation Interest of the SPA including through movement of machinery, personnel, noise, vibration and/or noise associated with domestic dwellings.
- Pollution of surface water through accidental spillage or discharge of polluting substances, or via elevated suspended solids and siltation through run-off to watercourses.

The maximum likely distance at which disturbance will impact SCIs from the Baldoyle Bay SPA is 300m (Cutts et al., 2013). The magnitude of this impact and its potential significance will require further consideration at the assessment stage of any future planning application.

The proposed housing scheme may result in disturbance of SCI's of the adjacent SPA. However, it is likely that habituation will occur to this new source of disturbance given that the SCIs of the SPA are already accustomed to the disturbance associated with Baldoyle village and existing surrounding housing developments. This should be considered in further detail at the assessment stage of any future planning application.

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. 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. This should be considered in greater detail at the assessment stage of any future planning application.

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APPENDIX 1

TECHNICAL APPENDIX

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1. APPENDIX 1 (SURVEY DATA)

Table 1-1 Survey Effort

Date	Survey Method	Survey Area	Survey Duration	Weather Conditions	Comments	Surveyor
18/12/2019	Walkover	Site and SPA	05:00 starting at 09:30	Wind Speed and Direction: Strong Breeze, SE; Visibility: Moderate (1-2km); Cloud Height: 150-500m; Cloud Cover %: 90 Rain: Heavy Showers; Frost: None; Snow: None	Onsite area overgrown agri fields suboptimal for foraging geese	PC
23/12/2019	Walkover	Site and SPA	02:35 starting at 09:20	Light w winds - no rain		ED
15/01/2020	Walkover	SPA	02:20 starting at 10:00	Wind Speed and Direction: Gentle Breeze, W; Visibility: Good (>2km); Cloud Height: >500m; Cloud Cover %: 33 Rain: None; Frost: None; Snow: None		SD
15/01/2020	Walkover	Site	01:20 starting at 13:10	Wind Speed and Direction: Fresh Breeze, W; Visibility: Moderate (1-2km); Cloud Height: >500m; Cloud Cover %: 33 Rain: None; Frost: None; Snow: None		SD
28/01/2020	Walkover	SPA	02:35 starting at 08:40	Wind Speed and Direction: Fresh Breeze, NE; Visibility: Good (>2km); Cloud Height: 150-500m; Cloud Cover %: 66 Rain: Drizzle Mist; Frost: None; Snow: Ground		SD
28/01/2020	Walkover	Site	01:45 starting at 11:40	Wind Speed and Direction: Fresh Breeze, NE; Visibility: Good (>2km); Cloud Height: 150-500m; Cloud Cover %: 66 Rain: None; Frost: None; Snow: None		SD
10/02/2020	Walkover	Site	02:00 starting at 10:00	Wind Speed and Direction: Strong Breeze, W; Visibility: Good (>2km); Cloud Height: 150-500m; Cloud Cover %: 66 Rain: None; Frost: None; Snow: None		SD
10/02/2020	Walkover	SPA	02:05 starting at 12:10	Wind Speed and Direction: Strong Breeze, W; Visibility: Good (>2km); Cloud Height: 150-500m; Cloud Cover %: 66 Rain: Heavy Showers; Frost: None; Snow: Ground		SD

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Date	Survey Method	Survey Area	Survey Duration	Weather Conditions	Comments	Surveyor
24/02/2020	Walkover	Site	02:00 starting at 09:55	Wind Speed and Direction: Moderate Gale, NW; Visibility: Good (>2km); Cloud Height: 150-500m; Cloud Cover %: 33 Rain: None; Frost: None; Snow: None		SD
24/02/2020	Walkover	SPA	02:00 starting at 12:30	Wind Speed and Direction: Moderate Gale, NW; Visibility: Good (>2km); Cloud Height: 150-500m; Cloud Cover %: 33 Rain: None; Frost: None; Snow: None		SD
11/03/2020	Walkover	SPA	01:55 starting at 12:45	Wind Speed and Direction: Moderate Breeze, W; Visibility: Good (>2km); Cloud Height: 150-500m; Cloud Cover %: 33 Rain: Heavy Showers; Frost: None; Snow: None		SD
11/03/2020	Walkover	Site	02:00 starting at 10:20	Wind Speed and Direction: Moderate Breeze, W; Visibility: Good (>2km); Cloud Height: 150-500m; Cloud Cover %: 33 Rain: Light Showers; Frost: None; Snow: None		SD
24/03/2020	Walkover	SPA	02:15 starting at 11:45	Wind Speed and Direction: Gentle Breeze, W; Visibility: Good (>2km); Cloud Height: >500m; Cloud Cover %: 33 Rain: None; Frost: None; Snow: None		SD
24/03/2020	Walkover	Site	02:00 starting at 09:30	Wind Speed and Direction: Gentle Breeze, W; Visibility: Good (>2km); Cloud Height: >500m; Cloud Cover %: 33 Rain: None; Frost: None; Snow: None		SD

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Table 1-2 Walkover Survey Data

Map Ref	Survey Date	Species	Number of birds	Habitat and Activity	Comments	Surveyor
MH001	18/12/2019	Moorhen	3	FW2, (Depositing/upland rivers) foraging		PC
H001	18/12/2019	Grey heron	1	FW2, (Depositing/upland rivers) foraging		PC
OC001	18/12/2019	Oystercatcher	30	GA2, (Amenity grassland (improved)) foraging		PC
CM001	18/12/2019	Common Gull	24	GA2, (Amenity grassland (improved)) foraging		PC
PB001	18/12/2019	Brent Goose	12	GA2, (Amenity grassland (improved)) foraging		PC
OC002	18/12/2019	Oystercatcher	56	GA2, (Amenity grassland (improved)) foraging		PC
H002	18/12/2019	Grey heron	1	GS2, (Dry meadows and grassy verges) foraging in pool		PC
SN001	18/12/2019	Common Snipe	1	GS2, (Dry meadows and grassy verges) foraging in pool		PC
SN002	18/12/2019	Common Snipe	3	GS2, (Dry meadows and grassy verges) foraging in pool		PC
BH001	23/12/2019	Black-headed Gull	1			ED
H003	23/12/2019	Grey Heron	1			ED
HG001	23/12/2019	Herring Gull	6			ED
BW001	23/12/2019	Black-tailed Godwit	12		flight oversite	ED
PB002	23/12/2019	Brent Goose	40		flight oversite Light bellied brent geese	ED
SN003	23/12/2019	Common Snipe	1			ED
HG002	23/12/2019	Herring Gull	2			ED
HG003	15/01/2020	Herring Gull	14	ED2, (Spoil and bare ground) loafing near construction area		SD
BH002	15/01/2020	Black-headed Gull	13	ED2, (Spoil and bare ground) loafing near construction area		SD

Map Ref	Survey Date	Species	Number of birds	Habitat and Activity	Comments	Surveyor
	15/01/2020	Hooded Crow	14	GS2, (Dry meadows and grassy verges) ED2, (Spoil and bare ground) ED3, (Recolonising bare ground) flyover		SD
	15/01/2020	Magpie	19	WL1, (Hedgerows) ED2, (Spoil and bare ground) foraging		SD
	15/01/2020	Buzzard	1	ED3, (Recolonising bare ground) hunting		SD
PB003/PB004	15/01/2020	Brent Goose	49	GS2, (Dry meadows and grassy verges) 41 flying south then north. 8 flying east to west. Flying over site as the tide in SPA rises, but not landing		SD
	15/01/2020	Wren	3	WS1, (Scrub) foraging		SD
	15/01/2020	Song Thrush	2	GS2, (Dry meadows and grassy verges) foraging		SD
	15/01/2020	Kestrel	1	GS2, (Dry meadows and grassy verges) hunting		SD
	15/01/2020	Jackdaw	2	ED3, (Recolonising bare ground) foraging		SD
BH003	28/01/2020	Black-headed Gull	15	ED2, (Spoil and bare ground) loafing near construction area		SD
HG004	28/01/2020	Herring Gull	9	ED2, (Spoil and bare ground) loafing near construction area		SD
	28/01/2020	Herring Gull	12	ED2, (Spoil and bare ground) ED3, (Recolonising bare ground) GS2, (Dry meadows and grassy verges) flyover		SD
PB005	28/01/2020	Brent Goose	7	GS2, (Dry meadows and grassy verges) fly over site towards SPA. Do not land		SD
	28/01/2020	Song Thrush	3	GS2, (Dry meadows and grassy verges) ED2, (Spoil and bare ground) foraging		SD
	28/01/2020	Magpie	7	WL2, (Treelines) ED2, (Spoil and bare ground) foraging		SD
	28/01/2020	Robin	1	WS1, (Scrub) foraging		SD
	28/01/2020	Jackdaw	2	ED2, (Spoil and bare ground) ED3, (Recolonising bare ground) flyover		SD

Map Ref	Survey Date	Species	Number of birds	Habitat and Activity	Comments	Surveyor
	28/01/2020	Raven	1	ED2, (Spoil and bare ground) mobbed by Jackdaws		SD
	28/01/2020	Goldfinch	1	GS2, (Dry meadows and grassy verges) foraging		SD
	28/01/2020	Hooded Crow	2	ED3, (Recolonising bare ground) ED2, (Spoil and bare ground) WL1, (Hedgerows) foraging		SD
	28/01/2020	Wren	1	WL1, (Hedgerows) foraging		SD
MA001	28/01/2020	Mallard	2	FW2, (Depositing/upland rivers) swimming in river		SD
	28/01/2020	Blackbird	2	WS1, (Scrub) foraging		SD
H004	28/01/2020	Grey Heron	1	FW2, (Depositing/upland rivers) GS2, (Dry meadows and grassy verges) moving around site		SD
SN004	28/01/2020	Common Snipe	6	GS4, (Wet grassland) flushed from wet grassland		SD
	10/02/2020	Herring Gull	8	GS2, (Dry meadows and grassy verges) ED2, (Spoil and bare ground) ED3, (Recolonising bare ground) flying		SD
	10/02/2020	Magpie	11	ED2, (Spoil and bare ground) ED3, (Recolonising bare ground) foraging		SD
	10/02/2020	Hooded Crow	4	GS2, (Dry meadows and grassy verges) ED2, (Spoil and bare ground) foraging		SD
SN005	10/02/2020	Common Snipe	1	GS2, (Dry meadows and grassy verges) flushed		SD
MA002	10/02/2020	Mallard	5	GS2, (Dry meadows and grassy verges) fly over site E to W		SD
H005	10/02/2020	Grey Heron	1	ED2, (Spoil and bare ground) at pool in spoil		SD
PB006	10/02/2020	Brent Goose	11	GS2, (Dry meadows and grassy verges) fly over site E to W	look disturbed from SPA	SD
	10/02/2020	Robin	2	WS1, (Scrub) foraging		SD
	10/02/2020	Great Black-backed Gull	1	GS2, (Dry meadows and grassy verges) flying		SD
	10/02/2020	Buzzard	1	GS2, (Dry meadows and grassy verges) hunting		SD
	10/02/2020	Blackbird	2	WL1, (Hedgerows) foraging		SD
	10/02/2020	Rook	9	GS2, (Dry meadows and grassy verges) foraging		SD

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Map Ref	Survey Date	Species	Number of birds	Habitat and Activity	Comments	Surveyor
L001	10/02/2020	Lapwing	100	FS1, (Reed and large sedge swamps) roosting	attempting to roost in pond adjacent to site. Frequently disturbed but do not fly over site	SD
	10/02/2020	Mallard	15	FS1, (Reed and large sedge swamps) flying	flying around reedbed adjacent to site but do not fly over site	SD
SN006	10/02/2020	Common Snipe	3	GS4, (Wet grassland) flushed		SD
	10/02/2020	Dunnock	1	WS1, (Scrub) singing		SD
	10/02/2020	Starling	30	GS2, (Dry meadows and grassy verges) foraging		SD
	10/02/2020	Black-headed Gull	8	GS2, (Dry meadows and grassy verges) ED2, (Spoil and bare ground) flying		SD
	10/02/2020	Wood Pigeon	8	BL3, (Buildings and artificial surfaces) foraging on road		SD
	10/02/2020	Blue Tit	1	WS1, (Scrub) alarm calls		SD
PB007	24/02/2020	Brent Goose	~80	GS2, (Dry meadows and grassy verges) foraging	foraging in park adjacent to site	SD
	24/02/2020	Buzzard	1	GS2, (Dry meadows and grassy verges) hunting		SD
	24/02/2020	Black-headed Gull	14	GS2, (Dry meadows and grassy verges) flying		SD
	24/02/2020	Robin	2	WS1, (Scrub) foraging		SD
	24/02/2020	Robin	2	WS1, (Scrub) singing		SD
	24/02/2020	Hooded Crow	5	GS2, (Dry meadows and grassy verges) WS1, (Scrub) foraging		SD
	24/02/2020	Lesser Black-backed Gull	1	GS2, (Dry meadows and grassy verges) flying		SD
	24/02/2020	Meadow Pipit	15	WS1, (Scrub) GS2, (Dry meadows and grassy verges) ED2, (Spoil and bare ground) foraging and displaying		SD
	24/02/2020	Blue Tit	4	WS1, (Scrub) singing and calling		SD
	24/02/2020	Herring Gull	1	ED2, (Spoil and bare ground) roosting		SD

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Map Ref	Survey Date	Species	Number of birds	Habitat and Activity	Comments	Surveyor
	24/02/2020	Magpie	6	WL1, (Hedgerows) WS1, (Scrub) ED2, (Spoil and bare ground) foraging		SD
	24/02/2020	Blackbird	3	WL1, (Hedgerows) foraging		SD
	24/02/2020	Skylark	2	GS2, (Dry meadows and grassy verges) displaying		SD
	24/02/2020	Dunnock	1	WS1, (Scrub) singing		SD
	24/02/2020	Greenfinch	1	WS1, (Scrub) calling		SD
	24/02/2020	Goldfinch	1	GS2, (Dry meadows and grassy verges) flying		SD
	24/02/2020	Chaffinch	1	WL1, (Hedgerows) calling		SD
L002	24/02/2020	Lapwing	~30	FS1, (Reed and large sedge swamps) roosting	roosting in flooded area adjacent to site	SD
	24/02/2020	Cormorant	1	GS2, (Dry meadows and grassy verges) fly over site W to E		SD
SU001	24/02/2020	Shelduck	2	GA1, (Improved agricultural grassland) roosting	roosting near flooded area adjacent to site	SD
BH004	24/02/2020	Black-headed Gull	4	GA1, (Improved agricultural grassland) roosting	roosting near flooded area adjacent to site	SD
	24/02/2020	Wood Pigeon	5	WL1, (Hedgerows) roosting		SD
	24/02/2020	Wren	1	WS1, (Scrub) calling		SD
MA003	24/02/2020	Mallard	6	GS2, (Dry meadows and grassy verges) fly over site E to W		SD
BH005	24/02/2020	Black-headed Gull	50+	GA1, (Improved agricultural grassland) roosting	roosting on farmland adjacent to site	SD
SN007	24/02/2020	Common Snipe	1	GS2, (Dry meadows and grassy verges) flushed		SD
SN008	24/02/2020	Common Snipe	2	GS4, (Wet grassland) flushed		SD
	24/02/2020	Rook	2	GS2, (Dry meadows and grassy verges) foraging		SD
	24/02/2020	Herring Gull	1	GS2, (Dry meadows and grassy verges) flying		SD
	24/02/2020	Bar-tailed Godwit	35	GS2, (Dry meadows and grassy verges) fly over site N to S	flock flies high over site but does not land or use site	SD

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Map Ref	Survey Date	Species	Number of birds	Habitat and Activity	Comments	Surveyor
	11/03/2020	Rook	2	GS2, (Dry meadows and grassy verges) ED2, (Spoil and bare ground) foraging		SD
	11/03/2020	Magpie	11	GS2, (Dry meadows and grassy verges) WL1, (Hedgerows) WS1, (Scrub) foraging		SD
	11/03/2020	Skylark	1	GS2, (Dry meadows and grassy verges) breeding display		SD
	11/03/2020	Herring Gull	7	GS2, (Dry meadows and grassy verges) flying over site		SD
	11/03/2020	Hooded Crow	3	WL1, (Hedgerows) WL2, (Treelines) nest building		SD
	11/03/2020	Meadow Pipit	18	GS2, (Dry meadows and grassy verges) WL2, (Treelines) foraging		SD
	11/03/2020	Wren	1	WL1, (Hedgerows) singing		SD
SN009	11/03/2020	Common Snipe	1	GS2, (Dry meadows and grassy verges) flushed		SD
	11/03/2020	Skylark	5	GS2, (Dry meadows and grassy verges) foraging		SD
	11/03/2020	Meadow Pipit	2	GS2, (Dry meadows and grassy verges) breeding display		SD
	11/03/2020	Buzzard	1	WL2, (Treelines) calling from treeline on site boundary - potential site for nesting		SD
	11/03/2020	Robin	3	WL1, (Hedgerows) foraging		SD
	11/03/2020	Wood Pigeon	10	WL1, (Hedgerows) WS1, (Scrub) foraging		SD
	11/03/2020	Dunnock	1	WS1, (Scrub) singing		SD
SN010	11/03/2020	Common Snipe	2	GS4, (Wet grassland) flushed		SD
	11/03/2020	Blackbird	2	WL1, (Hedgerows) foraging		SD
	11/03/2020	Greenfinch	1	WL1, (Hedgerows) foraging		SD
	11/03/2020	Goldfinch	12	WL1, (Hedgerows) foraging		SD
	11/03/2020	Pheasant	1	GS2, (Dry meadows and grassy verges) flushed		SD
	11/03/2020	Buzzard	4	GS2, (Dry meadows and grassy verges) WL2, (Treelines) soaring and calling high over site		SD

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Map Ref	Survey Date	Species	Number of birds	Habitat and Activity	Comments	Surveyor
	11/03/2020	Black-headed Gull	1	GS2, (Dry meadows and grassy verges) flying over site		SD
MA004	11/03/2020	Mallard	2	FW, (Watercourses) fly into site towards river		SD
	24/03/2020	Magpie	14	WL1, (Hedgerows) WL2, (Treelines) ED2, (Spoil and bare ground) foraging		SD
	24/03/2020	Herring Gull	10	GS2, (Dry meadows and grassy verges) scattered individuals flying around site		SD
	24/03/2020	Skylark	4	GS2, (Dry meadows and grassy verges) displaying		SD
	24/03/2020	Hooded Crow	3	GS2, (Dry meadows and grassy verges) foraging		SD
	24/03/2020	Dunnock	1	WS1, (Scrub) singing		SD
	24/03/2020	Stonechat	2	GS2, (Dry meadows and grassy verges) pair foraging		SD
	24/03/2020	Rook	12	GS2, (Dry meadows and grassy verges) WL2, (Treelines) foraging		SD
	24/03/2020	Meadow Pipit	15	GS2, (Dry meadows and grassy verges) foraging		SD
	24/03/2020	Robin	4	WL1, (Hedgerows) WL2, (Treelines) singing		SD
	24/03/2020	Wren	1	WS1, (Scrub) singing		SD
MA005/MA006/MA007	24/03/2020	Mallard	6	GS2, (Dry meadows and grassy verges) FW, (Watercourses) flying over; 2 may have landed in river		SD
	24/03/2020	Wood Pigeon	21	WL1, (Hedgerows) foraging		SD
	24/03/2020	Blackbird	2	WL1, (Hedgerows) foraging		SD
	24/03/2020	Jackdaw	6	ED2, (Spoil and bare ground) foraging		SD
	24/03/2020	Goldfinch	1	WL1, (Hedgerows) singing		SD
	24/03/2020	Greenfinch	1	WL1, (Hedgerows) calling		SD
SN011	24/03/2020	Common Snipe	2	GS4, (Wet grassland) flushed		SD
	24/03/2020	Goldfinch	4	WL1, (Hedgerows) foraging		SD

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Map Ref	Survey Date	Species	Number of birds	Habitat and Activity	Comments	Surveyor
ET001	24/03/2020	Little Egret	1	mixed flock roosting adjacent to site, overlapping site boundary at far NE corner		SD
MA008	24/03/2020	Mallard	3	mixed flock roosting adjacent to site, overlapping site boundary at far NE corner	partially within site boundary	SD
SU002	24/03/2020	Shelduck	4	mixed flock roosting adjacent to site, overlapping site boundary at far NE corner	partially within site boundary	SD
BW002	24/03/2020	Black-tailed Godwit	35	mixed flock roosting adjacent to site, overlapping site boundary at far NE corner	partially within site boundary	SD
T001	24/03/2020	Teal	4	foraging in river adjacent to site		SD
MA009	24/03/2020	Mallard	2	FW, (Watercourses) foraging in river		SD
MH002	24/03/2020	Moorhen	1	FW, (Watercourses) foraging on river's edge		SD
CM002	24/03/2020	Common Gull	1	flies over		SD
H006	24/03/2020	Grey Heron	1	ED2, (Spoil and bare ground) standing in flooded area		SD

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Table 1-3 SPA Survey Data

Map Ref	Date	Species	Notes on Habitat and Activity	Comments	Surveyor
FL001	18/12/2019	Herring Gull	Intertidal; Roosting		PC
FL001	18/12/2019	Great Black-backed Gull	Intertidal; Roosting		PC
FL001	18/12/2019	Oystercatcher	Intertidal; Feeding		PC
FL001	18/12/2019	Curlew	Intertidal; Feeding		PC
FL001	18/12/2019	Mallard	Intertidal; Feeding		PC
FL001	18/12/2019	Teal	Intertidal; Feeding		PC
FL001	18/12/2019	Redshank	Intertidal; Feeding		PC
FL001	18/12/2019	Black-headed Gull	Supratidal; Feeding		PC
FL002	18/12/2019	Mallard	Intertidal; Feeding		PC
FL002	18/12/2019	Oystercatcher	Intertidal; Feeding		PC
FL002	18/12/2019	Herring Gull	Intertidal; Feeding		PC
FL002	18/12/2019	Black-headed Gull	Intertidal; Feeding		PC
FL002	18/12/2019	Bar-tailed Godwit	Intertidal; Feeding		PC
FL002	18/12/2019	Grey Plover	Intertidal; Feeding		PC
FL002	18/12/2019	Shelduck	Intertidal; Feeding		PC
FL002	18/12/2019	Lapwing	Intertidal; Feeding		PC
FL002	18/12/2019	Common Gull	Intertidal; Feeding		PC
FL002	18/12/2019	Curlew	Intertidal; Feeding		PC
FL002	18/12/2019	Redshank	Intertidal; Feeding		PC
FL002	18/12/2019	Brent Goose	Intertidal; Feeding		PC
FL003	18/12/2019	Brent Goose	Terrestrial; Feeding	Foraging in golf course	PC
FL004	18/12/2019	Red-breasted Merganser	Subtidal; Feeding		PC
FL004	18/12/2019	Common Gull	Intertidal; Feeding		PC
FL004	18/12/2019	Herring Gull	Intertidal; Feeding		PC
FL004	18/12/2019	Oystercatcher	Supratidal; Roosting		PC
FL004	18/12/2019	Curlew	Supratidal; Roosting		PC

Map Ref	Date	Species	Notes on Habitat and Activity	Comments	Surveyor
FL004	18/12/2019	Long-tailed Duck	Subtidal; Feeding		PC
FL005	18/12/2019	Redshank	Intertidal; Feeding		PC
FL005	18/12/2019	Turnstone	Intertidal; Feeding		PC
FL005	18/12/2019	Herring Gull	Intertidal; Feeding		PC
FL005	18/12/2019	Grey Heron	Intertidal; Feeding		PC
FL005	18/12/2019	Curlew	Intertidal; Feeding		PC
FL005	18/12/2019	Teal	Intertidal; Feeding		PC
FL006	18/12/2019	Curlew	Intertidal; Feeding		PC
FL006	18/12/2019	Oystercatcher	Intertidal; Feeding		PC
FL006	18/12/2019	Dunlin	Intertidal; Feeding		PC
FL006	18/12/2019	Redshank	Intertidal; Feeding		PC
FL006	18/12/2019	Bar-tailed Godwit	Intertidal; Feeding		PC
FL007	18/12/2019	Black-headed Gull	Intertidal; Feeding		PC
FL007	18/12/2019	Herring Gull	Intertidal; Feeding		PC
FL007	18/12/2019	Turnstone	Intertidal; Feeding		PC
FL007	18/12/2019	Curlew	Intertidal; Feeding		PC
FL007	18/12/2019	Bar-tailed Godwit	Intertidal; Feeding		PC
FL007	18/12/2019	Redshank	Intertidal; Feeding		PC
FL007	18/12/2019	Oystercatcher	Intertidal; Feeding		PC
FL008	18/12/2019	Bar-tailed Godwit	Intertidal; Feeding		PC
FL008	18/12/2019	Curlew	Intertidal; Feeding		PC
FL008	18/12/2019	Oystercatcher	Intertidal; Feeding		PC
FL008	18/12/2019	Redshank	Intertidal; Feeding		PC
FL008	18/12/2019	Shelduck	Intertidal; Feeding		PC
FL008	18/12/2019	Turnstone	Intertidal; Feeding		PC
FL008	18/12/2019	Greenshank	Intertidal; Feeding		PC

Map Ref	Date	Species	Notes on Habitat and Activity	Comments	Surveyor
FL008	18/12/2019	Herring Gull	Intertidal; Feeding		PC
FL008	18/12/2019	Black-headed Gull	Intertidal; Feeding		PC
FL008	18/12/2019	Great Black-backed Gull	Intertidal; Feeding		PC
FL008	18/12/2019	Dunlin	Intertidal; Feeding		PC
FL008	18/12/2019	Brent Goose	Intertidal; Feeding		PC
FL008	18/12/2019	Golden Plover	Intertidal; Roosting		PC
FL009	18/12/2019	Teal	Intertidal; Roosting		PC
FL009	18/12/2019	Wigeon	Intertidal; Roosting		PC
FL009	18/12/2019	Whooper Swan	Intertidal; Roosting		PC
FL010	23/12/2019	Lapwing	Above Water; Roosting		ED
FL010	23/12/2019	Redshank	Above Water; Roosting		ED
FL011	23/12/2019	Shelduck	On Water; feeding		ED
FL012	23/12/2019	Wigeon	On Water; feeding		ED
FL012	23/12/2019	Shelduck	On Water; Feeding		ED
FL012	23/12/2019	Teal	On Water; Feeding		ED
FL012	23/12/2019	Wigeon	On Water; Feeding		ED
FL012	23/12/2019	Great Black-backed Gull	Above Water; Roosting		ED
FL012	23/12/2019	Black-headed Gull	Above Water; Roosting		ED
FL012	23/12/2019	Common Gull	Above Water; Roosting		ED
FL012	23/12/2019	Redshank	Above Water; Roosting		ED
FL012	23/12/2019	Little Egret	Above Water; Feeding		ED
FL012	23/12/2019	Red-breasted Merganser	Above Water; Roosting		ED
FL012	23/12/2019	Grey Heron	Above Water; Feeding		ED
	15/01/2020	Oystercatcher	Intertidal; Feeding		SD
	15/01/2020	Herring Gull	Intertidal; Feeding	also 15+ HG following fishing boat outside SPA boundary	SD
	15/01/2020	Curlew	Intertidal; Feeding		SD

Map Ref	Date	Species	Notes on Habitat and Activity	Comments	Surveyor
	15/01/2020	Redshank	Intertidal; Feeding		SD
	15/01/2020	Hooded Crow	Intertidal; Feeding		SD
	15/01/2020	Cormorant	Subtidal; Feeding		SD
	15/01/2020	Great Black-backed Gull	Intertidal; Feeding		SD
	15/01/2020	Brent Goose	Flying		SD
	15/01/2020	Red-breasted Merganser	Subtidal; Feeding		SD
	15/01/2020	Herring Gull	Intertidal; Feeding		SD
	15/01/2020	Oystercatcher	Intertidal; Feeding		SD
	15/01/2020	Brent Goose	Subtidal; Feeding		SD
	15/01/2020	Curlew	Intertidal; Feeding		SD
	15/01/2020	Redshank	Intertidal; Feeding		SD
	15/01/2020	Redshank	Intertidal; Roosting		SD
	15/01/2020	Black-headed Gull	Intertidal; Roosting		SD
	15/01/2020	Red-breasted Merganser	Subtidal; Feeding		SD
	15/01/2020	Teal	Intertidal; Roosting		SD
	15/01/2020	Hooded Crow	Intertidal; Feeding		SD
	15/01/2020	Herring Gull	Subtidal; Roosting		SD
	15/01/2020	Herring Gull	Intertidal; Roosting		SD
	15/01/2020	Herring Gull	Intertidal; Feeding		SD
	15/01/2020	Black-headed Gull	Intertidal; Feeding		SD
	15/01/2020	Shelduck	Intertidal; Feeding		SD
	15/01/2020	Redshank	Intertidal; Feeding		SD
	15/01/2020	Turnstone	Supratidal; Feeding		SD
	15/01/2020	Curlew	Intertidal; Feeding		SD
FL013	15/01/2020	Curlew	Intertidal; Roosting		SD
FL013	15/01/2020	Oystercatcher	Intertidal; Feeding		SD

Map Ref	Date	Species	Notes on Habitat and Activity	Comments	Surveyor
	15/01/2020	Oystercatcher	Intertidal; Roosting		SD
	15/01/2020	Oystercatcher	Terrestrial; Roosting		SD
	15/01/2020	Ringed Plover	Intertidal; Feeding		SD
	15/01/2020	Great Black-backed Gull	Intertidal; Feeding		SD
	15/01/2020	Red-breasted Merganser	Subtidal; Feeding		SD
	15/01/2020	Starling	Supratidal; Feeding		SD
	15/01/2020	Brent Goose	Intertidal; Feeding		SD
	15/01/2020	Wigeon	Subtidal; Feeding		SD
	15/01/2020	Herring Gull	Subtidal; Feeding		SD
	15/01/2020	Herring Gull	Intertidal; Feeding		SD
	15/01/2020	Oystercatcher	Intertidal; Feeding		SD
	15/01/2020	Turnstone	Intertidal; Feeding		SD
	15/01/2020	Redshank	Intertidal; Roosting		SD
	15/01/2020	Shelduck	Subtidal; Feeding		SD
	15/01/2020	Shelduck	Intertidal; Feeding		SD
	15/01/2020	Curlew	Intertidal; Feeding		SD
	15/01/2020	Brent Goose	Intertidal; Feeding		SD
	15/01/2020	Brent Goose	Subtidal; Feeding		SD
	15/01/2020	Black-headed Gull	Subtidal; Roosting		SD
	15/01/2020	Black-headed Gull	Intertidal; Feeding		SD
	15/01/2020	Little Grebe	Supratidal; Feeding		SD
FL014	15/01/2020	Lapwing	Supratidal; Roosting		SD
	15/01/2020	Redshank	Intertidal; Feeding		SD
	15/01/2020	Redshank	Supratidal; Roosting		SD
FL015	15/01/2020	Black-headed Gull	Intertidal; Feeding	also 30+ foraging in park adjacent to SPA	SD
	15/01/2020	Greenshank	Intertidal; Feeding		SD

Map Ref	Date	Species	Notes on Habitat and Activity	Comments	Surveyor
	15/01/2020	Herring Gull	Flying		SD
	15/01/2020	Wigeon	Subtidal; Feeding		SD
	15/01/2020	Mallard	Subtidal; Feeding		SD
FL015	15/01/2020	Brent Goose	Subtidal; Feeding	also 60+ foraging in park adjacent to SPA	SD
	15/01/2020	Brent Goose	Flying		SD
	15/01/2020	Wigeon	Subtidal; Feeding		SD
	15/01/2020	Herring Gull	Intertidal; Feeding		SD
	15/01/2020	Curlew	Supratidal; Roosting	in reeds	SD
	15/01/2020	Redshank	Intertidal; Roosting		SD
	15/01/2020	Teal	Subtidal; Feeding		SD
	15/01/2020	Brent Goose	Subtidal; Feeding		SD
FL016	15/01/2020	Black-headed Gull	Subtidal; Roosting		SD
	28/01/2020	Hooded Crow	Intertidal; Feeding		SD
	28/01/2020	Black-headed Gull	Intertidal; Feeding		SD
	28/01/2020	Herring Gull	Intertidal; Feeding		SD
	28/01/2020	Great Black-backed Gull	Intertidal; Feeding		SD
	28/01/2020	Oystercatcher	Intertidal; Feeding		SD
	28/01/2020	Oystercatcher	Intertidal; Roosting		SD
	28/01/2020	Curlew	Intertidal; Feeding		SD
	28/01/2020	Red-breasted Merganser	Subtidal; Feeding		SD
	28/01/2020	Common Gull	Intertidal; Feeding		SD
	28/01/2020	Redshank	Intertidal; Feeding		SD
	28/01/2020	Ringed Plover	Intertidal; Feeding		SD
	28/01/2020	Hooded Crow	Intertidal; Feeding		SD
	28/01/2020	Curlew	Intertidal; Feeding		SD
	28/01/2020	Great Black-backed Gull	Intertidal; Feeding		SD

Map Ref	Date	Species	Notes on Habitat and Activity	Comments	Surveyor
	28/01/2020	Redshank	Intertidal; Feeding		SD
	28/01/2020	Oystercatcher	Intertidal; Feeding		SD
FL017	28/01/2020	Oystercatcher	Intertidal; Roosting		SD
	28/01/2020	Shelduck	Intertidal; Feeding		SD
	28/01/2020	Herring Gull	Intertidal; Feeding		SD
	28/01/2020	Black-headed Gull	Intertidal; Feeding		SD
FL018	28/01/2020	Oystercatcher	Intertidal; Feeding		SD
FL018	28/01/2020	Oystercatcher	Intertidal; Roosting		SD
	28/01/2020	Redshank	Intertidal; Feeding		SD
	28/01/2020	Black-headed Gull	Intertidal; Feeding		SD
	28/01/2020	Black-headed Gull	Intertidal; Roosting		SD
	28/01/2020	Shelduck	Subtidal; Feeding		SD
	28/01/2020	Hooded Crow	Intertidal; Feeding		SD
	28/01/2020	Curlew	Intertidal; Feeding		SD
	28/01/2020	Curlew	Intertidal; Roosting		SD
	28/01/2020	Bar-tailed Godwit	Intertidal; Feeding		SD
	28/01/2020	Herring Gull	Intertidal; Feeding		SD
	28/01/2020	Herring Gull	Intertidal; Roosting		SD
	28/01/2020	Turnstone	Intertidal; Feeding		SD
	28/01/2020	Great Black-backed Gull	Intertidal; Feeding		SD
	28/01/2020	Greenshank	Intertidal; Feeding		SD
	28/01/2020	Great Crested Grebe	Subtidal; Feeding		SD
	28/01/2020	Brent Goose	Intertidal; Feeding		SD
FL019	28/01/2020	Brent Goose	Subtidal; Feeding		SD
FL019	28/01/2020	Brent Goose	Intertidal; Feeding		SD
	28/01/2020	Redshank	Intertidal; Feeding		SD

Map Ref	Date	Species	Notes on Habitat and Activity	Comments	Surveyor
	28/01/2020	Black-headed Gull	Intertidal; Feeding		SD
	28/01/2020	Shelduck	Intertidal; Feeding		SD
	28/01/2020	Oystercatcher	Intertidal; Feeding		SD
	28/01/2020	Oystercatcher	Intertidal; Roosting		SD
	28/01/2020	Curlew	Intertidal; Feeding		SD
	28/01/2020	Curlew	Intertidal; Roosting		SD
	28/01/2020	Great Black-backed Gull	Intertidal; Feeding		SD
	28/01/2020	Red-breasted Merganser	Subtidal; Feeding		SD
FL020	28/01/2020	Knot	Intertidal; Feeding		SD
	28/01/2020	Bar-tailed Godwit	Intertidal; Feeding		SD
	28/01/2020	Herring Gull	Intertidal; Feeding		SD
	28/01/2020	Lapwing	Intertidal; Roosting		SD
	28/01/2020	Bar-tailed Godwit	Intertidal; Feeding		SD
	28/01/2020	Brent Goose		in park adjacent to SPA	SD
	28/01/2020	Black-headed Gull		in park adjacent to SPA	SD
	28/01/2020	Mallard		in park adjacent to SPA	SD
	28/01/2020	Shelduck	Intertidal; Feeding		SD
	28/01/2020	Curlew	Intertidal; Feeding		SD
	28/01/2020	Great Black-backed Gull	Intertidal; Roosting		SD
	28/01/2020	Cormorant	Subtidal; Roosting		SD
	28/01/2020	Black-headed Gull	Intertidal; Feeding		SD
	28/01/2020	Mallard	Intertidal; Feeding		SD
	28/01/2020	Oystercatcher	Intertidal; Feeding		SD
	28/01/2020	Redshank	Intertidal; Feeding		SD
	28/01/2020	Lapwing	Intertidal; Feeding		SD
	28/01/2020	Lapwing	Intertidal; Roosting		SD

Map Ref	Date	Species	Notes on Habitat and Activity	Comments	Surveyor
	28/01/2020	Lesser Black-backed Gull	Intertidal; Feeding		SD
	28/01/2020	Teal	Subtidal; Feeding		SD
	28/01/2020	Herring Gull	Intertidal; Roosting		SD
	28/01/2020	Lapwing	Intertidal; Roosting		SD
	28/01/2020	Shelduck	Subtidal; Roosting		SD
	28/01/2020	Shelduck	Intertidal; Roosting		SD
	28/01/2020	Curlew	Intertidal; Roosting		SD
	28/01/2020	Curlew	Terrestrial; Roosting	some roosting within grass	SD
	28/01/2020	Black-headed Gull	Intertidal; Feeding		SD
	28/01/2020	Black-headed Gull	Intertidal; Roosting		SD
	28/01/2020	Herring Gull	Intertidal; Roosting		SD
	28/01/2020	Wigeon	Subtidal; Feeding		SD
	28/01/2020	Oystercatcher	Intertidal; Feeding		SD
	28/01/2020	Great Crested Grebe	Subtidal; Feeding		SD
	28/01/2020	Redshank	Intertidal; Feeding		SD
	28/01/2020	Bar-tailed Godwit	Intertidal; Feeding		SD
	28/01/2020	Great Black-backed Gull	Intertidal; Feeding		SD
	28/01/2020	Bar-tailed Godwit	Intertidal; Feeding		SD
	10/02/2020	Black-headed Gull	Intertidal; Feeding		SD
	10/02/2020	Cormorant	Subtidal; Feeding		SD
	10/02/2020	Great Crested Grebe	Subtidal; Feeding		SD
	10/02/2020	Herring Gull	Intertidal; Feeding		SD
FL021	10/02/2020	Brent Goose	Intertidal; Feeding		SD
	10/02/2020	Turnstone	Supratidal; Feeding		SD
	10/02/2020	Herring Gull		flying	SD
	10/02/2020	Black-headed Gull	Subtidal; Feeding		SD

Map Ref	Date	Species	Notes on Habitat and Activity	Comments	Surveyor
	10/02/2020	Teal	Subtidal; Feeding		SD
	10/02/2020	Redshank	Intertidal; Feeding		SD
	10/02/2020	Black-headed Gull	Subtidal; Roosting		SD
	10/02/2020	Red-breasted Merganser	Subtidal; Feeding		SD
	10/02/2020	Great Crested Grebe	Subtidal; Feeding		SD
	10/02/2020	Herring Gull	Subtidal; Roosting		SD
	10/02/2020	Rook		flying	SD
	10/02/2020	Knot	Intertidal; Roosting		SD
	10/02/2020	Oystercatcher	Terrestrial; Feeding		SD
	10/02/2020	Brent Goose		flying	SD
	10/02/2020	Starling	Intertidal; Feeding		SD
	10/02/2020	Long-tailed Duck	Subtidal; Roosting		SD
	10/02/2020	Knot	Supratidal; Roosting		SD
	10/02/2020	Shelduck	Subtidal; Feeding		SD
	10/02/2020	Brent Goose		flying	SD
	10/02/2020	Oystercatcher	Supratidal; Roosting		SD
	10/02/2020	Teal	Subtidal; Feeding		SD
	10/02/2020	Brent Goose	Subtidal; Feeding		SD
	10/02/2020	Red-breasted Merganser	Subtidal; Feeding		SD
	10/02/2020	Herring Gull		flying	SD
	10/02/2020	Cormorant	Subtidal; Roosting		SD
	10/02/2020	Lesser Black-backed Gull		flying	SD
	10/02/2020	Curlew	Terrestrial; Roosting		SD
FL022	10/02/2020	Redshank	Supratidal; Roosting		SD
	10/02/2020	Black-headed Gull	Intertidal; Feeding		SD
	10/02/2020	Shelduck	Intertidal; Feeding		SD

Map Ref	Date	Species	Notes on Habitat and Activity	Comments	Surveyor
	10/02/2020	Lapwing	Supratidal; Roosting		SD
	10/02/2020	Mallard	Subtidal; Feeding		SD
	10/02/2020	Little Egret	Intertidal; Feeding		SD
	10/02/2020	Redshank	Intertidal; Feeding		SD
	10/02/2020	Starling	Supratidal; Feeding		SD
	10/02/2020	Shelduck	Terrestrial; Roosting		SD
	10/02/2020	Brent Goose	Subtidal; Feeding		SD
	10/02/2020	Brent Goose		in park adjacent to SPA	SD
	10/02/2020	Black-headed Gull		in park adjacent to SPA	SD
	10/02/2020	Bar-tailed Godwit	Supratidal; Roosting		SD
	10/02/2020	Teal	Subtidal; Feeding		SD
	10/02/2020	Teal		flying	SD
	10/02/2020	Herring Gull		flying	SD
	10/02/2020	Black-headed Gull	Subtidal; Roosting		SD
	10/02/2020	Herring Gull		flying	SD
	10/02/2020	Shelduck	Subtidal; Feeding		SD
	24/02/2020	Cormorant	Subtidal; Feeding		SD
	24/02/2020	Red-breasted Merganser	Subtidal; Feeding		SD
	24/02/2020	Hooded Crow	Intertidal; Feeding		SD
FL023	24/02/2020	Brent Goose	Terrestrial; Feeding		SD
	24/02/2020	Teal	Intertidal; Feeding		SD
	24/02/2020	Hooded Crow	Terrestrial; Feeding		SD
	24/02/2020	Herring Gull	Subtidal; Feeding		SD
	24/02/2020	Brent Goose	Terrestrial; Feeding		SD
	24/02/2020	Herring Gull		flying	SD
	24/02/2020	Brent Goose	Subtidal; Feeding		SD

Map Ref	Date	Species	Notes on Habitat and Activity	Comments	Surveyor
	24/02/2020	Shelduck	Intertidal; Roosting		SD
	24/02/2020	Oystercatcher	Intertidal; Roosting		SD
	24/02/2020	Great Crested Grebe	Subtidal; Feeding		SD
	24/02/2020	Brent Goose	Terrestrial; Feeding		SD
	24/02/2020	Brent Goose	Intertidal; Feeding		SD
	24/02/2020	Oystercatcher	Terrestrial; Feeding		SD
FL024	24/02/2020	Redshank	Supratidal; Roosting		SD
	24/02/2020	Curlew	Supratidal; Roosting		SD
	24/02/2020	Mallard	Supratidal; Roosting		SD
	24/02/2020	Brent Goose		in park adjacent to SPA	SD
	24/02/2020	Mallard		in park adjacent to SPA	SD
	24/02/2020	Black-headed Gull		in park adjacent to SPA	SD
	24/02/2020	Shelduck	Intertidal; Roosting		SD
	24/02/2020	Teal	Intertidal; Roosting		SD
	24/02/2020	Herring Gull		flying	SD
	24/02/2020	Black-headed Gull	Terrestrial; Feeding		SD
	24/02/2020	Herring Gull		flying	SD
	24/02/2020	Teal	Intertidal; Feeding		SD
	24/02/2020	Shelduck	Intertidal; Feeding		SD
	24/02/2020	Shelduck	Intertidal; Roosting		SD
	11/03/2020	Oystercatcher	Intertidal; Roosting		SD
	11/03/2020	Hooded Crow	Intertidal; Feeding		SD
	11/03/2020	Knot		flyover	SD
	11/03/2020	Red-breasted Merganser	Subtidal; Feeding		SD
	11/03/2020	Great Crested Grebe	Subtidal; Feeding		SD
	11/03/2020	Herring Gull		flyover	SD

Map Ref	Date	Species	Notes on Habitat and Activity	Comments	Surveyor
	11/03/2020	Hooded Crow	Terrestrial; Feeding		SD
FL025	11/03/2020	Brent Goose	Intertidal; Feeding		SD
	11/03/2020	Redshank	Intertidal; Feeding		SD
	11/03/2020	Herring Gull	Terrestrial; Roosting		SD
	11/03/2020	Oystercatcher	Terrestrial; Roosting		SD
	11/03/2020	Brent Goose	Terrestrial; Feeding		SD
	11/03/2020	Curlew	Terrestrial; Roosting		SD
	11/03/2020	Black-headed Gull	Terrestrial; Feeding		SD
	11/03/2020	Shelduck	Intertidal; Roosting		SD
	11/03/2020	Brent Goose	Subtidal; Roosting		SD
	11/03/2020	Shelduck	Subtidal; Roosting		SD
	11/03/2020	Black-headed Gull	Subtidal; Roosting		SD
	11/03/2020	Black-headed Gull		flyover	SD
	11/03/2020	Red-breasted Merganser	Subtidal; Feeding		SD
	11/03/2020	Redshank	Supratidal; Roosting		SD
	11/03/2020	Oystercatcher	Terrestrial; Feeding		SD
	11/03/2020	Shelduck	Subtidal; Feeding		SD
	11/03/2020	Red-breasted Merganser	Subtidal; Feeding		SD
	11/03/2020	Herring Gull	Subtidal; Roosting		SD
	11/03/2020	Black-headed Gull	Subtidal; Roosting		SD
	11/03/2020	Wigeon	Subtidal; Feeding		SD
	11/03/2020	Mallard		on grass at church adjacent to SPA roosting	SD
FL026	11/03/2020	Brent Goose	Intertidal; Feeding		SD
FL026	11/03/2020	Redshank	Supratidal; Roosting		SD
	11/03/2020	Great Black-backed Gull	Intertidal; Roosting		SD
	11/03/2020	Shelduck	Subtidal; Feeding		SD

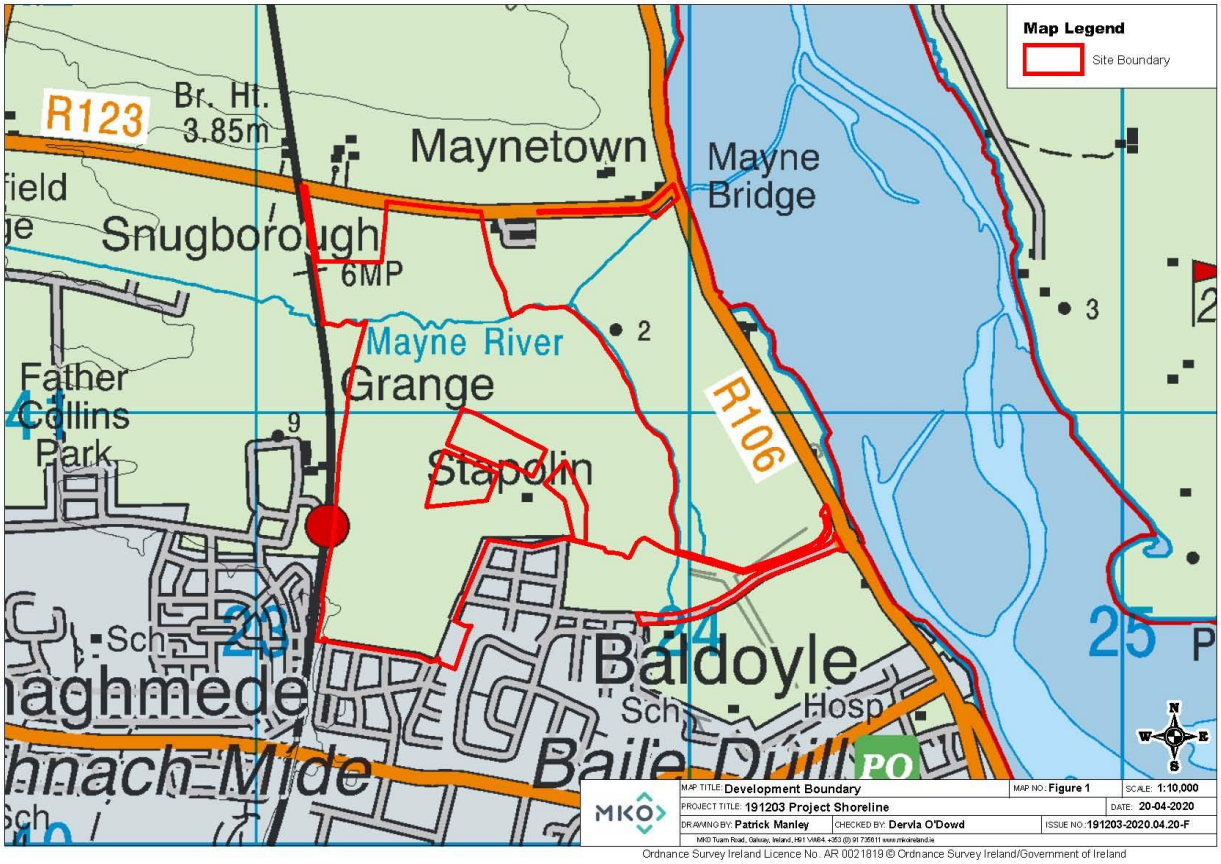
Map Ref	Date	Species	Notes on Habitat and Activity	Comments	Surveyor
FL027	11/03/2020	Brent Goose	Subtidal; Roosting		SD
	11/03/2020	Little Egret	Intertidal; Feeding		SD
	11/03/2020	Mallard		in park adjacent to SPA roosting	SD
	11/03/2020	Black-headed Gull		in park adjacent to SPA roosting	SD
	11/03/2020	Herring Gull		in park adjacent to SPA roosting	SD
FL028	11/03/2020	Brent Goose	Intertidal; Feeding		SD
	11/03/2020	Mallard	Terrestrial; Feeding		SD
	11/03/2020	Redshank	Intertidal; Roosting		SD
FL029	11/03/2020	Brent Goose	Intertidal; Feeding		SD
	11/03/2020	Little Egret	Intertidal; Feeding		SD
	11/03/2020	Herring Gull		flyover	SD
	11/03/2020	Redshank	Intertidal; Feeding		SD
	11/03/2020	Teal	Subtidal; Feeding		SD
	11/03/2020	Shelduck	Intertidal; Feeding		SD
	11/03/2020	Curlew	Intertidal; Roosting		SD
	11/03/2020	Herring Gull	Subtidal; Roosting		SD
	11/03/2020	Teal	Subtidal; Feeding		SD
	24/03/2020	Hooded Crow	Intertidal; Feeding		SD
	24/03/2020	Herring Gull	Subtidal; Roosting		SD
	24/03/2020	Red-breasted Merganser	Subtidal; Feeding		SD
	24/03/2020	Gannet	Subtidal; Feeding		SD
	24/03/2020	Brent Goose	Intertidal; Feeding		SD
	24/03/2020	Black-tailed Godwit	Intertidal; Roosting	mixed flock roosting	SD
	24/03/2020	Redshank	Intertidal; Roosting	mixed flock roosting	SD
	24/03/2020	Black-headed Gull	Subtidal; Roosting		SD
	24/03/2020	Common Gull	Subtidal; Roosting		SD

Map Ref	Date	Species	Notes on Habitat and Activity	Comments	Surveyor
	24/03/2020	Herring Gull	Subtidal; Roosting		SD
	24/03/2020	Red-breasted Merganser	Subtidal; Feeding		SD
FL030	24/03/2020	Oystercatcher	Supratidal; Roosting		SD
	24/03/2020	Brent Goose	Intertidal; Feeding		SD
	24/03/2020	Great Crested Grebe	Subtidal; Feeding		SD
	24/03/2020	Great Black-backed Gull	Subtidal; Roosting		SD
	24/03/2020	Brent Goose	Intertidal; Feeding		SD
	24/03/2020	Shelduck	Intertidal; Feeding		SD
	24/03/2020	Mallard	Terrestrial; Roosting		SD
	24/03/2020	Brent Goose		fly north to south	SD
	24/03/2020	Mallard		fly north to south	SD
	24/03/2020	Brent Goose	Intertidal; Feeding		SD
	24/03/2020	Herring Gull	Supratidal; Roosting		SD
FL032	24/03/2020	Black-tailed Godwit	Supratidal; Roosting		SD
	24/03/2020	Little Egret	Supratidal; Roosting		SD
	24/03/2020	Curlew	Intertidal; Feeding		SD
	24/03/2020	Shelduck	Subtidal; Feeding		SD
	24/03/2020	Mallard	Intertidal; Feeding		SD
	24/03/2020	Gannet	Subtidal; Feeding		SD
	24/03/2020	Redshank	Supratidal; Roosting		SD
	24/03/2020	Wigeon	Intertidal; Feeding		SD
	24/03/2020	Buzzard	Intertidal; Feeding	hunting over reedbed; number 3 on map	SD
	24/03/2020	Herring Gull	Intertidal;	mobbing BZ	SD
	24/03/2020	Shelduck	Subtidal; Feeding		SD
	24/03/2020	Hooded Crow	Terrestrial; Feeding		SD
	24/03/2020	Herring Gull		in park adjacent to SPA foraging	SD

Map Ref	Date	Species	Notes on Habitat and Activity	Comments	Surveyor
	24/03/2020	Redshank	Supratidal; Roosting		SD
	24/03/2020	Black-headed Gull		flyover	SD
	24/03/2020	Teal	Subtidal; Feeding		SD
	24/03/2020	Little Egret	Intertidal; Feeding		SD
	24/03/2020	Brent Goose	Subtidal; Feeding		SD
	24/03/2020	Teal	Subtidal; Feeding		SD
	24/03/2020	Herring Gull		flyover	SD
	24/03/2020	Herring Gull	Intertidal; Feeding		SD
FL031	24/03/2020	Brent Goose	Subtidal; Feeding	large, looscly dispersed flock	SD
	24/03/2020	Teal	Subtidal; Feeding		SD
	24/03/2020	Herring Gull	Subtidal; Feeding		SD
	24/03/2020	Little Egret	Intertidal; Feeding		SD

APPENDIX 2

FIGURES



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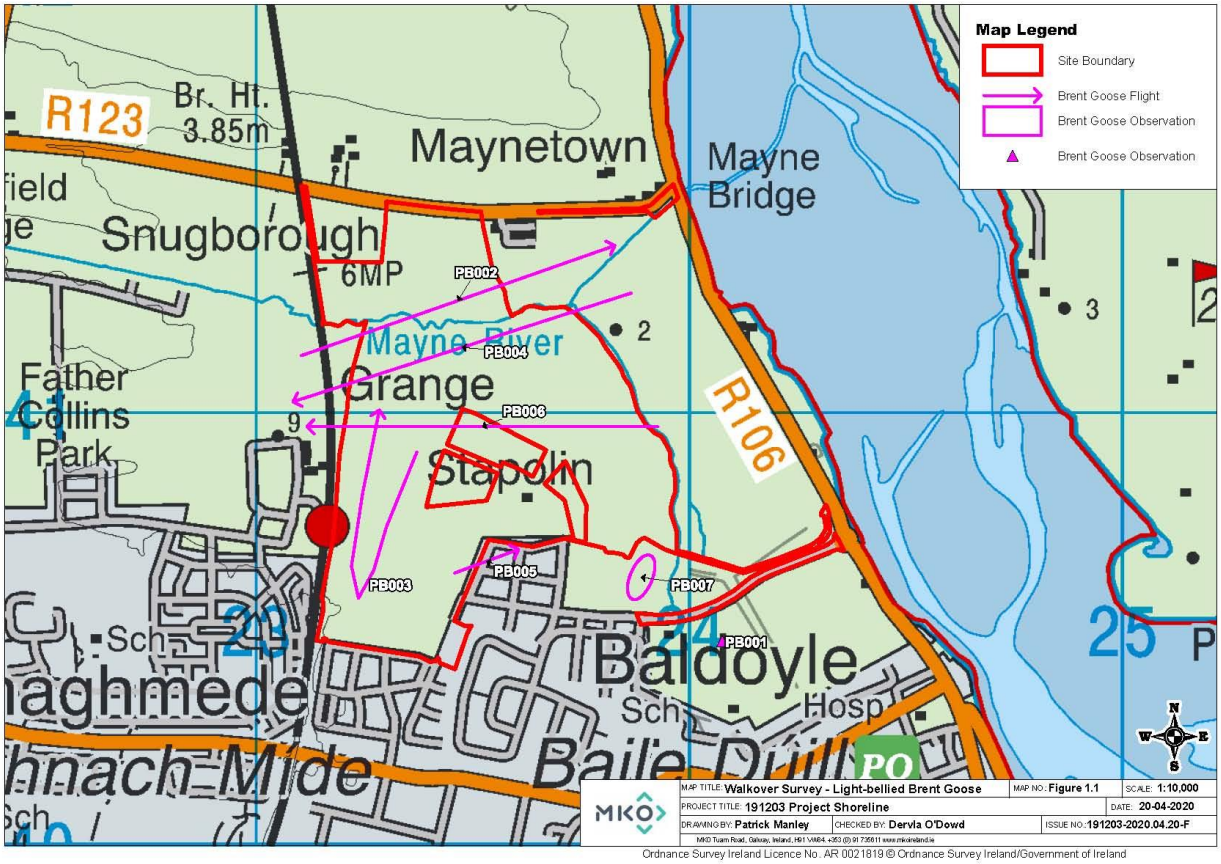

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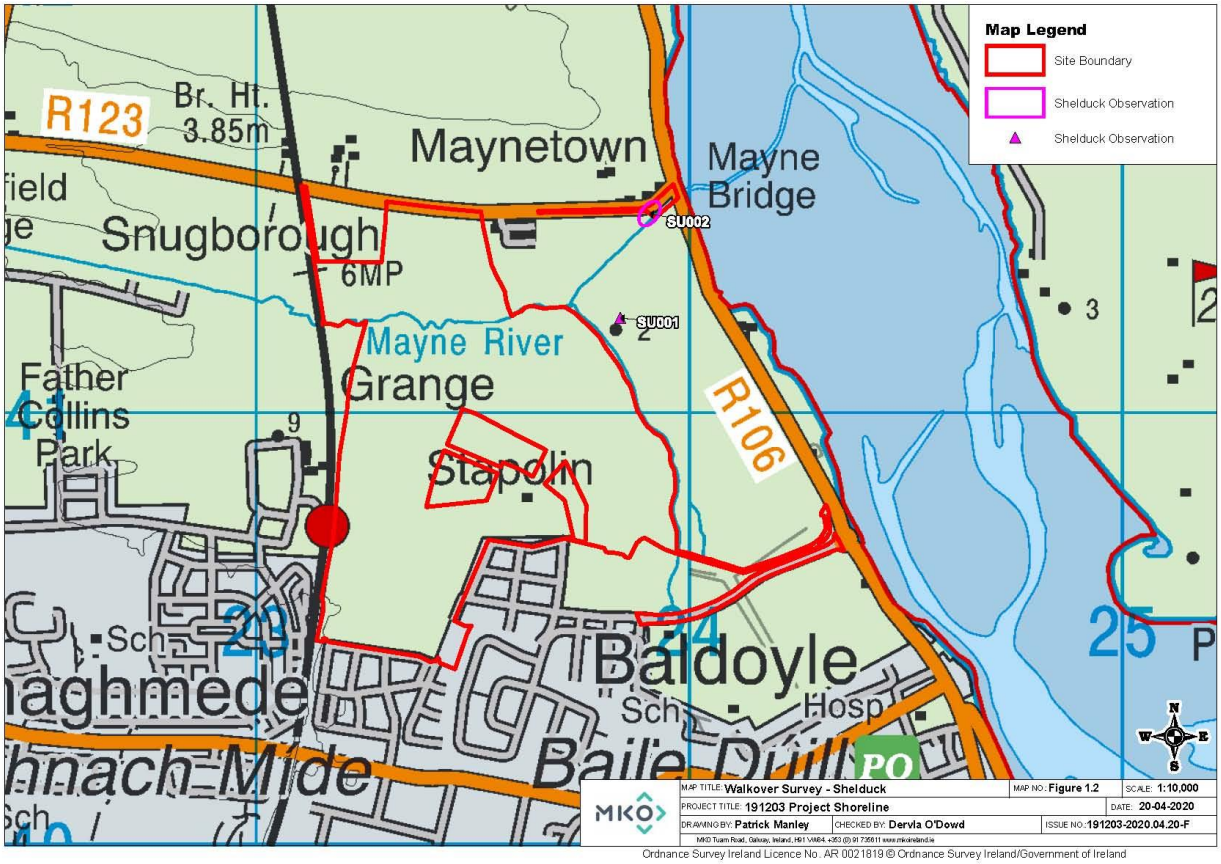

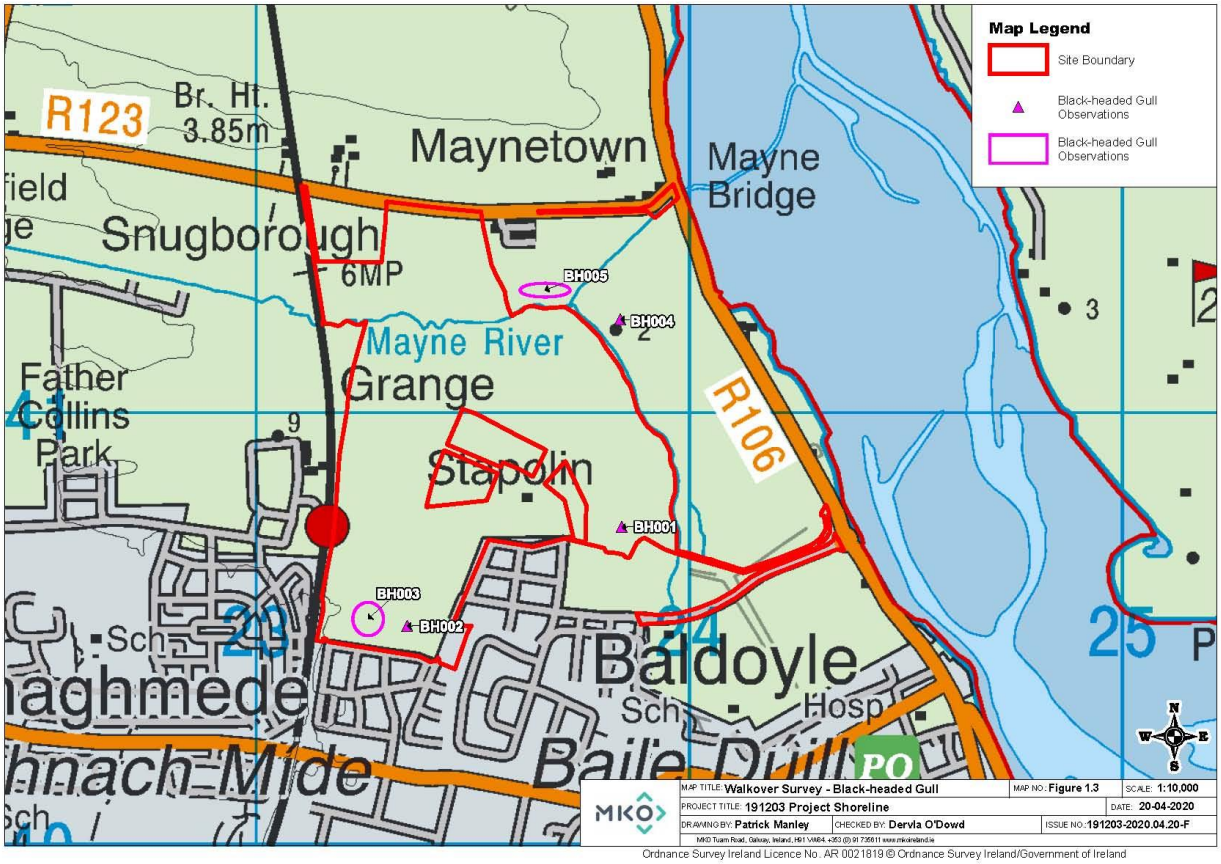

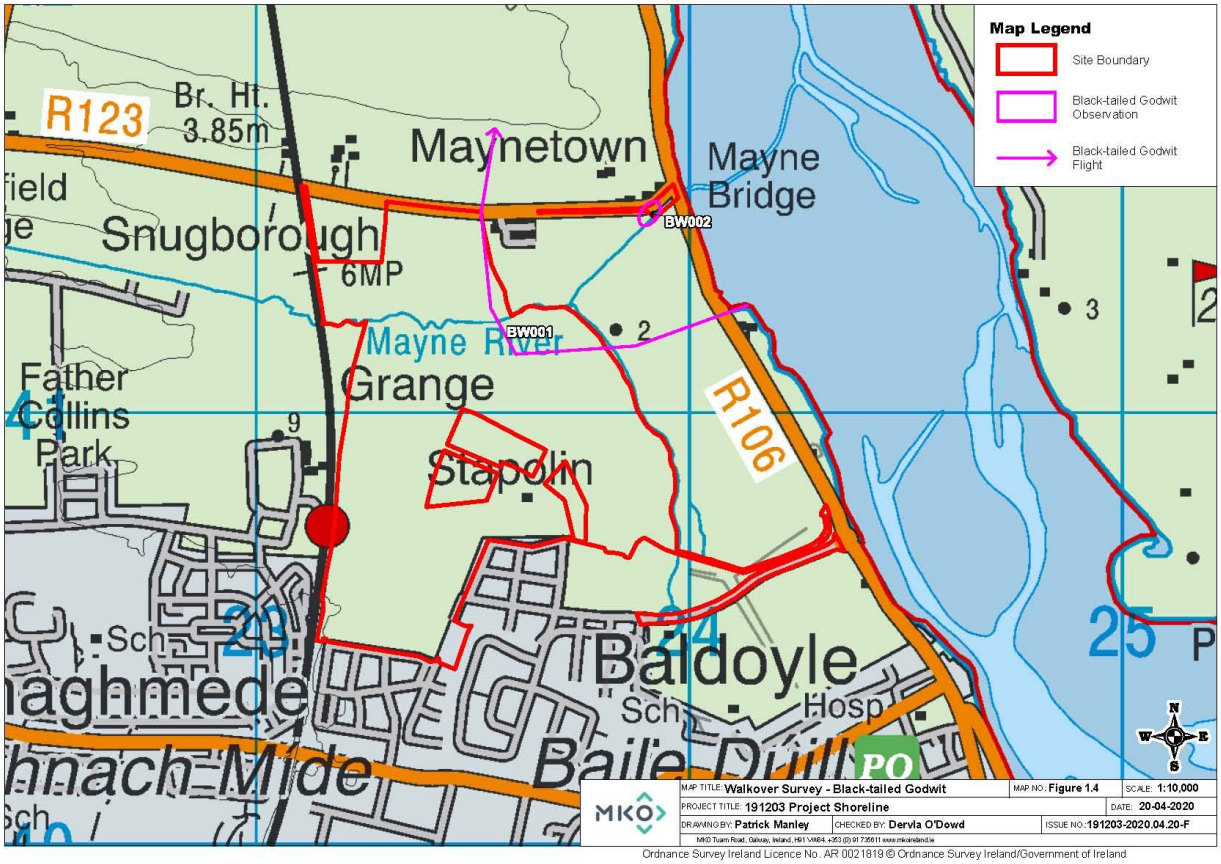

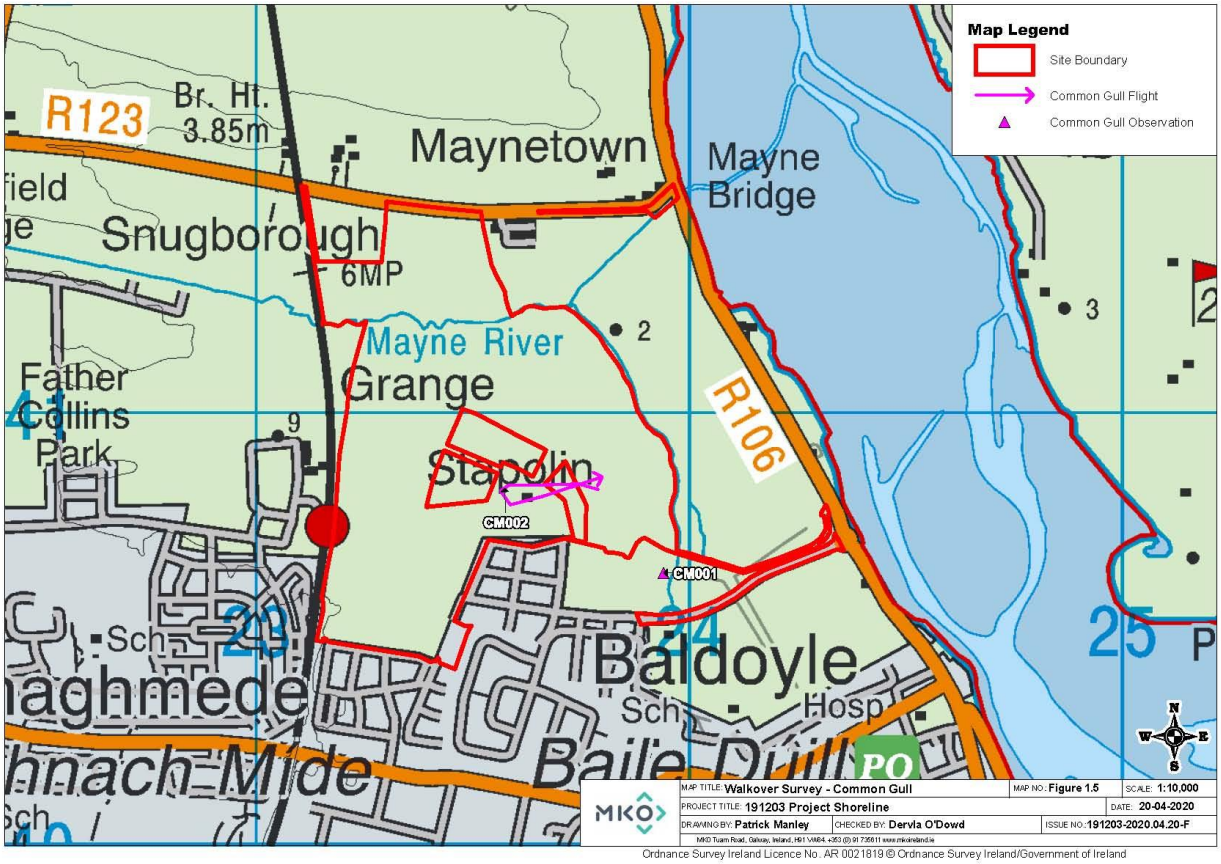

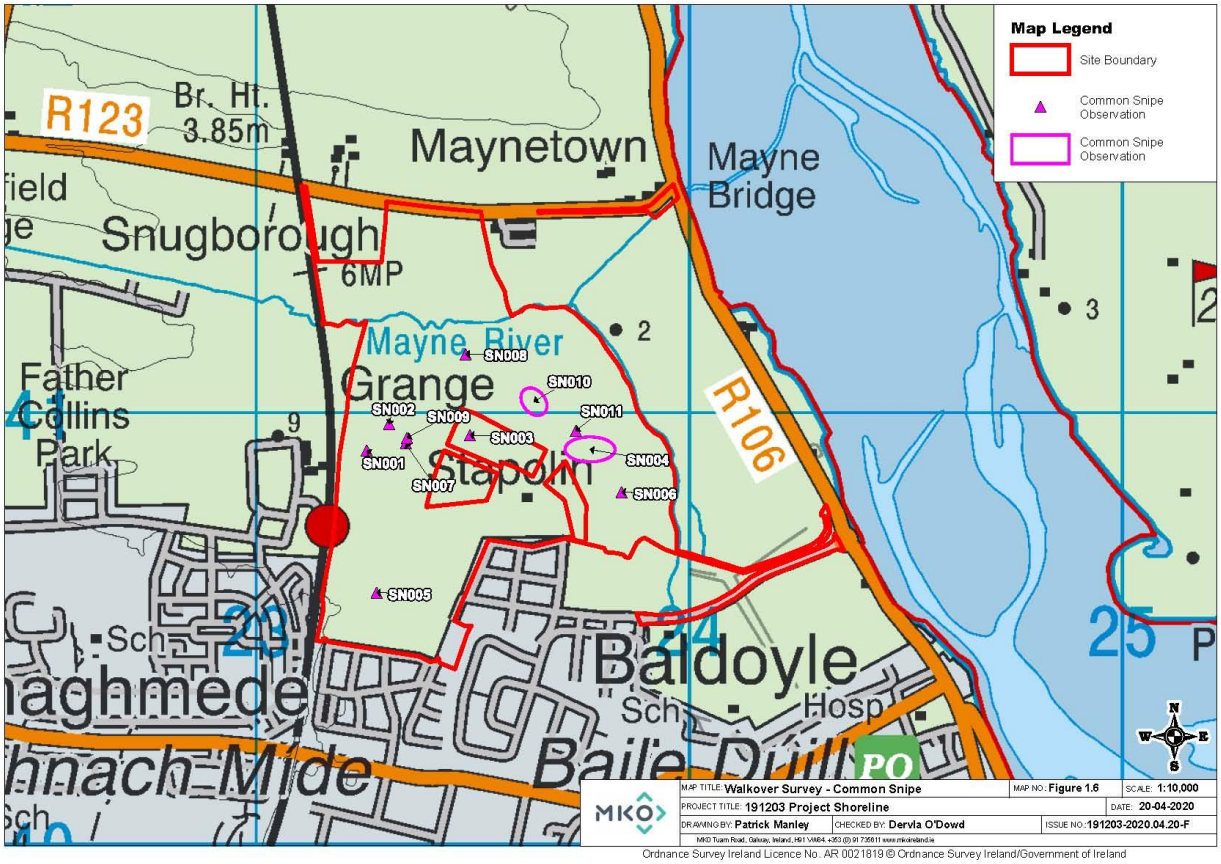

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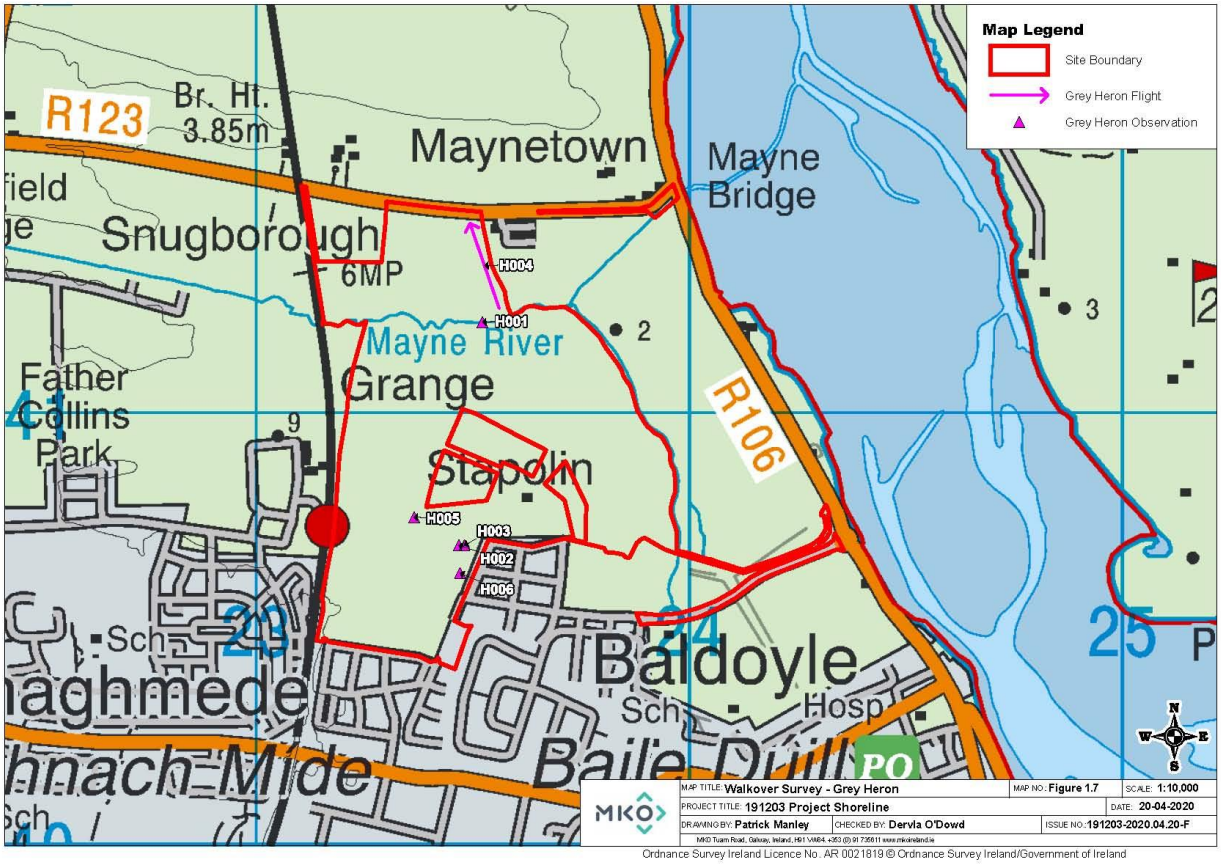

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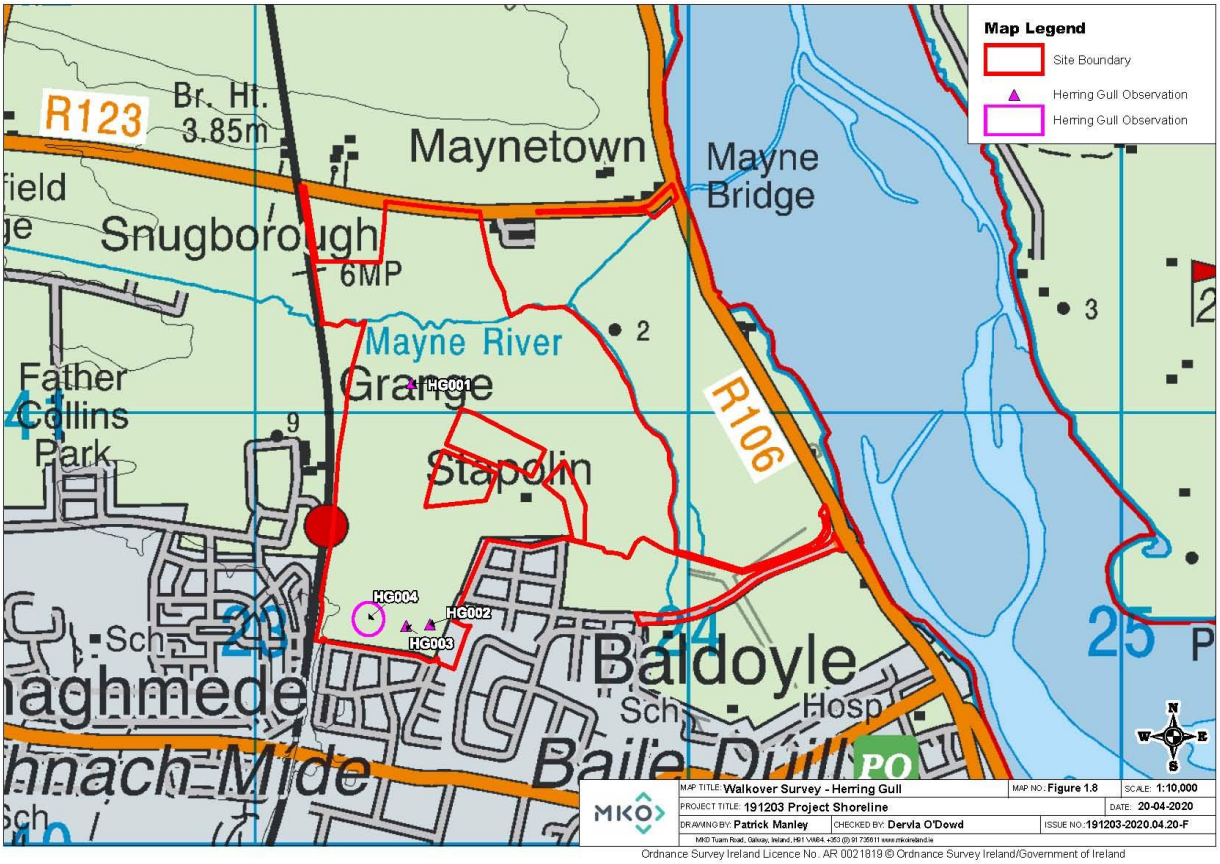

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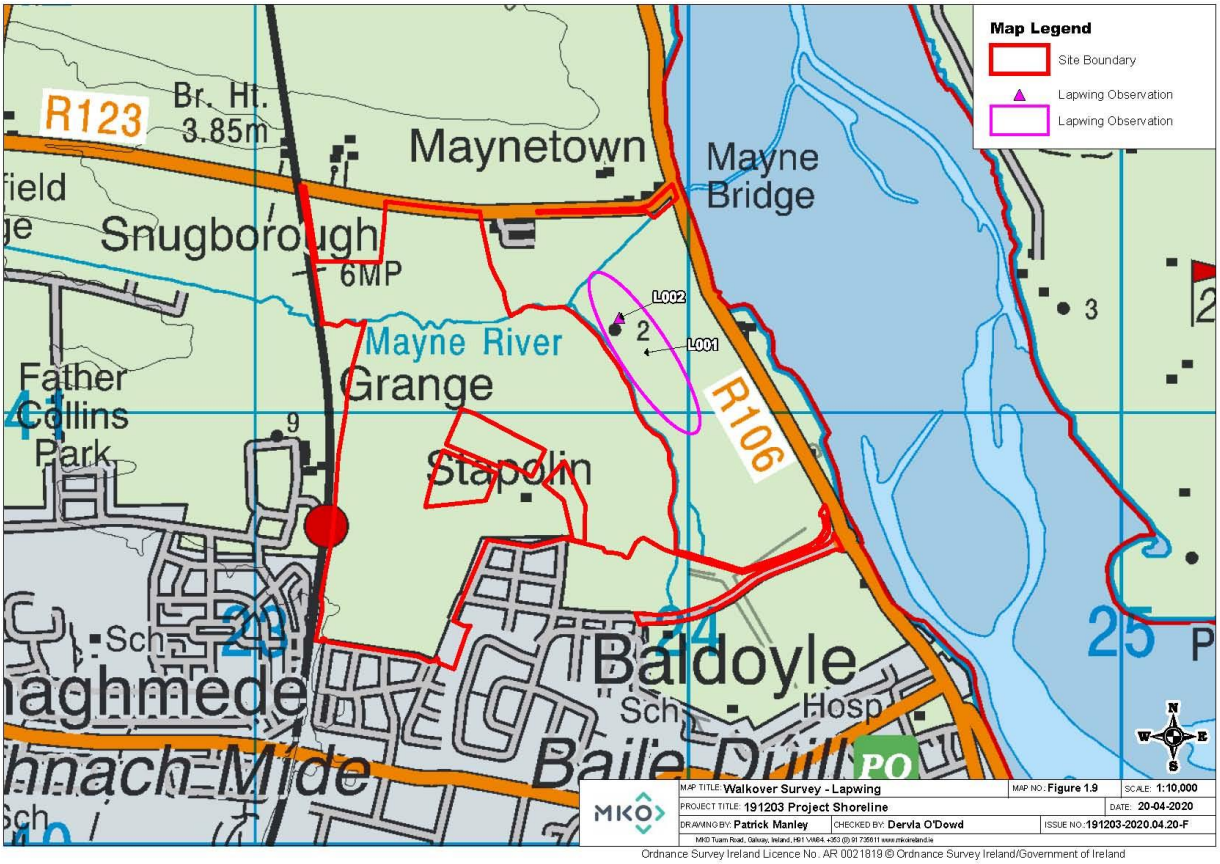

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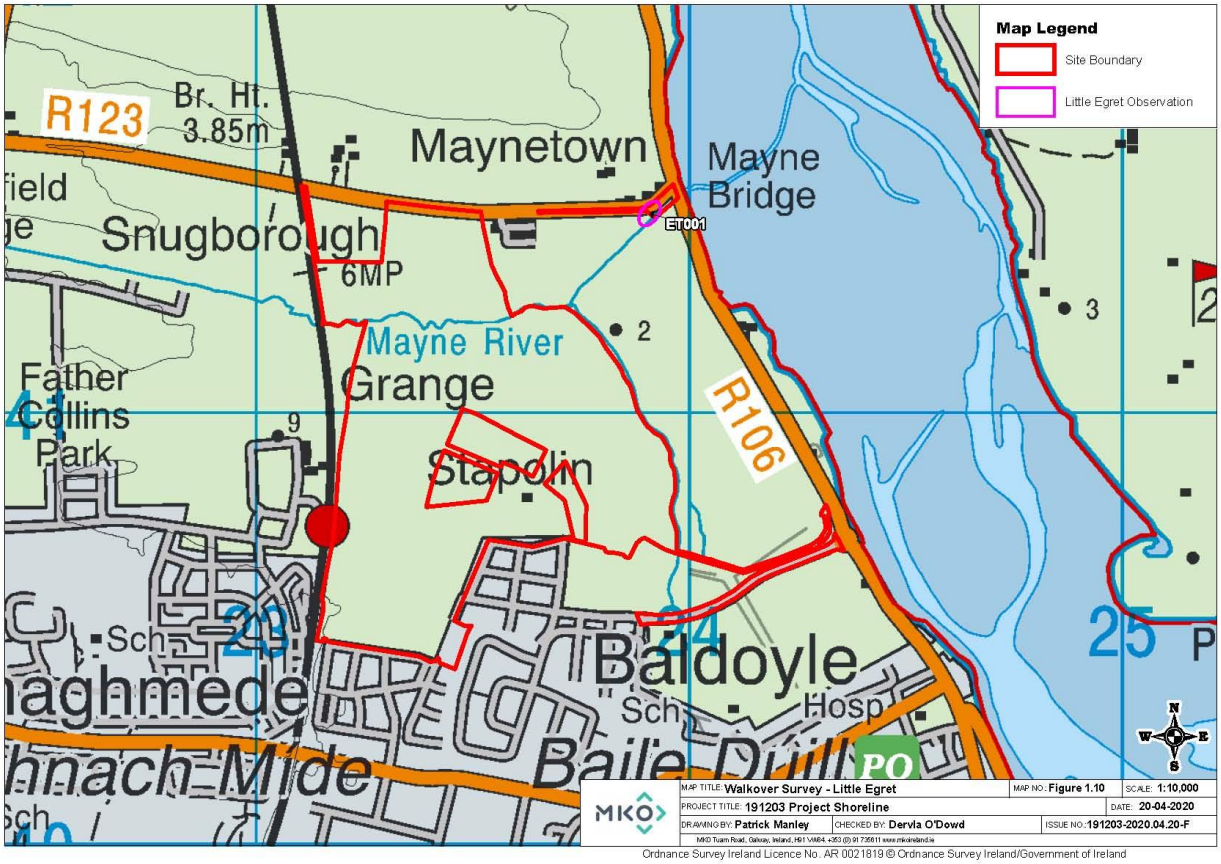

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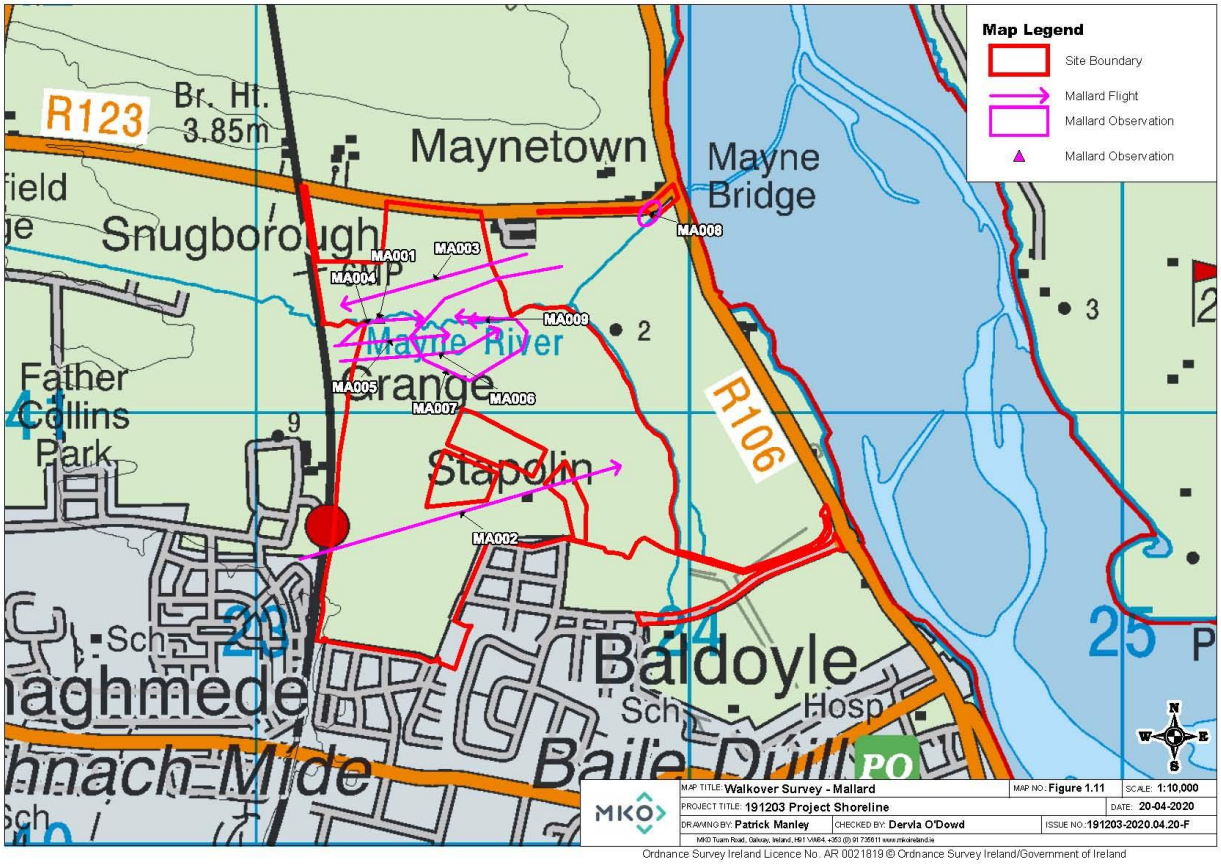

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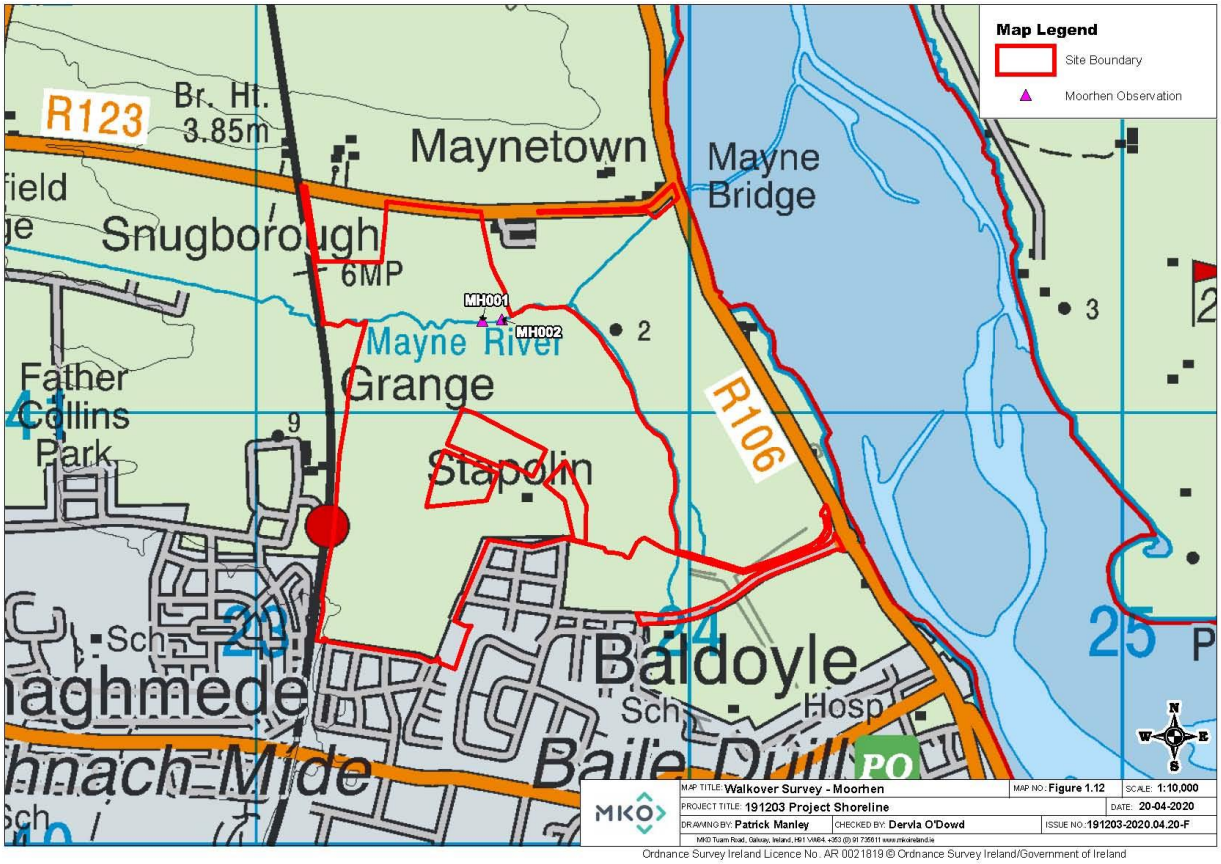

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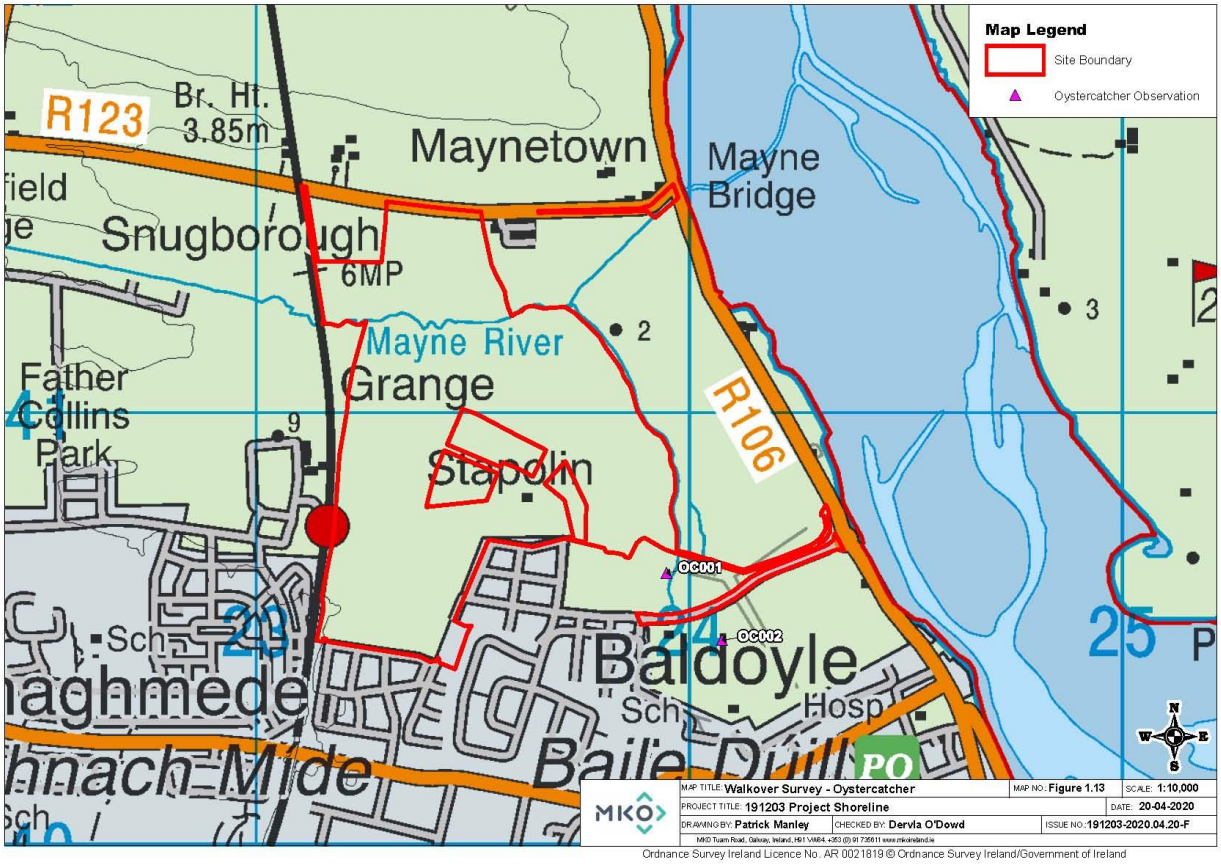

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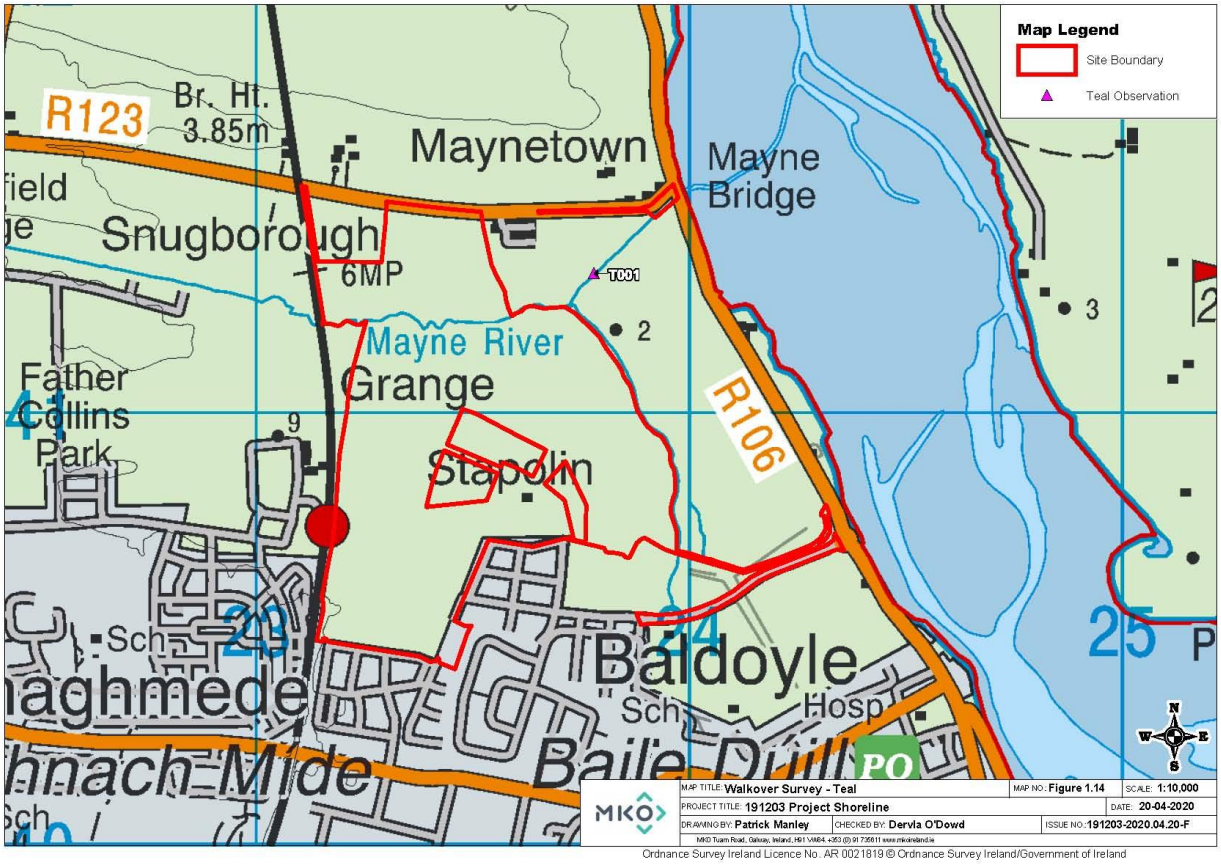

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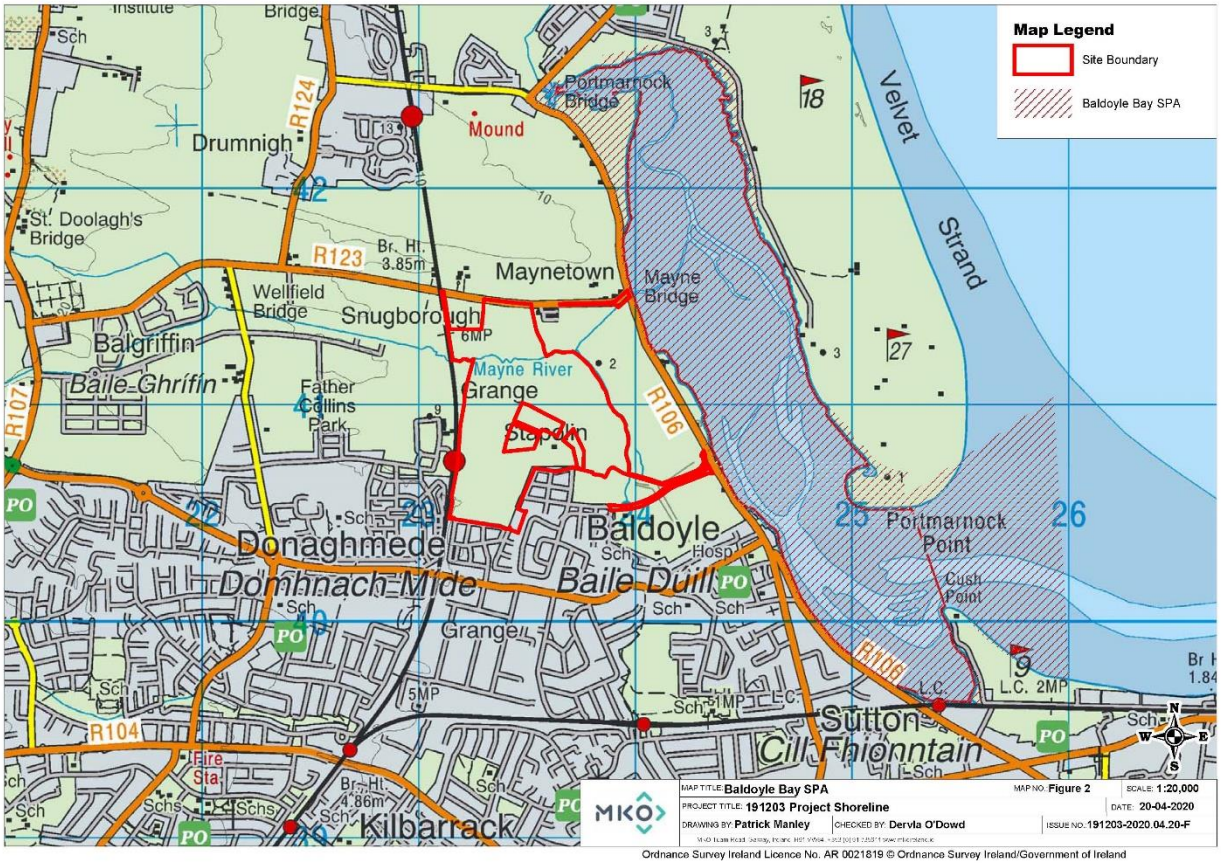

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Table 1 December 2019 Flock Map

Map Ref	Date	Species	Number of birds	Notes on Habitat and Activity	Comments	Surveyor
FL001	18/12/2019	Herring Gull	96	Intertidal; Roosting		PC
FL001	18/12/2019	Great Black-backed Gull	12	Intertidal; Roosting		PC
FL001	18/12/2019	Oystercatcher	26	Intertidal; Feeding		PC
FL001	18/12/2019	Curlew	2	Intertidal; Feeding		PC
FL001	18/12/2019	Mallard	2	Intertidal; Feeding		PC
FL001	18/12/2019	Teal	2	Intertidal; Feeding		PC
FL001	18/12/2019	Redshank	12	Intertidal; Feeding		PC
FL001	18/12/2019	Black-headed Gull	10	Supratidal; Feeding		PC
FL002	18/12/2019	Mallard	51	Intertidal; Feeding		PC
FL002	18/12/2019	Oystercatcher	35	Intertidal; Feeding		PC
FL002	18/12/2019	Herring Gull	6	Intertidal; Feeding		PC
FL002	18/12/2019	Black-headed Gull	5	Intertidal; Feeding		PC
FL002	18/12/2019	Bar-tailed Godwit	4	Intertidal; Feeding		PC
FL002	18/12/2019	Grey Plover	4	Intertidal; Feeding		PC
FL002	18/12/2019	Shelduck	36	Intertidal; Feeding		PC
FL002	18/12/2019	Lapwing	1	Intertidal; Feeding		PC
FL002	18/12/2019	Common Gull	5	Intertidal; Feeding		PC
FL002	18/12/2019	Curlew	10	Intertidal; Feeding		PC
FL002	18/12/2019	Redshank	11	Intertidal; Feeding		PC
FL002	18/12/2019	Brent Goose	18	Intertidal; Feeding		PC
FL003	18/12/2019	Brent Goose	45	Terrestrial; Feeding	Foraging in golf course	PC
FL004	18/12/2019	Red-breasted Merganser	10	Subtidal; Feeding		PC
FL004	18/12/2019	Common Gull	4	Intertidal; Feeding		PC
FL004	18/12/2019	Herring Gull	5	Intertidal; Feeding		PC
FL004	18/12/2019	Oystercatcher	10	Supratidal; Roosting		PC
FL004	18/12/2019	Curlew	2	Supratidal; Roosting		PC

Project Shoreline Bird Surveys, Baldoyle, North Co. Dublin
191203 – F – Winter Bird Survey Report 2019/2020

Map Ref	Date	Species	Number of birds	Notes on Habitat and Activity	Comments	Surveyor
FL004	18/12/2019	Long-tailed Duck	1	Subtidal; Feeding		PC
FL005	18/12/2019	Redshank	18	Intertidal; Feeding		PC
FL005	18/12/2019	Turnstone	2	Intertidal; Feeding		PC
FL005	18/12/2019	Herring Gull	4	Intertidal; Feeding		PC
FL005	18/12/2019	Grey Heron	1	Intertidal; Feeding		PC
FL005	18/12/2019	Curlew	1	Intertidal; Feeding		PC
FL005	18/12/2019	Teal	7	Intertidal; Feeding		PC
FL006	18/12/2019	Curlew	1	Intertidal; Feeding		PC
FL006	18/12/2019	Oystercatcher	1	Intertidal; Feeding		PC
FL006	18/12/2019	Dunlin	4	Intertidal; Feeding		PC
FL006	18/12/2019	Redshank	3	Intertidal; Feeding		PC
FL006	18/12/2019	Bar-tailed Godwit	8	Intertidal; Feeding		PC
FL007	18/12/2019	Black-headed Gull	4	Intertidal; Feeding		PC
FL007	18/12/2019	Herring Gull	9	Intertidal; Feeding		PC
FL007	18/12/2019	Turnstone	16	Intertidal; Feeding		PC
FL007	18/12/2019	Curlew	3	Intertidal; Feeding		PC
FL007	18/12/2019	Bar-tailed Godwit	8	Intertidal; Feeding		PC
FL007	18/12/2019	Redshank	6	Intertidal; Feeding		PC
FL007	18/12/2019	Oystercatcher	21	Intertidal; Feeding		PC
FL008	18/12/2019	Bar-tailed Godwit	27	Intertidal; Feeding		PC
FL008	18/12/2019	Curlew	16	Intertidal; Feeding		PC
FL008	18/12/2019	Oystercatcher	62	Intertidal; Feeding		PC
FL008	18/12/2019	Redshank	30	Intertidal; Feeding		PC
FL008	18/12/2019	Shelduck	17	Intertidal; Feeding		PC
FL008	18/12/2019	Turnstone	4	Intertidal; Feeding		PC
FL008	18/12/2019	Greenshank	1	Intertidal; Feeding		PC

Map Ref	Date	Species	Number of birds	Notes on Habitat and Activity	Comments	Surveyor
FL008	18/12/2019	Herring Gull	16	Intertidal; Feeding		PC
FL008	18/12/2019	Black-headed Gull	13	Intertidal; Feeding		PC
FL008	18/12/2019	Great Black-backed Gull	4	Intertidal; Feeding		PC
FL008	18/12/2019	Dunlin	16	Intertidal; Feeding		PC
FL008	18/12/2019	Brent Goose	6	Intertidal; Feeding		PC
FL008	18/12/2019	Golden Plover	50	Intertidal; Roosting		PC
FL009	18/12/2019	Teal	6	Intertidal; Roosting		PC
FL009	18/12/2019	Wigeon	79	Intertidal; Roosting		PC
FL009	18/12/2019	Whooper Swan	1	Intertidal; Roosting		PC
FL010	23/12/2019	Lapwing	7	Above Water; Roosting		ED
FL010	23/12/2019	Redshank	1	Above Water; Roosting		ED
FL011	23/12/2019	Shelduck	12	On Water; feeding		ED
FL012	23/12/2019	Wigeon	1	On Water; feeding		ED
FL012	23/12/2019	Shelduck	14	On Water; Feeding		ED
FL012	23/12/2019	Teal	11	On Water; Feeding		ED
FL012	23/12/2019	Wigeon	16	On Water; Feeding		ED
FL012	23/12/2019	Great Black-backed Gull	2	Above Water; Roosting		ED
FL012	23/12/2019	Black-headed Gull	6	Above Water; Roosting		ED
FL012	23/12/2019	Common Gull	1	Above Water; Roosting		ED
FL012	23/12/2019	Redshank	2	Above Water; Roosting		ED
FL012	23/12/2019	Little Egret	1	Above Water; Feeding		ED
FL012	23/12/2019	Red-breasted Merganser	1	Above Water; Roosting		ED
FL012	23/12/2019	Grey Heron	1	Above Water; Feeding		ED

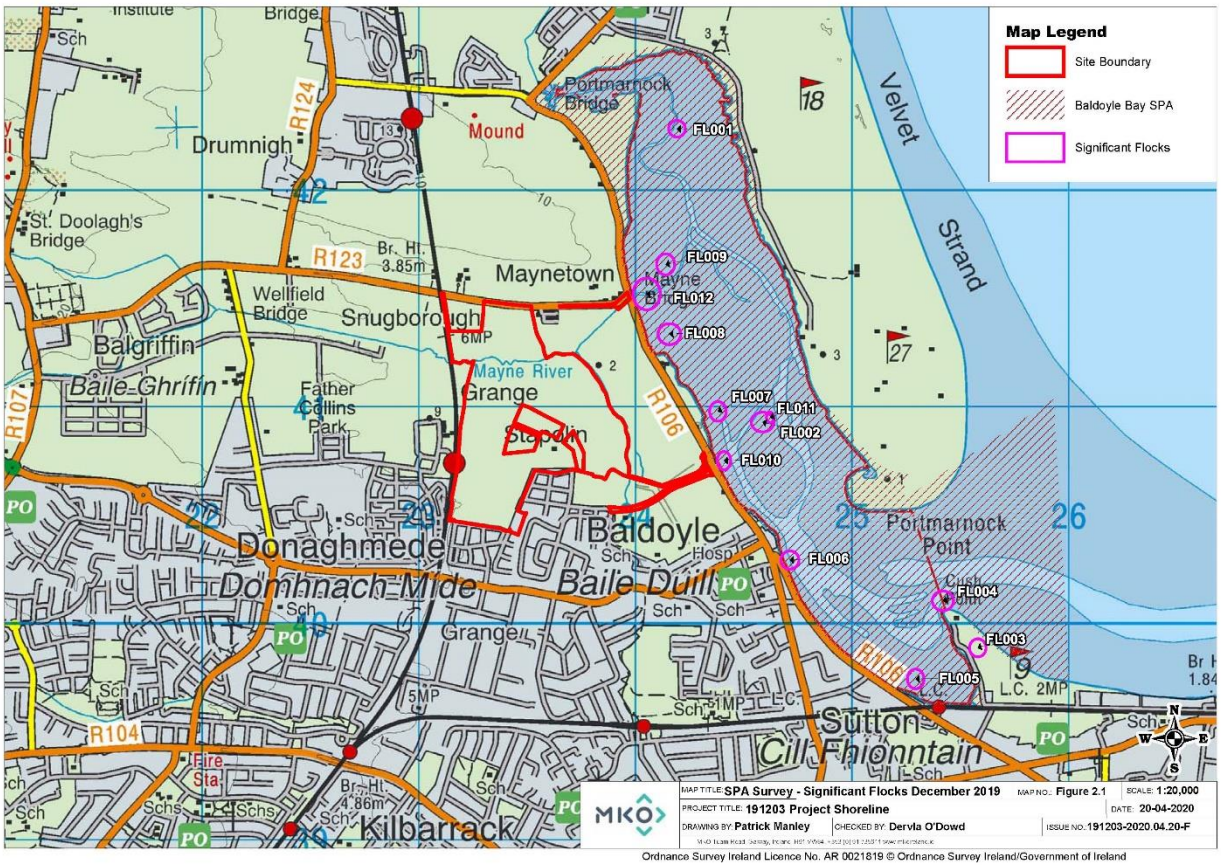


Table 2 January 2020 Flock Map

Map Ref	Date	Species	Number of birds	Notes on Habitat and Activity	Comments	Surveyor
FL013	15/01/2020	Curlew	36	Intertidal; Roosting		SD
FL013	15/01/2020	Oystercatcher	77	Intertidal; Feeding		SD
FL014	15/01/2020	Lapwing	38	Supratidal; Roosting		SD
FL015	15/01/2020	Black-headed Gull	5	Intertidal; Feeding	30+ foraging in park adjacent to SPA	SD
FL015	15/01/2020	Brent Goose	4	Subtidal; Feeding	60+ foraging in park adjacent to SPA	SD
FL016	15/01/2020	Black-headed Gull	29	Subtidal; Roosting		SD
FL017	28/01/2020	Oystercatcher	138	Intertidal; Roosting		SD
FL018	28/01/2020	Oystercatcher	32	Intertidal; Feeding		SD
FL018	28/01/2020	Oystercatcher	45	Intertidal; Roosting		SD
FL019	28/01/2020	Brent Goose	50	Subtidal; Feeding		SD
FL019	28/01/2020	Brent Goose	303	Intertidal; Feeding		SD
FL020	28/01/2020	Knot	160	Intertidal; Feeding		SD

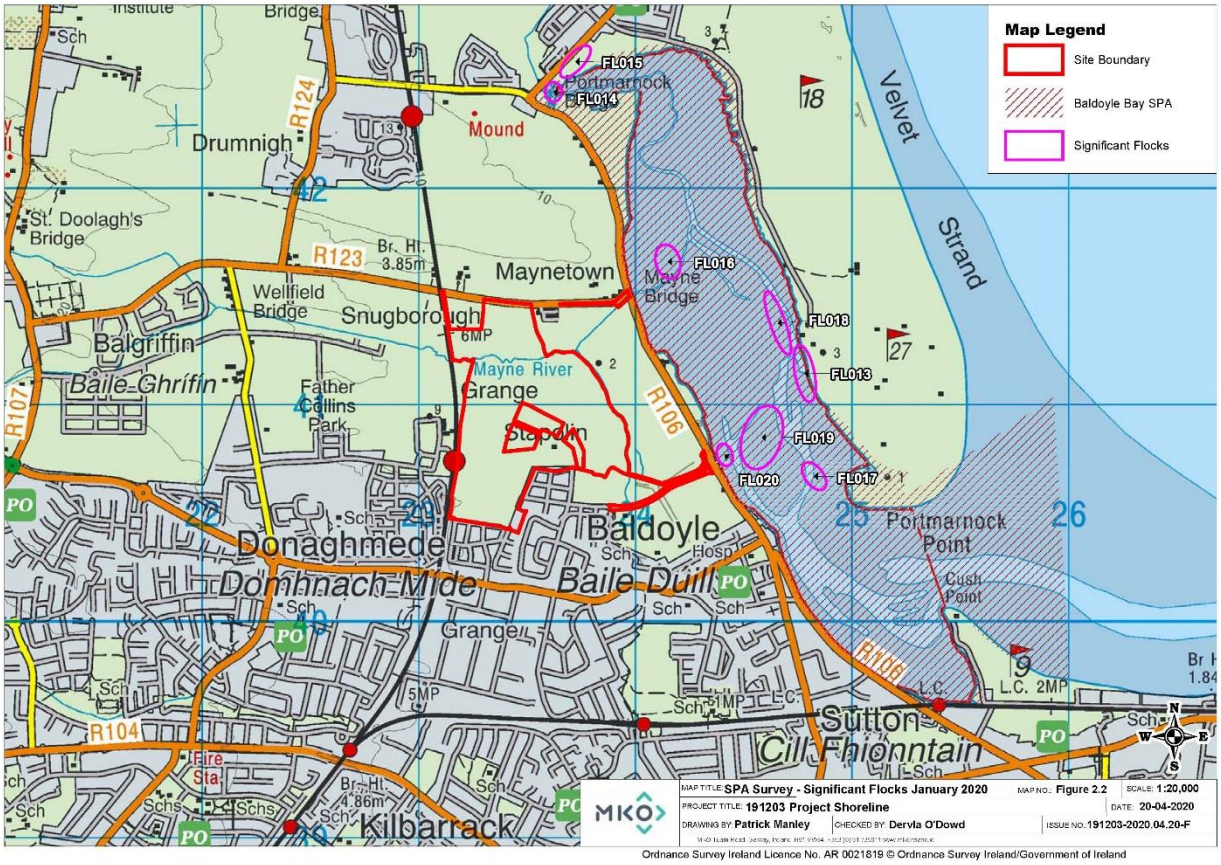


Table 3 February 2020 Hock Map

Map Ref	Date	Species	Number of birds	Notes on Habitat and Activity	Comments	Surveyor
FL021	10/02/2020	Brent Goose	119	Intertidal; Feeding		SD
FL022	10/02/2020	Redshank	111	Supratidal; Roosting		SD
FL023	24/02/2020	Brent Goose	40	Terrestrial; Feeding		SD
FL024	24/02/2020	Redshank	48	Supratidal; Roosting		SD

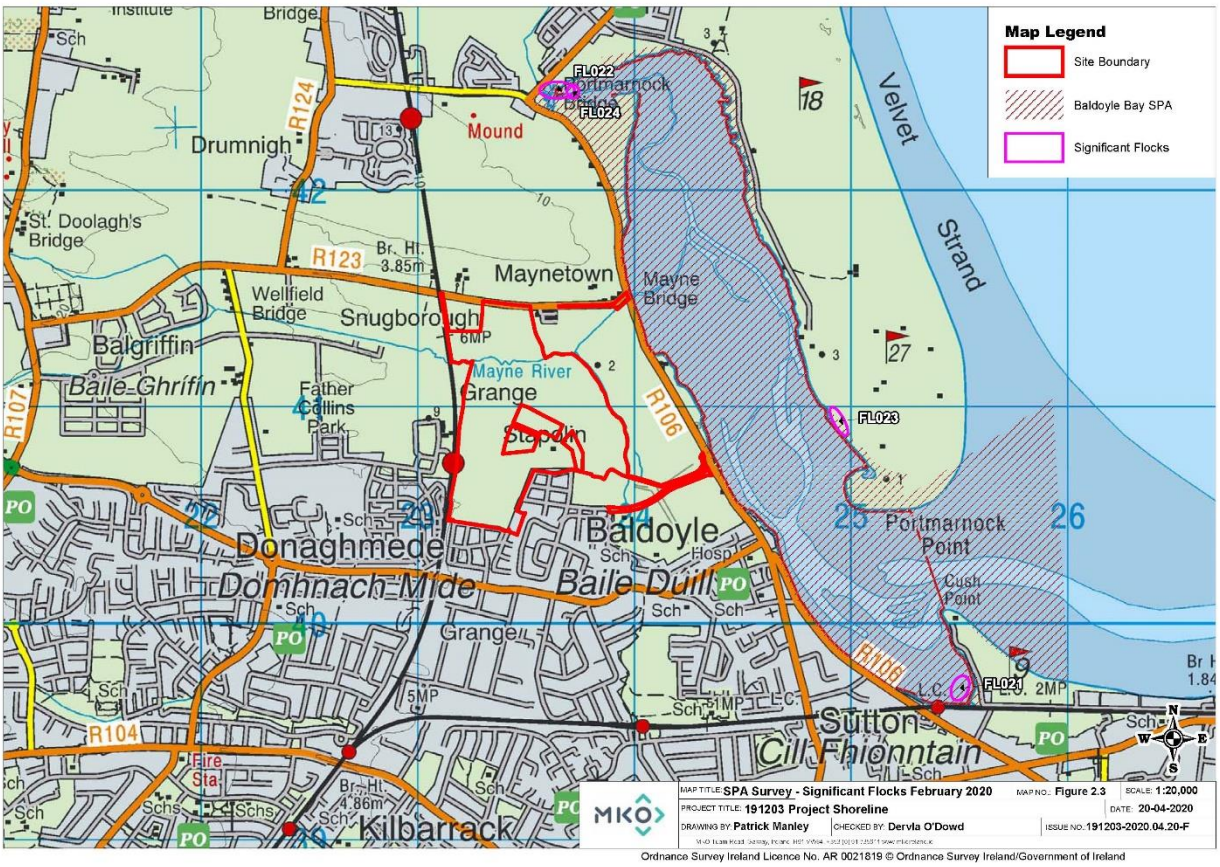
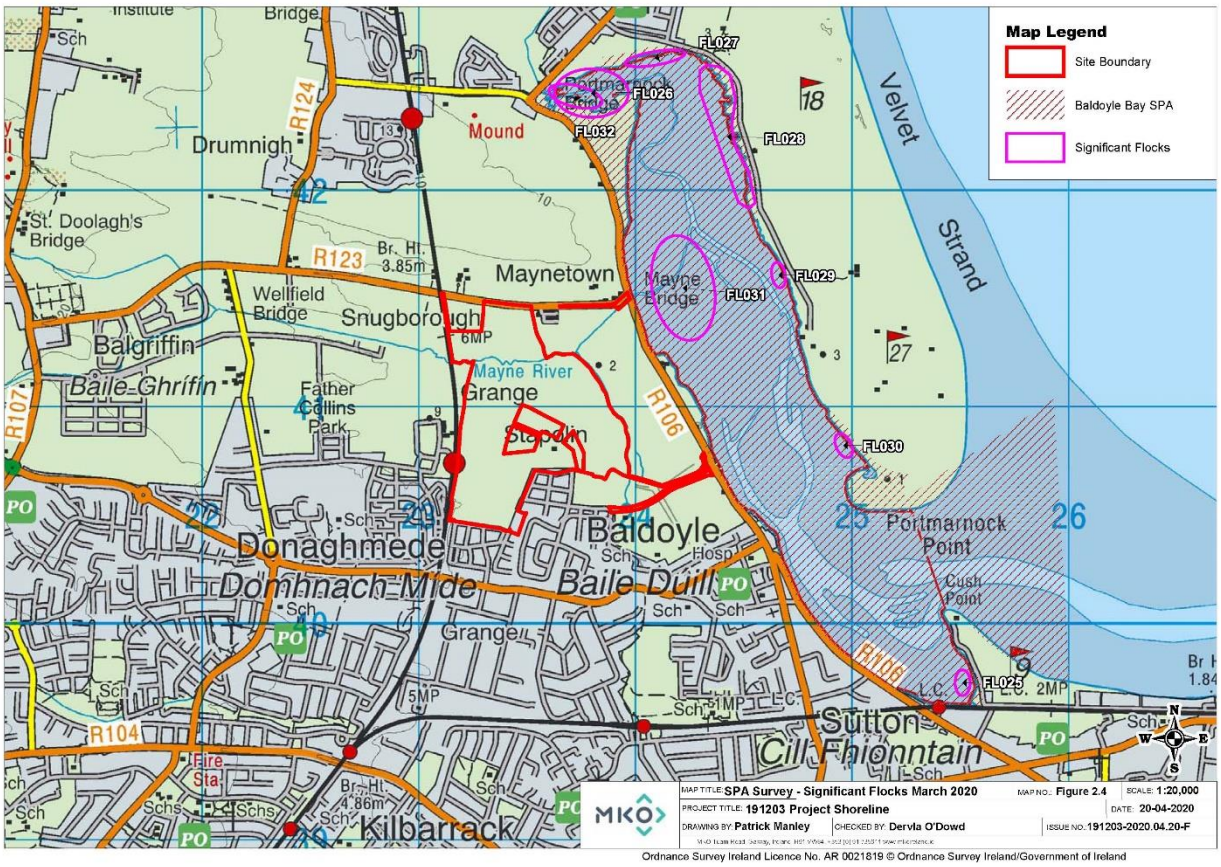
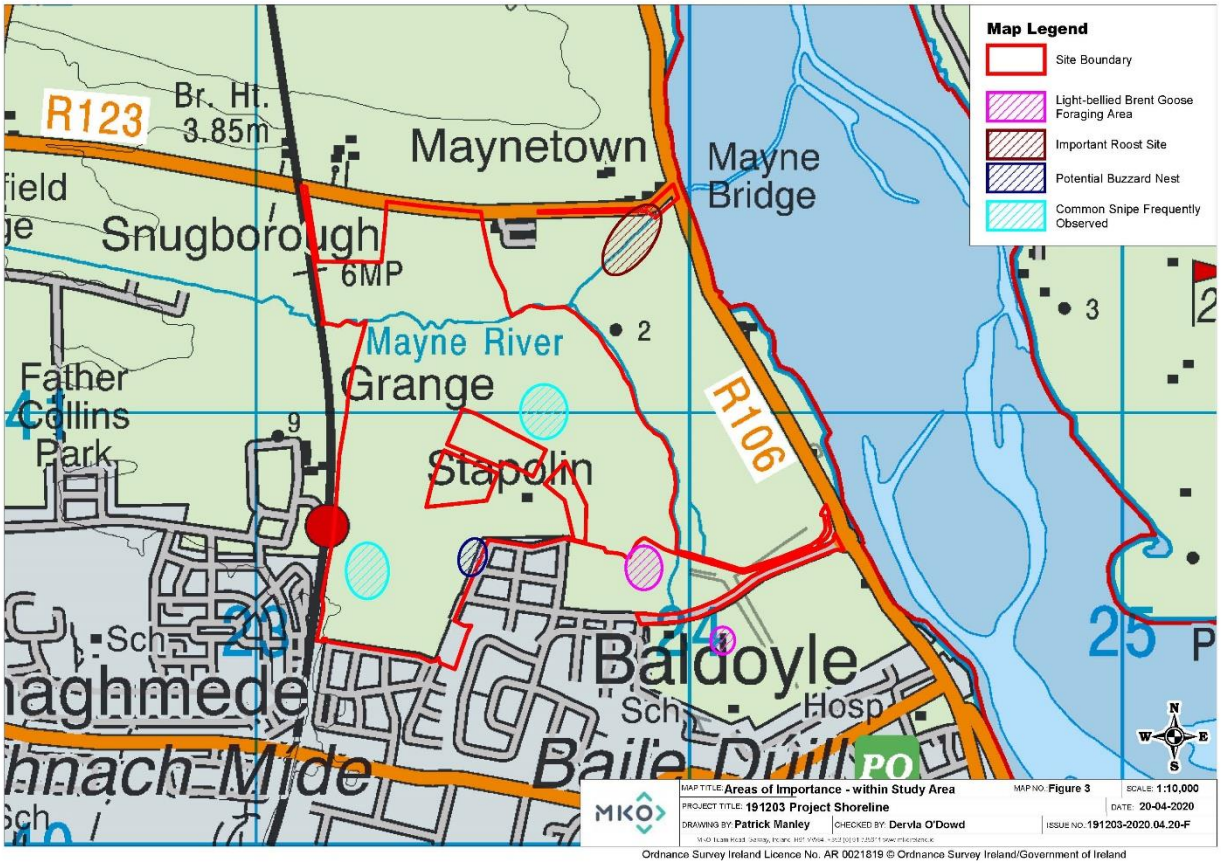


Table 4 March 2020 Flock Map

Map Ref	Date	Species	Number of birds	Notes on Habitat and Activity	Comments	Surveyor
FL025	11/03/2020	Brent Goose	62	Intertidal; Feeding		SD
FL026	11/03/2020	Brent Goose	110	Intertidal; Feeding		SD
FL026	11/03/2020	Redshank	73	Supratidal; Roosting		SD
FL027	11/03/2020	Brent Goose	114	Subtidal; Roosting		SD
FL028	11/03/2020	Brent Goose	470	Intertidal; Feeding		SD
FL029	11/03/2020	Brent Goose	101	Intertidal; Feeding		SD
FL030	24/03/2020	Oystercatcher	250	Supratidal; Roosting		SD
FL032	24/03/2020	Black-tailed Godwit	82	Supratidal; Roosting		SD
FL031	24/03/2020	Brent Goose	382	Subtidal; Feeding	large, loosely dispersed flock	SD




Map Legend
Site Boundary
Light-bellied Brent Goose Foraging Area
Important Roost Site
Potential Buzzard Nest
Common Snipe Frequently Observed
R123
Br. Ht. 3.85m
Maynetown
Mayne Bridge
Snugborough
6MP
Mayne River
Grange
Father Collins Park
Stapolin
R106
Baldoyle
Sch
Hosp
PO
MAP TITLE: Areas of Importance - within Study Area
MAP NO.: Figure 3
SCALE: 1:10,000
PROJECT TITLE: 191203 Project Shoreline
DATE: 20-04-2020
DRAWING BY: Patrick Manley
CHECKED BY: Dervla O'Dowd
ISSUE NO.: 191203-2020.04.20-F
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A8.2 Invasive Plant Survey (Japanese Knotweed)

KNOTWEED CONTROL IRELAND REMOVING THE ROOT OF THE PROBLEM

Appendix A8.2

Invasive Plant Survey Report – Project Shoreline

Ronnie Murphy BSc Forestry H-Dip Hort
Knotweed Control Ireland 09/Aug/2019

Table of Contents

1. Introduction

An Invasive Plant Survey (Japanese Knotweed) was carried out on the 9th August 2019 by Knotweed Surveyor Ronnie Murphy of Knotweed Control Ireland. This included a walkover survey of the entire site (Areas A & B), and around part of the outside perimeter. Japanese Knotweed invasive plant species were recorded in two locations within and adjacent to the property boundary.

The aims of the survey and follow-up report are to:

- Survey all areas within the site and within 7m around the outside perimeter.
- If recorded, measure all stands of Japanese knotweed within the site;
- Identify any areas of Japanese knotweed adjacent to the site;
- Provide recommendations of treatment strategies for the eradication of Japanese knotweed within the site; and
- Provide recommendations for monitoring Japanese knotweed following treatment.

2. SITE ASSESSMENT

The site comprises approx. 50 ha and is made up of several different habitat types. Most of the site is made up of bare ground and improved grassland, there are large areas of hedgerows on field boundaries and a small mixed woodland on the East boundary, some areas of the site are reverting to scrub as the site is mainly left unmanaged. The Mayne River runs through the northern part of the site. Japanese Knotweed was found in areas to the North and East of the site. The Knotweed to the North of the site is currently under-going a treatment program carried out by Dublin City Council. Knotweed on the edge of woodland to the East of the site has been treated over the last 4 years and there is no sign of any live growth. This area however will need to be excavated and included in an eradication program as it is highly likely that Knotweed will re-emerge when this area is disturbed due to on-site construction works.

Note: Soil contaminated with live or dead Japanese Knotweed rhizomes is deemed as controlled waste and must not be moved off-site unless under license from National Parks and Wildlife Service. (S.I. 477, 2011).

Site Address: Stapolin Fields, Stapolin, Baldoyle, Dublin 13.

Managing land infested with Japanese knotweed in an appropriate and efficient manner can avoid:

- potential prosecution and/or compensation claims;
- planning permission refusals;
- reductions in land value;
- physical damage to buildings and hard surfaces;
- harm to the environment; and
- Excessive cost.

2. Methodology

The Knotweed survey was undertaken by experienced Knotweed surveyor Ronnie Murphy from Knotweed Control Ireland on the 9th of August 2019 during which, 2 areas of Japanese knotweed were recorded on site.

4. Survey Results/Recommendations

Japanese Knotweed a highly invasive plant species was recorded in two locations on site. See Map 1 & 2 for more details.

Where possible it is KCI practice to also survey around the outside perimeter and adjacent properties when carrying out invasive plant surveys. Were access permitted we surveyed most of the outside perimeter around the site, however due to limited access we did not survey the entire outside perimeter. Knotweed was recorded growing outside the perimeter to the North of the site.

Efforts should be made with the suppliers of any soil, sand or hard-core material coming onto site, to ensure these supplies are free from invasive plant material.

If soil has recently arrived on site and is believed to be infested with invasive plant material like Knotweed this should be left undisturbed on till checked by a specialist.

The Knotweed to the north of the site (**Area A**) can be left in situ and continued to be treated with herbicide only if this area does not fall onto the construction footprint of the site.

The Knotweed to the East of the site (**Area B**) can be disposed off-site using the Dig and Dump method. This would be the most practical and bio-secure method most suited for this area of the site.

Monitoring: In all situations it will be necessary to observe a minimum of two years without regrowth before it is possible to consider that the eradication/control program has been affective or that the site is clear of Japanese Knotweed. (PCA - The Management of Japanese knotweed, 2014)

Biosecurity safeguards and controls should be put in place by an invasive plant specialist before any work commences onsite. For example, install fencing around the Knotweed areas and alert all contractors working in the area to avoid any ground disturbance within 7m to the Knotweed plants.

Note: No work of any kind should commence on site without first having an invasive plant specialist prepare a site-specific invasive plant management plan. Works on site should follow guidance within the invasive plan management plan.

Note: Knotweed Control Ireland can typically hand over a Knotweed clean site in 4-5 weeks from being appointed. This includes soil sampling results and National Parks & Wildlife License waiting period.

5. Legislative Framework

At an international level Ireland has signed up to a number of treaties and conventions, including the **Convention on Biological Diversity**. Such treaties and conventions require the Irish Government to address issues of invasive alien species. This has been implemented through the **Wildlife Act 1976 and 2000** and further regulated through the **European Communities (Birds and Natural Habitats) Regulations 2011 (SI 477 of 2011).**

Regulations 49 and 50 of these regulations include legislative measures to deal with the dispersal and introduction of invasive alien species:

Regulation 49

'a person shall be guilty of an offence if they: plant; disperse; allow or cause to disperse; spread or cause to grow the plant in the Republic of Ireland'. The list of species in the Third Schedule includes Japanese Knotweed, Giant Knotweed and their hybrid Bohemian Knotweed'.

Regulation 50

'an offence to or intend to; import; buy; sell; breed; reproduce or propagate; offer or expose for sale; advertise; publish a price list; transport; and distribute any plant species or vector material listed in the Third Schedule'. Non-native species subject to restrictions under Regulations 49 and 50 are included in the third schedule of the European Communities (Birds and Natural Habitats)

Regulations 2011 (S.I. 477 of 2011). The Third Schedule, Invasive species in this list include: Japanese Knotweed, Giant Hogweed, Giant Knotweed, Giant Rhubarb, Himalayan Balsam, Himalayan Knotweed, Bohemian Knotweed and Rhododendron.

The vector which applies to Knotweed species is: "Soil or spoil taken from places infested with Japanese knotweed material (i.e. facilitates spread), referred to in the regulations (Third Schedule Part 3), Giant knotweed or their hybrid Bohemian knotweed".

6. REFERENCES

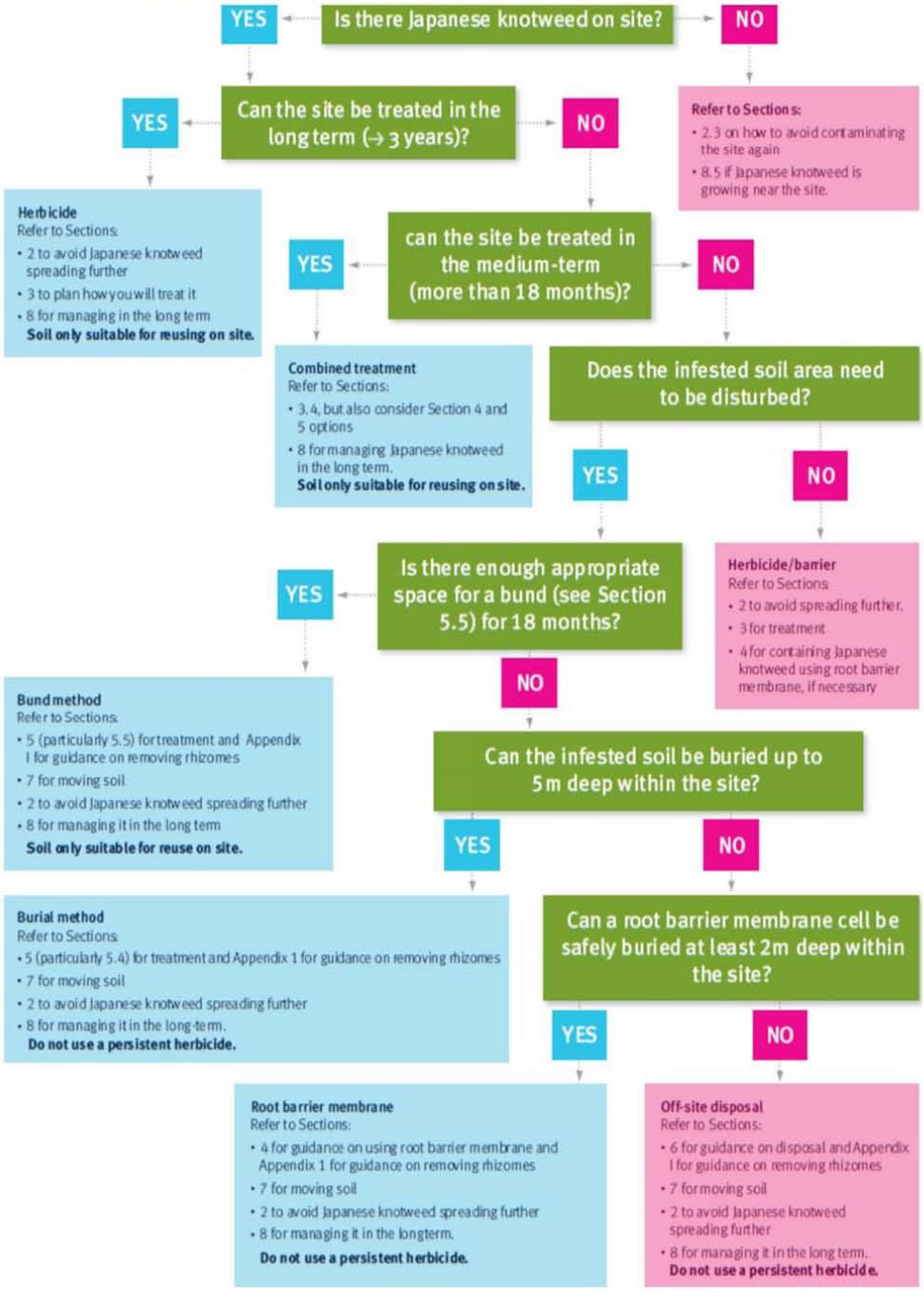
The Environment Agency, Managing Knotweed on Development Sites, Knotweed Code of Practice, 2013

National Action Plan for the sustainable use of pesticides (Ireland)

Property Care Association, Code of Practice for the Management of Japanese Knotweed, 2015

SEPA Technical Guidance Note On-site management of Japanese Knotweed and associated contaminated soils, V1.5 - 2008

7. KNOTWEED FLOWCHART



Managing Knotweed on Development Sites – Knotweed Code of Practice, Environment Agency - 2013

Map 1


Project Shoreline Site Map
Map shows both areas infested with J. Knotweed on site.
Knotweed Area A
Knotweed Area B
Red Arches Ave
Legend
A Knotweed Area A
B Knotweed Area B
N
Google Earth
300 m

Map 2

Figure 1 Map prepared for 2018 survey (AREA B)

A9.1 NRA - Institute of Geologists of Ireland (IGI) Geological Impact Rating

Appendix A9.1

NRA - Institute of Geologists of Ireland (IGI) Geological Impact Rating

Table 1 Criteria for rating site importance of Geological Features (NRA)

Importance	Criteria	Typical Example
Very High	Attribute has a high quality, significance or value on a regional or national scale Degree or extent of soil contamination is significant on a national or regional scale Volume of peat and/or soft organic soil underlying route is significant on a national or regional scale.	Geological feature rare on a regional or national scale (NHA) Large existing quarry or pit Proven economically extractable mineral resource
High	Attribute has a high quality, significance or value on a local scale. Degree or extent of soil contamination is significant on a local scale. Volume of peat and/or soft organic soil underlying route is significant on a local scale.	Contaminated soil on site with previous heavy industrial usage Large recent landfill site for mixed wastes Geological feature of high value on a local scale (County Geological Site) Well drained and/or high fertility soils Moderately sized existing quarry or pit Marginally economic extractable mineral resource
Medium	Attribute has a medium quality, significance or value on a local scale Degree or extent of soil contamination is moderate on a local scale Volume of peat and/or soft organic soil underlying route is moderate on a local scale	Contaminated soil on site with previous light industrial usage Small recent landfill site for mixed wastes Moderately drained and/or moderate fertility soils Small existing quarry or pit Sub-economic extractable mineral resource
Low	Attribute has a low quality, significance or value on a local scale Degree or extent of soil contamination is minor on a local scale. Volume of peat and/or soft organic soil underlying route is small on a local scale	Large historical and/or recent site for construction and demolition wastes. Small historical and/or recent landfill site for construction and demolition wastes. Poorly drained and/or low fertility soils. Uneconomically extractable mineral resource.

Table 2 Criteria for rating impact magnitude at EIS stage – Estimation of magnitude of impact on soil / geology attribute (NRA)

Magnitude of Impact	Criteria	Typical Examples
Large Adverse	Results in loss of attribute	Loss of high proportion of future quarry or pit reserves
Moderate Adverse	Results in impact on integrity of attribute or loss of part of attribute	Loss of moderate proportion of future quarry or pit reserves
Small Adverse	Results in minor impact on integrity of attribute or loss of small part of	Loss of small proportion of future quarry or pit reserves
Negligible	Results in an impact on attribute but of insufficient magnitude to affect either use or integrity	No measurable changes in attributes
Minor Beneficial	Results in minor improvement of attribute quality	Minor enhancement of geological heritage
Moderate Beneficial	Results in moderate improvement of attribute quality	Moderate enhancement of geological heritage
Major Beneficial	Results in major improvement of attribute quality	Major enhancement of geological heritage

Table 3 Criteria for rating Site Attributes - Estimation of Importance of Hydrogeology Attributes (NRA)

Magnitude of Impact	Criteria	Typical Examples
Extremely High	Attribute has a high quality or value on an international	Groundwater supports river, wetland or surface water body ecosystem protected by EU legislation e.g. SAC or SPA status
Very High	Attribute has a high quality or value on a regional or national scale	Regionally Important Aquifer with multiple well fields Groundwater supports river, wetland or surface water body ecosystem protected by national legislation – NHA status Regionally important potable water source supplying >2500 homes
High	Attribute has a high quality or value on a local scale	Regionally Important Aquifer Groundwater provides large proportion of baseflow to local rivers Locally important potable water source supplying >1000 homes Outer source protection area for regionally important water source
Medium	Attribute has a medium quality or value on a local scale	Locally Important Aquifer Potable water source supplying >50 homes Outer source protection area for locally important water source
Low	Attribute has a low quality or value on a local scale	Poor Bedrock Aquifer Potable water source supplying <50 homes

Table 4 Criteria for Rating Impact Significance at EIS Stage – Estimation of Magnitude of Impact on Hydrogeology Attribute (NRA)

Magnitude of Impact	Criteria	Typical Examples
Large Adverse	Results in loss of attribute and /or quality and integrity of attribute	Removal of large proportion of aquifer. Changes to aquifer or unsaturated zone resulting in extensive change to existing water supply springs and wells, river baseflow or ecosystems. Potential high risk of pollution to groundwater from routine run-off. Calculated risk of serious pollution incident >2% annually.
Moderate Adverse	Results in impact on integrity of attribute or loss of part of attribute	Removal of moderate proportion of aquifer. Changes to aquifer or unsaturated zone resulting in moderate change toexisting water supply springs and wells, river baseflow or ecosystems. Potential medium risk of pollution to groundwater from routine run-off. Calculated risk of serious pollution incident >1% annually.
Small Adverse	Results in minor impact on integrity of attribute or loss of small part of attribute	Removal of small proportion of aquifer. Changes to aquifer or unsaturated zone resulting in minor change to water supply springs and wells, river baseflow or ecosystems. Potential low risk of pollution to groundwater from routine run-off. Calculated risk of serious pollution incident >0.5% annually.
Negligible	Results in an impact on attribute but of insufficient magnitude to affect either use or integrity	Calculated risk of serious pollution incident <0.5% annually.

Table 5: Rating of Significant Environmental Impacts at EIS Stage (NRA)

Importance of Attribute	Magnitude of Importance			
	Negligible	Small Adverse	Moderate Adverse	Large Adverse
Extremely High	Imperceptible	Significant	Profound	Profound
Very High	Imperceptible	Significant / moderate	Profound/ Significant	Profound
High	Imperceptible	Moderate /Slight	Significant/ moderate	Profound /Significant
Medium	Imperceptible	Slight	Moderate	Significant
Low	Imperceptible	Imperceptible	Slight	Slight/ Moderate

A9.2 GII Trial Pit & Borehole logs

Ground Investigations Ireland Ltd
www.gii.ie

Site Baldoyle			**Trial Pit Number** SA01
Machine : JCB 3CX **Method :** Trial Pit	**Dimensions**	**Ground Level (mOD)** 7.93	**Client** CS Consulting	**Job Number** 9161-10-19
	Location 723096.5 E 740636.8 N	**Dates** 28/01/2020	**Project Contractor** Ground Investigations Ireland	**Sheet** 1/1

Depth (m)	Sample / Tests	Water Depth (m)	Field Records	Level (mOD)	Depth (m) (Thickness)	Description	Legend	Water
					(0.30)	Brown slightly gravelly TOPSOIL		
				7.63	0.30	MADE GROUND: Brown slightly sandy gravelly Clay with some timber fragments		
					(0.90)			
				6.73	1.20	Firm brown sandy slightly gravelly CLAY with occasional subrounded cobbles and boulders		
					(0.30)			
				6.43	1.50	Complete at 1.50m		

Plan

Remarks

Trial Pit stable
No groundwater encountered
Trial Pit backfilled upon completion of soakaway test

Scale (approx)	Logged By	Figure No.
1:25	EB	9161-10-19.SA01

Ground Investigations Ireland Ltd
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Site Baldoyle			**Trial Pit Number** SA02
Machine : JCB 3CX **Method :** Trial Pit	**Dimensions**	**Ground Level (mOD)** 9.08	**Client** CS Consulting	**Job Number** 9161-10-19
	Location 723084.7 E 740516.1 N	**Dates** 28/01/2020	**Project Contractor** Ground Investigations Ireland	**Sheet** 1/1

Depth (m)	Sample / Tests	Water Depth (m)	Field Records	Level (mOD)	Depth (m) (Thickness)	Description	Legend	Water
					(0.55)	MADE GROUND: Brown slightly sandy gravelly Clay with occasional concrete fragments		
				8.53	0.55	MADE GROUND: Greyish brown slightly sandy gravelly Cay with some glass fragments		
					(0.45)			
				8.08	1.00	POSSIBLE MADE GROUND: Brown mottled grey sandy slightly gravelly Clay with occasional cobbles		
					(0.20)			
				7.88	1.20	Firm greyish brown sandy slightly gravelly CLAY with occasional cobbles		
					(0.30)			
				7.58	1.50	Complete at 1.50m		

Plan

Remarks

Trial Pit stable
No groundwater encountered
Trial Pit backfilled upon completion of soakaway test

Scale (approx)	Logged By	Figure No.
1:25	EB	9161-10-19.SA02

Ground Investigations Ireland Ltd
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Site Baldoyle			**Trial Pit Number** SA03
Machine : JCB 3CX **Method :** Trial Pit	**Dimensions** 1.7 x 0.5 x 1.4 m	**Ground Level (mOD)** 8.32	**Client** CS Consulting	**Job Number** 9161-10-19
	Location (dGPS) 723182.3 E 740601.5 N	**Dates** 30/10/2019	**Project Contractor** Ground Investigations Ireland	**Sheet** 1/1

Depth (m)	Sample / Tests	Water Depth (m)	Field Records	Level (mOD)	Depth (m) (Thickness)	Description	Legend	Water
					(0.25)	Dark brown slightly sandy gravelly TOPSOIL with charcoal fragments and grass rootlets		
				8.07	0.25	MADE GROUND: Brown mottled grey slightly sandy gravelly Clay with plastic fragments and rebar		
					(0.55)			
				7.52	0.80	Firm to stiff brown mottled grey slightly sandy slightly gravelly CLAY with occasional sand lenses		
					(0.60)			
				6.92	1.40	Complete at 1.40m		

Plan

Remarks

No grundwater encountered
Trial pit stable
Soakaway backfilled upon completion

Scale (approx)	Logged By	Figure No.
1:25	AB	9161-10-19.SA03

Ground Investigations Ireland Ltd
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Site Baldoyle			**Trial Pit Number** SA04
Machine : JCB 3CX **Method :** Trial Pit	**Dimensions** 1.7 x 0.5 x 1.5 m	**Ground Level (mOD)** 6.31	**Client** CS Consulting	**Job Number** 9161-10-19
	Location (dGPS) 723227.1 E 740635.1 N	**Dates** 30/10/2019	**Project Contractor** Ground Investigations Ireland	**Sheet** 1/1

Depth (m)	Sample / Tests	Water Depth (m)	Field Records	Level (mOD)	Depth (m) (Thickness)	Description	Legend	Water
				6.21	(0.10) 0.10	Dark brown slightly sandy very gravelly TOPSOIL with grass rootlets and charcoal fragments		
						MADE GROUND: Brown mottled grey slightly sandy gravelly Clay with plastic and rebar fragments		
					(0.60)			
				5.61	0.70	Firm brown slightly gravelly CLAY with wood rootlets		
					(0.40)			
				5.21	1.10	Firm brown light brown slightly gravelly CLAY		
					(0.40)			
				4.81	1.50	Complete at 1.50m		

Plan

Remarks

No groundwater encountered
Trial pit stable
Soakaway backfilled upon completion

Scale (approx)	Logged By	Figure No.
1:25	AB	9161-10-19.SA04

Ground Investigations Ireland Ltd
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Site Baldoyle			**Trial Pit Number** SA05
Machine : JCB 3CX **Method :** Trial Pit	**Dimensions** 1.8 x 0.5 x 1.5 m	**Ground Level (mOD)** 8.51	**Client** CS Consulting	**Job Number** 9161-10-19
	Location (dGPS) 723207.5 E 740537.1 N	**Dates** 30/10/2019	**Project Contractor** Ground Investigations Ireland	**Sheet** 1/1

Depth (m)	Sample / Tests	Water Depth (m)	Field Records	Level (mOD)	Depth (m) (Thickness)	Description	Legend	Water
					(0.40)	MADE GROUND: Brown mottled grey slightly sandy very gravelly Clay with plastic, tarmac and rebar fragments		
			Medium ingress(1) at 0.60m.	8.11	0.40	Stiff brown mottled grey slightly sandy gravelly CLAY.		▽1
					(1.00)			
				7.11	1.40			
					(0.10)	Stiff black slightly sandy gravelly CLAY		
				7.01	1.50	Complete at 1.50m		

Plan

Remarks

Groundwater encountered at 0.60m BGL
Trial pit stable
Soakaway backfilled upon completion

Scale (approx)	Logged By	Figure No.
1:25	AB	9161-10-19.SA05

Ground Investigations Ireland Ltd
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Site Baldoyle			**Trial Pit Number** SA06
Machine : JCB 3CX **Method :** Trial Pit	**Dimensions** 1.7 x 0.5 x 1.5 m	**Ground Level (mOD)** 8.76	**Client** CS Consulting	**Job Number** 9161-10-19
	Location (dGPS) 723166.8 E 740513.9 N	**Dates** 30/10/2019	**Project Contractor** Ground Investigations Ireland	**Sheet** 1/1

Depth (m)	Sample / Tests	Water Depth (m)	Field Records	Level (mOD)	Depth (m) (Thickness)	Description	Legend	Water
					(0.40)	MADE GROUND: Grey brown slightly sandy very gravelly TOPSOIL with rebar		
				8.36	0.40	MADE GROUND: Grey mottled brown slightly sandy gravelly Clay with occasional plastic and red brick.		
					(0.60)			
				7.76	1.00	Firm to stiff grey mottled brown slightly sandy gravelly CLAY.		
					(0.50)			
				7.26	1.50	Complete at 1.50m		

Plan

Remarks

No groundwater encountered
Trial pit stable
Soakaway backfilled upon completion

Scale (approx)	Logged By	Figure No.
1:25	AB	9161-10-19.SA06

Ground Investigations Ireland Ltd
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Site Baldoyle			**Trial Pit Number** SA07
Machine : JCB 3CX **Method :** Trial Pit	**Dimensions** 1.7 x 0.5 x 1.7 m	**Ground Level (mOD)** 5.89	**Client** CS Consulting	**Job Number** 9161-10-19
	Location (dGPS) 723292.6 E 740579.4 N	**Dates** 30/10/2019	**Project Contractor** Ground Investigations Ireland	**Sheet** 1/1

Depth (m)	Sample / Tests	Water Depth (m)	Field Records	Level (mOD)	Depth (m) (Thickness)	Description	Legend	Water
				5.79	(0.10) 0.10	Brown slightly sandy gravelly TOPSOIL with grass rootlets and rebar		
					(0.40)	MADE GROUND: Stiff brown mottled black slightly sandy slightly gravelly Clay with occasional plastic and rebar fragments		
				5.39	0.50	Grey brown sandy very clayey angular to sub rounded fine to coarse GRAVEL with occasional sub angular to sub rounded cobbles and lenses of sand and clay		
			Fast Ingress(1) at 1.10m.		(1.10)			▽1
				4.29	1.60	Complete at 1.60m		

Plan

Remarks

Groundwater encountered at 1.10m BGL as fast ingress
Trial pit stable
Soakaway backfilled upon completion

Scale (approx)	Logged By	Figure No.
1:25	AB	9161-10-19.SA07

Ground Investigations Ireland Ltd
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Site Baldoyle			**Trial Pit Number** SA08
Machine : JCB 3CX **Method :** Trial Pit	**Dimensions** 1.6 x 0.5 x 1.4 m	**Ground Level (mOD)** 6.87	**Client** CS Consulting	**Job Number** 9161-10-19
	Location (dGPS) 723340.4 E 740514.9 N	**Dates** 30/10/2019	**Project Contractor** Ground Investigations Ireland	**Sheet** 1/1

Depth (m)	Sample / Tests	Water Depth (m)	Field Records	Level (mOD)	Depth (m) (Thickness)	Description	Legend	Water
				6.77	(0.10) 0.10	Grey brown slightly sandy very gravelly TOPSOIL with rebar		
						MADE GROUND: Brown slightly sandy slightly gravelly Clay with occasional plastic and red brick fragments		
					(0.60)			
				6.17	0.70	Brown sandy very clayey fine to medium sub angular to sub rounded GRAVEL		
			Medium Ingress(1) at 1.00m.		(0.40)			▽1
				5.77	1.10	Stiff dark grey slightly sandy gravelly CLAY with occasional cobbles and boulders		
					(0.30)			
				5.47	1.40	Complete at 1.40m		

Plan

Remarks

Groundwater encountered at 1.0m BGL as moderate ingress
Trial pit stable
Soakaway backfilled upon completion

Scale (approx)	Logged By	Figure No.
1:25	AB	9161-10-19.SA08

Ground Investigations Ireland Ltd
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Site Baldoyle			**Trial Pit Number** SA09
Machine : JCB 3CX **Method :** Trial Pit	**Dimensions** 1.7 x 0.5 x 1.4 m	**Ground Level (mOD)** 8.47	**Client** CS Consulting	**Job Number** 9161-10-19
	Location (dGPS) 723269.5 E 740496.4 N	**Dates** 30/10/2019	**Project Contractor** Ground Investigations Ireland	**Sheet** 1/1

Depth (m)	Sample / Tests	Water Depth (m)	Field Records	Level (mOD)	Depth (m) (Thickness)	Description	Legend	Water
					(0.40)	Brown slightly sandy gravelly Topsoil with grass rootlets and rebar fragments		
				8.07	0.40			
					(0.30)	MADE GROUND: Brown mottled grey slightly sandy gravelly Clay		
				7.77	0.70			
					(0.70)	Greyish brown slightly clayey slightly sandy fine to coarse angular to sub rounded GRAVEL with occasional cobbles		
				7.07	1.40	Complete at 1.40m		

Plan

Remarks

No groundwater encountered
Sidewalls spalling from 0.70m BGL
Soakaway backfilled upon completion

Scale (approx)	Logged By	Figure No.
1:25	AB	9161-10-19.SA09

Ground Investigations Ireland Ltd
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Site Baldoyle			**Trial Pit Number** SA10
Machine : 8 Tonne Tracked Excavator **Method :** Trial Pit	**Dimensions** 2.10x0.50x1.50m	**Ground Level (mOD)** 6.49	**Client** CS Consulting	**Job Number** 9161-10-19
	Location (dGPS) 723355.6 E 740647.1 N	**Dates** 14/11/2019	**Project Contractor** Ground Investigations Ireland	**Sheet** 1/1

Depth (m)	Sample / Tests	Water Depth (m)	Field Records	Level (mOD)	Depth (m) (Thickness)	Description	Legend	Water
					(0.20)	Grey clayey sandy fine to coarse angular crushed rock FILL		
				6.29	0.20	MADE GROUND: Brown slightly sandy gravelly Clay with red brick fragments		
					(0.20)			
				6.09	0.40	Stiff brown slightly sandy gravelly CLAY with occasional subangular cobbles		
					(1.10)			
				4.99	1.50	Complete at 1.50m		

Plan

Remarks

Trial Pit stable
No groundwater encountered
Trial Pit backfilled upon completion of soakaway test

Scale (approx)	Logged By	Figure No.
1:25	EB	9161-10-19.SA12

Ground Investigations Ireland Ltd
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Site Baldoyle			**Trial Pit Number** SA11
Machine : JCB 3CX **Method :** Trial Pit	**Dimensions**	**Ground Level (mOD)** 6.68	**Client** CS Consulting	**Job Number** 9161-10-19
	Location 723383.1 E 740727.6 N	**Dates** 28/01/2020	**Project Contractor** Ground Investigations Ireland	**Sheet** 1/1

Depth (m)	Sample / Tests	Water Depth (m)	Field Records	Level (mOD)	Depth (m) (Thickness)	Description	Legend	Water
					(0.55)	MADE GROUND: Brown slightly sandy gravelly Clay with occasional metal fragments		
				6.13	0.55			
					(0.65)	Firm brown mottled grey slightly sandy gravelly CLAY with occasional subrounded cobbles		
				5.48	1.20			
					(0.30)	Brown very clayey gravelly fine to coarse SAND with occasional subrounded cobbles		
				5.18	1.50	Complete at 1.50m		

Plan

Remarks

Trial Pit collapse from 1.20m BGL
No groundwater encountered
Trial Pit backfilled upon completion of soakaway test

Scale (approx)	Logged By	Figure No.
1:25	EB	9161-10-19.SA11

Ground Investigations Ireland Ltd
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Site Baldoyle			**Trial Pit Number** SA12
Machine : 8 Tonne Tracked Excavator **Method :** Trial Pit	**Dimensions** 2.30x0.50x1.60m	**Ground Level (mOD)** 7.11	**Client** CS Consulting	**Job Number** 9161-10-19
	Location (dGPS) 723336.1 E 740778.4 N	**Dates** 14/11/2019	**Project Contractor** Ground Investigations Ireland	**Sheet** 1/1

Depth (m)	Sample / Tests	Water Depth (m)	Field Records	Level (mOD)	Depth (m) (Thickness)	Description	Legend	Water
					(0.20)	Black slightly sandy organic Clay		
				6.91	0.20	MADE GROUND: Grey/brown slightly sandy gravelly Clay with rebar		
					(0.20)			
				6.71	0.40	Stiff brown slightly sandy gravelly CLAY with occasional subangular cobbles		
					(1.20)			
				5.51	1.60	Complete at 1.60m		

Plan

Remarks

Trial Pit stable
No groundwater encountered
Trial Pit backfilled upon completion of soakaway test

Scale (approx)	Logged By	Figure No.
1:25	EB	9161-10-19.SA12

Ground Investigations Ireland Ltd
www.gii.ie

Site Baldoyle			**Trial Pit Number** TP01
Machine : JCB 3CX **Method :** Trial Pit	**Dimensions**	**Ground Level (mOD)** 8.05	**Client** CS Consulting	**Job Number** 9161-10-19
	Location 723095.3 E 740640.4 N	**Dates** 20/01/2020	**Project Contractor** Ground Investigations Ireland	**Sheet** 1/1

Depth (m)	Sample / Tests	Water Depth (m)	Field Records	Level (mOD)	Depth (m) (Thickness)	Description	Legend	Water
					(0.30)	MADE GROUND: Brown slightly gravelly Topsoil		
				7.75	0.30	MADE GROUND: Brown slightly sandy gravelly Clay with occasional plastic fragments and cobbles		
					(0.90)			
				6.85	1.20	Firm to stiff brown slightly sandy gravelly CLAY with occasional subrounded cobbles		
					(0.70)			
				6.15	1.90	Stiff greyish brown sandy slightly gravelly CLAY with occasional subangular to subrounded cobbles and boulders and sandy lenses		
					(1.00)			
				5.15	2.90	Stiff grey slightly sandy gravelly CLAY with some angular to subrounded cobbles and boulders		
					(0.30)			
				4.85	3.20	Complete at 3.20m		

Plan

Remarks

Trial Pit collapse from 1.20m BGL
No groundwater encountered
Trial Pit backfilled upon completion

Scale (approx)	Logged By	Figure No.
1:25	EB	9161-10-19.TP01

Ground Investigations Ireland Ltd
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Site Baldoyle			**Trial Pit Number** TP02
Machine : JCB 3CX **Method :** Trial Pit	**Dimensions**	**Ground Level (mOD)** 7.73	**Client** CS Consulting	**Job Number** 9161-10-19
	Location 723126.6 E 740636.4 N	**Dates** 21/01/2020	**Project Contractor** Ground Investigations Ireland	**Sheet** 1/1

Depth (m)	Sample / Tests	Water Depth (m)	Field Records	Level (mOD)	Depth (m) (Thickness)	Description	Legend	Water
					(0.40)	MADE GROUND: Brown slightly gravelly Clay with rootlets		
				7.33	0.40			
0.50	B				(0.40)	Soft reddish brown slightly sandy gravelly CLAY		
				6.93	0.80			
					(0.70)	Loose grey/brown clayey very gravelly fine to coarse SAND with occasional subrounded to rounded cobbles		
1.50	B			6.23	1.50			
					(0.50)	Medium dense grey/brown clayey very gravelly fine to coarse SAND with occasional subrounded to rounded cobbles		
				5.73	2.00			
					(0.80)	Dense grey clayey very gravelly fine to coarse SAND with some subangular to subrounded cobbles and boulders		
2.50	B			4.93	2.80			
					(0.40)	Stiff grey slightly sandy gravelly CLAY with some angular to subrounded cobbles and boulders		
				4.53	3.20	Complete at 3.20m		

Plan

Remarks

Trial Pit stable
No groundwater encountered
Trial Pit backfilled upon completion

Scale (approx)	Logged By	Figure No.
1:25	EB	9161-10-19.TP02

Ground Investigations Ireland Ltd
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Site Baldoyle			**Trial Pit Number** TP03
Machine : JCB 3CX **Method :** Trial Pit	**Dimensions**	**Ground Level (mOD)** 8.27	**Client** CS Consulting	**Job Number** 9161-10-19
	Location 723094.7 E 740619.9 N	**Dates** 20/01/2020	**Project Contractor** Ground Investigations Ireland	**Sheet** 1/1

Depth (m)	Sample / Tests	Water Depth (m)	Field Records	Level (mOD)	Depth (m) (Thickness)	Description	Legend	Water
					(0.30)	MADE GROUND: Brown slightly gravelly Topsoil		
				7.97	0.30	MADE GROUND: Brown slightly sandy gravelly Clay with occasional fabric fragments		
					(0.70)			
				7.27	1.00	Stiff brown slightly sandy gravelly CLAY with occasional subangular to subrounded cobbles		
					(0.80)			
				6.47	1.80	Stiff greyish brown slightly sandy gravelly CLAY with some subangular to subrounded cobbles and boulders		
					(1.00)			
				5.47	2.80	Stiff grey slightly sandy gravelly CLAY with occasional angular to subrounded cobbles and boulders		
					(0.30)			
				5.17	3.10	Complete at 3.10m		

Plan

Remarks

Trial Pit stable
No groundwater encountered
Trial Pit backfilled upon completion

Scale (approx)	Logged By	Figure No.
1:25	EB	9161-10-19.TP03

Ground Investigations Ireland Ltd
www.gii.ie

Site Baldoyle			**Trial Pit Number** TP04
Machine : JCB 3CX **Method :** Trial Pit	**Dimensions**	**Ground Level (mOD)** 8.68	**Client** CS Consulting	**Job Number** 9161-10-19
	Location 723120.9 E 740616.8 N	**Dates** 21/01/2020	**Project Contractor** Ground Investigations Ireland	**Sheet** 1/1

Depth (m)	Sample / Tests	Water Depth (m)	Field Records	Level (mOD)	Depth (m) (Thickness)	Description	Legend	Water
					(0.30)	Brown slightly gravelly TOPSOIL		
				8.38	0.30			
					(0.30)	POSSIBLE MADE GROUND: Grey/brown slightly sandy gravelly Clay		
				8.08	0.60			
					(0.30)	Firm reddish brown slightly sandy gravelly CLAY with occasional subangular cobbles		
				7.78	0.90			
					(0.70)	Medium dense greyish brown very clayey gravelly fine to coarse SAND with occasional rounded cobbles and boulders		
				7.08	1.60			
					(0.50)	Firm to stiff grey/brown slightly sandy gravelly CLAY with occasional subangular to subrounded cobbles and boulders		
				6.58	2.10			
					(1.00)	Stiff grey mottled brown slightly sandy gravelly CLAY with some subrounded cobbles and boulders		
				5.58	3.10			
					(0.20)	Stiff grey slightly sandy gravelly CLAY with some subangular to subrounded cobbles and boulders		
				5.38	3.30	Complete at 3.30m		

Plan

Remarks

Trial Pit stable
No groundwater encountered
Trial Pit backfilled upon completion

Scale (approx)	Logged By	Figure No.
1:25	EB	9161-10-19.TP04

Ground Investigations Ireland Ltd
www.gii.ie

Site Baldoyle			**Trial Pit Number** TP05
Machine : JCB 3CX **Method :** Trial Pit	**Dimensions**	**Ground Level (mOD)** 9.22	**Client** CS Consulting	**Job Number** 9161-10-19
	Location 723090.6 E 740588.1 N	**Dates** 20/01/2020	**Project Contractor** Ground Investigations Ireland	**Sheet** 1/1

Depth (m)	Sample / Tests	Water Depth (m)	Field Records	Level (mOD)	Depth (m) (Thickness)	Description	Legend	Water
					(0.30)	MADE GROUND: Brown slightly gravelly Topsoil		
				8.92	0.30	MADE GROUND: Brown slightly sandy gravelly Clay with occasional red brick fragments		
					(0.90)			
				8.02	1.20	POSSIBLE MADE GROUND: Brown slightly sandy gravelly Clay with occasional subangular to subrounded cobbles		
					(0.50)			
				7.52	1.70	Stiff greyish brown slightly sandy gravelly CLAY with some subangular to subrounded cobbles and boulders		
					(0.70)			
				6.82	2.40			
					(0.10)	Stiff grey slightly sandy gravelly CLAY with some angular to subrounded cobbles and boulders		
				6.72	2.50	Complete at 2.50m		

Plan

Remarks

Trial Pit collapse from 0.90m BGL
No groundwater encountered
Trial Pit backfilled upon completion
Shallow depth due to inclined surface

Scale (approx)	Logged By	Figure No.
1:25	EB	9161-10-19.TP05

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Site Baldoyle			**Trial Pit Number** TP06
Machine : JCB 3CX **Method :** Trial Pit	**Dimensions**	**Ground Level (mOD)** 9.38	**Client** CS Consulting	**Job Number** 9161-10-19
	Location 723119.8 E 740593.3 N	**Dates** 21/01/2020	**Project Contractor** Ground Investigations Ireland	**Sheet** 1/1

Depth (m)	Sample / Tests	Water Depth (m)	Field Records	Level (mOD)	Depth (m) (Thickness)	Description	Legend	Water
				9.08	(0.30) 0.30	Brown slightly gravelly TOPSOIL		
0.50	B					Stiff brown slightly sandy slightly gravelly CLAY with occasional subangular to subrounded cobbles		
				8.48	(0.60) 0.90			
1.50	B					Medium dense greyish brown clayey gravelly fine to coarse SAND with occasional subangular to subrounded cobbles		
			Moderate(1) at 1.80m.	7.58	(0.90) 1.80			▽1
						Medium dense to dense grey slightly gravelly predominantly fine SAND with occasional subrounded cobbles and clayey lenses		
2.50	B			6.88	(0.70) 2.50			
						Stiff grey slightly sandy gravelly CLAY with some angular to subrounded cobbles and boulders		
				6.38	(0.50) 3.00			
						Complete at 3.00m		

Plan

Remarks

Trial Pit spalling from 1.20m BGL
Groundwater encountered at 1.80m BGL as moderate ingress
Trial Pit backfilled upon completion

Scale (approx)	Logged By	Figure No.
1:25	EB	9161-10-19.TP06

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Site Baldoyle			**Trial Pit Number** TP07
Machine : JCB 3CX **Method :** Trial Pit	**Dimensions**	**Ground Level (mOD)** 9.61	**Client** CS Consulting	**Job Number** 9161-10-19
	Location 723115.8 E 740560.1 N	**Dates** 21/01/2020	**Project Contractor** Ground Investigations Ireland	**Sheet** 1/1

Depth (m)	Sample / Tests	Water Depth (m)	Field Records	Level (mOD)	Depth (m) (Thickness)	Description	Legend	Water
					(0.40)	Brown slightly gravelly TOPSOIL		
				9.21	0.40	Firm brown slightly sandy slightly gravelly CLAY		
					(0.50)			
				8.71	0.90	Firm to stiff brown mottled grey slightly sandy gravelly CLAY with occasional subangular to subrounded cobbles		
					(1.00)			
				7.71	1.90	Stiff brown slightly sandy gravelly CLAY with occasional angular to subangular cobbles and boulders		
					(0.50)			
				7.21	2.40	Dense grey clayey rounded fine to coarse GRAVEL with many subrounded to rounded cobbles and boulders		
					(0.40)			
				6.81	2.80	Complete at 2.80m		

Plan

Remarks

Trial Pit stable
No groundwater encountered
Trial Pit backfilled upon completion

Scale (approx)	Logged By	Figure No.
1:25	EB	9161-10-19.TP07

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Site Baldoyle			**Trial Pit Number** TP08
Machine : JCB 3CX **Method :** Trial Pit	**Dimensions**	**Ground Level (mOD)** 9.41	**Client** CS Consulting	**Job Number** 9161-10-19
	Location 723087.9 E 740543.9 N	**Dates** 20/01/2020	**Project Contractor** Ground Investigations Ireland	**Sheet** 1/1

Depth (m)	Sample / Tests	Water Depth (m)	Field Records	Level (mOD)	Depth (m) (Thickness)	Description	Legend	Water
					(0.30)	MADE GROUND: Brown slightly gravelly Topsoil		
				9.11	0.30			
0.50	B					MADE GROUND: Brown slightly sandy gravelly Clay with occasional plastic fragments and cobbles		
					(0.70)			
				8.41	1.00			
						MADE GROUND: Brown slightly sandy gravelly Clay with some angular to subrounded cobbles and boulders		
					(0.50)			
1.50	B			7.91	1.50			
						MADE GROUND: Brown sandy slightly gravelly Clay with occasional fabric fragments and subrounded cobbles and boulders		
					(0.80)			
				7.11	2.30			
					(0.20)	Soft brown slightly sandy gravelly CLAY with some cobbles and boulders		
2.50	B			6.91	2.50			
						Soft grey slightly sandy gravelly CLAY with some angular to subrounded cobbles and boulders and sandy lenses		
					(0.70)			
				6.21	3.20			
						Complete at 3.20m		

Plan

Remarks

Trial Pit collapse below 1.40m BGL
No groundwater encountered
Trial Pit backfilled upon completion

Scale (approx)	Logged By	Figure No.
1:25	EB	9161-10-19.TP08

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Site Baldoyle			**Trial Pit Number** TP09
Machine : JCB 3CX **Method :** Trial Pit	**Dimensions**	**Ground Level (mOD)** 9.08	**Client** CS Consulting	**Job Number** 9161-10-19
	Location 723116.9 E 740518.3 N	**Dates** 21/01/2020	**Project Contractor** Ground Investigations Ireland	**Sheet** 1/1

Depth (m)	Sample / Tests	Water Depth (m)	Field Records	Level (mOD)	Depth (m) (Thickness)	Description	Legend	Water
					(0.40)	Brown slightly gravelly TOPSOIL		
				8.68	0.40			
0.50	B				(0.25)	Stiff light brown slightly sandy slightly gravelly CLAY		
				8.43	0.65			
					(0.85)	Firm to stiff brown mottled grey slightly sandy gravelly CLAY with occasional subangular to subrounded cobbles		
1.50	B			7.58	1.50			
					(0.40)	Stiff brown slightly sandy gravelly CLAY with some angular to subangular cobbles and boulders		
				7.18	1.90			
					(1.10)	Stiff grey slightly sandy gravelly CLAY with occasional subangular to subrounded cobbles and boulders		
2.50	B							
				6.08	3.00	Complete at 3.00m		

Plan

Remarks

Trial Pit stable
No groundwater encountered
Trial Pit backfilled upon completion

Scale (approx)	Logged By	Figure No.
1:25	EB	9161-10-19.TP09

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Site Baldoyle			**Trial Pit Number** TP10
Machine : JCB 3CX **Method :** Trial Pit	**Dimensions**	**Ground Level (mOD)** 9.87	**Client** CS Consulting	**Job Number** 9161-10-19
	Location 723081.7 E 740507.5 N	**Dates** 20/01/2020	**Project Contractor** Ground Investigations Ireland	**Sheet** 1/1

Depth (m)	Sample / Tests	Water Depth (m)	Field Records	Level (mOD)	Depth (m) (Thickness)	Description	Legend	Water
					(0.30)	MADE GROUND: Brown slightly gravelly Topsoil		
				9.57	0.30	MADE GROUND: Brown slightly sandy gravelly Clay with occasional plastic fragments and cobbles		
					(0.90)			
				8.67	1.20	Firm to stiff brown slightly sandy gravelly CLAY with occasional subangular to subrounded cobbles and boulders		
					(0.60)			
				8.07	1.80	Firm grey/brown sandy slightly gravelly CLAY with occasional subrounded cobbles and boulders and sandy lenses		
					(0.90)			
				7.17	2.70	Stiff dark grey slightly sandy gravelly CLAY with some angular to subrounded cobbles and boulders		
					(0.50)			
				6.67	3.20	Complete at 3.20m		

Plan

Remarks

Trial Pit stable
No groundwater encountered
Trial Pit backfilled upon completion

Scale (approx)	Logged By	Figure No.
1:25	EB	9161-10-19.TP10

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Site Baldoyle			**Trial Pit Number** TP11
Machine : 8 Tonne Tracked Excavator **Method :** Trial Pit	**Dimensions** 3.20x1.00x3.20m	**Ground Level (mOD)** 7.97	**Client** CS Consulting	**Job Number** 9161-10-19
	Location 723135.3 E 740623.1 N	**Dates** 31/10/2019	**Project Contractor** Ground Investigations Ireland	**Sheet** 1/1

Depth (m)	Sample / Tests	Water Depth (m)	Field Records	Level (mOD)	Depth (m) (Thickness)	Description	Legend	Water
					(0.35)	Brown slightly gravelly TOPSOIL with grass rootlets		
				7.62	0.35	Soft reddish brown slightly sandy slightly gravelly slightly silty CLAY		
					(0.45)			
				7.17	0.80	Stiff brown slightly sandy slightly gravelly CLAY		
					(0.70)			
				6.47	1.50	Medium dense greyish brown clayey very gravelly fine to coarse SAND with some sub rounded cobbles and boulders. Gravel is fine to coarse, rounded.		▽1
			Moderate(1) at 1.80m.		(0.90)			
				5.57	2.40	Stiff greyish brown sandy slightly gravelly CLAY with some sub angular to sub rounded cobbles and boulders		
					(0.40)			
				5.17	2.80	Stiff grey slightly sandy gravelly CLAY with some sub angular to sub rounded cobbles and boulders		
					(0.40)			
				4.77	3.20	Complete at 3.20m		

Plan

Remarks

Trial pit collapse below 1.50m BGL
Groundwater encountered at 1.80m BGL
Trial Pit backfilled upon completion

Scale (approx)	Logged By	Figure No.
1:25	AB	9161-10-19.TP11

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Site Baldoyle			**Trial Pit Number** TP12
Machine : 8 Tonne Tracked Excavator **Method :** Trial Pit	**Dimensions** 3.20x1.00x3.20m	**Ground Level (mOD)** 7.53	**Client** CS Consulting	**Job Number** 9161-10-19
	Location (dGPS) 723154.6 E 740632.9 N	**Dates** 31/10/2019	**Project Contractor** Ground Investigations Ireland	**Sheet** 1/1

Depth (m)	Sample / Tests	Water Depth (m)	Field Records	Level (mOD)	Depth (m) (Thickness)	Description	Legend	Water
					(0.35)	Brown slightly gravelly TOPSOIL with grass rootlets		
				7.18	0.35	Soft reddish brown slightly sandy slightly gravelly CLAY		
0.50	B				(0.45)			
				6.73	0.80	Medium dense brown very clayey gravelly fine to coarse SAND with some sub rounded cobbles and boulders		
1.00	B				(0.40)			
				6.33	1.20	Medium dense greyish brown very clayey gravelly fine to coarse SAND with clay lenses and occasional sub rounded cobbles and boulders		
			Slow(1) at 1.60m.		(0.70)			▽1
				5.63	1.90	Stiff greyish brown slightly sandy gravelly CLAY with occasional cobbles and boulders		
2.00	B				(0.70)			
				4.93	2.60	Stiff grey slightly sandy gravelly CLAY with some angular to sub rounded cobbles and boulders		
					(0.60)			
				4.33	3.20	Complete at 3.20m		

Plan

Remarks

Trial pit spalling from 1.80m BGL
Groundwater encountered at 1.60m BGL
Trial Pit backfilled upon completion

Scale (approx)	Logged By	Figure No.
1:25	AB	9161-10-19.TP12

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Site Baldoyle			**Trial Pit Number** TP13
Machine : 8 Tonne Tracked Excavator **Method :** Trial Pit	**Dimensions** 3.20x1.00x3.20m	**Ground Level (mOD)** 8.98	**Client** CS Consulting	**Job Number** 9161-10-19
	Location (dGPS) 723132.1 E 740603.9 N	**Dates** 31/10/2019	**Project Contractor** Ground Investigations Ireland	**Sheet** 1/1

Depth (m)	Sample / Tests	Water Depth (m)	Field Records	Level (mOD)	Depth (m) (Thickness)	Description	Legend	Water
					(0.20)	Brown slightly gravelly TOPSOIL with grass rootlets		
				8.78	0.20	MADE GROUND: Brown slightly sandy gravelly Clay with some red brick fragments		
0.50	B				(0.70)			
				8.08	0.90	Firm to stiff brown sandy slightly gravelly CLAY		
1.00	B				(0.30)			
				7.78	1.20	Medium dense greyish brown very clayey gravelly fine to coarse SAND		
					(0.30)			
				7.48	1.50	Firm to stiff brown slightly sandy gravelly CLAY with occasional sub rounded cobbles and boulders		
			Slow(1) at 1.80m.					▽1
2.00	B				(1.10)			
				6.38	2.60	Stiff grey slightly sandy gravelly CLAY with some angular to sub rounded cobbles and boulders		
					(0.60)			
3.00	B							
				5.78	3.20	Complete at 3.20m		

Plan

Remarks

Trial pit stable
Groundwater encountered at 1.80m BGL as slow seepage
Trial Pit backfilled upon completion

Scale (approx)	Logged By	Figure No.
1:25	AB	9161-10-19.TP13

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Site Baldoyle			**Trial Pit Number** TP14
Machine : 8 Tonne Tracked Excavator **Method :** Trial Pit	**Dimensions** 3.20x1.00x3.00m	**Ground Level (mOD)** 8.60	**Client** CS Consulting	**Job Number** 9161-10-19
	Location (dGPS) 723152.6 E 740606.2 N	**Dates** 31/10/2019	**Project Contractor** Ground Investigations Ireland	**Sheet** 1/1

Depth (m)	Sample / Tests	Water Depth (m)	Field Records	Level (mOD)	Depth (m) (Thickness)	Description	Legend	Water
					(0.30)	Brown slightly gravelly TOPSOIL with grass rootlets		
				8.30	0.30	MADE GROUND: Brown slightly sandy slightly gravelly Clay with timber fragments		
					(0.40)			
				7.90	0.70	Firm brown slightly sandy gravelly CLAY		
					(0.80)			
			Moderate(1) at 1.80m.	7.10	1.50	Dense grey clayey very gravelly SAND with clay lenses		▽1
					(0.80)			
				6.30	2.30	Stiff grey slightly sandy gravelly CLAY with some sub angular to sub rounded cobbles and boulders		
					(0.70)			
				5.60	3.00	Complete at 3.00m		

Plan

Remarks

Trial pit spalling from 1.50m to 2.50m BGL
Groundwater encountered at 1.80m BGL
Trial Pit backfilled upon completion

Scale (approx)	Logged By	Figure No.
1:25	AB	9161-10-19.TP14

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Site Baldoyle			**Trial Pit Number** TP15
Machine : 8 Tonne Tracked Excavator **Method :** Trial Pit	**Dimensions** 3.20x1.00x3.20m	**Ground Level (mOD)** 8.42	**Client** CS Consulting	**Job Number** 9161-10-19
	Location (dGPS) 723172.1 E 740608.8 N	**Dates** 31/10/2019	**Project Contractor** Ground Investigations Ireland	**Sheet** 1/1

Depth (m)	Sample / Tests	Water Depth (m)	Field Records	Level (mOD)	Depth (m) (Thickness)	Description	Legend	Water
					(0.20)	Brown slightly gravelly TOPSOIL with grass rootlets		
				8.22	0.20	MADE GROUND: Dark brown sandy slightly gravelly Clay		
					(0.40)			
0.50	B			7.82	0.60	Firm greyish brown slightly sandy gravelly CLAY		
					(0.40)			
1.00	B			7.42	1.00	Firm to stiff greyish brown slightly sandy gravelly CLAY occasional sub rounded cobbles		
					(0.90)			
				6.52	1.90	Stiff greyish brown sandy slightly gravelly CLAY with sand lenses and sub rounded cobbles and boulders		
2.00	B				(0.50)			
				6.02	2.40	Stiff grey slightly sandy gravelly CLAY with some sub angular to sub rounded cobbles and boulders		
					(0.80)			
				5.22	3.20	Complete at 3.20m		

Plan

Remarks

Trial pit stable
No groundwater encountered
Trial Pit backfilled upon completion

Scale (approx)	Logged By	Figure No.
1:25	AB	9161-10-19.TP15

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Site Baldoyle			**Trial Pit Number** TP16
Machine : 8 Tonne Tracked Excavator **Method :** Trial Pit	**Dimensions** 3.20x1.00x3.60m	**Ground Level (mOD)** 6.85	**Client** CS Consulting	**Job Number** 9161-10-19
	Location (dGPS) 723189.7 E 740626.5 N	**Dates** 31/10/2019	**Project Contractor** Ground Investigations Ireland	**Sheet** 1/1

Depth (m)	Sample / Tests	Water Depth (m)	Field Records	Level (mOD)	Depth (m) (Thickness)	Description	Legend	Water
					(0.40)	Brown slightly gravelly TOPSOIL with grass rootlets		
				6.45	0.40	Soft brown slightly sandy gravelly CLAY		
					(0.50)			
				5.95	0.90	Soft light brown gravelly CLAY. Gravel is fine to coarse, sub rounded.		
					(0.20)			
				5.75	1.10	Loose to medium dense greyish brown very clayey slightly gravelly fine SAND		
					(0.90)			
				4.85	2.00	Medium dense to dense grey clayey very gravelly fine to coarse SAND with some sub rounded cobbles		
			Fast(1) at 2.80m.		(1.30)			▽1
				3.55	3.30	Stiff grey slightly sandy gravelly CLAY with some sub angular to sub rounded cobbles and boulders		
					(0.20)			
				3.35	3.50	Complete at 3.50m		

Plan

Remarks

Trial pit sidewall collapsing at 2.0m BGL
Groundwater encountered at 2.80m BGL
Trial Pit backfilled upon completion

Scale (approx)	Logged By	Figure No.
1:25	AB	9161-10-19.TP16

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Site Baldoyle			**Trial Pit Number** TP17
Machine : 8 Tonne Tracked Excavator **Method :** Trial Pit	**Dimensions** 3.20x1.00x2.70m	**Ground Level (mOD)** 8.62	**Client** CS Consulting	**Job Number** 9161-10-19
	Location (dGPS) 723178.5 E 740594.6 N	**Dates** 31/10/2019	**Project Contractor** Ground Investigations Ireland	**Sheet** 1/1

Depth (m)	Sample / Tests	Water Depth (m)	Field Records	Level (mOD)	Depth (m) (Thickness)	Description	Legend	Water
					(0.20)	Brown slightly gravelly TOPSOIL with grass rootlets		
				8.42	0.20	MADE GROUND: Brown slightly sandy slightly gravelly Clay with red PVC fragments		
					(0.40)			
0.50	B			8.02	0.60	Medium dense brown very clayey gravelly fine to coarse SAND		
1.00	B				(0.70)			
				7.32	1.30	Firm greyish brown slightly sandy gravelly CLAY with occasional sub rounded cobbles		
					(0.50)			
				6.82	1.80	Medium dense to dense grey clayey very gravelly fine to coarse SAND with clayey lenses. Gravel is fine to coarse, sub angular.		
2.00	B		Slow seepage(1) at 2.00m.		(0.40)			▽1
				6.42	2.20	Very stiff grey slightly sandy gravelly CLAY with some sub angular to sub rounded cobbles and boulders		
					(0.50)			
				5.92	2.70	Complete at 2.70m		

Plan

Remarks

Trial pit stable
Groundwater encountered at 2.0m BGL
Trial Pit backfilled upon completion

Scale (approx)	Logged By	Figure No.
1:25	AB	9161-10-19.TP17

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Site Baldoyle			**Trial Pit Number** TP18
Machine : 8 Tonne Tracked Excavator **Method :** Trial Pit	**Dimensions** 3.20x1.00x3.0m	**Ground Level (mOD)** 7.49	**Client** CS Consulting	**Job Number** 9161-10-19
	Location (dGPS) 723198.3 E 740610.3 N	**Dates** 31/10/2019	**Project Contractor** Ground Investigations Ireland	**Sheet** 1/1

Depth (m)	Sample / Tests	Water Depth (m)	Field Records	Level (mOD)	Depth (m) (Thickness)	Description	Legend	Water
					(0.30)	Brown slightly gravelly TOPSOIL with grass rootlets		
				7.19	0.30			
					(0.40)	Firm brown slightly sandy slightly gravelly CLAY (reworked)		
0.50	B			6.79	0.70			
					(0.70)	Firm reddish brown slightly sandy slightly gravelly CLAY		
1.00	B			6.09	1.40			
					(0.40)	Stiff brown sandy slightly gravelly CLAY with occasional sub rounded cobbles		
				5.69	1.80			
2.00	B				(0.80)	Medium dense dark grey clayey very sandy sub angular to rounded fine to coarse GRAVEL of predominantly mudstone with some angular to rounded cobbles and boulders		
				4.89	2.60			
					(0.40)	Dense dark grey clayey very sandy sub angular to rounded fine to coarse GRAVEL of predominantly mudstone with some angular to rounded cobbles and boulders		
				4.49	3.00			
						Complete at 3.00m		

Plan

Remarks

Trial pit spalling below 2.20m BGL
No groundwater encountered
Trial Pit backfilled upon completion

Scale (approx)	Logged By	Figure No.
1:25	AB	9161-10-19.TP18

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Site Baldoyle			**Trial Pit Number** TP19
Machine : 8 Tonne Tracked Excavator **Method :** Trial Pit	**Dimensions** 3.20x1.00x2.50m	**Ground Level (mOD)** 8.12	**Client** CS Consulting	**Job Number** 9161-10-19
	Location (dGPS) 723197.8 E 740586.8 N	**Dates** 31/10/2019	**Project Contractor** Ground Investigations Ireland	**Sheet** 1/1

Depth (m)	Sample / Tests	Water Depth (m)	Field Records	Level (mOD)	Depth (m) (Thickness)	Description	Legend	Water
					(0.20)	Brown slightly gravelly TOPSOIL with grass rootlets		
				7.92	0.20	MADE GROUND: Grey/brown clayey sandy angular fine to coarse Gravel with plastic and timber		
					(0.60)			
				7.32	0.80	Stiff greyish brown slightly sandy gravelly CLAY with occasional cobbles and boulders		
			Moderate(1) at 1.00m.		(0.50)			▽1
				6.82	1.30	Medium dense grey clayey very gravelly fine to coarse SAND with clay lenses		
					(0.70)			
				6.12	2.00	Very stiff grey slightly sandy gravelly CLAY with some sub angular to sub rounded cobbles and boulders		
					(0.50)			
				5.62	2.50	Complete at 2.50m		

Plan

Remarks

Trial pit spalling from 1.30m to 2.0m BGL
Groundwater encountered at 1.0m BGL
Trial Pit backfilled upon completion

Scale (approx)	Logged By	Figure No.
1:25	AB	9161-10-19.TP19

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Site Baldoyle			**Trial Pit Number** TP20
Machine : 8 Tonne Tracked Excavator **Method :** Trial Pit	**Dimensions** 3.20x1.00x2.90m	**Ground Level (mOD)** 7.45	**Client** CS Consulting	**Job Number** 9161-10-19
	Location (dGPS) 723222.7 E 740585 N	**Dates** 30/10/2019	**Project Contractor** Ground Investigations Ireland	**Sheet** 1/1

Depth (m)	Sample / Tests	Water Depth (m)	Field Records	Level (mOD)	Depth (m) (Thickness)	Description	Legend	Water
					(0.15)	Brown slightly gravelly TOPSOIL with grass rootlets		
				7.30	0.15	MADE GROUND: Grey/brown clayey sandy angular fine to coarse Gravel (crushed rock fill)		
					(0.25)			
				7.05	0.40	Soft to firm brown slightly sandy gravelly CLAY with occasional sub rounded cobbles		
0.50	B							
					(0.90)			
1.00	B							
				6.15	1.30	Stiff brown slightly sandy gravelly CLAY with occasional sub angular to sub rounded cobbles		
					(0.90)			
2.00	B							
				5.25	2.20	Very stiff grey slightly sandy gravelly CLAY with some sub angular to sub rounded cobbles and boulders		
					(0.70)			
				4.55	2.90	Complete at 2.90m		

Plan

Remarks

Trial Pit stable
No groundwater encountered
Trial Pit backfilled upon completion
200mm Yellow gas main in pit

Scale (approx)	Logged By	Figure No.
1:25	EB	9161-10-19.TP20

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Site Baldoyle			**Trial Pit Number** TP21
Machine : 8 Tonne Tracked Excavator **Method :** Trial Pit	**Dimensions** 3.30x1.00x2.90m	**Ground Level (mOD)** 9.66	**Client** CS Consulting	**Job Number** 9161-10-19
	Location (dGPS) 723121.6 E 740538.1 N	**Dates** 30/10/2019	**Project Contractor** Ground Investigations Ireland	**Sheet** 1/1

Depth (m)	Sample / Tests	Water Depth (m)	Field Records	Level (mOD)	Depth (m) (Thickness)	Description	Legend	Water
					(0.20)	MADE GROUND: Brown slightly gravelly TOPSOIL with grass rootlets		
				9.46	0.20	MADE GROUND: Brown slightly sandy slightly gravelly Clay with occasional timber fragments		
					(0.30)			
				9.16	0.50	Firm brown slightly sandy gravelly CLAY		
					(0.70)			
				8.46	1.20	Stiff greyish brown slightly sandy gravelly CLAY with occasional sub angular cobbles and boulders		
					(0.90)			
				7.56	2.10	Stiff brown slightly sandy gravelly CLAY with occasional sub angular to sub rounded cobbles		
					(0.40)			
				7.16	2.50	Stiff grey slightly sandy gravelly CLAY with some sub angular to sub rounded cobbles and boulders		
					(0.40)			
				6.76	2.90	Complete at 2.90m		

Plan

Remarks

Trial Pit stable
No groundwater encountered
Trial Pit backfilled upon completion

Scale (approx)	Logged By	Figure No.
1:25	EB	9161-10-19.TP21

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Site Baldoyle			**Trial Pit Number** TP22
Machine : 8 Tonne Tracked Excavator **Method :** Trial Pit	**Dimensions** 3.20x1.00x2.70m	**Ground Level (mOD)** 9.71	**Client** CS Consulting	**Job Number** 9161-10-19
	Location (dGPS) 723148.6 E 740538.8 N	**Dates** 30/10/2019	**Project Contractor** Ground Investigations Ireland	**Sheet** 1/1

Depth (m)	Sample / Tests	Water Depth (m)	Field Records	Level (mOD)	Depth (m) (Thickness)	Description	Legend	Water
					(0.20)	MADE GROUND: Brown slightly gravelly Topsoil with grass rootlets		
				9.51	0.20	MADE GROUND: Brown slightly sandy slightly gravelly Clay with occasional fabric fragments		
					(0.30)			
0.50	B			9.21	0.50	Firm brown slightly sandy slightly gravelly CLAY		
					(0.40)			
				8.81	0.90	Soft greyish brown slightly sandy gravelly CLAY		
1.00	B		Moderate ingress(1) at 1.10m.					▽1
					(0.90)			
				7.91	1.80	Stiff greyish brown slightly sandy gravelly CLAY		
2.00	B				(0.60)			
				7.31	2.40	Very stiff grey slightly sandy gravelly CLAY with some sub angular to sub rounded cobbles and boulders		
					(0.30)			
				7.01	2.70	Complete at 2.70m		

Plan

Remarks

Trial Pit stable
Groundwater encountered at 1.10m BGL as moderate ingress
Trial Pit backfilled upon completion

Scale (approx)	Logged By	Figure No.
1:25	EB	9161-10-19.TP22

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Site Baldoyle			**Trial Pit Number** TP23
Machine : JCB 3CX **Method :** Trial Pit	**Dimensions**	**Ground Level (mOD)** 8.90	**Client** CS Consulting	**Job Number** 9161-10-19
	Location 723122.5 E 740496.9 N	**Dates** 21/01/2020	**Project Contractor** Ground Investigations Ireland	**Sheet** 1/1

Depth (m)	Sample / Tests	Water Depth (m)	Field Records	Level (mOD)	Depth (m) (Thickness)	Description	Legend	Water
					(0.30)	MADE GROUND: Brown clayey sandy fine to coarse crushed rock FILL		
				8.60	0.30			
					(0.30)	POSSIBLE MADE GROUND: Brown slightly sandy gravelly Clay with occasional cobbles		
				8.30	0.60			
					(0.90)	Firm dark brown mottled grey slightly sandy gravelly CLAY with occasional subrounded cobbles and sandy lenses		
			Moderate(1) at 1.50m.	7.40	1.50			▽1
					(0.80)	Medium dense grey very clayey very gravelly fine to coarse SAND with occasional subrounded cobbles and clayey lenses		
				6.60	2.30			
					(0.70)	Stiff grey slightly sandy gravelly CLAY with occasional subangular to subrounded cobbles and boulders		
				5.90	3.00			
						Complete at 3.00m		

Plan

Remarks

Trial Pit stable
Groundwater encountered at 1.50m BGL as moderate ingress
Trial Pit backfilled upon completion

Scale (approx)	Logged By	Figure No.
1:25	EB	9161-10-19.TP23

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Site Baldoyle			**Trial Pit Number** TP24
Machine : 8 Tonne Tracked Excavator **Method :** Trial Pit	**Dimensions** 3.20x1.00x2.80m	**Ground Level (mOD)** 9.17	**Client** CS Consulting	**Job Number** 9161-10-19
	Location (dGPS) 723140.6 E 740514.9 N	**Dates** 30/10/2019	**Project Contractor** Ground Investigations Ireland	**Sheet** 1/1

Depth (m)	Sample / Tests	Water Depth (m)	Field Records	Level (mOD)	Depth (m) (Thickness)	Description	Legend	Water
					(0.25)	MADE GROUND: Brown slightly gravelly Topsoil with grass rootlets		
				8.92	0.25	MADE GROUND: Brown slightly sandy slightly gravelly Clay with occasional metal fragments		
0.50	B				(0.35)			
				8.57	0.60	Firm greyish brown slightly sandy gravelly CLAY		
					(0.30)			
				8.27	0.90	Firm to stiff greyish brown slightly sandy gravelly CLAY with occasional sub rounded cobbles and boulders		
1.00	B							
					(1.20)			
2.00	B							
				7.07	2.10	Very stiff grey slightly sandy gravelly CLAY with some sub angular to sub rounded cobbles and boulders		
					(0.70)			
				6.37	2.80	Complete at 2.80m		

Plan

Remarks

Trial Pit stable
No groundwater encountered
Trial Pit backfilled upon completion

Scale (approx)	Logged By	Figure No.
1:25	EB	9161-10-19.TP24

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Site Baldoyle			**Trial Pit Number** TP25
Machine : 8 Tonne Tracked Excavator **Method :** Trial Pit	**Dimensions** 3.20x1.00x2.70m	**Ground Level (mOD)** 9.17	**Client** CS Consulting	**Job Number** 9161-10-19
	Location (dGPS) 723159.8 E 740521.9 N	**Dates** 30/10/2019	**Project Contractor** Ground Investigations Ireland	**Sheet** 1/1

Depth (m)	Sample / Tests	Water Depth (m)	Field Records	Level (mOD)	Depth (m) (Thickness)	Description	Legend	Water
					(0.20)	MADE GROUND: Brown slightly gravelly TOPSOIL with grass rootlets		
				8.97	0.20	MADE GROUND: Brown slightly sandy slightly gravelly Clay with occasional timber fragments		
					(0.40)			
				8.57	0.60	Soft greyish brown slightly sandy slightly gravelly CLAY with occasional sub rounded cobbles		
					(0.40)			
				8.17	1.00	Stiff greyish brown slightly sandy gravelly CLAY with occasional sub angular to sub rounded cobbles and boulders		
					(0.50)			
				7.67	1.50	Firm greyish brown slightly sandy gravelly CLAY with occasional sub angular to sub rounded cobbles and boulders		
					(0.60)			
				7.07	2.10	Firm to stiff grey slightly sandy gravelly CLAY with some sub angular to sub rounded cobbles and boulders		
					(0.60)			
				6.47	2.70	Complete at 2.70m		

Plan

Remarks

Trial Pit stable
No groundwater encountered
Trial Pit backfilled upon completion

Scale (approx)	Logged By	Figure No.
1:25	EB	9161-10-19.TP25

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Site Baldoyle			**Trial Pit Number** TP26
Machine : 8 Tonne Tracked Excavator **Method :** Trial Pit	**Dimensions** 3.00x1.00x2.30m	**Ground Level (mOD)** 8.70	**Client** CS Consulting	**Job Number** 9161-10-19
	Location (dGPS) 723184.1 E 740533.4 N	**Dates** 30/10/2019	**Project Contractor** Ground Investigations Ireland	**Sheet** 1/1

Depth (m)	Sample / Tests	Water Depth (m)	Field Records	Level (mOD)	Depth (m) (Thickness)	Description	Legend	Water
					(0.20)	MADE GROUND: Brown slightly gravelly Topsoil with grass rootlets		
				8.50	0.20	MADE GROUND: Brown slightly sandy slightly gravelly Clay with occasional red PVC fragments		
					(0.50)			
				8.00	0.70	Firm greyish brown slightly sandy gravelly CLAY with occasional sub angular cobbles		
					(0.30)			
				7.70	1.00	Stiff greyish brown slightly sandy gravelly CLAY with some sub angular to sub rounded cobbles and boulders		
					(0.70)			
				7.00	1.70	Very stiff grey slightly sandy gravelly CLAY with some sub angular to sub rounded cobbles and boulders		
					(0.60)			
				6.40	2.30	Complete at 2.30m		

Plan

Remarks

Trial Pit stable
No groundwater encountered
Trial Pit backfilled upon completion

Scale (approx)	Logged By	Figure No.
1:25	EB	9161-10-19.TP26

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Site Baldoyle			**Trial Pit Number** TP27
Machine : 8 Tonne Tracked Excavator **Method :** Trial Pit	**Dimensions** 3.10x1.00x3.00m	**Ground Level (mOD)** 9.06	**Client** CS Consulting	**Job Number** 9161-10-19
	Location (dGPS) 723141 E 740487.5 N	**Dates** 01/11/2019	**Project Contractor** Ground Investigations Ireland	**Sheet** 1/1

Depth (m)	Sample / Tests	Water Depth (m)	Field Records	Level (mOD)	Depth (m) (Thickness)	Description	Legend	Water
					(0.40)	MADE GROUND: Grey sandy angular fine to coarse Gravel (crushed rock fill)		
				8.66	0.40			
0.50	B				(0.40)	MADE GROUND: Light brown slightly sandy slightly gravelly Clay with some red brick fragments		
				8.26	0.80			▽1
			Fast(1) at 0.80m.			Firm to stiff greyish brown slightly sandy gravelly CLAY with occasional sub rounded cobbles		
1.00	B				(1.10)			
			Fast(2) at 1.80m.					▽2
				7.16	1.90	Stiff grey slightly sandy gravelly CLAY with some sub angular to sub rounded cobbles and boulders		
2.00	B				(1.10)			
				6.06	3.00	Complete at 3.00m		

Plan

Remarks

Trial pit unstable below 1.50m BGL
Groundwater encountered at 0.80m and 1.80m BGL
Trial Pit backfilled upon completion

Scale (approx)	Logged By	Figure No.
1:25	AB	9161-10-19.TP27

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Site Baldoyle			**Trial Pit Number** TP28
Machine : 8 Tonne Tracked Excavator **Method :** Trial Pit	**Dimensions** 3.20x1.00x2.80m	**Ground Level (mOD)** 9.11	**Client** CS Consulting	**Job Number** 9161-10-19
	Location (dGPS) 723168.6 E 740503.5 N	**Dates** 30/10/2019	**Project Contractor** Ground Investigations Ireland	**Sheet** 1/1

Depth (m)	Sample / Tests	Water Depth (m)	Field Records	Level (mOD)	Depth (m) (Thickness)	Description	Legend	Water
					(0.20)	MADE GROUND: Brown slightly gravelly Topsoil with grass rootlets		
				8.91	0.20	MADE GROUND: Brown slightly sandy slightly gravelly Clay with occasional timber fragments		
					(0.30)			
0.50	B			8.61	0.50	Firm to stiff greyish brown slightly sandy slightly gravelly CLAY with occasional sub rounded cobbles		
1.00	B				(0.90)			
				7.71	1.40	Stiff greyish brown slightly sandy gravelly CLAY		
					(0.50)			
2.00	B			7.21	1.90	Stiff grey slightly sandy gravelly CLAY with some sub angular to sub rounded cobbles and boulders		
					(0.90)			
				6.31	2.80	Complete at 2.80m		

Plan

Remarks

Trial Pit stable
No groundwater encountered
Trial Pit backfilled upon completion

Scale (approx)	Logged By	Figure No.
1:25	EB	9161-10-19.TP28

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Site Baldoyle			**Trial Pit Number** TP29
Machine : 8 Tonne Tracked Excavator **Method :** Trial Pit	**Dimensions** 3.20x1.00x2.60m	**Ground Level (mOD)** 9.00	**Client** CS Consulting	**Job Number** 9161-10-19
	Location (dGPS) 723194.3 E 740515.9 N	**Dates** 30/10/2019	**Project Contractor** Ground Investigations Ireland	**Sheet** 1/1

Depth (m)	Sample / Tests	Water Depth (m)	Field Records	Level (mOD)	Depth (m) (Thickness)	Description	Legend	Water
				8.90	(0.10) 0.10	MADE GROUND: Brown slightly gravelly Topsoil with grass rootlets		
					(0.40)	MADE GROUND: Brown slightly sandy slightly gravelly Clay with occasional timber fragments		
0.50	B			8.50	0.50	Soft brown slightly sandy slightly gravelly CLAY		
					(0.50)			
1.00	B			8.00	1.00	Soft to firm greyish brown slightly sandy gravelly CLAY with some sub angular to sub rounded cobbles		
					(0.90)			
2.00	B			7.10	1.90	Stiff grey slightly sandy gravelly CLAY with some sub angular to sub rounded cobbles and boulders		
					(0.70)			
				6.40	2.60	Complete at 2.60m		

Plan

Remarks

Trial Pit stable
No groundwater encountered
Trial Pit backfilled upon completion

Scale (approx)	Logged By	Figure No.
1:25	EB	9161-10-19.TP29

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Site Baldoyle			**Trial Pit Number** TP30
Machine : 8 Tonne Tracked Excavator **Method :** Trial Pit	**Dimensions** 3.10x1.00x2.30m	**Ground Level (mOD)** 9.04	**Client** CS Consulting	**Job Number** 9161-10-19
	Location (dGPS) 723177 E 740481.8 N	**Dates** 01/11/2019	**Project Contractor** Ground Investigations Ireland	**Sheet** 1/1

Depth (m)	Sample / Tests	Water Depth (m)	Field Records	Level (mOD)	Depth (m) (Thickness)	Description	Legend	Water
					(0.50)	MADE GROUND: Black sandy angular fine to coarse Gravel (crushed rock fill)		
				8.54	0.50			
					(0.40)	MADE GROUND: Light brown slightly sandy slightly gravelly Clay with some red brick fragments		
				8.14	0.90			
					(0.50)	Soft to firm greyish brown slightly sandy gravelly CLAY with occasional sub rounded cobbles		
				7.64	1.40			
					(0.40)	Firm greyish brown slightly sandy gravelly CLAY with occasional sub rounded cobbles		
				7.24	1.80			
					(0.50)	Firm to stiff grey slightly sandy gravelly CLAY with some sub angular to sub rounded cobbles and boulders		
				6.74	2.30			
						Complete at 2.30m		

Plan

Remarks

Trial pit stable
No groundwater encountered
Trial Pit backfilled upon completion

Scale (approx)	Logged By	Figure No.
1:25	AB	9161-10-19.TP30

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Site Baldoyle			**Trial Pit Number** TP31
Machine : 8 Tonne Tracked Excavator **Method :** Trial Pit	**Dimensions** 3.20x1.00x2.60m	**Ground Level (mOD)** 9.14	**Client** CS Consulting	**Job Number** 9161-10-19
	Location (dGPS) 723194.4 E 740490.6 N	**Dates** 30/10/2019	**Project Contractor** Ground Investigations Ireland	**Sheet** 1/1

Depth (m)	Sample / Tests	Water Depth (m)	Field Records	Level (mOD)	Depth (m) (Thickness)	Description	Legend	Water
					(0.20)	MADE GROUND: Brown slightly gravelly Topsoil with grass rootlets		
				8.94	0.20	MADE GROUND: Greyish brown slightly sandy gravelly Clay with occasional metal fragments		
					(0.30)			
				8.64	0.50	Soft to firm grey mottled brown slightly sandy slightly gravelly CLAY		
					(0.50)			
				8.14	1.00	Soft greyish brown slightly sandy gravelly CLAY with some angular to sub rounded cobbles and boulders		
					(1.10)			
				7.04	2.10	Firm to stiff grey slightly sandy gravelly CLAY with some sub angular to sub rounded cobbles and boulders		
					(0.50)			
				6.54	2.60	Complete at 2.60m		

Plan

Remarks

Trial Pit stable
No groundwater encountered
Trial Pit backfilled upon completion

Scale (approx)	Logged By	Figure No.
1:25	EB	9161-10-19.TP31

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Site Baldoyle			**Trial Pit Number** TP32
Machine : 8 Tonne Tracked Excavator **Method :** Trial Pit	**Dimensions** 3.10x1.00x2.50m	**Ground Level (mOD)** 9.01	**Client** CS Consulting	**Job Number** 9161-10-19
	Location (dGPS) 723212.3 E 740500.9 N	**Dates** 29/10/2019	**Project Contractor** Ground Investigations Ireland	**Sheet** 1/1

Depth (m)	Sample / Tests	Water Depth (m)	Field Records	Level (mOD)	Depth (m) (Thickness)	Description	Legend	Water
				8.91	(0.10) 0.10	MADE GROUND: Brown slightly gravelly Topsoil with grass rootlets		
					(0.40)	MADE GROUND: Greyish brown clayey sandy fine to coarse sub angular to angular Gravel with red PVC fragments (crushed rock fill)		
0.50	B			8.51	0.50	Firm ro stiff grey mottled brown slightly sandy slightly gravelly CLAY		
					(0.40)			
1.00	B			8.11	0.90	Firm to stiff greyish brown slightly sandy gravelly CLAY with some angular to sub rounded cobbles and boulders		
					(1.10)			
2.00	B			7.01	2.00	Stiff grey slightly sandy gravelly CLAY with some sub angular to sub rounded cobbles and boulders		
					(0.50)			
				6.51	2.50	Complete at 2.50m		

Plan

Remarks

Trial Pit stable
No groundwater encountered
Trial Pit backfilled upon completion

Scale (approx)	Logged By	Figure No.
1:25	EB	9161-10-19.TP48

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Site Baldoyle			**Trial Pit Number** TP33
Machine : 8 Tonne Excavator **Method :** Trial Pit	**Dimensions** 3.20x1.00x3.00m	**Ground Level (mOD)** 7.02	**Client** CS Consulting	**Job Number** 9161-10-19
	Location (dGPS) 723242.1 E 740600.9 N	**Dates** 29/10/2019	**Project Contractor** Ground Investigations Ireland	**Sheet** 1/1

Depth (m)	Sample / Tests	Water Depth (m)	Field Records	Level (mOD)	Depth (m) (Thickness)	Description	Legend	Water
					(0.20)	MADE GROUND: Brown slightly gravelly TOPSOIL with grass rootlets		
				6.82	0.20	MADE GROUND: Grey brown slightly sandy gravelly Clay with some red brick and plastic fragments		
0.50	B				(0.70)			
				6.12	0.90	Soft to firm brown slightly sandy slightly gravelly slightly silty CLAY		
1.00	B				(0.60)			
				5.52	1.50	Firm to stiff brown slightly sandy gravelly CLAY with occasional angular to sub rounded cobbles and boulders.		
2.00	B				(1.10)			
				4.42	2.60	Stiff dark grey slightly sandy gravelly CLAY with some sub angular to sub rounded cobbles and boulders.		
					(0.40)			
				4.02	3.00	Complete at 3.00m		

Plan

Remarks

Trial pit stable
No Groundwater encountered
Trial pit backfilled on completion

Scale (approx)	Logged By	Figure No.
1:25	AB	9161-10-19.TP33

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Site Baldoyle			**Trial Pit Number** TP34
Machine : 8 Tonne Excavator **Method :** Trial Pit	**Dimensions** 3.20x1.00x3.30m	**Ground Level (mOD)** 6.35	**Client** CS Consulting	**Job Number** 9161-10-19
	Location (Handheld GPS) 723253.4 E 740619.2 N	**Dates** 29/10/2019	**Project Contractor** Ground Investigations Ireland	**Sheet** 1/1

Depth (m)	Sample / Tests	Water Depth (m)	Field Records	Level (mOD)	Depth (m) (Thickness)	Description	Legend	Water
					(0.20)	Brown slightly gravelly TOPSOIL with grass rootlets		
				6.15	0.20	MADE GROUND: Dark brown slightly sandy gravelly Clay with some red brick and plastic fragments		
0.50	B				(0.70)			
				5.45	0.90	Stiff brown slightly sandy slightly gravelly slightly silty CLAY with occasional sub rounded cobbles		
1.00	B				(0.70)			
				4.75	1.60	Firm to stiff dark greyish brown sandy slightly gravelly silty CLAY with occasional sub angular to sub rounded cobbles		
					(0.30)			
				4.45	1.90	Stiff grey slightly gravelly sandy CLAY with occasional sub angular to sub rounded cobbles and boulders.		
2.00	B				(1.10)			
				3.35	3.00	Complete at 3.30m		

Plan

Remarks

Trial pit stable
No Groundwater encountered
Trial pit backfilled on completion

Scale (approx)	Logged By	Figure No.
1:25	EB	9161-10-19.TP34

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Site Baldoyle			**Trial Pit Number** TP35
Machine : 8 Tonne Excavator **Method :** Trial Pit	**Dimensions** 3.00 x 1.00 x 2.30m	**Ground Level (mOD)** 7.72	**Client** CS Consulting	**Job Number** 9161-10-19
	Location (Handheld GPS) 723237.1 E 740567.6 N	**Dates** 29/10/2019	**Project Contractor** Ground Investigations Ireland	**Sheet** 1/1

Depth (m)	Sample / Tests	Water Depth (m)	Field Records	Level (mOD)	Depth (m) (Thickness)	Description	Legend	Water
				7.62	(0.10) 0.10	Brown slightly gravelly TOPSOIL with grass rootlets		
						MADE GROUND: Brown clayey sandy angular fine to coarse Gravel with many angular cobbles and boulders with some red brick fragments		
0.50	B				(0.70)			
				6.92	0.80	Medium dense brown very clayey slightly gravelly fine SAND with laminated clay lenses		
1.00	B							
					(1.10)			
				5.82	1.90	Stiff grey slightly sandy gravelly CLAY with some sub angular to sub rounded cobbles and boulders.		
2.00	B				(0.40)			
				5.42	2.30	Complete at 2.30m		

Plan

Remarks

Trial pit stable
No Groundwater encountered
Trial pit backfilled on completion

Scale (approx)	Logged By	Figure No.
1:25	AB	9161-10-19.TP35

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Site Baldoyle			**Trial Pit Number** TP36
Machine : 8 Tonne Excavator **Method :** Trial Pit	**Dimensions** 3.10x1.00x2.70m	**Ground Level (mOD)** 6.73	**Client** CS Consulting	**Job Number** 9161-10-19
	Location (Handheld GPS) 723261.1 E 740578.1 N	**Dates** 29/10/2019	**Project Contractor** Ground Investigations Ireland	**Sheet** 1/1

Depth (m)	Sample / Tests	Water Depth (m)	Field Records	Level (mOD)	Depth (m) (Thickness)	Description	Legend	Water
				6.63	(0.10) 0.10	Brown slightly gravelly TOPSOIL with grass rootlets		
					(0.30)	MADE GROUND: Red slightly gravelly Clay		
				6.33	0.40			
0.50	B				(0.30)	MADE GROUND: Greyish brown sandy slightly gravelly Clay with red brick fragments		
				6.03	0.70			
1.00	B				(1.20)	Soft to firm greyish brown slightly gravelly slightly silty sandy CLAY with some sub angular to sub rounded cobbles and boulders		
				4.83	1.90			
2.00	B				(0.80)	Stiff grey slightly sandy gravelly CLAY with some angular to sub rounded cobbles and boulders		
				4.03	2.70	Complete at 2.70m		

Plan

Remarks

Trial sidewall collapsing from 0.90-1.90m BGL
No Groundwater encountered
Trial pit backfilled on completion

Scale (approx)	Logged By	Figure No.
1:25	AB	9161-10-19.TP36

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Site Baldoyle			**Trial Pit Number** TP37
Machine : 8 Tonne Excavator **Method :** Trial Pit	**Dimensions** 3.10x1.00x3.30m	**Ground Level (mOD)** 6.22	**Client** CS Consulting	**Job Number** 9161-10-19
	Location (Handheld GPS) 723280.9 E 740591.8 N	**Dates** 29/10/2019	**Project Contractor** Ground Investigations Ireland	**Sheet** 1/1

Depth (m)	Sample / Tests	Water Depth (m)	Field Records	Level (mOD)	Depth (m) (Thickness)	Description	Legend	Water
					(0.20)	Brown slightly gravelly TOPSOIL with grass rootlets		
				6.02	0.20	MADE GROUND:Brown mottled grey slightly sandy gravelly Clay with some old fabric and rope fragments		
0.50	B				(0.70)			
				5.32	0.90	Firm to stiff brown slightly sandy slightly gravelly CLAY		
1.00	B				(0.30)			
				5.02	1.20	Medium dense grey brown very clayey gravelly fine to coarse SAND with occasional subangular to subrounded cobbles with lenses of Clay		
			Moderate Ingress(1) at 1.80m.		(1.20)			▽1
2.00	B							
				3.82	2.40	Stiff dark grey slightly sandy gravelly CLAY with some subangular to subrounded cobbles and boulders		
					(0.90)			
3.00	B							
				2.92	3.30	Complete at 3.30m		

Plan

Remarks

Trial pit unstable. Sidewall spalling below 1.30m BGL
Groundwater encountered at 1.80m BGL
Trial pit backfilled on completion

Scale (approx)	Logged By	Figure No.
1:25	EB	9161-10-19.TP37

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Site Baldoyle			**Trial Pit Number** TP38
Machine : 8 Tonne Excavator **Method :** Trial Pit	**Dimensions** 3.20x1.00x3.20m	**Ground Level (mOD)** 6.49	**Client** CS Consulting	**Job Number** 9161-10-19
	Location (Handheld GPS) 723304.7 E 740612.7 N	**Dates** 29/10/2019	**Project Contractor** Ground Investigations Ireland	**Sheet** 1/1

Depth (m)	Sample / Tests	Water Depth (m)	Field Records	Level (mOD)	Depth (m) (Thickness)	Description	Legend	Water
					(0.20)	Brown slightly gravelly TOPSOIL with grass rootlets		
				6.29	0.20	MADE GROUND: Grey brown very clayey sandy Gravel with some concrete fragments		
					(0.40)			
0.50	B			5.89	0.60	Soft brown slightly sandy gravelly CLAY with occasional sub rounded cobbles		
					(0.30)			
1.00	B			5.59	0.90	Soft dark grey slightly sandy gravelly CLAY with some sub angular to sub rounded cobbles and boulders		
					(0.80)			
				4.79	1.70	Stiff greyish brown slightly sandy slightly gravelly CLAY		
2.00	B				(0.70)			
				4.09	2.40	Medium dense brown clayey gravelly fine to coarse SAND		▽1
			Medium ingress(1) at 2.60m.		(0.50)			
				3.59	2.90	Stiff grey slightly sandy gravelly CLAY with some sub angular to sub rounded cobbles and boulders		
3.00	B				(0.30)			
				3.29	3.20	Complete at 3.20m		

Plan

Remarks

Trial pit stable
Groundwater encountered at 2.60m BGL
Trial pit backfilled on completion

Scale (approx)	Logged By	Figure No.
1:25	AB	9161-10-19.TP38

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Site Baldoyle			**Trial Pit Number** TP39
Machine : 8 Tonne Excavator **Method :** Trial Pit	**Dimensions** 3.00 x 1.00 x 2.10m	**Ground Level (mOD)** 7.00	**Client** CS Consulting	**Job Number** 9161-10-19
	Location (Handheld GPS) 723272.2 E 740549.4 N	**Dates** 29/10/2019	**Project Contractor** Ground Investigations Ireland	**Sheet** 1/1

Depth (m)	Sample / Tests	Water Depth (m)	Field Records	Level (mOD)	Depth (m) (Thickness)	Description	Legend	Water
				6.90	(0.10) 0.10	MADE GROUND: Grey sandy angular fine to coarse Gravel (crushed rock fill)		
					(0.40)	MADE GROUND: Brown slightly gravelly sandy Clay with many cobbles and occasional metal fragments		
0.50	B			6.50	0.50	Stiff brown slightly sandy slightly gravelly CLAY		
					(0.50)			
1.00	B			6.00	1.00	Stiff grey slightly sandy gravelly CLAY with occasional sub angular to sub rounded cobbles		
					(1.10)			
2.00	B			4.90	2.10	Complete at 2.10m		

Plan

Remarks

Trial pit stable
No groundwater
Trial pit backfilled on completion

Scale (approx)	Logged By	Figure No.
1:25	AB	9161-10-19.TP39

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Site Baldoyle			**Trial Pit Number** TP40
Machine : 8 Tonne Excavator **Method :** Trial Pit	**Dimensions** 2.80x1.00x1.10m	**Ground Level (mOD)** 6.24	**Client** CS Consulting	**Job Number** 9161-10-19
	Location (Handheld GPS) 723297.6 E 740556.5 N	**Dates** 29/10/2019	**Project Contractor** Ground Investigations Ireland	**Sheet** 1/1

Depth (m)	Sample / Tests	Water Depth (m)	Field Records	Level (mOD)	Depth (m) (Thickness)	Description	Legend	Water
					(0.20)	Brown slightly gravelly TOPSOIL with grass rootlets		
				6.04	0.20	MADE GROUND: Grey clayey sandy Gravel with red brick and concrete fragments		
				5.84	0.40	Soft to firm reddish brown slightly sandy slightly gravelly CLAY		
0.50	B				(0.30)			
			Fast ingress(1) at 0.70m.	5.54	0.70	Loose grey gravelly fine to coarse SAND		▽1
					(0.40)			
1.00	B			5.14	1.10	Complete at 1.10m		

Plan

Remarks

Trial pit stable
Groundwater encountered at 0.70m
Trial pit terminated due to Groundwater
Trial pit backfilled on completion

Scale (approx)	Logged By	Figure No.
1:25	AB	9161-10-19.TP40

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Site Baldoyle			**Trial Pit Number** TP41
Machine : 8 tonne Excavator **Method :** Trial Pit	**Dimensions** 3.10x1.00x3.00m	**Ground Level (mOD)** 5.70	**Client** CS Consulting	**Job Number** 9161-10-19
	Location (Handheld GPS) 723318.9 E 740588.8 N	**Dates** 29/10/2019	**Project Contractor** Ground Investigations Ireland	**Sheet** 1/1

Depth (m)	Sample / Tests	Water Depth (m)	Field Records	Level (mOD)	Depth (m) (Thickness)	Description	Legend	Water
					(0.20)	Brown slightly gravelly TOPSOIL with grass rootlets		
				5.50	0.20	MADE GROUND: Greyish brown slightly sandy gravelly Clay with some timber and concrete fragments		
0.50	B				(0.80)			
			Slow seepage(1) at 0.90m.					▽1
1.00	B			4.70	1.00	Firm brown slightly sandy gravelly CLAY with occasional sub rounded cobbles		
					(0.50)			
				4.20	1.50	Soft to firm brown slightly sandy gravelly CLAY with occasional sub rounded cobbles		
					(0.30)			
				3.90	1.80	Loose grey very clayey gravelly fine to coarse SAND		
2.00	B				(0.30)			
				3.60	2.10	Medium dense grey very clayey gravelly fine to coarse SAND		
					(0.20)			
				3.40	2.30	Stiff grey sandy slightly gravelly CLAY with occasional angular to sub rounded cobbles		
					(0.70)			
				2.70	3.00	Complete at 3.00m		

Plan

Remarks

Trial pit stable
Groundwater encountered at 0.90m BGL
Trial pit backfilled on completion

Scale (approx)	Logged By	Figure No.
1:25	AB	9161-10-19.TP41

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Site Baldoyle			**Trial Pit Number** TP42
Machine : 8 tonne Excavator **Method :** Trial Pit	**Dimensions** 3.20x1.00x3.30m	**Ground Level (mOD)** 6.08	**Client** CS Consulting	**Job Number** 9161-10-19
	Location (Handheld GPS) 723357.5 E 740597.3 N	**Dates** 29/10/2019	**Project Contractor** Ground Investigations Ireland	**Sheet** 1/1

Depth (m)	Sample / Tests	Water Depth (m)	Field Records	Level (mOD)	Depth (m) (Thickness)	Description	Legend	Water
					(0.20)	Brown slightly gravelly TOPSOIL with grass rootlets		
				5.88	0.20	MADE GROUND: Brown slightly sandy gravelly Clay with some plastic and red brick fragments		
0.50	B				(0.70)			
			Moderate(1) at 0.90m.	5.18	0.90	Stiff greyish brown sandy slightly gravelly CLAY with occasional cobbles		▽1
1.00	B				(0.40)			
				4.78	1.30	Firm greyish brown sandy slightly gravelly CLAY with occasional cobbles		▽2
			Moderate seepage(2) at 1.50m.		(0.70)			
2.00	B			4.08	2.00	Stiff grey slightly sandy gravelly CLAY with occasional sub angular to sub rounded cobbles and boulders.		
					(1.30)			
				2.78	3.30	Complete at 3.30m		

Plan

Remarks

Trial pit unstable below 0.60m BGL
Groundwater encountered at 0.90m BGL and 1.50m BGL
Trial pit backfilled on completion

Scale (approx)	Logged By	Figure No.
1:25	AB	9161-10-19.TP42

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Site Baldoyle			**Trial Pit Number** TP43
Machine : 8 tonne Excavator **Method :** Trial Pit	**Dimensions** 3.00x1.00x2.80m	**Ground Level (mOD)** 6.43	**Client** CS Consulting	**Job Number** 9161-10-19
	Location (Handheld GPS) 723308.8 E 740541.6 N	**Dates** 29/10/2019	**Project Contractor** Ground Investigations Ireland	**Sheet** 1/1

Depth (m)	Sample / Tests	Water Depth (m)	Field Records	Level (mOD)	Depth (m) (Thickness)	Description	Legend	Water
					(0.20)	Brown slightly gravelly TOPSOIL with grass rootlets		
				6.23	0.20	MADE GROUND: Greyish brown slightly sandy gravelly Clay with some red brick and concrete fragments		
					(0.30)			
0.50	B		Moderate Ingress(1) at 0.50m.	5.93	0.50	Loose to medium dense grey slightly clayey gravelly fine to coarse SAND		▽1
					(0.30)			
				5.63	0.80	Stiff greyish brown sandy gravelly CLAY with occasional sub rounded to sub angular cobbles		
1.00	B				(0.30)			
				5.33	1.10	Soft to firm greyish brown sandy gravelly CLAY with occasional sub rounded to sub angular cobbles		
					(0.70)			
				4.63	1.80	Stiff grey slightly sandy gravelly CLAY with some angular to sub rounded cobbles and boulders		
2.00	B				(1.00)			
				3.63	2.80	Complete at 2.80m		

Plan

Remarks

Trial pit stable
Groundwater encountered at 0.50m BGL
Trial pit backfilled on completion

Scale (approx)	Logged By	Figure No.
1:25	AB	9161-10-19.TP43

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Site Baldoyle			**Trial Pit Number** TP44
Machine : 8 tonne Excavator **Method :** Trial Pit	**Dimensions** 3.00x1.00x2.50	**Ground Level (mOD)** 5.56	**Client** CS Consulting	**Job Number** 9161-10-19
	Location (Handheld GPS) 723340.8 E 740558.4 N	**Dates** 29/10/2019	**Project Contractor** Ground Investigations Ireland	**Sheet** 1/1

Depth (m)	Sample / Tests	Water Depth (m)	Field Records	Level (mOD)	Depth (m) (Thickness)	Description	Legend	Water
					(0.20)	Brown slightly gravelly TOPSOIL with grass rootlets		
				5.36	0.20	MADE GROUND: Greyish brown very clayey sandy Gravel with occasional sub angular cobbles and some red brick and metal fragments		
0.50	B				(0.70)			
				4.66	0.90	Stiff greyish brown slightly sandy gravelly CLAY with occasional sub rounded cobbles		
1.00	B				(0.40)			
				4.26	1.30	Firm to stiff greyish brown slightly sandy gravelly CLAY with occasional sub rounded cobbles		
					(0.30)			
				3.96	1.60	Stiff slightly sandy gravelly CLAY with some sub angular to sub rounded cobbles and boulders.		
2.00	B				(0.90)			
				3.06	2.50	Complete at 2.50m		

Plan

Remarks

Trial pit stable
No groundwater
Trial pit backfilled on completion

Scale (approx)	Logged By	Figure No.
1:25	AB	9161-10-19.TP44

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Site Baldoyle			**Trial Pit Number** TP45
Machine : 8 tonne Excavator **Method :** Trial Pit	**Dimensions** 3.10x1.00x2.70m	**Ground Level (mOD)** 5.53	**Client** CS Consulting	**Job Number** 9161-10-19
	Location (Handheld GPS) 723352.2 E 740588.1 N	**Dates** 29/10/2019	**Project Contractor** Ground Investigations Ireland	**Sheet** 1/1

Depth (m)	Sample / Tests	Water Depth (m)	Field Records	Level (mOD)	Depth (m) (Thickness)	Description	Legend	Water
					(0.20)	MADE GROUND: Brown slightly gravelly Topsoil with grass rootlets		
				5.33	0.20	MADE GROUND: Brown slightly sandy gravelly Clay with rebar fragments		
0.50	B				(0.90)			
1.00	B		Fast Ingress(1) at 1.00m.					▽1
				4.43	1.10	POSSIBLE MADE GROUND: Grey sandy gravelly CLAY		
					(0.20)			
				4.23	1.30	Dense greyish brown very clayey gravelly fine to coarse SAND with occasional cobbles		
			Fast Ingress(2) at 1.50m.					▽2
					(1.10)			
2.00	B							
				3.13	2.40	Stiff grey slightly sandy gravelly CLAY with occasional sub angular to sub rounded cobbles and boulders. Gravel is sub angular to sub rounded		
					(0.30)			
				2.83	2.70	Complete at 2.70m		

Plan

Remarks

Trial pit unstable below 1.30m BGL
Groundwater encountered at 1.00m and 1.50m BGL
Trial pit backfilled on completion

Scale (approx)	Logged By	Figure No.
1:25	AB	9161-10-19.TP45

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Site Baldoyle			**Trial Pit Number** TP46
Machine : 8 tonne Excavator **Method :** Trial Pit	**Dimensions** 3.00x1.00x2.20m	**Ground Level (mOD)** 5.96	**Client** CS Consulting	**Job Number** 9161-10-19
	Location (Handheld GPS) 723357.3 E 740544.3 N	**Dates** 29/10/2019	**Project Contractor** Ground Investigations Ireland	**Sheet** 1/1

Depth (m)	Sample / Tests	Water Depth (m)	Field Records	Level (mOD)	Depth (m) (Thickness)	Description	Legend	Water
					(0.15)	Brown slightly gravelly TOPSOIL with grass rootlets		
				5.81	0.15	MADE GROUND: Greyish brown slightly sandy gravelly Clay with red brick fragments		
					(0.25)			
				5.56	0.40	Stiff reddish brown slightly sandy slightly gravelly CLAY		
0.50	B				(0.40)			
				5.16	0.80	Dense grey clayey very gravelly fine to coarse SAND with occasional sub rounded cobbles		
1.00	B							
			Fast Ingress(1) at 1.50m.		(1.30)			▽1
2.00	B		Fast Ingress(2) at 2.00m.					▽2
				3.86	2.10			
					(0.10)	Stiff grey slightly sandy gravelly CLAY with occasional sub rounded cobbles		
				3.76	2.20	Complete at 2.20m		

Plan

Remarks

Trial pit collapsing below 0.80m BGL
Groundwater encountered at 1.50 and 2.0m BGL
Trial pit backfilled on completion

Scale (approx)	Logged By	Figure No.
1:25	AB	9161-10-19.TP46

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Site Baldoyle			**Trial Pit Number** TP47
Machine : 8 tonne Excavator **Method :** Trial Pit	**Dimensions** 3.10x1.00x2.70m	**Ground Level (mOD)** 5.85	**Client** CS Consulting	**Job Number** 9161-10-19
	Location (Handheld GPS) 723369.7 E 740587.2 N	**Dates** 29/10/2019	**Project Contractor** Ground Investigations Ireland	**Sheet** 1/1

Depth (m)	Sample / Tests	Water Depth (m)	Field Records	Level (mOD)	Depth (m) (Thickness)	Description	Legend	Water
					(0.20)	Brown slightly gravelly TOPSOIL with grass rootlets		
				5.65	0.20	MADE GROUND: Brown slightly sandy gravelly Clay with plastic fragments		
					(1.10)			
			Fast Ingress(1) at 1.00m.					▽1
				4.55	1.30	Stiff brown slightly sandy slightly gravelly CLAY with occasional cobbles and boulders (possible made ground)		
			Fast Ingress(2) at 1.50m.		(0.30)			▽2
				4.25	1.60	Firm to stiff greyish brown sandy slightly gravelly CLAY		
					(0.20)			
				4.05	1.80	Loose greyish brown very clayey gravelly fine to coarse SAND		
					(0.20)			
2.00	B			3.85	2.00	Dense greyish brown very clayey gravelly fine to coarse SAND		
					(0.50)			
				3.35	2.50	Stiff grey slightly sandy gravelly CLAY with occasional sub rounded cobbles		
					(0.20)			
				3.15	2.70	Complete at 2.70m		

Plan

Remarks

Trial pit unstable below 0.20m BGL
Groundwater encountered at 1.0m and 1.50m BGL
Trial pit backfilled on completion

Scale (approx)	Logged By	Figure No.
1:25	AB	9161-10-19.TP47

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Site Baldoyle			**Trial Pit Number** TP48
Machine : 8 Tonne Tracked Excavator **Method :** Trial Pit	**Dimensions** 3.30x1.00x2.70m	**Ground Level (mOD)** 8.52	**Client** CS Consulting	**Job Number** 9161-10-19
	Location (dGPS) 723234.6 E 740524.6 N	**Dates** 29/10/2019	**Project Contractor** Ground Investigations Ireland	**Sheet** 1/1

Depth (m)	Sample / Tests	Water Depth (m)	Field Records	Level (mOD)	Depth (m) (Thickness)	Description	Legend	Water
					(0.20)	MADE GROUND: Grey sandy angular fine to coarse Gravel (crushed rock fill)		
				8.32	0.20	MADE GROUND: Brown slightly sandy gravelly Clay with occasional timber and metal fragments		
0.50	B				(0.60)			
				7.72	0.80	Medium dense grey clayey very gravelly fine to coarse SAND with occasional sub rounded cobbles		
1.00	B				(0.80)			
			Slow seepage(1) at 1.60m.	6.92	1.60	Firm grey slightly sandy gravelly CLAY with some sub angular to sub rounded cobbles and boulders		▽1
					(0.40)			
2.00	B			6.52	2.00	Stiff grey slightly sandy gravelly CLAY with some sub angular to sub rounded cobbles and boulders		
					(0.70)			
				5.82	2.70	Complete at 2.70m		

Plan

Remarks

Trial Pit stable
Groundwater encountered at 1.60m BGL as slow seepage
Trial Pit backfilled upon completion

Scale (approx)	Logged By	Figure No.
1:25	EB	9161-10-19.TP48

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Site Baldoyle			**Trial Pit Number** TP49
Machine : 8 Tonne Excavator **Method :** Trial Pit	**Dimensions** 3.00x1.00x2.50m	**Ground Level (mOD)** 8.27	**Client** CS Consulting	**Job Number** 9161-10-19
	Location (Handheld GPS) 723247.3 E 740540.3 N	**Dates** 29/10/2019	**Project Contractor** Ground Investigations Ireland	**Sheet** 1/1

Depth (m)	Sample / Tests	Water Depth (m)	Field Records	Level (mOD)	Depth (m) (Thickness)	Description	Legend	Water
				8.17	(0.10) 0.10	MADE GROUND: Grey sandy angular fine to coarse Gravel (crushed rock fill)		
					(0.40)	MADE GROUND: Brown clayey sandy fine to coarse angular to sub angular Gravel with concrete fragments		
0.50	B			7.77	0.50	Medium dense brown very clayey fine SAND with grey brown Clay lenses with occasional sub rounded cobbles		
1.00	B				(0.90)			
				6.87	1.40	Dense brown very clayey fine SAND with grey brown Clay lenses with occasional sub rounded cobbles		
					(0.60)			
2.00	B			6.27	2.00	Very stiff grey slightly sandy gravelly CLAY with some sub angubar to sub rounded cobbles and boulders		
					(0.50)			
				5.77	2.50	Complete at 2.50m		

Plan

Remarks

Trial pit stable
No groundwater
Trial pit backfilled on completion

Scale (approx)	Logged By	Figure No.
1:25	AB	9161-10-19.TP49

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Site Baldoyle			**Trial Pit Number** TP50
Machine : 8 Tonne Tracked Excavator **Method :** Trial Pit	**Dimensions** 3.30x1.00x2.40m	**Ground Level (mOD)** 8.62	**Client** CS Consulting	**Job Number** 9161-10-19
	Location (dGPS) 723232 E 740491.3 N	**Dates** 29/10/2019	**Project Contractor** Ground Investigations Ireland	**Sheet** 1/1

Depth (m)	Sample / Tests	Water Depth (m)	Field Records	Level (mOD)	Depth (m) (Thickness)	Description	Legend	Water
					(0.15)	Brown slightly gravelly TOPSOIL with grass rootlets		
				8.47	0.15	MADE GROUND: Brown slightly sandy gravelly Clay with occasional red brick fragments		
					(0.75)			
				7.72	0.90	Soft to firm brown slightly sandy gravelly CLAY with many sub angular to sub rounded cobbles and boulders		
					(0.80)			
				6.92	1.70	Stiff grey slightly sandy gravelly CLAY with some sub angular to sub rounded cobbles and boulders		
					(0.70)			
				6.22	2.40	Complete at 2.40m		

Plan

Remarks

Trial Pit stable
No groundwater encountered
Trial Pit backfilled upon completion

Scale (approx)	Logged By	Figure No.
1:25	EB	9161-10-19.TP50

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Site Baldoyle			**Trial Pit Number** TP51
Machine : 8 Tonne Tracked Excavator **Method :** Trial Pit	**Dimensions** 3.30x1.00x3.00m	**Ground Level (mOD)** 8.45	**Client** CS Consulting	**Job Number** 9161-10-19
	Location (dGPS) 723256.3 E 740512.4 N	**Dates** 29/10/2019	**Project Contractor** Ground Investigations Ireland	**Sheet** 1/1

Depth (m)	Sample / Tests	Water Depth (m)	Field Records	Level (mOD)	Depth (m) (Thickness)	Description	Legend	Water
					(0.15)	Brown slightly gravelly TOPSOIL with grass rootlets		
				8.30	0.15	MADE GROUND: Brown slightly sandy gravelly Clay with occasional timber and concrete fragments		
0.50	B				(0.65)			
				7.65	0.80	Firm brown sandy slightly gravelly CLAY		
					(0.20)			
1.00	B			7.45	1.00	Loose greyish brown clayey very gravelly fine to coarse SAND with occasional sub angular to sub rounded cobbles and boulders		
					(0.90)			
				6.55	1.90	Stiff grey slightly sandy gravelly CLAY with some sub angular to sub rounded cobbles and boulders		
2.00	B				(1.10)			
				5.45	3.00	Complete at 3.00m		

Plan

Remarks

Trial Pit spalling below 1.60m BGL
No groundwater encountered
Trial Pit backfilled upon completion

Scale (approx)	Logged By	Figure No.
1:25	EB	9161-10-19.TP50

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Site Baldoyle			**Trial Pit Number** TP52
Machine : 8 Tonne Tracked Excavator **Method :** Trial Pit	**Dimensions** 3.20x1.00x2.30m	**Ground Level (mOD)** 7.14	**Client** CS Consulting	**Job Number** 9161-10-19
	Location (dGPS) 723280.2 E 740535.9 N	**Dates** 29/10/2019	**Project Contractor** Ground Investigations Ireland	**Sheet** 1/1

Depth (m)	Sample / Tests	Water Depth (m)	Field Records	Level (mOD)	Depth (m) (Thickness)	Description	Legend	Water
					(0.20)	Brown slightly gravelly TOPSOIL with grass rootlets		
				6.94	0.20	MADE GROUND: Brown slightly sandy gravelly Clay with occasional timber and PVC fragments		
0.50	B				(0.60)			
				6.34	0.80	Loose brown clayey slightly gravelly fine SAND		
1.00	B				(0.70)			
				5.64	1.50	Firm to stiff grey slightly sandy gravelly CLAY with some sub angular to sub rounded cobbles and boulders		
					(0.50)			
				5.14	2.00	Stiff grey slightly sandy gravelly CLAY with some sub angular to sub rounded cobbles and boulders		
					(0.30)			
				4.84	2.30	Complete at 2.30m		

Plan

Remarks

Trial Pit stable
No groundwater encountered
Trial Pit backfilled upon completion

Scale (approx)	Logged By	Figure No.
1:25	EB	9161-10-19.TP52

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Site Baldoyle			**Trial Pit Number** TP53
Machine : 8 Tonne Tracked Excavator **Method :** Trial Pit	**Dimensions** 3.20m x 1.0m x 3.0m	**Ground Level (mOD)** 8.95	**Client** CS Consulting	**Job Number** 9161-10-19
	Location (dGPS) 723244.8 E 740478.4 N	**Dates** 01/11/2019	**Project Contractor** Ground Investigations Ireland	**Sheet** 1/1

Depth (m)	Sample / Tests	Water Depth (m)	Field Records	Level (mOD)	Depth (m) (Thickness)	Description	Legend	Water
					(0.60)	MADE GROUND: Grey clayey very sandy fine to coarse angular Gravel (crushed rock fill)		
0.50	B			8.35	0.60			
					(0.30)	MADE GROUND: Grey slightly sandy slightly gravelly Clay		
				8.05	0.90			
					(0.20)	MADE GROUND: Grey sandy slightly gravelly Clay with some red brick fragments		
1.00	B			7.85	1.10			
					(0.30)	Firm greyish brown slightly sandy gravelly CLAY with occasional sub angular to sub rounded cobbles		
				7.55	1.40			
					(0.60)	Firm to stiff greyish brown slightly sandy gravelly CLAY with some sub angular to sub rounded cobbles and boulders		
2.00	B			6.95	2.00			
					(0.30)	Stiff greyish brown slightly sandy gravelly CLAY with some sub angular to sub rounded cobbles and boulders		
				6.65	2.30			
					(0.70)	Very stiff grey slightly sandy gravelly CLAY with some sub angular to sub rounded cobbles and boulders		
				5.95	3.00			
						Complete at 3.00m		

Plan

Remarks

Trial Pit Stable
No groundwater encountered
Trial Pit backfilled upon completion

Scale (approx)	Logged By	Figure No.
1:25	AB	9161-10-19.TP53

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Site Baldoyle			**Trial Pit Number** TP54
Machine : 8 Tonne Tracked Excavator **Method :** Trial Pit	**Dimensions** 3.10x1.00x2.40m	**Ground Level (mOD)** 8.32	**Client** CS Consulting	**Job Number** 9161-10-19
	Location (dGPS) 723272.4 E 740512.9 N	**Dates** 29/10/2019	**Project Contractor** Ground Investigations Ireland	**Sheet** 1/1

Depth (m)	Sample / Tests	Water Depth (m)	Field Records	Level (mOD)	Depth (m) (Thickness)	Description	Legend	Water
					(0.20)	Brown slightly gravelly TOPSOIL with grass rootlets		
				8.12	0.20	MADE GROUND: Greyish brown slightly sandy gravelly Clay with occasional timber and concrete fragments		
					(0.50)			
				7.62	0.70	Firm brown slightly sandy gravelly CLAY		
					(0.40)			
				7.22	1.10	Loose greyish brown clayey gravelly fine to coarse SAND with Clay lenses		
					(0.30)			
				6.92	1.40	Medium dense greyish brown clayey gravelly fine to coarse SAND with Clay lenses		
					(0.50)			
				6.42	1.90	Soft to firm grey slightly sandy gravelly CLAY with some sub angular to sub rounded cobbles and boulders		
			Moderate ingress(1) at 2.20m.		(0.50)			▽1
				5.92	2.40	Complete at 2.40m		

Plan

Remarks

Trial Pit collapse below 1.10m BGL
Groundwater encountered at 2.20m BGL as moderate ingress
Trial Pit backfilled upon completion

Scale (approx)	Logged By	Figure No.
1:25	EB	9161-10-19.TP54

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Site Baldoyle			**Trial Pit Number** TP55
Machine : 8 Tonne Tracked Excavator **Method :** Trial Pit	**Dimensions** 3.00x1.00x2.50m	**Ground Level (mOD)** 8.64	**Client** CS Consulting	**Job Number** 9161-10-19
	Location (dGPS) Moved 5m West and 2m North due to cable	**Dates** 31/10/2019	**Project Contractor** Ground Investigations Ireland	**Sheet** 1/1

Depth (m)	Sample / Tests	Water Depth (m)	Field Records	Level (mOD)	Depth (m) (Thickness)	Description	Legend	Water
					(0.50)	MADE GROUND: Greyish brown clayey sandy fine to coarse angular Gravel (crushed rock fill)		
				8.14	0.50	Firm greyish brown sandy slightly gravelly CLAY with occasional sub angular cobbles		
					(0.80)			
				7.34	1.30	Stiff greyish brown slightly sandy gravelly CLAY with occasional angular to sub rounded cobbles and boulders		
					(0.90)			
				6.44	2.20	Very stiff grey slightly sandy gravelly CLAY with some sub angular to sub rounded cobbles and boulders		
					(0.30)			
				6.14	2.50	Complete at 2.50m		

Plan

Remarks

Trial Pit Stable
No groundwater encountered
Trial Pit backfilled upon completion

Scale (approx)	Logged By	Figure No.
1:25	AB	9161-10-19.TP55

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Site Baldoyle			**Trial Pit Number** TP56
Machine : 8 Tonne Excavator **Method :** Trial Pit	**Dimensions** 3.20x1.00x2.40m	**Ground Level (mOD)** 8.41	**Client** CS Consulting	**Job Number** 9161-10-19
	Location (dGPS) 723299.9 E 740476.4 N	**Dates** 29/10/2019	**Project Contractor** Ground Investigations Ireland	**Sheet** 1/1

Depth (m)	Sample / Tests	Water Depth (m)	Field Records	Level (mOD)	Depth (m) (Thickness)	Description	Legend	Water
				8.31	(0.10) 0.10	Brown slightly gravelly TOPSOIL with grass rootlets		
						MADE GROUND: Brown slightly gravelly sandy Clay with netting and pvc pipe fragments		
					(0.50)			
0.50	B			7.81	0.60	Stiff brown slightly gravelly sandy CLAY with occasional sub angular to sub rounded cobbles		
					(0.30)			
				7.51	0.90	Firm brown slightly gravelly sandy CLAY with occasional sub angular to sub rounded cobbles		
1.00	B				(0.50)			
				7.01	1.40	Stiff brown slightly gravelly sandy CLAY with occasional sub angular to sub rounded cobbles		
					(0.20)			
				6.81	1.60	Stiff brown slightly sandy gravelly CLAY with occasional coarse sandy lenses and cobbles		
					(0.40)			
2.00	B			6.41	2.00	Very stiff grey slightly sandy gravelly CLAY with occasional sub angular to sub rounded cobbles and boulders		
					(0.40)			
				6.01	2.40	Complete at 2.40m		

Plan

Remarks

Trial pit stable
No groundwater encountered
Trial pit backfilled on completion

Scale (approx)	Logged By	Figure No.
1:25	AB	9161-10-19.TP56

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Site Baldoyle			**Trial Pit Number** TP57
Machine : 8 Tonne Excavator **Method :** Trial Pit	**Dimensions** 3.20x1.00x3.10m	**Ground Level (mOD)** 8.02	**Client** CS Consulting	**Job Number** 9161-10-19
	Location (dGPS) 723309.9 E 740499.6 N	**Dates** 29/10/2019	**Project Contractor** Ground Investigations Ireland	**Sheet** 1/1

Depth (m)	Sample / Tests	Water Depth (m)	Field Records	Level (mOD)	Depth (m) (Thickness)	Description	Legend	Water
					(0.15)	Brown slightly gravelly TOPSOIL with grass rootlets		
				7.87	0.15	MADE GROUND: Grey brown very clayey sandy fine to coarse angular to sub angular Gravel with timber fragments		
					(0.55)			
				7.32	0.70	Soft reddish brown slightly sandy slightly gravelly CLAY		
					(0.30)			
				7.02	1.00	Stiff brown very sandy gravelly CLAY, with predominantly fine sand		
					(0.80)			
				6.22	1.80	Medium dense grey brown clayey very gravelly fine to coarse SAND with occasional sub angular to sub rounded cobbles and clay lenses.		
					(0.20)			
			Moderate(1) at 2.10m.	6.02	2.00	Loose grey brown clayey very gravelly fine to coarse SAND with occasional sub angular to sub rounded cobbles and clay lenses.		▽1
					(0.50)			
				5.52	2.50	Stiff grey slightly sandy gravelly CLAY with some sub angular to sub rounded cobbles and boulders		
					(0.60)			
				4.92	3.10	Complete at 3.10m		

Plan

Remarks

Trial pit collapsing from 1.80m BGL
Groundwater encountered at 2.10m BGL
Trial pit backfilled on completion

Scale (approx)	Logged By	Figure No.
1:25	AB	9161-10-19.TP57

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Site Baldoyle			**Trial Pit Number** TP58
Machine : 8 Tonne Tracked Excavator **Method :** Trial Pit	**Dimensions** 3.30x1.00x3.00m	**Ground Level (mOD)** 7.12	**Client** CS Consulting	**Job Number** 9161-10-19
	Location (dGPS) 723316.4 E 740523.1 N	**Dates** 29/10/2019	**Project Contractor** Ground Investigations Ireland	**Sheet** 1/1

Depth (m)	Sample / Tests	Water Depth (m)	Field Records	Level (mOD)	Depth (m) (Thickness)	Description	Legend	Water
					(0.15)	Brown slightly gravelly TOPSOIL with grass rootlets		
				6.97	0.15	MADE GROUND: Brown slightly sandy gravelly Clay with occasional sub rounded cobbles		
					(0.35)			
0.50	B			6.62	0.50	Stiff brown sandy slightly gravelly CLAY with fine sandy lenses		
					(0.50)			
1.00	B			6.12	1.00	Medium dense greyish brown clayey gravelly fine to coarse SAND with occasional sub rounded cobbles		
					(0.90)			
			Moderate ingress(1) at 1.90m.	5.22	1.90	Stiff grey slightly sandy gravelly CLAY with some sub angular to sub rounded cobbles and boulders		▽1
2.00	B				(1.10)			
				4.12	3.00	Complete at 3.00m		

Plan

Remarks

Trial Pit stable
Goundwater encountered at 1.90m BGL
Trial Pit backfilled upon completion

Scale (approx)	Logged By	Figure No.
1:25	EB	9161-10-19.TP58

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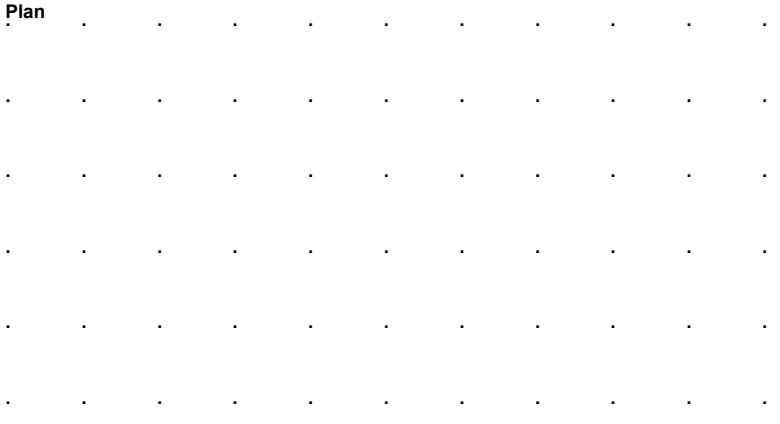
Site Baldoyle			**Trial Pit Number** TP59
Machine : 8 Tonne Excavator **Method :** Trial Pit	**Dimensions** 3.00x1.00x2.80m	**Ground Level (mOD)** 7.92	**Client** CS Consulting	**Job Number** 9161-10-19
	Location (dGPS) 723330.7 E 740477 N	**Dates** 29/10/2019	**Project Contractor** Ground Investigations Ireland	**Sheet** 1/1

Depth (m)	Sample / Tests	Water Depth (m)	Field Records	Level (mOD)	Depth (m) (Thickness)	Description	Legend	Water
				7.82	(0.10) 0.10	Brown slightly gravelly TOPSOIL with grass rootlets		
					(0.50)	MADE GROUND: Brown slightly gravelly sandy Clay with some angular cobbles and boulders, and some concrete and red brick fragments		
0.50	B			7.32	0.60			
					(0.70)	Medium dense greyish brown gravelly very clayey fine to coarse SAND		
1.00	B			6.62	1.30			
					(0.80)	Medium dense brown slightly gravelly very clayey predominantly fine SAND		
2.00	B			5.82	2.10			
					(0.40)	Stiff grey slightly sandy gravelly CLAY with occasional sub angular to sub rounded cobbles and boulders		
				5.42	2.50			
					(0.30)	Very stiff grey slightly sandy gravelly CLAY with occasional sub angular to sub rounded cobbles and boulders		
				5.12	2.80			
						Complete at 2.80m		

Plan



Remarks

Trial pit stable
No groundwater
Trial pit backfilled on completion

Scale (approx)	Logged By	Figure No.
1:25	AB	9161-10-19.TP59

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Site Baldoyle			**Trial Pit Number** TP60
Machine : 8 Tonne Excavator **Method :** Trial Pit	**Dimensions** 3.10x1.00x2.70m	**Ground Level (mOD)** 7.04	**Client** CS Consulting	**Job Number** 9161-10-19
	Location (dGPS) 723345.7 E 740505.7 N	**Dates** 29/10/2019	**Project Contractor** Ground Investigations Ireland	**Sheet** 1/1

Depth (m)	Sample / Tests	Water Depth (m)	Field Records	Level (mOD)	Depth (m) (Thickness)	Description	Legend	Water
				6.94	(0.10) 0.10	Brown slightly gravelly TOPSOIL with grass rootlets		
						MADE GROUND: Brown slightly sandy slightly gravelly Clay with some timber fragments		
0.50	B				(0.80)			
				6.14	0.90	Medium dense brown gravelly very clayey fine SAND with occasional sub rounded cobbles and boulders		
1.00	B				(0.30)			
				5.84	1.20	Dense brown gravelly very clayey fine SAND with occasional sub rounded cobbles and boulders		
					(0.30)			
				5.54	1.50	Dense greyish brown clayey very gravelly fine to coarse SAND with occasional sub rounded cobbles		▽1
			Fast(1) at 1.60m.		(0.40)			
				5.14	1.90	Stiff grey slightly sandy gravelly CLAY with some sub angular to sub rounded cobbles and boulders		
2.00	B				(0.80)			
				4.34	2.70	Complete at 2.70m		

Plan

Remarks

Trial pit stable
Groundwater encountered at 1.60m BGL
Trial pit backfilled on completion

Scale (approx)	Logged By	Figure No.
1:25	AB	9161-10-19.TP60

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Site Baldoyle			**Trial Pit Number** TP61
Machine : JCB 3CX **Method :** Trial Pit	**Dimensions**	**Ground Level (mOD)** 6.67	**Client** CS Consulting	**Job Number** 9161-10-19
	Location 723318.3 E 740669.2 N	**Dates** 21/01/2020	**Project Contractor** Ground Investigations Ireland	**Sheet** 1/1

Depth (m)	Sample / Tests	Water Depth (m)	Field Records	Level (mOD)	Depth (m) (Thickness)	Description	Legend	Water
					(0.40)	Grey angular fine to coarse crushed rock FILL		
				6.27	0.40			
					(0.10)	MADE GROUND: Dark brown slightly sandy gravelly Clay with wire fragments		
0.50	B			6.17	0.50			
					(0.40)	MADE GROUND: Brown slightly sandy gravelly Clay with occasional subangular to subrounded cobbles and boulders and concrete fragments		
				5.77	0.90			
					(0.55)	Stiff brown slightly sandy gravelly CLAY with occasional angular to subrounded cobbles and boulders		
1.50	B			5.22	1.45			
					(0.60)	Stiff greyish brown sandy slightly gravelly CLAY with occasional subangular to subrounded cobbles		
				4.62	2.05			
					(0.45)	Dense grey/brown slightly clayey gravelly fine to coarse SAND with occasional rounded cobbles		
2.50	B			4.17	2.50			
					(0.60)	Stiff grey slightly sandy gravelly CLAY with occasional angular to subrounded cobbles and boulders		
				3.57	3.10			
						Complete at 3.10m		

Plan

Remarks

Trial Pit stable
No groundwater encountered
Trial Pit backfilled upon completion

Scale (approx)	Logged By	Figure No.
1:25	EB	9161-10-19.TP61

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Site Baldoyle			**Trial Pit Number** TP62
Machine : JCB 3CX **Method :** Trial Pit	**Dimensions**	**Ground Level (mOD)** 6.55	**Client** CS Consulting	**Job Number** 9161-10-19
	Location 723354.4 E 740682.5 N	**Dates** 21/01/2020	**Project Contractor** Ground Investigations Ireland	**Sheet** 1/1

Depth (m)	Sample / Tests	Water Depth (m)	Field Records	Level (mOD)	Depth (m) (Thickness)	Description	Legend	Water
					(0.95)	Grey angular fine to coarse crushed rock FILL		
				5.60	0.95			
					(0.45)	Firm brown slightly sandy slightly gravelly CLAY		
				5.15	1.40			
					(1.10)	Stiff grey slightly sandy gravelly CLAY with some angular to subrounded cobbles and boulders Sand lens encountered from 2.05 to 2.40m BGL		
			Slow(1) at 2.05m.					▽1
				4.05	2.50	Complete at 2.50m		

Plan

Remarks

Trial Pit stable
Groundwater encountered at 2.05m BGL as slow seepage
Trial Pit backfilled upon completion

Scale (approx)	Logged By	Figure No.
1:25	EB	9161-10-19.TP62

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Site Baldoyle			**Trial Pit Number** TP63
Machine : JCB 3CX **Method :** Trial Pit	**Dimensions**	**Ground Level (mOD)** 6.60	**Client** CS Consulting	**Job Number** 9161-10-19
	Location 723326.5 E 740630.9 N	**Dates** 22/01/2020	**Project Contractor** Ground Investigations Ireland	**Sheet** 1/1

Depth (m)	Sample / Tests	Water Depth (m)	Field Records	Level (mOD)	Depth (m) (Thickness)	Description	Legend	Water
					(0.75)	Grey angular fine to coarse crushed rock FILL		
				5.85	0.75	MADE GROUND: Grey slightly sandy slightly gravelly Clay with occasional red brick fragments		
					(0.35)			
				5.50	1.10	POSSIBLE MADE GROUND: Light brown slightly sandy gravelly Clay with occasional subangular cobbles		
					(0.20)			
				5.30	1.30	Firm to stiff brown slightly sandy gravelly CLAY with occasional subangular to subrounded cobbles		
					(0.80)			
				4.50	2.10	Stiff greyish brown slightly sandy gravelly CLAY with occasional subangular to subrounded cobbles		
					(0.75)			
				3.75	2.85	Dense grey slightly clayey slightly gravelly predominantly fine SAND		
					(0.25)			
				3.50	3.10	Stiff grey slightly sandy gravelly CLAY with occasional subangular to subrounded cobbles and boulders		
					(0.20)			
				3.30	3.30	Complete at 3.30m		

Plan

Remarks

Trial Pit stable
No groundwater encountered
Trial Pit backfilled upon completion

Scale (approx)	Logged By	Figure No.
1:25	EB	9161-10-19.TP63

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Site Baldoyle			**Trial Pit Number** TP64
Machine : 8 Tonne Tracked Excavator **Method :** Trial Pit	**Dimensions** 3.10x1.00x2.00m	**Ground Level (mOD)** 6.53	**Client** CS Consulting	**Job Number** 9161-10-19
	Location (dGPS) 723341.1 E 740656.6 N	**Dates** 01/11/2019	**Project Contractor** Ground Investigations Ireland	**Sheet** 1/1

Depth (m)	Sample / Tests	Water Depth (m)	Field Records	Level (mOD)	Depth (m) (Thickness)	Description	Legend	Water
					(0.30)	Black sandy angular fine to coarse crushed rock FILL		
				6.23	0.30	MADE GROUND: Light brown slightly sandy gravelly Clay		
					(0.40)			
				5.83	0.70	MADE GROUND: Brown gravelly very clayey predominantly fine Sand with clay lenses and ceramic fragments		
					(0.70)			
				5.13	1.40	Stiff grey slightly sandy gravelly CLAY with some sub angular to sub rounded cobbles and boulders.		
					(0.60)			
				4.53	2.00	Complete at 2.00m		

Plan

Remarks

Trial pit stable
No groundwater encountered
Trial Pit backfilled upon completion

Scale (approx)	Logged By	Figure No.
1:25	AB	9161-10-19.TP64

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Site Baldoyle			**Trial Pit Number** TP65
Machine : 8 Tonne Tracked Excavator **Method :** Trial Pit	**Dimensions** 3.00x1.00x2.60m	**Ground Level (mOD)** 6.44	**Client** CS Consulting	**Job Number** 9161-10-19
	Location (dGPS) 723362.9 E 740667.6 N	**Dates** 01/11/2019	**Project Contractor** Ground Investigations Ireland	**Sheet** 1/1

Depth (m)	Sample / Tests	Water Depth (m)	Field Records	Level (mOD)	Depth (m) (Thickness)	Description	Legend	Water
					(0.65)	Black angular fine to coarse crushed rock FILL		
0.50	B			5.79	0.65			
				5.78	0.66	MADE GROUND: GEOTEXTILE MESH		
					(0.54)	Firm brown sandy slightly gravelly CLAY with occasional sub angular cobbles and some sandy lenses		
1.00	B		Slow(1) at 1.10m.					▽1
				5.24	1.20			
					(0.30)	Stiff brown sandy slightly gravelly CLAY with occasional sub angular cobbles and some sandy lenses		
				4.94	1.50			
					(0.50)	Stiff grey slightly sandy gravelly CLAY with some sub angular to sub rounded cobbles and boulders.		
2.00	B			4.44	2.00			
					(0.60)	Very stiff grey slightly sandy gravelly CLAY with some sub angular to sub rounded cobbles and boulders.		
				3.84	2.60			
						Complete at 2.60m		

Plan

Remarks

Trial pit stable
Groundwater encountered at 1.10m BGL
Trial Pit backfilled upon completion

Scale (approx)	Logged By	Figure No.
1:25	AB	9161-10-19.TP65

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Site Baldoyle			**Trial Pit Number** TP66
Machine : JCB 3CX **Method :** Trial Pit	**Dimensions**	**Ground Level (mOD)** 6.42	**Client** CS Consulting	**Job Number** 9161-10-19
	Location 723383.1 E 740686.4 N	**Dates** 21/01/2020	**Project Contractor** Ground Investigations Ireland	**Sheet** 1/1

Depth (m)	Sample / Tests	Water Depth (m)	Field Records	Level (mOD)	Depth (m) (Thickness)	Description	Legend	Water
					(0.15)	Grey angular fine to coarse crushed rock FILL		
				6.27	0.15	Black clayey angular fine to coarse crushed rock FILL		
					(0.35)			
0.50	B			5.92	0.50	POSSIBLE MADE GROUND: Brown slightly sandy gravelly Clay with occasional angular cobbles		
					(0.60)			
				5.32	1.10	Loose grey very clayey gravelly fine to coarse SAND with occasional subangular to rounded cobbles		
					(0.30)			
1.50	B			5.02	1.40	Stiff dark grey slightly sandy gravelly CLAY with some angular to subrounded cobbles and boulders		
					(1.00)			
				4.02	2.40	Complete at 2.40m		

Plan

Remarks

Trial Pit stable
No groundwater encountered
Trial Pit backfilled upon completion

Scale (approx)	Logged By	Figure No.
1:25	EB	9161-10-19.TP66

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Site Baldoyle			**Trial Pit Number** TP67
Machine : 8 Tonne Tracked Excavator **Method :** Trial Pit	**Dimensions** 3.30x1.00x3.30m	**Ground Level (mOD)** 6.38	**Client** CS Consulting	**Job Number** 9161-10-19
	Location (dGPS) 723351.9 E 740622.3 N	**Dates** 01/11/2019	**Project Contractor** Ground Investigations Ireland	**Sheet** 1/1

Depth (m)	Sample / Tests	Water Depth (m)	Field Records	Level (mOD)	Depth (m) (Thickness)	Description	Legend	Water
					(0.80)	Black sandy angular fine to coarse crushed rock FILL		
0.50	B			5.58	0.80	MADE GROUND: Greyish brown slightly sandy gravelly Clay with fence post		
1.00	B				(0.80)			
				4.78	1.60	MADE GROUND: Greyish brown slightly sandy gravelly Clay with timber fragments		
2.00	B				(0.70)			
			Fast(1) at 2.20m.	4.08	2.30	Loose greyish brown gravelly very clayey fine to coarse SAND		▽1
					(0.80)			
				3.28	3.10	Soft to firm grey slightly sandy gravelly CLAY with some sub angular to sub rounded cobbles and boulders.		
					(0.20)			
				3.08	3.30	Complete at 3.30m		

Plan

Remarks

Trial pit collapse from 1.60m BGL
Groundwater encountered at 2.20m BGL as fast ingress
Trial Pit backfilled upon completion

Scale (approx)	Logged By	Figure No.
1:25	AB	9161-10-19.TP67

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Site Baldoyle			**Trial Pit Number** TP68
Machine : 8 Tonne Tracked Excavator **Method :** Trial Pit	**Dimensions** 3.40x1.00x2.80m	**Ground Level (mOD)** 6.28	**Client** CS Consulting	**Job Number** 9161-10-19
	Location (dGPS) 723368 E 740630.4 N	**Dates** 01/11/2019	**Project Contractor** Ground Investigations Ireland	**Sheet** 1/1

Depth (m)	Sample / Tests	Water Depth (m)	Field Records	Level (mOD)	Depth (m) (Thickness)	Description	Legend	Water
					(0.40)	Black sandy angular fine to coarse crushed rock FILL		
				5.88	0.40			
0.50	B				(0.50)	MADE GROUND: Grey mottled brown slightly sandy gravelly Clay with red PVC fragments		
				5.38	0.90			
1.00	B				(0.60)	POSSIBLE MADE GROUND: Brown slightly sandy gravelly CLAY		
				4.78	1.50			
					(0.40)	Stiff greyish brown slightly sandy gravelly CLAY with occasional sub rounded cobbles and boulders with sand lenses		
				4.38	1.90			
2.00	B				(0.90)	Stiff grey slightly sandy gravelly CLAY with some sub rounded to sub angular cobbles and boulders		
				3.48	2.80			
						Complete at 2.80m		

Plan

Remarks

Trial pit stable
No groundwater encountered
Trial Pit backfilled upon completion

Scale (approx)	Logged By	Figure No.
1:25	AB	9161-10-19.TP68

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Site Baldoyle			**Trial Pit Number** TP69
Machine : JCB 3CX **Method :** Trial Pit	**Dimensions**	**Ground Level (mOD)** 6.60	**Client** CS Consulting	**Job Number** 9161-10-19
	Location 723373.8 E 740644.3 N	**Dates** 22/01/2020	**Project Contractor** Ground Investigations Ireland	**Sheet** 1/1

Depth (m)	Sample / Tests	Water Depth (m)	Field Records	Level (mOD)	Depth (m) (Thickness)	Description	Legend	Water
				6.45	(0.15) 0.15	Grey angular fine to coarse crushed rock FILL		
						MADE GROUND: Light brown slightly sandy gravelly Clay		
				6.10	(0.35) 0.50	POSSIBLE MADE GROUND: Dark brown slightly sandy gravelly Clay with occasional subangular cobbles		
				5.80	(0.30) 0.80	Dense brown clayey gravelly fine to coarse SAND with occasional subrounded cobbles		
			Moderate(1) at 1.65m.		(1.00)			▽1
				4.80	1.80	Stiff grey slightly sandy gravelly CLAY with occasional angular to subrounded cobbles and boulders		
					(0.70)			
				4.10	2.50	Complete at 2.50m		

Plan

Remarks

Trial Pit stable
Groundwater encountered at 1.65m BGL as moderate ingress
Trial Pit backfilled upon completion

Scale (approx)	Logged By	Figure No.
1:25	EB	9161-10-19.TP69

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Site Baldoyle			**Trial Pit Number** TP70
Machine : 8 Tonne Tracked Excavator **Method :** Trial Pit	**Dimensions** 3.00x1.00x0.80m	**Ground Level (mOD)** 6.58	**Client** CS Consulting	**Job Number** 9161-10-19
	Location (dGPS) 723383.4 E 740667.3 N	**Dates** 01/11/2019	**Project Contractor** Ground Investigations Ireland	**Sheet** 1/1

Depth (m)	Sample / Tests	Water Depth (m)	Field Records	Level (mOD)	Depth (m) (Thickness)	Description	Legend	Water
					(0.20)	Grey sandy angular fine to coarse crushed rock FILL		
				6.38	0.20	Black angular fine to coarse crushed rock FILL		
					(0.40)			
			Fast(1) at 0.60m.	5.98	0.60	GEOTEXTILE MESH		▽1
				5.97	0.61			
					(0.19)	Stiff brown slightly sandy gravelly CLAY		
				5.78	0.80	Complete at 0.80m		

Plan

Remarks

Trial pit abandoned due to ground water
Groundwater encountered at 0.60m BGL as fast ingress
Trial Pit backfilled upon completion

Scale (approx)	Logged By	Figure No.
1:25	AB	9161-10-19.TP70

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Site Baldoyle			**Trial Pit Number** TP71
Machine : JCB 3CX **Method :** Trial Pit	**Dimensions**	**Ground Level (mOD)** 6.14	**Client** CS Consulting	**Job Number** 9161-10-19
	Location 723395.2 E 740619.6 N	**Dates** 12/02/2020	**Project Contractor** Ground Investigations Ireland	**Sheet** 1/1

Depth (m)	Sample / Tests	Water Depth (m)	Field Records	Level (mOD)	Depth (m) (Thickness)	Description	Legend	Water
			Moderate ingress(1) at 0.40m.	6.04	(0.10) 0.10	Brown clayey gravelly Clay TOPSOIL		
					(0.40)	MADE GROUND: Grey very clayey gravelly fine to coarse Sand with styrofoam fragments		▽1
				5.64	0.50	Firm to stiff greyish brown slightly sandy gravelly CLAY with occasional subangular to subrounded cobbles		
					(1.30)			
				4.34	1.80	Stiff grey slightly sandy gravelly CLAY with some subangular to subrounded cobbles and boulders		
					(0.50)			
				3.84	2.30	Complete at 2.30m		

Plan

Remarks

Trial Pit stable
Groundwater encountered at 0.40m BGL as moderate ingress
Trial Pit backfilled upon completion

Scale (approx)	Logged By	Figure No.
1:25	EB	9161-10-19.TP71

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Site Baldoyle			**Trial Pit Number** TP72
Machine : JCB 3CX **Method :** Trial Pit	**Dimensions**	**Ground Level (mOD)** 7.17	**Client** CS Consulting	**Job Number** 9161-10-19
	Location 723401.6 E 740640.6 N	**Dates** 12/02/2020	**Project Contractor** Ground Investigations Ireland	**Sheet** 1/1

Depth (m)	Sample / Tests	Water Depth (m)	Field Records	Level (mOD)	Depth (m) (Thickness)	Description	Legend	Water
					(0.70)	Brown silty Clay TOPSOIL		
0.50	B			6.47	0.70	Soft greyish brown slightly sandy gravelly CLAY with occasional subangular cobbles		
					(0.70)			
1.50	B		Moderate ingress(1) at 1.60m.	5.77	1.40	Stiff greyish brown slightly sandy gravelly CLAY with occasional subangular cobbles		▽1
					(0.45)			
				5.32	1.85	Stiff grey slightly sandy gravelly CLAY with some subangular to subrounded cobbles and boulders		
					(0.75)			
				4.57	2.60	Complete at 2.60m		

Plan

Remarks

Trial Pit stable
Groundwater encountered at 1.60m BGL as moderate ingress
Trial Pit backfilled upon completion

Scale (approx)	Logged By	Figure No.
1:25	EB	9161-10-19.TP72

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Site Baldoyle			**Trial Pit Number** TP73
Machine : JCB 3CX **Method :** Trial Pit	**Dimensions**	**Ground Level (mOD)** 7.10	**Client** CS Consulting	**Job Number** 9161-10-19
	Location 723409.4 E 740658.9 N	**Dates** 12/02/2020	**Project Contractor** Ground Investigations Ireland	**Sheet** 1/1

Depth (m)	Sample / Tests	Water Depth (m)	Field Records	Level (mOD)	Depth (m) (Thickness)	Description	Legend	Water
					(0.35)	Brown slightly silty Clay TOPSOIL		
				6.75	0.35	POSSIBLE MADE GROUND: Greyish brown sandy slightly gravelly Clay		
					(0.65)			
				6.10	1.00	Medium dense greyish brown very clayey gravelly fine to coarse SAND with clay lenses and occasional subrounded cobbles		
					(0.60)			
				5.50	1.60	Firm to stiff brown slightly sandy gravelly CLAY with occasional subangular to subrounded cobbles and boulders		
					(0.30)			
				5.20	1.90	Stiff grey slightly sandy gravelly CLAY with occasional Sand lenses and some subangular to subrounded cobbles and boulders		
			Fast ingress(1) at 2.40m.		(0.80)			▽1
				4.40	2.70	Complete at 2.70m		

Plan

Remarks

Trial Pit stable
Groundwater encountered at 2.40m BGL as fast ingress
Trial Pit backfilled upon completion

Scale (approx)	Logged By	Figure No.
1:25	EB	9161-10-19.TP73

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Site Baldoyle			**Trial Pit Number** TP74
Machine : 8 Tonne Tracked Excavator **Method :** Trial Pit	**Dimensions** 3.0x1.00x2.20m	**Ground Level (mOD)** 6.76	**Client** CS Consulting	**Job Number** 9161-10-19
	Location (dGPS) 723336.6 E 740751.5 N	**Dates** 01/11/2019	**Project Contractor** Ground Investigations Ireland	**Sheet** 1/1

Depth (m)	Sample / Tests	Water Depth (m)	Field Records	Level (mOD)	Depth (m) (Thickness)	Description	Legend	Water
					(0.20)	Black angular fine to coarse crushed rock FILL		
				6.56	0.20	MADE GROUND: Brown clayey sandy angular Gravel		
0.50	B				(0.60)			
				5.96	0.80	Firm greyish brown slightly sandy gravelly CLAY		
1.00	B				(0.40)			
			Slow(1) at 1.20m.	5.56	1.20	Medium dense greyish brown clayey gravelly fine to coarse SAND		▽1
					(0.40)			
				5.16	1.60	Stiff grey slightly sandy gravelly CLAY with some sub angular cobbles and boulders		
					(0.60)			
2.00	B			4.56	2.20	Complete at 2.20m		

Plan

Remarks

Trial pit stable
Groundwater encountered at 1.20m to 1.60m BGL
Trial Pit backfilled upon completion

Scale (approx)	Logged By	Figure No.
1:25	AB	9161-10-19.TP74

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Site Baldoyle			**Trial Pit Number** TP75
Machine : 8 Tonne Tracked Excavator **Method :** Trial Pit	**Dimensions** 3.20x1.00x2.30m	**Ground Level (mOD)** 6.75	**Client** CS Consulting	**Job Number** 9161-10-19
	Location (dGPS) 723358.4 E 740751.4 N	**Dates** 01/11/2019	**Project Contractor** Ground Investigations Ireland	**Sheet** 1/1

Depth (m)	Sample / Tests	Water Depth (m)	Field Records	Level (mOD)	Depth (m) (Thickness)	Description	Legend	Water
					(0.30)	Brown slightly gravelly TOPSOIL with grass rootlets		
				6.45	0.30			
			Slow(1) at 0.40m.		(0.20)	MADE GROUND: Brown slightly sandy gravelly Clay		▽1
				6.25	0.50	Loose greyish brown gravelly very clayey fine to coarse SAND		
					(1.10)			
				5.15	1.60	Stiff grey slightly sandy gravelly CLAY with some sub angular to sub rounded cobbles and boulders.		
					(0.70)			
				4.45	2.30	Complete at 2.30m		

Plan

Remarks

Trial pit stable
Groundwater encountered at 0.40m BGL and below
Trial Pit backfilled upon completion

Scale (approx)	Logged By	Figure No.
1:25	AB	9161-10-19.TP75

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Site Baldoyle			**Trial Pit Number** TP76
Machine : 8 Tonne Tracked Excavator **Method :** Trial Pit	**Dimensions** 3.10x1.00x2.30m	**Ground Level (mOD)** 6.69	**Client** CS Consulting	**Job Number** 9161-10-19
	Location (dGPS) 723339.4 E 740708.9 N	**Dates** 01/11/2019	**Project Contractor** Ground Investigations Ireland	**Sheet** 1/1

Depth (m)	Sample / Tests	Water Depth (m)	Field Records	Level (mOD)	Depth (m) (Thickness)	Description	Legend	Water
					(0.50)	Black angular fine to coarse crushed rock FILL		
				6.19	0.50	Stiff brown slightly sandy gravelly CLAY		
			Very Fast(1) at 0.80m.		(0.60)			▽1
				5.59	1.10	Stiff greyish brown slightly sandy gravelly CLAY with occasional sub rounded to sub angular cobbles and boulders		
					(0.70)			
				4.89	1.80	Stiff grey slightly sandy gravelly CLAY with some sub angular cobbles and boulders		
					(0.40)			
				4.49	2.20	Complete at 2.30m		

Plan

Remarks

Trial pit stable
Land drain at 0.80m BGL
Groundwater encountered at 0.80m BGL
Trial Pit backfilled upon completion

Scale (approx)	Logged By	Figure No.
1:25	AB	9161-10-19.TP76

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Site Baldoyle			**Trial Pit Number** TP77
Machine : 8 Tonne Tracked Excavator **Method :** Trial Pit	**Dimensions** 3.10x1.00x2.60m	**Ground Level (mOD)** 6.79	**Client** CS Consulting	**Job Number** 9161-10-19
	Location (dGPS) 723372.6 E 740719.3 N	**Dates** 01/11/2019	**Project Contractor** Ground Investigations Ireland	**Sheet** 1/1

Depth (m)	Sample / Tests	Water Depth (m)	Field Records	Level (mOD)	Depth (m) (Thickness)	Description	Legend	Water
					(0.40)	Black angular fine to coarse crushed rock FILL		
			Slow(1) at 0.40m.	6.39	0.40	MADE GROUND: Brown slightly sandy gravelly Clay		▽1
0.50	B				(0.40)			
				5.99	0.80	Firm greyish brown slightly sandy gravelly CLAY with occasional sub rounded cobbles		
1.00	B				(0.40)			
				5.59	1.20	Soft to firm greyish brown slightly sandy gravelly CLAY with occasional sub rounded cobbles		
					(0.40)			
				5.19	1.60	Stiff grey slightly sandy gravelly CLAY with some sub angular to sub rounded cobbles and boulders		
2.00	B				(1.00)			
				4.19	2.60	Complete at 2.60m		

Plan

Remarks

Trial pit stable
Groundwater encountered at 0.40m BGL
Trial Pit backfilled upon completion

Scale (approx)	Logged By	Figure No.
1:25	AB	9161-10-19.TP77

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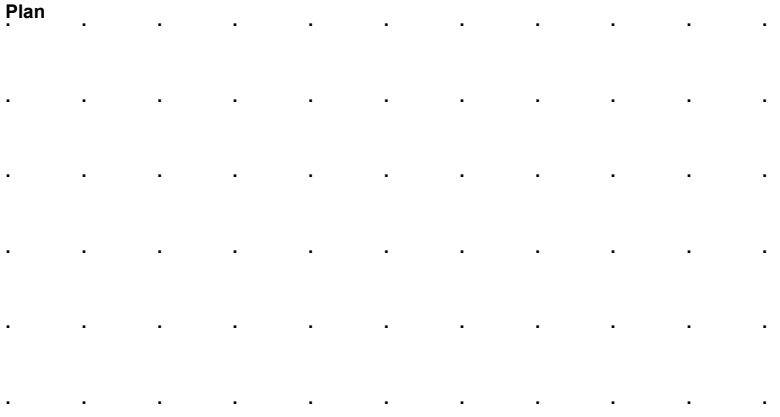
Site Baldoyle			**Trial Pit Number** TP78
Machine : 8 Tonne Tracked Excavator **Method :** Trial Pit	**Dimensions** 3.30x1.00x2.50m	**Ground Level (mOD)** 6.50	**Client** CS Consulting	**Job Number** 9161-10-19
	Location (dGPS) 723403.1 E 740743 N	**Dates** 01/11/2019	**Project Contractor** Ground Investigations Ireland	**Sheet** 1/1

Depth (m)	Sample / Tests	Water Depth (m)	Field Records	Level (mOD)	Depth (m) (Thickness)	Description	Legend	Water
					(0.20)	Brown slightly gravelly TOPSOIL with grass rootlets		
				6.30	0.20			
					(0.20)	Firm to stiff light brown slightly sandy slightly gravelly CLAY		
				6.10	0.40			
0.50	B				(0.30)	Medium dense greyish brown gravelly very clayey fine to coarse SAND with clay lenses		
				5.80	0.70			
1.00	B				(1.00)	Firm to stiff greyish brown sandy slightly gravelly CLAY with fine to coarse sandy lenses		
				4.80	1.70			
2.00	B				(0.80)	Stiff grey slightly sandy gravelly CLAY with some sub angular to sub rounded cobbles and boulders.		
				4.00	2.50			
						Complete at 2.50m		

Plan



Remarks

Trial pit stable
No groundwater encountered
Trial Pit backfilled upon completion

Scale (approx)	Logged By	Figure No.
1:25	AB	9161-10-19.TP78

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Site Baldoyle			**Trial Pit Number** TP79
Machine : 8 Tonne Tracked Excavator **Method :** Trial Pit	**Dimensions** 3.30x1.00x2.10m	**Ground Level (mOD)** 6.59	**Client** CS Consulting	**Job Number** 9161-10-19
	Location 723378.3 E 740699.7 N	**Dates** 01/11/2019	**Project Contractor** Ground Investigations Ireland	**Sheet** 1/1

Depth (m)	Sample / Tests	Water Depth (m)	Field Records	Level (mOD)	Depth (m) (Thickness)	Description	Legend	Water
					(0.40)	Black angular fine to coarse crushed rock FILL		
			Slow(1) at 0.50m.	6.19	0.40	MADE GROUND: Brown slightly sandy gravelly Clay		▽1
					(0.40)			
				5.79	0.80	Firm to stiff greyish brown slightly sandy gravelly CLAY with occasional sub rounded cobbles		
					(0.60)			
				5.19	1.40	Stiff brown slightly sandy gravelly CLAY		
					(0.20)			
				4.99	1.60	Very stiff grey slightly sandy gravelly CLAY with some sub angular to sub rounded cobbled and boulders		
					(0.50)			
				4.49	2.10	Complete at 2.10m		

Plan

Remarks

Trial pit stable
Groundwater encountered from 0.50m to 1.0m BGL
Trial Pit backfilled upon completion

Scale (approx)	Logged By	Figure No.
1:25	AB	9161-10-19.TP79

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Site Baldoyle			**Trial Pit Number** TP80
Machine : 8 Tonne Tracked Excavator **Method :** Trial Pit	**Dimensions** 3.10x1.00x2.70m	**Ground Level (mOD)** 6.62	**Client** CS Consulting	**Job Number** 9161-10-19
	Location (dGPS) 723398.8 E 740706.4 N	**Dates** 01/11/2019	**Project Contractor** Ground Investigations Ireland	**Sheet** 1/1

Depth (m)	Sample / Tests	Water Depth (m)	Field Records	Level (mOD)	Depth (m) (Thickness)	Description	Legend	Water
				6.52	(0.10) 0.10	Brown slightly gravelly TOPSOIL with grass rootlets		
0.50	B				(0.60)	Stiff greyish brown slightly sandy gravelly CLAY with occasional sub angular to sub rounded cobbles and boulders		
1.00	B			5.92	0.70			
					(0.40)	Firm to stiff greyish brown slightly sandy gravelly CLAY with occasional sub angular to sub rounded cobbles and boulders		
				5.52	1.10			
					(0.50)	Stiff greyish brown slightly sandy gravelly CLAY with occasional sub angular to sub rounded cobbles and boulders		
				5.02	1.60			
					(0.40)	Stiff grey slightly sandy gravelly CLAY with some sub angular to sub rounded cobbled and boulders		
2.00	B			4.62	2.00			
					(0.70)	Very stiff grey slightly sandy gravelly CLAY with some sub angular to sub rounded cobbled and boulders		
				3.92	2.70	Complete at 2.70m		

Plan

Remarks

Trial pit stable
No groundwater encountered
Trial Pit backfilled upon completion

Scale (approx)	Logged By	Figure No.
1:25	AB	9161-10-19.TP80

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Site Baldoyle			**Trial Pit Number** TP81
Machine : 8 Tonne Tracked Excavator **Method :** Trial Pit	**Dimensions** 3.30x1.00x2.30m	**Ground Level (mOD)** 6.54	**Client** CS Consulting	**Job Number** 9161-10-19
	Location (dGPS) 723404.1 E 740723.4 N	**Dates** 01/11/2019	**Project Contractor** Ground Investigations Ireland	**Sheet** 1/1

Depth (m)	Sample / Tests	Water Depth (m)	Field Records	Level (mOD)	Depth (m) (Thickness)	Description	Legend	Water
					(0.20)	Brown slightly gravelly TOPSOIL with grass rootlets		
				6.34	0.20	Stiff greyish brown sandy slightly gravelly CLAY		
					(0.40)			
				5.94	0.60	Firm to stiff greyish brown sandy slightly gravelly CLAY		
					(0.30)			
				5.64	0.90	Medium dense brown clayey very gravelly fine to coarse SAND with clay lenses and occasional sub rounded cobbles		
					(0.20)			
			Slow(1) at 1.10m.	5.44	1.10	Medium dense greyish brown clayey very gravelly fine to coarse SAND with some sub rounded cobbles and boulders		▽1
					(0.70)			
				4.74	1.80	Stiff grey slightly sandy gravelly CLAY with some sub angular to sub rounded cobbles and boulders		
					(0.50)			
				4.24	2.30	Complete at 2.30m		

Plan

Remarks

Trial pit sidewall collapse from 1.1m BGL
Groundwater encountered from 1.1m BGL
Trial Pit backfilled upon completion

Scale (approx)	Logged By	Figure No.
1:25	AB	9161-10-19.TP81

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Site Baldoyle			**Trial Pit Number** TP82
Machine : JCB 3CX **Method :** Trial Pit	**Dimensions**	**Ground Level (mOD)** 7.00	**Client** CS Consulting	**Job Number** 9161-10-19
	Location 723429.9 E 740710.3 N	**Dates** 12/02/2020	**Project Contractor** Ground Investigations Ireland	**Sheet** 1/1

Depth (m)	Sample / Tests	Water Depth (m)	Field Records	Level (mOD)	Depth (m) (Thickness)	Description	Legend	Water
					(0.30)	Brown slightly gravelly Clay TOPSOIL		
				6.70	0.30	MADE GROUND: Brown slightly gravelly silty Clay with occasional red brick fragments		
					(0.90)			
				5.80	1.20	Stiff greyish brown slightly sandy slightly gravelly slightly silty CLAY with occasional subangular to subrounded cobbles		
					(0.80)			
				5.00	2.00	Stiff grey slightly sandy gravelly CLAY with some subangular to subrounded cobbles and boulders		
					(0.50)			
				4.50	2.50	Complete at 2.50m		

Plan

Remarks

Trial Pit stable
No groundwater encountered
Trial Pit backfilled upon completion

Scale (approx)	Logged By	Figure No.
1:25	EB	9161-10-19.TP82

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Site Baldoyle			**Trial Pit Number** TP83
Machine : JCB 3CX **Method :** Trial Pit	**Dimensions**	**Ground Level (mOD)** 7.16	**Client** CS Consulting	**Job Number** 9161-10-19
	Location 723442 E 740739.4 N	**Dates** 12/02/2020	**Project Contractor** Ground Investigations Ireland	**Sheet** 1/1

Depth (m)	Sample / Tests	Water Depth (m)	Field Records	Level (mOD)	Depth (m) (Thickness)	Description	Legend	Water
					(0.40)	Brown slightly silty Clay TOPSOIL		
				6.76	0.40			
0.50	B				(0.70)	POSSIBLE MADE GROUND: Brown slightly gravelly silty Clay		
				6.06	1.10			
1.50	B				(0.80)	Firm greyish brown sandy slightly gravelly CLAY with occasional subangular to subrounded cobbles		
				5.26	1.90			
2.50	B				(0.80)	Stiff greyish brown sandy slightly gravelly CLAY with occasional subangular to subrounded cobbles		
				4.46	2.70			
					(0.50)	Stiff grey slightly sandy gravelly CLAY with some subangular to subrounded cobbles and boulders		
				3.96	3.20			
						Complete at 3.20m		

Plan

Remarks

Trial Pit stable
No groundwater encountered
Trial Pit backfilled upon completion

Scale (approx)	Logged By	Figure No.
1:25	EB	9161-10-19.TP83

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Site Baldoyle			**Trial Pit Number** TP84
Machine : JCB 3CX **Method :** Trial Pit	**Dimensions**	**Ground Level (mOD)** 7.84	**Client** CS Consulting	**Job Number** 9161-10-19
	Location 723362 E 740456.1 N	**Dates** 21/01/2020	**Project Contractor** Ground Investigations Ireland	**Sheet** 1/1

Depth (m)	Sample / Tests	Water Depth (m)	Field Records	Level (mOD)	Depth (m) (Thickness)	Description	Legend	Water
					(0.30)	Grey/brown clayey angular fine to coarse crushed rock FILL		
				7.54	0.30	MADE GROUND: Brown slightly sandy gravelly Clay with metal fragments		
					(0.30)			
				7.24	0.60	Medium dense grey slightly clayey gravelly fine to coarse SAND with occasional rounded cobbles		
					(0.90)			
			Slow(1) at 1.50m.	6.34	1.50	Soft to firm greyish brown sandy slightly gravelly CLAY with occasional subrounded cobbles		▽1
					(0.70)			
				5.64	2.20	Dense grey slightly clayey slightly gravelly fine SAND with occasional rounded cobbles		
					(0.40)			
				5.24	2.60	Stiff grey slightly sandy gravelly CLAY with occasional subangular to subrounded cobbles and boulders		
					(0.40)			
				4.84	3.00	Complete at 3.00m		

Plan

Remarks

Trial Pit collapse from 1.00m BGL
Groundwater encountered at 1.50m BGL as slow seepage
Trial Pit backfilled upon completion

Scale (approx)	Logged By	Figure No.
1:25	EB	9161-10-19.TP84

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Site Baldoyle			**Trial Pit Number** TP85
Machine : JCB 3CX **Method :** Trial Pit	**Dimensions**	**Ground Level (mOD)** 8.08	**Client** CS Consulting	**Job Number** 9161-10-19
	Location 723382.4 E 740460.5 N	**Dates** 21/01/2020	**Project Contractor** Ground Investigations Ireland	**Sheet** 1/1

Depth (m)	Sample / Tests	Water Depth (m)	Field Records	Level (mOD)	Depth (m) (Thickness)	Description	Legend	Water
					(0.30)	Brown slightly gravelly TOPSOIL		
				7.78	0.30			
0.50	B				(0.70)	Stiff brown slightly sandy slightly gravelly CLAY		
				7.08	1.00			
					(0.50)	Stiff brown mottled white sandy slightly gravelly CLAY with occasional subrounded to rounded cobbles		
1.50	B			6.58	1.50			
					(1.00)	Firm to stiff greyish brown sandy slightly gravelly CLAY with occasional subrounded cobbles and boulders and sandy lenses		
2.50	B			5.58	2.50			
					(0.80)	Stiff grey slightly sandy gravelly CLAY with some subangular to subrounded cobbles and boulders		
				4.78	3.30			
						Complete at 3.30m		

Plan

Remarks

Trial Pit stable
No groundwater encountered
Trial Pit backfilled upon completion

Scale (approx)	Logged By	Figure No.
1:25	EB	9161-10-19.TP85

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Site Baldoyle			**Trial Pit Number** TP86
Machine : JCB 3CX **Method :** Trial Pit	**Dimensions**	**Ground Level (mOD)** 7.75	**Client** CS Consulting	**Job Number** 9161-10-19
	Location 723369 E 740484.1 N	**Dates** 21/01/2020	**Project Contractor** Ground Investigations Ireland	**Sheet** 1/1

Depth (m)	Sample / Tests	Water Depth (m)	Field Records	Level (mOD)	Depth (m) (Thickness)	Description	Legend	Water
					(0.50)	Black angular fine to coarse crushed rock FILL		
0.50	B			7.25	0.50	POSSIBLE MADE GROUND: Grey slightly clayey very gravelly fine to coarse Sand with occasional subangular cobbles and boulders		
					(0.60)			
				6.65	1.10	Stiff brown slightly sandy gravelly CLAY with occasional subangular to subrounded cobbles and boulders		
1.50	B				(0.70)			
			Slow(1) at 2.00m.	5.95	1.80	Medium dense to dense grey clayey clayey slightly gravelly fine to coarse SAND with occasional rounded cobbles and clayey lenses		▽1
					(1.10)			
2.50	B							
				4.85	2.90	Stiff grey slightly sandy gravelly CLAY with occasional subangular to subrounded cobbles and boulders		
					(0.40)			
				4.45	3.30	Complete at 3.30m		

Plan

Remarks

Trial Pit spalling from 1.80m BGL
Groundwater encountered at 2.00m BGL as slow seepage
Trial Pit backfilled upon completion

Scale (approx)	Logged By	Figure No.
1:25	EB	9161-10-19.TP86

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Site Baldoyle			**Trial Pit Number** TP87
Machine : JCB 3CX **Method :** Trial Pit	**Dimensions**	**Ground Level (mOD)** 6.76	**Client** CS Consulting	**Job Number** 9161-10-19
	Location 723393.9 E 740493.8 N	**Dates** 21/01/2020	**Project Contractor** Ground Investigations Ireland	**Sheet** 1/1

Depth (m)	Sample / Tests	Water Depth (m)	Field Records	Level (mOD)	Depth (m) (Thickness)	Description	Legend	Water
					(0.40)	Black angular fine to coarse crushed rock FILL		
				6.36	0.40	Firm to stiff brown mottled white slightly sandy slightly gravelly CLAY with occasional subrounded cobbles		
					(0.90)			
				5.46	1.30	Medium dense grey clayey gravelly fine to coarse SAND		
					(0.20)			
				5.26	1.50	Soft to firm brown slightly sandy gravelly CLAY with occasional subangular to subrounded cobbles		
					(0.40)			
				4.86	1.90	Stiff grey slightly sandy gravelly CLAY with occasional subangular to subrounded cobbles and boulders		
					(0.50)			
				4.36	2.40	Medium dense grey slightly gravelly fine SAND with occasional rounded cobbles		
					(0.90)			
				3.46	3.30	Complete at 3.30m		

Plan

Remarks

Trial Pit stable
No groundwater encountered
Trial Pit backfilled upon completion

Scale (approx)	Logged By	Figure No.
1:25	EB	9161-10-19.TP87

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Site Baldoyle			**Trial Pit Number** TP88
Machine : JCB 3CX **Method :** Trial Pit	**Dimensions**	**Ground Level (mOD)** 5.74	**Client** CS Consulting	**Job Number** 9161-10-19
	Location 723385.8 E 740523 N	**Dates** 20/01/2020	**Project Contractor** Ground Investigations Ireland	**Sheet** 1/1

Depth (m)	Sample / Tests	Water Depth (m)	Field Records	Level (mOD)	Depth (m) (Thickness)	Description	Legend	Water
					(0.30)	Brown slightly gravelly TOPSOIL		
				5.44	0.30			
					(0.20)	MADE GROUND: Reddish brown slightly sandy slightly gravelly Clay		
				5.24	0.50			
					(0.30)	Stiff grey sandy slightly gravelly CLAY with occasional subrounded cobbles and boulders		
				4.94	0.80			
					(1.40)	Medium dense grey very clayey gravelly fine to coarse SAND with occasional subrounded cobbles and boulders with Clayey lenses		
			Moderate(1) at 2.20m.	3.54	2.20			▽1
					(0.20)	Stiff grey/brown sandy slightly gravelly CLAY		
				3.34	2.40			
					(0.70)	Stiff grey slightly sandy gravelly CLAY with some angular to subrounded cobbles and boulders		
				2.64	3.10			
						Complete at 3.10m		

Plan

Remarks

Trial Pit collapse from 0.80m BGL
Groundwater encountered at 2.20m BGL as moderate ingress
Trial Pit backfilled upon completion

Scale (approx)	Logged By	Figure No.
1:25	EB	9161-10-19.TP88

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Site Baldoyle			**Trial Pit Number** TP89
Machine : JCB 3CX **Method :** Trial Pit	**Dimensions**	**Ground Level (mOD)** 5.65	**Client** CS Consulting	**Job Number** 9161-10-19
	Location 723399.6 E 740519 N	**Dates** 21/01/2020	**Project Contractor** Ground Investigations Ireland	**Sheet** 1/1

Depth (m)	Sample / Tests	Water Depth (m)	Field Records	Level (mOD)	Depth (m) (Thickness)	Description	Legend	Water
					(0.30)	Grey clayey rounded fine to coarse rock FILL		
				5.35	0.30	MADE GROUND: Reddish brown slightly sandy slightly gravelly Clay		
0.50	B				(0.40)			
				4.95	0.70	Firm to stiff greyish brown slightly sandy gravelly CLAY with occasional subrounded cobbles and boulders		
					(0.30)			
				4.65	1.00	Medium dense grey very clayey gravelly fine to coarse SAND with occasional subrounded cobbles and boulders (Hydrocarbon odour)		
1.50	B				(0.80)			
				3.85	1.80	Stiff grey/brown slightly sandy gravelly CLAY with occasional subangular to subrounded cobbles and boulders		
					(0.60)			
			Moderate(1) at 2.40m.	3.25	2.40	Stiff grey slightly sandy gravelly CLAY with occasional angular to subrounded cobbles and boulders		▽1
2.50	B				(0.70)			
				2.55	3.10	Complete at 3.10m		

Plan

Remarks

Trial Pit stable
Groundwater encountered at 2.40m BGL as moderate ingress
Trial Pit backfilled upon completion

Scale (approx)	Logged By	Figure No.
1:25	EB	9161-10-19.TP89

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Site Baldoyle			**Borehole Number** BH01
Machine : Dando 2000 **Method :** Cable Percussion	**Casing Diameter** 200mm cased to 5.50m	**Ground Level (mOD)** 6.22	**Client** CS Consulting	**Job Number** 9161-10-19
	Location (dGPS) 723138.6 E 740751.9 N	**Dates** 06/11/2019-07/11/2019	**Project Contractor** Ground Investigations Ireland	**Sheet** 1/1

Depth (m)	Sample / Tests	Casing Depth (m)	Water Depth (m)	Field Records	Level (mOD)	Depth (m) (Thickness)	Description	Legend	Water
0.00-1.00	EN				6.02	(0.20) 0.20	MADE GROUND: Grey coarse angular Gravel with concrete		
0.50	B						MADE GROUND: Greyish brown slightly sandy gravelly Clay with occasional cobbles and boulders, with concrete and timber fragments		
1.00-1.30 1.00 1.00-2.00 1.50	SPT(C) 50/150 B EN B			1,7/16,34		(1.70)			▼1
2.00-2.45 2.00 2.00-3.00	SPT(C) N=21 B EN			1,0/3,5,5,8 Water strike(1) at 2.10m, rose to 1.50m in 20 mins, sealed at 3.80m.	4.32	1.90	Stiff dark grey slightly sandy very gravelly CLAY with some cobbles and boulders. Gravel is fine to coarse, angular to subangular		▽1
3.00-3.45 3.00	SPT(C) N=50 B			3,7/12,17,13,8	3.12	(1.20) 3.10	Very stiff dark grey slightly sandy gravelly CLAY with some cobbles and boulders. Gravel is fine to coarse, angular to subangular		
4.00-4.45 4.00	SPT(C) N=40 B			2,5/6,6,10,18		(2.40)			
5.00-5.00 5.00	SPT(C) 50*/0 50/0 B			50/50	0.72	5.50	Obstruction due to possible boulder or rock Complete at 5.50m		

Remarks
Complete at 5.50m BGL
Groundwater encountered at 2.10m BGL, sealed at 3.80m BGL
Chiselling from 1.30m to 1.40m for 1 hour. Chiselling from 4.90m to 5.50m for 2 hours.

Scale (approx)	Logged By
1:50	AB

Figure No. 9161-10-19.BH01

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Site Baldoyle			**Borehole Number** BH02
Machine : Dando 2000 **Method :** Cable Percussion	**Casing Diameter** 200mm cased to 6.80m	**Ground Level (mOD)** 6.28	**Client** CS Consulting	**Job Number** 9161-10-19
	Location (dGPS) 723121.3 E 740715.8 N	**Dates** 08/11/2019	**Project Contractor** Ground Investigations Ireland	**Sheet** 1/1

Depth (m)	Sample / Tests	Casing Depth (m)	Water Depth (m)	Field Records	Level (mOD)	Depth (m) (Thickness)	Description	Legend	Water
						(0.40)	MADE GROUND: Brown slightly sandy slightly gravelly Clay with concrete fragments		
					5.88	0.40	MADE GROUND: Brown slightly sandy slightly gravelly Clay with grass and wood rootlets and occasional concrete fragments		
1.00-1.45 1.00	SPT(C) N=7 B			2,1/2,2,1,2		(1.60)			
2.00-2.45 2.00	SPT(C) N=29 B			6,6/7,6,8,8 Water strike(1) at 2.30m, rose to 2.00m in 20 mins, sealed at 3.20m.	4.28	2.00	Dense black slightly clayey sandy angular to sub angular fine to coarse GRAVEL with some cobbles and boulders		▼1 ▽1
						(1.20)			
3.00-3.45 3.00	SPT(C) N=41 B			7,8/11,9,11,10	3.08	3.20	Very stiff dark grey slightly sandy gravelly CLAY with some cobbles and boulders. Gravel is fine to coarse, angular to subangular		
4.00-4.38 4.00	SPT(C) 50/225 B			11,13/13,17,20					
						(3.60)			
5.00-5.37 5.00	SPT(C) 50/215 B			16,18/19,18,13					
6.00-6.29 6.00	SPT(C) 50/135 B			20,18/23,27					
					-0.52	6.80	Obstruction due to possible boulder or rock.		
							Complete at 6.80m		

Remarks
Complete at 6.80m BGL
Groundwater encountered at 2.30m BGL, sealed at 3.20m BGL
Chiselling from 6.80m to 6.80m for 1 hour.

Scale (approx)	Logged By
1:50	AB

Figure No. 9161-10-19.BH02

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Site Baldoyle			**Borehole Number** BH03
Machine : Dando 2000 **Method :** Cable Percussion	**Casing Diameter** 200mm cased to 7.20m	**Ground Level (mOD)** 6.42	**Client** CS Consulting	**Job Number** 9161-10-19
	Location (dGPS) 723113.7 E 740690.1 N	**Dates** 05/11/2019	**Project Contractor** Ground Investigations Ireland	**Sheet** 1/1

Depth (m)	Sample / Tests	Casing Depth (m)	Water Depth (m)	Field Records	Level (mOD)	Depth (m) (Thickness)	Description	Legend	Water
						(1.80)	Firm to stiff grey mottled brown slightly sandy gravelly CLAY with occasional cobbles and boulders. Gravel is fine to coarse, angular to subangular. (Possible made ground)		
1.00-1.45 1.00	SPT(C) N=12 B			2,3/3,3,3,3					
					4.62	1.80	Very stiff dark grey slightly sandy gravelly CLAY with some subangular cobbles and boulders. Gravel is fine to coarse, angular to subangular.		
2.00-2.45 2.00	SPT(C) N=29 B			2,4/4,5,8,12					
3.00-3.45 3.00	SPT(C) N=37 B			6,11/8,8,10,11					
4.00-4.45 4.00	SPT(C) N=46 B			11,12/10,10,11,15		(5.40)			
5.00-5.35 5.00	SPT(C) 50/200 B			13,17/19,20,11					
6.00-6.28	SPT(C) 50/125			18,23/26,24					
7.00-7.15	SPT(C) 50/0			28,22/50	-0.78	7.20	Obstruction due to possible boulder or bedrock. Complete at 7.20m		

Remarks
Complete at 7.20m BGL
No groundwater encountered
Chiselling from 2.50m to 2.70m for 1 hour. Chiselling from 7.20m to 7.20m for 1 hour.

Scale (approx)	Logged By
1:50	AB

Figure No. 9161-10-19.BH03

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Site Baldoyle			**Borehole Number** BH04
Machine : Dando 2000 **Method :** Cable Percussion	**Casing Diameter** 200mm cased to 4.60m	**Ground Level (mOD)** 6.95	**Client** CS Consulting	**Job Number** 9161-10-19
	Location (dGPS) 723201.6 E 740752.6 N	**Dates** 01/11/2019-04/11/2019	**Project Contractor** Ground Investigations Ireland	**Sheet** 1/1

Depth (m)	Sample / Tests	Casing Depth (m)	Water Depth (m)	Field Records	Level (mOD)	Depth (m) (Thickness)	Description	Legend	Water
0.00-1.00	EN						Brown slightly sandy slightly gravelly CLAY with occasional subangular cobbles and boulders		
0.50	B					(1.20)			
1.00-1.45	SPT(C) N=7			1,0/0,2,2,3					
1.00	B				5.75	1.20			
1.00-2.00	EN						Soft to firm brown slightly sandy slightly gravelly CLAY with occasional subangular cobbles and boulders.		
1.50	B					(0.80)			
2.00-2.45	SPT(C) N=23			2,2/2,5,8,8	4.95	2.00			
2.00	B						Stiff black slightly sandy gravelly CLAY with some cobbles and boulders. Gravel is fine to coarse, angular to subangular		
2.00-3.00	EN					(1.00)			
3.00-3.38	SPT(C) 50/225			4,11/17,21,12	3.95	3.00			
3.00	B						Very stiff black slightly sandy gravelly CLAY with some cobbles and boulders. Gravel is fine to coarse, angular to subangular		
						(1.60)			
4.00-4.15	SPT(C) 50/0			14,23/50					
4.00	B				2.35	4.60	Obstruction due to possible boulder or rock.		
							Complete at 4.60m		

Remarks
Complete at 4.60m BGL
No groundwater encountered
Chiselling from 4.40m to 4.60m for 1 hour.

Scale (approx)	Logged By
1:50	AB

Figure No. 9161-10-19.BH04

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Site Baldoyle			**Borehole Number** BH05
Machine : Dando 2000 **Method :** Cable Percussion	**Casing Diameter** 200mm cased to 6.00m	**Ground Level (mOD)** 6.44	**Client** CS Consulting	**Job Number** 9161-10-19
	Location (dGPS) 723177.8 E 740714.5 N	**Dates** 31/10/2019	**Project Contractor** Ground Investigations Ireland	**Sheet** 1/1

Depth (m)	Sample / Tests	Casing Depth (m)	Water Depth (m)	Field Records	Level (mOD)	Depth (m) (Thickness)	Description	Legend	Water
0.00-1.00	EN						MADE GROUND: Brown slightly sandy slightly gravelly Clay with occasional cobbles and concrete fragments.		
0.50	B								
						(1.80)			
1.00-1.45	SPT(C) N=12			1,2/2,3,4,3					
1.00	B								
1.00-2.00	EN								
1.50	B								
					4.64	1.80			
						(0.40)	Very stiff brown slightly sandy gravelly CLAY with occasional cobbles. Gravel is fine to coarse, angular to subangular.		
2.00-2.45	SPT(C) N=31			2,3/5,5,8,13					
2.00	B				4.24	2.20			
2.00-3.00	EN						Very stiff black slightly sandy gravelly CLAY with some cobbles and boulders. Gravel is fine to coarse, angular to subangular.		
3.00-3.45	SPT(C) N=36			4,4/7,9,9,11					
3.00	B								
						(3.80)			
4.00-4.38	SPT(C) 50/225			1,2/11,18,21					
4.00	B								
5.00-5.00	SPT(C) 50*/0			50/50					
	50/0								
5.00	B								
									▼1
									▽1
6.00	B			Water strike(1) at 6.00m, rose to 5.70m in 20 mins.	0.44	6.00	Obstruction due to possible boulder or bedrock.		
6.00-6.00	SPT(C) 50*/0			50/50			Complete at 6.00m		
	50/0								

Remarks
Complete at 6.00m BGL
Groundwater encountered at 6.0m BGL
Borehole left open and made secure to facilitate rotary follow on
Chiselling from 4.30m to 4.70m for 1 hour. Chiselling from 6.00m to 6.00m for 1 hour.

Scale (approx)	Logged By
1:50	AB

Figure No. 9161-10-19.BH06

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Site Baldoyle			**Borehole Number** BH06
Machine : Dando 2000 **Method :** Cable Percussion	**Casing Diameter** 200mm cased to 6.60m	**Ground Level (mOD)** 6.33	**Client** CS Consulting	**Job Number** 9161-10-19
	Location (dGPS) 723166.6 E 740671.4 N	**Dates** 06/11/2019	**Project Contractor** Ground Investigations Ireland	**Sheet** 1/1

Depth (m)	Sample / Tests	Casing Depth (m)	Water Depth (m)	Field Records	Level (mOD)	Depth (m) (Thickness)	Description	Legend	Water
						(1.40)	MADE GROUND: Brown slightly sandy gravelly Clay with concrete and plastic fragments. Gravel is fine to coarse, sub angular to angular.		
1.00-1.45 1.00 1.00	SPT(C) N=10 B EN			1,2/1,3,2,4	4.93	1.40			
						(1.80)	Stiff brown slightly sandy very gravelly CLAY with occasional cobbles. Gravel is fine to coarse, subangular to angular.		
2.00-2.45 2.00 2.00	SPT(C) N=30 B EN			4,6/6,7,7,10					
3.00-3.45 3.00 3.00	SPT(C) N=50 B EN			5,9/10,15,19,6	3.13	3.20			
4.00 4.00	B EN						Very stiff black slightly sandy gravelly CLAY with some sub angular cobbles and boulders. Gravel is fine to coarse, angular to subangular.		
						(3.40)			
5.00-5.31 5.00	SPT(C) 50/160 B			14,19/18,22,10					
6.00-6.28 6.00	SPT(C) 50/125 B			23,23/24,26					
					-0.27	6.60	Obstruction due to possible boulder or rock.		
							Complete at 6.60m		

Remarks
Complete at 6.60m BGL
No groundwater encountered
No SPT at 4.0m BGL due to chiseling large boulder
Chiselling from 4.00m to 4.30m for 1 hour. Chiselling from 6.60m to 6.60m for 1 hour.

Scale (approx)	Logged By
1:50	AB

Figure No. 9161-10-19.BH06

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Site Baldoyle			**Borehole Number** BH07
Machine : Dando 2000 **Method :** Cable Percussion	**Casing Diameter** 200mm cased to 5.80m	**Ground Level (mOD)** 7.36	**Client** CS Consulting	**Job Number** 9161-10-19
	Location (dGPS) 723233.3 E 740752.3 N	**Dates** 01/11/2019	**Project Contractor** Ground Investigations Ireland	**Sheet** 1/1

Depth (m)	Sample / Tests	Casing Depth (m)	Water Depth (m)	Field Records	Level (mOD)	Depth (m) (Thickness)	Description	Legend	Water
0.00-1.00	EN						MADE GROUND: Firm brown mottled grey slightly sandy gravelly CLAY with occasional cobbles and boulders and plastic fragments. Gravel is angular to subangular, fine to coarse.		
0.50	B					(1.10)			
1.00-1.45	SPT(C) N=9			1,0/1,2,2,4	6.26	1.10	Firm brown mottled grey slightly sandy gravelly CLAY with occasional cobbles and boulders. Gravel is angular to sub angular, fine to coarse.		
1.00	B								
1.00-2.00	EN								
1.50	B					(0.90)			
2.00-2.30	SPT(C) 50/150			1,12/23,27	5.36	2.00	Dense dark grey slightly sandy slightly clayey subangular to angular fine to coarse GRAVEL with occasional cobbles		
2.00	B								
2.00-3.00	EN								
						(1.00)			
3.00-3.45	SPT(C) N=33			2,4/5,5,8,15	4.36	3.00	Very stiff dark grey slightly sandy gravelly CLAY with some cobbles and boulders. Gravel is angular to subangular, fine to coarse.		
3.00	B								
4.00-4.45	SPT(C) N=50			4,7/10,11,15,14					
4.00	B								
						(2.80)			
5.00-5.23	SPT(C) 50/75			7,18/50					
5.00	B								
5.80-5.88	SPT(C) 50*/75			50/50	1.56	5.80	Obstruction due to possible boulder or rock.		
	50/0								
5.80	B						Complete at 5.80m		

Remarks
Complete at 5.80m BGL
No groundwater encountered
Chiselling from 2.40m to 2.70m for 1 hour. Chiselling from 5.70m to 5.80m for 1 hour.

Scale (approx)	Logged By
1:50	AB

Figure No. 9161-10-19.BH07

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Site Baldoyle			**Borehole Number** BH08
Machine : Dando 2000 **Method :** Cable Percussion	**Casing Diameter** 200mm cased to 6.50m	**Ground Level (mOD)** 6.73	**Client** CS Consulting	**Job Number** 9161-10-19
	Location (dGPS) 723223.9 E 740716.2 N	**Dates** 30/10/2019-31/10/2019	**Project Contractor** Ground Investigations Ireland	**Sheet** 1/1

Depth (m)	Sample / Tests	Casing Depth (m)	Water Depth (m)	Field Records	Level (mOD)	Depth (m) (Thickness)	Description	Legend	Water
0.00-1.00	EN						Brown mottled grey slightly sandy gravelly CLAY with some angular cobbles and boulders. Gravel is fine to coarse, angular to subangular. (Possible made ground)		
0.50	B					(0.90)			
					5.83	0.90			
1.00-1.45	SPT(C) N=13			2,3/3,4,3,3			Firm to stiff brown mottled grey slightly sandy gravelly CLAY with some cobbles and boulders. Gravel is fine to coarse, angular to subangular.		
1.00	B								
1.00-2.00	EN								
1.50	B					(1.40)			
2.00-2.45	SPT(C) N=24			4,5/5,5,7,7					
2.00	B								
2.00-3.00	EN				4.43	2.30	Stiff dark grey slightly sandy gravelly CLAY with some cobbles and boulders. Gravel is fine to coarse, angular to subangular		
3.00-3.45	SPT(C) N=22			2,4/4,6,5,7					
3.00	B					(1.70)			
					2.73	4.00			
4.00-4.45	SPT(C) N=33			5,6/6,7,10,10			Very stiff dark grey slightly sandy gravelly CLAY with some cobbles and boulders. Gravel is fine to coarse, angular to subangular		
4.00	B								
5.00-5.23	SPT(C) 50/75			12,20/21,29					1
5.00	B					(2.50)			
				Water strike(1) at 5.80m, rose to 5.10m in 20 mins.					1
6.00	B								
6.00-6.15	SPT(C) 50/0			17,33/50					
					0.23	6.50	Obstruction due to possible boulder or rock.		
							Complete at 6.50m		

Remarks
Complete at 6.50m BGL
Groundwater encountered at 5.80m BGL
Chiselling from 3.80m to 3.90m for 1 hour. Chiselling from 6.20m to 6.50m for 1 hour.

Scale (approx)	Logged By
1:50	AB

Figure No. 9161-10-19.BH08

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Site Baldoyle			**Borehole Number** BH09
Machine : Dando 2000 **Method :** Cable Percussion	**Casing Diameter** 200mm cased to 7.00m	**Ground Level (mOD)** 6.31	**Client** CS Consulting	**Job Number** 9161-10-19
	Location (dGPS) 723222.8 E 740664.3 N	**Dates** 07/11/2019	**Project Contractor** Ground Investigations Ireland	**Sheet** 1/1

Depth (m)	Sample / Tests	Casing Depth (m)	Water Depth (m)	Field Records	Level (mOD)	Depth (m) (Thickness)	Description	Legend	Water
						(0.50)	MADE GROUND: Grey sandy gravelly CLAY with concrete		
					5.81	0.50	Firm greyish brown slightly sandy slightly gravelly CLAY with occasional cobbles and boulders and wood rootlets. (Possible Made Ground)		
1.00-1.45 1.00 1.00	SPT(C) N=9 B EN			2,1/2,2,2,3		(1.60)			
2.00-2.45 2.00 2.00	SPT(C) N=22 B EN			3,4/5,7,6,4 Water strike(1) at 2.30m, rose to 2.00m in 20 mins, sealed at 3.20m.	4.21	2.10	Very stiff dark grey slightly sandy gravelly CLAY with some cobbles and boulders. Gravel is fine to coarse, angular to subangular		▼1 ▽1
3.00-3.45 3.00 3.00	SPT(C) N=35 B EN			8,7/7,10,9,9					
4.00-4.45 4.00 4.00	SPT(C) N=47 B EN			13,14/11,12,12,12		(4.90)			
5.00-5.27 5.00	SPT(C) 50/115 B			14,16/16,16,18					
6.00-6.25 6.00	SPT(C) 50/95 B			16,19/20,19,11					
7.00-7.14 7.00	SPT(C) 50*/135 50/0 B			32,18/50	-0.69	7.00	Obstruction due to possible boulder or rock. Complete at 7.00m		

Remarks
Complete at 7.00m BGL
No groundwater encountered
Chiselling from 7.00m to 7.00m for 1 hour.

Scale (approx)	Logged By
1:50	AB

Figure No. 9161-10-19.BH09

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Site Baldoyle			**Borehole Number** BH10
Machine : Dando 2000 **Method :** Cable Percussion	**Casing Diameter** 200mm cased to 4.00m 150mm cased to 5.50m	**Ground Level (mOD)** 7.05	**Client** CS Consulting	**Job Number** 9161-10-19
	Location (dGPS) 723257.7 E 740727.3 N	**Dates** 22/10/2019	**Project Contractor** Ground Investigations Ireland	**Sheet** 1/1

Depth (m)	Sample / Tests	Casing Depth (m)	Water Depth (m)	Field Records	Level (mOD)	Depth (m) (Thickness)	Description	Legend	Water	Instr
						(1.50)	Firm greyish brown motled red slightly sandy gravelly CLAY. Gravel is fine to coarse, subangular to subrounded		▼1	
1.00-1.45 1.00	SPT(C) N=10 B			0,1/1,3,2,4						
					5.55	1.50	Stiff dark grey slightly sandy gravelly CLAY with occasional cobbles and boulders. Gravel is fine to coarse, angular to subangular.		▽1	
2.00	B			Water strike(1) at 1.70m, rose to 0.40m in 20 mins, sealed at 3.00m.		(1.50)				
2.00-2.45	SPT(C) N=19			3,4/4,4,5,6						
					4.05	3.00	Very stiff dark grey slightly sandy gravelly CLAY with occasional cobbles and boulders. Gravel is fine to coarse, angular to subangular.			
3.00-3.45 3.00	SPT(C) N=38 B			3,6/7,8,11,12						
4.00-4.40 4.00	SPT(C) 50/250 B			5,10/12,11,13,14		(2.50)				
5.00-5.38 5.00	SPT(C) 50/227 B			8,13/12,14,17,7						
					1.55	5.50	Obstruction due to possible boulder or rock.			
							Complete at 5.50m			

Remarks
Complete at 5.50m BGL
Groundwater encountered at 1.70m BGL
Casing diameter reduced to 150mm at 4.0m BGL due to hard strata
Temporary wavin pipe installed to 5.50m BGL for rotary follow on
Chiselling from 4.00m to 5.50m for 2 hours. Chiselling from 5.50m to 5.50m for 1 hour.

Scale (approx)	Logged By
1:50	AB

Figure No. 9161-10-19.BH10

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Site Baldoyle			**Borehole Number** BH11
Machine : Dando 2000 **Method :** Cable Percussion	**Casing Diameter** 200mm cased to 3.00m 150mm cased to 5.50m	**Ground Level (mOD)** 6.71	**Client** CS Consulting	**Job Number** 9161-10-19
	Location (dGPS) 723252.8 E 740686.6 N	**Dates** 24/10/2019	**Project Contractor** Ground Investigations Ireland	**Sheet** 1/1

Depth (m)	Sample / Tests	Casing Depth (m)	Water Depth (m)	Field Records	Level (mOD)	Depth (m) (Thickness)	Description	Legend	Water
0.00-1.00	EN					(1.00)	Firm grey mottled brown slightly sandy gravelly CLAY with occasional cobbles. Gravel is fine to coarse, subangular to subrounded		
1.00-1.45 1.00 1.00-2.00	SPT(C) N=17 B EN			4,2/2,5,5,5	5.71	1.00 (0.50)	Stiff grey mottled brown slightly sandy gravelly CLAY with occasional cobbles. Gravel is fine to coarse, subangular to subrounded		
					5.21	1.50	Stiff dark grey slightly sandy gravelly CLAY with occasional cobbles and boulders. Gravel is fine to coarse, angular to subAngular.		
2.00-2.45 2.00 2.00-3.00	SPT(C) N=18 B EN			3,3/2,4,6,6		(1.50)			
3.00-3.45 3.00 3.00-4.00	SPT(C) N=43 B EN			7,10/10,12,9,12	3.71	3.00	Very stiff dark grey slightly sandy gravelly CLAY with occasional cobbles and boulders. Gravel is fine to coarse, angular to subangular.		
4.00-4.33 4.00	SPT(C) 50/180 B			14,14/17,18,15		(2.50)			
5.00-5.33 5.00	SPT(C) 50/180 B			14,12/12,24,14					
					1.21	5.50	Obstruction due to possible boulder or rock.		
							Complete at 5.50m		

Remarks
Complete at 5.50m BGL
No groundwater encountered
Casing diameter reduced to 150mm at 3.0m BGL due to hard strata
Chiselling from 5.50m to 5.50m for 1 hour.

Scale (approx)	Logged By
1:50	AB

Figure No. 9161-10-19.BH11

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Site Baldoyle			**Borehole Number** BH12
Machine : Dando 2000 **Method :** Cable Percussion	**Casing Diameter** 200mm cased to 5.60m	**Ground Level (mOD)** 6.81	**Client** CS Consulting	**Job Number** 9161-10-19
	Location (dGPS) 723288.8 E 740645.6 N	**Dates** 29/10/2019	**Project Contractor** Ground Investigations Ireland	**Sheet** 1/1

Depth (m)	Sample / Tests	Casing Depth (m)	Water Depth (m)	Field Records	Level (mOD)	Depth (m) (Thickness)	Description	Legend	Water
						(1.70)	MADE GROUND: Brown slightly sandy gravelly CLAY with concrete and plastic fragments,		
1.00-1.45 1.00 1.00	SPT(C) N=6 B EN			1,1/1,2,2,1					
					5.11	1.70	Stiff brown slightly sandy gravelly CLAY with occasional cobbles and boulders		
						(0.50)			
2.00-2.45 2.00 2.00	SPT(C) N=24 B EN			3,3/4,7,7,6	4.61	2.20	Very stiff black slightly sandy gravelly CLAY with some cobbles and boulders		
3.00-3.45 3.00 3.00	SPT(C) N=38 B EN			8,11/14,7,6,11					
						(3.40)			
4.00-4.34 4.00 4.00	SPT(C) 50/190 B EN			14,12/13,17,20					
5.00-5.32 5.00	SPT(C) 50/170 B			15,17/20,20,10					
					1.21	5.60	Obstruction due to possible boulder or rock.		
							Complete at 5.60m		

Remarks
Complete at 5.60m BGL
No groundwater encountered
Chiselling from 5.60m to 5.60m for 1 hour.

Scale (approx)	Logged By
1:50	AB

Figure No. 9161-10-19.BH12

Ground Investigations Ireland Ltd
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Site Baldoyle			**Borehole Number** BH13
Machine : Dando 2000 **Method :** Cable Percussion	**Casing Diameter** 200mm cased to 3.50m 150mm cased to 5.40m	**Ground Level (mOD)** 6.77	**Client** CS Consulting	**Job Number** 9161-10-19
	Location (dGPS) 723312.1 E 740695.8 N	**Dates** 23/10/2019	**Project Contractor** Ground Investigations Ireland	**Sheet** 1/1

Depth (m)	Sample / Tests	Casing Depth (m)	Water Depth (m)	Field Records	Level (mOD)	Depth (m) (Thickness)	Description	Legend	Water
0.00-1.00	EN					(0.80)	Firm grey mottled brown slightly sandy gravelly CLAY. Gravel is fine to coarse, subangular to subrounded.		
					5.97	0.80			
1.00-1.45 1.00 1.00-2.00	SPT(C) N=15 B EN			1,2/3,4,4,4		(0.70)	Stiff grey mottled brown slightly sandy gravelly CLAY with occasional cobbles and boulders. Gravel is fine to coarse, sub angular to subrounded		
					5.27	1.50			
2.00-2.45 2.00 2.00-3.00	SPT(C) N=23 B EN			4,6/5,5,7,6 Water strike(1) at 2.50m, rose to 2.40m in 20 mins, sealed at 4.00m.		(1.50)	Stiff dark grey slightly sandy gravelly CLAY with occasional cobbles and boulders. Gravel is fine to coarse, angular to subangular.		▼1 ▽1
3.00-3.45 3.00 3.00-4.00	SPT(C) N=30 B EN			5,5/7,7,9,7	3.77	3.00	Very stiff dark grey slightly sandy gravelly CLAY with occasional cobbles and boulders. Gravel is fine to coarse, angular to subangular.		
4.00-4.37 4.00 4.00-5.00	SPT(C) 50/220 B EN			9,11/11,16,16,7		(2.40)			
5.00-5.33 5.00	SPT(C) 50/180 B			12,14/19,20,11					
					1.37	5.40	Obstruction due to possible boulder or rock.		
							Complete at 5.40m		

Remarks
Complete at 5.40m BGL
Groundwater encountered at 2.50m BGL
Casing diameter reduced to 150mm at 3.50m BGL due to hard strata
Chiselling from 5.40m to 5.40m for 1 hour.

Scale (approx)	Logged By
1:50	AB

Figure No. 9161-10-19.BH13

Ground Investigations Ireland Ltd
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Site Baldoyle			**Borehole Number** BH14
Machine : Dando 2000 **Method :** Cable Percussion	**Casing Diameter** 200mm cased to 3.00m 150mm cased to 5.80m	**Ground Level (mOD)** 7.06	**Client** CS Consulting	**Job Number** 9161-10-19
	Location (Handheld GPS) 723311.9 E 740754.2 N	**Dates** 24/10/2019	**Project Contractor** Ground Investigations Ireland	**Sheet** 1/1

Depth (m)	Sample / Tests	Casing Depth (m)	Water Depth (m)	Field Records	Level (mOD)	Depth (m) (Thickness)	Description	Legend	Water
0.00-1.00	EN					(0.70)	Firm greyish brown mottled red slightly sandy gravelly CLAY. Gravel is fine to coarse, subangular to subrounded.		
					6.36	0.70			
1.00-1.45 1.00 1.00-2.00	SPT(C) N=9 B EN			1,3/3,2,2,2		(1.00)	Firm greyish brown mottled red slightly sandy gravelly CLAY with occasional cobbles and boulders. Gravel is fine to coarse, subangular to subrounded		
					5.36	1.70			
2.00-2.45 2.00 2.00-3.00	SPT(C) N=21 B EN			2,2/7,5,4,5		(1.30)	Stiff dark grey slightly sandy gravelly CLAY with occasional cobbles and boulders. Gravel is fine to coarse, angular to subangular.		
					4.06	3.00			
3.00-3.45 3.00 3.00-4.00	SPT(C) N=34 B EN			4,6/8,9,9,8			Very stiff dark grey slightly sandy gravelly CLAY with occasional cobbles and boulders. Gravel is fine to coarse, angular to subangular.		
4.00-4.45 4.00	SPT(C) N=40 B			9,9/9,8,11,12		(2.80)			
5.00-5.29 5.00	SPT(C) 50/135 B			13,19/21,29					
					1.26	5.80	Obstruction due to possible boulder or rock.		
							Complete at 5.80m		

Remarks
Complete at 5.80m BGL
No groundwater encountered
Casing diameter reduced to 150mm at 3.0m BGL due to hard strata
Chiselling from 5.80m to 5.80m for 1 hour.

Scale (approx)	Logged By
1:50	AB

Figure No. 9161-10-19.BH14

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Site Baldoyle			**Borehole Number** BH16
Machine : Dando 2000 **Method :** Cable Percussion	**Casing Diameter** 200mm cased to 5.00m 150mm cased to 7.20m	**Ground Level (mOD)** 6.92	**Client** CS Consulting	**Job Number** 9161-10-19
	Location (dGPS) 723354.8 E 740727.8 N	**Dates** 13/11/2019	**Project Contractor** Ground Investigations Ireland	**Sheet** 1/1

Depth (m)	Sample / Tests	Casing Depth (m)	Water Depth (m)	Field Records	Level (mOD)	Depth (m) (Thickness)	Description
						(0.30)	MADE GROUND: Brown gravelly CLAY
					6.62	0.30	Firm to stiff brown slightly sandy gravelly CLAY with occasional cobbles. Gravel is fine to coarse, subangular to subrounded
1.00-1.45 1.00 1.00	SPT(C) N=13 B EN			3,3/4,2,4,3		(1.40)	
					5.22	1.70	Stiff dark grey slightly sandy gravelly CLAY with some cobbles and boulders. Gravel is fine to coarse, angular to subangular.
2.00-2.45 2.00 2.00	SPT(C) N=18 B EN			2,3/4,4,5,5		(1.30)	
					3.92	3.00	Very stiff dark grey slightly sandy gravelly CLAY with some cobbles and boulders. Gravel is fine to coarse, angular to subangular.
3.00-3.45 3.00 3.00	SPT(C) N=31 B EN			7,7/7,8,8,8			
4.00-4.45 4.00 4.00	SPT(C) N=46 B EN			8,10/11,11,12,12			
5.00-5.40 5.00	SPT(C) 50/245 B			10,12/14,14,15,7		(4.20)	
6.00-6.32 6.00	SPT(C) 50/170 B			16,15/16,20,14			
7.00-7.27 7.00	SPT(C) 50/115 B			14,26/27,23	-0.28	7.20	Obstruction due to boulder or rock
							Complete at 7.20m

Remarks
No groundwater encountered
Refusal at 7.20m BGL
50mm standpipe installed in borehole upon completion, slotted from 7.20m to 1.0m BGL, plain from 1.0m BGL to ground level, with bentonite seal and flush cover
Chiselling from 7.20m to 7.20m for 1 hour.

Scale (approx)	Logged By
1:50	AB

Figure No. 9161-10-19.BH16

Ground Investigations Ireland Ltd
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Site Baldoyle			**Borehole Number** BH17
Machine : Dando 2000 **Method :** Cable Percussion	**Casing Diameter** 200mm cased to 5.50m 150mm cased to 8.50m	**Ground Level (mOD)** 5.91	**Client** CS Consulting	**Job Number** 9161-10-19
	Location (dGPS) 723380.9 E 740614.8 N	**Dates** 13/11/2019	**Project Contractor** Ground Investigations Ireland	**Sheet** 1/1

Depth (m)	Sample / Tests	Casing Depth (m)	Water Depth (m)	Field Records	Level (mOD)	Depth (m) (Thickness)	Description	Legend	Water	Instr
					5.81	0.10 (0.30)	FILL: Grey angular fine to coarse Gravel with cobbles. (Crushed Rock Fill)			
					5.51	0.40	MADE GROUND: Brown gravelly CLAY			
1.00-1.45 1.00 1.00	SPT(C) N=5 B EN			0,1/1,1,1,2		(1.50)	Soft greyish brown slightly sandy gravelly CLAY with occasional cobbles. Gravel is fine to coarse, sub angular to sub rounded.			
2.00-2.45 2.00 2.00	SPT(C) N=26 B EN			6,7/9,6,5,6	4.01	1.90	Stiff dark grey slightly sandy gravelly CLAY with occasional cobbles and boulders. Gravel is fine to coarse, sub angular to angular.			
3.00-3.45 3.00 3.00	SPT(C) N=21 B EN			5,4/6,5,5,5		(2.10)				
4.00-4.45 4.00 4.00	SPT(C) N=47 B EN			8,9/11,12,12,12	1.91	4.00	Very stiff dark grey slightly sandy gravelly CLAY with occasional cobbles and boulders. Gravel is fine to coarse, sub angular to angular.			
5.00-5.45 5.00	SPT(C) N=46 B			11,7/8,13,12,13						
6.00-6.34 6.00	SPT(C) 50/190 B			14,14/17,18,15		(4.50)				
7.00-7.20 7.00	SPT(C) 50/50 B			18,27/50						
8.00-8.28 8.00	SPT(C) 50/125 B			23,19/24,26						
					-2.59	8.50	Complete at 8.50m			

Remarks
Complete at 8.50m BGL
No groundwater encountered
50mm Standpipe installed in borehole upon completion, Slotted from 8.50m to 1.0m BGL, plain from 1.0m BGL to ground level, with bentonite seal and raised cover.
Chiselling from 8.50m to 8.50m for 1 hour.

Scale (approx)	Logged By
1:50	AB

Figure No. 9161-10-19.BH17

Ground Investigations Ireland Ltd

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Site Baldoyle			**Borehole Number** BH20
Machine : Dando 2000 **Method :** Cable Percussion	**Casing Diameter** 200mm cased to 5.00m	**Ground Level (mOD)** 7.51	**Client** CS Consulting	**Job Number** 9161-10-19
	Location (dGPS) 723175.5 E 740624.6 N	**Dates** 13/02/2020	**Project Contractor** Ground Investigations Ireland	**Sheet** 1/1

Depth (m)	Sample / Tests	Casing Depth (m)	Water Depth (m)	Field Records	Level (mOD)	Depth (m) (Thickness)	Description	Legend	Water	Instr
						(0.40)	Brown slightly sandy gravelly TOPSOIL with rootlets			
					7.11	0.40	Firm brown slightly sandy gravelly CLAY with some cobbles and boulders. Gravel is fine to coarse, angular to subangular			
						(0.70)				
1.00-1.45 1.00	SPT(C) N=9 B			4,4/2,3,2,2	6.41	1.10	Firm brown slightly sandy gravelly CLAY with some cobbles and boulders. Gravel is fine to coarse, angular to subangular			
2.00-2.45 2.20	SPT(C) N=9 B			1,1/2,3,2,2		(1.70)				
					4.71	2.80	Stiff dark grey slightly sandy gravelly CLAY with some cobbles and boulders. Gravel is fine to coarse, angular to subangular			
3.00-3.45 3.00	SPT(C) N=33 B			7,9/8,8,8,9						
						(2.20)				
4.00-4.30 4.00	SPT(C) 50/150 B			14,19/22,28						
5.00-5.00 5.00	SPT(C) 25*/0 50/0 B			25/50	2.51	5.00	Obstruction due to possible boulder or rock			
							Complete at 5.00m			

Remarks
Complete at 5.00m BGL
50mm slotted standpipe installed from 5.00m to 1.00m with pea gravel surround, plain pipe installed from 1.00m to ground level with bentonite seal and raised cover.
Chiselling from 5.00m to 5.00m for 1 hour.

Scale (approx)	Logged By
1:50	AB

Figure No. 9161-10-19.BH20

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Site Baldoyle			**Borehole Number** BH21
Machine : Dando 2000 **Method :** Cable Percussion	**Casing Diameter** 200mm cased to 5.20m	**Ground Level (mOD)** 8.87	**Client** CS Consulting	**Job Number** 9161-10-19
	Location (dGPS) 723170 E 740518 N	**Dates** 14/11/2019-15/11/2019	**Project Contractor** Ground Investigations Ireland	**Sheet** 1/1

Depth (m)	Sample / Tests	Casing Depth (m)	Water Depth (m)	Field Records	Level (mOD)	Depth (m) (Thickness)	Description	Legend	Water	Instr
0.00-1.00	EN					(0.40)	Brown slightly sandy slightly gravelly TOPSOIL with rootlets			
					8.47	0.40				
0.50	B						Stiff greyish brown mottled orange slightly sandy gravelly CLAY with cobbles and grass rootlets. Gravel is fine to coarse, sub angular to sub rounded.			
1.00-1.45	SPT(C) N=15			2,1/2,4,4,5		(1.60)				
1.00	B									
1.00-2.00	EN									
1.50	B									
					6.87	2.00				
2.00-2.45	SPT(C) N=32			2,3/4,7,10,11			Very stiff dark grey slightly sandy gravelly CLAY with some cobbles and boulders. Gravel is fine to coarse angular to sub angular.			
2.00	B									
2.00-3.00	EN									
3.00-3.30	SPT(C) 50/150			6,14/23,27						
3.00	B									
						(3.20)				
4.00-4.00	SPT(C) 50*/0			50/50						
	50/0									
4.00	B									
5.00-5.00	SPT(C) 50*/0			50/50						
	50/0									
					3.67	5.20				
5.00	B						Complete at 5.20m			

Remarks
Refusal at 5.20m BGL
No groundwater encountered
50mm Standpipe installed in borehole upon completion, slotted from 5.20. to 1.0m BGL, plain from 1.0m BGL to ground level, with bentonite seal and raised cover.
Chiselling from 4.70m to 5.20m for 2 hours.

Scale (approx)	Logged By
1:50	AB

Figure No. 9161-10-19.BH21

Ground Investigations Ireland Ltd

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Site Baldoyle			**Borehole Number** BH22
Machine : Dando 2000 **Method :** Cable Percussion	**Casing Diameter** 200mm cased to 4.00m 150mm cased to 5.70m	**Ground Level (mOD)** 6.45	**Client** CS Consulting	**Job Number** 9161-10-19
	Location 723261.9 E 740595 N	**Dates** 25/10/2019	**Project Contractor** Ground Investigations Ireland	**Sheet** 1/1

Depth (m)	Sample / Tests	Casing Depth (m)	Water Depth (m)	Field Records	Level (mOD)	Depth (m) (Thickness)	Description	Legend	Water
0.00-1.00	EN						MADE GROUND: dark grey slightly sandy gravelly Clay with many cobbles and boulders, fragments of concrete, plastic and grass rootlets		▼1
						(1.80)			
1.00-1.45 1.00 1.00-2.00	SPT(C) N=12 B EN			1,1/2,2,4,4 Water strike(1) at 1.50m, rose to 0.50m in 20 mins, sealed at 2.50m.					▽1
					4.65	1.80	Stiff grey mottled brown slightly sandy gravelly CLAY with occasional cobbles and boulders. Gravel is fine to coarse, sub angular to sub rounded		
2.00-2.45 2.00 2.00-3.00	SPT(C) N=24 B EN			8,7/6,6,6,6		(0.40)			
					4.25	2.20	Very stiff dark grey slightly sandy gravelly CLAY with occasional cobbles and boulders. Gravel is fine to coarse, angular to sub angular.		
3.00-3.45 3.00 3.00-4.00	SPT(C) N=44 B EN			9,10/10,11,11,12					
						(3.50)			
4.00-4.34 4.00	SPT(C) 50/190 B			14,15/15,17,18					
5.00-5.00 5.00	SPT(C) 50*/0 50/0 B			25,25/50					
					0.75	5.70	Obstruction due to possible boulder or bedrock.		
							Complete at 5.70m		

Remarks
Complete at 5.70m BGL
Groundwater encountered at 1.50m BGL
Casing diameter reduced to 150mm at 4.0m BGL due to hard strata
Chiselling from 5.00m to 5.20m for 2 hours. Chiselling from 5.70m to 5.70m for 1 hour.

Scale (approx)	Logged By
1:50	AB

Figure No. 9161-10-19.BH22

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Site Baldoyle			**Borehole Number** BH25
Machine : Dando 2000 **Method :** Cable Percussion	**Casing Diameter** 200mm cased to 8.30m	**Ground Level (mOD)** 7.61	**Client** CS Consulting	**Job Number** 9161-10-19
	Location (dGPS) 723319.8 E 740508.9 N	**Dates** 13/11/2019-14/11/2019	**Project Contractor** Ground Investigations Ireland	**Sheet** 1/1

Depth (m)	Sample / Tests	Casing Depth (m)	Water Depth (m)	Field Records	Level (mOD)	Depth (m) (Thickness)	Description	Legend	Water	Instr
0.00-1.00	EN					(0.30)	MADE GROUND: Brown gravelly Clay with some cobbles			
					7.31	0.30				
0.50	B						Stiff brown slightly gravelly sandy CLAY with occasional cobbles and sand lenses. Sand is fine to medium grained.			
1.00-1.45	SPT(C) N=15			1,1/3,4,3,5		(1.50)				
1.00	B									
1.00-2.00	EN									
1.50	B								▼1	
					5.81	1.80				
2.00	B			Water strike(1) at 2.00m, rose to 1.70m in 20 mins, sealed at 2.60m.			Very stiff dark grey slightly sandy gravelly CLAY with some cobbles and boulders. Gravel is fine to coarse, angular to sub angular.		▽1	
2.00-3.00	EN									
2.00-2.45	SPT(C) N=23			1,3/5,6,6,6						
3.00-3.45	SPT(C) N=23			4,6/5,6,5,7						
3.00	B									
4.00-4.23	SPT(C) 50/75			14,22/50						
4.00	B									
5.00-5.45	SPT(C) N=44			3,6/7,7,12,18		(6.50)				
5.00	B									
6.00-6.45	SPT(C) N=41			5,4/5,8,13,15						
6.00	B									
7.00-7.38	SPT(C) 50/225			5,9/11,17,22						
7.00	B									
8.00-8.15	SPT(C) 50/0			13,37/50						
8.00	B									
					-0.69	8.30	Complete at 8.30m			

Remarks
Refusal at 8.30m BGL
Groundwater encountered at 2.0m BGL, sealed at 2.60m BGL
50mm Standpipe installed in borehole upon completion, slotted from 5.20. to 1.0m BGL, plain from 1.0m BGL to ground level, with bentonite seal and raised cover.
Chiselling from 4.20m to 4.50m for 1 hour. Chiselling from 7.50m to 8.30m for 1 hour.

Scale (approx)	Logged By
1:50	AB

Figure No. 9161-10-19.BH25

A9.3 GII Full Laboratory Reports

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Ireland

Attention :	Conor Finnerty
Date :	12th November, 2019
Your reference :	91691-10-19
Our reference :	Test Report 19/17941 Batch 1
Location :	Baldoyle St, GA1
Date samples received :	1st November, 2019
Status :	Final report
Issue :	1

Six samples were received for analysis on 1st November, 2019 of which six were scheduled for analysis. Please find attached our Test Report which should be read with notes at the end of the report and should include all sections if reproduced. Interpretations and opinions are outside the scope of any accreditation, and all results relate only to samples supplied.
All analysis is carried out on as received samples and reported on a dry weight basis unless stated otherwise. Results are not surrogate corrected.

Authorised By:

Phil Sommerton BSc
Senior Project Manager

Client Name: Ground Investigations Ireland
Reference: 91691-10-19
Location: Baldoyle St, GA1
Contact: Conor Finnerty
EMT Job No: 19/17941

Report : Solid

Solids: V=60g VOC jar, J=250g glass jar, T=plastic tub

EMT Sample No.	1-3	4-6	7-9	10-12	13-15	16-18					LOD/LOR	Units	Method No.
Sample ID	BH10	BH11	BH11	BH13	BH14	BH14							
Depth	1.00-2.00	0.00-1.00	2.00-3.00	1.00-2.00	0.00-1.00	2.00-3.00							
COC No / misc													
Containers	V J T	V J T	V J T	V J T	V J T	V J T							
Sample Date	22/10/2019	24/10/2019	24/10/2019	24/10/2019	24/10/2019	24/10/2019							
Sample Type	Soil	Soil	Soil	Soil	Soil	Soil							
Batch Number	1	1	1	1	1	1							
Date of Receipt	01/11/2019	01/11/2019	01/11/2019	01/11/2019	01/11/2019	01/11/2019							
Antimony	2	2	2	2	2	2					<1	mg/kg	TM30/PM15
Arsenic #	14.5	10.3	11.4	12.4	11.0	12.3					<0.5	mg/kg	TM30/PM15
Barium #	68	49	93	78	423	95					<1	mg/kg	TM30/PM15
Cadmium #	2.3	2.1	1.7	2.1	2.0	1.7					<0.1	mg/kg	TM30/PM15
Chromium #	49.0	50.2	53.9	46.7	47.1	44.1					<0.5	mg/kg	TM30/PM15
Copper #	33	30	28	30	30	32					<1	mg/kg	TM30/PM15
Lead #	20	16	18	19	17	19					<5	mg/kg	TM30/PM15
Mercury #	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1					<0.1	mg/kg	TM30/PM15
Molybdenum #	6.1	4.3	4.4	6.4	4.6	5.3					<0.1	mg/kg	TM30/PM15
Nickel #	41.8	40.4	36.4	46.3	39.3	39.9					<0.7	mg/kg	TM30/PM15
Selenium #	17	2	3	4	1	7					<1	mg/kg	TM30/PM15
Zinc #	98	71	80	79	77	87					<5	mg/kg	TM30/PM15
PAH MS													
Naphthalene #	<0.04	<0.04	<0.04	<0.04	<0.04	<0.04					<0.04	mg/kg	TM4/PM8
Acenaphthylene	<0.03	<0.03	<0.03	<0.03	<0.03	<0.03					<0.03	mg/kg	TM4/PM8
Acenaphthene #	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05					<0.05	mg/kg	TM4/PM8
Fluorene #	<0.04	<0.04	<0.04	<0.04	<0.04	<0.04					<0.04	mg/kg	TM4/PM8
Phenanthrene #	<0.03	<0.03	<0.03	<0.03	<0.03	<0.03					<0.03	mg/kg	TM4/PM8
Anthracene #	<0.04	<0.04	<0.04	<0.04	<0.04	<0.04					<0.04	mg/kg	TM4/PM8
Fluoranthene #	<0.03	<0.03	<0.03	<0.03	<0.03	<0.03					<0.03	mg/kg	TM4/PM8
Pyrene #	<0.03	<0.03	<0.03	<0.03	<0.03	<0.03					<0.03	mg/kg	TM4/PM8
Benzo(a)anthracene #	<0.06	<0.06	<0.06	<0.06	<0.06	<0.06					<0.06	mg/kg	TM4/PM8
Chrysene #	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02					<0.02	mg/kg	TM4/PM8
Benzo(bk)fluoranthene #	<0.07	<0.07	<0.07	<0.07	<0.07	<0.07					<0.07	mg/kg	TM4/PM8
Benzo(a)pyrene #	<0.04	<0.04	<0.04	<0.04	<0.04	<0.04					<0.04	mg/kg	TM4/PM8
Indeno(123cd)pyrene	<0.04	<0.04	<0.04	<0.04	<0.04	<0.04					<0.04	mg/kg	TM4/PM8
Dibenzo(ah)anthracene #	<0.04	<0.04	<0.04	<0.04	<0.04	<0.04					<0.04	mg/kg	TM4/PM8
Benzo(ghi)perylene #	<0.04	<0.04	<0.04	<0.04	<0.04	<0.04					<0.04	mg/kg	TM4/PM8
Coronene	<0.04	<0.04	<0.04	<0.04	<0.04	<0.04					<0.04	mg/kg	TM4/PM8
PAH 6 Total #	<0.22	<0.22	<0.22	<0.22	<0.22	<0.22					<0.22	mg/kg	TM4/PM8
PAH 17 Total	<0.64	<0.64	<0.64	<0.64	<0.64	<0.64					<0.64	mg/kg	TM4/PM8
Benzo(b)fluoranthene	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05					<0.05	mg/kg	TM4/PM8
Benzo(k)fluoranthene	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02					<0.02	mg/kg	TM4/PM8
Benzo(j)fluoranthene	<1	<1	<1	<1	<1	<1					<1	mg/kg	TM4/PM8
PAH Surrogate % Recovery	92	94	87	96	89	97					<0	%	TM4/PM8
Mineral Oil (C10-C40)	<30	<30	<30	<30	<30	<30					<30	mg/kg	TM5/PM8/PM16

Please see attached notes for all abbreviations and acronyms

Please include all sections of this report if it is reproduced
All solid results are expressed on a dry weight basis unless stated otherwise.

Element Materials Technology

Client Name: Ground Investigations Ireland
Reference: 91691-10-19
Location: Baldoyle St, GA1
Contact: Conor Finnerty
EMT Job No: 19/17941

Report : Solid

Solids: V=60g VOC jar, J=250g glass jar, T=plastic tub

Please see attached notes for all abbreviations and acronyms

EMT Sample No.	1-3	4-6	7-9	10-12	13-15	16-18					LOD/LOR	Units	Method No.
Sample ID	BH10	BH11	BH11	BH13	BH14	BH14							
Depth	1.00-2.00	0.00-1.00	2.00-3.00	1.00-2.00	0.00-1.00	2.00-3.00							
COC No / misc													
Containers	V J T	V J T	V J T	V J T	V J T	V J T							
Sample Date	22/10/2019	24/10/2019	24/10/2019	24/10/2019	24/10/2019	24/10/2019							
Sample Type	Soil	Soil	Soil	Soil	Soil	Soil							
Batch Number	1	1	1	1	1	1							
Date of Receipt	01/11/2019	01/11/2019	01/11/2019	01/11/2019	01/11/2019	01/11/2019							
TPH CWG													
Aliphatics													
>C5-C6 #	<0.1 SV	<0.1	<0.1 SV	<0.1	<0.1	<0.1 SV					<0.1	mg/kg	TM36/PM12
>C6-C8 #	<0.1 SV	<0.1	<0.1 SV	<0.1	<0.1	<0.1 SV					<0.1	mg/kg	TM36/PM12
>C8-C10	<0.1 SV	<0.1	<0.1 SV	<0.1	<0.1	<0.1 SV					<0.1	mg/kg	TM36/PM12
>C10-C12 #	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2					<0.2	mg/kg	TM5/PM8/PM16
>C12-C16 #	<4	<4	<4	<4	<4	<4					<4	mg/kg	TM5/PM8/PM16
>C16-C21 #	<7	<7	<7	<7	<7	<7					<7	mg/kg	TM5/PM8/PM16
>C21-C35 #	<7	<7	<7	<7	<7	<7					<7	mg/kg	TM5/PM8/PM16
>C35-C40	<7	<7	<7	<7	<7	<7					<7	mg/kg	TM5/PM8/PM16
Total aliphatics C5-40	<26	<26	<26	<26	<26	<26					<26	mg/kg	TM5/TM36/PM8/PM12/PM16
>C6-C10	<0.1 SV	<0.1	<0.1 SV	<0.1	<0.1	<0.1 SV					<0.1	mg/kg	TM36/PM12
>C10-C25	<10	<10	<10	<10	<10	<10					<10	mg/kg	TM5/PM8/PM16
>C25-C35	<10	<10	<10	<10	<10	<10					<10	mg/kg	TM5/PM8/PM16
Aromatics													
>C5-EC7 #	<0.1 SV	<0.1	<0.1 SV	<0.1	<0.1	<0.1 SV					<0.1	mg/kg	TM36/PM12
>EC7-EC8 #	<0.1 SV	<0.1	<0.1 SV	<0.1	<0.1	<0.1 SV					<0.1	mg/kg	TM36/PM12
>EC8-EC10 #	<0.1 SV	<0.1	<0.1 SV	<0.1	<0.1	<0.1 SV					<0.1	mg/kg	TM36/PM12
>EC10-EC12 #	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2					<0.2	mg/kg	TM5/PM8/PM16
>EC12-EC16 #	<4	<4	<4	<4	<4	<4					<4	mg/kg	TM5/PM8/PM16
>EC16-EC21 #	<7	<7	<7	<7	<7	<7					<7	mg/kg	TM5/PM8/PM16
>EC21-EC35 #	<7	<7	<7	<7	<7	<7					<7	mg/kg	TM5/PM8/PM16
>EC35-EC40	<7	<7	<7	<7	<7	<7					<7	mg/kg	TM5/PM8/PM16
Total aromatics C5-40	<26	<26	<26	<26	<26	<26					<26	mg/kg	TM5/TM36/PM8/PM12/PM16
Total aliphatics and aromatics(C5-40)	<52	<52	<52	<52	<52	<52					<52	mg/kg	TM5/TM36/PM8/PM12/PM16
>EC6-EC10 #	<0.1 SV	<0.1	<0.1 SV	<0.1	<0.1	<0.1 SV					<0.1	mg/kg	TM36/PM12
>EC10-EC25	<10	<10	<10	<10	<10	<10					<10	mg/kg	TM5/PM8/PM16
>EC25-EC35	<10	<10	<10	<10	<10	<10					<10	mg/kg	TM5/PM8/PM16
MTBE #	<5 SV	<5	<5 SV	<5	<5	<5 SV					<5	ug/kg	TM31/PM12
Benzene #	<5 SV	<5	<5 SV	<5	<5	<5 SV					<5	ug/kg	TM31/PM12
Toluene #	<5 SV	<5	<5 SV	<5	<5	<5 SV					<5	ug/kg	TM31/PM12
Ethylbenzene #	<5 SV	<5	<5 SV	<5	<5	<5 SV					<5	ug/kg	TM31/PM12
m/p-Xylene #	<5 SV	<5	<5 SV	<5	<5	<5 SV					<5	ug/kg	TM31/PM12
o-Xylene #	<5 SV	<5	<5 SV	<5	<5	<5 SV					<5	ug/kg	TM31/PM12
PCB 28 #	<5	<5	<5	<5	<5	<5					<5	ug/kg	TM17/PM8
PCB 52 #	<5	<5	<5	<5	<5	<5					<5	ug/kg	TM17/PM8
PCB 101 #	<5	<5	<5	<5	<5	<5					<5	ug/kg	TM17/PM8
PCB 118 #	<5	<5	<5	<5	<5	<5					<5	ug/kg	TM17/PM8
PCB 138 #	<5	<5	<5	<5	<5	<5					<5	ug/kg	TM17/PM8
PCB 153 #	<5	<5	<5	<5	<5	<5					<5	ug/kg	TM17/PM8
PCB 180 #	<5	<5	<5	<5	<5	<5					<5	ug/kg	TM17/PM8
Total 7 PCBs #	<35	<35	<35	<35	<35	<35					<35	ug/kg	TM17/PM8

Element Materials Technology

Client Name: Ground Investigations Ireland
Reference: 91691-10-19
Location: Baldoyle St, GA1
Contact: Conor Finnerty
EMT Job No: 19/17941

Report : Solid

Solids: V=60g VOC jar, J=250g glass jar, T=plastic tub

EMT Sample No.	1-3	4-6	7-9	10-12	13-15	16-18					LOD/LOR	Units	Method No.
Sample ID	BH10	BH11	BH11	BH13	BH14	BH14							
Depth	1.00-2.00	0.00-1.00	2.00-3.00	1.00-2.00	0.00-1.00	2.00-3.00							
COC No / misc													
Containers	V J T	V J T	V J T	V J T	V J T	V J T							
Sample Date	22/10/2019	24/10/2019	24/10/2019	24/10/2019	24/10/2019	24/10/2019							
Sample Type	Soil	Soil	Soil	Soil	Soil	Soil							
Batch Number	1	1	1	1	1	1							
Date of Receipt	01/11/2019	01/11/2019	01/11/2019	01/11/2019	01/11/2019	01/11/2019							
Natural Moisture Content	11.5	11.2	9.9	11.1	10.1	7.7					<0.1	%	PM4/PM0
Moisture Content (% Wet Weight)	10.3	10.1	9.0	10.0	9.2	7.2					<0.1	%	PM4/PM0
Hexavalent Chromium #	<0.3	<0.3	<0.3	<0.3	<0.3	<0.3					<0.3	mg/kg	TM38/PM20
Chromium III	49.0	50.2	53.9	46.7	47.1	44.1					<0.5	mg/kg	NONE/NONE
Total Organic Carbon #	0.69	0.53	0.63	0.45	0.38	0.73					<0.02	%	TM21/PM24
pH #	8.54	8.67	8.44	8.61	8.66	8.66					<0.01	pH units	TM73/PM11
Mass of raw test portion	0.0983	0.0992	0.0996	0.1019	0.1003	0.0975						kg	NONE/PM17
Mass of dried test portion	0.09	0.09	0.09	0.09	0.09	0.09						kg	NONE/PM17

Please see attached notes for all abbreviations and acronyms

Client Name: Ground Investigations Ireland
Reference: 91691-10-19
Location: Baldoyle St, GA1
Contact: Conor Finnerty
EMT Job No: 19/17941

Report : CEN 10:1 1 Batch

Solids: V=60g VOC jar, J=250g glass jar, T=plastic tub

Please see attached notes for all abbreviations and acronyms

EMT Sample No.	1-3	4-6	7-9	10-12	13-15	16-18					LOD/LOR	Units	Method No.
Sample ID	BH10	BH11	BH11	BH13	BH14	BH14							
Depth	1.00-2.00	0.00-1.00	2.00-3.00	1.00-2.00	0.00-1.00	2.00-3.00							
COC No / misc													
Containers	V J T	V J T	V J T	V J T	V J T	V J T							
Sample Date	22/10/2019	24/10/2019	24/10/2019	24/10/2019	24/10/2019	24/10/2019							
Sample Type	Soil	Soil	Soil	Soil	Soil	Soil							
Batch Number	1	1	1	1	1	1							
Date of Receipt	01/11/2019	01/11/2019	01/11/2019	01/11/2019	01/11/2019	01/11/2019							
Dissolved Antimony #	0.003	<0.002	0.004	<0.002	<0.002	<0.002					<0.002	mg/l	TM30/PM17
Dissolved Antimony (A10) #	0.03	<0.02	0.04	<0.02	<0.02	<0.02					<0.02	mg/kg	TM30/PM17
Dissolved Arsenic #	<0.0025	<0.0025	<0.0025	<0.0025	<0.0025	<0.0025					<0.0025	mg/l	TM30/PM17
Dissolved Arsenic (A10) #	<0.025	<0.025	<0.025	<0.025	<0.025	<0.025					<0.025	mg/kg	TM30/PM17
Dissolved Barium #	0.008	0.008	0.060	0.009	0.008	0.045					<0.003	mg/l	TM30/PM17
Dissolved Barium (A10) #	0.08	0.08	0.60	0.09	0.08	0.45					<0.03	mg/kg	TM30/PM17
Dissolved Cadmium #	<0.0005	<0.0005	<0.0005	<0.0005	<0.0005	<0.0005					<0.0005	mg/l	TM30/PM17
Dissolved Cadmium (A10) #	<0.005	<0.005	<0.005	<0.005	<0.005	<0.005					<0.005	mg/kg	TM30/PM17
Dissolved Chromium #	<0.0015	<0.0015	<0.0015	<0.0015	<0.0015	<0.0015					<0.0015	mg/l	TM30/PM17
Dissolved Chromium (A10) #	<0.015	<0.015	<0.015	<0.015	<0.015	<0.015					<0.015	mg/kg	TM30/PM17
Dissolved Copper #	<0.007	<0.007	<0.007	<0.007	<0.007	<0.007					<0.007	mg/l	TM30/PM17
Dissolved Copper (A10) #	<0.07	<0.07	<0.07	<0.07	<0.07	<0.07					<0.07	mg/kg	TM30/PM17
Dissolved Lead #	<0.005	<0.005	<0.005	<0.005	<0.005	<0.005					<0.005	mg/l	TM30/PM17
Dissolved Lead (A10) #	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05					<0.05	mg/kg	TM30/PM17
Dissolved Molybdenum #	0.037	0.023	0.017	0.028	0.021	0.042					<0.002	mg/l	TM30/PM17
Dissolved Molybdenum (A10) #	0.37	0.23	0.17	0.28	0.21	0.42					<0.02	mg/kg	TM30/PM17
Dissolved Nickel #	<0.002	<0.002	<0.002	<0.002	<0.002	<0.002					<0.002	mg/l	TM30/PM17
Dissolved Nickel (A10) #	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02					<0.02	mg/kg	TM30/PM17
Dissolved Selenium #	<0.003	<0.003	0.045	<0.003	<0.003	0.048					<0.003	mg/l	TM30/PM17
Dissolved Selenium (A10) #	<0.03	<0.03	0.45	<0.03	<0.03	0.48					<0.03	mg/kg	TM30/PM17
Dissolved Zinc #	<0.003	0.004	0.004	0.004	0.003	0.004					<0.003	mg/l	TM30/PM17
Dissolved Zinc (A10) #	<0.03	0.04	0.04	0.04	<0.03	0.04					<0.03	mg/kg	TM30/PM17
Mercury Dissolved by CVAF #	<0.00001	<0.00001	0.00004	<0.00001	<0.00001	<0.00001					<0.00001	mg/l	TM61/PM0
Mercury Dissolved by CVAF #	<0.0001	<0.0001	0.0004	<0.0001	<0.0001	<0.0001					<0.0001	mg/kg	TM61/PM0
Phenol	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01					<0.01	mg/l	TM26/PM0
Phenol	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1					<0.1	mg/kg	TM26/PM0
Fluoride	0.4	<0.3	<0.3	<0.3	0.3	0.4					<0.3	mg/l	TM173/PM0
Fluoride	4	<3	<3	<3	<3	4					<3	mg/kg	TM173/PM0
Sulphate as SO4 #	7.4	2.7	20.4	1.0	2.6	12.3					<0.5	mg/l	TM38/PM0
Sulphate as SO4 #	74	27	204	10	26	123					<5	mg/kg	TM38/PM0
Chloride #	0.7	<0.3	9.2	<0.3	<0.3	3.8					<0.3	mg/l	TM38/PM0
Chloride #	7	<3	92	<3	<3	38					<3	mg/kg	TM38/PM0
Dissolved Organic Carbon	2	3	3	3	3	4					<2	mg/l	TM60/PM0
Dissolved Organic Carbon	20	30	30	30	30	40					<20	mg/kg	TM60/PM0
pH	7.30	7.86	8.85	8.29	8.24	8.49					<0.01	pH units	TM73/PM0
Total Dissolved Solids #	74	64	95	58	76	113					<35	mg/l	TM20/PM0
Total Dissolved Solids #	740	640	950	580	760	1130					<350	mg/kg	TM20/PM0

Element Materials Technology

Client Name: Ground Investigations Ireland
Reference: 91691-10-19
Location: Baldoyle St, GA1
Contact: Conor Finnerty
EMT Job No: 19/17941

Report : EN12457_2

Solids: V=60g VOC jar, J=250g glass jar, T=plastic tub

Please see attached notes for all abbreviations and acronyms

EMT Sample No.	1-3	4-6	7-9	10-12	13-15	16-18										
Sample ID	BH10	BH11	BH11	BH13	BH14	BH14										
Depth	1.00-2.00	0.00-1.00	2.00-3.00	1.00-2.00	0.00-1.00	2.00-3.00										
COC No / misc																
Containers	V J T	V J T	V J T	V J T	V J T	V J T										
Sample Date	22/10/2019	24/10/2019	24/10/2019	24/10/2019	24/10/2019	24/10/2019										
Sample Type	Soil	Soil	Soil	Soil	Soil	Soil										
Batch Number	1	1	1	1	1	1										
Date of Receipt	01/11/2019	01/11/2019	01/11/2019	01/11/2019	01/11/2019	01/11/2019										
											Inert	Stable Non-reactive	Hazardous	LOD LOR	Units	Method No.
Solid Waste Analysis																
Total Organic Carbon #	0.69	0.53	0.63	0.45	0.38	0.73					3	5	6	<0.02	%	TM21/PM24
Sum of BTEX	<0.025 SV	<0.025	<0.025 SV	<0.025	<0.025	<0.025 SV					6	-	-	<0.025	mg/kg	TM31/PM12
Sum of 7 PCBs #	<0.035	<0.035	<0.035	<0.035	<0.035	<0.035					1	-	-	<0.035	mg/kg	TM17/PM8
Mineral Oil	<30	<30	<30	<30	<30	<30					500	-	-	<30	mg/kg	TM5/PM8/PM16
PAH Sum of 6 #	<0.22	<0.22	<0.22	<0.22	<0.22	<0.22					-	-	-	<0.22	mg/kg	TM4/PM8
PAH Sum of 17	<0.64	<0.64	<0.64	<0.64	<0.64	<0.64					100	-	-	<0.64	mg/kg	TM4/PM8
CEN 10:1 Leachate																
Arsenic #	<0.025	<0.025	<0.025	<0.025	<0.025	<0.025					0.5	2	25	<0.025	mg/kg	TM30/PM17
Barium #	0.08	0.08	0.60	0.09	0.08	0.45					20	100	300	<0.03	mg/kg	TM30/PM17
Cadmium #	<0.005	<0.005	<0.005	<0.005	<0.005	<0.005					0.04	1	5	<0.005	mg/kg	TM30/PM17
Chromium #	<0.015	<0.015	<0.015	<0.015	<0.015	<0.015					0.5	10	70	<0.015	mg/kg	TM30/PM17
Copper #	<0.07	<0.07	<0.07	<0.07	<0.07	<0.07					2	50	100	<0.07	mg/kg	TM30/PM17
Mercury #	<0.0001	<0.0001	0.0004	<0.0001	<0.0001	<0.0001					0.01	0.2	2	<0.0001	mg/kg	TM61/PM0
Molybdenum #	0.37	0.23	0.17	0.28	0.21	0.42					0.5	10	30	<0.02	mg/kg	TM30/PM17
Nickel #	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02					0.4	10	40	<0.02	mg/kg	TM30/PM17
Lead #	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05					0.5	10	50	<0.05	mg/kg	TM30/PM17
Antimony #	0.03	<0.02	0.04	<0.02	<0.02	<0.02					0.06	0.7	5	<0.02	mg/kg	TM30/PM17
Selenium #	<0.03	<0.03	0.45	<0.03	<0.03	0.48					0.1	0.5	7	<0.03	mg/kg	TM30/PM17
Zinc #	<0.03	0.04	0.04	0.04	<0.03	0.04					4	50	200	<0.03	mg/kg	TM30/PM17
Total Dissolved Solids #	740	640	950	580	760	1130					4000	60000	100000	<350	mg/kg	TM20/PM0
Dissolved Organic Carbon	20	30	30	30	30	40					500	800	1000	<20	mg/kg	TM60/PM0
Mass of raw test portion	0.0983	0.0992	0.0996	0.1019	0.1003	0.0975					-	-	-		kg	NONE/PM17
Dry Matter Content Ratio	91.5	91.0	90.6	88.2	89.5	92.1					-	-	-	<0.1	%	NONE/PM4
Leachant Volume	0.892	0.891	0.891	0.888	0.889	0.892					-	-	-		l	NONE/PM17
Eluate Volume	0.8	0.8	0.8	0.8	0.8	0.8					-	-	-		l	NONE/PM17
pH #	8.54	8.67	8.44	8.61	8.66	8.66					-	-	-	<0.01	pH units	TM73/PM11
Phenol	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1					1	-	-	<0.1	mg/kg	TM26/PM0
Fluoride	4	<3	<3	<3	<3	4					-	-	-	<3	mg/kg	TM173/PM0
Sulphate as SO4 #	74	27	204	10	26	123					1000	20000	50000	<5	mg/kg	TM38/PM0
Chloride #	7	<3	92	<3	<3	38					800	15000	25000	<3	mg/kg	TM38/PM0

All solid results are expressed on a dry weight basis unless stated otherwise.

Client Name: Ground Investigations Ireland

Reference: 91691-10-19

Location: Baldoyle St, GA1

Contact: Conor Finnerty

Matrix : Solid

EMT Job No.	Batch	Sample ID	Depth	EMT Sample No.	EPH Interpretation
19/17941	1	BH10	1.00-2.00	1-3	No interpretation possible
19/17941	1	BH11	0.00-1.00	4-6	No interpretation possible
19/17941	1	BH11	2.00-3.00	7-9	No interpretation possible
19/17941	1	BH13	1.00-2.00	10-12	No interpretation possible
19/17941	1	BH14	0.00-1.00	13-15	No interpretation possible
19/17941	1	BH14	2.00-3.00	16-18	No interpretation possible

Client Name: Ground Investigations Ireland
Reference: 91691-10-19
Location: Baldoyle St, GA1
Contact: Conor Finnerty

Note:

Asbestos Screen analysis is carried out in accordance with our documented in-house methods PM042 and TM065 and HSG 248 by Stereo and Polarised Light Microscopy using Dispersion Staining Techniques and is covered by our UKAS accreditation. Detailed Gravimetric Quantification and PCOM Fibre Analysis is carried out in accordance with our documented in-house methods PM042 and TM131 and HSG 248 using Stereo and Polarised Light Microscopy and Phase Contrast Optical Microscopy (PCOM). Samples are retained for not less than 6 months from the date of analysis unless specifically requested.

Opinions, including ACM type and Asbestos level less than 0.1%, lie outside the scope of our UKAS accreditation.

Where the sample is not taken by a Element Materials Technology consultant, Element Materials Technology cannot be responsible for inaccurate or unrepresentative sampling.

Signed on behalf of Element Materials Technology:

Ryan Butterworth
Asbestos Team Leader

EMT Job No.	Batch	Sample ID	Depth	EMT Sample No.	Date Of Analysis	Analysis	Result
19/17941	1	BH10	1.00-2.00	2	04/11/2019	**General Description (Bulk Analysis)**	Soil/Stones
					04/11/2019	**Asbestos Fibres**	NAD
					04/11/2019	**Asbestos ACM**	NAD
					04/11/2019	**Asbestos Type**	NAD
					04/11/2019	**Asbestos Level Screen**	NAD
19/17941	1	BH11	0.00-1.00	5	04/11/2019	**General Description (Bulk Analysis)**	Soil/Stones
					04/11/2019	**Asbestos Fibres**	NAD
					04/11/2019	**Asbestos ACM**	NAD
					04/11/2019	**Asbestos Type**	NAD
					04/11/2019	**Asbestos Level Screen**	NAD
19/17941	1	BH11	2.00-3.00	8	04/11/2019	**General Description (Bulk Analysis)**	soil-stones
					04/11/2019	**Asbestos Fibres**	NAD
					04/11/2019	**Asbestos ACM**	NAD
					04/11/2019	**Asbestos Type**	NAD
					04/11/2019	**Asbestos Level Screen**	NAD
19/17941	1	BH13	1.00-2.00	11	04/11/2019	**General Description (Bulk Analysis)**	Soil/Stones
					04/11/2019	**Asbestos Fibres**	NAD
					04/11/2019	**Asbestos ACM**	NAD
					04/11/2019	**Asbestos Type**	NAD
					04/11/2019	**Asbestos Level Screen**	NAD
19/17941	1	BH14	0.00-1.00	14	04/11/2019	**General Description (Bulk Analysis)**	Soil/Stone
					04/11/2019	**Asbestos Fibres**	NAD
					04/11/2019	**Asbestos ACM**	NAD
					04/11/2019	**Asbestos Type**	NAD
					04/11/2019	**Asbestos Level Screen**	NAD
19/17941	1	BH14	2.00-3.00	17	04/11/2019	**General Description (Bulk Analysis)**	Soil/Stone
					04/11/2019	**Asbestos Fibres**	NAD
					04/11/2019	**Asbestos ACM**	NAD
					04/11/2019	**Asbestos Type**	NAD
					04/11/2019	**Asbestos Level Screen**	NAD

Client Name: Ground Investigations Ireland
Reference: 91691-10-19
Location: Baldoyle St, GA1
Contact: Conor Finnerty

EMT Job No.	Batch	Sample ID	Depth	EMT Sample No.	Analysis	Reason
No deviating sample report results for job 19/17941						

Please note that only samples that are deviating are mentioned in this report. If no samples are listed it is because none were deviating.
Only analyses which are accredited are recorded as deviating if set criteria are not met.

NOTES TO ACCOMPANY ALL SCHEDULES AND REPORTS

EMT Job No.: 19/17941

SOILS

Please note we are only MCERTS accredited (UK soils only) for sand, loam and clay and any other matrix is outside our scope of accreditation.

Where an MCERTS report has been requested, you will be notified within 48 hours of any samples that have been identified as being outside our MCERTS scope. As validation has been performed on clay, sand and loam, only samples that are predominantly these matrices, or combinations of them will be within our MCERTS scope. If samples are not one of a combination of the above matrices they will not be marked as MCERTS accredited.

It is assumed that you have taken representative samples on site and require analysis on a representative subsample. Stones will generally be included unless we are requested to remove them.

All samples will be discarded one month after the date of reporting, unless we are instructed to the contrary.

If you have not already done so, please send us a purchase order if this is required by your company.

Where appropriate please make sure that our detection limits are suitable for your needs, if they are not, please notify us immediately.

All analysis is reported on a dry weight basis unless stated otherwise. Limits of detection for analyses carried out on as received samples are not moisture content corrected. Results are not surrogate corrected. Samples are dried at 35°C ±5°C unless otherwise stated. Moisture content for CEN Leachate tests are dried at 105°C ±5°C.

Where Mineral Oil or Fats, Oils and Grease is quoted, this refers to Total Aliphatics C10-C40.

Where a CEN 10:1 ZERO Headspace VOC test has been carried out, a 10:1 ratio of water to wet (as received) soil has been used.

% Asbestos in Asbestos Containing Materials (ACMs) is determined by reference to HSG 264 The Survey Guide - Appendix 2 : ACMs in buildings listed in order of ease of fibre release.

Sufficient amount of sample must be received to carry out the testing specified. Where an insufficient amount of sample has been received the testing may not meet the requirements of our accredited methods, as such accreditation may be removed.

Negative Neutralization Potential (NP) values are obtained when the volume of NaOH (0.1N) titrated (pH 8.3) is greater than the volume of HCl (1N) to reduce the pH of the sample to 2.0 - 2.5. Any negative NP values are corrected to 0.

The calculation of Pyrite content assumes that all oxidisable sulphides present in the sample are pyrite. This may not be the case. The calculation may be an overesitimate when other sulphides such as Barite (Barium Sulphate) are present.

WATERS

Please note we are not a UK Drinking Water Inspectorate (DWI) Approved Laboratory .

ISO17025 accreditation applies to surface water and groundwater and usually one other matrix which is analysis specific, any other liquids are outside our scope of accreditation.

As surface waters require different sample preparation to groundwaters the laboratory must be informed of the water type when submitting samples.

Where Mineral Oil or Fats, Oils and Grease is quoted, this refers to Total Aliphatics C10-C40.

DEVIATING SAMPLES

All samples should be submitted to the laboratory in suitable containers with sufficient ice packs to sustain an appropriate temperature for the requested analysis. The temperature of sample receipt is recorded on the confirmation schedules in order that the client can make an informed decision as to whether testing should still be undertaken.

SURROGATES

Surrogate compounds are added during the preparation process to monitor recovery of analytes. However low recovery in soils is often due to peat, clay or other organic rich matrices. For waters this can be due to oxidants, surfactants, organic rich sediments or remediation fluids. Acceptable limits for most organic methods are 70 - 130% and for VOCs are 50 - 150%. When surrogate recoveries are outside the performance criteria but the associated AQC passes this is assumed to be due to matrix effect. Results are not surrogate corrected.

DILUTIONS

A dilution suffix indicates a dilution has been performed and the reported result takes this into account. No further calculation is required.

BLANKS

Where analytes have been found in the blank, the sample will be treated in accordance with our laboratory procedure for dealing with contaminated blanks.

NOTE

Data is only reported if the laboratory is confident that the data is a true reflection of the samples analysed. Data is only reported as accredited when all the requirements of our Quality System have been met. In certain circumstances where all the requirements of the Quality System have not been met, for instance if the associated AQC has failed, the reason is fully investigated and documented. The sample data is then evaluated alongside the other quality control checks performed during analysis to determine its suitability. Following this evaluation, provided the sample results have not been effected, the data is reported but accreditation is removed. It is a UKAS requirement for data not reported as accredited to be considered indicative only, but this does not mean the data is not valid.
Where possible, and if requested, samples will be re-extracted and a revised report issued with accredited results. Please do not hesitate to contact the laboratory if further details are required of the circumstances which have led to the removal of accreditation.

REPORTS FROM THE SOUTH AFRICA LABORATORY

Any method number not prefixed with SA has been undertaken in our UK laboratory unless reported as subcontracted.

Measurement Uncertainty

Measurement uncertainty defines the range of values that could reasonably be attributed to the measured quantity. This range of values has not been included within the reported results. Uncertainty expressed as a percentage can be provided upon request.

ABBREVIATIONS and ACRONYMS USED

#	ISO17025 (UKAS Ref No. 4225) accredited - UK.
SA	ISO17025 (SANAS Ref No.T0729) accredited - South Africa
B	Indicates analyte found in associated method blank.
DR	Dilution required.
M	MCERTS accredited.
NA	Not applicable
NAD	No Asbestos Detected.
ND	None Detected (usually refers to VOC and/SVOC TICs).
NDP	No Determination Possible
SS	Calibrated against a single substance
SV	Surrogate recovery outside performance criteria. This may be due to a matrix effect.
W	Results expressed on as received basis.
+	AQC failure, accreditation has been removed from this result, if appropriate, see 'Note' on previous page.
>>	Results above calibration range, the result should be considered the minimum value. The actual result could be significantly higher, this result is not accredited.
*	Analysis subcontracted to an Element Materials Technology approved laboratory.
AD	Samples are dried at 35°C ±5°C
CO	Suspected carry over
LOD/LOR	Limit of Detection (Limit of Reporting) in line with ISO 17025 and MCERTS
ME	Matrix Effect
NFD	No Fibres Detected
BS	AQC Sample
LB	Blank Sample
N	Client Sample
TB	Trip Blank Sample
OC	Outside Calibration Range

EMT Job No: 19/17941

Test Method No.	Description	Prep Method No. (if appropriate)	Description	ISO 17025 (UKAS/SANAS)	MCERTS (UK soils only)	Analysis done on As Received (AR) or Dried (AD)	Reported on dry weight basis
PM4	Gravimetric measurement of Natural Moisture Content and % Moisture Content at either 35°C or 105°C. Calculation based on ISO 11465 and BS1377.	PM0	No preparation is required.			AR	
TM4	Modified USEPA 8270 method for the solvent extraction and determination of 16 PAHs by GC-MS.	PM8	End over end extraction of solid samples for organic analysis. The solvent mix varies depending on analysis required.			AR	Yes
TM4	Modified USEPA 8270 method for the solvent extraction and determination of 16 PAHs by GC-MS.	PM8	End over end extraction of solid samples for organic analysis. The solvent mix varies depending on analysis required.	Yes		AR	Yes
TM5	Modified 8015B method for the determination of solvent Extractable Petroleum Hydrocarbons (EPH) within the range C8-C40 by GCFID. For waters the solvent extracts dissolved phase plus a sheen if present.	PM16	Fractionation into aliphatic and aromatic fractions using a Rapid Trace SPE.			AR	
TM5	Modified 8015B method for the determination of solvent Extractable Petroleum Hydrocarbons (EPH) within the range C8-C40 by GCFID. For waters the solvent extracts dissolved phase plus a sheen if present.	PM8/PM16	End over end extraction of solid samples for organic analysis. The solvent mix varies depending on analysis required/Fractionation into aliphatic and aromatic fractions using a Rapid Trace SPE.			AR	Yes
TM5	Modified 8015B method for the determination of solvent Extractable Petroleum Hydrocarbons (EPH) within the range C8-C40 by GCFID. For waters the solvent extracts dissolved phase plus a sheen if present.	PM8/PM16	End over end extraction of solid samples for organic analysis. The solvent mix varies depending on analysis required/Fractionation into aliphatic and aromatic fractions using a Rapid Trace SPE.	Yes		AR	Yes
TM5/TM36	please refer to TM5 and TM36 for method details	PM8/PM12/PM16	please refer to PM8/PM16 and PM12 for method details			AR	Yes
TM17	Modified US EPA method 8270. Determination of specific Polychlorinated Biphenyl congeners by GC-MS.	PM8	End over end extraction of solid samples for organic analysis. The solvent mix varies depending on analysis required.	Yes		AR	Yes
TM20	Modified BS 1377-3: 1990/USEPA 160.3 Gravimetric determination of Total Dissolved Solids/Total Solids	PM0	No preparation is required.	Yes		AR	Yes
TM21	Modified BS 7755-3:1995, ISO10694:1995 Determination of Total Organic Carbon or Total Carbon by combustion in an Eltra TOC furnace/analyser in the presence of oxygen. The CO2 generated is quantified using infra-red detection. Organic Matter (SOM) calculated as per EA MCERTS Chemical Testing of Soil, March 2012 v4.	PM24	Dried and ground solid samples are washed with hydrochloric acid, then rinsed with deionised water to remove the mineral carbon before TOC analysis.	Yes		AD	Yes

EMT Job No: 19/17941

Test Method No.	Description	Prep Method No. (if appropriate)	Description	ISO 17025 (UKAS/SANAS)	MCERTS (UK soils only)	Analysis done on As Received (AR) or Dried (AD)	Reported on dry weight basis
TM26	Determination of phenols by Reversed Phased High Performance Liquid Chromatography and Electro-Chemical Detection.	PM0	No preparation is required.			AR	Yes
TM30	Determination of Trace Metal elements by ICP-OES (Inductively Coupled Plasma - Optical Emission Spectrometry). Modified US EPA Method 200.7, 6010B and BS EN ISO 11885 2009	PM15	Acid digestion of dried and ground solid samples using Aqua Regia refluxed at 112.5 °C. Samples containing asbestos are not dried and ground.			AD	Yes
TM30	Determination of Trace Metal elements by ICP-OES (Inductively Coupled Plasma - Optical Emission Spectrometry). Modified US EPA Method 200.7, 6010B and BS EN ISO 11885 2009	PM15	Acid digestion of dried and ground solid samples using Aqua Regia refluxed at 112.5 °C. Samples containing asbestos are not dried and ground.	Yes		AD	Yes
TM30	Determination of Trace Metal elements by ICP-OES (Inductively Coupled Plasma - Optical Emission Spectrometry). Modified US EPA Method 200.7, 6010B and BS EN ISO 11885 2009	PM17	Modified method BS EN12457-2 As received solid samples are leached with water in a 10:1 water to soil ratio for 24 hours, the moisture content of the sample is included in the ratio.	Yes		AR	Yes
TM31	Modified USEPA 8015B. Determination of Methyltertbutylether, Benzene, Toluene, Ethylbenzene and Xylene by headspace GC-FID.	PM12	Modified US EPA method 5021. Preparation of solid and liquid samples for GC headspace analysis.			AR	Yes
TM31	Modified USEPA 8015B. Determination of Methyltertbutylether, Benzene, Toluene, Ethylbenzene and Xylene by headspace GC-FID.	PM12	Modified US EPA method 5021. Preparation of solid and liquid samples for GC headspace analysis.	Yes		AR	Yes
TM36	Modified US EPA method 8015B. Determination of Gasoline Range Organics (GRO) in the carbon chain range of C4-12 by headspace GC-FID. MTBE by GCFID co-elutes with 3-methylpentane if present and therefore can give a false positive. Positive MTBE results can be confirmed using GCMS.	PM12	Modified US EPA method 5021. Preparation of solid and liquid samples for GC headspace analysis.			AR	Yes
TM36	Modified US EPA method 8015B. Determination of Gasoline Range Organics (GRO) in the carbon chain range of C4-12 by headspace GC-FID. MTBE by GCFID co-elutes with 3-methylpentane if present and therefore can give a false positive. Positive MTBE results can be confirmed using GCMS.	PM12	Modified US EPA method 5021. Preparation of solid and liquid samples for GC headspace analysis.	Yes		AR	Yes
TM38	Soluble Ion analysis using Discrete Analyser. Modified US EPA methods 325.2 (Chloride), 375.4 (Sulphate), 365.2 (o-Phosphate), 353.1 (TON), 354.1 (Nitrite), 350.1 (NH4+) comparable to BS ISO 15923-1, 7196A (Hex Cr)	PM0	No preparation is required.	Yes		AR	Yes
TM38	Soluble Ion analysis using Discrete Analyser. Modified US EPA methods 325.2 (Chloride), 375.4 (Sulphate), 365.2 (o-Phosphate), 353.1 (TON), 354.1 (Nitrite), 350.1 (NH4+) comparable to BS ISO 15923-1, 7196A (Hex Cr)	PM20	Extraction of dried and ground or as received samples with deionised water in a 2:1 water to solid ratio using a reciprocal shaker for all analytes except hexavalent chromium. Extraction of as received sample using 10:1 ratio of 0.2M sodium hydroxide to soil for hexavalent chromium using a reciprocal shaker.	Yes		AR	Yes

EMT Job No: 19/17941

Test Method No.	Description	Prep Method No. (if appropriate)	Description	ISO 17025 (UKAS/SANAS)	MCERTS (UK soils only)	Analysis done on As Received (AR) or Dried (AD)	Reported on dry weight basis
TM60	TC/TOC analysis of Waters by High Temperature Combustion followed by NDIR detection. Based on the following modified standard methods: USEPA 9060, APHA Standard Methods for Examination of Water and Wastewater 5310B, ASTM D 7573, and USEPA 415.1.	PM0	No preparation is required.			AR	Yes
TM61	Modified US EPA methods 245.7 and 200.7. Determination of Mercury by Cold Vapour Atomic Fluorescence.	PM0	No preparation is required.	Yes		AR	Yes
TM65	Asbestos Bulk Identification method based on HSG 248.	PM42	Solid samples undergo a thorough visual inspection for asbestos fibres prior to asbestos identification using TM065.	Yes		AR	
TM73	Modified US EPA methods 150.1 and 9045D and BS1377:1990. Determination of pH by Metrohm automated probe analyser.	PM0	No preparation is required.			AR	Yes
TM73	Modified US EPA methods 150.1 and 9045D and BS1377:1990. Determination of pH by Metrohm automated probe analyser.	PM11	Extraction of as received solid samples using one part solid to 2.5 parts deionised water.	Yes		AR	No
TM173	Analysis of fluoride by ISE (Ion Selective Electrode) using modified ISE method 340.2	PM0	No preparation is required.			AR	Yes
NONE	No Method Code	NONE	No Method Code			AD	Yes
NONE	No Method Code	PM17	Modified method BS EN12457-2 As received solid samples are leached with water in a 10:1 water to soil ratio for 24 hours, the moisture content of the sample is included in the ratio.				
NONE	No Method Code	PM17	Modified method BS EN12457-2 As received solid samples are leached with water in a 10:1 water to soil ratio for 24 hours, the moisture content of the sample is included in the ratio.			AR	
NONE	No Method Code	PM4	Gravimetric measurement of Natural Moisture Content and % Moisture Content at either 35°C or 105°C. Calculation based on ISO 11465 and BS1377.			AR	

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Ireland

Attention :	Conor Finnerty
Date :	13th November, 2019
Your reference :	9161-10-19
Our reference :	Test Report 19/18087 Batch 1
Location :	Baldoyle
Date samples received :	5th November, 2019
Status :	Final report
Issue :	1

Five samples were received for analysis on 5th November, 2019 of which five were scheduled for analysis. Please find attached our Test Report which should be read with notes at the end of the report and should include all sections if reproduced. Interpretations and opinions are outside the scope of any accreditation, and all results relate only to samples supplied.
All analysis is carried out on as received samples and reported on a dry weight basis unless stated otherwise. Results are not surrogate corrected.

Authorised By:

Phil Sommerton BSc
Senior Project Manager

Element Materials Technology

Client Name: Ground Investigations Ireland
Reference: 9161-10-19
Location: Baldoyle
Contact: Conor Finnerty
EMT Job No: 19/18087

Report : Solid

Solids: V=60g VOC jar, J=250g glass jar, T=plastic tub

EMT Sample No.	1-3	4-6	7-9	10-12	13-15						LOD/LOR	Units	Method No.
Sample ID	TP33	TP39	TP41	TP45	TP46								
Depth	0.50	0.50	0.50	0.50	0.50								
COC No / misc													
Containers	V J T	V J T	V J T	V J T	V J T								
Sample Date	01/11/2019	01/11/2019	01/11/2019	01/11/2019	01/11/2019								
Sample Type	Soil	Soil	Soil	Soil	Soil								
Batch Number	1	1	1	1	1								
Date of Receipt	05/11/2019	05/11/2019	05/11/2019	05/11/2019	05/11/2019								
Antimony	2	2	3	2	2						<1	mg/kg	TM30/PM15
Arsenic #	16.3	11.1	27.2	14.1	11.5						<0.5	mg/kg	TM30/PM15
Barium #	81	67	75	107	118						<1	mg/kg	TM30/PM15
Cadmium #	1.6	1.7	0.6	1.0	2.1						<0.1	mg/kg	TM30/PM15
Chromium #	63.3	55.1	57.7	50.2	69.3						<0.5	mg/kg	TM30/PM15
Copper #	28	29	28	19	44						<1	mg/kg	TM30/PM15
Lead #	25	20	21	15	20						<5	mg/kg	TM30/PM15
Mercury #	<0.1	<0.1	<0.1	<0.1	<0.1						<0.1	mg/kg	TM30/PM15
Molybdenum #	4.5	5.1	2.5	3.1	5.0						<0.1	mg/kg	TM30/PM15
Nickel #	32.1	38.5	35.3	22.5	38.6						<0.7	mg/kg	TM30/PM15
Selenium #	1	1	1	1	2						<1	mg/kg	TM30/PM15
Zinc #	97	74	90	60	109						<5	mg/kg	TM30/PM15
PAH MS													
Naphthalene #	<0.04	<0.04	<0.04	<0.04	<0.04						<0.04	mg/kg	TM4/PM8
Acenaphthylene	<0.03	<0.03	<0.03	<0.03	<0.03						<0.03	mg/kg	TM4/PM8
Acenaphthene #	<0.05	<0.05	<0.05	<0.05	<0.05						<0.05	mg/kg	TM4/PM8
Fluorene #	<0.04	<0.04	<0.04	<0.04	<0.04						<0.04	mg/kg	TM4/PM8
Phenanthrene #	0.07	<0.03	<0.03	<0.03	<0.03						<0.03	mg/kg	TM4/PM8
Anthracene #	<0.04	<0.04	<0.04	<0.04	<0.04						<0.04	mg/kg	TM4/PM8
Fluoranthene #	0.10	<0.03	<0.03	<0.03	<0.03						<0.03	mg/kg	TM4/PM8
Pyrene #	0.09	<0.03	<0.03	<0.03	<0.03						<0.03	mg/kg	TM4/PM8
Benzo(a)anthracene #	0.08	<0.06	<0.06	<0.06	<0.06						<0.06	mg/kg	TM4/PM8
Chrysene #	0.07	<0.02	<0.02	<0.02	<0.02						<0.02	mg/kg	TM4/PM8
Benzo(bk)fluoranthene #	0.10	<0.07	<0.07	<0.07	<0.07						<0.07	mg/kg	TM4/PM8
Benzo(a)pyrene #	0.06	<0.04	<0.04	<0.04	<0.04						<0.04	mg/kg	TM4/PM8
Indeno(123cd)pyrene	<0.04	<0.04	<0.04	<0.04	<0.04						<0.04	mg/kg	TM4/PM8
Dibenzo(ah)anthracene #	<0.04	<0.04	<0.04	<0.04	<0.04						<0.04	mg/kg	TM4/PM8
Benzo(ghi)perylene #	<0.04	<0.04	<0.04	<0.04	<0.04						<0.04	mg/kg	TM4/PM8
Coronene	<0.04	<0.04	<0.04	<0.04	<0.04						<0.04	mg/kg	TM4/PM8
PAH 6 Total #	0.26	<0.22	<0.22	<0.22	<0.22						<0.22	mg/kg	TM4/PM8
PAH 17 Total	<0.64	<0.64	<0.64	<0.64	<0.64						<0.64	mg/kg	TM4/PM8
Benzo(b)fluoranthene	0.07	<0.05	<0.05	<0.05	<0.05						<0.05	mg/kg	TM4/PM8
Benzo(k)fluoranthene	0.03	<0.02	<0.02	<0.02	<0.02						<0.02	mg/kg	TM4/PM8
Benzo(j)fluoranthene	<1	<1	<1	<1	<1						<1	mg/kg	TM4/PM8
PAH Surrogate % Recovery	96	98	93	69	97						<0	%	TM4/PM8
Mineral Oil (C10-C40)	<30	<30	<30	<30	<30						<30	mg/kg	TM5/PM8/PM16

Please see attached notes for all abbreviations and acronyms

Client Name: Ground Investigations Ireland
Reference: 9161-10-19
Location: Baldoyle
Contact: Conor Finnerty
EMT Job No: 19/18087

Report : Solid

Solids: V=60g VOC jar, J=250g glass jar, T=plastic tub

EMT Sample No.	1-3	4-6	7-9	10-12	13-15						LOD/LOR	Units	Method No.
Sample ID	TP33	TP39	TP41	TP45	TP46								
Depth	0.50	0.50	0.50	0.50	0.50								
COC No / misc													
Containers	V J T	V J T	V J T	V J T	V J T								
Sample Date	01/11/2019	01/11/2019	01/11/2019	01/11/2019	01/11/2019								
Sample Type	Soil	Soil	Soil	Soil	Soil								
Batch Number	1	1	1	1	1								
Date of Receipt	05/11/2019	05/11/2019	05/11/2019	05/11/2019	05/11/2019								
TPH CWG													
Aliphatics													
>C5-C6 #	<0.1	<0.1	<0.1 SV	<0.1 SV	<0.1						<0.1	mg/kg	TM36/PM12
>C6-C8 #	<0.1	<0.1	<0.1 SV	<0.1 SV	<0.1						<0.1	mg/kg	TM36/PM12
>C8-C10	<0.1	<0.1	<0.1 SV	<0.1 SV	<0.1						<0.1	mg/kg	TM36/PM12
>C10-C12 #	<0.2	<0.2	<0.2	<0.2	<0.2						<0.2	mg/kg	TM5/PM8/PM16
>C12-C16 #	<4	<4	<4	<4	<4						<4	mg/kg	TM5/PM8/PM16
>C16-C21 #	<7	<7	<7	<7	<7						<7	mg/kg	TM5/PM8/PM16
>C21-C35 #	<7	<7	<7	<7	<7						<7	mg/kg	TM5/PM8/PM16
>C35-C40	<7	<7	<7	<7	<7						<7	mg/kg	TM5/PM8/PM16
Total aliphatics C5-40	<26	<26	<26	<26	<26						<26	mg/kg	TM5/TM36/PM8/PM12/PM16
>C6-C10	<0.1	<0.1	<0.1 SV	<0.1 SV	<0.1						<0.1	mg/kg	TM36/PM12
>C10-C25	<10	<10	<10	<10	<10						<10	mg/kg	TM5/PM8/PM16
>C25-C35	<10	<10	<10	<10	<10						<10	mg/kg	TM5/PM8/PM16
Aromatics													
>C5-EC7 #	<0.1	<0.1	<0.1 SV	<0.1 SV	<0.1						<0.1	mg/kg	TM36/PM12
>EC7-EC8 #	<0.1	<0.1	<0.1 SV	<0.1 SV	<0.1						<0.1	mg/kg	TM36/PM12
>EC8-EC10 #	<0.1	<0.1	<0.1 SV	<0.1 SV	<0.1						<0.1	mg/kg	TM36/PM12
>EC10-EC12 #	<0.2	<0.2	<0.2	<0.2	<0.2						<0.2	mg/kg	TM5/PM8/PM16
>EC12-EC16 #	<4	<4	<4	<4	<4						<4	mg/kg	TM5/PM8/PM16
>EC16-EC21 #	<7	<7	<7	<7	<7						<7	mg/kg	TM5/PM8/PM16
>EC21-EC35 #	<7	<7	<7	<7	<7						<7	mg/kg	TM5/PM8/PM16
>EC35-EC40	<7	<7	<7	<7	<7						<7	mg/kg	TM5/PM8/PM16
Total aromatics C5-40	<26	<26	<26	<26	<26						<26	mg/kg	TM5/TM36/PM8/PM12/PM16
Total aliphatics and aromatics(C5-40)	<52	<52	<52	<52	<52						<52	mg/kg	TM5/TM36/PM8/PM12/PM16
>EC6-EC10 #	<0.1	<0.1	<0.1 SV	<0.1 SV	<0.1						<0.1	mg/kg	TM36/PM12
>EC10-EC25	<10	<10	<10	<10	<10						<10	mg/kg	TM5/PM8/PM16
>EC25-EC35	<10	<10	<10	<10	<10						<10	mg/kg	TM5/PM8/PM16
MTBE #	<5	<5	<5 SV	<5 SV	<5						<5	ug/kg	TM31/PM12
Benzene #	<5	<5	<5 SV	<5 SV	<5						<5	ug/kg	TM31/PM12
Toluene #	<5	<5	<5 SV	<5 SV	<5						<5	ug/kg	TM31/PM12
Ethylbenzene #	<5	<5	<5 SV	<5 SV	<5						<5	ug/kg	TM31/PM12
m/p-Xylene #	<5	<5	<5 SV	<5 SV	<5						<5	ug/kg	TM31/PM12
o-Xylene #	<5	<5	<5 SV	<5 SV	<5						<5	ug/kg	TM31/PM12
PCB 28 #	<5	<5	<5	<5	<5						<5	ug/kg	TM17/PM8
PCB 52 #	<5	<5	<5	<5	<5						<5	ug/kg	TM17/PM8
PCB 101 #	<5	<5	<5	<5	<5						<5	ug/kg	TM17/PM8
PCB 118 #	<5	<5	<5	<5	<5						<5	ug/kg	TM17/PM8
PCB 138 #	<5	<5	<5	<5	<5						<5	ug/kg	TM17/PM8
PCB 153 #	<5	<5	<5	<5	<5						<5	ug/kg	TM17/PM8
PCB 180 #	<5	<5	<5	<5	<5						<5	ug/kg	TM17/PM8
Total 7 PCBs #	<35	<35	<35	<35	<35						<35	ug/kg	TM17/PM8

Please see attached notes for all abbreviations and acronyms

Element Materials Technology

Client Name: Ground Investigations Ireland
Reference: 9161-10-19
Location: Baldoyle
Contact: Conor Finnerty
EMT Job No: 19/18087

Report : Solid

Solids: V=60g VOC jar, J=250g glass jar, T=plastic tub

EMT Sample No.	1-3	4-6	7-9	10-12	13-15						LOD/LOR	Units	Method No.
Sample ID	TP33	TP39	TP41	TP45	TP46								
Depth	0.50	0.50	0.50	0.50	0.50								
COC No / misc													
Containers	V J T	V J T	V J T	V J T	V J T								
Sample Date	01/11/2019	01/11/2019	01/11/2019	01/11/2019	01/11/2019								
Sample Type	Soil	Soil	Soil	Soil	Soil								
Batch Number	1	1	1	1	1								
Date of Receipt	05/11/2019	05/11/2019	05/11/2019	05/11/2019	05/11/2019								
Natural Moisture Content	15.0	10.3	7.7	18.6	17.5						<0.1	%	PM4/PM0
Moisture Content (% Wet Weight)	13.1	9.3	7.1	15.7	14.9						<0.1	%	PM4/PM0
Hexavalent Chromium #	<0.3	<0.3	<0.3	<0.3	<0.3						<0.3	mg/kg	TM38/PM20
Chromium III	63.3	55.1	57.7	50.2	69.3						<0.5	mg/kg	NONE/NONE
Total Organic Carbon #	0.85	0.37	0.41	0.46	0.57						<0.02	%	TM21/PM24
pH #	8.44	8.75	8.59	8.42	8.28						<0.01	pH units	TM73/PM11
Mass of raw test portion	0.1032	0.1001	0.0993	0.1125	0.1051							kg	NONE/PM17
Mass of dried test portion	0.09	0.09	0.09	0.09	0.09							kg	NONE/PM17

Please see attached notes for all abbreviations and acronyms

Client Name: Ground Investigations Ireland
Reference: 9161-10-19
Location: Baldoyle
Contact: Conor Finnerty
EMT Job No: 19/18087

Report : CEN 10:1 1 Batch

Solids: V=60g VOC jar, J=250g glass jar, T=plastic tub

Please see attached notes for all abbreviations and acronyms

EMT Sample No.	1-3	4-6	7-9	10-12	13-15						LOD/LOR	Units	Method No.
Sample ID	TP33	TP39	TP41	TP45	TP46								
Depth	0.50	0.50	0.50	0.50	0.50								
COC No / misc													
Containers	V J T	V J T	V J T	V J T	V J T								
Sample Date	01/11/2019	01/11/2019	01/11/2019	01/11/2019	01/11/2019								
Sample Type	Soil	Soil	Soil	Soil	Soil								
Batch Number	1	1	1	1	1								
Date of Receipt	05/11/2019	05/11/2019	05/11/2019	05/11/2019	05/11/2019								
Dissolved Antimony #	<0.002	<0.002	<0.002	<0.002	<0.002						<0.002	mg/l	TM30/PM17
Dissolved Antimony (A10) #	<0.02	<0.02	<0.02	<0.02	<0.02						<0.02	mg/kg	TM30/PM17
Dissolved Arsenic #	<0.0025	<0.0025	<0.0025	<0.0025	<0.0025						<0.0025	mg/l	TM30/PM17
Dissolved Arsenic (A10) #	<0.025	<0.025	<0.025	<0.025	<0.025						<0.025	mg/kg	TM30/PM17
Dissolved Barium #	0.012	0.007	0.009	0.008	0.007						<0.003	mg/l	TM30/PM17
Dissolved Barium (A10) #	0.12	0.07	0.09	0.08	0.07						<0.03	mg/kg	TM30/PM17
Dissolved Cadmium #	<0.0005	<0.0005	<0.0005	<0.0005	<0.0005						<0.0005	mg/l	TM30/PM17
Dissolved Cadmium (A10) #	<0.005	<0.005	<0.005	<0.005	<0.005						<0.005	mg/kg	TM30/PM17
Dissolved Chromium #	<0.0015	<0.0015	<0.0015	<0.0015	<0.0015						<0.0015	mg/l	TM30/PM17
Dissolved Chromium (A10) #	<0.015	<0.015	<0.015	<0.015	<0.015						<0.015	mg/kg	TM30/PM17
Dissolved Copper #	<0.007	<0.007	<0.007	<0.007	<0.007						<0.007	mg/l	TM30/PM17
Dissolved Copper (A10) #	<0.07	<0.07	<0.07	<0.07	<0.07						<0.07	mg/kg	TM30/PM17
Dissolved Lead #	<0.005	<0.005	0.005	0.006	<0.005						<0.005	mg/l	TM30/PM17
Dissolved Lead (A10) #	<0.05	<0.05	<0.05	0.06	<0.05						<0.05	mg/kg	TM30/PM17
Dissolved Molybdenum #	0.006	0.012	0.003	0.009	0.002						<0.002	mg/l	TM30/PM17
Dissolved Molybdenum (A10) #	0.06	0.12	0.03	0.09	0.02						<0.02	mg/kg	TM30/PM17
Dissolved Nickel #	<0.002	<0.002	<0.002	<0.002	<0.002						<0.002	mg/l	TM30/PM17
Dissolved Nickel (A10) #	<0.02	<0.02	<0.02	<0.02	<0.02						<0.02	mg/kg	TM30/PM17
Dissolved Selenium #	<0.003	<0.003	<0.003	<0.003	<0.003						<0.003	mg/l	TM30/PM17
Dissolved Selenium (A10) #	<0.03	<0.03	<0.03	<0.03	<0.03						<0.03	mg/kg	TM30/PM17
Dissolved Zinc #	<0.003	<0.003	0.006	0.006	0.003						<0.003	mg/l	TM30/PM17
Dissolved Zinc (A10) #	<0.03	<0.03	0.06	0.06	0.03						<0.03	mg/kg	TM30/PM17
Mercury Dissolved by CVAF #	<0.00001	<0.00001	<0.00001	<0.00001	<0.00001						<0.00001	mg/l	TM61/PM0
Mercury Dissolved by CVAF #	<0.0001	<0.0001	<0.0001	<0.0001	<0.0001						<0.0001	mg/kg	TM61/PM0
Phenol	<0.01	<0.01	<0.01	<0.01	<0.01						<0.01	mg/l	TM26/PM0
Phenol	<0.1	<0.1	<0.1	<0.1	<0.1						<0.1	mg/kg	TM26/PM0
Fluoride	0.6	<0.3	<0.3	0.4	0.3						<0.3	mg/l	TM173/PM0
Fluoride	6	<3	<3	4	3						<3	mg/kg	TM173/PM0
Sulphate as SO4 #	13.0	4.0	27.5	11.5	21.3						<0.5	mg/l	TM38/PM0
Sulphate as SO4 #	130	40	275	115	213						<5	mg/kg	TM38/PM0
Chloride #	<0.3	0.3	<0.3	0.4	0.4						<0.3	mg/l	TM38/PM0
Chloride #	<3	3	<3	4	4						<3	mg/kg	TM38/PM0
Dissolved Organic Carbon	4	3	4	6	3						<2	mg/l	TM60/PM0
Dissolved Organic Carbon	40	30	40	60	30						<20	mg/kg	TM60/PM0
pH	7.74	8.18	8.42	8.37	8.09						<0.01	pH units	TM73/PM0
Total Dissolved Solids #	174	72	124	89	100						<35	mg/l	TM20/PM0
Total Dissolved Solids #	1739	720	1239	890	1001						<350	mg/kg	TM20/PM0

Element Materials Technology

Client Name: Ground Investigations Ireland
Reference: 9161-10-19
Location: Baldoyle
Contact: Conor Finnerty
EMT Job No: 19/18087

Report : **EN12457_2**

Solids: V=60g VOC jar, J=250g glass jar, T=plastic tub

Please see attached notes for all abbreviations and acronyms

EMT Sample No.	1-3	4-6	7-9	10-12	13-15						Inert	Stable Non-reactive	Hazardous	LOD LOR	Units	Method No.
Sample ID	TP33	TP39	TP41	TP45	TP46											
Depth	0.50	0.50	0.50	0.50	0.50											
COC No / misc																
Containers	V J T	V J T	V J T	V J T	V J T											
Sample Date	01/11/2019	01/11/2019	01/11/2019	01/11/2019	01/11/2019											
Sample Type	Soil	Soil	Soil	Soil	Soil											
Batch Number	1	1	1	1	1											
Date of Receipt	05/11/2019	05/11/2019	05/11/2019	05/11/2019	05/11/2019											
Solid Waste Analysis																
Total Organic Carbon #	0.85	0.37	0.41	0.46	0.57						3	5	6	<0.02	%	TM21/PM24
Sum of BTEX	<0.025	<0.025	<0.025 SV	<0.025 SV	<0.025						6	-	-	<0.025	mg/kg	TM31/PM12
Sum of 7 PCBs #	<0.035	<0.035	<0.035	<0.035	<0.035						1	-	-	<0.035	mg/kg	TM17/PM8
Mineral Oil	<30	<30	<30	<30	<30						500	-	-	<30	mg/kg	TM5/PM8/PM16
PAH Sum of 6 #	0.26	<0.22	<0.22	<0.22	<0.22						-	-	-	<0.22	mg/kg	TM4/PM8
PAH Sum of 17	<0.64	<0.64	<0.64	<0.64	<0.64						100	-	-	<0.64	mg/kg	TM4/PM8
CEN 10:1 Leachate																
Arsenic #	<0.025	<0.025	<0.025	<0.025	<0.025						0.5	2	25	<0.025	mg/kg	TM30/PM17
Barium #	0.12	0.07	0.09	0.08	0.07						20	100	300	<0.03	mg/kg	TM30/PM17
Cadmium #	<0.005	<0.005	<0.005	<0.005	<0.005						0.04	1	5	<0.005	mg/kg	TM30/PM17
Chromium #	<0.015	<0.015	<0.015	<0.015	<0.015						0.5	10	70	<0.015	mg/kg	TM30/PM17
Copper #	<0.07	<0.07	<0.07	<0.07	<0.07						2	50	100	<0.07	mg/kg	TM30/PM17
Mercury #	<0.0001	<0.0001	<0.0001	<0.0001	<0.0001						0.01	0.2	2	<0.0001	mg/kg	TM61/PM0
Molybdenum #	0.06	0.12	0.03	0.09	0.02						0.5	10	30	<0.02	mg/kg	TM30/PM17
Nickel #	<0.02	<0.02	<0.02	<0.02	<0.02						0.4	10	40	<0.02	mg/kg	TM30/PM17
Lead #	<0.05	<0.05	<0.05	0.06	<0.05						0.5	10	50	<0.05	mg/kg	TM30/PM17
Antimony #	<0.02	<0.02	<0.02	<0.02	<0.02						0.06	0.7	5	<0.02	mg/kg	TM30/PM17
Selenium #	<0.03	<0.03	<0.03	<0.03	<0.03						0.1	0.5	7	<0.03	mg/kg	TM30/PM17
Zinc #	<0.03	<0.03	0.06	0.06	0.03						4	50	200	<0.03	mg/kg	TM30/PM17
Total Dissolved Solids #	1739	720	1239	890	1001						4000	60000	100000	<350	mg/kg	TM20/PM0
Dissolved Organic Carbon	40	30	40	60	30						500	800	1000	<20	mg/kg	TM60/PM0
Mass of raw test portion	0.1032	0.1001	0.0993	0.1125	0.1051						-	-	-		kg	NONE/PM17
Dry Matter Content Ratio	86.9	89.6	90.4	79.9	85.3						-	-	-	<0.1	%	NONE/PM4
Leachant Volume	0.886	0.89	0.89	0.877	0.885						-	-	-		l	NONE/PM17
Eluate Volume	0.8	0.8	0.8	0.8	0.7						-	-	-		l	NONE/PM17
pH #	8.44	8.75	8.59	8.42	8.28						-	-	-	<0.01	pH units	TM73/PM11
Phenol	<0.1	<0.1	<0.1	<0.1	<0.1						1	-	-	<0.1	mg/kg	TM26/PM0
Fluoride	6	<3	<3	4	3						-	-	-	<3	mg/kg	TM173/PM0
Sulphate as SO4 #	130	40	275	115	213						1000	20000	50000	<5	mg/kg	TM38/PM0
Chloride #	<3	3	<3	4	4						800	15000	25000	<3	mg/kg	TM38/PM0

All solid results are expressed on a dry weight basis unless stated otherwise.

Client Name: Ground Investigations Ireland

Reference: 9161-10-19

Location: Baldoyle

Contact: Conor Finnerty

Matrix : Solid

EMT Job No.	Batch	Sample ID	Depth	EMT Sample No.	EPH Interpretation
19/18087	1	TP33	0.50	1-3	No interpretation possible
19/18087	1	TP39	0.50	4-6	No interpretation possible
19/18087	1	TP41	0.50	7-9	No interpretation possible
19/18087	1	TP45	0.50	10-12	No interpretation possible
19/18087	1	TP46	0.50	13-15	No interpretation possible

Client Name: Ground Investigations Ireland
Reference: 19/10/9161
Location: Baldoyle
Contact: Conor Finnerty

Note:

Asbestos Screen analysis is carried out in accordance with our documented in-house methods PM042 and TM065 and HSG 248 by Stereo and Polarised Light Microscopy using Dispersion Staining Techniques and is covered by our UKAS accreditation. Detailed Gravimetric Quantification and PCOM Fibre Analysis is carried out in accordance with our documented in-house methods PM042 and TM131 and HSG 248 using Stereo and Polarised Light Microscopy and Phase Contrast Optical Microscopy (PCOM). Samples are retained for not less than 6 months from the date of analysis unless specifically requested.

Opinions, including ACM type and Asbestos level less than 0.1%, lie outside the scope of our UKAS accreditation.

Where the sample is not taken by a Element Materials Technology consultant, Element Materials Technology cannot be responsible for inaccurate or unrepresentative sampling.

Signed on behalf of Element Materials Technology:

Ryan Butterworth
Asbestos Team Leader

EMT Job No.	Batch	Sample ID	Depth	EMT Sample No.	Date Of Analysis	Analysis	Result
19/18087	1	TP33	0.50	2	06/11/2019	**General Description (Bulk Analysis)**	soil-stones
					06/11/2019	**Asbestos Fibres**	NAD
					06/11/2019	**Asbestos ACM**	NAD
					06/11/2019	**Asbestos Type**	NAD
					06/11/2019	**Asbestos Level Screen**	NAD
19/18087	1	TP39	0.50	5	06/11/2019	**General Description (Bulk Analysis)**	soil-stones
					06/11/2019	**Asbestos Fibres**	NAD
					06/11/2019	**Asbestos ACM**	NAD
					06/11/2019	**Asbestos Type**	NAD
					06/11/2019	**Asbestos Level Screen**	NAD
19/18087	1	TP41	0.50	8	06/11/2019	**General Description (Bulk Analysis)**	soil-stones
					06/11/2019	**Asbestos Fibres**	NAD
					06/11/2019	**Asbestos ACM**	NAD
					06/11/2019	**Asbestos Type**	NAD
					06/11/2019	**Asbestos Level Screen**	NAD
19/18087	1	TP45	0.50	11	06/11/2019	**General Description (Bulk Analysis)**	soil-stones
					06/11/2019	**Asbestos Fibres**	NAD
					06/11/2019	**Asbestos ACM**	NAD
					06/11/2019	**Asbestos Type**	NAD
					06/11/2019	**Asbestos Level Screen**	NAD
19/18087	1	TP46	0.50	14	06/11/2019	**General Description (Bulk Analysis)**	soil-stones
					06/11/2019	**Asbestos Fibres**	NAD
					06/11/2019	**Asbestos ACM**	NAD
					06/11/2019	**Asbestos Type**	NAD
					06/11/2019	**Asbestos Level Screen**	NAD

Client Name: Ground Investigations Ireland
Reference: 9161-10-19
Location: Baldoyle
Contact: Conor Finnerty

EMT Job No.	Batch	Sample ID	Depth	EMT Sample No.	Analysis	Reason
No deviating sample report results for job 19/18087						

Please note that only samples that are deviating are mentioned in this report. If no samples are listed it is because none were deviating.
Only analyses which are accredited are recorded as deviating if set criteria are not met.

NOTES TO ACCOMPANY ALL SCHEDULES AND REPORTS

EMT Job No.: 19/18087

SOILS

Please note we are only MCERTS accredited (UK soils only) for sand, loam and clay and any other matrix is outside our scope of accreditation.

Where an MCERTS report has been requested, you will be notified within 48 hours of any samples that have been identified as being outside our MCERTS scope. As validation has been performed on clay, sand and loam, only samples that are predominantly these matrices, or combinations of them will be within our MCERTS scope. If samples are not one of a combination of the above matrices they will not be marked as MCERTS accredited.

It is assumed that you have taken representative samples on site and require analysis on a representative subsample. Stones will generally be included unless we are requested to remove them.

All samples will be discarded one month after the date of reporting, unless we are instructed to the contrary.

If you have not already done so, please send us a purchase order if this is required by your company.

Where appropriate please make sure that our detection limits are suitable for your needs, if they are not, please notify us immediately.

All analysis is reported on a dry weight basis unless stated otherwise. Limits of detection for analyses carried out on as received samples are not moisture content corrected. Results are not surrogate corrected. Samples are dried at 35°C ±5°C unless otherwise stated. Moisture content for CEN Leachate tests are dried at 105°C ±5°C.

Where Mineral Oil or Fats, Oils and Grease is quoted, this refers to Total Aliphatics C10-C40.

Where a CEN 10:1 ZERO Headspace VOC test has been carried out, a 10:1 ratio of water to wet (as received) soil has been used.

% Asbestos in Asbestos Containing Materials (ACMs) is determined by reference to HSG 264 The Survey Guide - Appendix 2 : ACMs in buildings listed in order of ease of fibre release.

Sufficient amount of sample must be received to carry out the testing specified. Where an insufficient amount of sample has been received the testing may not meet the requirements of our accredited methods, as such accreditation may be removed.

Negative Neutralization Potential (NP) values are obtained when the volume of NaOH (0.1N) titrated (pH 8.3) is greater than the volume of HCl (1N) to reduce the pH of the sample to 2.0 - 2.5. Any negative NP values are corrected to 0.

The calculation of Pyrite content assumes that all oxidisable sulphides present in the sample are pyrite. This may not be the case. The calculation may be an overesitimate when other sulphides such as Barite (Barium Sulphate) are present.

WATERS

Please note we are not a UK Drinking Water Inspectorate (DWI) Approved Laboratory .

ISO17025 accreditation applies to surface water and groundwater and usually one other matrix which is analysis specific, any other liquids are outside our scope of accreditation.

As surface waters require different sample preparation to groundwaters the laboratory must be informed of the water type when submitting samples.

Where Mineral Oil or Fats, Oils and Grease is quoted, this refers to Total Aliphatics C10-C40.

DEVIATING SAMPLES

All samples should be submitted to the laboratory in suitable containers with sufficient ice packs to sustain an appropriate temperature for the requested analysis. The temperature of sample receipt is recorded on the confirmation schedules in order that the client can make an informed decision as to whether testing should still be undertaken.

SURROGATES

Surrogate compounds are added during the preparation process to monitor recovery of analytes. However low recovery in soils is often due to peat, clay or other organic rich matrices. For waters this can be due to oxidants, surfactants, organic rich sediments or remediation fluids. Acceptable limits for most organic methods are 70 - 130% and for VOCs are 50 - 150%. When surrogate recoveries are outside the performance criteria but the associated AQC passes this is assumed to be due to matrix effect. Results are not surrogate corrected.

DILUTIONS

A dilution suffix indicates a dilution has been performed and the reported result takes this into account. No further calculation is required.

BLANKS

Where analytes have been found in the blank, the sample will be treated in accordance with our laboratory procedure for dealing with contaminated blanks.

NOTE

Data is only reported if the laboratory is confident that the data is a true reflection of the samples analysed. Data is only reported as accredited when all the requirements of our Quality System have been met. In certain circumstances where all the requirements of the Quality System have not been met, for instance if the associated AQC has failed, the reason is fully investigated and documented. The sample data is then evaluated alongside the other quality control checks performed during analysis to determine its suitability. Following this evaluation, provided the sample results have not been effected, the data is reported but accreditation is removed. It is a UKAS requirement for data not reported as accredited to be considered indicative only, but this does not mean the data is not valid.
Where possible, and if requested, samples will be re-extracted and a revised report issued with accredited results. Please do not hesitate to contact the laboratory if further details are required of the circumstances which have led to the removal of accreditation.

REPORTS FROM THE SOUTH AFRICA LABORATORY

Any method number not prefixed with SA has been undertaken in our UK laboratory unless reported as subcontracted.

Measurement Uncertainty

Measurement uncertainty defines the range of values that could reasonably be attributed to the measured quantity. This range of values has not been included within the reported results. Uncertainty expressed as a percentage can be provided upon request.

ABBREVIATIONS and ACRONYMS USED

#	ISO17025 (UKAS Ref No. 4225) accredited - UK.
SA	ISO17025 (SANAS Ref No.T0729) accredited - South Africa
B	Indicates analyte found in associated method blank.
DR	Dilution required.
M	MCERTS accredited.
NA	Not applicable
NAD	No Asbestos Detected.
ND	None Detected (usually refers to VOC and/SVOC TICs).
NDP	No Determination Possible
SS	Calibrated against a single substance
SV	Surrogate recovery outside performance criteria. This may be due to a matrix effect.
W	Results expressed on as received basis.
+	AQC failure, accreditation has been removed from this result, if appropriate, see 'Note' on previous page.
>>	Results above calibration range, the result should be considered the minimum value. The actual result could be significantly higher, this result is not accredited.
*	Analysis subcontracted to an Element Materials Technology approved laboratory.
AD	Samples are dried at 35°C ±5°C
CO	Suspected carry over
LOD/LOR	Limit of Detection (Limit of Reporting) in line with ISO 17025 and MCERTS
ME	Matrix Effect
NFD	No Fibres Detected
BS	AQC Sample
LB	Blank Sample
N	Client Sample
TB	Trip Blank Sample
OC	Outside Calibration Range

EMT Job No: 19/18087

Test Method No.	Description	Prep Method No. (if appropriate)	Description	ISO 17025 (UKAS/SANAS)	MCERTS (UK soils only)	Analysis done on As Received (AR) or Dried (AD)	Reported on dry weight basis
PM4	Gravimetric measurement of Natural Moisture Content and % Moisture Content at either 35°C or 105°C. Calculation based on ISO 11465 and BS1377.	PM0	No preparation is required.			AR	
TM4	Modified USEPA 8270 method for the solvent extraction and determination of PAHs by GC-MS.	PM8	End over end extraction of solid samples for organic analysis. The solvent mix varies depending on analysis required.			AR	Yes
TM4	Modified USEPA 8270 method for the solvent extraction and determination of PAHs by GC-MS.	PM8	End over end extraction of solid samples for organic analysis. The solvent mix varies depending on analysis required.	Yes		AR	Yes
TM5	Modified 8015B method for the determination of solvent Extractable Petroleum Hydrocarbons (EPH) within the range C8-C40 by GCFID. For waters the solvent extracts dissolved phase plus a sheen if present.	PM16	Fractionation into aliphatic and aromatic fractions using a Rapid Trace SPE.			AR	
TM5	Modified 8015B method for the determination of solvent Extractable Petroleum Hydrocarbons (EPH) within the range C8-C40 by GCFID. For waters the solvent extracts dissolved phase plus a sheen if present.	PM8/PM16	End over end extraction of solid samples for organic analysis. The solvent mix varies depending on analysis required/Fractionation into aliphatic and aromatic fractions using a Rapid Trace SPE.			AR	Yes
TM5	Modified 8015B method for the determination of solvent Extractable Petroleum Hydrocarbons (EPH) within the range C8-C40 by GCFID. For waters the solvent extracts dissolved phase plus a sheen if present.	PM8/PM16	End over end extraction of solid samples for organic analysis. The solvent mix varies depending on analysis required/Fractionation into aliphatic and aromatic fractions using a Rapid Trace SPE.	Yes		AR	Yes
TM5/TM36	please refer to TM5 and TM36 for method details	PM8/PM12/PM16	please refer to PM8/PM16 and PM12 for method details			AR	Yes
TM17	Modified US EPA method 8270. Determination of specific Polychlorinated Biphenyl congeners by GC-MS.	PM8	End over end extraction of solid samples for organic analysis. The solvent mix varies depending on analysis required.	Yes		AR	Yes
TM20	Modified BS 1377-3: 1990/USEPA 160.3 Gravimetric determination of Total Dissolved Solids/Total Solids	PM0	No preparation is required.	Yes		AR	Yes
TM21	Modified BS 7755-3:1995, ISO10694:1995 Determination of Total Organic Carbon or Total Carbon by combustion in an Eltra TOC furnace/analyser in the presence of oxygen. The CO2 generated is quantified using infra-red detection. Organic Matter (SOM) calculated as per EA MCERTS Chemical Testing of Soil, March 2012 v4.	PM24	Dried and ground solid samples are washed with hydrochloric acid, then rinsed with deionised water to remove the mineral carbon before TOC analysis.	Yes		AD	Yes

EMT Job No: 19/18087

Test Method No.	Description	Prep Method No. (if appropriate)	Description	ISO 17025 (UKAS/SANAS)	MCERTS (UK soils only)	Analysis done on As Received (AR) or Dried (AD)	Reported on dry weight basis
TM26	Determination of phenols by Reversed Phased High Performance Liquid Chromatography and Electro-Chemical Detection.	PM0	No preparation is required.			AR	Yes
TM30	Determination of Trace Metal elements by ICP-OES (Inductively Coupled Plasma - Optical Emission Spectrometry). Modified US EPA Method 200.7, 6010B and BS EN ISO 11885 2009	PM15	Acid digestion of dried and ground solid samples using Aqua Regia refluxed at 112.5 °C. Samples containing asbestos are not dried and ground.			AD	Yes
TM30	Determination of Trace Metal elements by ICP-OES (Inductively Coupled Plasma - Optical Emission Spectrometry). Modified US EPA Method 200.7, 6010B and BS EN ISO 11885 2009	PM15	Acid digestion of dried and ground solid samples using Aqua Regia refluxed at 112.5 °C. Samples containing asbestos are not dried and ground.	Yes		AD	Yes
TM30	Determination of Trace Metal elements by ICP-OES (Inductively Coupled Plasma - Optical Emission Spectrometry). Modified US EPA Method 200.7, 6010B and BS EN ISO 11885 2009	PM17	Modified method BS EN12457-2 As received solid samples are leached with water in a 10:1 water to soil ratio for 24 hours, the moisture content of the sample is included in the ratio.	Yes		AR	Yes
TM31	Modified USEPA 8015B. Determination of Methyltertbutylether, Benzene, Toluene, Ethylbenzene and Xylene by headspace GC-FID.	PM12	Modified US EPA method 5021. Preparation of solid and liquid samples for GC headspace analysis.			AR	Yes
TM31	Modified USEPA 8015B. Determination of Methyltertbutylether, Benzene, Toluene, Ethylbenzene and Xylene by headspace GC-FID.	PM12	Modified US EPA method 5021. Preparation of solid and liquid samples for GC headspace analysis.	Yes		AR	Yes
TM36	Modified US EPA method 8015B. Determination of Gasoline Range Organics (GRO) in the carbon chain range of C4-12 by headspace GC-FID. MTBE by GCFID co-elutes with 3-methylpentane if present and therefore can give a false positive. Positive MTBE results can be confirmed using GCMS.	PM12	Modified US EPA method 5021. Preparation of solid and liquid samples for GC headspace analysis.			AR	Yes
TM36	Modified US EPA method 8015B. Determination of Gasoline Range Organics (GRO) in the carbon chain range of C4-12 by headspace GC-FID. MTBE by GCFID co-elutes with 3-methylpentane if present and therefore can give a false positive. Positive MTBE results can be confirmed using GCMS.	PM12	Modified US EPA method 5021. Preparation of solid and liquid samples for GC headspace analysis.	Yes		AR	Yes
TM38	Soluble Ion analysis using Discrete Analyser. Modified US EPA methods 325.2 (Chloride), 375.4 (Sulphate), 365.2 (o-Phosphate), 353.1 (TON), 354.1 (Nitrite), 350.1 (NH4+) comparable to BS ISO 15923-1, 7196A (Hex Cr)	PM0	No preparation is required.	Yes		AR	Yes
TM38	Soluble Ion analysis using Discrete Analyser. Modified US EPA methods 325.2 (Chloride), 375.4 (Sulphate), 365.2 (o-Phosphate), 353.1 (TON), 354.1 (Nitrite), 350.1 (NH4+) comparable to BS ISO 15923-1, 7196A (Hex Cr)	PM20	Extraction of dried and ground or as received samples with deionised water in a 2:1 water to solid ratio using a reciprocal shaker for all analytes except hexavalent chromium. Extraction of as received sample using 10:1 ratio of 0.2M sodium hydroxide to soil for hexavalent chromium using a reciprocal shaker.	Yes		AR	Yes

EMT Job No: 19/18087

Test Method No.	Description	Prep Method No. (if appropriate)	Description	ISO 17025 (UKAS/SANAS)	MCERTS (UK soils only)	Analysis done on As Received (AR) or Dried (AD)	Reported on dry weight basis
TM60	TC/TOC analysis of Waters by High Temperature Combustion followed by NDIR detection. Based on the following modified standard methods: USEPA 9060, APHA Standard Methods for Examination of Water and Wastewater 5310B, ASTM D 7573, and USEPA 415.1.	PM0	No preparation is required.			AR	Yes
TM61	Modified US EPA methods 245.7 and 200.7. Determination of Mercury by Cold Vapour Atomic Fluorescence.	PM0	No preparation is required.	Yes		AR	Yes
TM65	Asbestos Bulk Identification method based on HSG 248.	PM42	Solid samples undergo a thorough visual inspection for asbestos fibres prior to asbestos identification using TM065.	Yes		AR	
TM73	Modified US EPA methods 150.1 and 9045D and BS1377:1990. Determination of pH by Metrohm automated probe analyser.	PM0	No preparation is required.			AR	Yes
TM73	Modified US EPA methods 150.1 and 9045D and BS1377:1990. Determination of pH by Metrohm automated probe analyser.	PM11	Extraction of as received solid samples using one part solid to 2.5 parts deionised water.	Yes		AR	No
TM173	Analysis of fluoride by ISE (Ion Selective Electrode) using modified ISE method 340.2	PM0	No preparation is required.			AR	Yes
NONE	No Method Code	NONE	No Method Code			AD	Yes
NONE	No Method Code	PM17	Modified method BS EN12457-2 As received solid samples are leached with water in a 10:1 water to soil ratio for 24 hours, the moisture content of the sample is included in the ratio.				
NONE	No Method Code	PM17	Modified method BS EN12457-2 As received solid samples are leached with water in a 10:1 water to soil ratio for 24 hours, the moisture content of the sample is included in the ratio.			AR	
NONE	No Method Code	PM4	Gravimetric measurement of Natural Moisture Content and % Moisture Content at either 35°C or 105°C. Calculation based on ISO 11465 and BS1377.			AR	

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Ground Investigations Ireland
Catherinestown House
Hazelhatch Road
Newcastle
Co. Dublin
Ireland

Attention :	Diarmaid MagLochlainn
Date :	31st December, 2019
Your reference :	9161-10-19
Our reference :	Test Report 19/18422 Batch 1
Location :	Baldoyle
Date samples received :	11th November, 2019
Status :	Final report
Issue :	2

Seventeen samples were received for analysis on 11th November, 2019 of which seventeen were scheduled for analysis. Please find attached our Test Report which should be read with notes at the end of the report and should include all sections if reproduced. Interpretations and opinions are outside the scope of any accreditation, and all results relate only to samples supplied.
All analysis is carried out on as received samples and reported on a dry weight basis unless stated otherwise. Results are not surrogate corrected.

Authorised By:

Phil Sommerton BSc
Senior Project Manager

Client Name: Ground Investigations Ireland
Reference: 9161-10-19
Location: Baldoyle
Contact: Diarmaid MagLochlainn
EMT Job No: 19/18422

Report : Solid

Solids: V=60g VOC jar, J=250g glass jar, T=plastic tub

EMT Sample No.	1-3	4-6	7-9	10-12	13-15	16-18	19-21	22-24	25-27	31-33	LOD/LOR	Units	Method No.
Sample ID	TP13	TP15	TP18	TP20	TP22	TP27	TP29	TP32	TP48	TP58			
Depth	0.50	0.50	0.50	0.50	0.50	0.50	0.50	0.50	0.50	0.50			
COC No / misc													
Containers	V J T	V J T	V J T	V J T	V J T	V J T	V J T	V J T	V J T	V J T			
Sample Date	07/11/2019	07/11/2019	07/11/2019	07/11/2019	07/11/2019	07/11/2019	07/11/2019	07/11/2019	07/11/2019	07/11/2019			
Sample Type	Soil	Soil	Soil	Soil	Soil	Soil	Soil	Soil	Soil	Soil			
Batch Number	1	1	1	1	1	1	1	1	1	1			
Date of Receipt	11/11/2019	11/11/2019	11/11/2019	11/11/2019	11/11/2019	11/11/2019	11/11/2019	11/11/2019	11/11/2019	11/11/2019			
Antimony	3	2	2	2	3	3	2	2	2	1	<1	mg/kg	TM30/PM15
Arsenic #	15.5	11.8	14.6	10.3	14.2	12.8	14.7	15.9	10.1	9.6	<0.5	mg/kg	TM30/PM15
Barium #	118	67	106	83	129	122	155	141	47	60	<1	mg/kg	TM30/PM15
Cadmium #	1.7	2.0	2.2	1.4	1.7	2.0	2.8	2.5	2.0	1.6	<0.1	mg/kg	TM30/PM15
Chromium #	31.4	23.7	31.1	17.4	20.4	29.6	32.5	33.8	20.1	28.7	<0.5	mg/kg	TM30/PM15
Copper #	36	31	42	21	27	29	36	37	27	19	<1	mg/kg	TM30/PM15
Lead #	48	29	48	14	19	25	40	40	17	16	<5	mg/kg	TM30/PM15
Mercury #	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	0.2	<0.1	<0.1	<0.1	mg/kg	TM30/PM15
Molybdenum #	2.4	2.5	2.9	2.7	3.1	5.6	3.8	3.6	2.9	2.1	<0.1	mg/kg	TM30/PM15
Nickel #	42.7	37.5	41.2	29.2	40.4	36.0	45.1	39.3	38.7	31.7	<0.7	mg/kg	TM30/PM15
Selenium #	1	1	1	2	3	1	1	2	<1	<1	<1	mg/kg	TM30/PM15
Zinc #	104	85	126	65	75	75	124	128	77	60	<5	mg/kg	TM30/PM15
PAH MS													
Naphthalene #	<0.04	<0.04	<0.04	<0.04	<0.04	<0.04	<0.04	<0.04	<0.04	<0.04	<0.04	mg/kg	TM4/PM8
Acenaphthylene	<0.03	<0.03	<0.03	<0.03	<0.03	<0.03	<0.03	<0.03	<0.03	<0.03	<0.03	mg/kg	TM4/PM8
Acenaphthene #	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	mg/kg	TM4/PM8
Fluorene #	<0.04	<0.04	<0.04	<0.04	<0.04	<0.04	<0.04	<0.04	<0.04	<0.04	<0.04	mg/kg	TM4/PM8
Phenanthrene #	0.10	0.13	0.23	<0.03	<0.03	<0.03	0.17	0.10	<0.03	<0.03	<0.03	mg/kg	TM4/PM8
Anthracene #	<0.04	<0.04	0.07	<0.04	<0.04	<0.04	<0.04	<0.04	<0.04	<0.04	<0.04	mg/kg	TM4/PM8
Fluoranthene #	0.16	0.24	0.37	<0.03	<0.03	<0.03	0.21	0.17	<0.03	<0.03	<0.03	mg/kg	TM4/PM8
Pyrene #	0.15	0.21	0.31	<0.03	<0.03	<0.03	0.19	0.16	<0.03	<0.03	<0.03	mg/kg	TM4/PM8
Benzo(a)anthracene #	0.11	0.15	0.23	<0.06	<0.06	<0.06	0.15	0.12	<0.06	<0.06	<0.06	mg/kg	TM4/PM8
Chrysene #	0.11	0.15	0.23	<0.02	<0.02	<0.02	0.14	0.12	<0.02	<0.02	<0.02	mg/kg	TM4/PM8
Benzo(bk)fluoranthene #	0.17	0.24	0.33	<0.07	<0.07	<0.07	0.19	0.19	<0.07	<0.07	<0.07	mg/kg	TM4/PM8
Benzo(a)pyrene #	0.10	0.13	0.20	<0.04	<0.04	<0.04	0.11	0.11	<0.04	<0.04	<0.04	mg/kg	TM4/PM8
Indeno(123cd)pyrene	0.06	0.08	0.10	<0.04	<0.04	<0.04	0.06	0.06	<0.04	<0.04	<0.04	mg/kg	TM4/PM8
Dibenzo(ah)anthracene #	<0.04	<0.04	<0.04	<0.04	<0.04	<0.04	<0.04	<0.04	<0.04	<0.04	<0.04	mg/kg	TM4/PM8
Benzo(ghi)perylene #	0.06	0.09	0.11	<0.04	<0.04	<0.04	0.07	0.07	<0.04	<0.04	<0.04	mg/kg	TM4/PM8
Coronene	<0.04	<0.04	<0.04	<0.04	<0.04	<0.04	<0.04	<0.04	<0.04	<0.04	<0.04	mg/kg	TM4/PM8
PAH 6 Total #	0.55	0.78	1.11	<0.22	<0.22	<0.22	0.64	0.60	<0.22	<0.22	<0.22	mg/kg	TM4/PM8
PAH 17 Total	1.02	1.42	2.18	<0.64	<0.64	<0.64	1.29	1.10	<0.64	<0.64	<0.64	mg/kg	TM4/PM8
Benzo(b)fluoranthene	0.12	0.17	0.24	<0.05	<0.05	<0.05	0.14	0.14	<0.05	<0.05	<0.05	mg/kg	TM4/PM8
Benzo(k)fluoranthene	0.05	0.07	0.09	<0.02	<0.02	<0.02	0.05	0.05	<0.02	<0.02	<0.02	mg/kg	TM4/PM8
Benzo(j)fluoranthene	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	mg/kg	TM4/PM8
PAH Surrogate % Recovery	89	88	91	91	76	90	90	90	89	88	<0	%	TM4/PM8
Mineral Oil (C10-C40)	<30	<30	<30	<30	<30	<30	<30	<30	<30	<30	<30	mg/kg	TM5/PM8/PM16

Please see attached notes for all abbreviations and acronyms

Client Name: Ground Investigations Ireland
Reference: 9161-10-19
Location: Baldoyle
Contact: Diarmaid MagLochlainn
EMT Job No: 19/18422

Report : Solid

Solids: V=60g VOC jar, J=250g glass jar, T=plastic tub

EMT Sample No.	1-3	4-6	7-9	10-12	13-15	16-18	19-21	22-24	25-27	31-33	LOD/LOR	Units	Method No.
Sample ID	TP13	TP15	TP18	TP20	TP22	TP27	TP29	TP32	TP48	TP58			
Depth	0.50	0.50	0.50	0.50	0.50	0.50	0.50	0.50	0.50	0.50			
COC No / misc													
Containers	V J T	V J T	V J T	V J T	V J T	V J T	V J T	V J T	V J T	V J T			
Sample Date	07/11/2019	07/11/2019	07/11/2019	07/11/2019	07/11/2019	07/11/2019	07/11/2019	07/11/2019	07/11/2019	07/11/2019			
Sample Type	Soil	Soil	Soil	Soil	Soil	Soil	Soil	Soil	Soil	Soil			
Batch Number	1	1	1	1	1	1	1	1	1	1			
Date of Receipt	11/11/2019	11/11/2019	11/11/2019	11/11/2019	11/11/2019	11/11/2019	11/11/2019	11/11/2019	11/11/2019	11/11/2019			
TPH CWG													
Aliphatics													
>C5-C6 #	<0.1	<0.1	<0.1	<0.1	<0.1 SV	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	mg/kg	TM36/PM12
>C6-C8 #	<0.1	<0.1	<0.1	<0.1	<0.1 SV	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	mg/kg	TM36/PM12
>C8-C10	<0.1	<0.1	<0.1	<0.1	<0.1 SV	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	mg/kg	TM36/PM12
>C10-C12 #	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2	mg/kg	TM5/PM8/PM16
>C12-C16 #	<4	<4	<4	<4	<4	<4	<4	<4	<4	<4	<4	mg/kg	TM5/PM8/PM16
>C16-C21 #	<7	<7	<7	<7	<7	<7	<7	<7	<7	<7	<7	mg/kg	TM5/PM8/PM16
>C21-C35 #	<7	<7	<7	<7	<7	<7	<7	<7	<7	<7	<7	mg/kg	TM5/PM8/PM16
>C35-C40	<7	<7	<7	<7	<7	<7	<7	<7	<7	<7	<7	mg/kg	TM5/PM8/PM16
Total aliphatics C5-40	<26	<26	<26	<26	<26	<26	<26	<26	<26	<26	<26	mg/kg	TM5/TM36/PM8/PM12/PM16
>C6-C10	<0.1	<0.1	<0.1	<0.1	<0.1 SV	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	mg/kg	TM36/PM12
>C10-C25	<10	<10	<10	<10	<10	<10	<10	<10	<10	<10	<10	mg/kg	TM5/PM8/PM16
>C25-C35	<10	<10	<10	<10	<10	<10	<10	<10	<10	<10	<10	mg/kg	TM5/PM8/PM16
Aromatics													
>C5-EC7 #	<0.1	<0.1	<0.1	<0.1	<0.1 SV	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	mg/kg	TM36/PM12
>EC7-EC8 #	<0.1	<0.1	<0.1	<0.1	<0.1 SV	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	mg/kg	TM36/PM12
>EC8-EC10 #	<0.1	<0.1	<0.1	<0.1	<0.1 SV	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	mg/kg	TM36/PM12
>EC10-EC12 #	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2	mg/kg	TM5/PM8/PM16
>EC12-EC16 #	<4	<4	<4	<4	<4	<4	<4	<4	<4	<4	<4	mg/kg	TM5/PM8/PM16
>EC16-EC21 #	<7	<7	<7	<7	<7	<7	<7	<7	<7	<7	<7	mg/kg	TM5/PM8/PM16
>EC21-EC35 #	<7	<7	<7	<7	<7	<7	<7	<7	<7	<7	<7	mg/kg	TM5/PM8/PM16
>EC35-EC40	<7	<7	<7	<7	<7	<7	<7	<7	<7	<7	<7	mg/kg	TM5/PM8/PM16
Total aromatics C5-40	<26	<26	<26	<26	<26	<26	<26	<26	<26	<26	<26	mg/kg	TM5/TM36/PM8/PM12/PM16
Total aliphatics and aromatics(C5-40)	<52	<52	<52	<52	<52	<52	<52	<52	<52	<52	<52	mg/kg	TM5/TM36/PM8/PM12/PM16
>EC6-EC10 #	<0.1	<0.1	<0.1	<0.1	<0.1 SV	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	mg/kg	TM36/PM12
>EC10-EC25	<10	<10	<10	<10	<10	<10	<10	<10	<10	<10	<10	mg/kg	TM5/PM8/PM16
>EC25-EC35	<10	<10	<10	<10	<10	<10	<10	<10	<10	<10	<10	mg/kg	TM5/PM8/PM16
MTBE #	<5	<5	<5	<5	<5 SV	<5	<5	<5	<5	<5	<5	ug/kg	TM31/PM12
Benzene #	<5	<5	<5	<5	<5 SV	<5	<5	<5	<5	<5	<5	ug/kg	TM31/PM12
Toluene #	<5	<5	<5	<5	<5 SV	<5	<5	<5	<5	<5	<5	ug/kg	TM31/PM12
Ethylbenzene #	<5	<5	<5	<5	<5 SV	<5	<5	<5	<5	<5	<5	ug/kg	TM31/PM12
m/p-Xylene #	<5	<5	<5	<5	<5 SV	<5	<5	<5	<5	<5	<5	ug/kg	TM31/PM12
o-Xylene #	<5	<5	<5	<5	<5 SV	<5	<5	<5	<5	<5	<5	ug/kg	TM31/PM12
PCB 28 #	<5	<5	<5	<5	<5	<5	<5	<5	<5	<5	<5	ug/kg	TM17/PM8
PCB 52 #	<5	<5	<5	<5	<5	<5	<5	<5	<5	<5	<5	ug/kg	TM17/PM8
PCB 101 #	<5	<5	<5	<5	<5	<5	<5	<5	<5	<5	<5	ug/kg	TM17/PM8
PCB 118 #	<5	<5	<5	<5	<5	<5	<5	<5	<5	<5	<5	ug/kg	TM17/PM8
PCB 138 #	<5	<5	<5	<5	<5	<5	<5	<5	<5	<5	<5	ug/kg	TM17/PM8
PCB 153 #	<5	<5	<5	<5	<5	<5	<5	<5	<5	<5	<5	ug/kg	TM17/PM8
PCB 180 #	<5	<5	<5	<5	<5	<5	<5	<5	<5	<5	<5	ug/kg	TM17/PM8
Total 7 PCBs #	<35	<35	<35	<35	<35	<35	<35	<35	<35	<35	<35	ug/kg	TM17/PM8

Please see attached notes for all abbreviations and acronyms

Element Materials Technology

Client Name: Ground Investigations Ireland
Reference: 9161-10-19
Location: Baldoyle
Contact: Diarmaid MagLochlainn
EMT Job No: 19/18422

Report : Solid

Solids: V=60g VOC jar, J=250g glass jar, T=plastic tub

EMT Sample No.	1-3	4-6	7-9	10-12	13-15	16-18	19-21	22-24	25-27	31-33	LOD/LOR	Units	Method No.
Sample ID	TP13	TP15	TP18	TP20	TP22	TP27	TP29	TP32	TP48	TP58			
Depth	0.50	0.50	0.50	0.50	0.50	0.50	0.50	0.50	0.50	0.50			
COC No / misc													
Containers	V J T	V J T	V J T	V J T	V J T	V J T	V J T	V J T	V J T	V J T			
Sample Date	07/11/2019	07/11/2019	07/11/2019	07/11/2019	07/11/2019	07/11/2019	07/11/2019	07/11/2019	07/11/2019	07/11/2019			
Sample Type	Soil	Soil	Soil	Soil	Soil	Soil	Soil	Soil	Soil	Soil			
Batch Number	1	1	1	1	1	1	1	1	1	1			
Date of Receipt	11/11/2019	11/11/2019	11/11/2019	11/11/2019	11/11/2019	11/11/2019	11/11/2019	11/11/2019	11/11/2019	11/11/2019			
Natural Moisture Content	21.6	17.8	22.1	13.2	13.0	17.7	23.6	24.4	13.1	12.5	<0.1	%	PM4/PM0
Moisture Content (% Wet Weight)	17.8	15.1	18.1	11.6	11.5	15.0	19.1	19.6	11.5	11.1	<0.1	%	PM4/PM0
Hexavalent Chromium #	<0.3	<0.3	<0.3	<0.3	<0.3	<0.3	<0.3	<0.3	<0.3	<0.3	<0.3	mg/kg	TM38/PM20
Sulphate as SO4 (2:1 Ext) #	-	-	0.2994	-	-	-	0.0676	-	0.0439	0.0513	<0.0015	g/l	TM38/PM20
Chromium III	31.4	23.7	31.1	17.4	20.4	29.6	32.5	33.8	20.1	28.7	<0.5	mg/kg	NONE/NONE
Total Organic Carbon #	1.63	0.87	1.79	0.47	0.57	0.77	1.48	1.77	0.39	0.43	<0.02	%	TM21/PM24
pH #	8.29	8.28	8.05	9.16	8.39	8.25	8.40	7.71	8.58	8.46	<0.01	pH units	TM73/PM11
Mass of raw test portion	0.1088	0.1072	0.1091	0.1029	0.1086	0.1075	0.1113	0.1134	0.1052	0.1049		kg	NONE/PM17
Mass of dried test portion	0.09	0.09	0.09	0.09	0.09	0.09	0.09	0.09	0.09	0.09		kg	NONE/PM17

Please see attached notes for all abbreviations and acronyms

Element Materials Technology

Client Name: Ground Investigations Ireland
Reference: 9161-10-19
Location: Baldoyle
Contact: Diarmaid MagLochlainn
EMT Job No: 19/18422

Report : Solid

Solids: V=60g VOC jar, J=250g glass jar, T=plastic tub

EMT Sample No.	34-36	37-39,55	40-42	43-45	46-48	49-51	52-54				LOD/LOR	Units	Method No.
Sample ID	TP59	TP65	TP67	TP74	TP77	TP78	TP80						
Depth	0.50	0.50	2.00	0.50	0.50	0.50	0.50						
COC No / misc													
Containers	V J T	V J T	V J T	V J T	V J T	V J T	V J T						
Sample Date	07/11/2019	07/11/2019	07/11/2019	07/11/2019	07/11/2019	07/11/2019	07/11/2019						
Sample Type	Soil	Soil	Soil	Soil	Soil	Soil	Soil						
Batch Number	1	1	1	1	1	1	1						
Date of Receipt	11/11/2019	11/11/2019	11/11/2019	11/11/2019	11/11/2019	11/11/2019	11/11/2019						
Antimony	2	2	2	1	3	2	3				<1	mg/kg	TM30/PM15
Arsenic #	9.2	51.1	19.6	6.9	15.9	9.2	10.9				<0.5	mg/kg	TM30/PM15
Barium #	44	57	92	43	47	55	69				<1	mg/kg	TM30/PM15
Cadmium #	1.9	<0.1	1.3	1.7	2.1	2.0	2.2				<0.1	mg/kg	TM30/PM15
Chromium #	20.4	52.9	25.3	21.1	22.3	14.1	18.7				<0.5	mg/kg	TM30/PM15
Copper #	21	37	30	17	30	23	29				<1	mg/kg	TM30/PM15
Lead #	13	14	17	15	15	15	18				<5	mg/kg	TM30/PM15
Mercury #	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1				<0.1	mg/kg	TM30/PM15
Molybdenum #	2.5	1.1	2.5	2.2	3.6	3.0	3.9				<0.1	mg/kg	TM30/PM15
Nickel #	31.6	55.9	41.5	21.6	40.0	29.8	43.1				<0.7	mg/kg	TM30/PM15
Selenium #	<1	1	2	<1	2	<1	<1				<1	mg/kg	TM30/PM15
Zinc #	53	100	77	56	92	67	88				<5	mg/kg	TM30/PM15
PAH MS													
Naphthalene #	<0.04	<0.04	<0.04	<0.04	<0.04	<0.04	<0.04				<0.04	mg/kg	TM4/PM8
Acenaphthylene	<0.03	<0.03	<0.03	<0.03	<0.03	<0.03	<0.03				<0.03	mg/kg	TM4/PM8
Acenaphthene #	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05				<0.05	mg/kg	TM4/PM8
Fluorene #	<0.04	<0.04	<0.04	<0.04	<0.04	<0.04	<0.04				<0.04	mg/kg	TM4/PM8
Phenanthrene #	<0.03	<0.03	<0.03	<0.03	<0.03	<0.03	<0.03				<0.03	mg/kg	TM4/PM8
Anthracene #	<0.04	<0.04	<0.04	<0.04	<0.04	<0.04	<0.04				<0.04	mg/kg	TM4/PM8
Fluoranthene #	<0.03	<0.03	<0.03	<0.03	<0.03	<0.03	<0.03				<0.03	mg/kg	TM4/PM8
Pyrene #	<0.03	<0.03	<0.03	<0.03	<0.03	<0.03	<0.03				<0.03	mg/kg	TM4/PM8
Benzo(a)anthracene #	<0.06	<0.06	<0.06	<0.06	<0.06	<0.06	<0.06				<0.06	mg/kg	TM4/PM8
Chrysene #	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02				<0.02	mg/kg	TM4/PM8
Benzo(bk)fluoranthene #	<0.07	<0.07	<0.07	<0.07	<0.07	<0.07	<0.07				<0.07	mg/kg	TM4/PM8
Benzo(a)pyrene #	<0.04	<0.04	<0.04	<0.04	<0.04	<0.04	<0.04				<0.04	mg/kg	TM4/PM8
Indeno(123cd)pyrene	<0.04	<0.04	<0.04	<0.04	<0.04	<0.04	<0.04				<0.04	mg/kg	TM4/PM8
Dibenzo(ah)anthracene #	<0.04	<0.04	<0.04	<0.04	<0.04	<0.04	<0.04				<0.04	mg/kg	TM4/PM8
Benzo(ghi)perylene #	<0.04	<0.04	<0.04	<0.04	<0.04	<0.04	<0.04				<0.04	mg/kg	TM4/PM8
Coronene	<0.04	<0.04	<0.04	<0.04	<0.04	<0.04	<0.04				<0.04	mg/kg	TM4/PM8
PAH 6 Total #	<0.22	<0.22	<0.22	<0.22	<0.22	<0.22	<0.22				<0.22	mg/kg	TM4/PM8
PAH 17 Total	<0.64	<0.64	<0.64	<0.64	<0.64	<0.64	<0.64				<0.64	mg/kg	TM4/PM8
Benzo(b)fluoranthene	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05				<0.05	mg/kg	TM4/PM8
Benzo(k)fluoranthene	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02				<0.02	mg/kg	TM4/PM8
Benzo(j)fluoranthene	<1	<1	<1	<1	<1	<1	<1				<1	mg/kg	TM4/PM8
PAH Surrogate % Recovery	92	92	70	89	89	91	82				<0	%	TM4/PM8
Mineral Oil (C10-C40)	<30	<30	<30	<30	<30	<30	<30				<30	mg/kg	TM5/PM8/PM16

Please see attached notes for all abbreviations and acronyms

Please include all sections of this report if it is reproduced
All solid results are expressed on a dry weight basis unless stated otherwise.

Client Name: Ground Investigations Ireland
Reference: 9161-10-19
Location: Baldoyle
Contact: Diarmaid MagLochlainn
EMT Job No: 19/18422

Report : Solid

Solids: V=60g VOC jar, J=250g glass jar, T=plastic tub

Please see attached notes for all abbreviations and acronyms

EMT Sample No.	34-36	37-39,55	40-42	43-45	46-48	49-51	52-54				LOD/LOR	Units	Method No.
Sample ID	TP59	TP65	TP67	TP74	TP77	TP78	TP80						
Depth	0.50	0.50	2.00	0.50	0.50	0.50	0.50						
COC No / misc													
Containers	V J T	V J T	V J T	V J T	V J T	V J T	V J T						
Sample Date	07/11/2019	07/11/2019	07/11/2019	07/11/2019	07/11/2019	07/11/2019	07/11/2019						
Sample Type	Soil	Soil	Soil	Soil	Soil	Soil	Soil						
Batch Number	1	1	1	1	1	1	1						
Date of Receipt	11/11/2019	11/11/2019	11/11/2019	11/11/2019	11/11/2019	11/11/2019	11/11/2019						
TPH CWG													
Aliphatics													
>C5-C6 #	<0.1	<0.1 SV	<0.1 SV	<0.1	<0.1 SV	<0.1	<0.1				<0.1	mg/kg	TM36/PM12
>C6-C8 #	<0.1	<0.1 SV	<0.1 SV	<0.1	<0.1 SV	<0.1	<0.1				<0.1	mg/kg	TM36/PM12
>C8-C10	<0.1	<0.1 SV	<0.1 SV	<0.1	<0.1 SV	<0.1	<0.1				<0.1	mg/kg	TM36/PM12
>C10-C12 #	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2				<0.2	mg/kg	TM5/PM8/PM16
>C12-C16 #	<4	<4	<4	<4	<4	<4	<4				<4	mg/kg	TM5/PM8/PM16
>C16-C21 #	<7	<7	<7	<7	<7	<7	<7				<7	mg/kg	TM5/PM8/PM16
>C21-C35 #	<7	<7	<7	<7	<7	<7	<7				<7	mg/kg	TM5/PM8/PM16
>C35-C40	<7	<7	<7	<7	<7	<7	<7				<7	mg/kg	TM5/PM8/PM16
Total aliphatics C5-40	<26	<26	<26	<26	<26	<26	<26				<26	mg/kg	TM5/TM36/PM8/PM12/PM16
>C6-C10	<0.1	<0.1 SV	<0.1 SV	<0.1	<0.1 SV	<0.1	<0.1				<0.1	mg/kg	TM36/PM12
>C10-C25	<10	<10	<10	<10	<10	<10	<10				<10	mg/kg	TM5/PM8/PM16
>C25-C35	<10	<10	<10	<10	<10	<10	<10				<10	mg/kg	TM5/PM8/PM16
Aromatics													
>C5-EC7 #	<0.1	<0.1 SV	<0.1 SV	<0.1	<0.1 SV	<0.1	<0.1				<0.1	mg/kg	TM36/PM12
>EC7-EC8 #	<0.1	<0.1 SV	<0.1 SV	<0.1	<0.1 SV	<0.1	<0.1				<0.1	mg/kg	TM36/PM12
>EC8-EC10 #	<0.1	<0.1 SV	<0.1 SV	<0.1	<0.1 SV	<0.1	<0.1				<0.1	mg/kg	TM36/PM12
>EC10-EC12 #	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2				<0.2	mg/kg	TM5/PM8/PM16
>EC12-EC16 #	<4	<4	<4	<4	<4	<4	<4				<4	mg/kg	TM5/PM8/PM16
>EC16-EC21 #	<7	<7	<7	<7	<7	<7	<7				<7	mg/kg	TM5/PM8/PM16
>EC21-EC35 #	<7	<7	<7	<7	<7	<7	<7				<7	mg/kg	TM5/PM8/PM16
>EC35-EC40	<7	<7	<7	<7	<7	<7	<7				<7	mg/kg	TM5/PM8/PM16
Total aromatics C5-40	<26	<26	<26	<26	<26	<26	<26				<26	mg/kg	TM5/TM36/PM8/PM12/PM16
Total aliphatics and aromatics(C5-40)	<52	<52	<52	<52	<52	<52	<52				<52	mg/kg	TM5/TM36/PM8/PM12/PM16
>EC6-EC10 #	<0.1	<0.1 SV	<0.1 SV	<0.1	<0.1 SV	<0.1	<0.1				<0.1	mg/kg	TM36/PM12
>EC10-EC25	<10	<10	<10	<10	<10	<10	<10				<10	mg/kg	TM5/PM8/PM16
>EC25-EC35	<10	<10	<10	<10	<10	<10	<10				<10	mg/kg	TM5/PM8/PM16
MTBE #	<5	<5 SV	<5 SV	<5	<5 SV	<5	<5				<5	ug/kg	TM31/PM12
Benzene #	<5	<5 SV	<5 SV	<5	<5 SV	<5	<5				<5	ug/kg	TM31/PM12
Toluene #	<5	<5 SV	<5 SV	<5	<5 SV	<5	<5				<5	ug/kg	TM31/PM12
Ethylbenzene #	<5	<5 SV	<5 SV	<5	<5 SV	<5	<5				<5	ug/kg	TM31/PM12
m/p-Xylene #	<5	<5 SV	<5 SV	<5	<5 SV	<5	<5				<5	ug/kg	TM31/PM12
o-Xylene #	<5	<5 SV	<5 SV	<5	<5 SV	<5	<5				<5	ug/kg	TM31/PM12
PCB 28 #	<5	<5	<5	<5	<5	<5	<5				<5	ug/kg	TM17/PM8
PCB 52 #	<5	<5	<5	<5	<5	<5	<5				<5	ug/kg	TM17/PM8
PCB 101 #	<5	<5	<5	<5	<5	<5	<5				<5	ug/kg	TM17/PM8
PCB 118 #	<5	<5	<5	<5	<5	<5	<5				<5	ug/kg	TM17/PM8
PCB 138 #	<5	<5	<5	<5	<5	<5	<5				<5	ug/kg	TM17/PM8
PCB 153 #	<5	<5	<5	<5	<5	<5	<5				<5	ug/kg	TM17/PM8
PCB 180 #	<5	<5	<5	<5	<5	<5	<5				<5	ug/kg	TM17/PM8
Total 7 PCBs #	<35	<35	<35	<35	<35	<35	<35				<35	ug/kg	TM17/PM8

Element Materials Technology

Client Name: Ground Investigations Ireland
Reference: 9161-10-19
Location: Baldoyle
Contact: Diarmaid MagLochlainn
EMT Job No: 19/18422

Report : Solid

Solids: V=60g VOC jar, J=250g glass jar, T=plastic tub

EMT Sample No.	34-36	37-39,55	40-42	43-45	46-48	49-51	52-54				LOD/LOR	Units	Method No.
Sample ID	TP59	TP65	TP67	TP74	TP77	TP78	TP80						
Depth	0.50	0.50	2.00	0.50	0.50	0.50	0.50						
COC No / misc													
Containers	V J T	V J T	V J T	V J T	V J T	V J T	V J T						
Sample Date	07/11/2019	07/11/2019	07/11/2019	07/11/2019	07/11/2019	07/11/2019	07/11/2019						
Sample Type	Soil	Soil	Soil	Soil	Soil	Soil	Soil						
Batch Number	1	1	1	1	1	1	1						
Date of Receipt	11/11/2019	11/11/2019	11/11/2019	11/11/2019	11/11/2019	11/11/2019	11/11/2019						
Natural Moisture Content	14.7	8.6	15.6	8.6	11.3	11.0	1.6				<0.1	%	PM4/PM0
Moisture Content (% Wet Weight)	12.8	7.9	13.5	7.9	10.2	9.9	1.6				<0.1	%	PM4/PM0
Hexavalent Chromium #	<0.3	<0.3	<0.3	<0.3	<0.3	<0.3	<0.3				<0.3	mg/kg	TM38/PM20
Sulphate as SO4 (2:1 Ext) #	-	-	0.3745	-	0.2231	-	-				<0.0015	g/l	TM38/PM20
Chromium III	20.4	52.9	25.3	21.1	22.3	14.1	18.7				<0.5	mg/kg	NONE/NONE
Total Organic Carbon #	0.48	0.32	0.45	0.33	0.49	0.38	0.40				<0.02	%	TM21/PM24
pH #	8.57	8.30	8.18	8.61	8.49	8.70	8.68				<0.01	pH units	TM73/PM11
Mass of raw test portion	0.1066	0.098	0.1049	0.0982	0.1017	0.1011	0.1022					kg	NONE/PM17
Mass of dried test portion	0.09	0.09	0.09	0.09	0.09	0.09	0.09					kg	NONE/PM17

Please see attached notes for all abbreviations and acronyms

Client Name: Ground Investigations Ireland
Reference: 9161-10-19
Location: Baldoyle
Contact: Diarmaid MagLochlainn
EMT Job No: 19/18422

Report : CEN 10:1 1 Batch

Solids: V=60g VOC jar, J=250g glass jar, T=plastic tub

EMT Sample No.	1-3	4-6	7-9	10-12	13-15	16-18	19-21	22-24	25-27	31-33	LOD/LOR	Units	Method No.
Sample ID	TP13	TP15	TP18	TP20	TP22	TP27	TP29	TP32	TP48	TP58			
Depth	0.50	0.50	0.50	0.50	0.50	0.50	0.50	0.50	0.50	0.50			
COC No / misc													
Containers	V J T	V J T	V J T	V J T	V J T	V J T	V J T	V J T	V J T	V J T			
Sample Date	07/11/2019	07/11/2019	07/11/2019	07/11/2019	07/11/2019	07/11/2019	07/11/2019	07/11/2019	07/11/2019	07/11/2019			
Sample Type	Soil	Soil	Soil	Soil	Soil	Soil	Soil	Soil	Soil	Soil			
Batch Number	1	1	1	1	1	1	1	1	1	1			
Date of Receipt	11/11/2019	11/11/2019	11/11/2019	11/11/2019	11/11/2019	11/11/2019	11/11/2019	11/11/2019	11/11/2019	11/11/2019			
Dissolved Antimony #	<0.002	<0.002	<0.002	<0.002	<0.002	<0.002	0.003	0.005	<0.002	0.006	<0.002	mg/l	TM30/PM17
Dissolved Antimony (A10) #	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	0.03	0.05	<0.02	0.06	<0.02	mg/kg	TM30/PM17
Dissolved Arsenic #	<0.0025	<0.0025	<0.0025	0.0058	<0.0025	<0.0025	<0.0025	<0.0025	<0.0025	0.0030	<0.0025	mg/l	TM30/PM17
Dissolved Arsenic (A10) #	<0.025	<0.025	<0.025	0.058	<0.025	<0.025	<0.025	<0.025	<0.025	0.030	<0.025	mg/kg	TM30/PM17
Dissolved Barium #	0.008	0.006	0.007	0.007	0.022	0.011	0.011	0.025	0.005	0.006	<0.003	mg/l	TM30/PM17
Dissolved Barium (A10) #	0.08	0.06	0.07	0.07	0.22	0.11	0.11	0.25	0.05	0.06	<0.03	mg/kg	TM30/PM17
Dissolved Cadmium #	<0.0005	<0.0005	<0.0005	<0.0005	<0.0005	<0.0005	<0.0005	<0.0005	<0.0005	<0.0005	<0.0005	mg/l	TM30/PM17
Dissolved Cadmium (A10) #	<0.005	<0.005	<0.005	<0.005	<0.005	<0.005	<0.005	<0.005	<0.005	<0.005	<0.005	mg/kg	TM30/PM17
Dissolved Chromium #	<0.0015	<0.0015	<0.0015	<0.0015	<0.0015	<0.0015	<0.0015	<0.0015	<0.0015	<0.0015	<0.0015	mg/l	TM30/PM17
Dissolved Chromium (A10) #	<0.015	<0.015	<0.015	<0.015	<0.015	<0.015	<0.015	<0.015	<0.015	<0.015	<0.015	mg/kg	TM30/PM17
Dissolved Copper #	<0.007	<0.007	<0.007	<0.007	<0.007	<0.007	<0.007	<0.007	<0.007	<0.007	<0.007	mg/l	TM30/PM17
Dissolved Copper (A10) #	<0.07	<0.07	<0.07	<0.07	<0.07	<0.07	<0.07	<0.07	<0.07	<0.07	<0.07	mg/kg	TM30/PM17
Dissolved Lead #	<0.005	<0.005	<0.005	<0.005	<0.005	<0.005	<0.005	<0.005	<0.005	<0.005	<0.005	mg/l	TM30/PM17
Dissolved Lead (A10) #	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	mg/kg	TM30/PM17
Dissolved Molybdenum #	0.005	0.005	0.003	0.013	0.012	0.010	0.008	0.011	0.006	0.006	<0.002	mg/l	TM30/PM17
Dissolved Molybdenum (A10) #	0.05	0.05	0.03	0.13	0.12	0.10	0.08	0.11	0.06	0.06	<0.02	mg/kg	TM30/PM17
Dissolved Nickel #	<0.002	<0.002	<0.002	0.003	<0.002	<0.002	<0.002	<0.002	<0.002	<0.002	<0.002	mg/l	TM30/PM17
Dissolved Nickel (A10) #	<0.02	<0.02	<0.02	0.03	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	mg/kg	TM30/PM17
Dissolved Selenium #	<0.003	<0.003	<0.003	<0.003	<0.003	<0.003	<0.003	<0.003	<0.003	<0.003	<0.003	mg/l	TM30/PM17
Dissolved Selenium (A10) #	<0.03	<0.03	<0.03	<0.03	<0.03	<0.03	<0.03	<0.03	<0.03	<0.03	<0.03	mg/kg	TM30/PM17
Dissolved Zinc #	<0.003	<0.003	<0.003	<0.003	<0.003	<0.003	0.004	0.004	0.003	0.004	<0.003	mg/l	TM30/PM17
Dissolved Zinc (A10) #	<0.03	<0.03	<0.03	<0.03	<0.03	<0.03	0.04	0.04	<0.03	0.04	<0.03	mg/kg	TM30/PM17
Mercury Dissolved by CVAF #	<0.00001	<0.00001	<0.00001	<0.00001	<0.00001	<0.00001	<0.00001	<0.00001	<0.00001	<0.00001	<0.00001	mg/l	TM61/PM0
Mercury Dissolved by CVAF #	<0.0001	<0.0001	<0.0001	<0.0001	<0.0001	<0.0001	<0.0001	<0.0001	<0.0001	<0.0001	<0.0001	mg/kg	TM61/PM0
Phenol	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	mg/l	TM26/PM0
Phenol	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	mg/kg	TM26/PM0
Fluoride	0.8	0.5	0.5	0.4	0.4	0.4	0.5	0.4	0.3	0.4	<0.3	mg/l	TM173/PM0
Fluoride	8	5	5	4	4	4	5	4	<3	4	<3	mg/kg	TM173/PM0
Sulphate as SO4 #	0.8	4.8	3.9	24.8	5.5	46.5	12.3	33.2	4.5	7.1	<0.5	mg/l	TM38/PM0
Sulphate as SO4 #	8	48	39	248	55	465	123	332	45	71	<5	mg/kg	TM38/PM0
Chloride #	0.7	0.5	0.6	1.1	<0.3	0.5	0.3	1.5	<0.3	0.4	<0.3	mg/l	TM38/PM0
Chloride #	7	5	6	11	<3	5	<3	15	<3	4	<3	mg/kg	TM38/PM0
Dissolved Organic Carbon	5	4	5	5	<2	2	5	8	3	3	<2	mg/l	TM60/PM0
Dissolved Organic Carbon	50	40	50	50	<20	20	50	80	30	30	<20	mg/kg	TM60/PM0
pH	7.83	7.96	8.04	8.66	8.11	8.04	7.15	7.74	7.84	7.86	<0.01	pH units	TM73/PM0
Total Dissolved Solids #	50	89	77	62	<35	84	142	152	113	112	<35	mg/l	TM20/PM0
Total Dissolved Solids #	500	890	770	620	<350	840	1420	1520	1130	1120	<350	mg/kg	TM20/PM0

Please see attached notes for all abbreviations and acronyms

Client Name: Ground Investigations Ireland
Reference: 9161-10-19
Location: Baldoyle
Contact: Diarmaid MagLochlainn
EMT Job No: 19/18422

Report : CEN 10:1 1 Batch

Solids: V=60g VOC jar, J=250g glass jar, T=plastic tub

Please see attached notes for all abbreviations and acronyms

EMT Sample No.	34-36	37-39,55	40-42	43-45	46-48	49-51	52-54				LOD/LOR	Units	Method No.
Sample ID	TP59	TP65	TP67	TP74	TP77	TP78	TP80						
Depth	0.50	0.50	2.00	0.50	0.50	0.50	0.50						
COC No / misc													
Containers	V J T	V J T	V J T	V J T	V J T	V J T	V J T						
Sample Date	07/11/2019	07/11/2019	07/11/2019	07/11/2019	07/11/2019	07/11/2019	07/11/2019						
Sample Type	Soil	Soil	Soil	Soil	Soil	Soil	Soil						
Batch Number	1	1	1	1	1	1	1						
Date of Receipt	11/11/2019	11/11/2019	11/11/2019	11/11/2019	11/11/2019	11/11/2019	11/11/2019						
Dissolved Antimony #	0.003	0.006	0.004	0.006	<0.002	<0.002	<0.002				<0.002	mg/l	TM30/PM17
Dissolved Antimony (A10) #	0.03	0.06	0.04	0.06	<0.02	<0.02	<0.02				<0.02	mg/kg	TM30/PM17
Dissolved Arsenic #	<0.0025	<0.0025	<0.0025	<0.0025	<0.0025	<0.0025	0.0035				<0.0025	mg/l	TM30/PM17
Dissolved Arsenic (A10) #	<0.025	<0.025	<0.025	<0.025	<0.025	<0.025	0.035				<0.025	mg/kg	TM30/PM17
Dissolved Barium #	0.007	0.011	0.017	0.005	0.008	0.007	0.009				<0.003	mg/l	TM30/PM17
Dissolved Barium (A10) #	0.07	0.11	0.17	0.05	0.08	0.07	0.09				<0.03	mg/kg	TM30/PM17
Dissolved Cadmium #	<0.0005	<0.0005	<0.0005	<0.0005	<0.0005	<0.0005	<0.0005				<0.0005	mg/l	TM30/PM17
Dissolved Cadmium (A10) #	<0.005	<0.005	<0.005	<0.005	<0.005	<0.005	<0.005				<0.005	mg/kg	TM30/PM17
Dissolved Chromium #	<0.0015	<0.0015	<0.0015	<0.0015	<0.0015	<0.0015	<0.0015				<0.0015	mg/l	TM30/PM17
Dissolved Chromium (A10) #	<0.015	<0.015	<0.015	<0.015	<0.015	<0.015	<0.015				<0.015	mg/kg	TM30/PM17
Dissolved Copper #	<0.007	<0.007	<0.007	<0.007	<0.007	<0.007	<0.007				<0.007	mg/l	TM30/PM17
Dissolved Copper (A10) #	<0.07	<0.07	<0.07	<0.07	<0.07	<0.07	<0.07				<0.07	mg/kg	TM30/PM17
Dissolved Lead #	<0.005	<0.005	<0.005	<0.005	<0.005	<0.005	<0.005				<0.005	mg/l	TM30/PM17
Dissolved Lead (A10) #	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05				<0.05	mg/kg	TM30/PM17
Dissolved Molybdenum #	0.007	0.010	0.023	0.006	0.006	0.007	0.018				<0.002	mg/l	TM30/PM17
Dissolved Molybdenum (A10) #	0.07	0.10	0.23	0.06	0.06	0.07	0.18				<0.02	mg/kg	TM30/PM17
Dissolved Nickel #	<0.002	<0.002	<0.002	<0.002	<0.002	<0.002	<0.002				<0.002	mg/l	TM30/PM17
Dissolved Nickel (A10) #	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02				<0.02	mg/kg	TM30/PM17
Dissolved Selenium #	<0.003	<0.003	<0.003	<0.003	<0.003	<0.003	<0.003				<0.003	mg/l	TM30/PM17
Dissolved Selenium (A10) #	<0.03	<0.03	<0.03	<0.03	<0.03	<0.03	<0.03				<0.03	mg/kg	TM30/PM17
Dissolved Zinc #	0.004	<0.003	<0.003	0.003	<0.003	0.003	0.003				<0.003	mg/l	TM30/PM17
Dissolved Zinc (A10) #	0.04	<0.03	<0.03	<0.03	<0.03	<0.03	0.03				<0.03	mg/kg	TM30/PM17
Mercury Dissolved by CVAF #	<0.00001	<0.00001	<0.00001	<0.00001	<0.00001	<0.00001	<0.00001				<0.00001	mg/l	TM61/PM0
Mercury Dissolved by CVAF #	<0.0001	<0.0001	<0.0001	<0.0001	<0.0001	<0.0001	<0.0001				<0.0001	mg/kg	TM61/PM0
Phenol	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01				<0.01	mg/l	TM26/PM0
Phenol	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1				<0.1	mg/kg	TM26/PM0
Fluoride	0.4	<0.3	<0.3	<0.3	<0.3	<0.3	<0.3				<0.3	mg/l	TM173/PM0
Fluoride	4	<3	<3	<3	<3	<3	<3				<3	mg/kg	TM173/PM0
Sulphate as SO4 #	3.4	87.3	67.8	12.3	38.9	2.2	4.5				<0.5	mg/l	TM38/PM0
Sulphate as SO4 #	34	873	678	123	389	22	45				<5	mg/kg	TM38/PM0
Chloride #	<0.3	0.3	0.5	0.7	0.4	0.9	<0.3				<0.3	mg/l	TM38/PM0
Chloride #	<3	3	5	7	4	9	<3				<3	mg/kg	TM38/PM0
Dissolved Organic Carbon	3	<2	2	2	<2	3	2				<2	mg/l	TM60/PM0
Dissolved Organic Carbon	30	<20	20	<20	<20	30	20				<20	mg/kg	TM60/PM0
pH	7.91	7.54	7.60	7.50	7.58	7.68	7.78				<0.01	pH units	TM73/PM0
Total Dissolved Solids #	132	206	162	75	83	75	93				<35	mg/l	TM20/PM0
Total Dissolved Solids #	1319	2060	1621	750	830	750	930				<350	mg/kg	TM20/PM0

Client Name: Ground Investigations Ireland
Reference: 9161-10-19
Location: Baldoyle
Contact: Diarmaid MagLochlainn
EMT Job No: 19/18422

Report : EN12457_2

Solids: V=60g VOC jar, J=250g glass jar, T=plastic tub

Please see attached notes for all abbreviations and acronyms

EMT Sample No.	1-3	4-6	7-9	10-12	13-15	16-18	19-21	22-24	25-27	31-33	Inert	Stable Non-reactive	Hazardous	LOD LOR	Units	Method No.
Sample ID	TP13	TP15	TP18	TP20	TP22	TP27	TP29	TP32	TP48	TP58						
Depth	0.50	0.50	0.50	0.50	0.50	0.50	0.50	0.50	0.50	0.50						
COC No / misc																
Containers	V J T	V J T	V J T	V J T	V J T	V J T	V J T	V J T	V J T	V J T						
Sample Date	07/11/2019	07/11/2019	07/11/2019	07/11/2019	07/11/2019	07/11/2019	07/11/2019	07/11/2019	07/11/2019	07/11/2019						
Sample Type	Soil	Soil	Soil	Soil	Soil	Soil	Soil	Soil	Soil	Soil						
Batch Number	1	1	1	1	1	1	1	1	1	1						
Date of Receipt	11/11/2019	11/11/2019	11/11/2019	11/11/2019	11/11/2019	11/11/2019	11/11/2019	11/11/2019	11/11/2019	11/11/2019						
Solid Waste Analysis																
Total Organic Carbon #	1.63	0.87	1.79	0.47	0.57	0.77	1.48	1.77	0.39	0.43	3	5	6	<0.02	%	TM21/PM24
Sum of BTEX	<0.025	<0.025	<0.025	<0.025	<0.025 SV	<0.025	<0.025	<0.025	<0.025	<0.025	6	-	-	<0.025	mg/kg	TM31/PM12
Sum of 7 PCBs #	<0.035	<0.035	<0.035	<0.035	<0.035	<0.035	<0.035	<0.035	<0.035	<0.035	1	-	-	<0.035	mg/kg	TM17/PM8
Mineral Oil	<30	<30	<30	<30	<30	<30	<30	<30	<30	<30	500	-	-	<30	mg/kg	TM5/PM8/PM16
PAH Sum of 6 #	0.55	0.78	1.11	<0.22	<0.22	<0.22	0.64	0.60	<0.22	<0.22	-	-	-	<0.22	mg/kg	TM4/PM8
PAH Sum of 17	1.02	1.42	2.18	<0.64	<0.64	<0.64	1.29	1.10	<0.64	<0.64	100	-	-	<0.64	mg/kg	TM4/PM8
CEN 10:1 Leachate																
Arsenic #	<0.025	<0.025	<0.025	0.058	<0.025	<0.025	<0.025	<0.025	<0.025	0.030	0.5	2	25	<0.025	mg/kg	TM30/PM17
Barium #	0.08	0.06	0.07	0.07	0.22	0.11	0.11	0.25	0.05	0.06	20	100	300	<0.03	mg/kg	TM30/PM17
Cadmium #	<0.005	<0.005	<0.005	<0.005	<0.005	<0.005	<0.005	<0.005	<0.005	<0.005	0.04	1	5	<0.005	mg/kg	TM30/PM17
Chromium #	<0.015	<0.015	<0.015	<0.015	<0.015	<0.015	<0.015	<0.015	<0.015	<0.015	0.5	10	70	<0.015	mg/kg	TM30/PM17
Copper #	<0.07	<0.07	<0.07	<0.07	<0.07	<0.07	<0.07	<0.07	<0.07	<0.07	2	50	100	<0.07	mg/kg	TM30/PM17
Mercury #	<0.0001	<0.0001	<0.0001	<0.0001	<0.0001	<0.0001	<0.0001	<0.0001	<0.0001	<0.0001	0.01	0.2	2	<0.0001	mg/kg	TM61/PM0
Molybdenum #	0.05	0.05	0.03	0.13	0.12	0.10	0.08	0.11	0.06	0.06	0.5	10	30	<0.02	mg/kg	TM30/PM17
Nickel #	<0.02	<0.02	<0.02	0.03	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	0.4	10	40	<0.02	mg/kg	TM30/PM17
Lead #	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	0.5	10	50	<0.05	mg/kg	TM30/PM17
Antimony #	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	0.03	0.05	<0.02	0.06	0.06	0.7	5	<0.02	mg/kg	TM30/PM17
Selenium #	<0.03	<0.03	<0.03	<0.03	<0.03	<0.03	<0.03	<0.03	<0.03	<0.03	0.1	0.5	7	<0.03	mg/kg	TM30/PM17
Zinc #	<0.03	<0.03	<0.03	<0.03	<0.03	<0.03	0.04	0.04	<0.03	0.04	4	50	200	<0.03	mg/kg	TM30/PM17
Total Dissolved Solids #	500	890	770	620	<350	840	1420	1520	1130	1120	4000	60000	100000	<350	mg/kg	TM20/PM0
Dissolved Organic Carbon	50	40	50	50	<20	20	50	80	30	30	500	800	1000	<20	mg/kg	TM60/PM0
Mass of raw test portion	0.1088	0.1072	0.1091	0.1029	0.1086	0.1075	0.1113	0.1134	0.1052	0.1049	-	-	-		kg	NONE/PM17
Dry Matter Content Ratio	82.5	83.9	82.2	87.4	82.6	83.9	80.5	79.6	85.2	85.7	-	-	-	<0.1	%	NONE/PM4
Leachant Volume	0.881	0.883	0.88	0.887	0.881	0.883	0.878	0.877	0.884	0.885	-	-	-		l	NONE/PM17
Eluate Volume	0.8	0.8	0.8	0.8	0.8	0.8	0.8	0.8	0.8	0.8	-	-	-		l	NONE/PM17
pH #	8.29	8.28	8.05	9.16	8.39	8.25	8.40	7.71	8.58	8.46	-	-	-	<0.01	pH units	TM73/PM11
Phenol	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	1	-	-	<0.1	mg/kg	TM26/PM0
Fluoride	8	5	5	4	4	4	5	4	<3	4	-	-	-	<3	mg/kg	TM173/PM0
Sulphate as SO4 #	8	48	39	248	55	465	123	332	45	71	1000	20000	50000	<5	mg/kg	TM38/PM0
Chloride #	7	5	6	11	<3	5	<3	15	<3	4	800	15000	25000	<3	mg/kg	TM38/PM0

All solid results are expressed on a dry weight basis unless stated otherwise.

Client Name: Ground Investigations Ireland
Reference: 9161-10-19
Location: Baldoyle
Contact: Diarmaid MagLochlainn
EMT Job No: 19/18422

Report : EN12457_2

Solids: V=60g VOC jar, J=250g glass jar, T=plastic tub

Please see attached notes for all abbreviations and acronyms

EMT Sample No.	34-36	37-39,55	40-42	43-45	46-48	49-51	52-54				Inert	Stable Non-reactive	Hazardous	LOD LOR	Units	Method No.
Sample ID	TP59	TP65	TP67	TP74	TP77	TP78	TP80									
Depth	0.50	0.50	2.00	0.50	0.50	0.50	0.50									
COC No / misc																
Containers	V J T	V J T	V J T	V J T	V J T	V J T	V J T									
Sample Date	07/11/2019	07/11/2019	07/11/2019	07/11/2019	07/11/2019	07/11/2019	07/11/2019									
Sample Type	Soil	Soil	Soil	Soil	Soil	Soil	Soil									
Batch Number	1	1	1	1	1	1	1									
Date of Receipt	11/11/2019	11/11/2019	11/11/2019	11/11/2019	11/11/2019	11/11/2019	11/11/2019									
Solid Waste Analysis																
Total Organic Carbon #	0.48	0.32	0.45	0.33	0.49	0.38	0.40				3	5	6	<0.02	%	TM21/PM24
Sum of BTEX	<0.025	<0.025 SV	<0.025 SV	<0.025	<0.025 SV	<0.025	<0.025				6	-	-	<0.025	mg/kg	TM31/PM12
Sum of 7 PCBs #	<0.035	<0.035	<0.035	<0.035	<0.035	<0.035	<0.035				1	-	-	<0.035	mg/kg	TM17/PM8
Mineral Oil	<30	<30	<30	<30	<30	<30	<30				500	-	-	<30	mg/kg	TM5/PM8/PM16
PAH Sum of 6 #	<0.22	<0.22	<0.22	<0.22	<0.22	<0.22	<0.22				-	-	-	<0.22	mg/kg	TM4/PM8
PAH Sum of 17	<0.64	<0.64	<0.64	<0.64	<0.64	<0.64	<0.64				100	-	-	<0.64	mg/kg	TM4/PM8
CEN 10:1 Leachate																
Arsenic #	<0.025	<0.025	<0.025	<0.025	<0.025	<0.025	0.035				0.5	2	25	<0.025	mg/kg	TM30/PM17
Barium #	0.07	0.11	0.17	0.05	0.08	0.07	0.09				20	100	300	<0.03	mg/kg	TM30/PM17
Cadmium #	<0.005	<0.005	<0.005	<0.005	<0.005	<0.005	<0.005				0.04	1	5	<0.005	mg/kg	TM30/PM17
Chromium #	<0.015	<0.015	<0.015	<0.015	<0.015	<0.015	<0.015				0.5	10	70	<0.015	mg/kg	TM30/PM17
Copper #	<0.07	<0.07	<0.07	<0.07	<0.07	<0.07	<0.07				2	50	100	<0.07	mg/kg	TM30/PM17
Mercury #	<0.0001	<0.0001	<0.0001	<0.0001	<0.0001	<0.0001	<0.0001				0.01	0.2	2	<0.0001	mg/kg	TM61/PM0
Molybdenum #	0.07	0.10	0.23	0.06	0.06	0.07	0.18				0.5	10	30	<0.02	mg/kg	TM30/PM17
Nickel #	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02				0.4	10	40	<0.02	mg/kg	TM30/PM17
Lead #	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05				0.5	10	50	<0.05	mg/kg	TM30/PM17
Antimony #	0.03	0.06	0.04	0.06	<0.02	<0.02	<0.02				0.06	0.7	5	<0.02	mg/kg	TM30/PM17
Selenium #	<0.03	<0.03	<0.03	<0.03	<0.03	<0.03	<0.03				0.1	0.5	7	<0.03	mg/kg	TM30/PM17
Zinc #	0.04	<0.03	<0.03	<0.03	<0.03	<0.03	0.03				4	50	200	<0.03	mg/kg	TM30/PM17
Total Dissolved Solids #	1319	2060	1621	750	830	750	930				4000	60000	100000	<350	mg/kg	TM20/PM0
Dissolved Organic Carbon	30	<20	20	<20	<20	30	20				500	800	1000	<20	mg/kg	TM60/PM0
Mass of raw test portion	0.1066	0.098	0.1049	0.0982	0.1017	0.1011	0.1022				-	-	-		kg	NONE/PM17
Dry Matter Content Ratio	84.4	91.8	85.4	91.2	88.5	88.6	87.9				-	-	-	<0.1	%	NONE/PM4
Leachant Volume	0.883	0.892	0.885	0.891	0.888	0.888	0.888				-	-	-		l	NONE/PM17
Eluate Volume	0.8	0.8	0.8	0.8	0.8	0.8	0.8				-	-	-		l	NONE/PM17
pH #	8.57	8.30	8.18	8.61	8.49	8.70	8.68				-	-	-	<0.01	pH units	TM73/PM11
Phenol	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1				1	-	-	<0.1	mg/kg	TM26/PM0
Fluoride	4	<3	<3	<3	<3	<3	<3				-	-	-	<3	mg/kg	TM173/PM0
Sulphate as SO4 #	34	873	678	123	389	22	45				1000	20000	50000	<5	mg/kg	TM38/PM0
Chloride #	<3	3	5	7	4	9	<3				800	15000	25000	<3	mg/kg	TM38/PM0

All solid results are expressed on a dry weight basis unless stated otherwise.

Client Name: Ground Investigations Ireland

Reference: 9161-10-19

Location: Baldoyle

Contact: Diarmaid MagLochlainn

Matrix : Solid

EMT Job No.	Batch	Sample ID	Depth	EMT Sample No.	EPH Interpretation
19/18422	1	TP13	0.50	1-3	No interpretation possible
19/18422	1	TP15	0.50	4-6	No interpretation possible
19/18422	1	TP18	0.50	7-9	No interpretation possible
19/18422	1	TP20	0.50	10-12	No interpretation possible
19/18422	1	TP22	0.50	13-15	No interpretation possible
19/18422	1	TP27	0.50	16-18	No interpretation possible
19/18422	1	TP29	0.50	19-21	No interpretation possible
19/18422	1	TP32	0.50	22-24	No interpretation possible
19/18422	1	TP48	0.50	25-27	No interpretation possible
19/18422	1	TP58	0.50	31-33	No interpretation possible
19/18422	1	TP59	0.50	34-36	No interpretation possible
19/18422	1	TP65	0.50	37-39,55	No interpretation possible
19/18422	1	TP67	2.00	40-42	No interpretation possible
19/18422	1	TP74	0.50	43-45	No interpretation possible
19/18422	1	TP77	0.50	46-48	No interpretation possible
19/18422	1	TP78	0.50	49-51	No interpretation possible
19/18422	1	TP80	0.50	52-54	No interpretation possible

Client Name: Ground Investigations Ireland
Reference: 19/10/9161
Location: Baldoyle
Contact: Diarmaid MagLochlainn

Note:

Asbestos Screen analysis is carried out in accordance with our documented in-house methods PM042 and TM065 and HSG 248 by Stereo and Polarised Light Microscopy using Dispersion Staining Techniques and is covered by our UKAS accreditation. Detailed Gravimetric Quantification and PCOM Fibre Analysis is carried out in accordance with our documented in-house methods PM042 and TM131 and HSG 248 using Stereo and Polarised Light Microscopy and Phase Contrast Optical Microscopy (PCOM). Samples are retained for not less than 6 months from the date of analysis unless specifically requested.

Opinions, including ACM type and Asbestos level less than 0.1%, lie outside the scope of our UKAS accreditation.

Where the sample is not taken by a Element Materials Technology consultant, Element Materials Technology cannot be responsible for inaccurate or unrepresentative sampling.

EMT Job No.	Batch	Sample ID	Depth	EMT Sample No.	Date Of Analysis	Analysis	Result
19/18422	1	TP13	0.50	2	13/11/2019	**General Description (Bulk Analysis)**	soil-stones
					13/11/2019	**Asbestos Fibres**	NAD
					13/11/2019	**Asbestos ACM**	NAD
					13/11/2019	**Asbestos Type**	NAD
					13/11/2019	**Asbestos Level Screen**	NAD
19/18422	1	TP15	0.50	5	13/11/2019	**General Description (Bulk Analysis)**	soil-stones
					13/11/2019	**Asbestos Fibres**	NAD
					13/11/2019	**Asbestos ACM**	NAD
					13/11/2019	**Asbestos Type**	NAD
					13/11/2019	**Asbestos Level Screen**	NAD
19/18422	1	TP18	0.50	8	13/11/2019	**General Description (Bulk Analysis)**	soil-stones
					13/11/2019	**Asbestos Fibres**	NAD
					13/11/2019	**Asbestos ACM**	NAD
					13/11/2019	**Asbestos Type**	NAD
					13/11/2019	**Asbestos Level Screen**	NAD
19/18422	1	TP20	0.50	11	13/11/2019	**General Description (Bulk Analysis)**	soil-stones
					13/11/2019	**Asbestos Fibres**	NAD
					13/11/2019	**Asbestos ACM**	NAD
					13/11/2019	**Asbestos Type**	NAD
					13/11/2019	**Asbestos Level Screen**	NAD
19/18422	1	TP22	0.50	14	13/11/2019	**General Description (Bulk Analysis)**	soil-stones
					13/11/2019	**Asbestos Fibres**	NAD
					13/11/2019	**Asbestos ACM**	NAD
					13/11/2019	**Asbestos Type**	NAD
					13/11/2019	**Asbestos Level Screen**	NAD
19/18422	1	TP27	0.50	17	13/11/2019	**General Description (Bulk Analysis)**	soil-stones
					13/11/2019	**Asbestos Fibres**	NAD
					13/11/2019	**Asbestos ACM**	NAD
					13/11/2019	**Asbestos Type**	NAD
					13/11/2019	**Asbestos Level Screen**	NAD
19/18422	1	TP29	0.50	20	13/11/2019	**General Description (Bulk Analysis)**	soil/stones
					13/11/2019	**Asbestos Fibres**	NAD
					13/11/2019	**Asbestos ACM**	NAD

Client Name: Ground Investigations Ireland
Reference: 19/10/9161
Location: Baldoyle
Contact: Diarmaid MagLochlainn

EMT Job No.	Batch	Sample ID	Depth	EMT Sample No.	Date Of Analysis	Analysis	Result
19/18422	1	TP29	0.50	20	13/11/2019	**Asbestos Type**	NAD
					13/11/2019	**Asbestos Level Screen**	NAD
19/18422	1	TP32	0.50	23	13/11/2019	**General Description (Bulk Analysis)**	soil/stones
					13/11/2019	**Asbestos Fibres**	NAD
					13/11/2019	**Asbestos ACM**	NAD
					13/11/2019	**Asbestos Type**	NAD
					13/11/2019	**Asbestos Level Screen**	NAD
19/18422	1	TP48	0.50	26	13/11/2019	**General Description (Bulk Analysis)**	soil/stones
					13/11/2019	**Asbestos Fibres**	NAD
					13/11/2019	**Asbestos ACM**	NAD
					13/11/2019	**Asbestos Type**	NAD
					13/11/2019	**Asbestos Level Screen**	NAD
19/18422	1	TP58	0.50	32	13/11/2019	**General Description (Bulk Analysis)**	soil.stones
					13/11/2019	**Asbestos Fibres**	NAD
					13/11/2019	**Asbestos ACM**	NAD
					13/11/2019	**Asbestos Type**	NAD
					13/11/2019	**Asbestos Level Screen**	NAD
19/18422	1	TP59	0.50	35	13/11/2019	**General Description (Bulk Analysis)**	soil.stones
					13/11/2019	**Asbestos Fibres**	NAD
					13/11/2019	**Asbestos ACM**	NAD
					13/11/2019	**Asbestos Type**	NAD
					13/11/2019	**Asbestos Level Screen**	NAD
19/18422	1	TP65	0.50	38	13/11/2019	**General Description (Bulk Analysis)**	soil.stones
					13/11/2019	**Asbestos Fibres**	NAD
					13/11/2019	**Asbestos ACM**	NAD
					13/11/2019	**Asbestos Type**	NAD
					13/11/2019	**Asbestos Level Screen**	NAD
19/18422	1	TP67	2.00	41	13/11/2019	**General Description (Bulk Analysis)**	Soil/Stones
					13/11/2019	**Asbestos Fibres**	NAD
					13/11/2019	**Asbestos ACM**	NAD
					13/11/2019	**Asbestos Type**	NAD
					13/11/2019	**Asbestos Level Screen**	NAD
19/18422	1	TP74	0.50	44	13/11/2019	**General Description (Bulk Analysis)**	Soil/Stones
					13/11/2019	**Asbestos Fibres**	NAD
					13/11/2019	**Asbestos ACM**	NAD
					13/11/2019	**Asbestos Type**	NAD
					13/11/2019	**Asbestos Level Screen**	NAD
19/18422	1	TP77	0.50	47	13/11/2019	**General Description (Bulk Analysis)**	Soil/Stones
					13/11/2019	**Asbestos Fibres**	NAD
					13/11/2019	**Asbestos ACM**	NAD
					13/11/2019	**Asbestos Type**	NAD
					13/11/2019	**Asbestos Level Screen**	NAD
19/18422	1	TP78	0.50	50	13/11/2019	**General Description (Bulk Analysis)**	soil-stones
					13/11/2019	**Asbestos Fibres**	NAD

Client Name: Ground Investigations Ireland
Reference: 19/10/9161
Location: Baldoyle
Contact: Diarmaid MagLochlainn

EMT Job No.	Batch	Sample ID	Depth	EMT Sample No.	Date Of Analysis	Analysis	Result
19/18422	1	TP78	0.50	50	13/11/2019	**Asbestos ACM**	NAD
					13/11/2019	**Asbestos Type**	NAD
					13/11/2019	**Asbestos Level Screen**	NAD
19/18422	1	TP80	0.50	53	13/11/2019	**General Description (Bulk Analysis)**	soil-stones
					13/11/2019	**Asbestos Fibres**	NAD
					13/11/2019	**Asbestos ACM**	NAD
					13/11/2019	**Asbestos Type**	NAD
					13/11/2019	**Asbestos Level Screen**	NAD

Client Name: Ground Investigations Ireland

Reference: 9161-10-19

Location: Baldoyle

Contact: Diarmaid MagLochlainn

Matrix : Solid

EMT Job No.	Batch	Sample ID	Depth	EMT Sample No.	Analysis	Reason
19/18422	1	TP18	0.50	7-9	Sulphate	Sample holding time exceeded
19/18422	1	TP29	0.50	19-21	Sulphate	Sample holding time exceeded
19/18422	1	TP48	0.50	25-27	Sulphate	Sample holding time exceeded
19/18422	1	TP58	0.50	31-33	Sulphate	Sample holding time exceeded
19/18422	1	TP67	2.00	40-42	Sulphate	Sample holding time exceeded
19/18422	1	TP77	0.50	46-48	Sulphate	Sample holding time exceeded

Please note that only samples that are deviating are mentioned in this report. If no samples are listed it is because none were deviating.

Only analyses which are accredited are recorded as deviating if set criteria are not met.

NOTES TO ACCOMPANY ALL SCHEDULES AND REPORTS

EMT Job No.: 19/18422

SOILS

Please note we are only MCERTS accredited (UK soils only) for sand, loam and clay and any other matrix is outside our scope of accreditation.

Where an MCERTS report has been requested, you will be notified within 48 hours of any samples that have been identified as being outside our MCERTS scope. As validation has been performed on clay, sand and loam, only samples that are predominantly these matrices, or combinations of them will be within our MCERTS scope. If samples are not one of a combination of the above matrices they will not be marked as MCERTS accredited.

It is assumed that you have taken representative samples on site and require analysis on a representative subsample. Stones will generally be included unless we are requested to remove them.

All samples will be discarded one month after the date of reporting, unless we are instructed to the contrary.

If you have not already done so, please send us a purchase order if this is required by your company.

Where appropriate please make sure that our detection limits are suitable for your needs, if they are not, please notify us immediately.

All analysis is reported on a dry weight basis unless stated otherwise. Limits of detection for analyses carried out on as received samples are not moisture content corrected. Results are not surrogate corrected. Samples are dried at 35°C ±5°C unless otherwise stated. Moisture content for CEN Leachate tests are dried at 105°C ±5°C.

Where Mineral Oil or Fats, Oils and Grease is quoted, this refers to Total Aliphatics C10-C40.

Where a CEN 10:1 ZERO Headspace VOC test has been carried out, a 10:1 ratio of water to wet (as received) soil has been used.

% Asbestos in Asbestos Containing Materials (ACMs) is determined by reference to HSG 264 The Survey Guide - Appendix 2 : ACMs in buildings listed in order of ease of fibre release.

Sufficient amount of sample must be received to carry out the testing specified. Where an insufficient amount of sample has been received the testing may not meet the requirements of our accredited methods, as such accreditation may be removed.

Negative Neutralization Potential (NP) values are obtained when the volume of NaOH (0.1N) titrated (pH 8.3) is greater than the volume of HCl (1N) to reduce the pH of the sample to 2.0 - 2.5. Any negative NP values are corrected to 0.

The calculation of Pyrite content assumes that all oxidisable sulphides present in the sample are pyrite. This may not be the case. The calculation may be an overesitimate when other sulphides such as Barite (Barium Sulphate) are present.

WATERS

Please note we are not a UK Drinking Water Inspectorate (DWI) Approved Laboratory .

ISO17025 accreditation applies to surface water and groundwater and usually one other matrix which is analysis specific, any other liquids are outside our scope of accreditation.

As surface waters require different sample preparation to groundwaters the laboratory must be informed of the water type when submitting samples.

Where Mineral Oil or Fats, Oils and Grease is quoted, this refers to Total Aliphatics C10-C40.

DEVIATING SAMPLES

All samples should be submitted to the laboratory in suitable containers with sufficient ice packs to sustain an appropriate temperature for the requested analysis. The temperature of sample receipt is recorded on the confirmation schedules in order that the client can make an informed decision as to whether testing should still be undertaken.

SURROGATES

Surrogate compounds are added during the preparation process to monitor recovery of analytes. However low recovery in soils is often due to peat, clay or other organic rich matrices. For waters this can be due to oxidants, surfactants, organic rich sediments or remediation fluids. Acceptable limits for most organic methods are 70 - 130% and for VOCs are 50 - 150%. When surrogate recoveries are outside the performance criteria but the associated AQC passes this is assumed to be due to matrix effect. Results are not surrogate corrected.

DILUTIONS

A dilution suffix indicates a dilution has been performed and the reported result takes this into account. No further calculation is required.

BLANKS

Where analytes have been found in the blank, the sample will be treated in accordance with our laboratory procedure for dealing with contaminated blanks.

NOTE

Data is only reported if the laboratory is confident that the data is a true reflection of the samples analysed. Data is only reported as accredited when all the requirements of our Quality System have been met. In certain circumstances where all the requirements of the Quality System have not been met, for instance if the associated AQC has failed, the reason is fully investigated and documented. The sample data is then evaluated alongside the other quality control checks performed during analysis to determine its suitability. Following this evaluation, provided the sample results have not been effected, the data is reported but accreditation is removed. It is a UKAS requirement for data not reported as accredited to be considered indicative only, but this does not mean the data is not valid.
Where possible, and if requested, samples will be re-extracted and a revised report issued with accredited results. Please do not hesitate to contact the laboratory if further details are required of the circumstances which have led to the removal of accreditation.

REPORTS FROM THE SOUTH AFRICA LABORATORY

Any method number not prefixed with SA has been undertaken in our UK laboratory unless reported as subcontracted.

Measurement Uncertainty

Measurement uncertainty defines the range of values that could reasonably be attributed to the measured quantity. This range of values has not been included within the reported results. Uncertainty expressed as a percentage can be provided upon request.

ABBREVIATIONS and ACRONYMS USED

#	ISO17025 (UKAS Ref No. 4225) accredited - UK.
SA	ISO17025 (SANAS Ref No.T0729) accredited - South Africa
B	Indicates analyte found in associated method blank.
DR	Dilution required.
M	MCERTS accredited.
NA	Not applicable
NAD	No Asbestos Detected.
ND	None Detected (usually refers to VOC and/SVOC TICs).
NDP	No Determination Possible
SS	Calibrated against a single substance
SV	Surrogate recovery outside performance criteria. This may be due to a matrix effect.
W	Results expressed on as received basis.
+	AQC failure, accreditation has been removed from this result, if appropriate, see 'Note' on previous page.
>>	Results above calibration range, the result should be considered the minimum value. The actual result could be significantly higher, this result is not accredited.
*	Analysis subcontracted to an Element Materials Technology approved laboratory.
AD	Samples are dried at 35°C ±5°C
CO	Suspected carry over
LOD/LOR	Limit of Detection (Limit of Reporting) in line with ISO 17025 and MCERTS
ME	Matrix Effect
NFD	No Fibres Detected
BS	AQC Sample
LB	Blank Sample
N	Client Sample
TB	Trip Blank Sample
OC	Outside Calibration Range

EMT Job No: 19/18422

Test Method No.	Description	Prep Method No. (if appropriate)	Description	ISO 17025 (UKAS/SANAS)	MCERTS (UK soils only)	Analysis done on As Received (AR) or Dried (AD)	Reported on dry weight basis
PM4	Gravimetric measurement of Natural Moisture Content and % Moisture Content at either 35°C or 105°C. Calculation based on ISO 11465 and BS1377.	PM0	No preparation is required.			AR	
TM4	Modified USEPA 8270 method for the solvent extraction and determination of PAHs by GC-MS.	PM8	End over end extraction of solid samples for organic analysis. The solvent mix varies depending on analysis required.			AR	Yes
TM4	Modified USEPA 8270 method for the solvent extraction and determination of PAHs by GC-MS.	PM8	End over end extraction of solid samples for organic analysis. The solvent mix varies depending on analysis required.	Yes		AR	Yes
TM5	Modified 8015B method for the determination of solvent Extractable Petroleum Hydrocarbons (EPH) within the range C8-C40 by GCFID. For waters the solvent extracts dissolved phase plus a sheen if present.	PM16	Fractionation into aliphatic and aromatic fractions using a Rapid Trace SPE.			AR	
TM5	Modified 8015B method for the determination of solvent Extractable Petroleum Hydrocarbons (EPH) within the range C8-C40 by GCFID. For waters the solvent extracts dissolved phase plus a sheen if present.	PM8/PM16	End over end extraction of solid samples for organic analysis. The solvent mix varies depending on analysis required/Fractionation into aliphatic and aromatic fractions using a Rapid Trace SPE.			AR	Yes
TM5	Modified 8015B method for the determination of solvent Extractable Petroleum Hydrocarbons (EPH) within the range C8-C40 by GCFID. For waters the solvent extracts dissolved phase plus a sheen if present.	PM8/PM16	End over end extraction of solid samples for organic analysis. The solvent mix varies depending on analysis required/Fractionation into aliphatic and aromatic fractions using a Rapid Trace SPE.	Yes		AR	Yes
TM5/TM36	please refer to TM5 and TM36 for method details	PM8/PM12/PM16	please refer to PM8/PM16 and PM12 for method details			AR	Yes
TM17	Modified US EPA method 8270. Determination of specific Polychlorinated Biphenyl congeners by GC-MS.	PM8	End over end extraction of solid samples for organic analysis. The solvent mix varies depending on analysis required.	Yes		AR	Yes
TM20	Modified BS 1377-3: 1990/USEPA 160.3 Gravimetric determination of Total Dissolved Solids/Total Solids	PM0	No preparation is required.	Yes		AR	Yes
TM21	Modified BS 7755-3:1995, ISO10694:1995 Determination of Total Organic Carbon or Total Carbon by combustion in an Eltra TOC furnace/analyser in the presence of oxygen. The CO2 generated is quantified using infra-red detection. Organic Matter (SOM) calculated as per EA MCERTS Chemical Testing of Soil, March 2012 v4.	PM24	Dried and ground solid samples are washed with hydrochloric acid, then rinsed with deionised water to remove the mineral carbon before TOC analysis.	Yes		AD	Yes

EMT Job No: 19/18422

Test Method No.	Description	Prep Method No. (if appropriate)	Description	ISO 17025 (UKAS/SANAS)	MCERTS (UK soils only)	Analysis done on As Received (AR) or Dried (AD)	Reported on dry weight basis
TM26	Determination of phenols by Reversed Phased High Performance Liquid Chromatography and Electro-Chemical Detection.	PM0	No preparation is required.			AR	Yes
TM30	Determination of Trace Metal elements by ICP-OES (Inductively Coupled Plasma - Optical Emission Spectrometry). Modified US EPA Method 200.7, 6010B and BS EN ISO 11885 2009	PM15	Acid digestion of dried and ground solid samples using Aqua Regia refluxed at 112.5 °C. Samples containing asbestos are not dried and ground.			AD	Yes
TM30	Determination of Trace Metal elements by ICP-OES (Inductively Coupled Plasma - Optical Emission Spectrometry). Modified US EPA Method 200.7, 6010B and BS EN ISO 11885 2009	PM15	Acid digestion of dried and ground solid samples using Aqua Regia refluxed at 112.5 °C. Samples containing asbestos are not dried and ground.	Yes		AD	Yes
TM30	Determination of Trace Metal elements by ICP-OES (Inductively Coupled Plasma - Optical Emission Spectrometry). Modified US EPA Method 200.7, 6010B and BS EN ISO 11885 2009	PM17	Modified method BS EN12457-2 As received solid samples are leached with water in a 10:1 water to soil ratio for 24 hours, the moisture content of the sample is included in the ratio.	Yes		AR	Yes
TM31	Modified USEPA 8015B. Determination of Methyltertbutylether, Benzene, Toluene, Ethylbenzene and Xylene by headspace GC-FID.	PM12	Modified US EPA method 5021. Preparation of solid and liquid samples for GC headspace analysis.			AR	Yes
TM31	Modified USEPA 8015B. Determination of Methyltertbutylether, Benzene, Toluene, Ethylbenzene and Xylene by headspace GC-FID.	PM12	Modified US EPA method 5021. Preparation of solid and liquid samples for GC headspace analysis.	Yes		AR	Yes
TM36	Modified US EPA method 8015B. Determination of Gasoline Range Organics (GRO) in the carbon chain range of C4-12 by headspace GC-FID. MTBE by GCFID co-elutes with 3-methylpentane if present and therefore can give a false positive. Positive MTBE results can be confirmed using GCMS.	PM12	Modified US EPA method 5021. Preparation of solid and liquid samples for GC headspace analysis.			AR	Yes
TM36	Modified US EPA method 8015B. Determination of Gasoline Range Organics (GRO) in the carbon chain range of C4-12 by headspace GC-FID. MTBE by GCFID co-elutes with 3-methylpentane if present and therefore can give a false positive. Positive MTBE results can be confirmed using GCMS.	PM12	Modified US EPA method 5021. Preparation of solid and liquid samples for GC headspace analysis.	Yes		AR	Yes
TM38	Soluble Ion analysis using Discrete Analyser. Modified US EPA methods 325.2 (Chloride), 375.4 (Sulphate), 365.2 (o-Phosphate), 353.1 (TON), 354.1 (Nitrite), 350.1 (NH4+) comparable to BS ISO 15923-1, 7196A (Hex Cr)	PM0	No preparation is required.	Yes		AR	Yes
TM38	Soluble Ion analysis using Discrete Analyser. Modified US EPA methods 325.2 (Chloride), 375.4 (Sulphate), 365.2 (o-Phosphate), 353.1 (TON), 354.1 (Nitrite), 350.1 (NH4+) comparable to BS ISO 15923-1, 7196A (Hex Cr)	PM20	Extraction of dried and ground or as received samples with deionised water in a 2:1 water to solid ratio using a reciprocal shaker for all analytes except hexavalent chromium. Extraction of as received sample using 10:1 ratio of 0.2M sodium hydroxide to soil for hexavalent chromium using a reciprocal shaker.	Yes		AD	Yes

EMT Job No: 19/18422

Test Method No.	Description	Prep Method No. (if appropriate)	Description	ISO 17025 (UKAS/SANAS)	MCERTS (UK soils only)	Analysis done on As Received (AR) or Dried (AD)	Reported on dry weight basis
TM38	Soluble Ion analysis using Discrete Analyser. Modified US EPA methods 325.2 (Chloride), 375.4 (Sulphate), 365.2 (o-Phosphate), 353.1 (TON), 354.1 (Nitrite), 350.1 (NH4+) comparable to BS ISO 15923-1, 7196A (Hex Cr)	PM20	Extraction of dried and ground or as received samples with deionised water in a 2:1 water to solid ratio using a reciprocal shaker for all analytes except hexavalent chromium. Extraction of as received sample using 10:1 ratio of 0.2M sodium hydroxide to soil for hexavalent chromium using a reciprocal shaker.	Yes		AR	Yes
TM60	TC/TOC analysis of Waters by High Temperature Combustion followed by NDIR detection. Based on the following modified standard methods: USEPA 9060, APHA Standard Methods for Examination of Water and Wastewater 5310B, ASTM D 7573, and USEPA 415.1.	PM0	No preparation is required.			AR	Yes
TM61	Modified US EPA methods 245.7 and 200.7. Determination of Mercury by Cold Vapour Atomic Fluorescence.	PM0	No preparation is required.	Yes		AR	Yes
TM65	Asbestos Bulk Identification method based on HSG 248.	PM42	Solid samples undergo a thorough visual inspection for asbestos fibres prior to asbestos identification using TM065.	Yes		AR	
TM73	Modified US EPA methods 150.1 and 9045D and BS1377:1990. Determination of pH by Metrohm automated probe analyser.	PM0	No preparation is required.			AR	Yes
TM73	Modified US EPA methods 150.1 and 9045D and BS1377:1990. Determination of pH by Metrohm automated probe analyser.	PM11	Extraction of as received solid samples using one part solid to 2.5 parts deionised water.	Yes		AR	No
TM173	Analysis of fluoride by ISE (Ion Selective Electrode) using modified ISE method 340.2	PM0	No preparation is required.			AR	Yes
NONE	No Method Code	NONE	No Method Code			AD	Yes
NONE	No Method Code	PM17	Modified method BS EN12457-2 As received solid samples are leached with water in a 10:1 water to soil ratio for 24 hours, the moisture content of the sample is included in the ratio.				
NONE	No Method Code	PM17	Modified method BS EN12457-2 As received solid samples are leached with water in a 10:1 water to soil ratio for 24 hours, the moisture content of the sample is included in the ratio.			AR	

EMT Job No: 19/18422

Test Method No.	Description	Prep Method No. (if appropriate)	Description	ISO 17025 (UKAS/SANAS)	MCERTS (UK soils only)	Analysis done on As Received (AR) or Dried (AD)	Reported on dry weight basis
NONE	No Method Code	PM4	Gravimetric measurement of Natural Moisture Content and % Moisture Content at either 35°C or 105°C. Calculation based on ISO 11465 and BS1377.			AR	

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Ground Investigations Ireland
Catherinestown House
Hazelhatch Road
Newcastle
Co. Dublin
Ireland

Attention :	Diarmaid MagLochlainn
Date :	31st December, 2019
Your reference :	9161-10-19
Our reference :	Test Report 19/18649 Batch 1
Location :	Baldoyle
Date samples received :	14th November, 2019
Status :	Final report
Issue :	2

Twenty three samples were received for analysis on 14th November, 2019 of which sixteen were scheduled for analysis. Please find attached our Test Report which should be read with notes at the end of the report and should include all sections if reproduced. Interpretations and opinions are outside the scope of any accreditation, and all results relate only to samples supplied.
All analysis is carried out on as received samples and reported on a dry weight basis unless stated otherwise. Results are not surrogate corrected.

Authorised By:

Phil Sommerton BSc
Senior Project Manager

Client Name: Ground Investigations Ireland
Reference: 9161-10-19
Location: Baldoyle
Contact: Diarmaid MagLochlainn
EMT Job No: 19/18649

Report : Solid

Solids: V=60g VOC jar, J=250g glass jar, T=plastic tub

EMT Sample No.	1-3	4-6	7-9	10-12	13-15	16-18	19-21	22-24	25-27	28-30	LOD/LOR	Units	Method No.
Sample ID	BH1	BH1	BH2	BH3	BH3	BH4	BH5	BH5	BH6	BH7			
Depth	0.50	3.00	1.00	1.00	2.00	2.00	1.00	3.00	1.00	0.50			
COC No / misc													
Containers	V J T	V J T	V J T	V J T	V J T	V J T	V J T	V J T	V J T	V J T			
Sample Date	12/11/2019	12/11/2019	12/11/2019	12/11/2019	12/11/2019	12/11/2019	12/11/2019	12/11/2019	12/11/2019	12/11/2019			
Sample Type	Soil	Soil	Soil	Soil	Soil	Soil	Soil	Soil	Soil	Soil			
Batch Number	1	1	1	1	1	1	1	1	1	1			
Date of Receipt	14/11/2019	14/11/2019	14/11/2019	14/11/2019	14/11/2019	14/11/2019	14/11/2019	14/11/2019	14/11/2019	14/11/2019			
Antimony	2	3	2	2	2	2	2	2	2	2	<1	mg/kg	TM30/PM15
Arsenic #	19.5	18.6	11.5	13.7	9.5	11.1	12.7	9.6	13.0	11.1	<0.5	mg/kg	TM30/PM15
Barium #	101	78	302	96	153	138	257	140	103	106	<1	mg/kg	TM30/PM15
Cadmium #	0.6	2.0	1.5	1.4	1.0	1.7	1.6	1.4	1.7	1.9	<0.1	mg/kg	TM30/PM15
Chromium #	52.0	42.8	84.5	36.9	104.8	45.1	50.6	52.0	45.1	35.9	<0.5	mg/kg	TM30/PM15
Copper #	26	29	34	28	28	26	28	24	26	29	<1	mg/kg	TM30/PM15
Lead #	15	21	35	19	15	17	20	17	17	19	<5	mg/kg	TM30/PM15
Mercury #	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	mg/kg	TM30/PM15
Molybdenum #	2.0	5.7	6.4	4.1	5.0	4.0	5.1	4.8	3.2	4.4	<0.1	mg/kg	TM30/PM15
Nickel #	40.6	54.2	36.7	41.2	47.1	38.5	39.7	32.1	42.0	40.6	<0.7	mg/kg	TM30/PM15
Selenium #	<1	3	2	<1	4	3	<1	2	<1	<1	<1	mg/kg	TM30/PM15
Zinc #	79	117	118	72	82	74	83	64	85	73	<5	mg/kg	TM30/PM15
PAH MS													
Naphthalene #	<0.04	<0.04	<0.04	<0.04	<0.04	<0.04	<0.04	<0.04	<0.04	<0.04	<0.04	mg/kg	TM4/PM8
Acenaphthylene	<0.03	<0.03	<0.03	<0.03	<0.03	<0.03	<0.03	<0.03	<0.03	<0.03	<0.03	mg/kg	TM4/PM8
Acenaphthene #	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	mg/kg	TM4/PM8
Fluorene #	<0.04	<0.04	<0.04	<0.04	<0.04	<0.04	<0.04	<0.04	<0.04	<0.04	<0.04	mg/kg	TM4/PM8
Phenanthrene #	<0.03	<0.03	0.17	<0.03	<0.03	<0.03	<0.03	<0.03	<0.03	<0.03	<0.03	mg/kg	TM4/PM8
Anthracene #	<0.04	<0.04	<0.04	<0.04	<0.04	<0.04	<0.04	<0.04	<0.04	<0.04	<0.04	mg/kg	TM4/PM8
Fluoranthene #	<0.03	<0.03	0.15	<0.03	<0.03	<0.03	<0.03	<0.03	<0.03	<0.03	<0.03	mg/kg	TM4/PM8
Pyrene #	<0.03	<0.03	0.13	<0.03	<0.03	<0.03	<0.03	<0.03	<0.03	<0.03	<0.03	mg/kg	TM4/PM8
Benzo(a)anthracene #	<0.06	<0.06	<0.06	<0.06	<0.06	<0.06	<0.06	<0.06	<0.06	<0.06	<0.06	mg/kg	TM4/PM8
Chrysene #	<0.02	<0.02	0.07	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	mg/kg	TM4/PM8
Benzo(bk)fluoranthene #	<0.07	<0.07	<0.07	<0.07	<0.07	<0.07	<0.07	<0.07	<0.07	<0.07	<0.07	mg/kg	TM4/PM8
Benzo(a)pyrene #	<0.04	<0.04	<0.04	<0.04	<0.04	<0.04	<0.04	<0.04	<0.04	<0.04	<0.04	mg/kg	TM4/PM8
Indeno(123cd)pyrene	<0.04	<0.04	<0.04	<0.04	<0.04	<0.04	<0.04	<0.04	<0.04	<0.04	<0.04	mg/kg	TM4/PM8
Dibenzo(ah)anthracene #	<0.04	<0.04	<0.04	<0.04	<0.04	<0.04	<0.04	<0.04	<0.04	<0.04	<0.04	mg/kg	TM4/PM8
Benzo(ghi)perylene #	<0.04	<0.04	<0.04	<0.04	<0.04	<0.04	<0.04	<0.04	<0.04	<0.04	<0.04	mg/kg	TM4/PM8
Coronene	<0.04	<0.04	<0.04	<0.04	<0.04	<0.04	<0.04	<0.04	<0.04	<0.04	<0.04	mg/kg	TM4/PM8
PAH 6 Total #	<0.22	<0.22	<0.22	<0.22	<0.22	<0.22	<0.22	<0.22	<0.22	<0.22	<0.22	mg/kg	TM4/PM8
PAH 17 Total	<0.64	<0.64	<0.64	<0.64	<0.64	<0.64	<0.64	<0.64	<0.64	<0.64	<0.64	mg/kg	TM4/PM8
Benzo(b)fluoranthene	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	mg/kg	TM4/PM8
Benzo(k)fluoranthene	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	mg/kg	TM4/PM8
Benzo(j)fluoranthene	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	mg/kg	TM4/PM8
PAH Surrogate % Recovery	89	92	92	91	88	88	95	92	89	83	<0	%	TM4/PM8
Mineral Oil (C10-C40)	<30	<30	<30	<30	<30	<30	<30	<30	<30	<30	<30	mg/kg	TM5/PM8/PM16

Please see attached notes for all abbreviations and acronyms

All solid results are expressed on a dry weight basis unless stated otherwise.

Client Name: Ground Investigations Ireland
Reference: 9161-10-19
Location: Baldoyle
Contact: Diarmaid MagLochlainn
EMT Job No: 19/18649

Report : Solid

Solids: V=60g VOC jar, J=250g glass jar, T=plastic tub

EMT Sample No.	1-3	4-6	7-9	10-12	13-15	16-18	19-21	22-24	25-27	28-30	LOD/LOR	Units	Method No.
Sample ID	BH1	BH1	BH2	BH3	BH3	BH4	BH5	BH5	BH6	BH7			
Depth	0.50	3.00	1.00	1.00	2.00	2.00	1.00	3.00	1.00	0.50			
COC No / misc													
Containers	V J T	V J T	V J T	V J T	V J T	V J T	V J T	V J T	V J T	V J T			
Sample Date	12/11/2019	12/11/2019	12/11/2019	12/11/2019	12/11/2019	12/11/2019	12/11/2019	12/11/2019	12/11/2019	12/11/2019			
Sample Type	Soil	Soil	Soil	Soil	Soil	Soil	Soil	Soil	Soil	Soil			
Batch Number	1	1	1	1	1	1	1	1	1	1			
Date of Receipt	14/11/2019	14/11/2019	14/11/2019	14/11/2019	14/11/2019	14/11/2019	14/11/2019	14/11/2019	14/11/2019	14/11/2019			
TPH CWG													
Aliphatics													
>C5-C6 #	<0.1	<0.1 SV	<0.1	<0.1	<0.1 SV	<0.1 SV	<0.1	<0.1 SV	<0.1	<0.1	<0.1	mg/kg	TM36/PM12
>C6-C8 #	<0.1	<0.1 SV	<0.1	<0.1	<0.1 SV	<0.1 SV	<0.1	<0.1 SV	<0.1	<0.1	<0.1	mg/kg	TM36/PM12
>C8-C10	<0.1	<0.1 SV	<0.1	<0.1	<0.1 SV	<0.1 SV	<0.1	<0.1 SV	<0.1	<0.1	<0.1	mg/kg	TM36/PM12
>C10-C12 #	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2	mg/kg	TM5/PM8/PM16
>C12-C16 #	<4	<4	<4	<4	<4	<4	<4	<4	<4	<4	<4	mg/kg	TM5/PM8/PM16
>C16-C21 #	<7	<7	<7	<7	<7	<7	<7	<7	<7	<7	<7	mg/kg	TM5/PM8/PM16
>C21-C35 #	<7	<7	<7	<7	<7	<7	<7	<7	<7	<7	<7	mg/kg	TM5/PM8/PM16
>C35-C40	<7	<7	<7	<7	<7	<7	<7	<7	<7	<7	<7	mg/kg	TM5/PM8/PM16
Total aliphatics C5-40	<26	<26	<26	<26	<26	<26	<26	<26	<26	<26	<26	mg/kg	TM5/TM36/PM8/PM12/PM16
>C6-C10	<0.1	<0.1 SV	<0.1	<0.1	<0.1 SV	<0.1 SV	<0.1	<0.1 SV	<0.1	<0.1	<0.1	mg/kg	TM36/PM12
>C10-C25	<10	<10	<10	<10	<10	<10	<10	<10	<10	<10	<10	mg/kg	TM5/PM8/PM16
>C25-C35	<10	<10	<10	<10	<10	<10	<10	<10	<10	<10	<10	mg/kg	TM5/PM8/PM16
Aromatics													
>C5-EC7 #	<0.1	<0.1 SV	<0.1	<0.1	<0.1 SV	<0.1 SV	<0.1	<0.1 SV	<0.1	<0.1	<0.1	mg/kg	TM36/PM12
>EC7-EC8 #	<0.1	<0.1 SV	<0.1	<0.1	<0.1 SV	<0.1 SV	<0.1	<0.1 SV	<0.1	<0.1	<0.1	mg/kg	TM36/PM12
>EC8-EC10 #	<0.1	<0.1 SV	<0.1	<0.1	<0.1 SV	<0.1 SV	<0.1	<0.1 SV	<0.1	<0.1	<0.1	mg/kg	TM36/PM12
>EC10-EC12 #	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2	mg/kg	TM5/PM8/PM16
>EC12-EC16 #	<4	<4	<4	<4	<4	<4	<4	<4	<4	<4	<4	mg/kg	TM5/PM8/PM16
>EC16-EC21 #	<7	<7	<7	<7	<7	<7	<7	<7	<7	<7	<7	mg/kg	TM5/PM8/PM16
>EC21-EC35 #	<7	<7	<7	<7	<7	<7	<7	<7	<7	<7	<7	mg/kg	TM5/PM8/PM16
>EC35-EC40	<7	<7	<7	<7	<7	<7	<7	<7	<7	<7	<7	mg/kg	TM5/PM8/PM16
Total aromatics C5-40	<26	<26	<26	<26	<26	<26	<26	<26	<26	<26	<26	mg/kg	TM5/TM36/PM8/PM12/PM16
Total aliphatics and aromatics(C5-40)	<52	<52	<52	<52	<52	<52	<52	<52	<52	<52	<52	mg/kg	TM5/TM36/PM8/PM12/PM16
>EC6-EC10 #	<0.1	<0.1 SV	<0.1	<0.1	<0.1 SV	<0.1 SV	<0.1	<0.1 SV	<0.1	<0.1	<0.1	mg/kg	TM36/PM12
>EC10-EC25	<10	<10	<10	<10	<10	<10	<10	<10	<10	<10	<10	mg/kg	TM5/PM8/PM16
>EC25-EC35	<10	<10	<10	<10	<10	<10	<10	<10	<10	<10	<10	mg/kg	TM5/PM8/PM16
MTBE #	<5	<5 SV	<5	<5	<5 SV	<5 SV	<5	<5 SV	<5	<5	<5	ug/kg	TM31/PM12
Benzene #	<5	<5 SV	<5	<5	<5 SV	<5 SV	<5	<5 SV	<5	<5	<5	ug/kg	TM31/PM12
Toluene #	<5	<5 SV	<5	<5	<5 SV	<5 SV	<5	<5 SV	<5	<5	<5	ug/kg	TM31/PM12
Ethylbenzene #	<5	<5 SV	<5	<5	<5 SV	<5 SV	<5	<5 SV	<5	<5	<5	ug/kg	TM31/PM12
m/p-Xylene #	<5	<5 SV	<5	<5	<5 SV	<5 SV	<5	<5 SV	<5	<5	<5	ug/kg	TM31/PM12
o-Xylene #	<5	<5 SV	<5	<5	<5 SV	<5 SV	<5	<5 SV	<5	<5	<5	ug/kg	TM31/PM12
PCB 28 #	<5	<5	<5	<5	<5	<5	<5	<5	<5	<5	<5	ug/kg	TM17/PM8
PCB 52 #	<5	<5	<5	<5	<5	<5	<5	<5	<5	<5	<5	ug/kg	TM17/PM8
PCB 101 #	<5	<5	<5	<5	<5	<5	<5	<5	<5	<5	<5	ug/kg	TM17/PM8
PCB 118 #	<5	<5	<5	<5	<5	<5	<5	<5	<5	<5	<5	ug/kg	TM17/PM8
PCB 138 #	<5	<5	<5	<5	<5	<5	<5	<5	<5	<5	<5	ug/kg	TM17/PM8
PCB 153 #	<5	<5	<5	<5	<5	<5	<5	<5	<5	<5	<5	ug/kg	TM17/PM8
PCB 180 #	<5	<5	<5	<5	<5	<5	<5	<5	<5	<5	<5	ug/kg	TM17/PM8
Total 7 PCBs #	<35	<35	<35	<35	<35	<35	<35	<35	<35	<35	<35	ug/kg	TM17/PM8

Please see attached notes for all abbreviations and acronyms

Element Materials Technology

Client Name: Ground Investigations Ireland
Reference: 9161-10-19
Location: Baldoyle
Contact: Diarmaid MagLochlainn
EMT Job No: 19/18649

Report : Solid

Solids: V=60g VOC jar, J=250g glass jar, T=plastic tub

EMT Sample No.	1-3	4-6	7-9	10-12	13-15	16-18	19-21	22-24	25-27	28-30	LOD/LOR	Units	Method No.
Sample ID	BH1	BH1	BH2	BH3	BH3	BH4	BH5	BH5	BH6	BH7			
Depth	0.50	3.00	1.00	1.00	2.00	2.00	1.00	3.00	1.00	0.50			
COC No / misc													
Containers	V J T	V J T	V J T	V J T	V J T	V J T	V J T	V J T	V J T	V J T			
Sample Date	12/11/2019	12/11/2019	12/11/2019	12/11/2019	12/11/2019	12/11/2019	12/11/2019	12/11/2019	12/11/2019	12/11/2019			
Sample Type	Soil	Soil	Soil	Soil	Soil	Soil	Soil	Soil	Soil	Soil			
Batch Number	1	1	1	1	1	1	1	1	1	1			
Date of Receipt	14/11/2019	14/11/2019	14/11/2019	14/11/2019	14/11/2019	14/11/2019	14/11/2019	14/11/2019	14/11/2019	14/11/2019			
Natural Moisture Content	15.1	14.8	83.5	<0.1	10.4	12.2	16.4	10.6	10.9	15.6	<0.1	%	PM4/PM0
Moisture Content (% Wet Weight)	13.1	12.9	45.5	<0.1	9.4	10.9	14.1	9.6	9.9	13.5	<0.1	%	PM4/PM0
Hexavalent Chromium #	<0.3	<0.3	<0.3	<0.3	<0.3	<0.3	<0.3	<0.3	<0.3	<0.3	<0.3	mg/kg	TM38/PM20
Sulphate as SO4 (2:1 Ext) #	-	-	-	0.0086	-	-	-	-	-	0.0136	<0.0015	g/l	TM38/PM20
Chromium III	52.0	42.8	84.5	36.9	104.8	45.1	50.6	52.0	45.1	35.9	<0.5	mg/kg	NONE/NONE
Total Organic Carbon #	0.31	0.50	1.43	0.41	0.45	0.59	0.45	0.55	0.30	0.43	<0.02	%	TM21/PM24
pH #	8.64	8.58	8.30	8.70	8.80	8.52	8.68	8.61	8.62	8.64	<0.01	pH units	TM73/PM11
Mass of raw test portion	0.108	0.1076	0.1169	0.1005	0.1004	0.1011	0.1058	0.1007	0.1035	0.1064		kg	NONE/PM17
Mass of dried test portion	0.09	0.09	0.09	0.09	0.09	0.09	0.09	0.09	0.09	0.09		kg	NONE/PM17

Please see attached notes for all abbreviations and acronyms

Element Materials Technology

Client Name: Ground Investigations Ireland
Reference: 9161-10-19
Location: Baldoyle
Contact: Diarmaid MagLochlainn
EMT Job No: 19/18649

Report : Solid

Solids: V=60g VOC jar, J=250g glass jar, T=plastic tub

EMT Sample No.	31-33	34-36	37-39	40-42	49-51	67-69					LOD/LOR	Units	Method No.
Sample ID	BH7	BH8	BH9	BH9	BH11	TP53							
Depth	2.00	1.50	1.00	3.00	2.00	0.50							
COC No / misc													
Containers	V J T	V J T	V J T	V J T	V J T	V J T							
Sample Date	12/11/2019	12/11/2019	12/11/2019	12/11/2019	12/11/2019	07/11/2019							
Sample Type	Soil	Soil	Soil	Soil	Soil	Soil							
Batch Number	1	1	1	1	1	1							
Date of Receipt	14/11/2019	14/11/2019	14/11/2019	14/11/2019	14/11/2019	14/11/2019							
Antimony	2	2	2	2	-	2					<1	mg/kg	TM30/PM15
Arsenic #	12.4	8.8	12.1	11.4	-	31.2					<0.5	mg/kg	TM30/PM15
Barium #	96	252	97	145	-	87					<1	mg/kg	TM30/PM15
Cadmium #	1.5	1.6	1.3	1.4	-	0.7					<0.1	mg/kg	TM30/PM15
Chromium #	31.9	34.2	59.3	44.4	-	86.4					<0.5	mg/kg	TM30/PM15
Copper #	23	21	22	28	-	31					<1	mg/kg	TM30/PM15
Lead #	18	13	18	19	-	30					<5	mg/kg	TM30/PM15
Mercury #	<0.1	<0.1	<0.1	<0.1	-	<0.1					<0.1	mg/kg	TM30/PM15
Molybdenum #	3.3	4.1	2.9	4.3	-	4.4					<0.1	mg/kg	TM30/PM15
Nickel #	35.3	30.4	34.5	36.3	-	50.0					<0.7	mg/kg	TM30/PM15
Selenium #	3	<1	<1	3	-	<1					<1	mg/kg	TM30/PM15
Zinc #	124	63	69	73	-	96					<5	mg/kg	TM30/PM15
PAH MS													
Naphthalene #	<0.04	<0.04	<0.04	<0.04	-	<0.04					<0.04	mg/kg	TM4/PM8
Acenaphthylene	<0.03	<0.03	<0.03	<0.03	-	<0.03					<0.03	mg/kg	TM4/PM8
Acenaphthene #	<0.05	<0.05	<0.05	<0.05	-	<0.05					<0.05	mg/kg	TM4/PM8
Fluorene #	<0.04	<0.04	<0.04	<0.04	-	<0.04					<0.04	mg/kg	TM4/PM8
Phenanthrene #	<0.03	<0.03	<0.03	<0.03	-	0.05					<0.03	mg/kg	TM4/PM8
Anthracene #	<0.04	<0.04	<0.04	<0.04	-	<0.04					<0.04	mg/kg	TM4/PM8
Fluoranthene #	<0.03	<0.03	<0.03	<0.03	-	0.09					<0.03	mg/kg	TM4/PM8
Pyrene #	<0.03	<0.03	<0.03	<0.03	-	0.08					<0.03	mg/kg	TM4/PM8
Benzo(a)anthracene #	<0.06	<0.06	<0.06	<0.06	-	0.07					<0.06	mg/kg	TM4/PM8
Chrysene #	<0.02	<0.02	<0.02	<0.02	-	0.06					<0.02	mg/kg	TM4/PM8
Benzo(bk)fluoranthene #	<0.07	<0.07	<0.07	<0.07	-	0.09					<0.07	mg/kg	TM4/PM8
Benzo(a)pyrene #	<0.04	<0.04	<0.04	<0.04	-	0.05					<0.04	mg/kg	TM4/PM8
Indeno(123cd)pyrene	<0.04	<0.04	<0.04	<0.04	-	<0.04					<0.04	mg/kg	TM4/PM8
Dibenzo(ah)anthracene #	<0.04	<0.04	<0.04	<0.04	-	<0.04					<0.04	mg/kg	TM4/PM8
Benzo(ghi)perylene #	<0.04	<0.04	<0.04	<0.04	-	<0.04					<0.04	mg/kg	TM4/PM8
Coronene	<0.04	<0.04	<0.04	<0.04	-	<0.04					<0.04	mg/kg	TM4/PM8
PAH 6 Total #	<0.22	<0.22	<0.22	<0.22	-	0.23					<0.22	mg/kg	TM4/PM8
PAH 17 Total	<0.64	<0.64	<0.64	<0.64	-	<0.64					<0.64	mg/kg	TM4/PM8
Benzo(b)fluoranthene	<0.05	<0.05	<0.05	<0.05	-	0.06					<0.05	mg/kg	TM4/PM8
Benzo(k)fluoranthene	<0.02	<0.02	<0.02	<0.02	-	0.03					<0.02	mg/kg	TM4/PM8
Benzo(j)fluoranthene	<1	<1	<1	<1	-	<1					<1	mg/kg	TM4/PM8
PAH Surrogate % Recovery	91	89	91	90	-	90					<0	%	TM4/PM8
Mineral Oil (C10-C40)	<30	<30	<30	<30	-	<30					<30	mg/kg	TM5/PM8/PM16

Please see attached notes for all abbreviations and acronyms

Element Materials Technology

Client Name: Ground Investigations Ireland
Reference: 9161-10-19
Location: Baldoyle
Contact: Diarmaid MagLochlainn
EMT Job No: 19/18649

Report : Solid

Solids: V=60g VOC jar, J=250g glass jar, T=plastic tub

Please see attached notes for all abbreviations and acronyms

EMT Sample No.	31-33	34-36	37-39	40-42	49-51	67-69					LOD/LOR	Units	Method No.
Sample ID	BH7	BH8	BH9	BH9	BH11	TP53							
Depth	2.00	1.50	1.00	3.00	2.00	0.50							
COC No / misc													
Containers	V J T	V J T	V J T	V J T	V J T	V J T							
Sample Date	12/11/2019	12/11/2019	12/11/2019	12/11/2019	12/11/2019	07/11/2019							
Sample Type	Soil	Soil	Soil	Soil	Soil	Soil							
Batch Number	1	1	1	1	1	1							
Date of Receipt	14/11/2019	14/11/2019	14/11/2019	14/11/2019	14/11/2019	14/11/2019							
TPH CWG													
Aliphatics													
>C5-C6 #	<0.1 SV	<0.1	<0.1	<0.1 SV	-	<0.1					<0.1	mg/kg	TM36/PM12
>C6-C8 #	<0.1 SV	<0.1	<0.1	<0.1 SV	-	<0.1					<0.1	mg/kg	TM36/PM12
>C8-C10	<0.1 SV	<0.1	<0.1	<0.1 SV	-	<0.1					<0.1	mg/kg	TM36/PM12
>C10-C12 #	<0.2	<0.2	<0.2	<0.2	-	<0.2					<0.2	mg/kg	TM5/PM8/PM16
>C12-C16 #	<4	<4	<4	<4	-	<4					<4	mg/kg	TM5/PM8/PM16
>C16-C21 #	<7	<7	<7	<7	-	<7					<7	mg/kg	TM5/PM8/PM16
>C21-C35 #	<7	<7	<7	<7	-	<7					<7	mg/kg	TM5/PM8/PM16
>C35-C40	<7	<7	<7	<7	-	<7					<7	mg/kg	TM5/PM8/PM16
Total aliphatics C5-40	<26	<26	<26	<26	-	<26					<26	mg/kg	TM5/TM36/PM8/PM12/PM16
>C6-C10	<0.1 SV	<0.1	<0.1	<0.1 SV	-	<0.1					<0.1	mg/kg	TM36/PM12
>C10-C25	<10	<10	<10	<10	-	<10					<10	mg/kg	TM5/PM8/PM16
>C25-C35	<10	<10	<10	<10	-	<10					<10	mg/kg	TM5/PM8/PM16
Aromatics													
>C5-EC7 #	<0.1 SV	<0.1	<0.1	<0.1 SV	-	<0.1					<0.1	mg/kg	TM36/PM12
>EC7-EC8 #	<0.1 SV	<0.1	<0.1	<0.1 SV	-	<0.1					<0.1	mg/kg	TM36/PM12
>EC8-EC10 #	<0.1 SV	<0.1	<0.1	<0.1 SV	-	<0.1					<0.1	mg/kg	TM36/PM12
>EC10-EC12 #	<0.2	<0.2	<0.2	<0.2	-	<0.2					<0.2	mg/kg	TM5/PM8/PM16
>EC12-EC16 #	<4	<4	<4	<4	-	<4					<4	mg/kg	TM5/PM8/PM16
>EC16-EC21 #	<7	<7	<7	<7	-	<7					<7	mg/kg	TM5/PM8/PM16
>EC21-EC35 #	<7	<7	<7	<7	-	<7					<7	mg/kg	TM5/PM8/PM16
>EC35-EC40	<7	<7	<7	<7	-	<7					<7	mg/kg	TM5/PM8/PM16
Total aromatics C5-40	<26	<26	<26	<26	-	<26					<26	mg/kg	TM5/TM36/PM8/PM12/PM16
Total aliphatics and aromatics(C5-40)	<52	<52	<52	<52	-	<52					<52	mg/kg	TM5/TM36/PM8/PM12/PM16
>EC6-EC10 #	<0.1 SV	<0.1	<0.1	<0.1 SV	-	<0.1					<0.1	mg/kg	TM36/PM12
>EC10-EC25	<10	<10	<10	<10	-	<10					<10	mg/kg	TM5/PM8/PM16
>EC25-EC35	<10	<10	<10	<10	-	<10					<10	mg/kg	TM5/PM8/PM16
MTBE #	<5 SV	<5	<5	<5 SV	-	<5					<5	ug/kg	TM31/PM12
Benzene #	<5 SV	<5	<5	<5 SV	-	<5					<5	ug/kg	TM31/PM12
Toluene #	<5 SV	<5	<5	<5 SV	-	<5					<5	ug/kg	TM31/PM12
Ethylbenzene #	<5 SV	<5	<5	<5 SV	-	<5					<5	ug/kg	TM31/PM12
m/p-Xylene #	<5 SV	<5	<5	<5 SV	-	<5					<5	ug/kg	TM31/PM12
o-Xylene #	<5 SV	<5	<5	<5 SV	-	<5					<5	ug/kg	TM31/PM12
PCB 28 #	<5	<5	<5	<5	-	<5					<5	ug/kg	TM17/PM8
PCB 52 #	<5	<5	<5	<5	-	<5					<5	ug/kg	TM17/PM8
PCB 101 #	<5	<5	<5	<5	-	<5					<5	ug/kg	TM17/PM8
PCB 118 #	<5	<5	<5	<5	-	<5					<5	ug/kg	TM17/PM8
PCB 138 #	<5	<5	<5	<5	-	<5					<5	ug/kg	TM17/PM8
PCB 153 #	<5	<5	<5	<5	-	<5					<5	ug/kg	TM17/PM8
PCB 180 #	<5	<5	<5	<5	-	<5					<5	ug/kg	TM17/PM8
Total 7 PCBs #	<35	<35	<35	<35	-	<35					<35	ug/kg	TM17/PM8

Element Materials Technology

Client Name: Ground Investigations Ireland
Reference: 9161-10-19
Location: Baldoyle
Contact: Diarmaid MagLochlainn
EMT Job No: 19/18649

Report : Solid

Solids: V=60g VOC jar, J=250g glass jar, T=plastic tub

EMT Sample No.	31-33	34-36	37-39	40-42	49-51	67-69					LOD/LOR	Units	Method No.
Sample ID	BH7	BH8	BH9	BH9	BH11	TP53							
Depth	2.00	1.50	1.00	3.00	2.00	0.50							
COC No / misc													
Containers	V J T	V J T	V J T	V J T	V J T	V J T							
Sample Date	12/11/2019	12/11/2019	12/11/2019	12/11/2019	12/11/2019	07/11/2019							
Sample Type	Soil	Soil	Soil	Soil	Soil	Soil							
Batch Number	1	1	1	1	1	1							
Date of Receipt	14/11/2019	14/11/2019	14/11/2019	14/11/2019	14/11/2019	14/11/2019							
Natural Moisture Content	15.8	14.6	19.0	11.3	-	14.8					<0.1	%	PM4/PM0
Moisture Content (% Wet Weight)	13.6	12.8	16.0	10.1	-	12.9					<0.1	%	PM4/PM0
Hexavalent Chromium #	<0.3	<0.3	<0.3	<0.3	-	<0.3					<0.3	mg/kg	TM38/PM20
Sulphate as SO4 (2:1 Ext) #	-	-	-	-	0.1697	-					<0.0015	g/l	TM38/PM20
Chromium III	31.9	34.2	59.3	44.4	-	86.4					<0.5	mg/kg	NONE/NONE
Total Organic Carbon #	0.51	0.36	0.61	0.81	-	0.74					<0.02	%	TM21/PM24
pH #	8.44	8.57	8.09	8.49	8.73	8.49					<0.01	pH units	TM73/PM11
Mass of raw test portion	0.106	0.1066	0.1029	0.1043	-	0.1027						kg	NONE/PM17
Mass of dried test portion	0.09	0.09	0.09	0.09	-	0.09						kg	NONE/PM17

Please see attached notes for all abbreviations and acronyms

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All solid results are expressed on a dry weight basis unless stated otherwise.

Client Name: Ground Investigations Ireland
Reference: 9161-10-19
Location: Baldoyle
Contact: Diarmaid MagLochlainn
EMT Job No: 19/18649

Report : CEN 10:1 1 Batch

Solids: V=60g VOC jar, J=250g glass jar, T=plastic tub

EMT Sample No.	1-3	4-6	7-9	10-12	13-15	16-18	19-21	22-24	25-27	28-30	LOD/LOR	Units	Method No.
Sample ID	BH1	BH1	BH2	BH3	BH3	BH4	BH5	BH5	BH6	BH7			
Depth	0.50	3.00	1.00	1.00	2.00	2.00	1.00	3.00	1.00	0.50			
COC No / misc													
Containers	V J T	V J T	V J T	V J T	V J T	V J T	V J T	V J T	V J T	V J T			
Sample Date	12/11/2019	12/11/2019	12/11/2019	12/11/2019	12/11/2019	12/11/2019	12/11/2019	12/11/2019	12/11/2019	12/11/2019			
Sample Type	Soil	Soil	Soil	Soil	Soil	Soil	Soil	Soil	Soil	Soil			
Batch Number	1	1	1	1	1	1	1	1	1	1			
Date of Receipt	14/11/2019	14/11/2019	14/11/2019	14/11/2019	14/11/2019	14/11/2019	14/11/2019	14/11/2019	14/11/2019	14/11/2019			
Dissolved Antimony #	0.003	<0.002	<0.002	0.002	<0.002	0.003	<0.002	0.003	<0.002	<0.002	<0.002	mg/l	TM30/PM17
Dissolved Antimony (A10) #	0.03	<0.02	<0.02	<0.02	<0.02	0.03	<0.02	0.03	<0.02	<0.02	<0.02	mg/kg	TM30/PM17
Dissolved Arsenic #	<0.0025	<0.0025	<0.0025	<0.0025	<0.0025	<0.0025	<0.0025	<0.0025	<0.0025	<0.0025	<0.0025	mg/l	TM30/PM17
Dissolved Arsenic (A10) #	<0.025	<0.025	<0.025	<0.025	<0.025	<0.025	<0.025	<0.025	<0.025	<0.025	<0.025	mg/kg	TM30/PM17
Dissolved Barium #	0.007	0.012	0.012	0.008	0.013	0.044	0.006	0.032	<0.003	0.006	<0.003	mg/l	TM30/PM17
Dissolved Barium (A10) #	0.07	0.12	0.12	0.08	0.13	0.44	0.06	0.32	<0.03	0.06	<0.03	mg/kg	TM30/PM17
Dissolved Cadmium #	<0.0005	<0.0005	<0.0005	<0.0005	<0.0005	<0.0005	<0.0005	<0.0005	<0.0005	<0.0005	<0.0005	mg/l	TM30/PM17
Dissolved Cadmium (A10) #	<0.005	<0.005	<0.005	<0.005	<0.005	<0.005	<0.005	<0.005	<0.005	<0.005	<0.005	mg/kg	TM30/PM17
Dissolved Chromium #	<0.0015	<0.0015	<0.0015	<0.0015	<0.0015	<0.0015	<0.0015	<0.0015	<0.0015	<0.0015	<0.0015	mg/l	TM30/PM17
Dissolved Chromium (A10) #	<0.015	<0.015	<0.015	<0.015	<0.015	<0.015	<0.015	<0.015	<0.015	<0.015	<0.015	mg/kg	TM30/PM17
Dissolved Copper #	<0.007	<0.007	<0.007	<0.007	<0.007	<0.007	<0.007	<0.007	<0.007	<0.007	<0.007	mg/l	TM30/PM17
Dissolved Copper (A10) #	<0.07	<0.07	<0.07	<0.07	<0.07	<0.07	<0.07	<0.07	<0.07	<0.07	<0.07	mg/kg	TM30/PM17
Dissolved Lead #	<0.005	<0.005	<0.005	<0.005	<0.005	<0.005	<0.005	<0.005	<0.005	<0.005	<0.005	mg/l	TM30/PM17
Dissolved Lead (A10) #	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	mg/kg	TM30/PM17
Dissolved Molybdenum #	0.016	0.056	0.007	0.009	0.028	0.022	0.018	0.015	0.010	0.014	<0.002	mg/l	TM30/PM17
Dissolved Molybdenum (A10) #	0.16	0.56	0.07	0.09	0.28	0.22	0.18	0.15	0.10	0.14	<0.02	mg/kg	TM30/PM17
Dissolved Nickel #	<0.002	<0.002	<0.002	<0.002	<0.002	<0.002	<0.002	<0.002	<0.002	<0.002	<0.002	mg/l	TM30/PM17
Dissolved Nickel (A10) #	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	mg/kg	TM30/PM17
Dissolved Selenium #	<0.003	<0.003	<0.003	<0.003	<0.003	0.029	<0.003	0.044	<0.003	<0.003	<0.003	mg/l	TM30/PM17
Dissolved Selenium (A10) #	<0.03	<0.03	<0.03	<0.03	<0.03	0.29	<0.03	0.44	<0.03	<0.03	<0.03	mg/kg	TM30/PM17
Dissolved Zinc #	0.003	0.004	0.005	0.003	0.004	0.003	<0.003	<0.003	<0.003	0.003	<0.003	mg/l	TM30/PM17
Dissolved Zinc (A10) #	<0.03	0.04	0.05	<0.03	0.04	<0.03	<0.03	<0.03	<0.03	<0.03	<0.03	mg/kg	TM30/PM17
Mercury Dissolved by CVAF #	<0.00001	<0.00001	<0.00001	<0.00001	<0.00001	<0.00001	<0.00001	0.00001	<0.00001	<0.00001	<0.00001	mg/l	TM61/PM0
Mercury Dissolved by CVAF #	<0.0001	<0.0001	<0.0001	<0.0001	<0.0001	<0.0001	<0.0001	<0.0001	<0.0001	<0.0001	<0.0001	mg/kg	TM61/PM0
Phenol	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	mg/l	TM26/PM0
Phenol	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	mg/kg	TM26/PM0
Fluoride	0.4	0.4	0.5	0.3	0.3	<0.3	0.3	<0.3	0.7	0.4	<0.3	mg/l	TM173/PM0
Fluoride	4	4	5	<3	3	<3	3	<3	7	4	<3	mg/kg	TM173/PM0
Sulphate as SO4 #	21.1	10.8	0.6	0.6	2.4	17.4	0.7	22.6	0.6	2.0	<0.5	mg/l	TM38/PM0
Sulphate as SO4 #	211	108	6	6	24	174	7	226	6	20	<5	mg/kg	TM38/PM0
Chloride #	<0.3	0.3	<0.3	<0.3	<0.3	6.9	0.3	7.8	<0.3	0.7	<0.3	mg/l	TM38/PM0
Chloride #	<3	<3	<3	<3	<3	69	3	78	<3	7	<3	mg/kg	TM38/PM0
Dissolved Organic Carbon	<2	<2	4	<2	<2	<2	<2	<2	<2	<2	<2	mg/l	TM60/PM0
Dissolved Organic Carbon	<20	<20	40	<20	<20	<20	<20	<20	<20	<20	<20	mg/kg	TM60/PM0
pH	8.11	8.05	8.11	8.09	8.12	7.93	8.07	7.89	7.99	8.07	<0.01	pH units	TM73/PM0
Total Dissolved Solids #	134	84	128	86	89	141	114	89	69	73	<35	mg/l	TM20/PM0
Total Dissolved Solids #	1339	840	1279	860	890	1410	1141	890	690	730	<350	mg/kg	TM20/PM0

Please see attached notes for all abbreviations and acronyms

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Client Name: Ground Investigations Ireland
Reference: 9161-10-19
Location: Baldoyle
Contact: Diarmaid MagLochlainn
EMT Job No: 19/18649

Report : CEN 10:1 1 Batch

Solids: V=60g VOC jar, J=250g glass jar, T=plastic tub

Please see attached notes for all abbreviations and acronyms

EMT Sample No.	31-33	34-36	37-39	40-42	67-69						LOD/LOR	Units	Method No.
Sample ID	BH7	BH8	BH9	BH9	TP53								
Depth	2.00	1.50	1.00	3.00	0.50								
COC No / misc													
Containers	V J T	V J T	V J T	V J T	V J T								
Sample Date	12/11/2019	12/11/2019	12/11/2019	12/11/2019	07/11/2019								
Sample Type	Soil	Soil	Soil	Soil	Soil								
Batch Number	1	1	1	1	1								
Date of Receipt	14/11/2019	14/11/2019	14/11/2019	14/11/2019	14/11/2019								
Dissolved Antimony #	0.002	<0.002	<0.002	<0.002	<0.002						<0.002	mg/l	TM30/PM17
Dissolved Antimony (A10) #	<0.02	<0.02	<0.02	<0.02	<0.02						<0.02	mg/kg	TM30/PM17
Dissolved Arsenic #	<0.0025	<0.0025	<0.0025	<0.0025	0.0039						<0.0025	mg/l	TM30/PM17
Dissolved Arsenic (A10) #	<0.025	<0.025	<0.025	<0.025	0.039						<0.025	mg/kg	TM30/PM17
Dissolved Barium #	0.051	0.006	0.005	0.055	<0.003						<0.003	mg/l	TM30/PM17
Dissolved Barium (A10) #	0.51	0.06	0.05	0.55	<0.03						<0.03	mg/kg	TM30/PM17
Dissolved Cadmium #	<0.0005	<0.0005	<0.0005	<0.0005	<0.0005						<0.0005	mg/l	TM30/PM17
Dissolved Cadmium (A10) #	<0.005	<0.005	<0.005	<0.005	<0.005						<0.005	mg/kg	TM30/PM17
Dissolved Chromium #	<0.0015	<0.0015	<0.0015	<0.0015	<0.0015						<0.0015	mg/l	TM30/PM17
Dissolved Chromium (A10) #	<0.015	<0.015	<0.015	<0.015	<0.015						<0.015	mg/kg	TM30/PM17
Dissolved Copper #	<0.007	<0.007	<0.007	<0.007	<0.007						<0.007	mg/l	TM30/PM17
Dissolved Copper (A10) #	<0.07	<0.07	<0.07	<0.07	<0.07						<0.07	mg/kg	TM30/PM17
Dissolved Lead #	<0.005	<0.005	<0.005	<0.005	<0.005						<0.005	mg/l	TM30/PM17
Dissolved Lead (A10) #	<0.05	<0.05	<0.05	<0.05	<0.05						<0.05	mg/kg	TM30/PM17
Dissolved Molybdenum #	0.021	0.012	0.007	0.025	0.011						<0.002	mg/l	TM30/PM17
Dissolved Molybdenum (A10) #	0.21	0.12	0.07	0.25	0.11						<0.02	mg/kg	TM30/PM17
Dissolved Nickel #	<0.002	<0.002	<0.002	<0.002	<0.002						<0.002	mg/l	TM30/PM17
Dissolved Nickel (A10) #	<0.02	<0.02	<0.02	<0.02	<0.02						<0.02	mg/kg	TM30/PM17
Dissolved Selenium #	0.046	<0.003	<0.003	0.041	<0.003						<0.003	mg/l	TM30/PM17
Dissolved Selenium (A10) #	0.46	<0.03	<0.03	0.41	<0.03						<0.03	mg/kg	TM30/PM17
Dissolved Zinc #	<0.003	0.003	<0.003	0.004	<0.003						<0.003	mg/l	TM30/PM17
Dissolved Zinc (A10) #	<0.03	<0.03	<0.03	0.04	<0.03						<0.03	mg/kg	TM30/PM17
Mercury Dissolved by CVAF #	0.00002	<0.00001	<0.00001	0.00001	<0.00001						<0.00001	mg/l	TM61/PM0
Mercury Dissolved by CVAF #	0.0002	<0.0001	<0.0001	0.0001	<0.0001						<0.0001	mg/kg	TM61/PM0
Phenol	<0.01	<0.01	<0.01	<0.01	<0.01						<0.01	mg/l	TM26/PM0
Phenol	<0.1	<0.1	<0.1	<0.1	<0.1						<0.1	mg/kg	TM26/PM0
Fluoride	0.3	<0.3	0.6	<0.3	<0.3						<0.3	mg/l	TM173/PM0
Fluoride	<3	<3	6	<3	<3						<3	mg/kg	TM173/PM0
Sulphate as SO4 #	22.7	3.1	5.0	17.5	7.3						<0.5	mg/l	TM38/PM0
Sulphate as SO4 #	227	31	50	175	73						<5	mg/kg	TM38/PM0
Chloride #	7.0	<0.3	<0.3	6.9	<0.3						<0.3	mg/l	TM38/PM0
Chloride #	70	<3	<3	69	<3						<3	mg/kg	TM38/PM0
Dissolved Organic Carbon	<2	4	<2	3	<2						<2	mg/l	TM60/PM0
Dissolved Organic Carbon	<20	40	<20	30	<20						<20	mg/kg	TM60/PM0
pH	7.99	7.07	7.70	8.00	8.20						<0.01	pH units	TM73/PM0
Total Dissolved Solids #	106	74	155	104	54						<35	mg/l	TM20/PM0
Total Dissolved Solids #	1059	740	1550	1040	540						<350	mg/kg	TM20/PM0

Element Materials Technology

Client Name: Ground Investigations Ireland
Reference: 9161-10-19
Location: Baldoyle
Contact: Diarmaid MagLochlainn
EMT Job No: 19/18649

Report : EN12457_2

Solids: V=60g VOC jar, J=250g glass jar, T=plastic tub

Please see attached notes for all abbreviations and acronyms

EMT Sample No.	1-3	4-6	7-9	10-12	13-15	16-18	19-21	22-24	25-27	28-30						
Sample ID	BH1	BH1	BH2	BH3	BH3	BH4	BH5	BH5	BH6	BH7						
Depth	0.50	3.00	1.00	1.00	2.00	2.00	1.00	3.00	1.00	0.50						
COC No / misc																
Containers	V J T	V J T	V J T	V J T	V J T	V J T	V J T	V J T	V J T	V J T						
Sample Date	12/11/2019	12/11/2019	12/11/2019	12/11/2019	12/11/2019	12/11/2019	12/11/2019	12/11/2019	12/11/2019	12/11/2019						
Sample Type	Soil	Soil	Soil	Soil	Soil	Soil	Soil	Soil	Soil	Soil						
Batch Number	1	1	1	1	1	1	1	1	1	1	Inert	Stable Non-reactive	Hazardous	LOD LOR	Units	Method No.
Date of Receipt	14/11/2019	14/11/2019	14/11/2019	14/11/2019	14/11/2019	14/11/2019	14/11/2019	14/11/2019	14/11/2019	14/11/2019						
Solid Waste Analysis																
Total Organic Carbon #	0.31	0.50	1.43	0.41	0.45	0.59	0.45	0.55	0.30	0.43	3	5	6	<0.02	%	TM21/PM24
Sum of BTEX	<0.025	<0.025 SV	<0.025	<0.025	<0.025 SV	<0.025 SV	<0.025	<0.025 SV	<0.025	<0.025	6	-	-	<0.025	mg/kg	TM31/PM12
Sum of 7 PCBs #	<0.035	<0.035	<0.035	<0.035	<0.035	<0.035	<0.035	<0.035	<0.035	<0.035	1	-	-	<0.035	mg/kg	TM17/PM8
Mineral Oil	<30	<30	<30	<30	<30	<30	<30	<30	<30	<30	500	-	-	<30	mg/kg	TM5/PM8/PM16
PAH Sum of 6 #	<0.22	<0.22	<0.22	<0.22	<0.22	<0.22	<0.22	<0.22	<0.22	<0.22	-	-	-	<0.22	mg/kg	TM4/PM8
PAH Sum of 17	<0.64	<0.64	<0.64	<0.64	<0.64	<0.64	<0.64	<0.64	<0.64	<0.64	100	-	-	<0.64	mg/kg	TM4/PM8
CEN 10:1 Leachate																
Arsenic #	<0.025	<0.025	<0.025	<0.025	<0.025	<0.025	<0.025	<0.025	<0.025	<0.025	0.5	2	25	<0.025	mg/kg	TM30/PM17
Barium #	0.07	0.12	0.12	0.08	0.13	0.44	0.06	0.32	<0.03	0.06	20	100	300	<0.03	mg/kg	TM30/PM17
Cadmium #	<0.005	<0.005	<0.005	<0.005	<0.005	<0.005	<0.005	<0.005	<0.005	<0.005	0.04	1	5	<0.005	mg/kg	TM30/PM17
Chromium #	<0.015	<0.015	<0.015	<0.015	<0.015	<0.015	<0.015	<0.015	<0.015	<0.015	0.5	10	70	<0.015	mg/kg	TM30/PM17
Copper #	<0.07	<0.07	<0.07	<0.07	<0.07	<0.07	<0.07	<0.07	<0.07	<0.07	2	50	100	<0.07	mg/kg	TM30/PM17
Mercury #	<0.0001	<0.0001	<0.0001	<0.0001	<0.0001	<0.0001	<0.0001	<0.0001	<0.0001	<0.0001	0.01	0.2	2	<0.0001	mg/kg	TM61/PM0
Molybdenum #	0.16	0.56	0.07	0.09	0.28	0.22	0.18	0.15	0.10	0.14	0.5	10	30	<0.02	mg/kg	TM30/PM17
Nickel #	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	0.4	10	40	<0.02	mg/kg	TM30/PM17
Lead #	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	0.5	10	50	<0.05	mg/kg	TM30/PM17
Antimony #	0.03	<0.02	<0.02	<0.02	<0.02	0.03	<0.02	0.03	<0.02	<0.02	0.06	0.7	5	<0.02	mg/kg	TM30/PM17
Selenium #	<0.03	<0.03	<0.03	<0.03	<0.03	0.29	<0.03	0.44	<0.03	<0.03	0.1	0.5	7	<0.03	mg/kg	TM30/PM17
Zinc #	<0.03	0.04	0.05	<0.03	0.04	<0.03	<0.03	<0.03	<0.03	<0.03	4	50	200	<0.03	mg/kg	TM30/PM17
Total Dissolved Solids #	1339	840	1279	860	890	1410	1141	890	690	730	4000	60000	100000	<350	mg/kg	TM20/PM0
Dissolved Organic Carbon	<20	<20	40	<20	<20	<20	<20	<20	<20	<20	500	800	1000	<20	mg/kg	TM60/PM0
Mass of raw test portion	0.108	0.1076	0.1169	0.1005	0.1004	0.1011	0.1058	0.1007	0.1035	0.1064	-	-	-		kg	NONE/PM17
Dry Matter Content Ratio	83.6	83.6	77.2	89.2	89.9	89.1	85.4	89.3	87.4	84.5	-	-	-	<0.1	%	NONE/PM4
Leachant Volume	0.882	0.882	0.873	0.889	0.89	0.889	0.885	0.889	0.887	0.883	-	-	-		l	NONE/PM17
Eluate Volume	0.8	0.8	0.8	0.8	0.8	0.8	0.8	0.8	0.8	0.8	-	-	-		l	NONE/PM17
pH #	8.64	8.58	8.30	8.70	8.80	8.52	8.68	8.61	8.62	8.64	-	-	-	<0.01	pH units	TM73/PM11
Phenol	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	1	-	-	<0.1	mg/kg	TM26/PM0
Fluoride	4	4	5	<3	3	<3	3	<3	7	4	-	-	-	<3	mg/kg	TM173/PM0
Sulphate as SO4 #	211	108	6	6	24	174	7	226	6	20	1000	20000	50000	<5	mg/kg	TM38/PM0
Chloride #	<3	<3	<3	<3	<3	69	3	78	<3	7	800	15000	25000	<3	mg/kg	TM38/PM0

All solid results are expressed on a dry weight basis unless stated otherwise.

Element Materials Technology

Client Name: Ground Investigations Ireland
Reference: 9161-10-19
Location: Baldoyle
Contact: Diarmaid MagLochlainn
EMT Job No: 19/18649

Report : EN12457_2

Solids: V=60g VOC jar, J=250g glass jar, T=plastic tub

Please see attached notes for all abbreviations and acronyms

EMT Sample No.	31-33	34-36	37-39	40-42	67-69						Inert	Stable Non-reactive	Hazardous	LOD LOR	Units	Method No.
Sample ID	BH7	BH8	BH9	BH9	TP53											
Depth	2.00	1.50	1.00	3.00	0.50											
COC No / misc																
Containers	V J T	V J T	V J T	V J T	V J T											
Sample Date	12/11/2019	12/11/2019	12/11/2019	12/11/2019	07/11/2019											
Sample Type	Soil	Soil	Soil	Soil	Soil											
Batch Number	1	1	1	1	1											
Date of Receipt	14/11/2019	14/11/2019	14/11/2019	14/11/2019	14/11/2019											
Solid Waste Analysis																
Total Organic Carbon #	0.51	0.36	0.61	0.81	0.74						3	5	6	<0.02	%	TM21/PM24
Sum of BTEX	<0.025 SV	<0.025	<0.025	<0.025 SV	<0.025						6	-	-	<0.025	mg/kg	TM31/PM12
Sum of 7 PCBs #	<0.035	<0.035	<0.035	<0.035	<0.035						1	-	-	<0.035	mg/kg	TM17/PM8
Mineral Oil	<30	<30	<30	<30	<30						500	-	-	<30	mg/kg	TM5/PM8/PM16
PAH Sum of 6 #	<0.22	<0.22	<0.22	<0.22	0.23						-	-	-	<0.22	mg/kg	TM4/PM8
PAH Sum of 17	<0.64	<0.64	<0.64	<0.64	<0.64						100	-	-	<0.64	mg/kg	TM4/PM8
CEN 10:1 Leachate																
Arsenic #	<0.025	<0.025	<0.025	<0.025	0.039						0.5	2	25	<0.025	mg/kg	TM30/PM17
Barium #	0.51	0.06	0.05	0.55	<0.03						20	100	300	<0.03	mg/kg	TM30/PM17
Cadmium #	<0.005	<0.005	<0.005	<0.005	<0.005						0.04	1	5	<0.005	mg/kg	TM30/PM17
Chromium #	<0.015	<0.015	<0.015	<0.015	<0.015						0.5	10	70	<0.015	mg/kg	TM30/PM17
Copper #	<0.07	<0.07	<0.07	<0.07	<0.07						2	50	100	<0.07	mg/kg	TM30/PM17
Mercury #	0.0002	<0.0001	<0.0001	0.0001	<0.0001						0.01	0.2	2	<0.0001	mg/kg	TM61/PM0
Molybdenum #	0.21	0.12	0.07	0.25	0.11						0.5	10	30	<0.02	mg/kg	TM30/PM17
Nickel #	<0.02	<0.02	<0.02	<0.02	<0.02						0.4	10	40	<0.02	mg/kg	TM30/PM17
Lead #	<0.05	<0.05	<0.05	<0.05	<0.05						0.5	10	50	<0.05	mg/kg	TM30/PM17
Antimony #	<0.02	<0.02	<0.02	<0.02	<0.02						0.06	0.7	5	<0.02	mg/kg	TM30/PM17
Selenium #	0.46	<0.03	<0.03	0.41	<0.03						0.1	0.5	7	<0.03	mg/kg	TM30/PM17
Zinc #	<0.03	<0.03	<0.03	0.04	<0.03						4	50	200	<0.03	mg/kg	TM30/PM17
Total Dissolved Solids #	1059	740	1550	1040	540						4000	60000	100000	<350	mg/kg	TM20/PM0
Dissolved Organic Carbon	<20	40	<20	30	<20						500	800	1000	<20	mg/kg	TM60/PM0
Mass of raw test portion	0.106	0.1066	0.1029	0.1043	0.1027						-	-	-		kg	NONE/PM17
Dry Matter Content Ratio	85.2	84.2	87.2	86.2	87.6						-	-	-	<0.1	%	NONE/PM4
Leachant Volume	0.884	0.883	0.887	0.886	0.887						-	-	-		l	NONE/PM17
Eluate Volume	0.8	0.85	0.8	0.75	0.85						-	-	-		l	NONE/PM17
pH #	8.44	8.57	8.09	8.49	8.49						-	-	-	<0.01	pH units	TM73/PM11
Phenol	<0.1	<0.1	<0.1	<0.1	<0.1						1	-	-	<0.1	mg/kg	TM26/PM0
Fluoride	<3	<3	6	<3	<3						-	-	-	<3	mg/kg	TM173/PM0
Sulphate as SO4 #	227	31	50	175	73						1000	20000	50000	<5	mg/kg	TM38/PM0
Chloride #	70	<3	<3	69	<3						800	15000	25000	<3	mg/kg	TM38/PM0

Please include all sections of this report if it is reproduced
All solid results are expressed on a dry weight basis unless stated otherwise.

Client Name: Ground Investigations Ireland

Reference: 9161-10-19

Location: Baldoyle

Contact: Diarmaid MagLochlainn

Matrix : Solid

EMT Job No.	Batch	Sample ID	Depth	EMT Sample No.	EPH Interpretation
19/18649	1	BH1	0.50	1-3	No interpretation possible
19/18649	1	BH1	3.00	4-6	No interpretation possible
19/18649	1	BH2	1.00	7-9	No interpretation possible
19/18649	1	BH3	1.00	10-12	No interpretation possible
19/18649	1	BH3	2.00	13-15	No interpretation possible
19/18649	1	BH4	2.00	16-18	No interpretation possible
19/18649	1	BH5	1.00	19-21	No interpretation possible
19/18649	1	BH5	3.00	22-24	No interpretation possible
19/18649	1	BH6	1.00	25-27	No interpretation possible
19/18649	1	BH7	0.50	28-30	No interpretation possible
19/18649	1	BH7	2.00	31-33	No interpretation possible
19/18649	1	BH8	1.50	34-36	No interpretation possible
19/18649	1	BH9	1.00	37-39	No interpretation possible
19/18649	1	BH9	3.00	40-42	No interpretation possible
19/18649	1	TP53	0.50	67-69	No interpretation possible

Client Name: Ground Investigations Ireland
Reference: 19/10/9161
Location: Baldoyle
Contact: Diarmaid MagLochlainn

Note:

Asbestos Screen analysis is carried out in accordance with our documented in-house methods PM042 and TM065 and HSG 248 by Stereo and Polarised Light Microscopy using Dispersion Staining Techniques and is covered by our UKAS accreditation. Detailed Gravimetric Quantification and PCOM Fibre Analysis is carried out in accordance with our documented in-house methods PM042 and TM131 and HSG 248 using Stereo and Polarised Light Microscopy and Phase Contrast Optical Microscopy (PCOM). Samples are retained for not less than 6 months from the date of analysis unless specifically requested.

Opinions, including ACM type and Asbestos level less than 0.1%, lie outside the scope of our UKAS accreditation.

Where the sample is not taken by a Element Materials Technology consultant, Element Materials Technology cannot be responsible for inaccurate or unrepresentative sampling.

EMT Job No.	Batch	Sample ID	Depth	EMT Sample No.	Date Of Analysis	Analysis	Result
19/18649	1	BH1	0.50	2	18/11/2019	**General Description (Bulk Analysis)**	soil-stones
					18/11/2019	**Asbestos Fibres**	NAD
					18/11/2019	**Asbestos ACM**	NAD
					18/11/2019	**Asbestos Type**	NAD
					18/11/2019	**Asbestos Level Screen**	NAD
19/18649	1	BH1	3.00	5	18/11/2019	**General Description (Bulk Analysis)**	Soil/Stones
					18/11/2019	**Asbestos Fibres**	NAD
					18/11/2019	**Asbestos ACM**	NAD
					18/11/2019	**Asbestos Type**	NAD
					18/11/2019	**Asbestos Level Screen**	NAD
19/18649	1	BH2	1.00	8	18/11/2019	**General Description (Bulk Analysis)**	Soil/Stones
					18/11/2019	**Asbestos Fibres**	NAD
					18/11/2019	**Asbestos ACM**	NAD
					18/11/2019	**Asbestos Type**	NAD
					18/11/2019	**Asbestos Level Screen**	NAD
19/18649	1	BH3	1.00	11	18/11/2019	**General Description (Bulk Analysis)**	Soil/Stones
					18/11/2019	**Asbestos Fibres**	NAD
					18/11/2019	**Asbestos ACM**	NAD
					18/11/2019	**Asbestos Type**	NAD
					18/11/2019	**Asbestos Level Screen**	NAD
19/18649	1	BH3	2.00	14	18/11/2019	**General Description (Bulk Analysis)**	Soil/Stones
					18/11/2019	**Asbestos Fibres**	NAD
					18/11/2019	**Asbestos ACM**	NAD
					18/11/2019	**Asbestos Type**	NAD
					18/11/2019	**Asbestos Level Screen**	NAD
19/18649	1	BH4	2.00	17	18/11/2019	**General Description (Bulk Analysis)**	Soil/Stones
					18/11/2019	**Asbestos Fibres**	NAD
					18/11/2019	**Asbestos ACM**	NAD
					18/11/2019	**Asbestos Type**	NAD
					18/11/2019	**Asbestos Level Screen**	NAD
19/18649	1	BH5	1.00	20	18/11/2019	**General Description (Bulk Analysis)**	Soil/Stones
					18/11/2019	**Asbestos Fibres**	NAD
					18/11/2019	**Asbestos ACM**	NAD

Client Name: Ground Investigations Ireland
Reference: 19/10/9161
Location: Baldoyle
Contact: Diarmaid MagLochlainn

EMT Job No.	Batch	Sample ID	Depth	EMT Sample No.	Date Of Analysis	Analysis	Result
19/18649	1	BH5	1.00	20	18/11/2019	**Asbestos Type**	NAD
					18/11/2019	**Asbestos Level Screen**	NAD
19/18649	1	BH5	3.00	23	18/11/2019	**General Description (Bulk Analysis)**	Soil/Stones
					18/11/2019	**Asbestos Fibres**	NAD
					18/11/2019	**Asbestos ACM**	NAD
					18/11/2019	**Asbestos Type**	NAD
					18/11/2019	**Asbestos Level Screen**	NAD
19/18649	1	BH6	1.00	26	18/11/2019	**General Description (Bulk Analysis)**	soil-stones
					18/11/2019	**Asbestos Fibres**	NAD
					18/11/2019	**Asbestos ACM**	NAD
					18/11/2019	**Asbestos Type**	NAD
					18/11/2019	**Asbestos Level Screen**	NAD
19/18649	1	BH7	0.50	29	18/11/2019	**General Description (Bulk Analysis)**	Soil/Stones
					18/11/2019	**Asbestos Fibres**	NAD
					18/11/2019	**Asbestos ACM**	NAD
					18/11/2019	**Asbestos Type**	NAD
					18/11/2019	**Asbestos Level Screen**	NAD
19/18649	1	BH7	2.00	32	18/11/2019	**General Description (Bulk Analysis)**	soil-stones
					18/11/2019	**Asbestos Fibres**	NAD
					18/11/2019	**Asbestos ACM**	NAD
					18/11/2019	**Asbestos Type**	NAD
					18/11/2019	**Asbestos Level Screen**	NAD
19/18649	1	BH8	1.50	35	18/11/2019	**General Description (Bulk Analysis)**	soil-stones
					18/11/2019	**Asbestos Fibres**	NAD
					18/11/2019	**Asbestos ACM**	NAD
					18/11/2019	**Asbestos Type**	NAD
					18/11/2019	**Asbestos Level Screen**	NAD
19/18649	1	BH9	1.00	38	18/11/2019	**General Description (Bulk Analysis)**	soil-stones
					18/11/2019	**Asbestos Fibres**	NAD
					18/11/2019	**Asbestos ACM**	NAD
					18/11/2019	**Asbestos Type**	NAD
					18/11/2019	**Asbestos Level Screen**	NAD
19/18649	1	BH9	3.00	41	18/11/2019	**General Description (Bulk Analysis)**	Soil/Stones
					18/11/2019	**Asbestos Fibres**	NAD
					18/11/2019	**Asbestos ACM**	NAD
					18/11/2019	**Asbestos Type**	NAD
					18/11/2019	**Asbestos Level Screen**	NAD
19/18649	1	TP53	0.50	68	18/11/2019	**General Description (Bulk Analysis)**	soil-stones
					18/11/2019	**Asbestos Fibres**	NAD
					18/11/2019	**Asbestos ACM**	NAD
					18/11/2019	**Asbestos Type**	NAD
					18/11/2019	**Asbestos Level Screen**	NAD

Client Name: Ground Investigations Ireland

Reference: 9161-10-19

Location: Baldoyle

Contact: Diarmaid MagLochlainn

Matrix : Solid

EMT Job No.	Batch	Sample ID	Depth	EMT Sample No.	Analysis	Reason
19/18649	1	BH3	1.00	10-12	Sulphate	Sample holding time exceeded
19/18649	1	BH7	0.50	28-30	Sulphate	Sample holding time exceeded
19/18649	1	BH11	2.00	49-51	pH, Sulphate	Sample holding time exceeded

Please note that only samples that are deviating are mentioned in this report. If no samples are listed it is because none were deviating.

Only analyses which are accredited are recorded as deviating if set criteria are not met.

NOTES TO ACCOMPANY ALL SCHEDULES AND REPORTS

EMT Job No.: 19/18649

SOILS

Please note we are only MCERTS accredited (UK soils only) for sand, loam and clay and any other matrix is outside our scope of accreditation.

Where an MCERTS report has been requested, you will be notified within 48 hours of any samples that have been identified as being outside our MCERTS scope. As validation has been performed on clay, sand and loam, only samples that are predominantly these matrices, or combinations of them will be within our MCERTS scope. If samples are not one of a combination of the above matrices they will not be marked as MCERTS accredited.

It is assumed that you have taken representative samples on site and require analysis on a representative subsample. Stones will generally be included unless we are requested to remove them.

All samples will be discarded one month after the date of reporting, unless we are instructed to the contrary.

If you have not already done so, please send us a purchase order if this is required by your company.

Where appropriate please make sure that our detection limits are suitable for your needs, if they are not, please notify us immediately.

All analysis is reported on a dry weight basis unless stated otherwise. Limits of detection for analyses carried out on as received samples are not moisture content corrected. Results are not surrogate corrected. Samples are dried at 35°C ±5°C unless otherwise stated. Moisture content for CEN Leachate tests are dried at 105°C ±5°C.

Where Mineral Oil or Fats, Oils and Grease is quoted, this refers to Total Aliphatics C10-C40.

Where a CEN 10:1 ZERO Headspace VOC test has been carried out, a 10:1 ratio of water to wet (as received) soil has been used.

% Asbestos in Asbestos Containing Materials (ACMs) is determined by reference to HSG 264 The Survey Guide - Appendix 2 : ACMs in buildings listed in order of ease of fibre release.

Sufficient amount of sample must be received to carry out the testing specified. Where an insufficient amount of sample has been received the testing may not meet the requirements of our accredited methods, as such accreditation may be removed.

Negative Neutralization Potential (NP) values are obtained when the volume of NaOH (0.1N) titrated (pH 8.3) is greater than the volume of HCl (1N) to reduce the pH of the sample to 2.0 - 2.5. Any negative NP values are corrected to 0.

The calculation of Pyrite content assumes that all oxidisable sulphides present in the sample are pyrite. This may not be the case. The calculation may be an overesitimate when other sulphides such as Barite (Barium Sulphate) are present.

WATERS

Please note we are not a UK Drinking Water Inspectorate (DWI) Approved Laboratory .

ISO17025 accreditation applies to surface water and groundwater and usually one other matrix which is analysis specific, any other liquids are outside our scope of accreditation.

As surface waters require different sample preparation to groundwaters the laboratory must be informed of the water type when submitting samples.

Where Mineral Oil or Fats, Oils and Grease is quoted, this refers to Total Aliphatics C10-C40.

DEVIATING SAMPLES

All samples should be submitted to the laboratory in suitable containers with sufficient ice packs to sustain an appropriate temperature for the requested analysis. The temperature of sample receipt is recorded on the confirmation schedules in order that the client can make an informed decision as to whether testing should still be undertaken.

SURROGATES

Surrogate compounds are added during the preparation process to monitor recovery of analytes. However low recovery in soils is often due to peat, clay or other organic rich matrices. For waters this can be due to oxidants, surfactants, organic rich sediments or remediation fluids. Acceptable limits for most organic methods are 70 - 130% and for VOCs are 50 - 150%. When surrogate recoveries are outside the performance criteria but the associated AQC passes this is assumed to be due to matrix effect. Results are not surrogate corrected.

DILUTIONS

A dilution suffix indicates a dilution has been performed and the reported result takes this into account. No further calculation is required.

BLANKS

Where analytes have been found in the blank, the sample will be treated in accordance with our laboratory procedure for dealing with contaminated blanks.

NOTE

Data is only reported if the laboratory is confident that the data is a true reflection of the samples analysed. Data is only reported as accredited when all the requirements of our Quality System have been met. In certain circumstances where all the requirements of the Quality System have not been met, for instance if the associated AQC has failed, the reason is fully investigated and documented. The sample data is then evaluated alongside the other quality control checks performed during analysis to determine its suitability. Following this evaluation, provided the sample results have not been effected, the data is reported but accreditation is removed. It is a UKAS requirement for data not reported as accredited to be considered indicative only, but this does not mean the data is not valid.
Where possible, and if requested, samples will be re-extracted and a revised report issued with accredited results. Please do not hesitate to contact the laboratory if further details are required of the circumstances which have led to the removal of accreditation.

REPORTS FROM THE SOUTH AFRICA LABORATORY

Any method number not prefixed with SA has been undertaken in our UK laboratory unless reported as subcontracted.

Measurement Uncertainty

Measurement uncertainty defines the range of values that could reasonably be attributed to the measured quantity. This range of values has not been included within the reported results. Uncertainty expressed as a percentage can be provided upon request.

ABBREVIATIONS and ACRONYMS USED

#	ISO17025 (UKAS Ref No. 4225) accredited - UK.
SA	ISO17025 (SANAS Ref No.T0729) accredited - South Africa
B	Indicates analyte found in associated method blank.
DR	Dilution required.
M	MCERTS accredited.
NA	Not applicable
NAD	No Asbestos Detected.
ND	None Detected (usually refers to VOC and/SVOC TICs).
NDP	No Determination Possible
SS	Calibrated against a single substance
SV	Surrogate recovery outside performance criteria. This may be due to a matrix effect.
W	Results expressed on as received basis.
+	AQC failure, accreditation has been removed from this result, if appropriate, see 'Note' on previous page.
>>	Results above calibration range, the result should be considered the minimum value. The actual result could be significantly higher, this result is not accredited.
*	Analysis subcontracted to an Element Materials Technology approved laboratory.
AD	Samples are dried at 35°C ±5°C
CO	Suspected carry over
LOD/LOR	Limit of Detection (Limit of Reporting) in line with ISO 17025 and MCERTS
ME	Matrix Effect
NFD	No Fibres Detected
BS	AQC Sample
LB	Blank Sample
N	Client Sample
TB	Trip Blank Sample
OC	Outside Calibration Range

EMT Job No: 19/18649

Test Method No.	Description	Prep Method No. (if appropriate)	Description	ISO 17025 (UKAS/SANAS)	MCERTS (UK soils only)	Analysis done on As Received (AR) or Dried (AD)	Reported on dry weight basis
PM4	Gravimetric measurement of Natural Moisture Content and % Moisture Content at either 35°C or 105°C. Calculation based on ISO 11465 and BS1377.	PM0	No preparation is required.			AR	
TM4	Modified USEPA 8270 method for the solvent extraction and determination of PAHs by GC-MS.	PM8	End over end extraction of solid samples for organic analysis. The solvent mix varies depending on analysis required.			AR	Yes
TM4	Modified USEPA 8270 method for the solvent extraction and determination of PAHs by GC-MS.	PM8	End over end extraction of solid samples for organic analysis. The solvent mix varies depending on analysis required.	Yes		AR	Yes
TM5	Modified 8015B method for the determination of solvent Extractable Petroleum Hydrocarbons (EPH) within the range C8-C40 by GCFID. For waters the solvent extracts dissolved phase plus a sheen if present.	PM16	Fractionation into aliphatic and aromatic fractions using a Rapid Trace SPE.			AR	
TM5	Modified 8015B method for the determination of solvent Extractable Petroleum Hydrocarbons (EPH) within the range C8-C40 by GCFID. For waters the solvent extracts dissolved phase plus a sheen if present.	PM8/PM16	End over end extraction of solid samples for organic analysis. The solvent mix varies depending on analysis required/Fractionation into aliphatic and aromatic fractions using a Rapid Trace SPE.			AR	Yes
TM5	Modified 8015B method for the determination of solvent Extractable Petroleum Hydrocarbons (EPH) within the range C8-C40 by GCFID. For waters the solvent extracts dissolved phase plus a sheen if present.	PM8/PM16	End over end extraction of solid samples for organic analysis. The solvent mix varies depending on analysis required/Fractionation into aliphatic and aromatic fractions using a Rapid Trace SPE.	Yes		AR	Yes
TM5/TM36	please refer to TM5 and TM36 for method details	PM8/PM12/PM16	please refer to PM8/PM16 and PM12 for method details			AR	Yes
TM17	Modified US EPA method 8270. Determination of specific Polychlorinated Biphenyl congeners by GC-MS.	PM8	End over end extraction of solid samples for organic analysis. The solvent mix varies depending on analysis required.	Yes		AR	Yes
TM20	Modified BS 1377-3: 1990/USEPA 160.3 Gravimetric determination of Total Dissolved Solids/Total Solids	PM0	No preparation is required.	Yes		AR	Yes
TM21	Modified BS 7755-3:1995, ISO10694:1995 Determination of Total Organic Carbon or Total Carbon by combustion in an Eltra TOC furnace/analyser in the presence of oxygen. The CO2 generated is quantified using infra-red detection. Organic Matter (SOM) calculated as per EA MCERTS Chemical Testing of Soil, March 2012 v4.	PM24	Dried and ground solid samples are washed with hydrochloric acid, then rinsed with deionised water to remove the mineral carbon before TOC analysis.	Yes		AD	Yes

EMT Job No: 19/18649

Test Method No.	Description	Prep Method No. (if appropriate)	Description	ISO 17025 (UKAS/SANAS)	MCERTS (UK soils only)	Analysis done on As Received (AR) or Dried (AD)	Reported on dry weight basis
TM26	Determination of phenols by Reversed Phased High Performance Liquid Chromatography and Electro-Chemical Detection.	PM0	No preparation is required.			AR	Yes
TM30	Determination of Trace Metal elements by ICP-OES (Inductively Coupled Plasma - Optical Emission Spectrometry). Modified US EPA Method 200.7, 6010B and BS EN ISO 11885 2009	PM15	Acid digestion of dried and ground solid samples using Aqua Regia refluxed at 112.5 °C. Samples containing asbestos are not dried and ground.			AD	Yes
TM30	Determination of Trace Metal elements by ICP-OES (Inductively Coupled Plasma - Optical Emission Spectrometry). Modified US EPA Method 200.7, 6010B and BS EN ISO 11885 2009	PM15	Acid digestion of dried and ground solid samples using Aqua Regia refluxed at 112.5 °C. Samples containing asbestos are not dried and ground.	Yes		AD	Yes
TM30	Determination of Trace Metal elements by ICP-OES (Inductively Coupled Plasma - Optical Emission Spectrometry). Modified US EPA Method 200.7, 6010B and BS EN ISO 11885 2009	PM17	Modified method BS EN12457-2 As received solid samples are leached with water in a 10:1 water to soil ratio for 24 hours, the moisture content of the sample is included in the ratio.	Yes		AR	Yes
TM31	Modified USEPA 8015B. Determination of Methyltertbutylether, Benzene, Toluene, Ethylbenzene and Xylene by headspace GC-FID.	PM12	Modified US EPA method 5021. Preparation of solid and liquid samples for GC headspace analysis.			AR	Yes
TM31	Modified USEPA 8015B. Determination of Methyltertbutylether, Benzene, Toluene, Ethylbenzene and Xylene by headspace GC-FID.	PM12	Modified US EPA method 5021. Preparation of solid and liquid samples for GC headspace analysis.	Yes		AR	Yes
TM36	Modified US EPA method 8015B. Determination of Gasoline Range Organics (GRO) in the carbon chain range of C4-12 by headspace GC-FID. MTBE by GCFID co-elutes with 3-methylpentane if present and therefore can give a false positive. Positive MTBE results can be confirmed using GCMS.	PM12	Modified US EPA method 5021. Preparation of solid and liquid samples for GC headspace analysis.			AR	Yes
TM36	Modified US EPA method 8015B. Determination of Gasoline Range Organics (GRO) in the carbon chain range of C4-12 by headspace GC-FID. MTBE by GCFID co-elutes with 3-methylpentane if present and therefore can give a false positive. Positive MTBE results can be confirmed using GCMS.	PM12	Modified US EPA method 5021. Preparation of solid and liquid samples for GC headspace analysis.	Yes		AR	Yes
TM38	Soluble Ion analysis using Discrete Analyser. Modified US EPA methods 325.2 (Chloride), 375.4 (Sulphate), 365.2 (o-Phosphate), 353.1 (TON), 354.1 (Nitrite), 350.1 (NH4+) comparable to BS ISO 15923-1, 7196A (Hex Cr)	PM0	No preparation is required.	Yes		AR	Yes
TM38	Soluble Ion analysis using Discrete Analyser. Modified US EPA methods 325.2 (Chloride), 375.4 (Sulphate), 365.2 (o-Phosphate), 353.1 (TON), 354.1 (Nitrite), 350.1 (NH4+) comparable to BS ISO 15923-1, 7196A (Hex Cr)	PM20	Extraction of dried and ground or as received samples with deionised water in a 2:1 water to solid ratio using a reciprocal shaker for all analytes except hexavalent chromium. Extraction of as received sample using 10:1 ratio of 0.2M sodium hydroxide to soil for hexavalent chromium using a reciprocal shaker.	Yes		AD	Yes

EMT Job No: 19/18649

Test Method No.	Description	Prep Method No. (if appropriate)	Description	ISO 17025 (UKAS/SANAS)	MCERTS (UK soils only)	Analysis done on As Received (AR) or Dried (AD)	Reported on dry weight basis
TM38	Soluble Ion analysis using Discrete Analyser. Modified US EPA methods 325.2 (Chloride), 375.4 (Sulphate), 365.2 (o-Phosphate), 353.1 (TON), 354.1 (Nitrite), 350.1 (NH4+) comparable to BS ISO 15923-1, 7196A (Hex Cr)	PM20	Extraction of dried and ground or as received samples with deionised water in a 2:1 water to solid ratio using a reciprocal shaker for all analytes except hexavalent chromium. Extraction of as received sample using 10:1 ratio of 0.2M sodium hydroxide to soil for hexavalent chromium using a reciprocal shaker.	Yes		AR	Yes
TM60	TC/TOC analysis of Waters by High Temperature Combustion followed by NDIR detection. Based on the following modified standard methods: USEPA 9060, APHA Standard Methods for Examination of Water and Wastewater 5310B, ASTM D 7573, and USEPA 415.1.	PM0	No preparation is required.			AR	Yes
TM61	Modified US EPA methods 245.7 and 200.7. Determination of Mercury by Cold Vapour Atomic Fluorescence.	PM0	No preparation is required.	Yes		AR	Yes
TM65	Asbestos Bulk Identification method based on HSG 248.	PM42	Solid samples undergo a thorough visual inspection for asbestos fibres prior to asbestos identification using TM065.	Yes		AR	
TM73	Modified US EPA methods 150.1 and 9045D and BS1377:1990. Determination of pH by Metrohm automated probe analyser.	PM0	No preparation is required.			AR	Yes
TM73	Modified US EPA methods 150.1 and 9045D and BS1377:1990. Determination of pH by Metrohm automated probe analyser.	PM11	Extraction of as received solid samples using one part solid to 2.5 parts deionised water.	Yes		AR	No
TM173	Analysis of fluoride by ISE (Ion Selective Electrode) using modified ISE method 340.2	PM0	No preparation is required.			AR	Yes
NONE	No Method Code	NONE	No Method Code			AD	Yes
NONE	No Method Code	PM17	Modified method BS EN12457-2 As received solid samples are leached with water in a 10:1 water to soil ratio for 24 hours, the moisture content of the sample is included in the ratio.				
NONE	No Method Code	PM17	Modified method BS EN12457-2 As received solid samples are leached with water in a 10:1 water to soil ratio for 24 hours, the moisture content of the sample is included in the ratio.			AR	

EMT Job No: 19/18649

Test Method No.	Description	Prep Method No. (if appropriate)	Description	ISO 17025 (UKAS/SANAS)	MCERTS (UK soils only)	Analysis done on As Received (AR) or Dried (AD)	Reported on dry weight basis
NONE	No Method Code	PM4	Gravimetric measurement of Natural Moisture Content and % Moisture Content at either 35°C or 105°C. Calculation based on ISO 11465 and BS1377.			AR	

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Ground Investigations Ireland
Catherinestown House
Hazelhatch Road
Newcastle
Co. Dublin
Ireland

Attention :	Diarmaid MagLochlainn
Date :	18th February, 2020
Your reference :	9161-10-19
Our reference :	Test Report 20/1987 Batch 1
Location :	Baldoyle
Date samples received :	10th February, 2020
Status :	Final report
Issue :	1

Eighteen samples were received for analysis on 10th February, 2020 of which eighteen were scheduled for analysis. Please find attached our Test Report which should be read with notes at the end of the report and should include all sections if reproduced. Interpretations and opinions are outside the scope of any accreditation, and all results relate only to samples supplied.
All analysis is carried out on as received samples and reported on a dry weight basis unless stated otherwise. Results are not surrogate corrected.

Authorised By:

Bruce Leslie
Project Manager

Client Name: Ground Investigations Ireland
Reference: 9161-10-19
Location: Baldoyle
Contact: Diarmaid MagLochlainn
EMT Job No: 20/1987

Report : Solid

Solids: V=60g VOC jar, J=250g glass jar, T=plastic tub

EMT Sample No.	1-3	4	5-7	8	9-11	12-14	15	16-18	19	20-22	LOD/LOR	Units	Method No.
Sample ID	TP02	TP06	TP09	TP85	TP86	TP90	TP93	TP94	TP96	TP99			
Depth	0.50	0.50	1.50	0.50	0.50	0.50	1.50	0.50	0.50	0.50			
COC No / misc													
Containers	V J T	T	V J T	T	V J T	V J T	T	V J T	T	V J T			
Sample Date	21/01/2020	21/01/2020	21/01/2020	21/01/2020	21/01/2020	22/01/2020	22/01/2020	22/01/2020	22/01/2020	23/01/2020			
Sample Type	Soil	Soil	Soil	Soil	Soil	Soil	Soil	Soil	Soil	Soil			
Batch Number	1	1	1	1	1	1	1	1	1	1			
Date of Receipt	10/02/2020	10/02/2020	10/02/2020	10/02/2020	10/02/2020	10/02/2020	10/02/2020	10/02/2020	10/02/2020	10/02/2020			
Antimony	2	-	2	-	2	2	-	2	-	2	<1	mg/kg	TM30/PM15
Arsenic #	14.8	-	11.1	-	8.5	12.0	-	12.1	-	11.7	<0.5	mg/kg	TM30/PM15
Barium #	81	-	96	-	60	79	-	136	-	59	<1	mg/kg	TM30/PM15
Cadmium #	2.6	-	1.5	-	2.1	2.0	-	1.9	-	1.9	<0.1	mg/kg	TM30/PM15
Chromium #	40.8	-	20.3	-	22.5	18.8	-	22.0	-	22.0	<0.5	mg/kg	TM30/PM15
Copper #	28	-	24	-	18	26	-	26	-	27	<1	mg/kg	TM30/PM15
Lead #	30	-	17	-	12	18	-	21	-	22	<5	mg/kg	TM30/PM15
Mercury #	<0.1	-	<0.1	-	<0.1	<0.1	-	<0.1	-	<0.1	<0.1	mg/kg	TM30/PM15
Molybdenum #	3.9	-	3.1	-	3.0	3.3	-	3.4	-	3.0	<0.1	mg/kg	TM30/PM15
Nickel #	60.0	-	35.2	-	24.9	36.4	-	40.3	-	45.4	<0.7	mg/kg	TM30/PM15
Selenium #	2	-	1	-	1	<1	-	<1	-	<1	<1	mg/kg	TM30/PM15
Zinc #	107	-	79	-	61	72	-	89	-	100	<5	mg/kg	TM30/PM15
PAH MS													
Naphthalene #	<0.04	-	<0.04	-	<0.04	<0.04	-	<0.04	-	<0.04	<0.04	mg/kg	TM4/PM8
Acenaphthylene	<0.03	-	<0.03	-	<0.03	<0.03	-	<0.03	-	<0.03	<0.03	mg/kg	TM4/PM8
Acenaphthene #	<0.05	-	<0.05	-	<0.05	<0.05	-	<0.05	-	<0.05	<0.05	mg/kg	TM4/PM8
Fluorene #	<0.04	-	<0.04	-	<0.04	<0.04	-	<0.04	-	<0.04	<0.04	mg/kg	TM4/PM8
Phenanthrene #	<0.03	-	<0.03	-	<0.03	<0.03	-	<0.03	-	<0.03	<0.03	mg/kg	TM4/PM8
Anthracene #	<0.04	-	<0.04	-	<0.04	<0.04	-	<0.04	-	<0.04	<0.04	mg/kg	TM4/PM8
Fluoranthene #	<0.03	-	<0.03	-	<0.03	<0.03	-	<0.03	-	<0.03	<0.03	mg/kg	TM4/PM8
Pyrene #	<0.03	-	<0.03	-	<0.03	<0.03	-	<0.03	-	<0.03	<0.03	mg/kg	TM4/PM8
Benzo(a)anthracene #	<0.06	-	<0.06	-	<0.06	<0.06	-	<0.06	-	<0.06	<0.06	mg/kg	TM4/PM8
Chrysene #	<0.02	-	<0.02	-	<0.02	<0.02	-	<0.02	-	<0.02	<0.02	mg/kg	TM4/PM8
Benzo(bk)fluoranthene #	<0.07	-	<0.07	-	<0.07	<0.07	-	<0.07	-	<0.07	<0.07	mg/kg	TM4/PM8
Benzo(a)pyrene #	<0.04	-	<0.04	-	<0.04	<0.04	-	<0.04	-	<0.04	<0.04	mg/kg	TM4/PM8
Indeno(123cd)pyrene	<0.04	-	<0.04	-	<0.04	<0.04	-	<0.04	-	<0.04	<0.04	mg/kg	TM4/PM8
Dibenzo(ah)anthracene #	<0.04	-	<0.04	-	<0.04	<0.04	-	<0.04	-	<0.04	<0.04	mg/kg	TM4/PM8
Benzo(ghi)perylene #	<0.04	-	<0.04	-	<0.04	<0.04	-	<0.04	-	<0.04	<0.04	mg/kg	TM4/PM8
Coronene	<0.04	-	<0.04	-	<0.04	<0.04	-	<0.04	-	<0.04	<0.04	mg/kg	TM4/PM8
PAH 6 Total #	<0.22	-	<0.22	-	<0.22	<0.22	-	<0.22	-	<0.22	<0.22	mg/kg	TM4/PM8
PAH 17 Total	<0.64	-	<0.64	-	<0.64	<0.64	-	<0.64	-	<0.64	<0.64	mg/kg	TM4/PM8
Benzo(b)fluoranthene	<0.05	-	<0.05	-	<0.05	<0.05	-	<0.05	-	<0.05	<0.05	mg/kg	TM4/PM8
Benzo(k)fluoranthene	<0.02	-	<0.02	-	<0.02	<0.02	-	<0.02	-	<0.02	<0.02	mg/kg	TM4/PM8
Benzo(j)fluoranthene	<1	-	<1	-	<1	<1	-	<1	-	<1	<1	mg/kg	TM4/PM8
PAH Surrogate % Recovery	95	-	103	-	100	96	-	93	-	86	<0	%	TM4/PM8
Mineral Oil (C10-C40)	<30	-	<30	-	<30	<30	-	<30	-	<30	<30	mg/kg	TM5/PM8/PM16

Please see attached notes for all abbreviations and acronyms

Please include all sections of this report if it is reproduced
All solid results are expressed on a dry weight basis unless stated otherwise.

Element Materials Technology

Client Name: Ground Investigations Ireland
Reference: 9161-10-19
Location: Baldoyle
Contact: Diarmaid MagLochlainn
EMT Job No: 20/1987

Report : Solid

Solids: V=60g VOC jar, J=250g glass jar, T=plastic tub

EMT Sample No.	1-3	4	5-7	8	9-11	12-14	15	16-18	19	20-22	LOD/LOR	Units	Method No.
Sample ID	TP02	TP06	TP09	TP85	TP86	TP90	TP93	TP94	TP96	TP99			
Depth	0.50	0.50	1.50	0.50	0.50	0.50	1.50	0.50	0.50	0.50			
COC No / misc													
Containers	V J T	T	V J T	T	V J T	V J T	T	V J T	T	V J T			
Sample Date	21/01/2020	21/01/2020	21/01/2020	21/01/2020	21/01/2020	22/01/2020	22/01/2020	22/01/2020	22/01/2020	23/01/2020			
Sample Type	Soil	Soil	Soil	Soil	Soil	Soil	Soil	Soil	Soil	Soil			
Batch Number	1	1	1	1	1	1	1	1	1	1			
Date of Receipt	10/02/2020	10/02/2020	10/02/2020	10/02/2020	10/02/2020	10/02/2020	10/02/2020	10/02/2020	10/02/2020	10/02/2020			
TPH CWG													
Aliphatics													
>C5-C6 #	<0.1	-	<0.1	-	<0.1	<0.1	-	<0.1	-	<0.1	<0.1	mg/kg	TM36/PM12
>C6-C8 #	<0.1	-	<0.1	-	<0.1	<0.1	-	<0.1	-	<0.1	<0.1	mg/kg	TM36/PM12
>C8-C10	<0.1	-	<0.1	-	<0.1	<0.1	-	<0.1	-	<0.1	<0.1	mg/kg	TM36/PM12
>C10-C12 #	<0.2	-	<0.2	-	<0.2	<0.2	-	<0.2	-	<0.2	<0.2	mg/kg	TM5/PM8/PM16
>C12-C16 #	<4	-	<4	-	<4	<4	-	<4	-	<4	<4	mg/kg	TM5/PM8/PM16
>C16-C21 #	<7	-	<7	-	<7	<7	-	<7	-	<7	<7	mg/kg	TM5/PM8/PM16
>C21-C35 #	<7	-	<7	-	<7	<7	-	<7	-	<7	<7	mg/kg	TM5/PM8/PM16
>C35-C40	<7	-	<7	-	<7	<7	-	<7	-	<7	<7	mg/kg	TM5/PM8/PM16
Total aliphatics C5-40	<26	-	<26	-	<26	<26	-	<26	-	<26	<26	mg/kg	TM5/TM36/PM8/PM12/PM16
>C6-C10	<0.1	-	<0.1	-	<0.1	<0.1	-	<0.1	-	<0.1	<0.1	mg/kg	TM36/PM12
>C10-C25	<10	-	<10	-	<10	<10	-	<10	-	<10	<10	mg/kg	TM5/PM8/PM16
>C25-C35	<10	-	<10	-	<10	<10	-	<10	-	<10	<10	mg/kg	TM5/PM8/PM16
Aromatics													
>C5-EC7 #	<0.1	-	<0.1	-	<0.1	<0.1	-	<0.1	-	<0.1	<0.1	mg/kg	TM36/PM12
>EC7-EC8 #	<0.1	-	<0.1	-	<0.1	<0.1	-	<0.1	-	<0.1	<0.1	mg/kg	TM36/PM12
>EC8-EC10 #	<0.1	-	<0.1	-	<0.1	<0.1	-	<0.1	-	<0.1	<0.1	mg/kg	TM36/PM12
>EC10-EC12 #	<0.2	-	<0.2	-	<0.2	<0.2	-	<0.2	-	<0.2	<0.2	mg/kg	TM5/PM8/PM16
>EC12-EC16 #	<4	-	<4	-	<4	<4	-	<4	-	<4	<4	mg/kg	TM5/PM8/PM16
>EC16-EC21 #	<7	-	<7	-	<7	<7	-	<7	-	<7	<7	mg/kg	TM5/PM8/PM16
>EC21-EC35 #	<7	-	<7	-	<7	<7	-	<7	-	<7	<7	mg/kg	TM5/PM8/PM16
>EC35-EC40	<7	-	<7	-	<7	<7	-	<7	-	<7	<7	mg/kg	TM5/PM8/PM16
Total aromatics C5-40	<26	-	<26	-	<26	<26	-	<26	-	<26	<26	mg/kg	TM5/TM36/PM8/PM12/PM16
Total aliphatics and aromatics(C5-40)	<52	-	<52	-	<52	<52	-	<52	-	<52	<52	mg/kg	TM5/TM36/PM8/PM12/PM16
>EC6-EC10 #	<0.1	-	<0.1	-	<0.1	<0.1	-	<0.1	-	<0.1	<0.1	mg/kg	TM36/PM12
>EC10-EC25	<10	-	<10	-	<10	<10	-	<10	-	<10	<10	mg/kg	TM5/PM8/PM16
>EC25-EC35	<10	-	<10	-	<10	<10	-	<10	-	<10	<10	mg/kg	TM5/PM8/PM16
MTBE #	<5	-	<5	-	<5	<5	-	<5	-	<5	<5	ug/kg	TM31/PM12
Benzene #	<5	-	<5	-	<5	<5	-	<5	-	<5	<5	ug/kg	TM31/PM12
Toluene #	<5	-	<5	-	<5	<5	-	<5	-	<5	<5	ug/kg	TM31/PM12
Ethylbenzene #	<5	-	<5	-	<5	<5	-	<5	-	<5	<5	ug/kg	TM31/PM12
m/p-Xylene #	<5	-	<5	-	<5	<5	-	<5	-	<5	<5	ug/kg	TM31/PM12
o-Xylene #	<5	-	<5	-	<5	<5	-	<5	-	<5	<5	ug/kg	TM31/PM12
PCB 28 #	<5	-	<5	-	<5	<5	-	<5	-	<5	<5	ug/kg	TM17/PM8
PCB 52 #	<5	-	<5	-	<5	<5	-	<5	-	<5	<5	ug/kg	TM17/PM8
PCB 101 #	<5	-	<5	-	<5	<5	-	<5	-	<5	<5	ug/kg	TM17/PM8
PCB 118 #	<5	-	<5	-	<5	<5	-	<5	-	<5	<5	ug/kg	TM17/PM8
PCB 138 #	<5	-	<5	-	<5	<5	-	<5	-	<5	<5	ug/kg	TM17/PM8
PCB 153 #	<5	-	<5	-	<5	<5	-	<5	-	<5	<5	ug/kg	TM17/PM8
PCB 180 #	<5	-	<5	-	<5	<5	-	<5	-	<5	<5	ug/kg	TM17/PM8
Total 7 PCBs #	<35	-	<35	-	<35	<35	-	<35	-	<35	<35	ug/kg	TM17/PM8

Please see attached notes for all abbreviations and acronyms

Element Materials Technology

Client Name: Ground Investigations Ireland
Reference: 9161-10-19
Location: Baldoyle
Contact: Diarmaid MagLochlainn
EMT Job No: 20/1987

Report : Solid

Solids: V=60g VOC jar, J=250g glass jar, T=plastic tub

EMT Sample No.	1-3	4	5-7	8	9-11	12-14	15	16-18	19	20-22	LOD/LOR	Units	Method No.
Sample ID	TP02	TP06	TP09	TP85	TP86	TP90	TP93	TP94	TP96	TP99			
Depth	0.50	0.50	1.50	0.50	0.50	0.50	1.50	0.50	0.50	0.50			
COC No / misc													
Containers	V J T	T	V J T	T	V J T	V J T	T	V J T	T	V J T			
Sample Date	21/01/2020	21/01/2020	21/01/2020	21/01/2020	21/01/2020	22/01/2020	22/01/2020	22/01/2020	22/01/2020	23/01/2020			
Sample Type	Soil	Soil	Soil	Soil	Soil	Soil	Soil	Soil	Soil	Soil			
Batch Number	1	1	1	1	1	1	1	1	1	1			
Date of Receipt	10/02/2020	10/02/2020	10/02/2020	10/02/2020	10/02/2020	10/02/2020	10/02/2020	10/02/2020	10/02/2020	10/02/2020			
Natural Moisture Content	20.7	-	11.9	-	10.1	10.4	-	17.6	-	15.4	<0.1	%	PM4/PM0
Moisture Content (% Wet Weight)	17.2	-	10.6	-	9.2	9.4	-	14.9	-	13.3	<0.1	%	PM4/PM0
Hexavalent Chromium #	<0.3	-	<0.3	-	<0.3	<0.3	-	<0.3	-	<0.3	<0.3	mg/kg	TM38/PM20
Sulphate as SO4 (2:1 Ext) #	-	0.0126	-	0.0024	-	-	0.0346	-	0.0084	-	<0.0015	g/l	TM38/PM20
Chromium III	40.8	-	20.3	-	22.5	18.8	-	22.0	-	22.0	<0.5	mg/kg	NONE/NONE
Total Organic Carbon #	0.82	-	0.35	-	0.40	0.38	-	0.68	-	0.37	<0.02	%	TM21/PM24
pH #	8.51	8.41	8.72	8.56	8.70	8.80	8.75	8.47	8.87	8.52	<0.01	pH units	TM73/PM11
Mass of raw test portion	0.1126	-	0.1011	-	0.0983	0.0962	-	0.1056	-	0.1082		kg	NONE/PM17
Mass of dried test portion	0.09	-	0.09	-	0.09	0.09	-	0.09	-	0.09		kg	NONE/PM17

Please see attached notes for all abbreviations and acronyms

Element Materials Technology

Client Name: Ground Investigations Ireland
Reference: 9161-10-19
Location: Baldoyle
Contact: Diarmaid MagLochlainn
EMT Job No: 20/1987

Report : Solid

Solids: V=60g VOC jar, J=250g glass jar, T=plastic tub

EMT Sample No.	23-25	26-28	29-31	32-34	35	36-38	39	40			LOD/LOR	Units	Method No.
Sample ID	TP102	TP103	TP109	TP111	TP111	TP113	TP113	TP103					
Depth	0.50	0.50	0.50	0.50	1.50	0.50	1.50	1.50					
COC No / misc													
Containers	V J T	V J T	V J T	V J T	T	V J T	T	T					
Sample Date	25/01/2020	23/01/2020	24/01/2020	24/01/2020	24/01/2020	24/01/2020	24/01/2020	23/01/2020					
Sample Type	Soil	Soil	Soil	Soil	Soil	Soil	Soil	Soil					
Batch Number	1	1	1	1	1	1	1	1					
Date of Receipt	10/02/2020	10/02/2020	10/02/2020	10/02/2020	10/02/2020	10/02/2020	10/02/2020	10/02/2020					
Antimony	4	2	2	2	-	2	-	-			<1	mg/kg	TM30/PM15
Arsenic #	22.7	9.5	17.8	14.0	-	13.6	-	-			<0.5	mg/kg	TM30/PM15
Barium #	118	49	138	127	-	56	-	-			<1	mg/kg	TM30/PM15
Cadmium #	1.9	1.5	3.4	2.2	-	2.1	-	-			<0.1	mg/kg	TM30/PM15
Chromium #	39.3	17.8	35.3	26.8	-	23.4	-	-			<0.5	mg/kg	TM30/PM15
Copper #	50	20	38	34	-	29	-	-			<1	mg/kg	TM30/PM15
Lead #	38	13	52	35	-	21	-	-			<5	mg/kg	TM30/PM15
Mercury #	<0.1	<0.1	<0.1	<0.1	-	<0.1	-	-			<0.1	mg/kg	TM30/PM15
Molybdenum #	7.0	2.6	3.1	3.9	-	3.0	-	-			<0.1	mg/kg	TM30/PM15
Nickel #	77.8	32.6	50.0	47.3	-	40.5	-	-			<0.7	mg/kg	TM30/PM15
Selenium #	3	<1	2	2	-	<1	-	-			<1	mg/kg	TM30/PM15
Zinc #	156	60	133	108	-	80	-	-			<5	mg/kg	TM30/PM15
PAH MS													
Naphthalene #	<0.04	<0.04	<0.04	<0.04	-	<0.04	-	-			<0.04	mg/kg	TM4/PM8
Acenaphthylene	<0.03	<0.03	<0.03	<0.03	-	<0.03	-	-			<0.03	mg/kg	TM4/PM8
Acenaphthene #	<0.05	<0.05	<0.05	<0.05	-	<0.05	-	-			<0.05	mg/kg	TM4/PM8
Fluorene #	<0.04	<0.04	<0.04	<0.04	-	<0.04	-	-			<0.04	mg/kg	TM4/PM8
Phenanthrene #	<0.03	<0.03	0.34	0.17	-	<0.03	-	-			<0.03	mg/kg	TM4/PM8
Anthracene #	<0.04	<0.04	0.06	0.05	-	<0.04	-	-			<0.04	mg/kg	TM4/PM8
Fluoranthene #	<0.03	<0.03	0.37	0.32	-	<0.03	-	-			<0.03	mg/kg	TM4/PM8
Pyrene #	<0.03	<0.03	0.34	0.30	-	<0.03	-	-			<0.03	mg/kg	TM4/PM8
Benzo(a)anthracene #	<0.06	<0.06	0.20	0.24	-	<0.06	-	-			<0.06	mg/kg	TM4/PM8
Chrysene #	<0.02	<0.02	0.21	0.22	-	<0.02	-	-			<0.02	mg/kg	TM4/PM8
Benzo(bk)fluoranthene #	<0.07	<0.07	0.32	0.32	-	<0.07	-	-			<0.07	mg/kg	TM4/PM8
Benzo(a)pyrene #	<0.04	<0.04	0.19	0.20	-	<0.04	-	-			<0.04	mg/kg	TM4/PM8
Indeno(123cd)pyrene	<0.04	<0.04	0.09	0.09	-	<0.04	-	-			<0.04	mg/kg	TM4/PM8
Dibenzo(ah)anthracene #	<0.04	<0.04	<0.04	<0.04	-	<0.04	-	-			<0.04	mg/kg	TM4/PM8
Benzo(ghi)perylene #	<0.04	<0.04	0.11	0.11	-	<0.04	-	-			<0.04	mg/kg	TM4/PM8
Coronene	<0.04	<0.04	<0.04	<0.04	-	<0.04	-	-			<0.04	mg/kg	TM4/PM8
PAH 6 Total #	<0.22	<0.22	1.08	1.04	-	<0.22	-	-			<0.22	mg/kg	TM4/PM8
PAH 17 Total	<0.64	<0.64	2.23	2.02	-	<0.64	-	-			<0.64	mg/kg	TM4/PM8
Benzo(b)fluoranthene	<0.05	<0.05	0.23	0.23	-	<0.05	-	-			<0.05	mg/kg	TM4/PM8
Benzo(k)fluoranthene	<0.02	<0.02	0.09	0.09	-	<0.02	-	-			<0.02	mg/kg	TM4/PM8
Benzo(j)fluoranthene	<1	<1	<1	<1	-	<1	-	-			<1	mg/kg	TM4/PM8
PAH Surrogate % Recovery	99	100	90	92	-	106	-	-			<0	%	TM4/PM8
Mineral Oil (C10-C40)	<30	<30	<30	<30	-	<30	-	-			<30	mg/kg	TM5/PM8/PM16

Please see attached notes for all abbreviations and acronyms

Please include all sections of this report if it is reproduced
All solid results are expressed on a dry weight basis unless stated otherwise.

Client Name: Ground Investigations Ireland
Reference: 9161-10-19
Location: Baldoyle
Contact: Diarmaid MagLochlainn
EMT Job No: 20/1987

Report : Solid

Solids: V=60g VOC jar, J=250g glass jar, T=plastic tub

EMT Sample No.	23-25	26-28	29-31	32-34	35	36-38	39	40			LOD/LOR	Units	Method No.
Sample ID	TP102	TP103	TP109	TP111	TP111	TP113	TP113	TP103					
Depth	0.50	0.50	0.50	0.50	1.50	0.50	1.50	1.50					
COC No / misc													
Containers	V J T	V J T	V J T	V J T	T	V J T	T	T					
Sample Date	25/01/2020	23/01/2020	24/01/2020	24/01/2020	24/01/2020	24/01/2020	24/01/2020	23/01/2020					
Sample Type	Soil	Soil	Soil	Soil	Soil	Soil	Soil	Soil					
Batch Number	1	1	1	1	1	1	1	1					
Date of Receipt	10/02/2020	10/02/2020	10/02/2020	10/02/2020	10/02/2020	10/02/2020	10/02/2020	10/02/2020					
TPH CWG													
Aliphatics													
>C5-C6 #	<0.1	<0.1	<0.1	<0.1	-	<0.1	-	-			<0.1	mg/kg	TM36/PM12
>C6-C8 #	<0.1	<0.1	<0.1	<0.1	-	<0.1	-	-			<0.1	mg/kg	TM36/PM12
>C8-C10	<0.1	<0.1	<0.1	<0.1	-	<0.1	-	-			<0.1	mg/kg	TM36/PM12
>C10-C12 #	<0.2	<0.2	<0.2	<0.2	-	<0.2	-	-			<0.2	mg/kg	TM5/PM8/PM16
>C12-C16 #	<4	<4	<4	<4	-	<4	-	-			<4	mg/kg	TM5/PM8/PM16
>C16-C21 #	<7	<7	<7	<7	-	<7	-	-			<7	mg/kg	TM5/PM8/PM16
>C21-C35 #	<7	<7	<7	<7	-	<7	-	-			<7	mg/kg	TM5/PM8/PM16
>C35-C40	<7	<7	<7	<7	-	<7	-	-			<7	mg/kg	TM5/PM8/PM16
Total aliphatics C5-40	<26	<26	<26	<26	-	<26	-	-			<26	mg/kg	TM5/TM36/PM8/PM12/PM16
>C6-C10	<0.1	<0.1	<0.1	<0.1	-	<0.1	-	-			<0.1	mg/kg	TM36/PM12
>C10-C25	<10	<10	<10	<10	-	<10	-	-			<10	mg/kg	TM5/PM8/PM16
>C25-C35	<10	<10	<10	<10	-	<10	-	-			<10	mg/kg	TM5/PM8/PM16
Aromatics													
>C5-EC7 #	<0.1	<0.1	<0.1	<0.1	-	<0.1	-	-			<0.1	mg/kg	TM36/PM12
>EC7-EC8 #	<0.1	<0.1	<0.1	<0.1	-	<0.1	-	-			<0.1	mg/kg	TM36/PM12
>EC8-EC10 #	<0.1	<0.1	<0.1	<0.1	-	<0.1	-	-			<0.1	mg/kg	TM36/PM12
>EC10-EC12 #	<0.2	<0.2	<0.2	<0.2	-	<0.2	-	-			<0.2	mg/kg	TM5/PM8/PM16
>EC12-EC16 #	<4	<4	<4	<4	-	<4	-	-			<4	mg/kg	TM5/PM8/PM16
>EC16-EC21 #	<7	<7	<7	<7	-	<7	-	-			<7	mg/kg	TM5/PM8/PM16
>EC21-EC35 #	<7	<7	<7	<7	-	<7	-	-			<7	mg/kg	TM5/PM8/PM16
>EC35-EC40	<7	<7	<7	<7	-	<7	-	-			<7	mg/kg	TM5/PM8/PM16
Total aromatics C5-40	<26	<26	<26	<26	-	<26	-	-			<26	mg/kg	TM5/TM36/PM8/PM12/PM16
Total aliphatics and aromatics(C5-40)	<52	<52	<52	<52	-	<52	-	-			<52	mg/kg	TM5/TM36/PM8/PM12/PM16
>EC6-EC10 #	<0.1	<0.1	<0.1	<0.1	-	<0.1	-	-			<0.1	mg/kg	TM36/PM12
>EC10-EC25	<10	<10	<10	<10	-	<10	-	-			<10	mg/kg	TM5/PM8/PM16
>EC25-EC35	<10	<10	<10	<10	-	<10	-	-			<10	mg/kg	TM5/PM8/PM16
MTBE #	<5	<5	<5	<5	-	<5	-	-			<5	ug/kg	TM31/PM12
Benzene #	<5	<5	<5	<5	-	<5	-	-			<5	ug/kg	TM31/PM12
Toluene #	<5	<5	<5	<5	-	<5	-	-			<5	ug/kg	TM31/PM12
Ethylbenzene #	<5	<5	<5	<5	-	<5	-	-			<5	ug/kg	TM31/PM12
m/p-Xylene #	<5	<5	<5	<5	-	<5	-	-			<5	ug/kg	TM31/PM12
o-Xylene #	<5	<5	<5	<5	-	<5	-	-			<5	ug/kg	TM31/PM12
PCB 28 #	<5	<5	<5	<5	-	<5	-	-			<5	ug/kg	TM17/PM8
PCB 52 #	<5	<5	<5	<5	-	<5	-	-			<5	ug/kg	TM17/PM8
PCB 101 #	<5	<5	<5	<5	-	<5	-	-			<5	ug/kg	TM17/PM8
PCB 118 #	<5	<5	<5	<5	-	<5	-	-			<5	ug/kg	TM17/PM8
PCB 138 #	<5	<5	<5	<5	-	<5	-	-			<5	ug/kg	TM17/PM8
PCB 153 #	<5	<5	<5	<5	-	<5	-	-			<5	ug/kg	TM17/PM8
PCB 180 #	<5	<5	<5	<5	-	<5	-	-			<5	ug/kg	TM17/PM8
Total 7 PCBs #	<35	<35	<35	<35	-	<35	-	-			<35	ug/kg	TM17/PM8

Please see attached notes for all abbreviations and acronyms

Element Materials Technology

Client Name: Ground Investigations Ireland
Reference: 9161-10-19
Location: Baldoyle
Contact: Diarmaid MagLochlainn
EMT Job No: 20/1987

Report : Solid

Solids: V=60g VOC jar, J=250g glass jar, T=plastic tub

EMT Sample No.	23-25	26-28	29-31	32-34	35	36-38	39	40			LOD/LOR	Units	Method No.
Sample ID	TP102	TP103	TP109	TP111	TP111	TP113	TP113	TP103					
Depth	0.50	0.50	0.50	0.50	1.50	0.50	1.50	1.50					
COC No / misc													
Containers	V J T	V J T	V J T	V J T	T	V J T	T	T					
Sample Date	25/01/2020	23/01/2020	24/01/2020	24/01/2020	24/01/2020	24/01/2020	24/01/2020	23/01/2020					
Sample Type	Soil	Soil	Soil	Soil	Soil	Soil	Soil	Soil					
Batch Number	1	1	1	1	1	1	1	1					
Date of Receipt	10/02/2020	10/02/2020	10/02/2020	10/02/2020	10/02/2020	10/02/2020	10/02/2020	10/02/2020					
Natural Moisture Content	21.7	11.4	16.7	18.1	-	12.3	-	-			<0.1	%	PM4/PM0
Moisture Content (% Wet Weight)	17.8	10.3	14.3	15.3	-	11.0	-	-			<0.1	%	PM4/PM0
Hexavalent Chromium #	<0.3	<0.3	<0.3	<0.3	-	<0.3	-	-			<0.3	mg/kg	TM38/PM20
Sulphate as SO4 (2:1 Ext) #	-	-	-	-	0.0743	-	0.0039	0.0090			<0.0015	g/l	TM38/PM20
Chromium III	39.3	17.8	35.3	26.8	-	23.4	-	-			<0.5	mg/kg	NONE/NONE
Total Organic Carbon #	0.58	0.28	1.92	1.19	-	0.56	-	-			<0.02	%	TM21/PM24
pH #	8.46	8.68	8.27	8.24	8.42	8.78	8.79	8.72			<0.01	pH units	TM73/PM11
Mass of raw test portion	0.1053	0.1018	0.1097	0.1079	-	0.1039	-	-				kg	NONE/PM17
Mass of dried test portion	0.09	0.09	0.09	0.09	-	0.09	-	-				kg	NONE/PM17

Please see attached notes for all abbreviations and acronyms

Client Name: Ground Investigations Ireland
Reference: 9161-10-19
Location: Baldoyle
Contact: Diarmaid MagLochlainn
EMT Job No: 20/1987

Report : CEN 10:1 1 Batch

Solids: V=60g VOC jar, J=250g glass jar, T=plastic tub

EMT Sample No.	1-3	5-7	9-11	12-14	16-18	20-22	23-25	26-28	29-31	32-34	LOD/LOR	Units	Method No.
Sample ID	TP02	TP09	TP86	TP90	TP94	TP99	TP102	TP103	TP109	TP111			
Depth	0.50	1.50	0.50	0.50	0.50	0.50	0.50	0.50	0.50	0.50			
COC No / misc													
Containers	V J T	V J T	V J T	V J T	V J T	V J T	V J T	V J T	V J T	V J T			
Sample Date	21/01/2020	21/01/2020	21/01/2020	22/01/2020	22/01/2020	23/01/2020	25/01/2020	23/01/2020	24/01/2020	24/01/2020			
Sample Type	Soil	Soil	Soil	Soil	Soil	Soil	Soil	Soil	Soil	Soil			
Batch Number	1	1	1	1	1	1	1	1	1	1			
Date of Receipt	10/02/2020	10/02/2020	10/02/2020	10/02/2020	10/02/2020	10/02/2020	10/02/2020	10/02/2020	10/02/2020	10/02/2020			
Dissolved Antimony #	<0.002	<0.002	<0.002	<0.002	<0.002	<0.002	<0.002	0.004	<0.002	<0.002	<0.002	mg/l	TM30/PM17
Dissolved Antimony (A10) #	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	0.04	<0.02	<0.02	<0.02	mg/kg	TM30/PM17
Dissolved Arsenic #	<0.0025	<0.0025	<0.0025	<0.0025	<0.0025	<0.0025	<0.0025	<0.0025	<0.0025	<0.0025	<0.0025	mg/l	TM30/PM17
Dissolved Arsenic (A10) #	<0.025	<0.025	<0.025	<0.025	<0.025	<0.025	<0.025	<0.025	<0.025	<0.025	<0.025	mg/kg	TM30/PM17
Dissolved Barium #	<0.003	<0.003	0.007	0.004	0.003	0.007	<0.003	0.003	0.006	0.007	<0.003	mg/l	TM30/PM17
Dissolved Barium (A10) #	<0.03	<0.03	0.07	0.04	<0.03	0.07	<0.03	0.03	0.06	0.07	<0.03	mg/kg	TM30/PM17
Dissolved Cadmium #	<0.0005	<0.0005	<0.0005	<0.0005	<0.0005	<0.0005	<0.0005	<0.0005	<0.0005	<0.0005	<0.0005	mg/l	TM30/PM17
Dissolved Cadmium (A10) #	<0.005	<0.005	<0.005	<0.005	<0.005	<0.005	<0.005	<0.005	<0.005	<0.005	<0.005	mg/kg	TM30/PM17
Dissolved Chromium #	<0.0015	<0.0015	<0.0015	<0.0015	<0.0015	<0.0015	<0.0015	<0.0015	<0.0015	<0.0015	<0.0015	mg/l	TM30/PM17
Dissolved Chromium (A10) #	<0.015	<0.015	<0.015	<0.015	<0.015	<0.015	<0.015	<0.015	<0.015	<0.015	<0.015	mg/kg	TM30/PM17
Dissolved Copper #	<0.007	<0.007	<0.007	<0.007	<0.007	<0.007	<0.007	<0.007	<0.007	<0.007	<0.007	mg/l	TM30/PM17
Dissolved Copper (A10) #	<0.07	<0.07	<0.07	<0.07	<0.07	<0.07	<0.07	<0.07	<0.07	<0.07	<0.07	mg/kg	TM30/PM17
Dissolved Lead #	<0.005	<0.005	<0.005	<0.005	<0.005	<0.005	<0.005	<0.005	<0.005	<0.005	<0.005	mg/l	TM30/PM17
Dissolved Lead (A10) #	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	mg/kg	TM30/PM17
Dissolved Molybdenum #	<0.002	0.015	0.004	0.007	0.011	0.011	<0.002	0.004	0.002	0.006	<0.002	mg/l	TM30/PM17
Dissolved Molybdenum (A10) #	<0.02	0.15	0.04	0.07	0.11	0.11	<0.02	0.04	<0.02	0.06	<0.02	mg/kg	TM30/PM17
Dissolved Nickel #	<0.002	<0.002	<0.002	<0.002	<0.002	<0.002	<0.002	<0.002	<0.002	<0.002	<0.002	mg/l	TM30/PM17
Dissolved Nickel (A10) #	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	mg/kg	TM30/PM17
Dissolved Selenium #	<0.003	<0.003	<0.003	<0.003	<0.003	<0.003	<0.003	<0.003	<0.003	<0.003	<0.003	mg/l	TM30/PM17
Dissolved Selenium (A10) #	<0.03	<0.03	<0.03	<0.03	<0.03	<0.03	<0.03	<0.03	<0.03	<0.03	<0.03	mg/kg	TM30/PM17
Dissolved Zinc #	<0.003	<0.003	<0.003	<0.003	<0.003	<0.003	<0.003	0.003	0.004	<0.003	<0.003	mg/l	TM30/PM17
Dissolved Zinc (A10) #	<0.03	<0.03	<0.03	<0.03	<0.03	<0.03	<0.03	0.03	0.04	<0.03	<0.03	mg/kg	TM30/PM17
Mercury Dissolved by CVAF #	<0.00001	<0.00001	<0.00001	<0.00001	<0.00001	<0.00001	<0.00001	<0.00001	<0.00001	<0.00001	<0.00001	mg/l	TM61/PM0
Mercury Dissolved by CVAF #	<0.0001	<0.0001	<0.0001	<0.0001	<0.0001	<0.0001	<0.0001	<0.0001	<0.0001	<0.0001	<0.0001	mg/kg	TM61/PM0
Phenol	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	mg/l	TM26/PM0
Phenol	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	mg/kg	TM26/PM0
Fluoride	0.4	<0.6 $_{AA}$	0.5	0.4	0.4	0.3	<0.3	0.5	0.6	0.6	<0.3	mg/l	TM173/PM0
Fluoride	4	<6 $_{AA}$	5	4	4	3	<3	5	6	6	<3	mg/kg	TM173/PM0
Sulphate as SO4 #	5.8	0.9	19.9	11.3	21.3	5.2	4.8	<0.5	8.7	42.0	<0.5	mg/l	TM38/PM0
Sulphate as SO4 #	58	9	199	113	213	52	48	<5	87	420	<5	mg/kg	TM38/PM0
Chloride #	0.5	<0.3	<0.3	0.4	0.3	0.7	<0.3	<0.3	<0.3	<0.3	<0.3	mg/l	TM38/PM0
Chloride #	5	<3	<3	4	<3	7	<3	<3	<3	<3	<3	mg/kg	TM38/PM0
Dissolved Organic Carbon	3	3	<2	3	3	3	6	3	4	4	<2	mg/l	TM60/PM0
Dissolved Organic Carbon	30	30	<20	30	30	30	60	30	40	40	<20	mg/kg	TM60/PM0
pH	7.49	7.90	8.22	7.91	8.18	8.03	7.98	7.98	8.13	8.07	<0.01	pH units	TM73/PM0
Total Dissolved Solids #	123	103	73	190	218	89	156	47	70	123	<35	mg/l	TM20/PM0
Total Dissolved Solids #	1230	1030	730	1900	2179	890	1559	470	700	1231	<350	mg/kg	TM20/PM0

Please see attached notes for all abbreviations and acronyms

Client Name: Ground Investigations Ireland
Reference: 9161-10-19
Location: Baldoyle
Contact: Diarmaid MagLochlainn
EMT Job No: 20/1987

Report : CEN 10:1 1 Batch

Solids: V=60g VOC jar, J=250g glass jar, T=plastic tub

Please see attached notes for all abbreviations and acronyms

EMT Sample No.	36-38												
Sample ID	TP113												
Depth	0.50												
COC No / misc													
Containers	V J T												
Sample Date	24/01/2020												
Sample Type	Soil												
Batch Number	1												
Date of Receipt	10/02/2020												
											LOD/LOR	Units	Method No.
Dissolved Antimony #	<0.002										<0.002	mg/l	TM30/PM17
Dissolved Antimony (A10) #	<0.02										<0.02	mg/kg	TM30/PM17
Dissolved Arsenic #	<0.0025										<0.0025	mg/l	TM30/PM17
Dissolved Arsenic (A10) #	<0.025										<0.025	mg/kg	TM30/PM17
Dissolved Barium #	<0.003										<0.003	mg/l	TM30/PM17
Dissolved Barium (A10) #	<0.03										<0.03	mg/kg	TM30/PM17
Dissolved Cadmium #	<0.0005										<0.0005	mg/l	TM30/PM17
Dissolved Cadmium (A10) #	<0.005										<0.005	mg/kg	TM30/PM17
Dissolved Chromium #	<0.0015										<0.0015	mg/l	TM30/PM17
Dissolved Chromium (A10) #	<0.015										<0.015	mg/kg	TM30/PM17
Dissolved Copper #	<0.007										<0.007	mg/l	TM30/PM17
Dissolved Copper (A10) #	<0.07										<0.07	mg/kg	TM30/PM17
Dissolved Lead #	<0.005										<0.005	mg/l	TM30/PM17
Dissolved Lead (A10) #	<0.05										<0.05	mg/kg	TM30/PM17
Dissolved Molybdenum #	0.003										<0.002	mg/l	TM30/PM17
Dissolved Molybdenum (A10) #	0.03										<0.02	mg/kg	TM30/PM17
Dissolved Nickel #	<0.002										<0.002	mg/l	TM30/PM17
Dissolved Nickel (A10) #	<0.02										<0.02	mg/kg	TM30/PM17
Dissolved Selenium #	<0.003										<0.003	mg/l	TM30/PM17
Dissolved Selenium (A10) #	<0.03										<0.03	mg/kg	TM30/PM17
Dissolved Zinc #	<0.003										<0.003	mg/l	TM30/PM17
Dissolved Zinc (A10) #	<0.03										<0.03	mg/kg	TM30/PM17
Mercury Dissolved by CVAF #	<0.00001										<0.00001	mg/l	TM61/PM0
Mercury Dissolved by CVAF #	<0.0001										<0.0001	mg/kg	TM61/PM0
Phenol	<0.01										<0.01	mg/l	TM26/PM0
Phenol	<0.1										<0.1	mg/kg	TM26/PM0
Fluoride	0.6										<0.3	mg/l	TM173/PM0
Fluoride	6										<3	mg/kg	TM173/PM0
Sulphate as SO4 #	<0.5										<0.5	mg/l	TM38/PM0
Sulphate as SO4 #	<5										<5	mg/kg	TM38/PM0
Chloride #	<0.3										<0.3	mg/l	TM38/PM0
Chloride #	<3										<3	mg/kg	TM38/PM0
Dissolved Organic Carbon	3										<2	mg/l	TM60/PM0
Dissolved Organic Carbon	30										<20	mg/kg	TM60/PM0
pH	8.07										<0.01	pH units	TM73/PM0
Total Dissolved Solids #	36										<35	mg/l	TM20/PM0
Total Dissolved Solids #	360										<350	mg/kg	TM20/PM0

Element Materials Technology

Client Name: Ground Investigations Ireland
Reference: 9161-10-19
Location: Baldoyle
Contact: Diarmaid MagLochlainn
EMT Job No: 20/1987

Report : EN12457_2

Solids: V=60g VOC jar, J=250g glass jar, T=plastic tub

Please see attached notes for all abbreviations and acronyms

EMT Sample No.	1-3	5-7	9-11	12-14	16-18	20-22	23-25	26-28	29-31	32-34						
Sample ID	TP02	TP09	TP86	TP90	TP94	TP99	TP102	TP103	TP109	TP111						
Depth	0.50	1.50	0.50	0.50	0.50	0.50	0.50	0.50	0.50	0.50						
COC No / misc																
Containers	V J T	V J T	V J T	V J T	V J T	V J T	V J T	V J T	V J T	V J T						
Sample Date	21/01/2020	21/01/2020	21/01/2020	22/01/2020	22/01/2020	23/01/2020	25/01/2020	23/01/2020	24/01/2020	24/01/2020						
Sample Type	Soil	Soil	Soil	Soil	Soil	Soil	Soil	Soil	Soil	Soil						
Batch Number	1	1	1	1	1	1	1	1	1	1	Inert	Stable Non-reactive	Hazardous	LOD LOR	Units	Method No.
Date of Receipt	10/02/2020	10/02/2020	10/02/2020	10/02/2020	10/02/2020	10/02/2020	10/02/2020	10/02/2020	10/02/2020	10/02/2020						
Solid Waste Analysis																
Total Organic Carbon #	0.82	0.35	0.40	0.38	0.68	0.37	0.58	0.28	1.92	1.19	3	5	6	<0.02	%	TM21/PM24
Sum of BTEX	<0.025	<0.025	<0.025	<0.025	<0.025	<0.025	<0.025	<0.025	<0.025	<0.025	6	-	-	<0.025	mg/kg	TM31/PM12
Sum of 7 PCBs #	<0.035	<0.035	<0.035	<0.035	<0.035	<0.035	<0.035	<0.035	<0.035	<0.035	1	-	-	<0.035	mg/kg	TM17/PM8
Mineral Oil	<30	<30	<30	<30	<30	<30	<30	<30	<30	<30	500	-	-	<30	mg/kg	TM5/PM8/PM16
PAH Sum of 6 #	<0.22	<0.22	<0.22	<0.22	<0.22	<0.22	<0.22	<0.22	1.08	1.04	-	-	-	<0.22	mg/kg	TM4/PM8
PAH Sum of 17	<0.64	<0.64	<0.64	<0.64	<0.64	<0.64	<0.64	<0.64	2.23	2.02	100	-	-	<0.64	mg/kg	TM4/PM8
CEN 10:1 Leachate																
Arsenic #	<0.025	<0.025	<0.025	<0.025	<0.025	<0.025	<0.025	<0.025	<0.025	<0.025	0.5	2	25	<0.025	mg/kg	TM30/PM17
Barium #	<0.03	<0.03	0.07	0.04	<0.03	0.07	<0.03	0.03	0.06	0.07	20	100	300	<0.03	mg/kg	TM30/PM17
Cadmium #	<0.005	<0.005	<0.005	<0.005	<0.005	<0.005	<0.005	<0.005	<0.005	<0.005	0.04	1	5	<0.005	mg/kg	TM30/PM17
Chromium #	<0.015	<0.015	<0.015	<0.015	<0.015	<0.015	<0.015	<0.015	<0.015	<0.015	0.5	10	70	<0.015	mg/kg	TM30/PM17
Copper #	<0.07	<0.07	<0.07	<0.07	<0.07	<0.07	<0.07	<0.07	<0.07	<0.07	2	50	100	<0.07	mg/kg	TM30/PM17
Mercury #	<0.0001	<0.0001	<0.0001	<0.0001	<0.0001	<0.0001	<0.0001	<0.0001	<0.0001	<0.0001	0.01	0.2	2	<0.0001	mg/kg	TM61/PM0
Molybdenum #	<0.02	0.15	0.04	0.07	0.11	0.11	<0.02	0.04	<0.02	0.06	0.5	10	30	<0.02	mg/kg	TM30/PM17
Nickel #	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	0.4	10	40	<0.02	mg/kg	TM30/PM17
Lead #	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	0.5	10	50	<0.05	mg/kg	TM30/PM17
Antimony #	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	0.04	<0.02	<0.02	0.06	0.7	5	<0.02	mg/kg	TM30/PM17
Selenium #	<0.03	<0.03	<0.03	<0.03	<0.03	<0.03	<0.03	<0.03	<0.03	<0.03	0.1	0.5	7	<0.03	mg/kg	TM30/PM17
Zinc #	<0.03	<0.03	<0.03	<0.03	<0.03	<0.03	<0.03	0.03	0.04	<0.03	4	50	200	<0.03	mg/kg	TM30/PM17
Total Dissolved Solids #	1230	1030	730	1900	2179	890	1559	470	700	1231	4000	60000	100000	<350	mg/kg	TM20/PM0
Dissolved Organic Carbon	30	30	<20	30	30	30	60	30	40	40	500	800	1000	<20	mg/kg	TM60/PM0
Mass of raw test portion	0.1126	0.1011	0.0983	0.0962	0.1056	0.1082	0.1053	0.1018	0.1097	0.1079	-	-	-		kg	NONE/PM17
Dry Matter Content Ratio	80.2	88.8	91.7	93.9	85.1	83.2	85.2	88.7	81.9	83.7	-	-	-	<0.1	%	NONE/PM4
Leachant Volume	0.878	0.889	0.892	0.894	0.884	0.882	0.884	0.889	0.88	0.883	-	-	-		l	NONE/PM17
Eluate Volume	0.8	0.85	0.8	0.85	0.875	0.775	0.7	0.8	0.8	0.8	-	-	-		l	NONE/PM17
pH #	8.51	8.72	8.70	8.80	8.47	8.52	8.46	8.68	8.27	8.24	-	-	-	<0.01	pH units	TM73/PM11
Phenol	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	1	-	-	<0.1	mg/kg	TM26/PM0
Fluoride	4	<6 BA	5	4	4	3	<3	5	6	6	-	-	-	<3	mg/kg	TM173/PM0
Sulphate as SO4 #	58	9	199	113	213	52	48	<5	87	420	1000	20000	50000	<5	mg/kg	TM38/PM0
Chloride #	5	<3	<3	4	<3	7	<3	<3	<3	<3	800	15000	25000	<3	mg/kg	TM38/PM0

All solid results are expressed on a dry weight basis unless stated otherwise.

Client Name: Ground Investigations Ireland
Reference: 9161-10-19
Location: Baldoyle
Contact: Diarmaid MagLochlainn
EMT Job No: 20/1987

Report : **EN12457_2**

Solids: V=60g VOC jar, J=250g glass jar, T=plastic tub

Please see attached notes for all abbreviations and acronyms

EMT Sample No.	36-38															
Sample ID	TP113															
Depth	0.50															
COC No / misc																
Containers	V J T															
Sample Date	24/01/2020															
Sample Type	Soil															
Batch Number	1															
Date of Receipt	10/02/2020											Inert	Stable Non-reactive	Hazardous	LOD LOR	Units	Method No.
Solid Waste Analysis																	
Total Organic Carbon #	0.56											3	5	6	<0.02	%	TM21/PM24
Sum of BTEX	<0.025											6	-	-	<0.025	mg/kg	TM31/PM12
Sum of 7 PCBs #	<0.035											1	-	-	<0.035	mg/kg	TM17/PM8
Mineral Oil	<30											500	-	-	<30	mg/kg	TM5/PM8/PM16
PAH Sum of 6 #	<0.22											-	-	-	<0.22	mg/kg	TM4/PM8
PAH Sum of 17	<0.64											100	-	-	<0.64	mg/kg	TM4/PM8
CEN 10:1 Leachate																	
Arsenic #	<0.025											0.5	2	25	<0.025	mg/kg	TM30/PM17
Barium #	<0.03											20	100	300	<0.03	mg/kg	TM30/PM17
Cadmium #	<0.005											0.04	1	5	<0.005	mg/kg	TM30/PM17
Chromium #	<0.015											0.5	10	70	<0.015	mg/kg	TM30/PM17
Copper #	<0.07											2	50	100	<0.07	mg/kg	TM30/PM17
Mercury #	<0.0001											0.01	0.2	2	<0.0001	mg/kg	TM61/PM0
Molybdenum #	0.03											0.5	10	30	<0.02	mg/kg	TM30/PM17
Nickel #	<0.02											0.4	10	40	<0.02	mg/kg	TM30/PM17
Lead #	<0.05											0.5	10	50	<0.05	mg/kg	TM30/PM17
Antimony #	<0.02											0.06	0.7	5	<0.02	mg/kg	TM30/PM17
Selenium #	<0.03											0.1	0.5	7	<0.03	mg/kg	TM30/PM17
Zinc #	<0.03											4	50	200	<0.03	mg/kg	TM30/PM17
Total Dissolved Solids #	360											4000	60000	100000	<350	mg/kg	TM20/PM0
Dissolved Organic Carbon	30											500	800	1000	<20	mg/kg	TM60/PM0
Mass of raw test portion	0.1039											-	-	-		kg	NONE/PM17
Dry Matter Content Ratio	86.9											-	-	-	<0.1	%	NONE/PM4
Leachant Volume	0.886											-	-	-		l	NONE/PM17
Eluate Volume	0.6											-	-	-		l	NONE/PM17
pH #	8.78											-	-	-	<0.01	pH units	TM73/PM11
Phenol	<0.1											1	-	-	<0.1	mg/kg	TM26/PM0
Fluoride	6											-	-	-	<3	mg/kg	TM173/PM0
Sulphate as SO4 #	<5											1000	20000	50000	<5	mg/kg	TM38/PM0
Chloride #	<3											800	15000	25000	<3	mg/kg	TM38/PM0

All solid results are expressed on a dry weight basis unless stated otherwise.

Client Name: Ground Investigations Ireland

Reference: 9161-10-19

Location: Baldoyle

Contact: Diarmaid MagLochlainn

Matrix : Solid

EMT Job No.	Batch	Sample ID	Depth	EMT Sample No.	EPH Interpretation
20/1987	1	TP02	0.50	1-3	No interpretation possible
20/1987	1	TP09	1.50	5-7	No interpretation possible
20/1987	1	TP86	0.50	9-11	No interpretation possible
20/1987	1	TP90	0.50	12-14	No interpretation possible
20/1987	1	TP94	0.50	16-18	No interpretation possible
20/1987	1	TP99	0.50	20-22	No interpretation possible
20/1987	1	TP102	0.50	23-25	No interpretation possible
20/1987	1	TP103	0.50	26-28	No interpretation possible
20/1987	1	TP109	0.50	29-31	No interpretation possible
20/1987	1	TP111	0.50	32-34	No interpretation possible
20/1987	1	TP113	0.50	36-38	No interpretation possible

Client Name: Ground Investigations Ireland
Reference: 19/10/9161
Location: Baldoyle
Contact: Diarmaid MagLochlainn

Note:

Asbestos Screen analysis is carried out in accordance with our documented in-house methods PM042 and TM065 and HSG 248 by Stereo and Polarised Light Microscopy using Dispersion Staining Techniques and is covered by our UKAS accreditation. Detailed Gravimetric Quantification and PCOM Fibre Analysis is carried out in accordance with our documented in-house methods PM042 and TM131 and HSG 248 using Stereo and Polarised Light Microscopy and Phase Contrast Optical Microscopy (PCOM). Samples are retained for not less than 6 months from the date of analysis unless specifically requested.

Opinions, including ACM type and Asbestos level less than 0.1%, lie outside the scope of our UKAS accreditation.

Where the sample is not taken by a Element Materials Technology consultant, Element Materials Technology cannot be responsible for inaccurate or unrepresentative sampling.

EMT Job No.	Batch	Sample ID	Depth	EMT Sample No.	Date Of Analysis	Analysis	Result
20/1987	1	TP02	0.50	2	12/02/2020	**General Description (Bulk Analysis)**	soil.stones
					12/02/2020	**Asbestos Fibres**	NAD
					12/02/2020	**Asbestos ACM**	NAD
					12/02/2020	**Asbestos Type**	NAD
					12/02/2020	**Asbestos Level Screen**	NAD
20/1987	1	TP09	1.50	6	12/02/2020	**General Description (Bulk Analysis)**	soil/stones
					12/02/2020	**Asbestos Fibres**	NAD
					12/02/2020	**Asbestos ACM**	NAD
					12/02/2020	**Asbestos Type**	NAD
					12/02/2020	**Asbestos Level Screen**	NAD
20/1987	1	TP86	0.50	10	12/02/2020	**General Description (Bulk Analysis)**	soil-stones
					12/02/2020	**Asbestos Fibres**	NAD
					12/02/2020	**Asbestos ACM**	NAD
					12/02/2020	**Asbestos Type**	NAD
					12/02/2020	**Asbestos Level Screen**	NAD
20/1987	1	TP90	0.50	13	12/02/2020	**General Description (Bulk Analysis)**	soil-stones
					12/02/2020	**Asbestos Fibres**	NAD
					12/02/2020	**Asbestos ACM**	NAD
					12/02/2020	**Asbestos Type**	NAD
					12/02/2020	**Asbestos Level Screen**	NAD
20/1987	1	TP94	0.50	17	12/02/2020	**General Description (Bulk Analysis)**	Soil/Stones
					12/02/2020	**Asbestos Fibres**	NAD
					12/02/2020	**Asbestos ACM**	NAD
					12/02/2020	**Asbestos Type**	NAD
					12/02/2020	**Asbestos Level Screen**	NAD
20/1987	1	TP99	0.50	21	12/02/2020	**General Description (Bulk Analysis)**	Soil/Stones
					12/02/2020	**Asbestos Fibres**	NAD
					12/02/2020	**Asbestos ACM**	NAD
					12/02/2020	**Asbestos Type**	NAD
					12/02/2020	**Asbestos Level Screen**	NAD
20/1987	1	TP102	0.50	24	12/02/2020	**General Description (Bulk Analysis)**	soil.stones
					12/02/2020	**Asbestos Fibres**	NAD
					12/02/2020	**Asbestos ACM**	NAD

Client Name: Ground Investigations Ireland
Reference: 19/10/9161
Location: Baldoyle
Contact: Diarmaid MagLochlainn

EMT Job No.	Batch	Sample ID	Depth	EMT Sample No.	Date Of Analysis	Analysis	Result
20/1987	1	TP102	0.50	24	12/02/2020	**Asbestos Type**	NAD
					12/02/2020	**Asbestos Level Screen**	NAD
20/1987	1	TP103	0.50	27	12/02/2020	**General Description (Bulk Analysis)**	soil/stones
					12/02/2020	**Asbestos Fibres**	NAD
					12/02/2020	**Asbestos ACM**	NAD
					12/02/2020	**Asbestos Type**	NAD
					12/02/2020	**Asbestos Level Screen**	NAD
20/1987	1	TP109	0.50	30	12/02/2020	**General Description (Bulk Analysis)**	soil-stones
					12/02/2020	**Asbestos Fibres**	NAD
					12/02/2020	**Asbestos ACM**	NAD
					12/02/2020	**Asbestos Type**	NAD
					12/02/2020	**Asbestos Level Screen**	NAD
20/1987	1	TP111	0.50	33	12/02/2020	**General Description (Bulk Analysis)**	soil-stones
					12/02/2020	**Asbestos Fibres**	NAD
					12/02/2020	**Asbestos ACM**	NAD
					12/02/2020	**Asbestos Type**	NAD
					12/02/2020	**Asbestos Level Screen**	NAD
20/1987	1	TP113	0.50	37	12/02/2020	**General Description (Bulk Analysis)**	soil/stones
					12/02/2020	**Asbestos Fibres**	NAD
					12/02/2020	**Asbestos Fibres (2)**	NAD
					12/02/2020	**Asbestos ACM**	NAD
					12/02/2020	**Asbestos ACM (2)**	NAD
					12/02/2020	**Asbestos Type**	NAD
					12/02/2020	**Asbestos Type (2)**	NAD
					12/02/2020	**Asbestos Level Screen**	NAD

Client Name: Ground Investigations Ireland

Reference: 9161-10-19

Location: Baldoyle

Contact: Diarmaid MagLochlainn

Matrix : Solid

EMT Job No.	Batch	Sample ID	Depth	EMT Sample No.	Analysis	Reason
20/1987	1	TP02	0.50	1-3	EPH, GRO, PAH, PCB	Sample holding time exceeded prior to receipt
20/1987	1	TP09	1.50	5-7	EPH, GRO, PAH, PCB	Sample holding time exceeded prior to receipt
20/1987	1	TP86	0.50	9-11	EPH, GRO, PAH, PCB	Sample holding time exceeded prior to receipt
20/1987	1	TP90	0.50	12-14	EPH, GRO, PAH, PCB	Sample holding time exceeded prior to receipt
20/1987	1	TP94	0.50	16-18	EPH, GRO, PAH, PCB	Sample holding time exceeded prior to receipt
20/1987	1	TP99	0.50	20-22	EPH, GRO, PAH, PCB	Sample holding time exceeded prior to receipt
20/1987	1	TP102	0.50	23-25	EPH, GRO, PAH, PCB	Sample holding time exceeded prior to receipt
20/1987	1	TP103	0.50	26-28	EPH, GRO, PAH, PCB	Sample holding time exceeded prior to receipt
20/1987	1	TP109	0.50	29-31	EPH, GRO, PAH, PCB	Sample holding time exceeded prior to receipt
20/1987	1	TP111	0.50	32-34	EPH, GRO, PAH, PCB	Sample holding time exceeded prior to receipt
20/1987	1	TP113	0.50	36-38	EPH, GRO, PAH, PCB	Sample holding time exceeded prior to receipt

Please note that only samples that are deviating are mentioned in this report. If no samples are listed it is because none were deviating.

Only analyses which are accredited are recorded as deviating if set criteria are not met.

NOTES TO ACCOMPANY ALL SCHEDULES AND REPORTS

EMT Job No.: 20/1987

SOILS

Please note we are only MCERTS accredited (UK soils only) for sand, loam and clay and any other matrix is outside our scope of accreditation.

Where an MCERTS report has been requested, you will be notified within 48 hours of any samples that have been identified as being outside our MCERTS scope. As validation has been performed on clay, sand and loam, only samples that are predominantly these matrices, or combinations of them will be within our MCERTS scope. If samples are not one of a combination of the above matrices they will not be marked as MCERTS accredited.

It is assumed that you have taken representative samples on site and require analysis on a representative subsample. Stones will generally be included unless we are requested to remove them.

All samples will be discarded one month after the date of reporting, unless we are instructed to the contrary.

If you have not already done so, please send us a purchase order if this is required by your company.

Where appropriate please make sure that our detection limits are suitable for your needs, if they are not, please notify us immediately.

All analysis is reported on a dry weight basis unless stated otherwise. Limits of detection for analyses carried out on as received samples are not moisture content corrected. Results are not surrogate corrected. Samples are dried at 35°C ±5°C unless otherwise stated. Moisture content for CEN Leachate tests are dried at 105°C ±5°C.

Where Mineral Oil or Fats, Oils and Grease is quoted, this refers to Total Aliphatics C10-C40.

Where a CEN 10:1 ZERO Headspace VOC test has been carried out, a 10:1 ratio of water to wet (as received) soil has been used.

% Asbestos in Asbestos Containing Materials (ACMs) is determined by reference to HSG 264 The Survey Guide - Appendix 2 : ACMs in buildings listed in order of ease of fibre release.

Sufficient amount of sample must be received to carry out the testing specified. Where an insufficient amount of sample has been received the testing may not meet the requirements of our accredited methods, as such accreditation may be removed.

Negative Neutralization Potential (NP) values are obtained when the volume of NaOH (0.1N) titrated (pH 8.3) is greater than the volume of HCl (1N) to reduce the pH of the sample to 2.0 - 2.5. Any negative NP values are corrected to 0.

The calculation of Pyrite content assumes that all oxidisable sulphides present in the sample are pyrite. This may not be the case. The calculation may be an overesitimate when other sulphides such as Barite (Barium Sulphate) are present.

WATERS

Please note we are not a UK Drinking Water Inspectorate (DWI) Approved Laboratory .

ISO17025 accreditation applies to surface water and groundwater and usually one other matrix which is analysis specific, any other liquids are outside our scope of accreditation.

As surface waters require different sample preparation to groundwaters the laboratory must be informed of the water type when submitting samples.

Where Mineral Oil or Fats, Oils and Grease is quoted, this refers to Total Aliphatics C10-C40.

DEVIATING SAMPLES

All samples should be submitted to the laboratory in suitable containers with sufficient ice packs to sustain an appropriate temperature for the requested analysis. The temperature of sample receipt is recorded on the confirmation schedules in order that the client can make an informed decision as to whether testing should still be undertaken.

SURROGATES

Surrogate compounds are added during the preparation process to monitor recovery of analytes. However low recovery in soils is often due to peat, clay or other organic rich matrices. For waters this can be due to oxidants, surfactants, organic rich sediments or remediation fluids. Acceptable limits for most organic methods are 70 - 130% and for VOCs are 50 - 150%. When surrogate recoveries are outside the performance criteria but the associated AQC passes this is assumed to be due to matrix effect. Results are not surrogate corrected.

DILUTIONS

A dilution suffix indicates a dilution has been performed and the reported result takes this into account. No further calculation is required.

BLANKS

Where analytes have been found in the blank, the sample will be treated in accordance with our laboratory procedure for dealing with contaminated blanks.

NOTE

Data is only reported if the laboratory is confident that the data is a true reflection of the samples analysed. Data is only reported as accredited when all the requirements of our Quality System have been met. In certain circumstances where all the requirements of the Quality System have not been met, for instance if the associated AQC has failed, the reason is fully investigated and documented. The sample data is then evaluated alongside the other quality control checks performed during analysis to determine its suitability. Following this evaluation, provided the sample results have not been effected, the data is reported but accreditation is removed. It is a UKAS requirement for data not reported as accredited to be considered indicative only, but this does not mean the data is not valid.
Where possible, and if requested, samples will be re-extracted and a revised report issued with accredited results. Please do not hesitate to contact the laboratory if further details are required of the circumstances which have led to the removal of accreditation.

REPORTS FROM THE SOUTH AFRICA LABORATORY

Any method number not prefixed with SA has been undertaken in our UK laboratory unless reported as subcontracted.

Measurement Uncertainty

Measurement uncertainty defines the range of values that could reasonably be attributed to the measured quantity. This range of values has not been included within the reported results. Uncertainty expressed as a percentage can be provided upon request.

ABBREVIATIONS and ACRONYMS USED

#	ISO17025 (UKAS Ref No. 4225) accredited - UK.
SA	ISO17025 (SANAS Ref No.T0729) accredited - South Africa
B	Indicates analyte found in associated method blank.
DR	Dilution required.
M	MCERTS accredited.
NA	Not applicable
NAD	No Asbestos Detected.
ND	None Detected (usually refers to VOC and/SVOC TICs).
NDP	No Determination Possible
SS	Calibrated against a single substance
SV	Surrogate recovery outside performance criteria. This may be due to a matrix effect.
W	Results expressed on as received basis.
+	AQC failure, accreditation has been removed from this result, if appropriate, see 'Note' on previous page.
>>	Results above calibration range, the result should be considered the minimum value. The actual result could be significantly higher, this result is not accredited.
*	Analysis subcontracted to an Element Materials Technology approved laboratory.
AD	Samples are dried at 35°C ±5°C
CO	Suspected carry over
LOD/LOR	Limit of Detection (Limit of Reporting) in line with ISO 17025 and MCERTS
ME	Matrix Effect
NFD	No Fibres Detected
BS	AQC Sample
LB	Blank Sample
N	Client Sample
TB	Trip Blank Sample
OC	Outside Calibration Range
AA	x2 Dilution

BA	x2 Dilution

EMT Job No: 20/1987

Test Method No.	Description	Prep Method No. (if appropriate)	Description	ISO 17025 (UKAS/SANAS)	MCERTS (UK soils only)	Analysis done on As Received (AR) or Dried (AD)	Reported on dry weight basis
PM4	Gravimetric measurement of Natural Moisture Content and % Moisture Content at either 35°C or 105°C. Calculation based on ISO 11465 and BS1377.	PM0	No preparation is required.			AR	
TM4	Modified USEPA 8270 method for the solvent extraction and determination of PAHs by GC-MS.	PM8	End over end extraction of solid samples for organic analysis. The solvent mix varies depending on analysis required.			AR	Yes
TM4	Modified USEPA 8270 method for the solvent extraction and determination of PAHs by GC-MS.	PM8	End over end extraction of solid samples for organic analysis. The solvent mix varies depending on analysis required.	Yes		AR	Yes
TM5	Modified 8015B method for the determination of solvent Extractable Petroleum Hydrocarbons (EPH) within the range C8-C40 by GCFID. For waters the solvent extracts dissolved phase plus a sheen if present.	PM16	Fractionation into aliphatic and aromatic fractions using a Rapid Trace SPE.			AR	
TM5	Modified 8015B method for the determination of solvent Extractable Petroleum Hydrocarbons (EPH) within the range C8-C40 by GCFID. For waters the solvent extracts dissolved phase plus a sheen if present.	PM8/PM16	End over end extraction of solid samples for organic analysis. The solvent mix varies depending on analysis required/Fractionation into aliphatic and aromatic fractions using a Rapid Trace SPE.			AR	Yes
TM5	Modified 8015B method for the determination of solvent Extractable Petroleum Hydrocarbons (EPH) within the range C8-C40 by GCFID. For waters the solvent extracts dissolved phase plus a sheen if present.	PM8/PM16	End over end extraction of solid samples for organic analysis. The solvent mix varies depending on analysis required/Fractionation into aliphatic and aromatic fractions using a Rapid Trace SPE.	Yes		AR	Yes
TM5/TM36	please refer to TM5 and TM36 for method details	PM8/PM12/PM16	please refer to PM8/PM16 and PM12 for method details			AR	Yes
TM17	Modified US EPA method 8270. Determination of specific Polychlorinated Biphenyl congeners by GC-MS.	PM8	End over end extraction of solid samples for organic analysis. The solvent mix varies depending on analysis required.	Yes		AR	Yes
TM20	Modified BS 1377-3: 1990/USEPA 160.3 Gravimetric determination of Total Dissolved Solids/Total Solids	PM0	No preparation is required.	Yes		AR	Yes
TM21	Modified BS 7755-3:1995, ISO10694:1995 Determination of Total Organic Carbon or Total Carbon by combustion in an Eltra TOC furnace/analyser in the presence of oxygen. The CO2 generated is quantified using infra-red detection. Organic Matter (SOM) calculated as per EA MCERTS Chemical Testing of Soil, March 2012 v4.	PM24	Dried and ground solid samples are washed with hydrochloric acid, then rinsed with deionised water to remove the mineral carbon before TOC analysis.	Yes		AD	Yes

EMT Job No: 20/1987

Test Method No.	Description	Prep Method No. (if appropriate)	Description	ISO 17025 (UKAS/SANAS)	MCERTS (UK soils only)	Analysis done on As Received (AR) or Dried (AD)	Reported on dry weight basis
TM26	Determination of phenols by Reversed Phased High Performance Liquid Chromatography and Electro-Chemical Detection.	PM0	No preparation is required.			AR	Yes
TM30	Determination of Trace Metal elements by ICP-OES (Inductively Coupled Plasma - Optical Emission Spectrometry). Modified US EPA Method 200.7, 6010B and BS EN ISO 11885 2009	PM15	Acid digestion of dried and ground solid samples using Aqua Regia refluxed at 112.5 °C. Samples containing asbestos are not dried and ground.			AD	Yes
TM30	Determination of Trace Metal elements by ICP-OES (Inductively Coupled Plasma - Optical Emission Spectrometry). Modified US EPA Method 200.7, 6010B and BS EN ISO 11885 2009	PM15	Acid digestion of dried and ground solid samples using Aqua Regia refluxed at 112.5 °C. Samples containing asbestos are not dried and ground.	Yes		AD	Yes
TM30	Determination of Trace Metal elements by ICP-OES (Inductively Coupled Plasma - Optical Emission Spectrometry). Modified US EPA Method 200.7, 6010B and BS EN ISO 11885 2009	PM17	Modified method BS EN12457-2 As received solid samples are leached with water in a 10:1 water to soil ratio for 24 hours, the moisture content of the sample is included in the ratio.	Yes		AR	Yes
TM31	Modified USEPA 8015B. Determination of Methyltertbutylether, Benzene, Toluene, Ethylbenzene and Xylene by headspace GC-FID.	PM12	Modified US EPA method 5021. Preparation of solid and liquid samples for GC headspace analysis.			AR	Yes
TM31	Modified USEPA 8015B. Determination of Methyltertbutylether, Benzene, Toluene, Ethylbenzene and Xylene by headspace GC-FID.	PM12	Modified US EPA method 5021. Preparation of solid and liquid samples for GC headspace analysis.	Yes		AR	Yes
TM36	Modified US EPA method 8015B. Determination of Gasoline Range Organics (GRO) in the carbon chain range of C4-12 by headspace GC-FID. MTBE by GCFID co-elutes with 3-methylpentane if present and therefore can give a false positive. Positive MTBE results can be confirmed using GCMS.	PM12	Modified US EPA method 5021. Preparation of solid and liquid samples for GC headspace analysis.			AR	Yes
TM36	Modified US EPA method 8015B. Determination of Gasoline Range Organics (GRO) in the carbon chain range of C4-12 by headspace GC-FID. MTBE by GCFID co-elutes with 3-methylpentane if present and therefore can give a false positive. Positive MTBE results can be confirmed using GCMS.	PM12	Modified US EPA method 5021. Preparation of solid and liquid samples for GC headspace analysis.	Yes		AR	Yes
TM38	Soluble Ion analysis using Discrete Analyser. Modified US EPA methods 325.2 (Chloride), 375.4 (Sulphate), 365.2 (o-Phosphate), 353.1 (TON), 354.1 (Nitrite), 350.1 (NH4+) comparable to BS ISO 15923-1, 7196A (Hex Cr)	PM0	No preparation is required.	Yes		AR	Yes
TM38	Soluble Ion analysis using Discrete Analyser. Modified US EPA methods 325.2 (Chloride), 375.4 (Sulphate), 365.2 (o-Phosphate), 353.1 (TON), 354.1 (Nitrite), 350.1 (NH4+) comparable to BS ISO 15923-1, 7196A (Hex Cr)	PM20	Extraction of dried and ground or as received samples with deionised water in a 2:1 water to solid ratio using a reciprocal shaker for all analytes except hexavalent chromium. Extraction of as received sample using 10:1 ratio of 0.2M sodium hydroxide to soil for hexavalent chromium using a reciprocal shaker.	Yes		AD	Yes

EMT Job No: 20/1987

Test Method No.	Description	Prep Method No. (if appropriate)	Description	ISO 17025 (UKAS/SANAS)	MCERTS (UK soils only)	Analysis done on As Received (AR) or Dried (AD)	Reported on dry weight basis
TM38	Soluble Ion analysis using Discrete Analyser. Modified US EPA methods 325.2 (Chloride), 375.4 (Sulphate), 365.2 (o-Phosphate), 353.1 (TON), 354.1 (Nitrite), 350.1 (NH4+) comparable to BS ISO 15923-1, 7196A (Hex Cr)	PM20	Extraction of dried and ground or as received samples with deionised water in a 2:1 water to solid ratio using a reciprocal shaker for all analytes except hexavalent chromium. Extraction of as received sample using 10:1 ratio of 0.2M sodium hydroxide to soil for hexavalent chromium using a reciprocal shaker.	Yes		AR	Yes
TM60	TC/TOC analysis of Waters by High Temperature Combustion followed by NDIR detection. Based on the following modified standard methods: USEPA 9060, APHA Standard Methods for Examination of Water and Wastewater 5310B, ASTM D 7573, and USEPA 415.1.	PM0	No preparation is required.			AR	Yes
TM61	Modified US EPA methods 245.7 and 200.7. Determination of Mercury by Cold Vapour Atomic Fluorescence.	PM0	No preparation is required.	Yes		AR	Yes
TM65	Asbestos Bulk Identification method based on HSG 248.	PM42	Solid samples undergo a thorough visual inspection for asbestos fibres prior to asbestos identification using TM065.	Yes		AR	
TM73	Modified US EPA methods 150.1 and 9045D and BS1377:1990. Determination of pH by Metrohm automated probe analyser.	PM0	No preparation is required.			AR	Yes
TM73	Modified US EPA methods 150.1 and 9045D and BS1377:1990. Determination of pH by Metrohm automated probe analyser.	PM11	Extraction of as received solid samples using one part solid to 2.5 parts deionised water.	Yes		AR	No
TM173	Analysis of fluoride by ISE (Ion Selective Electrode) using modified ISE method 340.2	PM0	No preparation is required.			AR	Yes
NONE	No Method Code	NONE	No Method Code			AD	Yes
NONE	No Method Code	PM17	Modified method BS EN12457-2 As received solid samples are leached with water in a 10:1 water to soil ratio for 24 hours, the moisture content of the sample is included in the ratio.				
NONE	No Method Code	PM17	Modified method BS EN12457-2 As received solid samples are leached with water in a 10:1 water to soil ratio for 24 hours, the moisture content of the sample is included in the ratio.			AR	

EMT Job No: 20/1987

Test Method No.	Description	Prep Method No. (if appropriate)	Description	ISO 17025 (UKAS/SANAS)	MCERTS (UK soils only)	Analysis done on As Received (AR) or Dried (AD)	Reported on dry weight basis
NONE	No Method Code	PM4	Gravimetric measurement of Natural Moisture Content and % Moisture Content at either 35°C or 105°C. Calculation based on ISO 11465 and BS1377.			AR	

A9.4 Waste Acceptance Criteria - Summary Table

Waste Categorisation Summary Table

GA-1 Baldoyle

Sample ID	BH1	BH1	BH2	BH3	BH3	BH4	BH5	BH5	BH6	BH7					
Sample Depth (m)	0.50	3.00	1.00	1.00	2.00	2.00	1.00	3.00	1.00	0.50					
Material Description	Made Ground	Clay	Made Ground	Clay	Clay	Clay	Made Ground	Clay	Made Ground	Made Ground					
Sample Date	12/11/2019	12/11/2019	12/11/2019	12/11/2019	12/11/2019	12/11/2019	12/11/2019	12/11/2019	12/11/2019	12/11/2019					
LoW Code	17 05 04	17 05 04	17 05 04	17 05 04	17 05 04	17 05 04	17 05 04	17 05 04	17 05 04	17 05 04	Inert Criteria	IMS* Criteria	Hazardous Criteria	LOD LOR	Units
Waste Category	Category B1	Category B2	Category B1	Category A	Category A	Category B2	Category B1	Category C	Category B1	Category B1					
Metals															
Antimony	2	3	2	2	2	2	2	2	2	2	-	-	HazWaste	<1	mg/kg
Arsenic	19.5	18.6	11.5	13.7	9.5	11.1	12.7	9.6	13.0	11.1	-	-	HazWaste	<0.5	mg/kg
Barium	101	78	302	96	153	138	257	140	103	106	-	-	HazWaste	<1	mg/kg
Cadmium	0.6	2.0	1.5	1.4	1.0	1.7	1.6	1.4	1.7	1.9	-	-	HazWaste	<0.1	mg/kg
Chromium	52.0	42.8	84.5	36.9	104.8	45.1	50.6	52.0	45.1	35.9	-	-	HazWaste	<0.5	mg/kg
Copper	26	29	34	28	28	26	28	24	26	29	-	-	HazWaste	<1	mg/kg
Lead	15	21	35	19	15	17	20	17	17	19	-	-	HazWaste	<5	mg/kg
Mercury	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	-	-	HazWaste	<0.1	mg/kg
Molybdenum	2.0	5.7	6.4	4.1	5.0	4.0	5.1	4.8	3.2	4.4	-	-	HazWaste	<0.1	mg/kg
Nickel	40.6	54.2	36.7	41.2	47.1	38.5	39.7	32.1	42.0	40.6	-	-	HazWaste	<0.7	mg/kg
Selenium	<1	3	2	<1	4	3	<1	2	<1	<1	-	-	HazWaste	<1	mg/kg
Zinc	79	117	118	72	82	74	83	64	85	73	-	-	HazWaste	<5	mg/kg
Hexavalent Chromium	<0.3	<0.3	<0.3	<0.3	<0.3	<0.3	<0.3	<0.3	<0.3	<0.3	-	-	HazWaste	<0.3	mg/kg
pH (solid sample)	8.64	8.58	8.30	8.70	8.80	8.52	8.68	8.61	8.62	8.64	-	-	HazWaste	<0.01	pH units
alkali reserve	-	-	-	-	-	-	-	-	-	-	-	-	-	<0.000	gNaOH/100g
Asbestos															
Asbestos Fibres	NAD	NAD	NAD	NAD	NAD	NAD	NAD	NAD	NAD	NAD	-	-	0.1	<0.001	%
ACM Detected	-	-	-	-	-	-	-	-	-	-	-	-	-	Presence	Presence
PAHs															
Naphthalene	<0.04	<0.04	<0.04	<0.04	<0.04	<0.04	<0.04	<0.04	<0.04	<0.04	-	-	HazWaste	<0.04	mg/kg
Acenaphthylene	<0.03	<0.03	<0.03	<0.03	<0.03	<0.03	<0.03	<0.03	<0.03	<0.03	-	-	HazWaste	<0.03	mg/kg
Acenaphthene	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	-	-	HazWaste	<0.05	mg/kg
Fluorene	<0.04	<0.04	<0.04	<0.04	<0.04	<0.04	<0.04	<0.04	<0.04	<0.04	-	-	HazWaste	<0.04	mg/kg
Phenanthrene	<0.03	<0.03	0.17	<0.03	<0.03	<0.03	<0.03	<0.03	<0.03	<0.03	-	-	HazWaste	<0.03	mg/kg
Anthracene	<0.04	<0.04	<0.04	<0.04	<0.04	<0.04	<0.04	<0.04	<0.04	<0.04	-	-	HazWaste	<0.04	mg/kg
Fluoranthene	<0.03	<0.03	0.15	<0.03	<0.03	<0.03	<0.03	<0.03	<0.03	<0.03	-	-	HazWaste	<0.03	mg/kg
Pyrene	<0.03	<0.03	0.13	<0.03	<0.03	<0.03	<0.03	<0.03	<0.03	<0.03	-	-	HazWaste	<0.03	mg/kg
Benzo(a)anthracene	<0.06	<0.06	<0.06	<0.06	<0.06	<0.06	<0.06	<0.06	<0.06	<0.06	-	-	HazWaste	<0.06	mg/kg
Chrysene	<0.02	<0.02	0.07	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	-	-	HazWaste	<0.02	mg/kg
Benzo(bk)fluoranthene	<0.07	<0.07	<0.07	<0.07	<0.07	<0.07	<0.07	<0.07	<0.07	<0.07	-	-	HazWaste	<0.07	mg/kg
Benzo(a)pyrene	<0.04	<0.04	<0.04	<0.04	<0.04	<0.04	<0.04	<0.04	<0.04	<0.04	-	-	HazWaste	<0.04	mg/kg
Indeno(123cd)pyrene	<0.04	<0.04	<0.04	<0.04	<0.04	<0.04	<0.04	<0.04	<0.04	<0.04	-	-	HazWaste	<0.04	mg/kg
Dibenzo(ah)anthracene	<0.04	<0.04	<0.04	<0.04	<0.04	<0.04	<0.04	<0.04	<0.04	<0.04	-	-	HazWaste	<0.04	mg/kg
Benzo(ghi)perylene	<0.04	<0.04	<0.04	<0.04	<0.04	<0.04	<0.04	<0.04	<0.04	<0.04	-	-	HazWaste	<0.04	mg/kg
Coronene	<0.04	<0.04	<0.04	<0.04	<0.04	<0.04	<0.04	<0.04	<0.04	<0.04	-	-	HazWaste	<0.04	mg/kg
PAH 6 Total	<0.22	<0.22	<0.22	<0.22	<0.22	<0.22	<0.22	<0.22	<0.22	<0.22	-	-	-	<0.22	mg/kg
PAH 17 Total	<0.64	<0.64	<0.64	<0.64	<0.64	<0.64	<0.64	<0.64	<0.64	<0.64	100	100	-	<0.64	mg/kg
Benzo(b)fluoranthene	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	-	-	HazWaste	<0.05	mg/kg
Benzo(k)fluoranthene	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	-	-	HazWaste	<0.02	mg/kg
Benzo(j)fluoranthene	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	-	-	HazWaste	<1	mg/kg
Hydrocarbons															
TPH (C5-40)	<52	<52	<52	<52	<52	<52	<52	<52	<52	<52	-	-	HazWaste	<52	mg/kg
MTBE	<5	<5	<5	<5	<5	<5	<5	<5	<5	<5	-	-	HazWaste	<5	ug/kg
Benzene	<5	<5	<5	<5	<5	<5	<5	<5	<5	<5	-	-	HazWaste	<5	ug/kg
Toluene	<5	<5	<5	<5	<5	<5	<5	<5	<5	<5	-	-	HazWaste	<5	ug/kg
Ethylbenzene	<5	<5	<5	<5	<5	<5	<5	<5	<5	<5	-	-	HazWaste	<5	ug/kg
m/p-Xylene	<5	<5	<5	<5	<5	<5	<5	<5	<5	<5	-	-	HazWaste	<5	ug/kg
o-Xylene	<5	<5	<5	<5	<5	<5	<5	<5	<5	<5	-	-	HazWaste	<5	ug/kg
Total 7 PCBs	<35	<35	<35	<35	<35	<35	<35	<35	<35	<35	1,000	1,000	HazWaste	<35	ug/kg
WAC Solid Sample Summary**															
Total Organic Carbon *	0.31	0.50	1.43	0.41	0.45	0.59	0.45	0.55	0.30	0.43	3	6	-	<0.02	%
Sum of BTEX	<0.025	<0.025	<0.025	<0.025	<0.025	<0.025	<0.025	<0.025	<0.025	<0.025	6	6	-	<0.025	mg/kg
Sum of 7 PCBs	<0.035	<0.035	<0.035	<0.035	<0.035	<0.035	<0.035	<0.035	<0.035	<0.035	1	1	-	<0.035	mg/kg
Mineral Oil	<30	<30	<30	<30	<30	<30	<30	<30	<30	<30	500	500	-	<30	mg/kg
PAH Sum of 6	<0.22	<0.22	<0.22	<0.22	<0.22	<0.22	<0.22	<0.22	<0.22	<0.22	-	-	-	<0.22	mg/kg
PAH Sum of 17	<0.64	<0.64	<0.64	<0.64	<0.64	<0.64	<0.64	<0.64	<0.64	<0.64	100	100	-	<0.64	mg/kg
WAC Leachate Data**															
Arsenic	<0.025	<0.025	<0.025	<0.025	<0.025	<0.025	<0.025	<0.025	<0.025	<0.025	0.5	1.5	-	<0.025	mg/kg
Barium	0.07	0.12	0.12	0.08	0.13	0.44	0.06	0.32	<0.03	0.06	20	20	-	<0.03	mg/kg
Cadmium	<0.005	<0.005	<0.005	<0.005	<0.005	<0.005	<0.005	<0.005	<0.005	<0.005	0.04	0.04	-	<0.005	mg/kg
Chromium	<0.015	<0.015	<0.015	<0.015	<0.015	<0.015	<0.015	<0.015	<0.015	<0.015	0.5	0.5	-	<0.015	mg/kg
Copper	<0.07	<0.07	<0.07	<0.07	<0.07	<0.07	<0.07	<0.07	<0.07	<0.07	2	2	-	<0.07	mg/kg
Mercury	<0.0001	<0.0001	<0.0001	<0.0001	<0.0001	<0.0001	<0.0001	<0.0001	<0.0001	<0.0001	0.01	0.01	-	<0.0001	mg/kg
Molybdenum	0.16	0.56	0.07	0.09	0.28	0.22	0.18	0.15	0.10	0.14	0.5	1.5	-	<0.02	mg/kg
Nickel	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	0.4	0.4	-	<0.02	mg/kg
Lead	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	0.5	0.5	-	<0.05	mg/kg
Antimony	0.03	<0.02	<0.02	<0.02	<0.02	0.03	<0.02	0.03	<0.02	<0.02	0.06	0.18	-	<0.02	mg/kg
Selenium	<0.03	<0.03	<0.03	<0.03	<0.03	0.29	<0.03	0.44	<0.03	<0.03	0.1	0.3	-	<0.03	mg/kg
Zinc	<0.03	0.04	0.05	<0.03	0.04	<0.03	<0.03	<0.03	<0.03	<0.03	4	4	-	<0.03	mg/kg
Total Dissolved Solids	1339	840	1279	860	890	1410	1141	890	690	730	4000	12,000	-	<350	mg/kg
Dissolved Organic Carbon	<20	<20	40	<20	<20	<20	<20	<20	<20	<20	500	500	-	<20	mg/kg
Phenol	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	1	1	-	<0.1	mg/kg
Sulphate as SO4	211	108	6	6	24	174	7	226	6	20	1000	3,000	-	<0.5	mg/kg
Chloride	<3	<3	<3	<3	<3	69	3	78	<3	7	800	2,400	-	<3	mg/kg

NAD- no asbestos detected

* - Integrated Materials Solutions Landfill, Hollywood Great, Nag's Head, The Naul, Co. Dublin

** - limits as specified in Council Decision 2003/33/EC

Waste Categorisation Summary Table

GA-1 Baldoyle

Sample ID	BH7	BH8	BH9	BH9	BH10	BH11	BH11	BH13	BH14	BH14					
Sample Depth (m)	2.00	1.50	1.00	3.00	1.00-2.00	0.00-1.00	2.00-3.00	1.00-2.00	0.00-1.00	2.00-3.00					
Material Description	Clay	Clay	Clay	Clay	Clay	Clay	Clay	Clay	Clay	Clay					
Sample Date	12/11/2019	12/11/2019	12/11/2019	12/11/2019	22/10/2019	24/10/2019	24/10/2019	24/10/2019	24/10/2019	24/10/2019					
LoW Code	17 05 04	17 05 04	17 05 04	17 05 04	17 05 04	17 05 04	17 05 04	17 05 04	17 05 04	17 05 04	Inert Criteria	IMS* Criteria	Hazardous Criteria	LOD LOR	Units
Waste Category	Category C	Category A	Category A	Category C	Category A	Category A	Category C	Category A	Category A	Category C					
Metals															
Antimony	2	2	2	2	2	2	2	2	2	2	-	-	HazWaste	<1	mg/kg
Arsenic	12.4	8.8	12.1	11.4	14.5	10.3	11.4	12.4	11.0	12.3	-	-	HazWaste	<0.5	mg/kg
Barium	96	252	97	145	68	49	93	78	423	95	-	-	HazWaste	<1	mg/kg
Cadmium	1.5	1.6	1.3	1.4	2.3	2.1	1.7	2.1	2.0	1.7	-	-	HazWaste	<0.1	mg/kg
Chromium	31.9	34.2	59.3	44.4	49.0	50.2	53.9	46.7	47.1	44.1	-	-	HazWaste	<0.5	mg/kg
Copper	23	21	22	28	33	30	28	30	30	32	-	-	HazWaste	<1	mg/kg
Lead	18	13	18	19	20	16	18	19	17	19	-	-	HazWaste	<5	mg/kg
Mercury	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	-	-	HazWaste	<0.1	mg/kg
Molybdenum	3.3	4.1	2.9	4.3	6.1	4.3	4.4	6.4	4.6	5.3	-	-	HazWaste	<0.1	mg/kg
Nickel	35.3	30.4	34.5	36.3	41.8	40.4	36.4	46.3	39.3	39.9	-	-	HazWaste	<0.7	mg/kg
Selenium	3	<1	<1	3	17	2	3	4	1	7	-	-	HazWaste	<1	mg/kg
Zinc	124	63	69	73	98	71	80	79	77	87	-	-	HazWaste	<5	mg/kg
Hexavalent Chromium	<0.3	<0.3	<0.3	<0.3	<0.3	<0.3	<0.3	<0.3	<0.3	<0.3	-	-	HazWaste	<0.3	mg/kg
pH (solid sample)	8.44	8.57	8.09	8.49	8.54	8.67	8.44	8.61	8.66	8.66	-	-	HazWaste	<0.01	pH units
alkali reserve	-	-	-	-	-	-	-	-	-	-	-	-	-	<0.000	gNaOH/100g
Asbestos															
Asbestos Fibres	NAD	NAD	NAD	NAD	NAD	NAD	NAD	NAD	NAD	NAD	-	-	0.1	<0.001	%
ACM Detected	-	-	-	-	-	-	-	-	-	-	-	-	-	Presence	Presence
PAHs															
Naphthalene	<0.04	<0.04	<0.04	<0.04	<0.04	<0.04	<0.04	<0.04	<0.04	<0.04	-	-	HazWaste	<0.04	mg/kg
Acenaphthylene	<0.03	<0.03	<0.03	<0.03	<0.03	<0.03	<0.03	<0.03	<0.03	<0.03	-	-	HazWaste	<0.03	mg/kg
Acenaphthene	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	-	-	HazWaste	<0.05	mg/kg
Fluorene	<0.04	<0.04	<0.04	<0.04	<0.04	<0.04	<0.04	<0.04	<0.04	<0.04	-	-	HazWaste	<0.04	mg/kg
Phenanthrene	<0.03	<0.03	<0.03	<0.03	<0.03	<0.03	<0.03	<0.03	<0.03	<0.03	-	-	HazWaste	<0.03	mg/kg
Anthracene	<0.04	<0.04	<0.04	<0.04	<0.04	<0.04	<0.04	<0.04	<0.04	<0.04	-	-	HazWaste	<0.04	mg/kg
Fluoranthene	<0.03	<0.03	<0.03	<0.03	<0.03	<0.03	<0.03	<0.03	<0.03	<0.03	-	-	HazWaste	<0.03	mg/kg
Pyrene	<0.03	<0.03	<0.03	<0.03	<0.03	<0.03	<0.03	<0.03	<0.03	<0.03	-	-	HazWaste	<0.03	mg/kg
Benzo(a)anthracene	<0.06	<0.06	<0.06	<0.06	<0.06	<0.06	<0.06	<0.06	<0.06	<0.06	-	-	HazWaste	<0.06	mg/kg
Chrysene	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	-	-	HazWaste	<0.02	mg/kg
Benzo(bk)fluoranthene	<0.07	<0.07	<0.07	<0.07	<0.07	<0.07	<0.07	<0.07	<0.07	<0.07	-	-	HazWaste	<0.07	mg/kg
Benzo(a)pyrene	<0.04	<0.04	<0.04	<0.04	<0.04	<0.04	<0.04	<0.04	<0.04	<0.04	-	-	HazWaste	<0.04	mg/kg
Indeno(123cd)pyrene	<0.04	<0.04	<0.04	<0.04	<0.04	<0.04	<0.04	<0.04	<0.04	<0.04	-	-	HazWaste	<0.04	mg/kg
Dibenzo(ah)anthracene	<0.04	<0.04	<0.04	<0.04	<0.04	<0.04	<0.04	<0.04	<0.04	<0.04	-	-	HazWaste	<0.04	mg/kg
Benzo(ghi)perylene	<0.04	<0.04	<0.04	<0.04	<0.04	<0.04	<0.04	<0.04	<0.04	<0.04	-	-	HazWaste	<0.04	mg/kg
Coronene	<0.04	<0.04	<0.04	<0.04	<0.04	<0.04	<0.04	<0.04	<0.04	<0.04	-	-	HazWaste	<0.04	mg/kg
PAH 6 Total	<0.22	<0.22	<0.22	<0.22	<0.22	<0.22	<0.22	<0.22	<0.22	<0.22	-	-	-	<0.22	mg/kg
PAH 17 Total	<0.64	<0.64	<0.64	<0.64	<0.64	<0.64	<0.64	<0.64	<0.64	<0.64	100	100	-	<0.64	mg/kg
Benzo(b)fluoranthene	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	-	-	HazWaste	<0.05	mg/kg
Benzo(k)fluoranthene	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	-	-	HazWaste	<0.02	mg/kg
Benzo(j)fluoranthene	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	-	-	HazWaste	<1	mg/kg
Hydrocarbons															
TPH (C5-40)	<52	<52	<52	<52	<52	<52	<52	<52	<52	<52	-	-	HazWaste	<52	mg/kg
MTBE	<5	<5	<5	<5	<5	<5	<5	<5	<5	<5	-	-	HazWaste	<5	ug/kg
Benzene	<5	<5	<5	<5	<5	<5	<5	<5	<5	<5	-	-	HazWaste	<5	ug/kg
Toluene	<5	<5	<5	<5	<5	<5	<5	<5	<5	<5	-	-	HazWaste	<5	ug/kg
Ethylbenzene	<5	<5	<5	<5	<5	<5	<5	<5	<5	<5	-	-	HazWaste	<5	ug/kg
m/p-Xylene	<5	<5	<5	<5	<5	<5	<5	<5	<5	<5	-	-	HazWaste	<5	ug/kg
o-Xylene	<5	<5	<5	<5	<5	<5	<5	<5	<5	<5	-	-	HazWaste	<5	ug/kg
Total 7 PCBs	<35	<35	<35	<35	<35	<35	<35	<35	<35	<35	1,000	1,000	HazWaste	<35	ug/kg
WAC Solid Sample Summary**															
Total Organic Carbon *	0.51	0.36	0.61	0.81	0.69	0.53	0.63	0.45	0.38	0.73	3	6	-	<0.02	%
Sum of BTEX	<0.025	<0.025	<0.025	<0.025	<0.025	<0.025	<0.025	<0.025	<0.025	<0.025	6	6	-	<0.025	mg/kg
Sum of 7 PCBs	<0.035	<0.035	<0.035	<0.035	<0.035	<0.035	<0.035	<0.035	<0.035	<0.035	1	1	-	<0.035	mg/kg
Mineral Oil	<30	<30	<30	<30	<30	<30	<30	<30	<30	<30	500	500	-	<30	mg/kg
PAH Sum of 6	<0.22	<0.22	<0.22	<0.22	<0.22	<0.22	<0.22	<0.22	<0.22	<0.22	-	-	-	<0.22	mg/kg
PAH Sum of 17	<0.64	<0.64	<0.64	<0.64	<0.64	<0.64	<0.64	<0.64	<0.64	<0.64	100	100	-	<0.64	mg/kg
WAC Leachate Data**															
Arsenic	<0.025	<0.025	<0.025	<0.025	<0.025	<0.025	<0.025	<0.025	<0.025	<0.025	0.5	1.5	-	<0.025	mg/kg
Barium	0.51	0.06	0.05	0.55	0.08	0.08	0.60	0.09	0.08	0.45	20	20	-	<0.03	mg/kg
Cadmium	<0.005	<0.005	<0.005	<0.005	<0.005	<0.005	<0.005	<0.005	<0.005	<0.005	0.04	0.04	-	<0.005	mg/kg
Chromium	<0.015	<0.015	<0.015	<0.015	<0.015	<0.015	<0.015	<0.015	<0.015	<0.015	0.5	0.5	-	<0.015	mg/kg
Copper	<0.07	<0.07	<0.07	<0.07	<0.07	<0.07	<0.07	<0.07	<0.07	<0.07	2	2	-	<0.07	mg/kg
Mercury	0.0002	<0.0001	<0.0001	0.0001	<0.0001	<0.0001	0.0004	<0.0001	<0.0001	<0.0001	0.01	0.01	-	<0.0001	mg/kg
Molybdenum	0.21	0.12	0.07	0.25	0.37	0.23	0.17	0.28	0.21	0.42	0.5	1.5	-	<0.02	mg/kg
Nickel	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	0.4	0.4	-	<0.02	mg/kg
Lead	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	0.5	0.5	-	<0.05	mg/kg
Antimony	<0.02	<0.02	<0.02	<0.02	0.03	<0.02	0.04	<0.02	<0.02	<0.02	0.06	0.18	-	<0.02	mg/kg
Selenium	0.46	<0.03	<0.03	0.41	<0.03	<0.03	0.45	<0.03	<0.03	0.48	0.1	0.3	-	<0.03	mg/kg
Zinc	<0.03	<0.03	<0.03	0.04	<0.03	0.04	0.04	0.04	<0.03	0.04	4	4	-	<0.03	mg/kg
Total Dissolved Solids	1059	740	1550	1040	740	640	950	580	760	1130	4000	12,000	-	<350	mg/kg
Dissolved Organic Carbon	<20	40	<20	30	20	30	30	30	30	40	500	500	-	<20	mg/kg
Phenol	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	1	1	-	<0.1	mg/kg
Sulphate as SO4	227	31	50	175	74	27	204	10	26	123	1000	3,000	-	<0.5	mg/kg
Chloride	70	<3	<3	69	7	<3	92	<3	<3	38	800	2,400	-	<3	mg/kg

NAD- no asbestos detected

* - Integrated Materials Solutions Landfill, Hollywood Great, Nag's Head, The Naul, Co. Dublin

** - limits as specified in Council Decision 2003/33/EC

Waste Categorisation Summary Table

GA-1 Baldoyle

Sample ID	TP02	TP09	TP13	TP15	TP18	TP20	TP22	TP27	TP29	TP32					
Sample Depth (m)	0.50	1.50	0.50	0.50	0.50	0.50	0.50	0.50	0.50	0.50					
Material Description	Clay	Clay	Made Ground	Made Ground	Made Ground	Clay	Clay	Clay	Made Ground	Made Ground					
Sample Date	21/01/2020	21/01/2020	07/11/2019	07/11/2019	07/11/2019	07/11/2019	07/11/2019	07/11/2019	07/11/2019	07/11/2019					
LoW Code	17 05 04	17 05 04	17 05 04	17 05 04	17 05 04	17 05 04	17 05 04	17 05 04	17 05 04	17 05 04	Inert Criteria	IMS* Criteria	Hazardous Criteria	LOD LOR	Units
Waste Category	Category A	Category A	Category B1	Category B1	Category B1	Category A	Category A	Category A	Category B1	Category B1					
Metals															
Antimony	2	2	3	2	2	2	3	3	2	2	-	-	HazWaste	<1	mg/kg
Arsenic	14.8	11.1	15.5	11.8	14.6	10.3	14.2	12.8	14.7	15.9	-	-	HazWaste	<0.5	mg/kg
Barium	81	96	118	67	106	83	129	122	155	141	-	-	HazWaste	<1	mg/kg
Cadmium	2.6	1.5	1.7	2.0	2.2	1.4	1.7	2.0	2.8	2.5	-	-	HazWaste	<0.1	mg/kg
Chromium	40.8	20.3	31.4	23.7	31.1	17.4	20.4	29.6	32.5	33.8	-	-	HazWaste	<0.5	mg/kg
Copper	28	24	36	31	42	21	27	29	36	37	-	-	HazWaste	<1	mg/kg
Lead	30	17	48	29	48	14	19	25	40	40	-	-	HazWaste	<5	mg/kg
Mercury	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	0.2	-	-	HazWaste	<0.1	mg/kg
Molybdenum	3.9	3.1	2.4	2.5	2.9	2.7	3.1	5.6	3.8	3.6	-	-	HazWaste	<0.1	mg/kg
Nickel	60.0	35.2	42.7	37.5	41.2	29.2	40.4	36.0	45.1	39.3	-	-	HazWaste	<0.7	mg/kg
Selenium	2	1	1	1	1	2	3	1	1	2	-	-	HazWaste	<1	mg/kg
Zinc	107	79	104	85	126	65	75	75	124	128	-	-	HazWaste	<5	mg/kg
Hexavalent Chromium	<0.3	<0.3	<0.3	<0.3	<0.3	<0.3	<0.3	<0.3	<0.3	<0.3	-	-	HazWaste	<0.3	mg/kg
pH (solid sample)	8.51	8.72	8.29	8.28	8.05	9.16	8.39	8.25	8.40	7.71	-	-	HazWaste	<0.01	pH units
alkali reserve	-	-	-	-	-	-	-	-	-	-	-	-	-	<0.000	gNaOH/100g
Asbestos															
Asbestos Fibres	NAD	NAD	NAD	NAD	NAD	NAD	NAD	NAD	NAD	NAD	-	-	0.1	<0.001	%
ACM Detected	-	-	-	-	-	-	-	-	-	-	-	-	-	Presence	Presence
PAHs															
Naphthalene	<0.04	<0.04	<0.04	<0.04	<0.04	<0.04	<0.04	<0.04	<0.04	<0.04	-	-	HazWaste	<0.04	mg/kg
Acenaphthylene	<0.03	<0.03	<0.03	<0.03	<0.03	<0.03	<0.03	<0.03	<0.03	<0.03	-	-	HazWaste	<0.03	mg/kg
Acenaphthene	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	-	-	HazWaste	<0.05	mg/kg
Fluorene	<0.04	<0.04	<0.04	<0.04	<0.04	<0.04	<0.04	<0.04	<0.04	<0.04	-	-	HazWaste	<0.04	mg/kg
Phenanthrene	<0.03	<0.03	0.10	0.13	0.23	<0.03	<0.03	<0.03	0.17	0.10	-	-	HazWaste	<0.03	mg/kg
Anthracene	<0.04	<0.04	<0.04	<0.04	0.07	<0.04	<0.04	<0.04	<0.04	<0.04	-	-	HazWaste	<0.04	mg/kg
Fluoranthene	<0.03	<0.03	0.16	0.24	0.37	<0.03	<0.03	<0.03	0.21	0.17	-	-	HazWaste	<0.03	mg/kg
Pyrene	<0.03	<0.03	0.15	0.21	0.31	<0.03	<0.03	<0.03	0.19	0.16	-	-	HazWaste	<0.03	mg/kg
Benzo(a)anthracene	<0.06	<0.06	0.11	0.15	0.23	<0.06	<0.06	<0.06	0.15	0.12	-	-	HazWaste	<0.06	mg/kg
Chrysene	<0.02	<0.02	0.11	0.15	0.23	<0.02	<0.02	<0.02	0.14	0.12	-	-	HazWaste	<0.02	mg/kg
Benzo(bk)fluoranthene	<0.07	<0.07	0.17	0.24	0.33	<0.07	<0.07	<0.07	0.19	0.19	-	-	HazWaste	<0.07	mg/kg
Benzo(a)pyrene	<0.04	<0.04	0.10	0.13	0.20	<0.04	<0.04	<0.04	0.11	0.11	-	-	HazWaste	<0.04	mg/kg
Indeno(123cd)pyrene	<0.04	<0.04	0.06	0.08	0.10	<0.04	<0.04	<0.04	0.06	0.06	-	-	HazWaste	<0.04	mg/kg
Dibenzo(ah)anthracene	<0.04	<0.04	<0.04	<0.04	<0.04	<0.04	<0.04	<0.04	<0.04	<0.04	-	-	HazWaste	<0.04	mg/kg
Benzo(ghi)perylene	<0.04	<0.04	0.06	0.09	0.11	<0.04	<0.04	<0.04	0.07	0.07	-	-	HazWaste	<0.04	mg/kg
Coronene	<0.04	<0.04	<0.04	<0.04	<0.04	<0.04	<0.04	<0.04	<0.04	<0.04	-	-	HazWaste	<0.04	mg/kg
PAH 6 Total	<0.22	<0.22	0.55	0.78	1.11	<0.22	<0.22	<0.22	0.64	0.60	-	-	-	<0.22	mg/kg
PAH 17 Total	<0.64	<0.64	1.02	1.42	2.18	<0.64	<0.64	<0.64	1.29	1.10	100	100	-	<0.64	mg/kg
Benzo(b)fluoranthene	<0.05	<0.05	0.12	0.17	0.24	<0.05	<0.05	<0.05	0.14	0.14	-	-	HazWaste	<0.05	mg/kg
Benzo(k)fluoranthene	<0.02	<0.02	0.05	0.07	0.09	<0.02	<0.02	<0.02	0.05	0.05	-	-	HazWaste	<0.02	mg/kg
Benzo(j)fluoranthene	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	-	-	HazWaste	<1	mg/kg
Hydrocarbons															
TPH (C5-40)	<52	<52	<52	<52	<52	<52	<52	<52	<52	<52	-	-	HazWaste	<52	mg/kg
MTBE	<5	<5	<5	<5	<5	<5	<5	<5	<5	<5	-	-	HazWaste	<5	ug/kg
Benzene	<5	<5	<5	<5	<5	<5	<5	<5	<5	<5	-	-	HazWaste	<5	ug/kg
Toluene	<5	<5	<5	<5	<5	<5	<5	<5	<5	<5	-	-	HazWaste	<5	ug/kg
Ethylbenzene	<5	<5	<5	<5	<5	<5	<5	<5	<5	<5	-	-	HazWaste	<5	ug/kg
m/p-Xylene	<5	<5	<5	<5	<5	<5	<5	<5	<5	<5	-	-	HazWaste	<5	ug/kg
o-Xylene	<5	<5	<5	<5	<5	<5	<5	<5	<5	<5	-	-	HazWaste	<5	ug/kg
Total 7 PCBs	<35	<35	<35	<35	<35	<35	<35	<35	<35	<35	1,000	1,000	HazWaste	<35	ug/kg
WAC Solid Sample Summary**															
Total Organic Carbon *	0.82	0.35	1.63	0.87	1.79	0.47	0.57	0.77	1.48	1.77	3	6	-	<0.02	%
Sum of BTEX	<0.025	<0.025	<0.025	<0.025	<0.025	<0.025	<0.025	<0.025	<0.025	<0.025	6	6	-	<0.025	mg/kg
Sum of 7 PCBs	<0.035	<0.035	<0.035	<0.035	<0.035	<0.035	<0.035	<0.035	<0.035	<0.035	1	1	-	<0.035	mg/kg
Mineral Oil	<30	<30	<30	<30	<30	<30	<30	<30	<30	<30	500	500	-	<30	mg/kg
PAH Sum of 6	<0.22	<0.22	0.55	0.78	1.11	<0.22	<0.22	<0.22	0.64	0.60	-	-	-	<0.22	mg/kg
PAH Sum of 17	<0.64	<0.64	1.02	1.42	2.18	<0.64	<0.64	<0.64	1.29	1.10	100	100	-	<0.64	mg/kg
WAC Leachate Data**															
Arsenic	<0.025	<0.025	<0.025	<0.025	<0.025	0.058	<0.025	<0.025	<0.025	<0.025	0.5	1.5	-	<0.025	mg/kg
Barium	<0.03	<0.03	0.08	0.06	0.07	0.07	0.22	0.11	0.11	0.25	20	20	-	<0.03	mg/kg
Cadmium	<0.005	<0.005	<0.005	<0.005	<0.005	<0.005	<0.005	<0.005	<0.005	<0.005	0.04	0.04	-	<0.005	mg/kg
Chromium	<0.015	<0.015	<0.015	<0.015	<0.015	<0.015	<0.015	<0.015	<0.015	<0.015	0.5	0.5	-	<0.015	mg/kg
Copper	<0.07	<0.07	<0.07	<0.07	<0.07	<0.07	<0.07	<0.07	<0.07	<0.07	2	2	-	<0.07	mg/kg
Mercury	<0.0001	<0.0001	<0.0001	<0.0001	<0.0001	<0.0001	<0.0001	<0.0001	<0.0001	<0.0001	0.01	0.01	-	<0.0001	mg/kg
Molybdenum	<0.02	0.15	0.05	0.05	0.03	0.13	0.12	0.10	0.08	0.11	0.5	1.5	-	<0.02	mg/kg
Nickel	<0.02	<0.02	<0.02	<0.02	<0.02	0.03	<0.02	<0.02	<0.02	<0.02	0.4	0.4	-	<0.02	mg/kg
Lead	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	0.5	0.5	-	<0.05	mg/kg
Antimony	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	0.03	0.05	0.06	0.18	-	<0.02	mg/kg
Selenium	<0.03	<0.03	<0.03	<0.03	<0.03	<0.03	<0.03	<0.03	<0.03	<0.03	0.1	0.3	-	<0.03	mg/kg
Zinc	<0.03	<0.03	<0.03	<0.03	<0.03	<0.03	<0.03	<0.03	0.04	0.04	4	4	-	<0.03	mg/kg
Total Dissolved Solids	1230	1030	500	890	770	620	<350	840	1420	1520	4000	12,000	-	<350	mg/kg
Dissolved Organic Carbon	30	30	50	40	50	50	<20	20	50	80	500	500	-	<20	mg/kg
Phenol	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	1	1	-	<0.1	mg/kg
Sulphate as SO4	58	9	8	48	39	248	55	465	123	332	1000	3,000	-	<0.5	mg/kg
Chloride	5	<3	7	5	6	11	<3	5	<3	15	800	2,400	-	<3	mg/kg

NAD- no asbestos detected

* - Integrated Materials Solutions Landfill, Hollywood Great, Nag's Head, The Naul, Co. Dublin

** - limits as specified in Council Decision 2003/33/EC

Waste Categorisation Summary Table

GA-1 Baldoyle

Sample ID	TP33	TP39	TP41	TP45	TP46	TP48	TP53	TP58	TP59	TP65					
Sample Depth (m)	0.50	0.50	0.50	0.50	0.50	0.50	0.50	0.50	0.50	0.50					
Material Description	Made Ground	Clay	Made Ground	Made Ground	Clay	Clay	Made Ground	Clay	Made Ground	Made Ground					
Sample Date	01/11/2019	01/11/2019	01/11/2019	01/11/2019	01/11/2019	07/11/2019	07/11/2019	07/11/2019	07/11/2019	07/11/2019					
LoW Code	17 05 04	17 05 04	17 05 04	17 05 04	17 05 04	17 05 04	17 05 04	17 05 04	17 05 04	17 05 04	Inert Criteria	IMS* Criteria	Hazardous Criteria	LOD LOR	Units
Waste Category	Category B1	Category A	Category B1	Category B1	Category A	Category A	Category B1	Category A	Category B1	Category B1					
Metals															
Antimony	2	2	3	2	2	2	2	1	2	2	-	-	HazWaste	<1	mg/kg
Arsenic	16.3	11.1	27.2	14.1	11.5	10.1	31.2	9.6	9.2	51.1	-	-	HazWaste	<0.5	mg/kg
Barium	81	67	75	107	118	47	87	60	44	57	-	-	HazWaste	<1	mg/kg
Cadmium	1.6	1.7	0.6	1.0	2.1	2.0	0.7	1.6	1.9	<0.1	-	-	HazWaste	<0.1	mg/kg
Chromium	63.3	55.1	57.7	50.2	69.3	20.1	86.4	28.7	20.4	52.9	-	-	HazWaste	<0.5	mg/kg
Copper	28	29	28	19	44	27	31	19	21	37	-	-	HazWaste	<1	mg/kg
Lead	25	20	21	15	20	17	30	16	13	14	-	-	HazWaste	<5	mg/kg
Mercury	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	-	-	HazWaste	<0.1	mg/kg
Molybdenum	4.5	5.1	2.5	3.1	5.0	2.9	4.4	2.1	2.5	1.1	-	-	HazWaste	<0.1	mg/kg
Nickel	32.1	38.5	35.3	22.5	38.6	38.7	50.0	31.7	31.6	55.9	-	-	HazWaste	<0.7	mg/kg
Selenium	1	1	1	1	2	<1	<1	<1	<1	1	-	-	HazWaste	<1	mg/kg
Zinc	97	74	90	60	109	77	96	60	53	100	-	-	HazWaste	<5	mg/kg
Hexavalent Chromium	<0.3	<0.3	<0.3	<0.3	<0.3	<0.3	<0.3	<0.3	<0.3	<0.3	-	-	HazWaste	<0.3	mg/kg
pH (solid sample)	8.44	8.75	8.59	8.42	8.28	8.58	8.49	8.46	8.57	8.30	-	-	HazWaste	<0.01	pH units
alkali reserve	-	-	-	-	-	-	-	-	-	-	-	-	-	<0.000	gNaOH/100g
Asbestos															
Asbestos Fibres	NAD	NAD	NAD	NAD	NAD	NAD	NAD	NAD	NAD	NAD	-	-	0.1	<0.001	%
ACM Detected	-	-	-	-	-	-	-	-	-	-	-	-	-	Presence	Presence
PAHs															
Naphthalene	<0.04	<0.04	<0.04	<0.04	<0.04	<0.04	<0.04	<0.04	<0.04	<0.04	-	-	HazWaste	<0.04	mg/kg
Acenaphthylene	<0.03	<0.03	<0.03	<0.03	<0.03	<0.03	<0.03	<0.03	<0.03	<0.03	-	-	HazWaste	<0.03	mg/kg
Acenaphthene	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	-	-	HazWaste	<0.05	mg/kg
Fluorene	<0.04	<0.04	<0.04	<0.04	<0.04	<0.04	<0.04	<0.04	<0.04	<0.04	-	-	HazWaste	<0.04	mg/kg
Phenanthrene	0.07	<0.03	<0.03	<0.03	<0.03	<0.03	0.05	<0.03	<0.03	<0.03	-	-	HazWaste	<0.03	mg/kg
Anthracene	<0.04	<0.04	<0.04	<0.04	<0.04	<0.04	<0.04	<0.04	<0.04	<0.04	-	-	HazWaste	<0.04	mg/kg
Fluoranthene	0.10	<0.03	<0.03	<0.03	<0.03	<0.03	0.09	<0.03	<0.03	<0.03	-	-	HazWaste	<0.03	mg/kg
Pyrene	0.09	<0.03	<0.03	<0.03	<0.03	<0.03	0.08	<0.03	<0.03	<0.03	-	-	HazWaste	<0.03	mg/kg
Benzo(a)anthracene	0.08	<0.06	<0.06	<0.06	<0.06	<0.06	0.07	<0.06	<0.06	<0.06	-	-	HazWaste	<0.06	mg/kg
Chrysene	0.07	<0.02	<0.02	<0.02	<0.02	<0.02	0.06	<0.02	<0.02	<0.02	-	-	HazWaste	<0.02	mg/kg
Benzo(bk)fluoranthene	0.10	<0.07	<0.07	<0.07	<0.07	<0.07	0.09	<0.07	<0.07	<0.07	-	-	HazWaste	<0.07	mg/kg
Benzo(a)pyrene	0.06	<0.04	<0.04	<0.04	<0.04	<0.04	0.05	<0.04	<0.04	<0.04	-	-	HazWaste	<0.04	mg/kg
Indeno(123cd)pyrene	<0.04	<0.04	<0.04	<0.04	<0.04	<0.04	<0.04	<0.04	<0.04	<0.04	-	-	HazWaste	<0.04	mg/kg
Dibenzo(ah)anthracene	<0.04	<0.04	<0.04	<0.04	<0.04	<0.04	<0.04	<0.04	<0.04	<0.04	-	-	HazWaste	<0.04	mg/kg
Benzo(ghi)perylene	<0.04	<0.04	<0.04	<0.04	<0.04	<0.04	<0.04	<0.04	<0.04	<0.04	-	-	HazWaste	<0.04	mg/kg
Coronene	<0.04	<0.04	<0.04	<0.04	<0.04	<0.04	<0.04	<0.04	<0.04	<0.04	-	-	HazWaste	<0.04	mg/kg
PAH 6 Total	0.26	<0.22	<0.22	<0.22	<0.22	<0.22	0.23	<0.22	<0.22	<0.22	-	-	-	<0.22	mg/kg
PAH 17 Total	<0.64	<0.64	<0.64	<0.64	<0.64	<0.64	<0.64	<0.64	<0.64	<0.64	100	100	-	<0.64	mg/kg
Benzo(b)fluoranthene	0.07	<0.05	<0.05	<0.05	<0.05	<0.05	0.06	<0.05	<0.05	<0.05	-	-	HazWaste	<0.05	mg/kg
Benzo(k)fluoranthene	0.03	<0.02	<0.02	<0.02	<0.02	<0.02	0.03	<0.02	<0.02	<0.02	-	-	HazWaste	<0.02	mg/kg
Benzo(j)fluoranthene	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	-	-	HazWaste	<1	mg/kg
Hydrocarbons															
TPH (C5-40)	<52	<52	<52	<52	<52	<52	<52	<52	<52	<52	-	-	HazWaste	<52	mg/kg
MTBE	<5	<5	<5	<5	<5	<5	<5	<5	<5	<5	-	-	HazWaste	<5	ug/kg
Benzene	<5	<5	<5	<5	<5	<5	<5	<5	<5	<5	-	-	HazWaste	<5	ug/kg
Toluene	<5	<5	<5	<5	<5	<5	<5	<5	<5	<5	-	-	HazWaste	<5	ug/kg
Ethylbenzene	<5	<5	<5	<5	<5	<5	<5	<5	<5	<5	-	-	HazWaste	<5	ug/kg
m/p-Xylene	<5	<5	<5	<5	<5	<5	<5	<5	<5	<5	-	-	HazWaste	<5	ug/kg
o-Xylene	<5	<5	<5	<5	<5	<5	<5	<5	<5	<5	-	-	HazWaste	<5	ug/kg
Total 7 PCBs	<35	<35	<35	<35	<35	<35	<35	<35	<35	<35	1,000	1,000	HazWaste	<35	ug/kg
WAC Solid Sample Summary**															
Total Organic Carbon *	0.85	0.37	0.41	0.46	0.57	0.39	0.74	0.43	0.48	0.32	3	6	-	<0.02	%
Sum of BTEX	<0.025	<0.025	<0.025	<0.025	<0.025	<0.025	<0.025	<0.025	<0.025	<0.025	6	6	-	<0.025	mg/kg
Sum of 7 PCBs	<0.035	<0.035	<0.035	<0.035	<0.035	<0.035	<0.035	<0.035	<0.035	<0.035	1	1	-	<0.035	mg/kg
Mineral Oil	<30	<30	<30	<30	<30	<30	<30	<30	<30	<30	500	500	-	<30	mg/kg
PAH Sum of 6	0.26	<0.22	<0.22	<0.22	<0.22	<0.22	0.23	<0.22	<0.22	<0.22	-	-	-	<0.22	mg/kg
PAH Sum of 17	<0.64	<0.64	<0.64	<0.64	<0.64	<0.64	<0.64	<0.64	<0.64	<0.64	100	100	-	<0.64	mg/kg
WAC Leachate Data**															
Arsenic	<0.025	<0.025	<0.025	<0.025	<0.025	<0.025	0.039	0.030	<0.025	<0.025	0.5	1.5	-	<0.025	mg/kg
Barium	0.12	0.07	0.09	0.08	0.07	0.05	<0.03	0.06	0.07	0.11	20	20	-	<0.03	mg/kg
Cadmium	<0.005	<0.005	<0.005	<0.005	<0.005	<0.005	<0.005	<0.005	<0.005	<0.005	0.04	0.04	-	<0.005	mg/kg
Chromium	<0.015	<0.015	<0.015	<0.015	<0.015	<0.015	<0.015	<0.015	<0.015	<0.015	0.5	0.5	-	<0.015	mg/kg
Copper	<0.07	<0.07	<0.07	<0.07	<0.07	<0.07	<0.07	<0.07	<0.07	<0.07	2	2	-	<0.07	mg/kg
Mercury	<0.0001	<0.0001	<0.0001	<0.0001	<0.0001	<0.0001	<0.0001	<0.0001	<0.0001	<0.0001	0.01	0.01	-	<0.0001	mg/kg
Molybdenum	0.06	0.12	0.03	0.09	0.02	0.06	0.11	0.06	0.07	0.10	0.5	1.5	-	<0.02	mg/kg
Nickel	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	0.4	0.4	-	<0.02	mg/kg
Lead	<0.05	<0.05	<0.05	0.06	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	0.5	0.5	-	<0.05	mg/kg
Antimony	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	0.06	0.03	0.06	0.06	0.18	-	<0.02	mg/kg
Selenium	<0.03	<0.03	<0.03	<0.03	<0.03	<0.03	<0.03	<0.03	<0.03	<0.03	0.1	0.3	-	<0.03	mg/kg
Zinc	<0.03	<0.03	0.06	0.06	0.03	<0.03	<0.03	0.04	0.04	<0.03	4	4	-	<0.03	mg/kg
Total Dissolved Solids	1739	720	1239	890	1001	1130	540	1120	1319	2060	4000	12,000	-	<350	mg/kg
Dissolved Organic Carbon	40	30	40	60	30	30	<20	30	30	<20	500	500	-	<20	mg/kg
Phenol	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	1	1	-	<0.1	mg/kg
Sulphate as SO4	130	40	275	115	213	45	73	71	34	873	1000	3,000	-	<0.5	mg/kg
Chloride	<3	3	<3	4	4	<3	<3	4	<3	3	800	2,400	-	<3	mg/kg

NAD- no asbestos detected

* - Integrated Materials Solutions Landfill, Hollywood Great, Nag's Head, The Naul, Co. Dublin

** - limits as specified in Council Decision 2003/33/EC

Waste Categorisation Summary Table

GA-1 Baldoyle

Sample ID	TP67	TP74	TP77	TP78	TP80	TP86	TP89	TP89	Inert Criteria	IMS* Criteria	Hazardous Criteria	LOD LOR	Units
Sample Depth (m)	**2.00**	**0.50**	**0.50**	**0.50**	**0.50**	**0.50**	**1.50**	**2.50**					
Material Description	**Made Ground**	**Gravel**	**Clay**	**Sand**	**Clay**	**Sand**	**Sand**	**Clay**					
Sample Date	**07/11/2019**	**07/11/2019**	**07/11/2019**	**07/11/2019**	**07/11/2019**	**21/01/2020**	**24/01/2020**	**24/01/2020**					
LoW Code	**17 05 04**	**17 05 04**	**17 05 04**	**17 05 04**	**17 05 04**	**17 05 04**	**17 05 03**	**17 05 04**					
Waste Category	**Category B1**	**Category A**	**Category A**	**Category A**	**Category A**	**Category A**	**Category D**	**Category B2**					
Metals													
Antimony	2	1	3	2	3	2	<1	2	-	-	HazWaste	<1	mg/kg
Arsenic	19.6	6.9	15.9	9.2	10.9	8.5	4.4	12.0	-	-	HazWaste	<0.5	mg/kg
Barium	92	43	47	55	69	60	28	110	-	-	HazWaste	<1	mg/kg
Cadmium	1.3	1.7	2.1	2.0	2.2	2.1	0.7	1.4	-	-	HazWaste	<0.1	mg/kg
Chromium	25.3	21.1	22.3	14.1	18.7	22.5	25.5	55.4	-	-	HazWaste	<0.5	mg/kg
Copper	30	17	30	23	29	18	10	26	-	-	HazWaste	<1	mg/kg
Lead	17	15	15	15	18	12	6	17	-	-	HazWaste	<5	mg/kg
Mercury	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	-	-	HazWaste	<0.1	mg/kg
Molybdenum	2.5	2.2	3.6	3.0	3.9	3.0	2.4	4.4	-	-	HazWaste	<0.1	mg/kg
Nickel	41.5	21.6	40.0	29.8	43.1	24.9	14.4	37.7	-	-	HazWaste	<0.7	mg/kg
Selenium	2	<1	2	<1	<1	1	<1	7	-	-	HazWaste	<1	mg/kg
Zinc	77	56	92	67	88	61	32	70	-	-	HazWaste	<5	mg/kg
Hexavalent Chromium	<0.3	<0.3	<0.3	<0.3	<0.3	<0.3	<0.3	<0.3	-	-	HazWaste	<0.3	mg/kg
pH (solid sample)	8.18	8.61	8.49	8.70	8.68	8.70	8.34	8.64	-	-	HazWaste	<0.01	pH units
alkali reserve	-	-	-	-	-	-	-	-	-	-	-	<0.000	gNaOH/100g
Asbestos													
Asbestos Fibres	NAD	NAD	NAD	NAD	NAD	NAD	NAD	NAD	-	-	0.1	<0.001	%
ACM Detected	-	-	-	-	-	-	-	-	-	-	-	Presence	Presence
PAHs													
Naphthalene	<0.04	<0.04	<0.04	<0.04	<0.04	<0.04	<0.04	<0.04	-	-	HazWaste	<0.04	mg/kg
Acenaphthylene	<0.03	<0.03	<0.03	<0.03	<0.03	<0.03	0.11	<0.03	-	-	HazWaste	<0.03	mg/kg
Acenaphthene	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	0.31	<0.05	-	-	HazWaste	<0.05	mg/kg
Fluorene	<0.04	<0.04	<0.04	<0.04	<0.04	<0.04	0.72	<0.04	-	-	HazWaste	<0.04	mg/kg
Phenanthrene	<0.03	<0.03	<0.03	<0.03	<0.03	<0.03	0.73	0.06	-	-	HazWaste	<0.03	mg/kg
Anthracene	<0.04	<0.04	<0.04	<0.04	<0.04	<0.04	0.07	<0.04	-	-	HazWaste	<0.04	mg/kg
Fluoranthene	<0.03	<0.03	<0.03	<0.03	<0.03	<0.03	<0.03	<0.03	-	-	HazWaste	<0.03	mg/kg
Pyrene	<0.03	<0.03	<0.03	<0.03	<0.03	<0.03	0.19	<0.03	-	-	HazWaste	<0.03	mg/kg
Benzo(a)anthracene	<0.06	<0.06	<0.06	<0.06	<0.06	<0.06	<0.06	<0.06	-	-	HazWaste	<0.06	mg/kg
Chrysene	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	0.07	0.04	-	-	HazWaste	<0.02	mg/kg
Benzo(bk)fluoranthene	<0.07	<0.07	<0.07	<0.07	<0.07	<0.07	<0.07	<0.07	-	-	HazWaste	<0.07	mg/kg
Benzo(a)pyrene	<0.04	<0.04	<0.04	<0.04	<0.04	<0.04	<0.04	<0.04	-	-	HazWaste	<0.04	mg/kg
Indeno(123cd)pyrene	<0.04	<0.04	<0.04	<0.04	<0.04	<0.04	<0.04	<0.04	-	-	HazWaste	<0.04	mg/kg
Dibenzo(ah)anthracene	<0.04	<0.04	<0.04	<0.04	<0.04	<0.04	<0.04	<0.04	-	-	HazWaste	<0.04	mg/kg
Benzo(ghi)perylene	<0.04	<0.04	<0.04	<0.04	<0.04	<0.04	<0.04	<0.04	-	-	HazWaste	<0.04	mg/kg
Coronene	<0.04	<0.04	<0.04	<0.04	<0.04	<0.04	<0.04	<0.04	-	-	HazWaste	<0.04	mg/kg
PAH 6 Total	<0.22	<0.22	<0.22	<0.22	<0.22	<0.22	<0.22	<0.22	-	-	-	<0.22	mg/kg
PAH 17 Total	<0.64	<0.64	<0.64	<0.64	<0.64	<0.64	2.20	<0.64	100	100	-	<0.64	mg/kg
Benzo(b)fluoranthene	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	-	-	HazWaste	<0.05	mg/kg
Benzo(k)fluoranthene	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	-	-	HazWaste	<0.02	mg/kg
Benzo(j)fluoranthene	<1	<1	<1	<1	<1	<1	<1	<1	-	-	HazWaste	<1	mg/kg
Hydrocarbons													
TPH (C5-40)	<52	<52	<52	<52	<52	<52	2,172	<52	-	-	HazWaste	<52	mg/kg
MTBE	<5	<5	<5	<5	<5	<5	<5	<5	-	-	HazWaste	<5	ug/kg
Benzene	<5	<5	<5	<5	<5	<5	<5	<5	-	-	HazWaste	<5	ug/kg
Toluene	<5	<5	<5	<5	<5	<5	<5	<5	-	-	HazWaste	<5	ug/kg
Ethylbenzene	<5	<5	<5	<5	<5	<5	19	<5	-	-	HazWaste	<5	ug/kg
m/p-Xylene	<5	<5	<5	<5	<5	<5	34	<5	-	-	HazWaste	<5	ug/kg
o-Xylene	<5	<5	<5	<5	<5	<5	<5	<5	-	-	HazWaste	<5	ug/kg
Total 7 PCBs	<35	<35	<35	<35	<35	<35	<35	<35	1,000	1,000	HazWaste	<35	ug/kg
WAC Solid Sample Summary**													
Total Organic Carbon *	0.45	0.33	0.49	0.38	0.40	0.40	0.46	0.54	3	6	-	<0.02	%
Sum of BTEX	<0.025	<0.025	<0.025	<0.025	<0.025	<0.025	0.053	<0.025	6	6	-	<0.025	mg/kg
Sum of 7 PCBs	<0.035	<0.035	<0.035	<0.035	<0.035	<0.035	<0.035	<0.035	1	1	-	<0.035	mg/kg
Mineral Oil	<30	<30	<30	<30	<30	<30	1241	<30	500	500	-	<30	mg/kg
PAH Sum of 6	<0.22	<0.22	<0.22	<0.22	<0.22	<0.22	<0.22	<0.22	-	-	-	<0.22	mg/kg
PAH Sum of 17	<0.64	<0.64	<0.64	<0.64	<0.64	<0.64	2.20	<0.64	100	100	-	<0.64	mg/kg
WAC Leachate Data**													
Arsenic	<0.025	<0.025	<0.025	<0.025	0.035	<0.025	<0.025	<0.025	0.5	1.5	-	<0.025	mg/kg
Barium	0.17	0.05	0.08	0.07	0.09	0.07	0.11	0.05	20	20	-	<0.03	mg/kg
Cadmium	<0.005	<0.005	<0.005	<0.005	<0.005	<0.005	<0.005	<0.005	0.04	0.04	-	<0.005	mg/kg
Chromium	<0.015	<0.015	<0.015	<0.015	<0.015	<0.015	<0.015	<0.015	0.5	0.5	-	<0.015	mg/kg
Copper	<0.07	<0.07	<0.07	<0.07	<0.07	<0.07	<0.07	<0.07	2	2	-	<0.07	mg/kg
Mercury	<0.0001	<0.0001	<0.0001	<0.0001	<0.0001	<0.0001	<0.0001	<0.0001	0.01	0.01	-	<0.0001	mg/kg
Molybdenum	0.23	0.06	0.06	0.07	0.18	0.04	0.09	0.05	0.5	1.5	-	<0.02	mg/kg
Nickel	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	0.4	0.4	-	<0.02	mg/kg
Lead	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	0.5	0.5	-	<0.05	mg/kg
Antimony	0.04	0.06	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	0.06	0.18	-	<0.02	mg/kg
Selenium	<0.03	<0.03	<0.03	<0.03	<0.03	<0.03	<0.03	0.15	0.1	0.3	-	<0.03	mg/kg
Zinc	<0.03	<0.03	<0.03	<0.03	0.03	<0.03	<0.03	<0.03	4	4	-	<0.03	mg/kg
Total Dissolved Solids	1621	750	830	750	930	730	740	380	4000	12,000	-	<350	mg/kg
Dissolved Organic Carbon	20	<20	<20	30	20	<20	30	<20	500	500	-	<20	mg/kg
Phenol	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	1	1	-	<0.1	mg/kg
Sulphate as SO4	678	123	389	22	45	199	209	67	1000	3,000	-	<0.5	mg/kg
Chloride	5	7	4	9	<3	<3	13	5	800	2,400	-	<3	mg/kg

NAD- no asbestos detected

* - Integrated Materials Solutions Landfill, Hollywood Great, Nag's Head, The Naul, Co. Dublin

** - limits as specified in Council Decision 2003/33/EC

Waste Categorisation Summary Table

GA-1 Baldoyle

Sample ID	TP90	TP94	TP99	TP102	TP103	TP109	TP111	TP113	Inert Criteria	IMS* Criteria	Hazardous Criteria	LOD LOR	Units
Sample Depth (m)	**0.50**	**0.50**	**0.50**	**0.50**	**0.50**	**0.50**	**0.50**	**0.50**					
Material Description	**Made Ground**	**Clay**	**Sand**	**Clay**	**Made Ground**	**Made Ground**	**Made Ground**	**Sand**					
Sample Date	**22/01/2020**	**22/01/2020**	**23/01/2020**	**25/01/2020**	**23/01/2020**	**24/01/2020**	**24/01/2020**	**24/01/2020**					
LoW Code	**17 05 04**	**17 05 04**	**17 05 04**	**17 05 04**	**17 05 04**	**17 05 04**	**17 05 04**	**17 05 04**					
Waste Category	**Category B1**	**Category A**	**Category A**	**Category A**	**Category B1**	**Category B1**	**Category B1**	**Category A**					
Metals													
Antimony	2	2	2	4	2	2	2	2	-	-	HazWaste	<1	mg/kg
Arsenic	12.0	12.1	11.7	22.7	9.5	17.8	14.0	13.6	-	-	HazWaste	<0.5	mg/kg
Barium	79	136	59	118	49	138	127	56	-	-	HazWaste	<1	mg/kg
Cadmium	2.0	1.9	1.9	1.9	1.5	3.4	2.2	2.1	-	-	HazWaste	<0.1	mg/kg
Chromium	18.8	22.0	22.0	39.3	17.8	35.3	26.8	23.4	-	-	HazWaste	<0.5	mg/kg
Copper	26	26	27	50	20	38	34	29	-	-	HazWaste	<1	mg/kg
Lead	18	21	22	38	13	52	35	21	-	-	HazWaste	<5	mg/kg
Mercury	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	-	-	HazWaste	<0.1	mg/kg
Molybdenum	3.3	3.4	3.0	7.0	2.6	3.1	3.9	3.0	-	-	HazWaste	<0.1	mg/kg
Nickel	36.4	40.3	45.4	77.8	32.6	50.0	47.3	40.5	-	-	HazWaste	<0.7	mg/kg
Selenium	<1	<1	<1	3	<1	2	2	<1	-	-	HazWaste	<1	mg/kg
Zinc	72	89	100	156	60	133	108	80	-	-	HazWaste	<5	mg/kg
Hexavalent Chromium	<0.3	<0.3	<0.3	<0.3	<0.3	<0.3	<0.3	<0.3	-	-	HazWaste	<0.3	mg/kg
pH (solid sample)	8.80	8.47	8.52	8.46	8.68	8.27	8.24	8.78	-	-	HazWaste	<0.01	pH units
alkali reserve	-	-	-	-	-	-	-	-	-	-	-	<0.000	gNaOH/100g
Asbestos													
Asbestos Fibres	NAD	NAD	NAD	NAD	NAD	NAD	NAD	NAD	-	-	0.1	<0.001	%
ACM Detected	-	-	-	-	-	-	-	-	-	-	-	Presence	Presence
PAHs													
Naphthalene	<0.04	<0.04	<0.04	<0.04	<0.04	<0.04	<0.04	<0.04	-	-	HazWaste	<0.04	mg/kg
Acenaphthylene	<0.03	<0.03	<0.03	<0.03	<0.03	<0.03	<0.03	<0.03	-	-	HazWaste	<0.03	mg/kg
Acenaphthene	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	-	-	HazWaste	<0.05	mg/kg
Fluorene	<0.04	<0.04	<0.04	<0.04	<0.04	<0.04	<0.04	<0.04	-	-	HazWaste	<0.04	mg/kg
Phenanthrene	<0.03	<0.03	<0.03	<0.03	<0.03	0.34	0.17	<0.03	-	-	HazWaste	<0.03	mg/kg
Anthracene	<0.04	<0.04	<0.04	<0.04	<0.04	0.06	0.05	<0.04	-	-	HazWaste	<0.04	mg/kg
Fluoranthene	<0.03	<0.03	<0.03	<0.03	<0.03	0.37	0.32	<0.03	-	-	HazWaste	<0.03	mg/kg
Pyrene	<0.03	<0.03	<0.03	<0.03	<0.03	0.34	0.30	<0.03	-	-	HazWaste	<0.03	mg/kg
Benzo(a)anthracene	<0.06	<0.06	<0.06	<0.06	<0.06	0.20	0.24	<0.06	-	-	HazWaste	<0.06	mg/kg
Chrysene	<0.02	<0.02	<0.02	<0.02	<0.02	0.21	0.22	<0.02	-	-	HazWaste	<0.02	mg/kg
Benzo(bk)fluoranthene	<0.07	<0.07	<0.07	<0.07	<0.07	0.32	0.32	<0.07	-	-	HazWaste	<0.07	mg/kg
Benzo(a)pyrene	<0.04	<0.04	<0.04	<0.04	<0.04	0.19	0.20	<0.04	-	-	HazWaste	<0.04	mg/kg
Indeno(123cd)pyrene	<0.04	<0.04	<0.04	<0.04	<0.04	0.09	0.09	<0.04	-	-	HazWaste	<0.04	mg/kg
Dibenzo(ah)anthracene	<0.04	<0.04	<0.04	<0.04	<0.04	<0.04	<0.04	<0.04	-	-	HazWaste	<0.04	mg/kg
Benzo(ghi)perylene	<0.04	<0.04	<0.04	<0.04	<0.04	0.11	0.11	<0.04	-	-	HazWaste	<0.04	mg/kg
Coronene	<0.04	<0.04	<0.04	<0.04	<0.04	<0.04	<0.04	<0.04	-	-	HazWaste	<0.04	mg/kg
PAH 6 Total	<0.22	<0.22	<0.22	<0.22	<0.22	1.08	1.04	<0.22	-	-	-	<0.22	mg/kg
PAH 17 Total	<0.64	<0.64	<0.64	<0.64	<0.64	2.23	2.02	<0.64	100	100	-	<0.64	mg/kg
Benzo(b)fluoranthene	<0.05	<0.05	<0.05	<0.05	<0.05	0.23	0.23	<0.05	-	-	HazWaste	<0.05	mg/kg
Benzo(k)fluoranthene	<0.02	<0.02	<0.02	<0.02	<0.02	0.09	0.09	<0.02	-	-	HazWaste	<0.02	mg/kg
Benzo(j)fluoranthene	<1	<1	<1	<1	<1	<1	<1	<1	-	-	HazWaste	<1	mg/kg
Hydrocarbons													
TPH (C5-40)	<52	<52	<52	<52	<52	<52	<52	<52	-	-	HazWaste	<52	mg/kg
MTBE	<5	<5	<5	<5	<5	<5	<5	<5	-	-	HazWaste	<5	ug/kg
Benzene	<5	<5	<5	<5	<5	<5	<5	<5	-	-	HazWaste	<5	ug/kg
Toluene	<5	<5	<5	<5	<5	<5	<5	<5	-	-	HazWaste	<5	ug/kg
Ethylbenzene	<5	<5	<5	<5	<5	<5	<5	<5	-	-	HazWaste	<5	ug/kg
m/p-Xylene	<5	<5	<5	<5	<5	<5	<5	<5	-	-	HazWaste	<5	ug/kg
o-Xylene	<5	<5	<5	<5	<5	<5	<5	<5	-	-	HazWaste	<5	ug/kg
Total 7 PCBs	<35	<35	<35	<35	<35	<35	<35	<35	1,000	1,000	HazWaste	<35	ug/kg
WAC Solid Sample Summary**													
Total Organic Carbon *	0.38	0.68	0.37	0.58	0.28	1.92	1.19	0.56	3	6	-	<0.02	%
Sum of BTEX	<0.025	<0.025	<0.025	<0.025	<0.025	<0.025	<0.025	<0.025	6	6	-	<0.025	mg/kg
Sum of 7 PCBs	<0.035	<0.035	<0.035	<0.035	<0.035	<0.035	<0.035	<0.035	1	1	-	<0.035	mg/kg
Mineral Oil	<30	<30	<30	<30	<30	<30	<30	<30	500	500	-	<30	mg/kg
PAH Sum of 6	<0.22	<0.22	<0.22	<0.22	<0.22	1.08	1.04	<0.22	-	-	-	<0.22	mg/kg
PAH Sum of 17	<0.64	<0.64	<0.64	<0.64	<0.64	2.23	2.02	<0.64	100	100	-	<0.64	mg/kg
WAC Leachate Data**													
Arsenic	<0.025	<0.025	<0.025	<0.025	<0.025	<0.025	<0.025	<0.025	0.5	1.5	-	<0.025	mg/kg
Barium	0.04	<0.03	0.07	<0.03	0.03	0.06	0.07	<0.03	20	20	-	<0.03	mg/kg
Cadmium	<0.005	<0.005	<0.005	<0.005	<0.005	<0.005	<0.005	<0.005	0.04	0.04	-	<0.005	mg/kg
Chromium	<0.015	<0.015	<0.015	<0.015	<0.015	<0.015	<0.015	<0.015	0.5	0.5	-	<0.015	mg/kg
Copper	<0.07	<0.07	<0.07	<0.07	<0.07	<0.07	<0.07	<0.07	2	2	-	<0.07	mg/kg
Mercury	<0.0001	<0.0001	<0.0001	<0.0001	<0.0001	<0.0001	<0.0001	<0.0001	0.01	0.01	-	<0.0001	mg/kg
Molybdenum	0.07	0.11	0.11	<0.02	0.04	<0.02	0.06	0.03	0.5	1.5	-	<0.02	mg/kg
Nickel	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	0.4	0.4	-	<0.02	mg/kg
Lead	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	0.5	0.5	-	<0.05	mg/kg
Antimony	<0.02	<0.02	<0.02	<0.02	0.04	<0.02	<0.02	<0.02	0.06	0.18	-	<0.02	mg/kg
Selenium	<0.03	<0.03	<0.03	<0.03	<0.03	<0.03	<0.03	<0.03	0.1	0.3	-	<0.03	mg/kg
Zinc	<0.03	<0.03	<0.03	<0.03	0.03	0.04	<0.03	<0.03	4	4	-	<0.03	mg/kg
Total Dissolved Solids	1900	2179	890	1559	470	700	1231	360	4000	12,000	-	<350	mg/kg
Dissolved Organic Carbon	30	30	30	60	30	40	40	30	500	500	-	<20	mg/kg
Phenol	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	1	1	-	<0.1	mg/kg
Sulphate as SO4	113	213	52	48	<5	87	420	<5	1000	3,000	-	<0.5	mg/kg
Chloride	4	<3	7	<3	<3	<3	<3	<3	800	2,400	-	<3	mg/kg

NAD- no asbestos detected

* - Integrated Materials Solutions Landfill, Hollywood Great, Nag's Head, The Naul, Co. Dublin

** - limits as specified in Council Decision 2003/33/EC

APPENDIX 9 – Suitable 4 Waste Data

S4UL - Metals (Residential with homgrown produce), GA-1 Baldoyle

Sample ID	BH1	BH1	BH2	BH3	BH3	BH4	BH5	BH5	BH6	BH7	Max Level Detected	Units	Residential with homegrown produce
Sample Depth (m)	**0.5**	**3**	**1**	**1**	**2**	**2**	**1**	**3**	**1**	**0.5**			
Antimony	2	3	2	2	2	2	2	2	2	2	3	mg/kg	ne
Arsenic	19.5	18.6	11.5	13.7	9.5	11.1	12.7	9.6	13	11.1	19.5	mg/kg	37
Barium	101	78	302	96	153	138	257	140	103	106	302	mg/kg	ne
Cadmium	0.6	2	1.5	1.4	1	1.7	1.6	1.4	1.7	1.9	2	mg/kg	11
Chromium	52	42.8	84.5	36.9	104.8	45.1	50.6	52	45.1	35.9	104.8	mg/kg	910
Copper	26	29	34	28	28	26	28	24	26	29	34	mg/kg	2,400
Lead	15	21	35	19	15	17	20	17	17	19	35	mg/kg	ne
Mercury	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	0	mg/kg	1.2
Molybdenum	2	5.7	6.4	4.1	5	4	5.1	4.8	3.2	4.4	6.4	mg/kg	ne
Nickel	40.6	54.2	36.7	41.2	47.1	38.5	39.7	32.1	42	40.6	54.2	mg/kg	130
Selenium	<1	3	2	<1	4	3	<1	2	<1	<1	4	mg/kg	250
Zinc	79	117	118	72	82	74	83	64	85	73	118	mg/kg	3,700
Hexavalent Chromium	<0.3	<0.3	<0.3	<0.3	<0.3	<0.3	<0.3	<0.3	<0.3	<0.3	0	mg/kg	6*

S4UL - Metals (Residential with homgrown produce), GA-1 Baldoyle

Sample ID	BH7	BH8	BH9	BH9	BH10	BH11	BH11	BH13	BH14	BH14	Max Level Detected	Units	Residential with homegrown produce
Sample Depth (m)	**2**	**1.5**	**1**	**3**	**1.00-2.00**	**0.00-1.00**	**2.00-3.00**	**1.00-2.00**	**0.00-1.00**	**2.00-3.00**			
Antimony	2	2	2	2	2	2	2	2	2	2	2	mg/kg	ne
Arsenic	12.4	8.8	12.1	11.4	14.5	10.3	11.4	12.4	11	12.3	14.5	mg/kg	37
Barium	96	252	97	145	68	49	93	78	423	95	423	mg/kg	ne
Cadmium	1.5	1.6	1.3	1.4	2.3	2.1	1.7	2.1	2	1.7	2.3	mg/kg	11
Chromium	31.9	34.2	59.3	44.4	49	50.2	53.9	46.7	47.1	44.1	59.3	mg/kg	910
Copper	23	21	22	28	33	30	28	30	30	32	33	mg/kg	2,400
Lead	18	13	18	19	20	16	18	19	17	19	20	mg/kg	ne
Mercury	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	0	mg/kg	1.2
Molybdenum	3.3	4.1	2.9	4.3	6.1	4.3	4.4	6.4	4.6	5.3	6.4	mg/kg	ne
Nickel	35.3	30.4	34.5	36.3	41.8	40.4	36.4	46.3	39.3	39.9	46.3	mg/kg	130
Selenium	3	<1	<1	3	17	2	3	4	1	7	17	mg/kg	250
Zinc	124	63	69	73	98	71	80	79	77	87	124	mg/kg	3,700
Hexavalent Chromium	<0.3	<0.3	<0.3	<0.3	<0.3	<0.3	<0.3	<0.3	<0.3	<0.3	0	mg/kg	6*

S4UL - Metals (Residential with homgrown produce), GA-1 Baldoyle

Sample ID	TP02	TP09	TP13	TP15	TP18	TP20	TP22	TP27	TP29	TP32	Max Level Detected	Units	Residential with homegrown produce
Sample Depth (m)	**0.5**	**1.5**	**0.5**	**0.5**	**0.5**	**0.5**	**0.5**	**0.5**	**0.5**	**0.5**			
Antimony	2	2	3	2	2	2	3	3	2	2	3	mg/kg	ne
Arsenic	14.8	11.1	15.5	11.8	14.6	10.3	14.2	12.8	14.7	15.9	15.9	mg/kg	37
Barium	81	96	118	67	106	83	129	122	155	141	155	mg/kg	ne
Cadmium	2.6	1.5	1.7	2	2.2	1.4	1.7	2	2.8	2.5	2.8	mg/kg	11
Chromium	40.8	20.3	31.4	23.7	31.1	17.4	20.4	29.6	32.5	33.8	40.8	mg/kg	910
Copper	28	24	36	31	42	21	27	29	36	37	42	mg/kg	2,400
Lead	30	17	48	29	48	14	19	25	40	40	48	mg/kg	ne
Mercury	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	0.2	0.2	mg/kg	1.2
Molybdenum	3.9	3.1	2.4	2.5	2.9	2.7	3.1	5.6	3.8	3.6	5.6	mg/kg	ne
Nickel	60	35.2	42.7	37.5	41.2	29.2	40.4	36	45.1	39.3	60	mg/kg	130
Selenium	2	1	1	1	1	2	3	1	1	2	3	mg/kg	250
Zinc	107	79	104	85	126	65	75	75	124	128	128	mg/kg	3,700
Hexavalent Chromium	<0.3	<0.3	<0.3	<0.3	<0.3	<0.3	<0.3	<0.3	<0.3	<0.3	0	mg/kg	6*

S4UL - Metals (Residential with homgrown produce), GA-1 Baldoyle

Sample ID	TP33	TP39	TP41	TP45	TP46	TP48	TP53	TP58	TP59	TP65	Max Level Detected	Units	Residential with homegrown produce
Sample Depth (m)	**0.5**	**0.5**	**0.5**	**0.5**	**0.5**	**0.5**	**0.5**	**0.5**	**0.5**	**0.5**			
Antimony	2	2	3	2	2	2	2	1	2	2	3	mg/kg	ne
Arsenic	16.3	11.1	27.2	14.1	11.5	10.1	31.2	9.6	9.2	51.1	51.1	mg/kg	37
Barium	81	67	75	107	118	47	87	60	44	57	118	mg/kg	ne
Cadmium	1.6	1.7	0.6	1	2.1	2	0.7	1.6	1.9	<0.1	2.1	mg/kg	11
Chromium	63.3	55.1	57.7	50.2	69.3	20.1	86.4	28.7	20.4	52.9	86.4	mg/kg	910
Copper	28	29	28	19	44	27	31	19	21	37	44	mg/kg	2,400
Lead	25	20	21	15	20	17	30	16	13	14	30	mg/kg	ne
Mercury	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	0	mg/kg	1.2
Molybdenum	4.5	5.1	2.5	3.1	5	2.9	4.4	2.1	2.5	1.1	5.1	mg/kg	ne
Nickel	32.1	38.5	35.3	22.5	38.6	38.7	50	31.7	31.6	55.9	55.9	mg/kg	130
Selenium	1	1	1	1	2	<1	<1	<1	<1	1	2	mg/kg	250
Zinc	97	74	90	60	109	77	96	60	53	100	109	mg/kg	3,700
Hexavalent Chromium	<0.3	<0.3	<0.3	<0.3	<0.3	<0.3	<0.3	<0.3	<0.3	<0.3	0	mg/kg	6*

S4UL - Metals (Residential with homgrown produce), GA-1 Baldoyle

Sample ID	TP67	TP74	TP77	TP78	TP80	TP86	TP89	TP89	TP90	TP94	Max Level Detected	Units	Residential with homegrown produce
Sample Depth (m)	**2**	**0.5**	**0.5**	**0.5**	**0.5**	**0.5**	**1.5**	**2.5**	**0.5**	**0.5**			
Antimony	2	1	3	2	3	2	<1	2	2	2	3	mg/kg	ne
Arsenic	19.6	6.9	15.9	9.2	10.9	8.5	4.4	12	12	12.1	19.6	mg/kg	37
Barium	92	43	47	55	69	60	28	110	79	136	136	mg/kg	ne
Cadmium	1.3	1.7	2.1	2	2.2	2.1	0.7	1.4	2	1.9	2.2	mg/kg	11
Chromium	25.3	21.1	22.3	14.1	18.7	22.5	25.5	55.4	18.8	22	55.4	mg/kg	910
Copper	30	17	30	23	29	18	10	26	26	26	30	mg/kg	2,400
Lead	17	15	15	15	18	12	6	17	18	21	21	mg/kg	ne
Mercury	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	0	mg/kg	1.2
Molybdenum	2.5	2.2	3.6	3	3.9	3	2.4	4.4	3.3	3.4	4.4	mg/kg	ne
Nickel	41.5	21.6	40	29.8	43.1	24.9	14.4	37.7	36.4	40.3	43.1	mg/kg	130
Selenium	2	<1	2	<1	<1	1	<1	7	<1	<1	7	mg/kg	250
Zinc	77	56	92	67	88	61	32	70	72	89	92	mg/kg	3,700
Hexavalent Chromium	<0.3	<0.3	<0.3	<0.3	<0.3	<0.3	<0.3	<0.3	<0.3	<0.3	0	mg/kg	6*

S4UL - Metals (Residential with homgrown produce), GA-1 Baldoyle

Sample ID	TP99	TP102	TP103	TP109	TP111	TP113	Max Level Detected	Units	Residential with homegrown produce
Sample Depth (m)	**0.5**	**0.5**	**0.5**	**0.5**	**0.5**	**0.5**			
Antimony	2	4	2	2	2	2	4	mg/kg	ne
Arsenic	11.7	22.7	9.5	17.8	14	13.6	22.7	mg/kg	37
Barium	59	118	49	138	127	56	138	mg/kg	ne
Cadmium	1.9	1.9	1.5	3.4	2.2	2.1	3.4	mg/kg	11
Chromium	22	39.3	17.8	35.3	26.8	23.4	39.3	mg/kg	910
Copper	27	50	20	38	34	29	50	mg/kg	2,400
Lead	22	38	13	52	35	21	52	mg/kg	ne
Mercury	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	0	mg/kg	1.2
Molybdenum	3	7	2.6	3.1	3.9	3	7	mg/kg	ne
Nickel	45.4	77.8	32.6	50	47.3	40.5	77.8	mg/kg	130
Selenium	<1	3	<1	2	2	<1	3	mg/kg	250
Zinc	100	156	60	133	108	80	156	mg/kg	3,700
Hexavalent Chromium	<0.3	<0.3	<0.3	<0.3	<0.3	<0.3	0	mg/kg	6*

S4UL - PAHs (Residential with Homegrown Produce), GA-1 Baldoyle

													Residential with homegrown produce		
	BH1	BH1	BH2	BH3	BH3	BH4	BH5	BH5	BH6	BH7	Max Level Detected	Units	LQM/CIEH Suitable 4 Use Levels (S4ULs) [mg/kg DW]		
	0.5	3	1	1	2	2	1	3	1	0.5			1 % SOM	2.5 % SOM	6 % SOM
Naphthalene	<0.04	<0.04	<0.04	<0.04	<0.04	<0.04	<0.04	<0.04	<0.04	<0.04	0.00	mg/kg	2.3	5.6	13
Acenaphthylene	<0.03	<0.03	<0.03	<0.03	<0.03	<0.03	<0.03	<0.03	<0.03	<0.03	0.00	mg/kg	170	420	920
Acenaphthene	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	0.00	mg/kg	210	510	1,100
Fluorene	<0.04	<0.04	<0.04	<0.04	<0.04	<0.04	<0.04	<0.04	<0.04	<0.04	0.00	mg/kg	170	400	860
Phenanthrene	<0.03	<0.03	0.17	<0.03	<0.03	<0.03	<0.03	<0.03	<0.03	<0.03	0.17	mg/kg	95	220	440
Anthracene	<0.04	<0.04	<0.04	<0.04	<0.04	<0.04	<0.04	<0.04	<0.04	<0.04	0.00	mg/kg	2,400	5,400	11,000
Fluoranthene	<0.03	<0.03	0.15	<0.03	<0.03	<0.03	<0.03	<0.03	<0.03	<0.03	0.15	mg/kg	280	560	890
Pyrene	<0.03	<0.03	0.13	<0.03	<0.03	<0.03	<0.03	<0.03	<0.03	<0.03	0.13	mg/kg	620	1,200	2,000
Benzo(a)anthracene	<0.06	<0.06	<0.06	<0.06	<0.06	<0.06	<0.06	<0.06	<0.06	<0.06	0.00	mg/kg	7.2	11	13
Chrysene	<0.02	<0.02	0.07	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	0.07	mg/kg	15	22	27
Benzo(bk)fluoranthene	<0.07	<0.07	<0.07	<0.07	<0.07	<0.07	<0.07	<0.07	<0.07	<0.07	0.00	mg/kg	ne	ne	ne
Benzo(a)pyrene	<0.04	<0.04	<0.04	<0.04	<0.04	<0.04	<0.04	<0.04	<0.04	<0.04	0.00	mg/kg	2.2	2.7	3
Indeno(123cd)pyrene	<0.04	<0.04	<0.04	<0.04	<0.04	<0.04	<0.04	<0.04	<0.04	<0.04	0.00	mg/kg	27	36	41
Dibenzo(ah)anthracene	<0.04	<0.04	<0.04	<0.04	<0.04	<0.04	<0.04	<0.04	<0.04	<0.04	0.00	mg/kg	0.24	0.28	0.3
Benzo(ghi)perylene	<0.04	<0.04	<0.04	<0.04	<0.04	<0.04	<0.04	<0.04	<0.04	<0.04	0.00	mg/kg	320	340	350
Coronene	<0.04	<0.04	<0.04	<0.04	<0.04	<0.04	<0.04	<0.04	<0.04	<0.04	0.00	mg/kg	ne	ne	ne
PAH 6 Total	<0.22	<0.22	<0.22	<0.22	<0.22	<0.22	<0.22	<0.22	<0.22	<0.22	0.00	mg/kg	ne	ne	ne
PAH 17 Total	<0.64	<0.64	<0.64	<0.64	<0.64	<0.64	<0.64	<0.64	<0.64	<0.64	0.00	mg/kg	ne	ne	ne
Benzo(b)fluoranthene	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	0.00	mg/kg	2.6	3.3	3.7
Benzo(k)fluoranthene	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	0.00	mg/kg	77	93	100
Benzo(j)fluoranthene	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	0.00	mg/kg	ne	ne	ne
TOC	0.31	0.5	1.43	0.41	0.45	0.59	0.45	0.55	0.3	0.43		%			
SOM (Note 1)	0.53	0.86	2.47	0.71	0.78	1.02	0.78	0.95	0.52	0.74					

Note 1 - TOC * 1.724

S4UL - PAHs (Residential with Homegrown Produce), GA-1 Baldoyle

	BH7	BH8	BH9	BH9	BH10	BH11	BH11	BH13	BH14	BH14	Max Level Detected	Units	Residential with homegrown produce LQM/CIEH Suitable 4 Use Levels (S4ULs) [mg/kg DW]		
	2	1.5	1	3	1.00-2.00	0.00-1.00	2.00-3.00	1.00-2.00	0.00-1.00	2.00-3.00			1 % SOM	2.5 % SOM	6 % SOM
Naphthalene	<0.04	<0.04	<0.04	<0.04	<0.04	<0.04	<0.04	<0.04	<0.04	<0.04	0.00	mg/kg	2.3	5.6	13
Acenaphthylene	<0.03	<0.03	<0.03	<0.03	<0.03	<0.03	<0.03	<0.03	<0.03	<0.03	0.00	mg/kg	170	420	920
Acenaphthene	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	0.00	mg/kg	210	510	1,100
Fluorene	<0.04	<0.04	<0.04	<0.04	<0.04	<0.04	<0.04	<0.04	<0.04	<0.04	0.00	mg/kg	170	400	860
Phenanthrene	<0.03	<0.03	<0.03	<0.03	<0.03	<0.03	<0.03	<0.03	<0.03	<0.03	0.00	mg/kg	95	220	440
Anthracene	<0.04	<0.04	<0.04	<0.04	<0.04	<0.04	<0.04	<0.04	<0.04	<0.04	0.00	mg/kg	2,400	5,400	11,000
Fluoranthene	<0.03	<0.03	<0.03	<0.03	<0.03	<0.03	<0.03	<0.03	<0.03	<0.03	0.00	mg/kg	280	560	890
Pyrene	<0.03	<0.03	<0.03	<0.03	<0.03	<0.03	<0.03	<0.03	<0.03	<0.03	0.00	mg/kg	620	1,200	2,000
Benzo(a)anthracene	<0.06	<0.06	<0.06	<0.06	<0.06	<0.06	<0.06	<0.06	<0.06	<0.06	0.00	mg/kg	7.2	11	13
Chrysene	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	0.00	mg/kg	15	22	27
Benzo(bk)fluoranthene	<0.07	<0.07	<0.07	<0.07	<0.07	<0.07	<0.07	<0.07	<0.07	<0.07	0.00	mg/kg	ne	ne	ne
Benzo(a)pyrene	<0.04	<0.04	<0.04	<0.04	<0.04	<0.04	<0.04	<0.04	<0.04	<0.04	0.00	mg/kg	2.2	2.7	3
Indeno(123cd)pyrene	<0.04	<0.04	<0.04	<0.04	<0.04	<0.04	<0.04	<0.04	<0.04	<0.04	0.00	mg/kg	27	36	41
Dibenzo(ah)anthracene	<0.04	<0.04	<0.04	<0.04	<0.04	<0.04	<0.04	<0.04	<0.04	<0.04	0.00	mg/kg	0.24	0.28	0.3
Benzo(ghi)perylene	<0.04	<0.04	<0.04	<0.04	<0.04	<0.04	<0.04	<0.04	<0.04	<0.04	0.00	mg/kg	320	340	350
Coronene	<0.04	<0.04	<0.04	<0.04	<0.04	<0.04	<0.04	<0.04	<0.04	<0.04	0.00	mg/kg	ne	ne	ne
PAH 6 Total	<0.22	<0.22	<0.22	<0.22	<0.22	<0.22	<0.22	<0.22	<0.22	<0.22	0.00	mg/kg	ne	ne	ne
PAH 17 Total	<0.64	<0.64	<0.64	<0.64	<0.64	<0.64	<0.64	<0.64	<0.64	<0.64	0.00	mg/kg	ne	ne	ne
Benzo(b)fluoranthene	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	0.00	mg/kg	2.6	3.3	3.7
Benzo(k)fluoranthene	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	0.00	mg/kg	77	93	100
Benzo(j)fluoranthene	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	0.00	mg/kg	ne	ne	ne
TOC	0.51	0.36	0.61	0.81	0.69	0.53	0.63	0.45	0.38	0.73		%			
SOM (Note 1)	0.88	0.62	1.05	1.40	1.19	0.91	1.09	0.78	0.66	1.26					

Note 1 - TOC * 1.724

S4UL - PAHs (Residential with Homegrown Produce), GA-1 Baldoyle

	TP02	TP09	TP13	TP15	TP18	TP20	TP22	TP27	TP29	TP32	Max Level Detected	Units	Residential with homegrown produce LQM/CIEH Suitable 4 Use Levels (S4ULs) [mg/kg DW]		
	0.5	1.5	0.5	0.5	0.5	0.5	0.5	0.5	0.5	0.5			1 % SOM	2.5 % SOM	6 % SOM
Naphthalene	<0.04	<0.04	<0.04	<0.04	<0.04	<0.04	<0.04	<0.04	<0.04	<0.04	0.00	mg/kg	2.3	5.6	13
Acenaphthylene	<0.03	<0.03	<0.03	<0.03	<0.03	<0.03	<0.03	<0.03	<0.03	<0.03	0.00	mg/kg	170	420	920
Acenaphthene	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	0.00	mg/kg	210	510	1,100
Fluorene	<0.04	<0.04	<0.04	<0.04	<0.04	<0.04	<0.04	<0.04	<0.04	<0.04	0.00	mg/kg	170	400	860
Phenanthrene	<0.03	<0.03	0.1	0.13	0.23	<0.03	<0.03	<0.03	0.17	0.1	0.23	mg/kg	95	220	440
Anthracene	<0.04	<0.04	<0.04	<0.04	0.07	<0.04	<0.04	<0.04	<0.04	<0.04	0.07	mg/kg	2,400	5,400	11,000
Fluoranthene	<0.03	<0.03	0.16	0.24	0.37	<0.03	<0.03	<0.03	0.21	0.17	0.37	mg/kg	280	560	890
Pyrene	<0.03	<0.03	0.15	0.21	0.31	<0.03	<0.03	<0.03	0.19	0.16	0.31	mg/kg	620	1,200	2,000
Benzo(a)anthracene	<0.06	<0.06	0.11	0.15	0.23	<0.06	<0.06	<0.06	0.15	0.12	0.23	mg/kg	7.2	11	13
Chrysene	<0.02	<0.02	0.11	0.15	0.23	<0.02	<0.02	<0.02	0.14	0.12	0.23	mg/kg	15	22	27
Benzo(bk)fluoranthene	<0.07	<0.07	0.17	0.24	0.33	<0.07	<0.07	<0.07	0.19	0.19	0.33	mg/kg	ne	ne	ne
Benzo(a)pyrene	<0.04	<0.04	0.1	0.13	0.2	<0.04	<0.04	<0.04	0.11	0.11	0.20	mg/kg	2.2	2.7	3
Indeno(123cd)pyrene	<0.04	<0.04	0.06	0.08	0.1	<0.04	<0.04	<0.04	0.06	0.06	0.10	mg/kg	27	36	41
Dibenzo(ah)anthracene	<0.04	<0.04	<0.04	<0.04	<0.04	<0.04	<0.04	<0.04	<0.04	<0.04	0.00	mg/kg	0.24	0.28	0.3
Benzo(ghi)perylene	<0.04	<0.04	0.06	0.09	0.11	<0.04	<0.04	<0.04	0.07	0.07	0.11	mg/kg	320	340	350
Coronene	<0.04	<0.04	<0.04	<0.04	<0.04	<0.04	<0.04	<0.04	<0.04	<0.04	0.00	mg/kg	ne	ne	ne
PAH 6 Total	<0.22	<0.22	0.55	0.78	1.11	<0.22	<0.22	<0.22	0.64	0.6	1.11	mg/kg	ne	ne	ne
PAH 17 Total	<0.64	<0.64	1.02	1.42	2.18	<0.64	<0.64	<0.64	1.29	1.1	2.18	mg/kg	ne	ne	ne
Benzo(b)fluoranthene	<0.05	<0.05	0.12	0.17	0.24	<0.05	<0.05	<0.05	0.14	0.14	0.24	mg/kg	2.6	3.3	3.7
Benzo(k)fluoranthene	<0.02	<0.02	0.05	0.07	0.09	<0.02	<0.02	<0.02	0.05	0.05	0.09	mg/kg	77	93	100
Benzo(j)fluoranthene	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	0.00	mg/kg	ne	ne	ne
TOC	0.82	0.35	1.63	0.87	1.79	0.47	0.57	0.77	1.48	1.77		%			
SOM (Note 1)	1.41	0.60	2.81	1.50	3.09	0.81	0.98	1.33	2.55	3.05					

Note 1 - TOC * 1.724

S4UL - PAHs (Residential with Homegrown Produce), GA-1 Baldoyle

	TP33	TP39	TP41	TP45	TP46	TP48	TP53	TP58	TP59	TP65	Max Level Detected	Units	Residential with homegrown produce LQM/CIEH Suitable 4 Use Levels (S4ULs) [mg/kg DW]		
	0.5	0.5	0.5	0.5	0.5	0.5	0.5	0.5	0.5	0.5			1 % SOM	2.5 % SOM	6 % SOM
Naphthalene	<0.04	<0.04	<0.04	<0.04	<0.04	<0.04	<0.04	<0.04	<0.04	<0.04	0.00	mg/kg	2.3	5.6	13
Acenaphthylene	<0.03	<0.03	<0.03	<0.03	<0.03	<0.03	<0.03	<0.03	<0.03	<0.03	0.00	mg/kg	170	420	920
Acenaphthene	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	0.00	mg/kg	210	510	1,100
Fluorene	<0.04	<0.04	<0.04	<0.04	<0.04	<0.04	<0.04	<0.04	<0.04	<0.04	0.00	mg/kg	170	400	860
Phenanthrene	0.07	<0.03	<0.03	<0.03	<0.03	<0.03	0.05	<0.03	<0.03	<0.03	0.07	mg/kg	95	220	440
Anthracene	<0.04	<0.04	<0.04	<0.04	<0.04	<0.04	<0.04	<0.04	<0.04	<0.04	0.00	mg/kg	2,400	5,400	11,000
Fluoranthene	0.1	<0.03	<0.03	<0.03	<0.03	<0.03	0.09	<0.03	<0.03	<0.03	0.10	mg/kg	280	560	890
Pyrene	0.09	<0.03	<0.03	<0.03	<0.03	<0.03	0.08	<0.03	<0.03	<0.03	0.09	mg/kg	620	1,200	2,000
Benzo(a)anthracene	0.08	<0.06	<0.06	<0.06	<0.06	<0.06	0.07	<0.06	<0.06	<0.06	0.08	mg/kg	7.2	11	13
Chrysene	0.07	<0.02	<0.02	<0.02	<0.02	<0.02	0.06	<0.02	<0.02	<0.02	0.07	mg/kg	15	22	27
Benzo(bk)fluoranthene	0.1	<0.07	<0.07	<0.07	<0.07	<0.07	0.09	<0.07	<0.07	<0.07	0.10	mg/kg	ne	ne	ne
Benzo(a)pyrene	0.06	<0.04	<0.04	<0.04	<0.04	<0.04	0.05	<0.04	<0.04	<0.04	0.06	mg/kg	2.2	2.7	3
Indeno(123cd)pyrene	<0.04	<0.04	<0.04	<0.04	<0.04	<0.04	<0.04	<0.04	<0.04	<0.04	0.00	mg/kg	27	36	41
Dibenzo(ah)anthracene	<0.04	<0.04	<0.04	<0.04	<0.04	<0.04	<0.04	<0.04	<0.04	<0.04	0.00	mg/kg	0.24	0.28	0.3
Benzo(ghi)perylene	<0.04	<0.04	<0.04	<0.04	<0.04	<0.04	<0.04	<0.04	<0.04	<0.04	0.00	mg/kg	320	340	350
Coronene	<0.04	<0.04	<0.04	<0.04	<0.04	<0.04	<0.04	<0.04	<0.04	<0.04	0.00	mg/kg	ne	ne	ne
PAH 6 Total	0.26	<0.22	<0.22	<0.22	<0.22	<0.22	0.23	<0.22	<0.22	<0.22	0.26	mg/kg	ne	ne	ne
PAH 17 Total	<0.64	<0.64	<0.64	<0.64	<0.64	<0.64	<0.64	<0.64	<0.64	<0.64	0.00	mg/kg	ne	ne	ne
Benzo(b)fluoranthene	0.07	<0.05	<0.05	<0.05	<0.05	<0.05	0.06	<0.05	<0.05	<0.05	0.07	mg/kg	2.6	3.3	3.7
Benzo(k)fluoranthene	0.03	<0.02	<0.02	<0.02	<0.02	<0.02	0.03	<0.02	<0.02	<0.02	0.03	mg/kg	77	93	100
Benzo(j)fluoranthene	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	0.00	mg/kg	ne	ne	ne
TOC	0.85	0.37	0.41	0.46	0.57	0.39	0.74	0.43	0.48	0.32		%			
SOM (Note 1)	1.47	0.64	0.71	0.79	0.98	0.67	1.28	0.74	0.83	0.55					

Note 1 - TOC * 1.724

S4UL - PAHs (Residential with Homegrown Produce), GA-1 Baldoyle

													Residential with homegrown produce		
	TP67	TP74	TP77	TP78	TP80	TP86	TP89	TP89	TP90	TP94	Max Level Detected	Units	LQM/CIEH Suitable 4 Use Levels (S4ULs) [mg/kg DW]		
	2	0.5	0.5	0.5	0.5	0.5	1.5	2.5	0.5	0.5			1 % SOM	2.5 % SOM	6 % SOM
Naphthalene	<0.04	<0.04	<0.04	<0.04	<0.04	<0.04	<0.04	<0.04	<0.04	<0.04	0.00	mg/kg	2.3	5.6	13
Acenaphthylene	<0.03	<0.03	<0.03	<0.03	<0.03	<0.03	0.11	<0.03	<0.03	<0.03	0.11	mg/kg	170	420	920
Acenaphthene	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	0.31	<0.05	<0.05	<0.05	0.31	mg/kg	210	510	1,100
Fluorene	<0.04	<0.04	<0.04	<0.04	<0.04	<0.04	0.72	<0.04	<0.04	<0.04	0.72	mg/kg	170	400	860
Phenanthrene	<0.03	<0.03	<0.03	<0.03	<0.03	<0.03	0.73	0.06	<0.03	<0.03	0.73	mg/kg	95	220	440
Anthracene	<0.04	<0.04	<0.04	<0.04	<0.04	<0.04	0.07	<0.04	<0.04	<0.04	0.07	mg/kg	2,400	5,400	11,000
Fluoranthene	<0.03	<0.03	<0.03	<0.03	<0.03	<0.03	<0.03	<0.03	<0.03	<0.03	0.00	mg/kg	280	560	890
Pyrene	<0.03	<0.03	<0.03	<0.03	<0.03	<0.03	0.19	<0.03	<0.03	<0.03	0.19	mg/kg	620	1,200	2,000
Benzo(a)anthracene	<0.06	<0.06	<0.06	<0.06	<0.06	<0.06	<0.06	<0.06	<0.06	<0.06	0.00	mg/kg	7.2	11	13
Chrysene	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	0.07	0.04	<0.02	<0.02	0.07	mg/kg	15	22	27
Benzo(bk)fluoranthene	<0.07	<0.07	<0.07	<0.07	<0.07	<0.07	<0.07	<0.07	<0.07	<0.07	0.00	mg/kg	ne	ne	ne
Benzo(a)pyrene	<0.04	<0.04	<0.04	<0.04	<0.04	<0.04	<0.04	<0.04	<0.04	<0.04	0.00	mg/kg	2.2	2.7	3
Indeno(123cd)pyrene	<0.04	<0.04	<0.04	<0.04	<0.04	<0.04	<0.04	<0.04	<0.04	<0.04	0.00	mg/kg	27	36	41
Dibenzo(ah)anthracene	<0.04	<0.04	<0.04	<0.04	<0.04	<0.04	<0.04	<0.04	<0.04	<0.04	0.00	mg/kg	0.24	0.28	0.3
Benzo(ghi)perylene	<0.04	<0.04	<0.04	<0.04	<0.04	<0.04	<0.04	<0.04	<0.04	<0.04	0.00	mg/kg	320	340	350
Coronene	<0.04	<0.04	<0.04	<0.04	<0.04	<0.04	<0.04	<0.04	<0.04	<0.04	0.00	mg/kg	ne	ne	ne
PAH 6 Total	<0.22	<0.22	<0.22	<0.22	<0.22	<0.22	<0.22	<0.22	<0.22	<0.22	0.00	mg/kg	ne	ne	ne
PAH 17 Total	<0.64	<0.64	<0.64	<0.64	<0.64	<0.64	2.2	<0.64	<0.64	<0.64	2.20	mg/kg	ne	ne	ne
Benzo(b)fluoranthene	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	0.00	mg/kg	2.6	3.3	3.7
Benzo(k)fluoranthene	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	0.00	mg/kg	77	93	100
Benzo(j)fluoranthene	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	0.00	mg/kg	ne	ne	ne
TOC	0.45	0.33	0.49	0.38	0.4	0.4	0.46	0.54	0.38	0.68		%			
SOM (Note 1)	0.78	0.57	0.84	0.66	0.69	0.69	0.79	0.93	0.66	1.17					

Note 1 - TOC * 1.724

S4UL - PAHs (Residential with Homegrown Produce), GA-1 Baldoyle

	TP99	TP102	TP103	TP109	TP111	TP113	Max Level Detected	Units	Residential with homegrown produce LQM/CIEH Suitable 4 Use Levels (S4ULs) [mg/kg DW]		
	0.5	0.5	0.5	0.5	0.5	0.5			1 % SOM	2.5 % SOM	6 % SOM
Naphthalene	<0.04	<0.04	<0.04	<0.04	<0.04	<0.04	0.00	mg/kg	2.3	5.6	13
Acenaphthylene	<0.03	<0.03	<0.03	<0.03	<0.03	<0.03	0.00	mg/kg	170	420	920
Acenaphthene	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	0.00	mg/kg	210	510	1,100
Fluorene	<0.04	<0.04	<0.04	<0.04	<0.04	<0.04	0.00	mg/kg	170	400	860
Phenanthrene	<0.03	<0.03	<0.03	0.34	0.17	<0.03	0.34	mg/kg	95	220	440
Anthracene	<0.04	<0.04	<0.04	0.06	0.05	<0.04	0.06	mg/kg	2,400	5,400	11,000
Fluoranthene	<0.03	<0.03	<0.03	0.37	0.32	<0.03	0.37	mg/kg	280	560	890
Pyrene	<0.03	<0.03	<0.03	0.34	0.3	<0.03	0.34	mg/kg	620	1,200	2,000
Benzo(a)anthracene	<0.06	<0.06	<0.06	0.2	0.24	<0.06	0.24	mg/kg	7.2	11	13
Chrysene	<0.02	<0.02	<0.02	0.21	0.22	<0.02	0.22	mg/kg	15	22	27
Benzo(bk)fluoranthene	<0.07	<0.07	<0.07	0.32	0.32	<0.07	0.32	mg/kg	ne	ne	ne
Benzo(a)pyrene	<0.04	<0.04	<0.04	0.19	0.2	<0.04	0.20	mg/kg	2.2	2.7	3
Indeno(123cd)pyrene	<0.04	<0.04	<0.04	0.09	0.09	<0.04	0.09	mg/kg	27	36	41
Dibenzo(ah)anthracene	<0.04	<0.04	<0.04	<0.04	<0.04	<0.04	0.00	mg/kg	0.24	0.28	0.3
Benzo(ghi)perylene	<0.04	<0.04	<0.04	0.11	0.11	<0.04	0.11	mg/kg	320	340	350
Coronene	<0.04	<0.04	<0.04	<0.04	<0.04	<0.04	0.00	mg/kg	ne	ne	ne
PAH 6 Total	<0.22	<0.22	<0.22	1.08	1.04	<0.22	1.08	mg/kg	ne	ne	ne
PAH 17 Total	<0.64	<0.64	<0.64	2.23	2.02	<0.64	2.23	mg/kg	ne	ne	ne
Benzo(b)fluoranthene	<0.05	<0.05	<0.05	0.23	0.23	<0.05	0.23	mg/kg	2.6	3.3	3.7
Benzo(k)fluoranthene	<0.02	<0.02	<0.02	0.09	0.09	<0.02	0.09	mg/kg	77	93	100
Benzo(j)fluoranthene	<1	<1	<1	<1	<1	<1	0.00	mg/kg	ne	ne	ne
TOC	0.37	0.58	0.28	1.92	1.19	0.56		%			
SOM (Note 1)	0.64	1.00	0.48	3.31	2.05	0.97					

Note 1 - TOC * 1.724

S4UL - Organic Compounds (Residential with Homegrown Produce), GA-1 Baldoyle

													Residential with homegrown produce		
Residential	**BH1**	**BH1**	**BH2**	**BH3**	**BH3**	**BH4**	**BH5**	**BH5**	**BH6**	**BH7**	**Max Level**	**Units**	**LQM/CIEH Suitable 4 Use Levels (S4ULs) [mg/kg DW]**		
	0.5	**3**	**1**	**1**	**2**	**2**	**1**	**3**	**1**	**0.5**	**Detected**		**1 % SOM**	**2.5 % SOM**	**6 % SOM**
Aliphatics															
>C5-C6	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	0.00	mg/kg	42	78	160
>C6-C8	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	0.00	mg/kg	100	230	530
>C8-C10	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	0.00	mg/kg	27	65	150
>C10-C12	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2	0.00	mg/kg	130	330	760
>C12-C16	<4	<4	<4	<4	<4	<4	<4	<4	<4	<4	0.00	mg/kg	1,100	2,400	4,300
>C16-C21	<7	<7	<7	<7	<7	<7	<7	<7	<7	<7	0.00	mg/kg	ne	ne	ne
>C21-C35	<7	<7	<7	<7	<7	<7	<7	<7	<7	<7	0.00	mg/kg	ne	ne	ne
>C16-C35	<14	<14	<14	<14	<14	<14	<14	<14	<14	<14	0.00	mg/kg	65000	92000	110000
>C35-C40	<7	<7	<7	<7	<7	<7	<7	<7	<7	<7	0.00	mg/kg	ne	ne	ne
Total aliphatics C5-40	<26	<26	<26	<26	<26	<26	<26	<26	<26	<26	0.00	mg/kg	ne	ne	ne
>C6-C10	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	0.00	mg/kg	ne	ne	ne
>C10-C25	<10	<10	<10	<10	<10	<10	<10	<10	<10	<10	0.00	mg/kg	ne	ne	ne
>C25-C35	<10	<10	<10	<10	<10	<10	<10	<10	<10	<10	0.00	mg/kg	ne	ne	ne
Aromatics															
>C5-EC7	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	0.00	mg/kg	70	140	300
>EC7-EC8	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	0.00	mg/kg	130	290	660
>EC8-EC10	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	0.00	mg/kg	34	83	190
>EC10-EC12	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2	0.00	mg/kg	74	180	380
>EC12-EC16	<4	<4	<4	<4	<4	<4	<4	<4	<4	<4	0.00	mg/kg	140	330	660
>EC16-EC21	<7	<7	<7	<7	<7	<7	<7	<7	<7	<7	0.00	mg/kg	260	540	930
>EC21-EC35	<7	<7	<7	<7	<7	<7	<7	<7	<7	<7	0.00	mg/kg	1,100	1,500	1,700
>EC35-EC40	<7	<7	<7	<7	<7	<7	<7	<7	<7	<7	0.00	mg/kg	ne	ne	ne
Total aromatics C5-40	<26	<26	<26	<26	<26	<26	<26	<26	<26	<26	0.00	mg/kg	ne	ne	ne
Total aliphatics and aromatics(C5-40)	<52	<52	<52	<52	<52	<52	<52	<52	<52	<52	0.00	mg/kg	ne	ne	ne
>EC6-EC10	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	0.00	mg/kg	ne	ne	ne
>EC10-EC25	<10	<10	<10	<10	<10	<10	<10	<10	<10	<10	0.00	mg/kg	ne	ne	ne
>EC25-EC35	<10	<10	<10	<10	<10	<10	<10	<10	<10	<10	0.00	mg/kg	ne	ne	ne
BTEX															
MTBE	<0.005	<0.005	<0.005	<0.005	<0.005	<0.005	<0.005	<0.005	<0.005	<0.005	0.00	mg/kg	ne	ne	ne
Benzene	<0.005	<0.005	<0.005	<0.005	<0.005	<0.005	<0.005	<0.005	<0.005	<0.005	0.00	mg/kg	0.087	0.17	0.37
Toluene	<0.005	<0.005	<0.005	<0.005	<0.005	<0.005	<0.005	<0.005	<0.005	<0.005	0.00	mg/kg	130	290	660
Ethylbenzene	<0.005	<0.005	<0.005	<0.005	<0.005	<0.005	<0.005	<0.005	<0.005	<0.005	0.00	mg/kg	47	110	260
m/p-Xylene	<0.005	<0.005	<0.005	<0.005	<0.005	<0.005	<0.005	<0.005	<0.005	<0.005	0.00	mg/kg	56	130	310
o-Xylene	<0.005	<0.005	<0.005	<0.005	<0.005	<0.005	<0.005	<0.005	<0.005	<0.005	0.000	mg/kg	60	140	330
TOC	0.31	0.5	1.43	0.41	0.45	0.59	0.45	0.55	0.3	0.43		%			
SOM (Note 1)	0.53	0.86	2.47	0.71	0.78	1.02	0.78	0.95	0.52	0.74					

Note 1 - TOC * 1.724

S4UL - Organic Compounds (Residential with Homegrown Produce), GA-1 Baldoyle

													Residential with homegrown produce		
Residential	**BH7**	**BH8**	**BH9**	**BH9**	**BH10**	**BH11**	**BH11**	**BH13**	**BH14**	**BH14**	**Max Level**	**Units**	**LQM/CIEH Suitable 4 Use Levels (S4ULs) [mg/kg DW]**		
	2	**1.5**	**1**	**3**	**1.00-2.00**	**0.00-1.00**	**2.00-3.00**	**1.00-2.00**	**0.00-1.00**	**2.00-3.00**	**Detected**		**1 % SOM**	**2.5 % SOM**	**6 % SOM**
Aliphatics															
>C5-C6	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	0.00	mg/kg	42	78	160
>C6-C8	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	0.00	mg/kg	100	230	530
>C8-C10	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	0.00	mg/kg	27	65	150
>C10-C12	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2	0.00	mg/kg	130	330	760
>C12-C16	<4	<4	<4	<4	<4	<4	<4	<4	<4	<4	0.00	mg/kg	1,100	2,400	4,300
>C16-C21	<7	<7	<7	<7	<7	<7	<7	<7	<7	<7	0.00	mg/kg	ne	ne	ne
>C21-C35	<7	<7	<7	<7	<7	<7	<7	<7	<7	<7	0.00	mg/kg	ne	ne	ne
>C16-C35	<14	<14	<14	<14	<14	<14	<14	<14	<14	<14	0.00	mg/kg	65000	92000	110000
>C35-C40	<7	<7	<7	<7	<7	<7	<7	<7	<7	<7	0.00	mg/kg	ne	ne	ne
Total aliphatics C5-40	<26	<26	<26	<26	<26	<26	<26	<26	<26	<26	0.00	mg/kg	ne	ne	ne
>C6-C10	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	0.00	mg/kg	ne	ne	ne
>C10-C25	<10	<10	<10	<10	<10	<10	<10	<10	<10	<10	0.00	mg/kg	ne	ne	ne
>C25-C35	<10	<10	<10	<10	<10	<10	<10	<10	<10	<10	0.00	mg/kg	ne	ne	ne
Aromatics															
>C5-EC7	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	0.00	mg/kg	70	140	300
>EC7-EC8	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	0.00	mg/kg	130	290	660
>EC8-EC10	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	0.00	mg/kg	34	83	190
>EC10-EC12	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2	0.00	mg/kg	74	180	380
>EC12-EC16	<4	<4	<4	<4	<4	<4	<4	<4	<4	<4	0.00	mg/kg	140	330	660
>EC16-EC21	<7	<7	<7	<7	<7	<7	<7	<7	<7	<7	0.00	mg/kg	260	540	930
>EC21-EC35	<7	<7	<7	<7	<7	<7	<7	<7	<7	<7	0.00	mg/kg	1,100	1,500	1,700
>EC35-EC40	<7	<7	<7	<7	<7	<7	<7	<7	<7	<7	0.00	mg/kg	ne	ne	ne
Total aromatics C5-40	<26	<26	<26	<26	<26	<26	<26	<26	<26	<26	0.00	mg/kg	ne	ne	ne
Total aliphatics and aromatics(C5-40)	<52	<52	<52	<52	<52	<52	<52	<52	<52	<52	0.00	mg/kg	ne	ne	ne
>EC6-EC10	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	0.00	mg/kg	ne	ne	ne
>EC10-EC25	<10	<10	<10	<10	<10	<10	<10	<10	<10	<10	0.00	mg/kg	ne	ne	ne
>EC25-EC35	<10	<10	<10	<10	<10	<10	<10	<10	<10	<10	0.00	mg/kg	ne	ne	ne
BTEX															
MTBE	<0.005	<0.005	<0.005	<0.005	<0.005	<0.005	<0.005	<0.005	<0.005	<0.005	0.00	mg/kg	ne	ne	ne
Benzene	<0.005	<0.005	<0.005	<0.005	<0.005	<0.005	<0.005	<0.005	<0.005	<0.005	0.00	mg/kg	0.087	0.17	0.37
Toluene	<0.005	<0.005	<0.005	<0.005	<0.005	<0.005	<0.005	<0.005	<0.005	<0.005	0.00	mg/kg	130	290	660
Ethylbenzene	<0.005	<0.005	<0.005	<0.005	<0.005	<0.005	<0.005	<0.005	<0.005	<0.005	0.00	mg/kg	47	110	260
m/p-Xylene	<0.005	<0.005	<0.005	<0.005	<0.005	<0.005	<0.005	<0.005	<0.005	<0.005	0.00	mg/kg	56	130	310
o-Xylene	<0.005	<0.005	<0.005	<0.005	<0.005	<0.005	<0.005	<0.005	<0.005	<0.005	0.000	mg/kg	60	140	330
TOC	0.51	0.36	0.61	0.81	0.69	0.53	0.63	0.45	0.38	0.73		%			
SOM (Note 1)	0.88	0.62	1.05	1.40	1.19	0.91	1.09	0.78	0.66	1.26					

Note 1 - TOC * 1.724

S4UL - Organic Compounds (Residential with Homegrown Produce), GA-1 Baldoyle

													Residential with homegrown produce		
Residential	**TP02**	**TP09**	**TP13**	**TP15**	**TP18**	**TP20**	**TP22**	**TP27**	**TP29**	**TP32**	**Max Level**	**Units**	**LQM/CIEH Suitable 4 Use Levels (S4ULs) [mg/kg DW]**		
	0.5	**1.5**	**0.5**	**0.5**	**0.5**	**0.5**	**0.5**	**0.5**	**0.5**	**0.5**	**Detected**		**1 % SOM**	**2.5 % SOM**	**6 % SOM**
Aliphatics															
>C5-C6	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	0.00	mg/kg	42	78	160
>C6-C8	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	0.00	mg/kg	100	230	530
>C8-C10	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	0.00	mg/kg	27	65	150
>C10-C12	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2	0.00	mg/kg	130	330	760
>C12-C16	<4	<4	<4	<4	<4	<4	<4	<4	<4	<4	0.00	mg/kg	1,100	2,400	4,300
>C16-C21	<7	<7	<7	<7	<7	<7	<7	<7	<7	<7	0.00	mg/kg	ne	ne	ne
>C21-C35	<7	<7	<7	<7	<7	<7	<7	<7	<7	<7	0.00	mg/kg	ne	ne	ne
>C16-C35	<14	<14	<14	<14	<14	<14	<14	<14	<14	<14	0.00	mg/kg	65000	92000	110000
>C35-C40	<7	<7	<7	<7	<7	<7	<7	<7	<7	<7	0.00	mg/kg	ne	ne	ne
Total aliphatics C5-40	<26	<26	<26	<26	<26	<26	<26	<26	<26	<26	0.00	mg/kg	ne	ne	ne
>C6-C10	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	0.00	mg/kg	ne	ne	ne
>C10-C25	<10	<10	<10	<10	<10	<10	<10	<10	<10	<10	0.00	mg/kg	ne	ne	ne
>C25-C35	<10	<10	<10	<10	<10	<10	<10	<10	<10	<10	0.00	mg/kg	ne	ne	ne
Aromatics															
>C5-EC7	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	0.00	mg/kg	70	140	300
>EC7-EC8	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	0.00	mg/kg	130	290	660
>EC8-EC10	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	0.00	mg/kg	34	83	190
>EC10-EC12	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2	0.00	mg/kg	74	180	380
>EC12-EC16	<4	<4	<4	<4	<4	<4	<4	<4	<4	<4	0.00	mg/kg	140	330	660
>EC16-EC21	<7	<7	<7	<7	<7	<7	<7	<7	<7	<7	0.00	mg/kg	260	540	930
>EC21-EC35	<7	<7	<7	<7	<7	<7	<7	<7	<7	<7	0.00	mg/kg	1,100	1,500	1,700
>EC35-EC40	<7	<7	<7	<7	<7	<7	<7	<7	<7	<7	0.00	mg/kg	ne	ne	ne
Total aromatics C5-40	<26	<26	<26	<26	<26	<26	<26	<26	<26	<26	0.00	mg/kg	ne	ne	ne
Total aliphatics and aromatics(C5-40)	<52	<52	<52	<52	<52	<52	<52	<52	<52	<52	0.00	mg/kg	ne	ne	ne
>EC6-EC10	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	0.00	mg/kg	ne	ne	ne
>EC10-EC25	<10	<10	<10	<10	<10	<10	<10	<10	<10	<10	0.00	mg/kg	ne	ne	ne
>EC25-EC35	<10	<10	<10	<10	<10	<10	<10	<10	<10	<10	0.00	mg/kg	ne	ne	ne
BTEX															
MTBE	<0.005	<0.005	<0.005	<0.005	<0.005	<0.005	<0.005	<0.005	<0.005	<0.005	0.00	mg/kg	ne	ne	ne
Benzene	<0.005	<0.005	<0.005	<0.005	<0.005	<0.005	<0.005	<0.005	<0.005	<0.005	0.00	mg/kg	0.087	0.17	0.37
Toluene	<0.005	<0.005	<0.005	<0.005	<0.005	<0.005	<0.005	<0.005	<0.005	<0.005	0.00	mg/kg	130	290	660
Ethylbenzene	<0.005	<0.005	<0.005	<0.005	<0.005	<0.005	<0.005	<0.005	<0.005	<0.005	0.00	mg/kg	47	110	260
m/p-Xylene	<0.005	<0.005	<0.005	<0.005	<0.005	<0.005	<0.005	<0.005	<0.005	<0.005	0.00	mg/kg	56	130	310
o-Xylene	<0.005	<0.005	<0.005	<0.005	<0.005	<0.005	<0.005	<0.005	<0.005	<0.005	0.000	mg/kg	60	140	330
TOC	0.82	0.35	1.63	0.87	1.79	0.47	0.57	0.77	1.48	1.77		%			
SOM (Note 1)	1.41	0.60	2.81	1.50	3.09	0.81	0.98	1.33	2.55	3.05					

Note 1 - TOC * 1.724

S4UL - Organic Compounds (Residential with Homegrown Produce), GA-1 Baldoyle

													Residential with homegrown produce		
Residential	**TP33**	**TP39**	**TP41**	**TP45**	**TP46**	**TP48**	**TP53**	**TP58**	**TP59**	**TP65**	**Max Level Detected**	**Units**	**LQM/CIEH Suitable 4 Use Levels (S4ULs) [mg/kg DW]**		
	0.5	**0.5**	**0.5**	**0.5**	**0.5**	**0.5**	**0.5**	**0.5**	**0.5**	**0.5**			**1 % SOM**	**2.5 % SOM**	**6 % SOM**
Aliphatics															
>C5-C6	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	0.00	mg/kg	42	78	160
>C6-C8	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	0.00	mg/kg	100	230	530
>C8-C10	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	0.00	mg/kg	27	65	150
>C10-C12	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2	0.00	mg/kg	130	330	760
>C12-C16	<4	<4	<4	<4	<4	<4	<4	<4	<4	<4	0.00	mg/kg	1,100	2,400	4,300
>C16-C21	<7	<7	<7	<7	<7	<7	<7	<7	<7	<7	0.00	mg/kg	ne	ne	ne
>C21-C35	<7	<7	<7	<7	<7	<7	<7	<7	<7	<7	0.00	mg/kg	ne	ne	ne
>C16-C35	<14	<14	<14	<14	<14	<14	<14	<14	<14	<14	0.00	mg/kg	65000	92000	110000
>C35-C40	<7	<7	<7	<7	<7	<7	<7	<7	<7	<7	0.00	mg/kg	ne	ne	ne
Total aliphatics C5-40	<26	<26	<26	<26	<26	<26	<26	<26	<26	<26	0.00	mg/kg	ne	ne	ne
>C6-C10	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	0.00	mg/kg	ne	ne	ne
>C10-C25	<10	<10	<10	<10	<10	<10	<10	<10	<10	<10	0.00	mg/kg	ne	ne	ne
>C25-C35	<10	<10	<10	<10	<10	<10	<10	<10	<10	<10	0.00	mg/kg	ne	ne	ne
Aromatics															
>C5-EC7	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	0.00	mg/kg	70	140	300
>EC7-EC8	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	0.00	mg/kg	130	290	660
>EC8-EC10	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	0.00	mg/kg	34	83	190
>EC10-EC12	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2	0.00	mg/kg	74	180	380
>EC12-EC16	<4	<4	<4	<4	<4	<4	<4	<4	<4	<4	0.00	mg/kg	140	330	660
>EC16-EC21	<7	<7	<7	<7	<7	<7	<7	<7	<7	<7	0.00	mg/kg	260	540	930
>EC21-EC35	<7	<7	<7	<7	<7	<7	<7	<7	<7	<7	0.00	mg/kg	1,100	1,500	1,700
>EC35-EC40	<7	<7	<7	<7	<7	<7	<7	<7	<7	<7	0.00	mg/kg	ne	ne	ne
Total aromatics C5-40	<26	<26	<26	<26	<26	<26	<26	<26	<26	<26	0.00	mg/kg	ne	ne	ne
Total aliphatics and aromatics(C5-40)	<52	<52	<52	<52	<52	<52	<52	<52	<52	<52	0.00	mg/kg	ne	ne	ne
>EC6-EC10	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	0.00	mg/kg	ne	ne	ne
>EC10-EC25	<10	<10	<10	<10	<10	<10	<10	<10	<10	<10	0.00	mg/kg	ne	ne	ne
>EC25-EC35	<10	<10	<10	<10	<10	<10	<10	<10	<10	<10	0.00	mg/kg	ne	ne	ne
BTEX															
MTBE	<0.005	<0.005	<0.005	<0.005	<0.005	<0.005	<0.005	<0.005	<0.005	<0.005	0.00	mg/kg	ne	ne	ne
Benzene	<0.005	<0.005	<0.005	<0.005	<0.005	<0.005	<0.005	<0.005	<0.005	<0.005	0.00	mg/kg	0.087	0.17	0.37
Toluene	<0.005	<0.005	<0.005	<0.005	<0.005	<0.005	<0.005	<0.005	<0.005	<0.005	0.00	mg/kg	130	290	660
Ethylbenzene	<0.005	<0.005	<0.005	<0.005	<0.005	<0.005	<0.005	<0.005	<0.005	<0.005	0.00	mg/kg	47	110	260
m/p-Xylene	<0.005	<0.005	<0.005	<0.005	<0.005	<0.005	<0.005	<0.005	<0.005	<0.005	0.00	mg/kg	56	130	310
o-Xylene	<0.005	<0.005	<0.005	<0.005	<0.005	<0.005	<0.005	<0.005	<0.005	<0.005	0.000	mg/kg	60	140	330
TOC	0.85	0.37	0.41	0.46	0.57	0.39	0.74	0.43	0.48	0.32		%			
SOM (Note 1)	1.47	0.64	0.71	0.79	0.98	0.67	1.28	0.74	0.83	0.55					

Note 1 - TOC * 1.724

S4UL - Organic Compounds (Residential with Homegrown Produce), GA-1 Baldoyle

													Residential with homegrown produce		
Residential	**TP67**	**TP74**	**TP77**	**TP78**	**TP80**	**TP86**	**TP89**	**TP89**	**TP90**	**TP94**	**Max Level**	**Units**	**LQM/CIEH Suitable 4 Use Levels (S4ULs) [mg/kg DW]**		
	2	**0.5**	**0.5**	**0.5**	**0.5**	**0.5**	**1.5**	**2.5**	**0.5**	**0.5**	**Detected**		**1 % SOM**	**2.5 % SOM**	**6 % SOM**
Aliphatics															
>C5-C6	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	0.00	mg/kg	42	78	160
>C6-C8	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	0.00	mg/kg	100	230	530
>C8-C10	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	4.40	<0.1	<0.1	<0.1	4.40	mg/kg	27	65	150
>C10-C12	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2	56	<0.2	<0.2	<0.2	56.00	mg/kg	130	330	760
>C12-C16	<4	<4	<4	<4	<4	<4	294	<4	<4	<4	294.00	mg/kg	1,100	2,400	4,300
>C16-C21	<7	<7	<7	<7	<7	<7	560	<7	<7	<7	560.00	mg/kg	ne	ne	ne
>C21-C35	<7	<7	<7	<7	<7	<7	331	<7	<7	<7	331.00	mg/kg	ne	ne	ne
>C16-C35	<14	<14	<14	<14	<14	<14	891	<14	<14	<14	891.00	mg/kg	65000	92000	110000
>C35-C40	<7	<7	<7	<7	<7	<7	<7	<7	<7	<7	0.00	mg/kg	ne	ne	ne
Total aliphatics C5-40	<26	<26	<26	<26	<26	<26	1245.00	<26	<26	<26	1245.00	mg/kg	ne	ne	ne
>C6-C10	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	4.40	<0.1	<0.1	<0.1	4.40	mg/kg	ne	ne	ne
>C10-C25	<10	<10	<10	<10	<10	<10	1197	<10	<10	<10	1197.00	mg/kg	ne	ne	ne
>C25-C35	<10	<10	<10	<10	<10	<10	76	<10	<10	<10	76.00	mg/kg	ne	ne	ne
Aromatics															
>C5-EC7	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	0.00	mg/kg	70	140	300
>EC7-EC8	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	0.00	mg/kg	130	290	660
>EC8-EC10	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	0.00	mg/kg	34	83	190
>EC10-EC12	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2	25.5	<0.2	<0.2	<0.2	25.50	mg/kg	74	180	380
>EC12-EC16	<4	<4	<4	<4	<4	<4	237	<4	<4	<4	237.00	mg/kg	140	330	660
>EC16-EC21	<7	<7	<7	<7	<7	<7	432	<7	<7	<7	432.00	mg/kg	260	540	930
>EC21-EC35	<7	<7	<7	<7	<7	<7	232	<7	<7	<7	232.00	mg/kg	1,100	1,500	1,700
>EC35-EC40	<7	<7	<7	<7	<7	<7	<7	<7	<7	<7	0.00	mg/kg	ne	ne	ne
Total aromatics C5-40	<26	<26	<26	<26	<26	<26	927	<26	<26	<26	927.00	mg/kg	ne	ne	ne
Total aliphatics and aromatics(C5-40)	<52	<52	<52	<52	<52	<52	2172	<52	<52	<52	2172.00	mg/kg	ne	ne	ne
>EC6-EC10	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	0.00	mg/kg	ne	ne	ne
>EC10-EC25	<10	<10	<10	<10	<10	<10	899	<10	<10	<10	899.00	mg/kg	ne	ne	ne
>EC25-EC35	<10	<10	<10	<10	<10	<10	57	<10	<10	<10	57.00	mg/kg	ne	ne	ne
BTEX															
MTBE	<0.005	<0.005	<0.005	<0.005	<0.005	<0.005	<0.005	<0.005	<0.005	<0.005	0.00	mg/kg	ne	ne	ne
Benzene	<0.005	<0.005	<0.005	<0.005	<0.005	<0.005	<0.005	<0.005	<0.005	<0.005	0.00	mg/kg	0.087	0.17	0.37
Toluene	<0.005	<0.005	<0.005	<0.005	<0.005	<0.005	<0.005	<0.005	<0.005	<0.005	0.00	mg/kg	130	290	660
Ethylbenzene	<0.005	<0.005	<0.005	<0.005	<0.005	<0.005	0.02	<0.005	<0.005	<0.005	0.02	mg/kg	47	110	260
m/p-Xylene	<0.005	<0.005	<0.005	<0.005	<0.005	<0.005	0.03	<0.005	<0.005	<0.005	0.03	mg/kg	56	130	310
o-Xylene	<0.005	<0.005	<0.005	<0.005	<0.005	<0.005	<0.005	<0.005	<0.005	<0.005	0.000	mg/kg	60	140	330
TOC	0.45	0.33	0.49	0.38	0.4	0.4	0.46	0.54	0.38	0.68		%			
SOM (Note 1)	0.78	0.57	0.84	0.66	0.69	0.69	0.79	0.93	0.66	1.17					

Note 1 - TOC * 1.724

S4UL - Organic Compounds (Residential with Homegrown Produce), GA-1 Baldoyle

Residential	TP99	TP102	TP103	TP109	TP111	TP113	Max Level Detected	Units	Residential with homegrown produce LQM/CIEH Suitable 4 Use Levels (S4ULs) [mg/kg DW] 1 % SOM	2.5 % SOM	6 % SOM
	0.5	0.5	0.5	0.5	0.5	0.5					
Aliphatics											
>C5-C6	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	0.00	mg/kg	42	78	160
>C6-C8	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	0.00	mg/kg	100	230	530
>C8-C10	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	0.00	mg/kg	27	65	150
>C10-C12	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2	0.00	mg/kg	130	330	760
>C12-C16	<4	<4	<4	<4	<4	<4	0.00	mg/kg	1,100	2,400	4,300
>C16-C21	<7	<7	<7	<7	<7	<7	0.00	mg/kg	ne	ne	ne
>C21-C35	<7	<7	<7	<7	<7	<7	0.00	mg/kg	ne	ne	ne
>C16-C35	<14	<14	<14	<14	<14	<14	0.00	mg/kg	65000	92000	110000
>C35-C40	<7	<7	<7	<7	<7	<7	0.00	mg/kg	ne	ne	ne
Total aliphatics C5-40	<26	<26	<26	<26	<26	<26	0.00	mg/kg	ne	ne	ne
>C6-C10	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	0.00	mg/kg	ne	ne	ne
>C10-C25	<10	<10	<10	<10	<10	<10	0.00	mg/kg	ne	ne	ne
>C25-C35	<10	<10	<10	<10	<10	<10	0.00	mg/kg	ne	ne	ne
Aromatics											
>C5-EC7	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	0.00	mg/kg	70	140	300
>EC7-EC8	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	0.00	mg/kg	130	290	660
>EC8-EC10	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	0.00	mg/kg	34	83	190
>EC10-EC12	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2	0.00	mg/kg	74	180	380
>EC12-EC16	<4	<4	<4	<4	<4	<4	0.00	mg/kg	140	330	660
>EC16-EC21	<7	<7	<7	<7	<7	<7	0.00	mg/kg	260	540	930
>EC21-EC35	<7	<7	<7	<7	<7	<7	0.00	mg/kg	1,100	1,500	1,700
>EC35-EC40	<7	<7	<7	<7	<7	<7	0.00	mg/kg	ne	ne	ne
Total aromatics C5-40	<26	<26	<26	<26	<26	<26	0.00	mg/kg	ne	ne	ne
Total aliphatics and aromatics(C5-40)	<52	<52	<52	<52	<52	<52	0.00	mg/kg	ne	ne	ne
>EC6-EC10	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	0.00	mg/kg	ne	ne	ne
>EC10-EC25	<10	<10	<10	<10	<10	<10	0.00	mg/kg	ne	ne	ne
>EC25-EC35	<10	<10	<10	<10	<10	<10	0.00	mg/kg	ne	ne	ne
BTEX											
MTBE	<0.005	<0.005	<0.005	<0.005	<0.005	<0.005	0.00	mg/kg	ne	ne	ne
Benzene	<0.005	<0.005	<0.005	<0.005	<0.005	<0.005	0.00	mg/kg	0.087	0.17	0.37
Toluene	<0.005	<0.005	<0.005	<0.005	<0.005	<0.005	0.00	mg/kg	130	290	660
Ethylbenzene	<0.005	<0.005	<0.005	<0.005	<0.005	<0.005	0.00	mg/kg	47	110	260
m/p-Xylene	<0.005	<0.005	<0.005	<0.005	<0.005	<0.005	0.00	mg/kg	56	130	310
o-Xylene	<0.005	<0.005	<0.005	<0.005	<0.005	<0.005	0.000	mg/kg	60	140	330
TOC	0.37	0.58	0.28	1.92	1.19	0.56		%			
SOM (Note 1)	0.64	1.00	0.48	3.31	2.05	0.97					

Note 1 - TOC * 1.724

A10.1 NRA - Institute of Geologists of Ireland (IGI) Hydrology Impact Rating

Appendix A10.1

Institute of Geologists of Ireland (IGI) Hydrology Impact Rating

Table 1: Criteria for rating impact magnitude at EIS stage – Estimation of magnitude of impact on hydrology attributes (NRA, 2009)

Magnitude of Impact	Criteria	Typical Examples
Large Adverse	Results in loss of attribute and/ or quality and integrity of attribute	Loss or extensive change to a water body or water dependent habitat
Moderate Adverse	Results in impact on integrity of attribute or loss of part of attribute	Calculated risk of serious pollution incident >1% annually[2]
Small Adverse	Results in minor impact on integrity of attribute or loss of small part of attribute	Increase in predicted peak flood level >10mm1
Negligible	Results in an impact on attribute but of insufficient magnitude to affect either use or integrity	Negligible change in predicted peak flood level1
Minor Beneficial	Results in minor improvement of attribute quality	Calculated reduction in pollution risk of 50% or more where existing risk is <1% annually[2]
Moderate Beneficial	Results in moderate improvement of attribute quality	Calculated reduction in pollution risk of 50% or more where existing risk is >1% annually[2]
Major Beneficial	Results in major improvement of attribute quality	Reduction in predicted peak flood level >100mm1

Additional examples are provided in the NRA Guidance Document

1 Refer to Annex 1, Methods E and F, Annex 1 of HA216/06

1 Refer to Appendix B3 / Annex 1, Method D, Annex 1 of HA216/06 2

2 Source: 'Guidelines on Procedures for Assessment and Treatment of Geology, Hydrology and Hydrogeology for National Road Schemes' by the National Roads Authority (NRA, 2009)

Table 2 Criteria for Rating Impact Significance of Hydrological Attributes (NRA, 2009)

Importance	Criteria	Typical Examples
Extremely High	Attribute has a high quality or value on an international scale	River, wetland or surface water body ecosystem protected by EU legislation e.g. 'European sites' designated under the Habitats Regulations or 'Salmonid waters' designated pursuant to the European Communities (Quality of Salmonid Waters) Regulations, 1988.
Very High	Attribute has a high quality or value on a regional or national scale	River, wetland or surface water body ecosystem protected by national legislation – NHA status Regionally important potable water source supplying >2500 homes Quality Class A (Biotic Index Q4, Q5) Flood plain protecting more than 50 residential or commercial properties from flooding Nationally important amenity site for wide range of leisure activities
High	Attribute has a high quality or value on a local scale	Salmon fishery Locally important potable water source supplying >1000 homes Quality Class B (Biotic Index Q3-4) Flood plain protecting between 5 and 50 residential or commercial properties from flooding Locally important amenity site for wide range of leisure activities
Medium	Attribute has a medium quality or value on a local scale	Coarse fishery Local potable water source supplying >50 homes Quality Class C (Biotic Index Q3, Q2- 3) Flood plain protecting between 1 and 5 residential or commercial properties from flooding
Low	Attribute has a low quality or value on a local scale	Locally important amenity site for small range of leisure activities Local potable water source supplying <50 homes Quality Class D (Biotic Index Q2, Q1) Flood plain protecting 1 residential or commercial property from flooding Amenity site used by small numbers of local people

Source: 'Guidelines on Procedures for Assessment and Treatment of Geology, Hydrology and Hydrogeology for National Road Schemes' by the National Roads Authority (NRA, 2009)

A11.1 Ambient Air Quality Standards

Appendix A11.1

Ambient Air Quality Standards

National standards for ambient air pollutants in Ireland have generally ensued from Council Directives enacted in the EU (& previously the EC & EEC) (see Table 11.1). The initial interest in ambient air pollution legislation in the EU dates from the early 1980s and was in response to the most serious pollutant problems at that time which was the issue of acid rain. As a result of this sulphur dioxide, and later nitrogen dioxide, were both the focus of EU legislation. Linked to the acid rain problem was urban smog associated with fuel burning for space heating purposes. Also apparent at this time were the problems caused by leaded petrol and EU legislation was introduced to deal with this problem in the early 1980s.

In recent years the EU has focused on defining a basis strategy across the EU in relation to ambient air quality. In 1996, a Framework Directive, Council Directive 96/62/EC, on ambient air quality assessment and management was enacted. The aims of the Directive are fourfold. Firstly, the Directive's aim is to establish objectives for ambient air quality designed to avoid harmful effects to health. Secondly, the Directive aims to assess ambient air quality on the basis of common methods and criteria throughout the EU. Additionally, it is aimed to make information on air quality available to the public via alert thresholds and fourthly, it aims to maintain air quality where it is good and improve it in other cases.

As part of these measures to improve air quality, the European Commission has adopted proposals for daughter legislation under Directive 96/62/EC. The first of these directives to be enacted, Council Directive 1999/30/EC, has been passed into Irish Law as S.I. No 271 of 2002 (Air Quality Standards Regulations 2002), and has set limit values which came into operation on 17th June 2002. Council Directive 1999/30/EC, as relating to limit values for sulphur dioxide, nitrogen dioxide, lead and particulate matter, is detailed in Table 11.1. The Air Quality Standards Regulations 2002 detail margins of tolerance, which are trigger levels for certain types of action in the period leading to the attainment date. The margin of tolerance varies from 60% for lead, to 30% for 24-hour limit value for PM_{10}, 40% for the hourly and annual limit value for NO_2 and 26% for hourly SO_2 limit values. The margin of tolerance commenced from June 2002, and will start to reduce from 1 January 2003 and every 12 months thereafter by equal annual percentages to reach 0% by the attainment date. A second daughter directive, EU Council Directive 2000/69/EC, has published limit values for both carbon monoxide and benzene in ambient air. This has also been passed into Irish Law under the Air Quality Standards Regulations 2002.

The most recent EU Council Directive on ambient air quality was published on the 11/06/08 which has been transposed into Irish Law as S.I. 180 of 2011. Council Directive 2008/50/EC combines the previous Air Quality Framework Directive and its subsequent daughter directives. Provisions were also made for the

inclusion of new ambient limit values relating to $PM_{2.5}$. The margins of tolerance specific to each pollutant were also slightly adjusted from previous directives as outlined in Table 11.1. In regards to existing ambient air quality standards, it is not proposed to modify the standards but to strengthen existing provisions to ensure that non-compliances are removed. In addition, new ambient standards for $PM_{2.5}$ are included in Directive 2008/50/EC. The approach for $PM_{2.5}$ is to establish a target value of 25µg/m^3, as an annual average (to be attained everywhere by 2010) and a limit value of 25µg/m^3, as an annual average (to be attained everywhere by 2015), coupled with a target to reduce human exposure generally to $PM_{2.5}$ between 2010 and 2020. This exposure reduction target will range from 0% (for $PM_{2.5}$ concentrations of less than 8.5µg/m^3 to 20% of the average exposure indicator (AEI) for concentrations of between 18 - 22µg/m^3). Where the AEI is currently greater than 22µg/m^3 all appropriate measures should be employed to reduce this level to 18µg/m^3 by 2020. The AEI is based on measurements taken in urban background locations averaged over a three year period from 2008 - 2010 and again from 2018-2020. Additionally, an exposure concentration obligation of 20µg/m^3 has been set to be complied with by 2015 again based on the AEI.

Although the EU Air Quality Limit Values are the basis of legislation, other thresholds outlined by the EU Directives are used which are triggers for particular actions. The Alert Threshold is defined in Council Directive 96/62/EC as "a level beyond which there is a risk to human health from brief exposure and at which immediate steps shall be taken as laid down in Directive 96/62/EC". These steps include undertaking to ensure that the necessary steps are taken to inform the public (e.g. by means of radio, television and the press).

The Margin of Tolerance is defined in Council Directive 96/62/EC as a concentration which is higher than the limit value when legislation comes into force. It decreases to meet the limit value by the attainment date. The Upper Assessment Threshold is defined in Council Directive 96/62/EC as a concentration above which high quality measurement is mandatory. Data from measurement may be supplemented by information from other sources, including air quality modelling.

An annual average limit for both NO_X (NO and NO_2) is applicable for the protection of vegetation in highly rural areas away from major sources of NO_X such as large conurbations, factories and high road vehicle activity such as a dual carriageway or motorway. Annex VI of EU Directive 1999/30/EC identifies that monitoring to demonstrate compliance with the NO_X limit for the protection of vegetation should be carried out distances greater than:

- 5km from the nearest motorway or dual carriageway
- 5km from the nearest major industrial installation
- 20km from a major urban conurbation.

As a guideline, a monitoring station should be indicative of approximately 1000km^2 of surrounding area.

Under the terms of EU Framework Directive on Ambient Air Quality (96/62/EC), geographical areas within member states have been classified in terms of zones. The zones have been defined in order to meet the criteria for air quality monitoring, assessment and management as described in the Framework Directive and Daughter Directives. Zone A is defined as Dublin and its environs, Zone B is defined as Cork City, Zone C is defined as 21 urban areas with a population greater than 15,000 and Zone D is defined as the remainder of the country. The Zones were defined based on among other things, population and existing ambient air quality.

EU Council Directive 96/62/EC on ambient air quality and assessment has been adopted into Irish Legislation (S.I. No. 33 of 1999). The act has designated the Environmental Protection Agency (EPA) as the competent authority responsible for the implementation of the Directive and for assessing ambient air quality in the State. Other commonly referenced ambient air quality standards include the World Health Organisation. The WHO guidelines differ from air quality standards in that they are primarily set to protect public health from the effects of air pollution. Air quality standards, however, are air quality guidelines recommended by governments, for which additional factors, such as socio-economic factors, may be considered.

A11.2 Transport Infrastructure Ireland (TII) Significance Criteria

Appendix A11.2

Transport Infrastructure Ireland Significance Criteria

Table A11.2.1: Definition of Impact Magnitude for Changes in Ambient Pollutant Concentrations

Magnitude of Change	Annual Mean NO_2 / PM_{10}	No. days with PM_{10} concentration > 50 µg/m^3	Annual Mean $PM_{2.5}$
Large	Increase / decrease ≥4 µg/m^3	Increase / decrease >4 days	Increase / decrease ≥2.5 µg/m^3
Medium	Increase / decrease 2 - <4 µg/m^3	Increase / decrease 3 or 4 days	Increase / decrease 1.25 - <2.5 µg/m^3
Small	Increase / decrease 0.4 - <2 µg/m^3	Increase / decrease 1 or 2 days	Increase / decrease 0.25 - <1.25 µg/m^3
Imperceptible	Increase / decrease <0.4 µg/m^3	Increase / decrease <1 day	Increase / decrease <0.25 µg/m^3

Table A11.2.2: Air Quality Impact Significance Criteria For Annual Mean Nitrogen Dioxide and PM10 and PM2.5 Concentrations at a Receptor

Absolute Concentration in Relation to Objective/Limit Value	Change in Concentration [Note 1]		
	Small	Medium	Large
Increase with Scheme			
Above Objective/Limit Value With Scheme (≥40 µg/m^3 of NO_2 or PM_{10}) (≥25 µg/m^3 of $PM_{2.5}$)	Slight Adverse	Moderate Adverse	Substantial Adverse
Just Below Objective/Limit Value With Scheme (36 - <40 µg/m^3 of NO_2 or PM_{10}) (22.5 - <25 µg/m^3 of $PM_{2.5}$)	Slight Adverse	Moderate Adverse	Moderate Adverse
Below Objective/Limit Value With Scheme (30 - <36 µg/m^3 of NO_2 or PM_{10}) (18.75 - <22.5 µg/m^3 of $PM_{2.5}$)	Negligible	Slight Adverse	Slight Adverse
Well Below Objective/Limit Value With Scheme (<30 µg/m^3 of NO_2 or PM_{10}) (<18.75 µg/m^3 of $PM_{2.5}$)	Negligible	Negligible	Slight Adverse
Decrease with Scheme			
Above Objective/Limit Value With Scheme (≥40 µg/m^3 of NO_2 or PM_{10}) (≥25 µg/m^3 of $PM_{2.5}$)	Slight Beneficial	Moderate Beneficial	Substantial Beneficial
Just Below Objective/Limit Value With Scheme (36 - <40 µg/m^3 of NO_2 or PM_{10}) (22.5 - <25 µg/m^3 of $PM_{2.5}$)	Slight Beneficial	Moderate Beneficial	Moderate Beneficial
Below Objective/Limit Value With Scheme (30 - <36 µg/m^3 of NO_2 or PM_{10}) (18.75 - <22.5 µg/m^3 of $PM_{2.5}$)	Negligible	Slight Beneficial	Slight Beneficial

Absolute Concentration in Relation to Objective/Limit Value	Change in Concentration Note 1		
	Small	Medium	Large
Well Below Objective/Limit Value With Scheme (<30 µg/m^3 of NO_2 or PM_{10}) (<18.75 µg/m^3 of $PM_{2.5}$)	Negligible	Negligible	Slight Beneficial

Note 1 Well Below Standard = <75% of limit value.

A11.3 Dust Management Plan

Appendix A11.3

Dust Management Plan

The objective of dust control at the site is to ensure that no significant nuisance occurs at nearby sensitive receptors. In order to develop a workable and transparent dust control strategy, the following management plan has been formulated by drawing on best practice guidance from Ireland, the UK (IAQM (2014), BRE (2003), The Scottish Office (1996), UK ODPM (2002)) and the USA (USEPA, 1997).

Site Management

The aim is to ensure good site management by avoiding dust becoming airborne at source. This will be done through good design and effective control strategies.

At the construction planning stage, the siting of activities and storage piles will take note of the location of sensitive receptors and prevailing wind directions in order to minimise the potential for significant dust nuisance (see Figure 11.2 for the windrose for Dublin Airport). As the prevailing wind is predominantly south-westerly to south-westerly, locating construction compounds and storage piles downwind of sensitive receptors will minimise the potential for dust nuisance to occur at sensitive receptors.

Good site management will include the ability to respond to adverse weather conditions by either restricting operations on-site or quickly implementing effective control measures before the potential for nuisance occurs. When rainfall is greater than 0.2mm/day, dust generation is generally suppressed (IAQM, 2014; UK ODPM, 2002). The potential for significant dust generation is also reliant on threshold wind speeds of greater than 10 m/s (19.4 knots) (at 7m above ground) to release loose material from storage piles and other exposed materials (USEPA, 1986). Particular care should be taken during periods of high winds (gales) as these are periods where the potential for significant dust emissions are highest. The prevailing meteorological conditions in the vicinity of the site are favourable in general for the suppression of dust for a significant period of the year. Nevertheless, there will be infrequent periods where care will be needed to ensure that dust nuisance does not occur. The following measures shall be taken in order to avoid dust nuisance occurring under unfavourable meteorological conditions:

- The Principal Contractor or equivalent must monitor the contractors' performance to ensure that the proposed mitigation measures are implemented and that dust impacts and nuisance are minimised;
- During working hours, dust control methods will be monitored as appropriate, depending on the prevailing meteorological conditions;
- 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 should also include head/regional office contact details;
- It is recommended that community engagement be undertaken before works commence on site explaining the nature and duration of the works to local residents and businesses;
- 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;
- It is the responsibility of the contractor at all times to demonstrate full compliance with the dust control conditions herein; and
- At all times, the procedures put in place will be strictly monitored and assessed.

The dust minimisation measures shall be reviewed at regular intervals during the works to ensure the effectiveness of the procedures in place and to maintain the goal of minimisation of dust through the use of best practice and procedures. In the event of dust nuisance occurring outside the site boundary, site activities will be reviewed and satisfactory procedures implemented to rectify the problem. Specific dust control measures to be employed are described below.

Demolition

- Prior to demolition blocks should 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 should 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 should be minimised, if necessary fine water sprays should be employed.

Site Roads / Haulage Routes

Movement of construction trucks along site roads (particularly unpaved roads) can be a significant source of fugitive dust if control measures are not in place. The most effective means of suppressing dust emissions from unpaved roads is to apply speed restrictions. Studies show that these measures can have a control efficiency ranging from 25 to 80% (UK ODPM, 2002).

- A speed restriction of 20 km/hr will be applied as an effective control measure for dust for on-site vehicles using unpaved site roads;
- Access gates to the site shall be located at least 10m from sensitive receptors where possible;
- Bowsers or suitable watering equipment will be available during periods of dry weather throughout the construction period. Research has found that watering can reduce dust emissions by 50% (USEPA, 1997). Watering shall be conducted during sustained dry periods to ensure that unpaved areas are kept moist. The required application frequency will vary according to soil type, weather conditions and vehicular use;
- Any hard surface roads will be swept to remove mud and aggregate materials from their surface while any unsurfaced roads shall be restricted to essential site traffic only.

Land Clearing / Earth Moving

Land clearing / earth-moving works during periods of high winds and dry weather conditions can be a significant source of dust.

- During dry and windy periods, and when there is a likelihood of dust nuisance, watering shall be conducted to ensure moisture content of materials being moved is high enough to increase the stability of the soil and thus suppress dust;
- During periods of very high winds (gales), activities likely to generate significant dust emissions should be postponed until the gale has subsided.

Storage Piles

The location and moisture content of storage piles are important factors which determine their potential for dust emissions.

- Overburden material will be protected from exposure to wind by storing the material in sheltered regions of the site. Where possible storage piles should be located downwind of sensitive receptors;
- Regular watering will take place to ensure the moisture content is high enough to increase the stability of the soil and thus suppress dust. The regular watering of stockpiles has been found to have an 80% control efficiency (UK ODPM, 2002).
- Where feasible, hoarding will be erected around site boundaries to reduce visual impact. This will also have an added benefit of preventing larger particles from impacting on nearby sensitive receptors.

Site Traffic on Public Roads

Spillage and blow-off of debris, aggregates and fine material onto public roads should be reduced to a minimum by employing the following measures:

- Vehicles delivering or collecting material with potential for dust emissions shall be enclosed or covered with tarpaulin at all times to restrict the escape of dust;
- At the main site traffic exits, a wheel wash facility shall be installed if feasible. All trucks leaving the site must pass through the wheel wash. In addition, public roads outside the site shall be regularly inspected for cleanliness, as a minimum on a daily basis, and cleaned as necessary.

Summary of Dust Mitigation Measures

The pro-active control of fugitive dust will ensure that the prevention of significant emissions, rather than an inefficient attempt to control them once they have been released, will contribute towards the satisfactory performance of the contractor. The key features with respect to control of dust will be:

- The specification of a site policy on dust and the identification of the site management responsibilities for dust issues;
- The development of a documented system for managing site practices with regard to dust control;
- The development of a means by which the performance of the dust minimisation plan can be regularly monitored and assessed; and
- The specification of effective measures to deal with any complaints received.

A14.1 RMP / SMR Sites within 1.5km of the Proposed Project

Appendix A14.1

RMP / SMR Sites within 1.5km of the Proposed Project

RMP SITES

(Distances measured from nearest point of proposed Project Site)

RMP No.	DU015-012001	Townland	Balgriffin Park
Site Type	Church		
Description	According to D'Alton the church was confirmed of its titles in 1178 by Archbishop O'Toole. The Regal Visitations (1630) describe the church and chancel as ruinous (Ronan 1941, 67). Currently located within the open space of a housing development. A number of archaeological investigations were associated with the development. Geophysical survey (03R053) identified anomalies that were confirmed by test excavation (04E1371). A substantial curving ditch (4.75m in width and 1.3m deep) that appeared to be enclosing the site of the church was identified. Two smaller linear ditches were associated with the enclosure and contained similar fills. Several sherds of medieval pottery and a medieval glass bead were found in this area (McLoughlin, G. 2004:0513 www.excavtions.ie) Scheduled for inclusion in the next revision of the RMP		
Distance	c. 1.4km northwest		

RMP No.	DU015-012002	Townland	Balgriffin Park
Site Type	Graveslab	ITM	
Description	A grave-slab fragment was found at the site and is housed in the National Museum (NMI 1958:60; DU018-159). Scheduled for inclusion in the next revision of the RMP.		
Distance	c. 1.4km northwest		

RMP No.	DU015-018	Townland	Baldoyle
Site Type	Enclosure		
Description	A rectangular enclosure is visible on an aerial photograph (CUCAP, AIG 95) taken in 1970. The enclosure, a possible moated site was originally situated in low-lying marshy ground. It was built over with the Seagrange housing estate in 1973. However the Grassroots Archaeology project, a community archaeology project has over the past two seasons endeavoured to locate the remains of the monument in the gardens and open space of the housing estate. The open space was subject to geophysical survey (Licence no. 13R026) and identified the location of a natural spring and anomaly that may represent a leat. While test-excavation (Licence no. 13E0238) has yet to identify the enclosure ditch, medieval pottery has been recovered. Scheduled for inclusion in the next revision of the RMP.		
Distance	c. 870m southeast		

SMR No.	DU015-055	Townland	Maynetown
Site Type	Enclosure		
Description	Located towards the western end of an east-west ridge with extensive views of the coast and Ireland's Eye. An aerial photograph (OS 8, 7654) shows cropmark		

SMR No.	DU015-055	Townland	Maynetown
	evidence for a roughly circular univallate enclosure. Geophysical survey and two test excavations were undertaken at the site in advance of proposed development. The geophysical revealed the presence of a large circular enclosure, (c. 70m in diam.) that abutted an unusual 'avenue' feature, defined by two parallel ditches leading away from an east-facing entrance. Initial archaeological testing (Licence no. 00E0732) consisted of a single trench situated diagonally across the site, that confirmed the presence of a ditch, entrance and archaeological material both internally and external to the main enclosure ditch. A decorated bone bead was recovered (Wallace, A. 2002, 115). Further test excavation (Licence no. 07E0547) consisted of opening sections across the enclosure ditch and 'avenue'. The enclosure ditch (c. 7m wide x 2m deep) was filled by a number of silty clay deposits that contained much charcoal, butchered animal bone and sea shell (oyster, mussel, razor shell, periwinkle, cockles etc.). The lower fills were waterlogged in nature and contained lenses of organic material including decayed wood and grass. A charcoal sample from the primary fill was dated to AD 687–887 (2 Sigma). A section was also excavated through the southern avenue ditch and this revealed a cut measuring c. 5m wide by 1.2m deep. It had a concave profile and was filled by silty/sandy clay deposits that contained occasional seashell, butchered animal bone and charcoal (Moriarty, C. 2008:477 www.excavations.ie). According to the Portmarnock South LAP, the buffer zone for the monument will form part the open space within the green infrastructure network. The site is currently fenced within overgrown wasteland. Scheduled for inclusion in the next revision of the RMP.		
Distance	c. 1km northeast		

RMP No.	DU015-062003	Townland	Balgriffin Park
Site Type	Building		
Description	A 12th century castle was reputed to have been located on lands associated with Balgriffin Park. The Civil Survey (1654-6) mentions a stone house at Balgriffin (Simington 1945, 189). This was held by James Bath who owned vast estates in the Drumcondra area. There was a complex of farm buildings on a low-lying site known as Balgriffin Park which may be the site of this stone house. The site is now within open space of a housing development. A test excavation (Licence no. 00E0714) in advance of the Northern Fringe sewer immediately south of the site did not identify archaeological remains. Scheduled for inclusion in the next revision of the RMP.		
Distance	c. 1.4km northwest		

RMP No.	DU015-062002	Townland	Balgriffin Park
Site Type	House - 16th/17th century		
Description	A 12th century castle was reputed to have been located on lands associated with Balgriffin Park. The Civil Survey (1654-6) mentions a stone house at Balgriffin (Simington 1945, 189). This was held by James Bath who owned vast estates in the Drumcondra area. There was a complex of farm buildings on a low-lying site known as Balgriffin Park which may be the site of this stone house. The site is now within		

RMP No.	DU015-062002	Townland	Balgriffin Park
	open space of a housing development. A test excavation (Licence no. 00E0714) in advance of the Northern Fringe sewer immediately south of the site did not identify archaeological remains. Scheduled for inclusion in the next revision of the RMP.		
Distance	c. 1.4km northwest		

RMP No.	DU015-063	Townland	Baldoyle
Site Type	Enclosure		
Description	An aerial photograph (OS 7 9517, 9519) showed cropmark evidence for a univallate enclosure which is roughly circular in plan. Test excavation (Licence no. 03E1496) was undertaken in advance of housing development. Nine trenches were opened on the site of the monument but no traces of any features were identified (O'Carroll, E. 2003:485 www.excavations.ie). Now built over.		
Distance	c. 345m northwest		

RMP No.	DU015-064001	Townland	Grange (Balrothery East By., Balscaddan ED)
Site Type	Enclosure		
Description	An aerial photograph (OS 7, 9517, 9519) showed cropmark evidence for a univallate enclosure (diam. c. 20m) with an annex on the E. Test excavation (Licence no. 03E1496) in advance of housing development did not identify the site (O'Carroll, E. 2003: 485 www.excavations.ie). Now built over. Not scheduled for inclusion in the next revision of the RMP.		
Distance	c. 210m west		

RMP No.	DU015-064002	Townland	Grange (Balrothery East By., Balscaddan ED)
Site Type	Redundant Record		
Description	An aerial photograph (OS 7, 9517, 9519) shows one enclosure (DU015-064001). The evidence is not sufficient to warrant accepting this as an archaeological monument. Not scheduled for inclusion in the next revision of the RMP.		
Distance	c. 210m west		

RMP No.	DU015-069001	Townland	Baldoyle
Site Type	Church		
Description	Situated in a green belt area behind a housing estate. This is a small rectangular building orientated ENE-WSW (int. dims. Wth 4.8m, L 13.7m). It is built of uncoursed limestone masonry with dressed limestone quoins. Served as chapel for the tenants on the grange farm associated with the Priory of All Hallows (Joyce 1912, 276-77, Appleyard 1985, 153-4). Comprises an undivided nave and chancel with steeply pitched gables. The nave is entered through opposing doorway (now headless). S door way is rebated and there are draw bars present. Interior of nave lit by a double light, cusped, ogee-headed window with a central mullion which is a modern replacement. It has an internal splay. The chancel is lit by a double-light ogee-headed window, partially restored with sandstone. There is a blocked ope in the S wall of the chancel. Either		

	side of the chancel there are aumbries with a piscina at E end of S wall. Excavations undertaken in 1986 exposed burial in the interior and sherds of 13th-century pottery (Swan 1987, 16-17). The site has been landscaped leaving no trace of the graveyard. Further investigations in 1999 uncovered the remains of a stone wall which may represent part of an eastern precinct wall. To the east the remains of a small stone 'water-house' were also found, which was dated to the mid- to late 17th century and was probably used to control water into a series of fishponds (marked on the Ordnance Survey map dated 1843). This structure was well built and tapped into a stone drain that extended through the entire site, allowing access to the water at that point. At the western end of the site the excavation exposed domestic refuse pits in an area that originally formed part of the pond complex. Scheduled for inclusion in the next revision of the RMP.
Distance	c. 880m southwest

RMP No.	DU015-069002	Townland	Baldoyle
Site Type	Graveyard		
Description	The site has been landscaped leaving no trace of the graveyard. Further investigations in 1999 uncovered the remains of a stone wall which may represent part of an eastern precinct wall. Scheduled for inclusion in the next revision of the RMP.		
Distance	c. 880m southwest		

RMP No.	DU015-080	Townland	Kilbarrack Upper
Site Type	Ritual site - holy well		
Description	On the south bank of river which has been deepened and a linear park developed either side of it. There is no trace of the well or any local tradition except for the name on the road 'St Donaghy's road'. It was formerly visible as a pool marked by an ash tree. It was thought to have curative powers and was venerated particularly on St John's Eve (Appleyard, 1985, 152). Scheduled for inclusion in the next revision of the RMP.		
Distance	c. 1.4km southwest		

SMR SITES

SMR No.	DU015-096	Townland	Grange (Coolock By., Malahide ED)
Site Type	Burnt mound		
Description	Archaeological testing in 2003 revealed the remains of a small prehistoric burnt-mound (L 0.82m, Wth 0.68m). It consisted of a deposit of heat shattered stone (O Carroll, E 2006, 117). Scheduled for inclusion in the next revision of the RMP.		
Distance	c. 210m west		

SMR No.	DU015-097	Townland	Grange (Coolock By., Malahide ED)
Site Type	Burnt mound		
Description	Pre-development testing in 1993 revealed the remains of a prehistoric burnt mound (L 0.68m, Wth 0.82m). It comprised a deposit of heat shattered stone (O'Carroll 2006, 117). Scheduled for inclusion in the next revision of the RMP.		

Distance	c. 210m west

SMR No.	DU015-117	Townland	Drumnigh
Site Type	Enclosure		
Description	A large oval shaped enclosure visible as a crop mark on an aerial photograph. May contain internal features (SMR file; pers. comm. T. Condit). Geophysical survey (Licence no. 14R001) undertaken at the site did not yield significant responses. However testing (Licence no. 14E0007) confirmed the presence of a large enclosure (c.100m diam) ditch (2.5m wide x 1.1m deep). It is to be excavated in advance of development. Scheduled for inclusion in the next revision of the RMP.		
Distance	c. 1.1km northwest		

SMR No.	DU015-118	Townland	Drumnigh
Site Type	Enclosure		
Description	A circular enclosure visible as a crop mark on an aerial photograph (SMR file; pers. comm. T. Condit). This site was subject to three geophysical surveys. Geophysical survey (Licence no. 07R0230) was undertaken in advance of proposed realignment. It identified a pennanular ditch (c.30m diam.) with an entrance to the east (Nicholls 2008). Another geophyscial survey (Licence no. 07R0230EXT), also in advance of a proposed road realignment immediately north, identified another circular feature (c.25m diam.) which may be associated (Harrison 2008). A third geophysical survey (14R0045) in advance of the Greater Dublin Drainage Scheme identified the southern limit of the same enclosure, the ditch of which may contain burnt remains (Bonsall 2014, 9). Scheduled for inclusion in the next revision of the RMP. References: Nicholls, J. 2008a Geophysical Survey Report: R123 Mayne Road Upgrade, Drumnigh, Snugborough & Maynetown Townlands, North County Dublin (Licence no. 07R0230); Harrison, D. 2008a Geophysical Survey Report: R123 Mayne Road, Portmarnock, North County Dublin (Licence no. 07R0230EXT); Bonsall, J. 2014 Archaeological Geophysical Survey, Great Dublin Drainage Scheme, Blanchardstown to Swords (Licence no. 14E0045). Unpublished reports submitted to the National Monuments Service, DAHG.		
Distance	c. 935m north		

SMR No.	DU015-119	Townland	Drumnigh
Site Type	Ring-ditch		
Description	A circular ring-ditch visible as a crop mark on an aerial photograph (SMR file; pers. comm. T. Condit). Geophysical survey (Licence no. 14R001) confirmed the presence of a ring ditch (c.12.5m diam.) as did subsequent test excavation (Licence no. (14E0007). It will be preserved in situ within green space of development. Scheduled for inclusion in the next revision of the RMP.		
Distance	c. 950m northwest		

SMR No.	DU015-123	Townland	Saint Doolaghs
Site Type	Enclosure		
Description	A sub-circular enclosure visible as a crop mark on an aerial photograph together with other features that could indicate a possible field system (DU015-134) (SMR		

SMR No.	DU015-123	Townland	Saint Doolaghs
	file; pers. comm. T. Condit). Located on low east west rise within large open field, sloping and south facing. Traversed by ESB poles. No visible remains. Scheduled for inclusion in the next revision of the RMP.		
Distance	c. 1.4km northwest		

SMR No.	DU015-124	Townland	Saint Doolaghs
Site Type	Field system		
Description	A possible field system visible as a crop mark on an aerial photograph together with a sub-circular enclosure (DU015-123) in the same field (SMR file; pers. comm. T. Condit). Located on low east west rise within large open field, sloping and south facing. Traversed by ESB poles. No visible remains. Scheduled for inclusion in the next revision of the RMP.		
Distance	c. 1.4km northwest		

SMR No.	DU015-130	Townland	Maynetown
Site Type	Enclosure		
Description	The site was subject to geophysical survey in advance of a proposed road realignment. It confirmed the presence of a sub circular enclosure (34m in diam.) that contains internal responses suggestive of pits and postholes (Harrison, D. 2008a Geophysical Survey Report: R123 Mayne Road, Portmarnock, North County Dublin, Licence no. 07R0230EXT. Unpublished report submitted to the National Monuments Service, DAHG). Scheduled for inclusion in the next revision of the RMP.		
Distance	c. 880m north		

SMR No.	DU015-134	Townland	Drumnigh
Site Type	Enclosure		
Description	Geophysical survey (Licence no. 14R001) and test-excavation (Licence no. 14E007) were undertaken in advance of a residential development. Within the same field to the E is a ring ditch (DU015-119) and to the NE, an enclosure (DU015-117). This monument is a large figure-of-eight enclosure (c. 75m N-S x 50m E-W). The ditches (2m wide x 1.2m deep) contain waterlogged basal fills with well-preserved mollusc and animal bone inclusions. A possible entrance is located to the NW. The S element of the enclosure encompasses internal features including a possible kiln, pits and ditches (Walsh, F. 2014 Archaeological Assessment at Drumnigh, Co. Dublin, Licence no. 14E0007. Unpublished report submitted to the National Monuments Service, DAHG). Scheduled for inclusion in the next revision of the RMP.		
Distance	c. 1km northwest		

SMR No.	DU015-135	Townland	Drumnigh
Site Type	Enclosure		
Description	An enclosure was identified by geophysical survey (Licence no. 07R0230 ext.) undertaken in advance of a road realignment scheme. The circular enclosure (25m diam.) is located 27m N of another enclosure DU015-118--- on the S-facing slope		

SMR No.	DU015-135	Townland	Drumnigh
	of a low E – W ridge. Internal responses indicative of pits and postholes have been identified suggesting an area of occupation or settlement (Harrison, D. 2008a Geophysical Survey Report: R123 Mayne Road, Portmarnock, North County Dublin, Licence no. 07R0230EXT. Unpublished report submitted to the National Monuments Service, DAHG). Scheduled for inclusion in the next revision of the RMP.		
Distance	c. 935m north		

A14.2 Relevant Legislation

Appendix A14.2

Relevant Legislation

National Monuments Legislation (1930-2004)

The National Monument Act, 1930 (as amended) provides the formal legal mechanism to protect monuments in Ireland. Protection of a monument is provided via:

- Record of Monuments and Places (RMP);
- National Monument in the ownership or guardianship of the Minister for Arts, Heritage, Regional, Rural & Gaeltacht Affairs or a Local Authority;
- National Monument subject to a Preservation Order (or temporary Preservation Order); and
- Register of Historic Monuments (RHM).

The definition of a monument is specified as:

- any artificial or partly artificial building, structure or erection or group of such buildings, structures or erections;
- any artificial cave, stone or natural product, whether forming part of the ground, that has been artificially carved, sculptured or worked upon or which (where it does not form part of the place where it is) appears to have been purposely put or arranged in position;
- any, or any part of any, prehistoric or ancient tomb, grave or burial deposit, or (ii) ritual, industrial or habitation site; and
- any place comprising the remains or traces of any such building, structure or erection, any cave, stone or natural product or any such tomb, grave, burial deposit or ritual, industrial or habitation site.

Under Section 14 of the Principal Act (1930):

It shall be unlawful...

to demolish or remove wholly or in part or to disfigure, deface, alter, or in any manner injure or interfere with any such national monument without or otherwise than in accordance with the

consent hereinafter mentioned (a licence issued by the Office of Public Works National Monuments Branch),

or

to excavate, dig, plough or otherwise disturb the ground within, around, or in the proximity to any such national monument without or otherwise than in accordance...

Under Amendment to Section 23 of the Principal Act (1930):

A person who finds an archaeological object shall, within four days after the finding, make a report of it to a member of the Garda Síochána...or the Director of the National Museum...

The latter is of relevance to any finds made during a watching brief.

In the 1994 Amendment of Section 12 of the Principal Act (1930), all the sites and 'places' recorded by the Sites and Monuments Record of the Office of Public Works are provided with a new status in law. This new status provides a level of protection to the listed sites that is equivalent to that accorded to 'registered' sites [Section 8(1), National Monuments Amendment Act 1954] as follows:

The Commissioners shall establish and maintain a record of monuments and places where they believe there are monuments and the record shall be comprised of a list of monuments and such places and a map or maps showing each monument and such place in respect of each county in the State.

The Commissioners shall cause to be exhibited in a prescribed manner in each county the list and map or maps of the county drawn up and publish in a prescribed manner information about when and where the lists and maps may be consulted.

In addition, when the owner or occupier (not being the Commissioners) of a monument or place which has been recorded, or any person proposes to carry out, or to cause or permit the carrying out of, any work at or in relation to such monument or place, he shall give notice in writing of his proposal to carry out the work to the Commissioners and shall not, except in the case of urgent necessity and with the consent of the Commissioners, commence the work for a period of two months after having given the notice.

The National Monuments Amendment Act enacted in 2004 provides clarification in relation to the division of responsibilities between the Minister of Environment, Heritage and Local Government, Finance and Arts, Sports and Tourism together with the Commissioners of Public Works. The

Minister of Environment, Heritage and Local Government will issue directions relating to archaeological works and will be advised by the National Monuments Section and the National Museum of Ireland. The Act gives discretion to the Minister of Environment, Heritage and Local Government to grant consent or issue directions in relation to road developments (Section 149 and 51) approved by An Bord Pleanála and/or in relation to the discovery of National Monuments.

14A. (1) The consent of the Minister under section 14 of this Act and any further consent or licence under any other provision of the National Monuments Acts 1930 to 2004 shall not be required where the works involved are connected with an approved road development.

14A. (2) Any works of an archaeological nature that are carried out in respect of an approved road development shall be carried out in accordance with the directions of the Minister, which directions shall be issued following consultation by the minister with the Director of the National Museum of Ireland.

Subsection 14A (4) Where a national monument has been discovered to which subsection (3) of this section relates, then the road authority carrying out the road development shall report the discovery to the Minister subject to subsection (7) of this section, and pending any directions by the Minister under paragraph (d) of this subsection, no works which would interfere with the monument shall be carried out, except works urgently required to secure its preservation carried out in accordance with such measures as may be specified by the Minister.

The Minister will consult with the Director of the National Museum of Ireland for a period not longer than 14 days before issuing further directions in relation to the national monument.

The Minister will not be restricted to archaeological considerations alone, but will also consider the wider public interest.

Architectural Heritage (National Inventory) and Historic Monuments (Miscellaneous Provisions) Act, 1999

This Act provides for the establishment of a national inventory of architectural heritage and historic monuments.

Section 1 of the act defines “architectural heritage” as:

> (a) all structures and buildings together with their settings and attendant grounds, fixtures and fittings,

(b) groups of such structures and buildings, and,

(c) sites which are of architectural, historical, archaeological, artistic, cultural, scientific, social or technical interest.

Section 2 of the Act states that the Minister (for Arts, Heritage, Gaeltacht and the Islands) shall establish the NIAH, determining its form and content, defining the categories of architectural heritage, and specifying to which category each entry belongs. The information contained within the inventory will be made available to planning authorities, having regard to the security and privacy of both property and persons involved.

Section 3 of the Act states that the Minister may appoint officers, who may in turn request access to premises listed in the inventory from the occupiers of these buildings. The officer is required to inform the occupier of the building why entry is necessary, and in the event of a refusal, can apply for a warrant to enter the premises.

Section 14 of the Act states that obstruction of an officer or a refusal to comply with requirements of entry will result in the owner or occupier being guilty of an offence.

Section 5 of the Act states that sanitary authorities who carry out works on a monument covered by this Act will as far as possible preserve the monument with the proviso that its condition is not a danger to any person or property, and that the sanitation authority will inform the Minister that the works have been carried out.

The provisions in the Act are in addition to and not a substitution for provisions of the National Monument Act (1930–94), and the protection of monuments in the National Monuments Act is extended to the monuments covered by the Architectural Heritage (National Inventory) and Historic Monuments (Miscellaneous Provisions) Act (1999).

A14.3 Glossary of Impacts and Assessment Criteria

Appendix A14.3 - Glossary of Impacts and Assessment Criteria

Glossary of Impacts

Types of Impacts

Potential impacts on the receiving archaeological and cultural heritage environment can be described as direct physical impacts, indirect physical impacts, and impacts on setting (i.e. the surroundings in which an archaeological / cultural heritage asset can be experienced; Historic England 2017).

Direct physical impacts are those development activities that directly cause damage to the fabric of an archaeological / cultural heritage asset. Typically, these activities are related to construction works; e.g. they could include excavation of foundations, earthmoving / site preparation creation of access roads, cycle paths, and the excavation of service trenches.

Indirect physical impacts are those processes, triggered by development activity, that lead to the degradation of archaeological / cultural heritage assets.

Impacts on the setting of archaeological / cultural heritage assets describe how the presence of a development changes the surroundings of an asset in such a way that it affects (positively or negatively) the heritage significance of that asset. Visual impacts are most commonly encountered. Such impacts may be encountered at all stages in the life cycle of a development, but they are only likely to be considered significant during the prolonged operational life of the development.

Types of impact, as defined by the Draft EPA Guidelines on Information to be Contained in Environmental Impact Assessment Reports (hereafter referred to as the EPA Guidelines) (EPA 2017):

Cumulative Impact – The addition of many small impacts to create one larger, more significant, impact.

Do Nothing Impact – The environment as it would be in the future should no development of any kind be carried out.

Indeterminable Impact – When the full consequences of a change in the environment cannot be described.

Irreversible Impact – When the character, distinctiveness, diversity or reproductive capacity of an environment is permanently lost.

Residual Impact – The degree of environmental change that will occur after the proposed mitigation measures have taken effect.

'*Worst case' Impact* – The impacts arising from a development in the case where mitigation measures substantially fail.

Indirect or Secondary Impacts – Impacts that arise off-site or are caused by other parties that are not under the control of the developer. Impacts which are caused by the interaction of impacts, or by associated or off-site projects.

Quality of Impacts: Impacts on the archaeological and cultural heritage environment are assessed in terms of their quality, i.e. positive, negative, neutral:

Negative Impact A change that will detract from or permanently remove an archaeological monument from the landscape.

Neutral Impact A change that does not affect the archaeological heritage.

Positive Impact A change that improves or enhances the setting of an archaeological monument.

Duration of Impacts: The duration of an impact can be as follows:

Temporary Impact	Impact lasting for one year or less.
Short-term Impacts	Impact lasting one to seven years.
Medium-term Impact	Impact lasting seven to fifteen years.
Long-term Impact	Impact lasting fifteen to sixty years.
Permanent Impact	Impact lasting over sixty years.

Assessment Criteria

Introduction

This assessment methodology has regard to the EPA assessment criteria (EPA 2017) and to the National Roads Authority (NRA) Guidelines for the Assessment of Archaeological Heritage Impact of National Road Schemes (hereafter referred to as the NRA Guidelines) (NRA 2005).

Archaeological and cultural heritage sites are a non-renewable resource and such assets are generally considered to be location sensitive. In this context, any change to their environment, such as construction activity and ground disturbance works, could adversely affect these sites.

Significance / Sensitivity Criteria

In accordance with EPA Guidelines (EPA 2017), the context, character, significance and sensitivity of each archaeological / cultural heritage asset requires evaluation and the significance of the impact is then determined by considering the significance / sensitivity of the asset and the predicted magnitude of the impact.

In accordance with the NRA Guidelines (NRA 2005), the significance criteria used to evaluate an archaeological site, monument or complex take into account the character and integrity of the asset and any available data regarding it. This can be ascertained by looking at the following criteria cited in the NRA Guidelines (NRA 2005): the existing status (level of protection), condition or preservation, documentation or historical significance, group value, rarity, visibility in the landscape, fragility or vulnerability, and amenity value (Table 1). While these criteria contribute to the significance of a feature they should not be treated as definitive. These criteria are indicators which contribute to a wider judgement based on the individual circumstances of these archaeological/cultural heritage assets.

Table 1: Explanation of Archaeology and Cultural Heritage Asset Assessment Criteria

Criteria	Explanation
Existing Status	The level of protection associated with an archaeological / cultural heritage asset is an important consideration.
Condition / Preservation / Integrity	The survival of an archaeological / cultural heritage asset's archaeological potential both above and below ground is an important consideration and should be assessed in relation to its present condition and surviving features. Well-preserved sites should be highlighted, this assessment can only be based on a field inspection.
Documentation / Data	The significance of an archaeological / cultural heritage asset may be enhanced by the existence of records of previous investigations or contemporary documentation supported by written evidence or historic maps. Sites with a definite historical association or an example of a notable event or person should be highlighted.
Group Value / Character	The value of a single an archaeological / cultural heritage asset may be greatly enhanced by its association with related contemporary monuments or with monuments from different periods indicating an extended time presence in

Criteria	Explanation
	any specific area. In some cases it may be preferable to protect the complete group, including associated and adjacent land, rather than to protect isolated monuments within that group.
Rarity / Character	The rarity of some an archaeological / cultural heritage asset types can be a central factor affecting response strategies for development, whatever the condition of the individual feature. It is important to recognise sites that have a limited distribution.
Visibility in the landscape/ Character / Integrity	Archaeological / cultural heritage assets that are highly visible in the landscape have a heightened physical presence. The inter-visibility between monuments may also be explored in this category.
Fragility / Vulnerability / Integrity	It is important to assess the level of threat to an archaeological / cultural heritage asset from erosion, natural degradation, agricultural activity, land clearance, neglect, careless treatment or development.
Amenity Value / Character	Regard should be taken of the existing and potential amenity value of a an archaeological / cultural heritage asset.

An evaluation of the significance / sensitivity of archaeological / cultural heritage assets is based on their designation and on the extent to which these assets contribute to the archaeological or cultural heritage environment, though their individual or group qualities, either directly or potentially. Table 2 presents the scale of significance / sensitivity together with criteria. It has been compiled by Courtney Deery Heritage Consultancy Ltd, based on standard authorities and guidelines as listed in Section 14.2.2. Undesignated archaeological or cultural heritage sites can be assigned a low, medium or high sensitivity value, taking into consideration the criteria cited in Table 1 (e.g. condition, character, integrity or preservation, data, group value, rarity, visibility in the landscape, fragility or vulnerability, and amenity value).

Table 2: Significance / Sensitivity Criteria

Sensitivity / Significance	Criteria
High	Sites of international significance: World Heritage Sites. National Monuments. Protected Structures (assessed by the NIAH to be of international and national importance), where these are also National Monuments. Undesignated archaeological and cultural heritage sites.
Medium	Recorded Monuments (RMP sites & SMR sites scheduled for inclusion in the next revision of the RMP) Protected Structures / NIAH sites (assessed by the NIAH to be of regional importance), where these are also Recorded Monuments.

Sensitivity / Significance	Criteria
	Newly identified archaeological sites, confirmed through archaeological investigation, to be added to the SMR. Undesignated archaeological and cultural heritage sites.
Low	Sites listed in the National Inventory of Architectural Heritage (NIAH) Building Survey for which there are no upstanding remains. Undisturbed greenfield areas and riverine environs, which have an inherent archaeological potential. Undesignated archaeological and cultural heritage sites.
Negligible	Assets with very little or no surviving archaeological and / or cultural heritage interest.

Magnitude of Impact

When assessing the impact magnitude, the following criteria need to be considered:

- Extent – size, scale and spatial distributions of the impact;
- Duration – period of time over which the impact will occur;
- Frequency – how often the impact will occur; and
- Context – how will the extent, duration and frequency contrast with the accepted baseline conditions (see Table 1).

Table 3: Magnitude of Impact Criteria

Impact Magnitude	Criteria
High	These impacts arise where an archaeological / cultural heritage asset is completely and irreversibly destroyed by a proposed development. A change such that the value of the asset is totally altered or destroyed, leading to a complete loss of character, integrity and data about the site.
Medium	An impact which, by its magnitude, duration or intensity alters an important / significant aspect of the environment. An impact like this would be where an archaeological / cultural heritage asset would be impacted upon leading to a significant loss of character, integrity and data about the site. Or an impact which by its magnitude results in the partial loss of a historic structure (including fabric loss or alteration) or grounds including the part removal of buildings or features or part removal of demesne land (e.g. severance, visual intrusion or degradation of setting and amenity). A permanent positive impact that enhances or restores the character and / or setting of a cultural heritage site or upstanding archaeological heritage site in a clearly noticeable manner.

Impact Magnitude	Criteria
Low	A low impact arises where a change to the site is proposed which though noticeable is not such that the archaeological / cultural heritage character / integrity of the site is significantly compromised, and where there is no significant loss of data about the site. A positive impact that results in partial enhancement of the character and / or setting of a cultural heritage site or upstanding archaeological heritage site in the medium to long-term.
Negligible	An impact which causes very minor changes in the character of the environment and does not directly impact an archaeological / cultural heritage asset, or affect the appreciation or significance of the asset. There would be very minor changes to the character and integrity of the asset and no loss of data about the site.

National Monument

The National Monuments Act (1930, Section 2) defines a 'National Monument' 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*'.

The National Monuments legislation legally protects access to and the visual amenity associated with National Monuments and requires consent from the Minister for invasive works in their vicinity.

The defences / town walls of medieval Dublin are a National Monument in accordance with national policy on town defences (Department of Environment, Heritage and Local Government 2008).

Recorded Monuments

The primary source of information for archaeology is the Record of Monuments and Places (RMP) maintained by the Department of Housing, Local Government and Heritage (DHLGH). The RMP documents known upstanding archaeological monuments, their original location (in cases of destroyed monuments) and the position of possible sites in rural areas identified as cropmarks on vertical aerial photographs dating to before 1700 AD (with some later ones also being included). It is based on a comprehensive range of published and publicly available documentary and cartographic sources.

For the purpose of the assessment, the Sites and Monument Record (SMR) data and mapping as updated by the Archaeological Survey of Ireland (www.archaeology.ie) was examined so it could be used within an interactive identification and mapping system developed for Proposed Project.

Zones of Archaeological Potential

Zones of archaeological potential (ZAP) can be defined as areas within the urban and rural landscape that possess the potential to contain archaeological remains due to the settlement history of a place and or to the presence of topographical features such as rivers, lakes and high, defendable ground. An example of this is the RMP designated Historic City of Dublin, which is designated as a zone of archaeological potential covering an extensive area (RMP DU018-020). Other examples include historic settlements recorded at Donnybrook, Bray, Finglas, Kilmainham, Chapelizod and Tallaght. For the purpose of the assessment, ZAPs with statutory protection (i.e. contained in the RMP) were considered.

Non-Designated Sites

Newly identified archaeological sites that have been confirmed through archaeological investigation (monitoring, testing, excavation, geophysical survey) are considered to be of medium importance. Such sites are undesignated as they have yet to be added to the SMR.

Potential or undesignated archaeological sites identified through aerial photography, historic mapping, stray finds are considered to be of low sensitivity, as they have yet to be ground-truthed through archaeological investigation. Similarly, undisturbed greenfield areas and riverine environs, which have an inherent but as yet unproven archaeological potential are considered to be of low sensitivity.

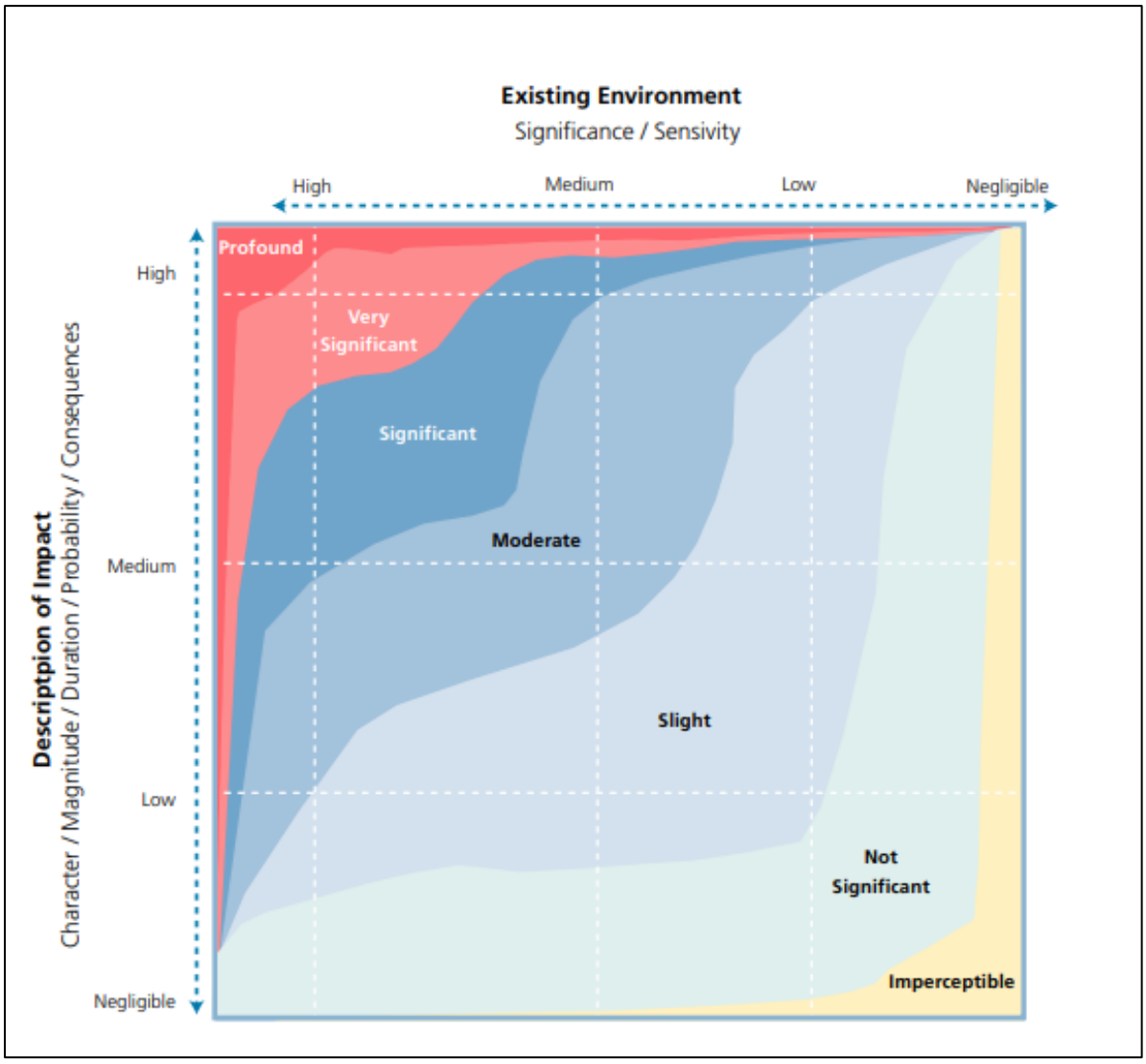
Significance of Impact

The Draft EPA Revised Guidelines on the Information to be Contained in Environmental Impact Statements (EIS) (EPA 2015) added the two additional levels of significance of impact: Very Significant and Not Significant (Table 4 and Image 1).

Table 4: Significance of Impacts (EPA 2015)

Significance of Impact	Description
Very Significant	An impact which by its character, magnitude, duration or intensity significantly alters the majority of a sensitive aspect of the environment, for example in this case a monument
Not Significant	An impact which causes noticeable changes in the character of the environment but without noticeable consequences.

Image 1: Figure 3.5 Description of Impacts from the Draft EPA Revised Guidelines on Information to be Contained in EIS (EPA 2015)



The likely significance of impacts is determined by considering the baseline rating or sensitivity value of the asset upon which the impact has an impact and the magnitude of the impact (Image 1). The impact significance is defined as Imperceptible, Not Significant, Slight, Moderate, Significant, Very Significant, or Profound (Table 5).

Table 5: Defining Significance of Impacts

Impact	Definition
Imperceptible	An impact capable of measurement but without noticeable consequences.
Not Significant	An impact which causes noticeable changes in the character of the environment but without significant consequences.
Slight	An impact which causes changes in the character of the environment which are not significant or profound and do not directly impact or affect an archaeological / cultural heritage asset.
Moderate	A moderate impact arises where a change to the site is proposed which though noticeable, does not lead to a significant loss of character, integrity and data about the archaeological / cultural heritage asset.
Significant	An impact which, by its magnitude, duration or intensity, alters an important aspect of the environment. An impact like this would be where part or all of a site would be permanently impacted upon, leading to a significant loss of character, integrity and data about the archaeological / cultural heritage asset.
Very Significant	An impact which, by its character, magnitude, duration or intensity significantly alters most of a sensitive aspect of the environment.
Profound	Applies where mitigation would be unlikely to remove adverse impacts. Reserved for adverse, negative impacts only. These impacts arise where an archaeological / cultural heritage asset is completely and irreversibly destroyed by a proposed development.

A18.1 Construction & Demolition Waste Management Plan

CONSTRUCTION & DEMOLITION WASTE MANAGEMENT PLAN FOR A RESIDENTIAL DEVELOPMENT

AT

LANDS AT BALDOYLE

APPENDIX A18.1

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CONTENTS

1.0 INTRODUCTION

AWN Consulting Ltd. (AWN) has prepared this Outline Construction & Demolition Waste Management Plan (C&D WMP) on behalf of the Shoreline Partnership.The subject application site is located at Baldoyle-Stapolin, Dublin 13.

The development will consist of alterations to the permitted development, as permitted under FCC Reg. Ref. 16A/0412, ABP Reg. Ref. ABP-248970 (as amended by F20A/0258 and F21A/0046) of 544 no. residential units (385 no. apartments and 159 no. houses), retail and a crèche, to the development of 882 no. new residential dwellings (747 no. apartments, 135 no. houses), residential tenant amenity, retail, crèche, parking, and public realm, over a total site area of c. 9.1 ha, and site development area of c. 8.89 ha. Landscaping will include extensive communal amenity areas, and significant public open space provision.

The purpose of this plan is to provide information necessary to ensure that the management of construction and demolition (C&D) waste at the site is undertaken in accordance with current legal and industry standards including the *Waste Management Acts 1996 - 2011* and associated Regulations [1], *Protection of the Environment Act 2003* as amended [2], *Litter Pollution Act 1997* as amended [3] and the *Eastern-Midlands Region Waste Management Plan 2015 – 2021* [4]. In particular, this Plan aims to ensure maximum recycling, reuse and recovery of waste with diversion from landfill, wherever possible. It also seeks to provide guidance on the appropriate 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 C&D WMP includes information on the legal and policy framework for C&D waste management in Ireland, estimates of the type and quantity of C&D waste to be generated by the proposed development and makes recommendations for management of different waste streams.

2.0 CONSTRUCTION & DEMOLITION WASTE MANAGEMENT IN IRELAND

2.1 National Level

The Irish Government issued a policy statement in September 1998 known as *'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. 2013).

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 government released a new national policy document outlining a new action plan for Ireland and it's waste to cover the period of 2020-2025. This plan 'A Waste Action Plan for a Circular Economy' [7], 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)".

It aims to fulfil the commitment in the Programme for Government to publish and start implementing a new National Waste Action Plan. It is intended that this new national waste policy will inform and give direction to waste planning and management in

Ireland over the coming years. It will be followed later this year by an All of Government Circular Economy Strategy. The policy document shifts focus away from waste disposal and moves it back up the production chain. To support the policy, regulation is already being used (Circular Economy Legislative Package) or in the pipeline (Single Use Plastics Directive). The policy document contains over 200 measures across various waste areas including Circular Economy, Municipal Waste, Consumer Protection & Citizen Engagement, Plastics and Packaging, Construction and Demolition, Textiles, Green Public Procurement and Waste Enforcement.

The National Construction and Demolition Waste Council (NCDWC) was launched in June 2002, as one of the recommendations of the Forum for the Construction Industry, in the Task Force B4 final report. The NCDWC subsequently produced '*Best Practice Guidelines for the Preparation of Waste Management Plans for Construction and Demolition Projects'* [9] in July 2006 in conjunction with the then Department of the Environment, Heritage and Local Government (DoEHLG). The guidelines outline the issues that need to be addressed at the pre-planning stage of a development all the way through to its completion. 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;
- Waste disposal/recycling of C&D wastes at the site;
- Provision of training for waste manager 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, Fingal County Council etc.

Section 3 of the Guidelines identifies thresholds above which there is a requirement for the preparation of a C&D Waste Management Plan for developments. This development requires a C&D WMP under the following criterion:

- New residential development of 10 houses or more.

Other guidelines followed in the preparation of this report include *'Construction and Demolition Waste Management – a handbook for Contractors and Site Managers'* [10] published by FÁS and the Construction Industry Federation in 2002.

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 Fingal County Council (FCC).

The *Eastern-Midlands Region Waste Management Plan 2015 – 2021* is the regional waste management plan for the FCC area published in May 2015.

The Regional Plan sets out the strategic targets for waste management in the region and sets a specific target for C&D waste of *"70% preparing for reuse, recycling and other recovery of construction and demolition waste"* (excluding natural soils and stones and hazardous wastes) to be achieved by 2020.

Municipal landfill charges in Ireland are based on the weight of waste disposed. In the Leinster Region, charges are approximately €130 - €150 per tonne of waste which includes a €75 per tonne landfill levy introduced under the *Waste Management (Landfill Levy) (Amendment) Regulations 2012.*

The *Fingal Development Plan 2017 – 2023* [11] came into effect on March 2017 and sets out a number of objectives for the Fingal region in line with the objectives of the regional waste management plan.

Objectives:

- Objective **WM03** Implement the provisions of the Eastern Midlands Region Waste Management Plan 2015 -2021 or any subsequent Waste Management Plan applicable within the lifetime of the Development Plan. All prospective developments in the County will be expected to take account of the provisions of the Regional Waste Management Plan and adhere to the requirements of that Plan.
- Objective **WM07** Promote the increased re-use of waste in accordance with the Eastern Midlands Region Waste Management Plan 2015 -2021 (or any subsequent plan).
- Objective **WM18** Ensure that construction and demolition Waste Management Plans meet the relevant recycling / recovery targets for such waste in accordance with the national legislation and regional waste management policy.
- *Objective **DMS36** Ensure all new residential schemes include appropriate design measures for refuse storage areas, details of which should be clearly shown at pre-planning and planning application stage. Ensure refuse storage areas are not situated immediately adjacent to the front door or ground floor window, unless adequate screened alcoves or other such mitigation measures are provided.*
- *Objective **DMS37** Ensure the maximum distance between the front door to a communal bin area does not exceed 50 metres.*

With regard to C&D waste specifically, the Development Plan requires that a 70% target for the re-use, recycling and recovery of man-made C&D waste in Ireland by 2020 is required in compliance with the EC (Waste Directive) Regulations 2011.

2.3 Legislative Requirements

The primary legislative instruments that govern waste management in Ireland and applicable to the project are:

- Waste Management Act 1996 (No. 10 of 1996) as amended. Sub-ordinate legislation includes:
  - European Communities (Waste Directive) Regulations 2011 (SI 126 of 2011) as amended
  - Waste Management (Collection Permit) Regulations (S.I No. 820 of 2007) as amended
  - Waste Management (Facility Permit and Registration) Regulations 2007, (S.I No. 821 of 2007) as amended
  - Waste Management (Licensing) Regulations 2004 (S.I. No. 395 of 2004) as amended
  - Waste Management (Packaging) Regulations 2014 (S.I. 282 of 2014) as amended
  - Waste Management (Planning) Regulations 1997 (S.I. No. 137 of 1997)
  - Waste Management (Landfill Levy) Regulations 2015 (S.I. No. 189 of 2015)
  - European Union (Waste Electrical and Electronic Equipment) Regulations 2014 (S.I. No. 149 of 2014)
  - European Union (Batteries and Accumulators) Regulations 2014 (S.I. No. 283 of 2014) as amended
  - Waste Management (Food Waste) Regulations 2009 (S.I. 508 of 2009), as amended

- European Union (Household Food Waste and Bio-waste) Regulation 2015 (S.I. No. 430 of 2015)
- Waste Management (Hazardous Waste) Regulations, 1998 (S.I. No. 163 of 1998) as amended
- Waste Management (Shipments of Waste) Regulations, 2007 (S.I. No. 419 of 2007) as amended
- Waste Management (Movement of Hazardous Waste) Regulations, 1998 (S.I. No. 147 of 1998)
- European Communities (Transfrontier Shipment of Waste) Regulations 1994 (SI 121 of 1994)
- European Union (Properties of Waste which Render it Hazardous) Regulations 2015 (S.I. No. 233 of 2015) as amended.

- Environmental Protection Act 1992 (No. 7 of 1992) as amended.
- Litter Pollution Act 1997 (No. 12 of 1997) as amended.
- Planning and Development Act 2000 (No. 30 of 2000) as amended [12].

One of the guiding principles of European waste legislation, which has in turn been incorporated into the *Waste Management Act 1996 - 2001* 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 client 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 and Amendments* or a waste or IED 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.

3.0 DESCRIPTION OF THE PROJECT

3.1 Location, Size and Scale of the Development

The subject application site is located at Baldoyle-Stapolin, Dublin 13.

The site is bound by existing residential areas to the south and east, referred to as Myrtle and the Red Arches respectively. Undeveloped residential areas are located to north and east of the site. The site is bound by the Dublin-Belfast / DART trainline and Clongriffin Station to the west.

The development will consist of alterations to the permitted development, as permitted under FCC Reg. Ref. 16A/0412, ABP Reg. Ref. ABP-248970 (as amended by F20A/0258 and F21A/0046) of 544 no. residential units (385 no. apartments and 159 no. houses), retail and a crèche, to the development of 882 no. new residential dwellings (747 no. apartments, 135 no. houses), residential tenant amenity, retail, crèche, parking, and public realm, over a total site area of c. 9.1 ha, and site development area of c. 8.89 ha. Landscaping will include extensive communal amenity areas, and significant public open space provision.

3.2 Details of the Non-Hazardous Wastes to be produced

There will be waste materials generated from the excavation of soil and stones to facilitate site clearance, construction of new building foundations and installation of services. The volume of material to be excavated has been estimated by the project engineers at c. 21,039m^3. It is anticipated that all of this material will be suitable for reuse onsite, and no material will be required to be removed offsite.

During the construction phase there may be a surplus of building materials, such as timber off-cuts, broken concrete blocks, 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 oversupply of materials will also be generated.

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 onsite 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.

3.3 Potential Hazardous Wastes to be produced

3.3.1 Contaminated Soil

Site investigations and environmental soil testing where undertaken by Ground Investigations Ireland (GII) between October 2019 and January 2020 at the proposed site. A selection of samples collected were analysed for a suite of parameters which allows for the assessment of the soils in terms of total pollutant content for classification of materials as hazardous or non-hazardous (RILTA Suite). The suite also allows for the assessment of the sampled material in terms of suitability for placement at licenced landfills (inert, stable non-reactive, hazardous etc.). The parameter list for the suite includes analysis of the solid samples for arsenic, barium, cadmium, chromium, copper, cyanide, lead, nickel, mercury, zinc, speciated aliphatic and aromatic petroleum hydrocarbons, pH, sulphate, sulphide, moisture content, soil organic matter and an asbestos screen.

The suite also includes those parameters specified in the EU Council Decision establishing criteria for the acceptance of waste at Landfills (Council Decision 2003/33/EC), which for the solid samples are total organic carbon (TOC), speciated aliphatic and aromatic petroleum hydrocarbons, BTEX, phenol, polychlorinated biphenyls (PCB) and PAH.

GII use HazWasteOnlineTM, a web-based commercial waste classification software tool which assists in the classification of potentially hazardous materials. This tool was used to determine whether the materials sampled are classified as hazardous or non-hazardous.

In total, forty-eight (48 No.) samples were assessed using the HazWasteOnLineTM Tool. The sample TP- 89 at 1.5m was classified as hazardous due to elevated levels

of TPH and the associated hazardous properties HP74 Carcinogenic and HP115 Mutagenic. All remaining samples were classified as being non-hazardous and no asbestos was detected.

If any potentially contaminated material is encountered, it 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'* [13] 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 [14]*, which establishes the criteria for the acceptance of waste at landfills.

If Asbestos or Asbestos Containing Material (ACMs) are identified, the removal of asbestos will be carried out by a suitably qualified contractor will only be removed from site by a suitably permitted waste contractor. in accordance with *S.I. No. 386 of 2006 Safety, Health and Welfare at Work (Exposure to Asbestos) Regulations 2006-2010.* All asbestos will be taken to a suitably licensed or permitted facility.

3.3.2 Fuel/Oils

As fuels and oils are classed as hazardous materials, any on-site storage of fuel/oil, all storage tanks and all draw-off points will be bunded (or stored in double-skinned tanks) and located in a dedicated, secure area of the site. Provided that these requirements are adhered to and site crew are trained in the appropriate refuelling techniques, it is not expected that there will be any fuel/oil wastage at the site.

3.3.3 Japanese Knot Weed and Other Invasive Plant Species

A site survey was undertaken by Knotweed Control Ireland in August 2019, for the purpose of identifying and managing any schedule 3 (*Regulations SI No. 355/2015)* invasive species such as Japanese Knotweed (*Fallopia japonica)*. This included a walkover survey of the entire site and around part of the outside perimeter.

Japanese Knotweed a highly invasive plant species was recorded in two locations on site. It is envisaged that all knotweed will be excavated and disposed of at a suitably licensed waste facility in accordance with a site specific invasive species plan, prepared by an invasive species specialist.

3.3.4 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 encountered) will be stored in appropriate receptacles in designated areas of the site pending collection by an authorised waste contractor.

3.4 Main C&D Waste Categories

The main non-hazardous and hazardous waste streams that could be generated by the construction and demolition activities at a typical site are shown in Table 3.1. The List of Waste (LoW) code (as effected from 1 June 2015) (also referred to as the European Waste Code or EWC) for each waste stream is also shown.

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

Table 3.1 *Typical waste types generated and LoW's numbers (*individual waste types may contain hazardous substances)

4.0 WASTE MANAGEMENT

4.1 Demolition Waste Generation

There is no demolition associated with the proposed development, there will however be existing hardstanding on part of the site that will need to be removed as part of the excavation works.

Demolition of existing temporary lift and stair enclosure and associated infrastructure to Clongriffin Train Station will take place under planning application FCC Reg. Ref. 16A/0412, ABP Reg. Ref. ABP-248970 (as amended by F20A/0258 and F21A/0046).

4.2 Construction Waste Generation

Table 4.1 shows the breakdown of C&D waste types produced on a typical site based on data from the EPA *National Waste Reports, the GMIT* [16] and other research reports.

Waste Types	%
Mixed C&D	33
Timber	28
Plasterboard	10
Metals	8
Concrete	6
Other	15
Total	**100**

Table 4.2 *Waste materials generated on a typical Irish construction site*

Table 4.2 shows the predicted construction waste generation for the proposed development based on the information available to date along with the targets for management of the waste streams. The predicted waste amounts are based on an

average large-scale development waste generation rate per m^2, using the waste breakdown rates shown in Table 4.1.

Waste Type	Tonnes	Reuse		Recycle/Recovery		Disposal	
		%	Tonnes	%	Tonnes	%	Tonnes
Mixed C&D	1815.8	10	181.6	80	1452.7	10	181.6
Timber	1540.7	40	616.3	55	847.4	5	77.0
Plasterboard	550.3	30	165.1	60	330.2	10	55.0
Metals	440.2	5	22.0	90	396.2	5	22.0
Concrete	330.2	30	99.0	65	214.6	5	16.5
Other	825.4	20	165.1	60	495.2	20	165.1
Total	**5502.6**		**1249.1**		**3736.2**		**517.2**

Table 4.2 *Estimated off-site reuse, recycle and disposal rates for construction waste*

In addition to the information in Table 4.2, the quantity of excavated material that will be generated has been estimated to be c. 21,093 m^3. Any suitable excavated material will be temporarily stockpiled for reuse as fill, where possible, all material is expected to be reused onsite. If for some reason material is not deemed suitable for reuse onsite it will be removed off site for appropriate reuse, recovery and/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.

4.3 Proposed 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. The appointed waste contractor will collect and transfer the wastes as receptacles are filled. There are numerous waste contractors in the FCC Region that provide this service.

All waste arising's will be handled by an approved waste contractor holding a current waste collection permit. All waste arising's requiring disposal off-site will be reused, recycled, recovered or disposed of at a facility holding the appropriate registration, permit or licence, as required.

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 (Ref. 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 offsite in their work vehicles (which are not design 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 or 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 etc, if required.

The management of the main waste streams is outlined as follows:

Top Soil & Sub Soil

The Waste Management 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 deemed not suitable for reuse onsite it will be removed off-site and could be reused as a by-product (and not as a waste), if this is done, it will be done in accordance with Article 27 of the *European Communities (Waste Directive) Regulations 2011*. Article 27 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. It is not envisaged that article 27 will be used to export excavated material off this site.

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 Article 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 Article 27. It is not envisaged that article 27 will be used to import material onto this site.

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 Management Acts 1996 – 2011* 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

It is not anticipated that bedrock will be encountered during the excavation phase of this development. However, if encountered it is envisaged that all bedrock will be removed offsite and will not be crushed onsite unless the appropriate waste permit, obtained from FCC.

Silt & Sludge
During the construction phase, silt and petrochemical interception should be carried out on runoff and pumped water from site works, where required. Sludge and silt will then be collected by a suitably licensed contractor and removed offsite.

Concrete Blocks, Bricks, Tiles & Ceramics
The majority of concrete blocks, bricks, tiles and ceramics generated as part of the construction and demolition works are expected to be clean, inert material and should be recycled, where possible.

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 into mixed ferrous, aluminium cladding, high grade stainless steel, low grade stainless steel etc., 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 demolition and 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 and 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 6.0) 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.

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.

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 construction waste offsite, details of the proposed destination of each waste stream will be provided to FCC by the project team.

4.4 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 weighing mechanism on the truck or at the receiving facility. These waste records will be maintained on site by the nominated project Waste Manager (see Section 6.0).

All movement of waste and the use of waste contractors will be undertaken in accordance with the *Waste Management Acts 1996 - 2011*, *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 waste manager (see Section 6.0) 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/IE Licence for that site will be provided to the nominated project waste manager (see Section 6.0). If the waste is being shipped abroad, a copy of the Transfrontier Shipping (TFS) notification document will be obtained from DCC (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.

5.0 ESTIMATED COST OF WASTE MANAGEMENT

An outline of the costs associated with different aspects of waste management is provided 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.

5.1 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 a reduced fee for such purposes, reducing final waste disposal costs.

5.2 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.

5.3 Disposal

Landfill charges in the Leinster region are currently at around €130 - €150 per tonne which includes a €75 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.

6.0 TRAINING PROVISIONS

A member of the construction team will be appointed as the project waste manager to ensure commitment, operational efficiency and accountability during the C&D phases of the project.

6.1 Waste Manager Training and Responsibilities

The nominated waste manager 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 waste manager 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 waste manager 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 waste manager 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 waste manager 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 C&D WMP.

6.2 Site Crew Training

Training of site crew is the responsibility of the waste manager and, as such, a waste training program should be organised. A basic awareness course will be held for all site crew to outline the C&D WMP 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.

7.0 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 arising's 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 waste manager with a waste docket (or 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
- Collection Permit No.
- Vehicle Reg.
- Driver Name
- Docket No.
- Waste Type
- EWC/LoW

The waste transfer dockets will be transferred to the site waste manager on a weekly basis and can be placed in the Waste Tracking Log file. This information will be forwarded onto the FCC Waste Regulation Unit when requested.

Alternatively, 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.

A copy of the Waste Collection Permits, CORs, Waste Facility Permits and Waste Licences will be maintained on site at all times. 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.

A copy of the Waste Collection Permits, CORs, Waste Facility Permits and Waste Licences will be sent to the FCC Waste Regulation Unit prior to any material being removed from site.

8.0 OUTLINE WASTE AUDIT PROCEDURE

8.1 Responsibility for Waste Audit

The appointed waste manager will be responsible for conducting a waste audit at the site during the C&D phase of the development. Contact details for the nominated Waste Manager will be provided to the FCC Waste Regulation Unit after the main contractor is appointed and prior to any material being removed from site.

8.2 Review of Records and Identification of Corrective Actions

A review of all the records for the waste generated and transported off-site should be undertaken mid-way through the 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.

Waste management costs will also be reviewed.

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.

9.0 CONSULTATION WITH RELEVANT BODIES

9.1 Local Authority

Once demolition and construction contractors have been appointed, have appointed waste contractors and prior to removal of any C&D waste materials offsite, details of the proposed destination of each waste stream will be provided to the FCC Waste Regulation Unit.

FCC will also be consulted, as required, throughout the demolition, 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.

9.2 Recycling/Salvage Companies

Companies that specialise in C&D waste management will be contacted to determine their suitability for engagement. Where a waste contractor is engaged, each company will be audited in order to ensure that relevant and up-to-date waste collection permits and facility COR/permits/licences are held. These permit details will be sent to the FCC Waste Regulation Unit. In addition, information regarding individual construction materials will be obtained, including the feasibility of recycling each material, the costs of recycling/reclamation and the means by which the wastes will be collected and transported off-site, and the recycling/reclamation process each material will undergo off site.

10.0 REFERENCES

1. Waste Management Act 1996 (No. 10 of 1996) as amended. Sub-ordinate and associated legislation includes:
   - European Communities (Waste Directive) Regulations 2011 (S.I. No. 126 of 2011) as amended.
   - Waste Management (Collection Permit) Regulations 2007 (S.I. No. 820 of 2007) as amended.
   - Waste Management (Facility Permit and Registration) Regulations 2007 (S.I No. 821 of 2007) as amended.
   - Waste Management (Licensing) Regulations 2000 (S.I No. 185 of 2000) as amended.
   - European Union (Packaging) Regulations 2014 (S.I. No. 282 of 2014) as amended.
   - Waste Management (Planning) Regulations 1997 (S.I. No. 137 of 1997) as amended.
   - Waste Management (Landfill Levy) Regulations 2015 (S.I. No. 189 of 2015)
   - European Union (Waste Electrical and Electronic Equipment) Regulations 2014 (S.I. No. 149 of 2014)
   - European Union (Batteries and Accumulators) Regulations 2014 (S.I. No. 283 of 2014) as amended.
   - Waste Management (Food Waste) Regulations 2009 (S.I. No. 508 of 2009) as amended.
   - European Union (Household Food Waste and Bio-waste) Regulations 2015 (S.I. No. 191 of 2015)
   - Waste Management (Hazardous Waste) Regulations 1998 (S.I. No. 163 of 1998) as amended.
   - Waste Management (Shipments of Waste) Regulations 2007 (S.I. No. 419 of 2007) as amended.
   - The European Communities (Transfrontier Shipment of Hazardous Waste) Regulations 1988 (S.I. No. 248 of 1988)
   - European Communities (Shipments of Hazardous Waste exclusively within Ireland) Regulations 2011 (S.I. No. 324 of 2011)
   - European Union (Properties of Waste which Render it Hazardous) Regulations 2015 (S.I. No. 233 of 2015)
2. Protection of the Environment Act 2003, (No. 27 of 2003) as amended.
3. Litter Pollution Act 1997 (S.I. No. 12 of 1997) as amended
4. Eastern-Midlands Region Waste Management Plan 2015 – 2021 (2015).
5. Department of Environment and Local Government (DoELG) *Waste Management – Changing Our Ways, A Policy Statement* (1998).
6. Forum for the Construction Industry – *Recycling of Construction and Demolition Waste.*
7. Department of Communications, Climate Action and Environment (DCCAE), *Waste Action Plan for the Circular Economy - Ireland's National Waste Policy 2020-2025* (2020).
8. Department of Environment, Heritage and Local Government, *Best Practice Guidelines on the Preparation of Waste Management Plans for Construction and Demolition Projects* (2006).

9. DoELG, *Making Ireland's Development Sustainable – Review, Assessment and Future Action (World Summit on Sustainable Development)* (2002)

10. FÁS and the Construction Industry Federation (CIF), *Construction and Demolition Waste Management – a handbook for Contractors and Site Managers* (2002).

11. Fingal County Council (FCC), Fingal Development Plan 2017-2023 (2017)

12. Planning and Development Act 2000 (S.I. No. 30 of 2000) as amended

13. EPA, *Waste Classification – List of Waste & Determining if Waste is Hazardous or Non-Hazardous* (2015)

14. 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.

15. Environmental Protection Agency (EPA), *National Waste Database Reports 1998 – 2012*.

16. 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).

A18.2 Operational Waste Management Plan

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OPERATIONAL WASTE MANAGEMENT PLAN FOR A RESIDENTIAL DEVELOPMENT

AT

LANDS AT BALDOYLE

APPENDIX A18.2

Report Prepared For

The Shoreline Partnership

Report Prepared By

Chonaill Bradley, Senior Environmental Consultant

Our Reference

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Title	Senior Environmental Consultant	Associate
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CONTENTS

1.0 INTRODUCTION

AWN Consulting Ltd. (AWN) has prepared this Operational Waste Management Plan (OWMP) on behalf of the Shoreline Partnership. The subject application site is located at Baldoyle-Stapolin, Dublin 13.

The development will consist of alterations to the permitted development, as permitted under FCC Reg. Ref. 16A/0412, ABP Reg. Ref. ABP-248970 (as amended by F20A/0258 and F21A/0046) of 544 no. residential units (385 no. apartments and 159 no. houses), retail and a crèche, to the development of 882 no. new residential dwellings (747 no. apartments, 135 no. houses), residential tenant amenity, retail, crèche, parking, and public realm, over a total site area of c. 9.1 ha, and site development area of c. 8.89 ha. Landscaping will include extensive communal amenity areas, and significant public open space provision.

This OWMP has been prepared to ensure that the management of waste during the operational phase of the proposed residential development is undertaken in accordance with current legal and industry standards including, the *Waste Management Act 1996 – 2011* as amended and associated Regulations [1], *Protection of the Environment Act 2003* as amended [2], *Litter Pollution Act 2003* as amended [3], the *'Eastern-Midlands Region (EMR) Waste Management Plan 2015 – 2021*' [4] and the Fingal County Council *Segregation Storage, Presentation and of Household and Commercial Waste (2019)* [5]. 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 in relation to the proposed medical centre use:

- Health Service Executive (HSE), *Waste Management Awareness Handbook* (2011) [6]; and
- HSE and Department of Health and Children (DOHC), *Healthcare Risk Waste Management: Segregation, Packaging and Storage Guidelines for Healthcare Risk Waste, 4th Edition* (2010) [7].

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'* [8] 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 [9]. 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'* [10]. 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'* [11]. 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 government released 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'* [12] 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).

It aims to fulfil the commitment in the Programme for Government to publish and start implementing a new National Waste Action Plan. It is intended that this new national waste policy will inform and give direction to waste planning and management in Ireland over the coming years. It will be followed later this year by an All of Government Circular Economy Strategy. The policy document shifts focus away from waste disposal and moves it back up the production chain. To support the policy, regulation is already being used (Circular Economy Legislative Package) or in the pipeline (Single Use Plastics Directive). The policy document contains over 200 measures across various waste areas including Circular Economy, Municipal Waste, Consumer Protection & Citizen Engagement, Plastics and Packaging, Construction and Demolition, Textiles, Green Public Procurement and Waste Enforcement.

Since 1998, the Environmental Protection Agency (EPA) has produced periodic *'National Waste (Database) Reports'* [13] 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 2018 National Waste Statistics, which is the most recent study published, along with national waste statistics web resource (August 2020) reported the following key statistics for 2018:

- **Generated –** Ireland produced 2,912,353 t of municipal waste in 2018, this is almost a five percent increase since 2017. This means that each person living in Ireland generated 600kg of municipal waste in 2018;
- **Managed –** Waste collected and treated by the waste industry. In 2018, a total of 2,865,207 t of municipal waste was managed and treated;
- **Unmanaged –**Waste that is not collected or brought to a waste facility and is therefore likely to cause pollution in the environment because it is burned, buried or dumped. The EPA estimates that 47,546 t was unmanaged in 2018;

- **Recovered –** the amount of waste recycled, used as a fuel in incinerators, or used to cover landfilled waste. In 2018, around 85% of municipal waste was recovered, this is an increase from 77% in 2017;
- **Recycled –** the waste broken down and used to make new items. Recycling also includes the breakdown of food and garden waste to make compost. The recycling rate in 2018 was 38%, which is down from 41% in 2017; and
- **Disposed –** Less than a quarter (15%) of municipal waste was landfilled in 2018, this is a decrease from 23% in 2017.

2.2 Regional Level

The proposed development is located in the Local Authority area of Fingal County Council (FCC).

The *EMR Waste Management Plan 2015 – 2021* is the regional waste management plan for the FCC area which was published in May 2015. The regional plan sets out the following strategic targets for waste management in the region:

- A 1% reduction per annum in the quantity of household waste generated per capita over the period of the plan;
- Achieve a recycling rate of 50% of managed municipal waste by 2020; and
- Reduce to 0% the direct disposal of unprocessed residual municipal waste to landfill (from 2016 onwards) in favour of higher value pre-treatment processes and indigenous recovery practices.

Municipal landfill charges in Ireland are based on the weight of waste disposed. In the Leinster Region, charges are approximately €130 - €150 per tonne of waste which includes a €75 per tonne landfill levy introduced under the *Waste Management (Landfill Levy) (Amendment) Regulations 2012.*

The *Fingal Development Plan 2017 – 2023* [14] came into effect in 2017 and sets out a number of policies and objectives for the Fingal region in line with the objectives of the regional waste management plan.

Waste objectives with a particular relevance to the proposed development are:

Objectives:

- *Objective **WM03** Implement the provisions of the Eastern Midlands Region Waste Management Plan 2015 -2021 or any subsequent Waste Management Plan applicable within the lifetime of the Development Plan. All prospective developments in the County will be expected to take account of the provisions of the Regional Waste Management Plan and adhere to the requirements of that Plan.*
- *Objective **WM05** Prevent and minimise the generation of waste in accordance with the Eastern Midlands Region Waste Management Plan 2015 -2021 (or any subsequent plans).*
- *Objective **WM07** Promote the increased re-use of waste in accordance with the Eastern Midlands Region Waste Management Plan 2015-2021 (or any subsequent plan)."*
- *Objective **DMS36** Ensure all new residential schemes include appropriate design measures for refuse storage areas, details of which should be clearly shown at pre-planning and planning application stage. Ensure refuse storage areas are not situated immediately adjacent to the front door or ground floor window, unless adequate screened alcoves or other such mitigation measures are provided.*
- *Objective **DMS37** Ensure the maximum distance between the front door to a communal bin area does not exceed 50 metres.*

2.3 Legislative Requirements

The primary legislative instruments that govern waste management in Ireland and applicable to the project are:

- Waste Management Act 1996 (No. 10 of 1996) as amended 2001 (No. 36 of 2001), 2003 (No. 27 of 2003) and 2011 (No 20 of 2011). Sub-ordinate and associated legislation includes:
  - European Communities (Waste Directive) Regulations 2011 (S.I. No. 126 of 2011) as amended
  - Waste Management (Collection Permit) Regulations 2007 (S.I. No. 820 of 2007) as amended
  - Waste Management (Facility Permit and Registration) Regulation 2007 (S.I No. 821 of 2007) as amended
  - Waste Management (Licensing) Regulations 2000 (S.I No. 185 of 2000) as amended
  - European Union (Packaging) Regulations 2014 (S.I. No. 282 of 2014) as amended.
  - Waste Management (Planning) Regulations 1997 (S.I. No. 137 of 1997) as amended
  - Waste Management (Landfill Levy) Regulations 2015 (S.I. No. 189 of 2015)
  - European Communities (Waste Electrical and Electronic Equipment) Regulations 2014 (S.I. No. 149 of 2014)
  - Waste Management (Batteries and Accumulators) Regulations 2014 (S.I. No. 283 of 2014) as amended
  - Waste Management (Food Waste) Regulations 2009 (S.I. No. 508 of 2009) as amended
  - European Union (Household Food Waste and Bio-waste) Regulations 2015 (S.I. No. 430 of 2015)
  - Waste Management (Hazardous Waste) Regulations 1998 (S.I. No. 163 of 1998) as amended
  - Waste Management (Shipments of Waste) Regulations 2007 (S.I. No. 419 of 2007) as amended
  - *European Communities (Transfrontier Shipment of Waste) Regulations 1994 (SI 121 of 1994)*
  - European Union (Properties of Waste Which Render it Hazardous) Regulations 2015 (S.I. No. 233 of 2015) as amended.
- Environmental Protection Act 1992 (S.I. No. 7 of 1992) as amended;
- Litter Pollution Act 1997 (Act No. 12 of 1997) as amended and
- Planning and Development Act 2000 (S.I. No. 30 of 2000) as amended [15]

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 proposed facilities 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 IED (Industrial Emissions Directive) 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 Fingal County Council Waste Bye-Laws

The FCC "Fingal County Council (Segregation Storage, Presentation and of Household and Commercial Waste) Bye-Laws (2020)" came into use on the 1st of April 2020. These bye-laws repeal the previous 'Fingal County Council *Bye-Laws for the Storage, Presentation and Collection of Household Waste (2006)'*. The Bye-Laws set a number of enforceable requirements on waste holders with regard to storage, separation and presentation of waste within the FCC 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 9:00am 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.

The full text of the Waste Bye-Laws is available from the FCC website.

2.4 Regional Waste Management Service Providers and Facilities

Various contractors offer waste collection services for the residential sector in the FCC 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 closest civic amenity centre can be found at Estuary Recyling Centre c. 6.80km away to the north west, the civic amenity centre can be used for the disposal of other household wastes as outlines in section 5.7.

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

The subject application site is located at Baldoyle-Stapolin, Dublin 13.

The site is bound by existing residential areas to the south and east, referred to as Myrtle and the Red Arches respectively. Undeveloped residential areas are located to north and east of the site. The site is bound by the Dublin-Belfast / DART trainline and Clongriffin Station to the west.

The development will consist of alterations to the permitted development, as permitted under FCC Reg. Ref. 16A/0412, ABP Reg. Ref. ABP-248970 (as amended by F20A/0258 and F21A/0046) of 544 no. residential units (385 no. apartments and 159 no. houses), retail and a crèche, to the development of 882 no. new residential dwellings (747 no. apartments, 135 no. houses), residential tenant amenity, retail, crèche, parking, and public realm, over a total site area of c. 9.1 ha, and site development area of c. 8.89 ha. Landscaping will include extensive communal amenity areas, and significant public open space provision.

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 internal 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:

- Healthcare waste from the medical centre and pharmacy. See Section 3.2.1 below for more information;
- Green/garden waste may be generated from internal plants or 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.) ;
- Lightbulbs;
- Textiles (rags);
- Waste cooking oil (if any generated by the residents or commercial 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.

3.2.1 Healthcare Waste from the Medical Centre

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 healthcare risk waste (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.

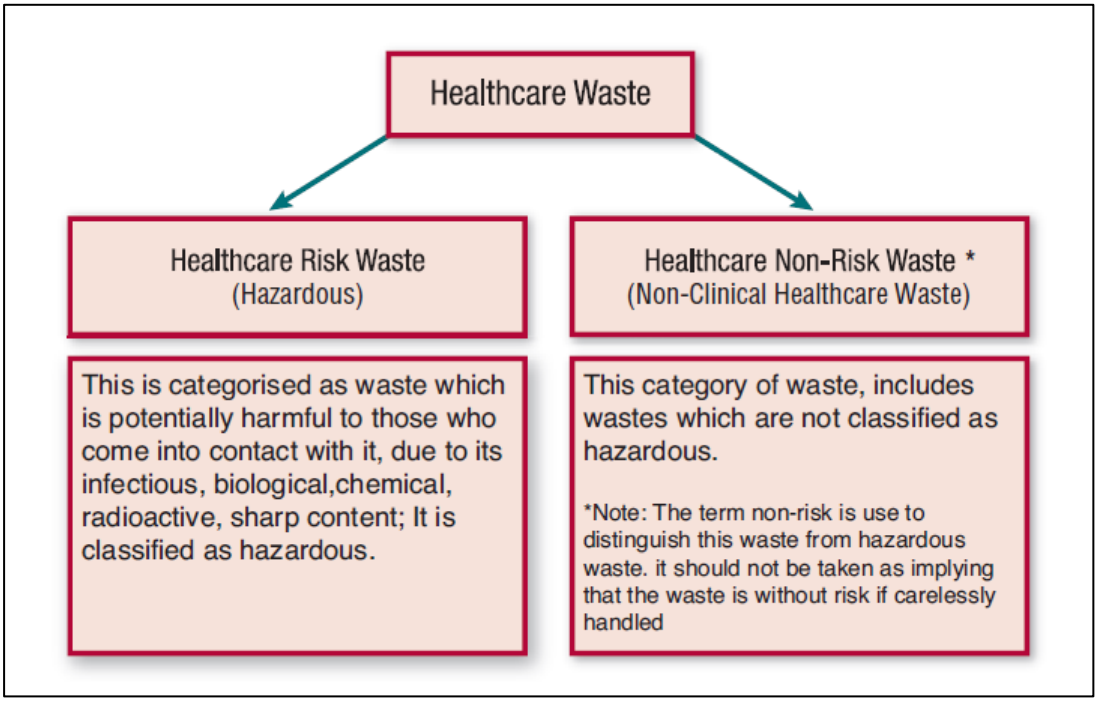

Figure 3.1 Healthcare Waste Categories (Source: HSE, *Waste Management Awareness Handbook* (2001)

Non-Risk/Non-Clinical Non-Hazardous Waste

The typical non-risk/non-clinical non-hazardous waste streams that will be generated will include the following typical waste categories:

- 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 on a daily basis, there will be some additional wastes generated on a regular basis that will need to be managed separately including:

- Green/garden waste from landscaping activities;
- Textiles;
- Batteries (non-hazardous) *note: hazardous batteries may also be generated which are referred to in Section 3.2.2*;
- 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*; and
- Furniture (and from time to time other bulky wastes).

Non-Clinical Hazardous Waste

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*;
- 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
- Light bulbs (Long Life, LED and Lilament bulbs).

Healthcare Risk Waste (Hazardous)

Healthcare risk waste will be generated from doctor surgeries, consulting rooms, treatment rooms. Figure 3.2 over shows the classification and colour coding of healthcare risk waste as presented in the HSE guidance document.

Not all of the waste types listed in Figure 3.2 will be generated at the care centre as the centre will provide primary care services only and will not carry out significant surgical procedures or cancer care services.

The healthcare risk waste generated at the care centre will comprise waste disposed of in yellow bags (such as dressings, swabs, bandages, gloves etc.) and yellow sharps buckets (for waste such as needles, syringes, razors, stitch cutters etc.).

Figure 3.2 Segregation of Healthcare Risk Waste (Source: HSE and DOHC, *Healthcare Risk Waste Management* (2010) and HSE, *Waste Management Awareness Handbook* (2011))

3.3 European Waste Codes

In 1994, the *European Waste Catalogue* [17] and *Hazardous Waste List* [18] were published by the European Commission. In 2002, the EPA published a document titled the *European Waste Catalogue and Hazardous Waste List* [19], 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'* [20] which became valid from the 1st June 2015. 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

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
Fluorescent tubes and other mercury containing waste*	20 01 21*
Bulky Wastes	20 03 07

** Individual waste type may contain hazardous materials*
Table 3.1 Typical Waste Types Generated and LoW Codes

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 units has been determined based on the predicted occupancy of the units. While the waste estimates for the commercial units has been based on area use per m^2.

The estimated waste generation for the development for the main waste types is presented in Table 4.1, 4.2 and 4.3.

Waste type	Waste Volume (m^3/week)			
	Residential Block A (Combined)	Residential Block D (Combined)	Residential Block B1 & B2 (Combined)	Residential Block C1a & C2a (Combined)
Organic Waste	4.52	4.61	1.26	1.06
DMR	32.05	32.68	8.96	7.52
Glass	0.88	0.89	0.24	0.21
MNR	16.85	17.18	4.71	3.95
Total	**54.30**	**55.36**	**15.18**	**12.74**

Table 4.1 Estimated waste generation for the proposed development for the main waste types

Waste type	Waste Volume (m^3/week)			
	Residential House 2 - Bed (Individual)	Residential House 3 - Bed (Individual)	Residential House 4 - Bed (Individual)	Creche Unit (Individual)
Organic Waste	0.02	0.02	0.02	0.05
DMR	0.11	0.13	0.18	1.74
Glass	0.01	0.01	0.01	0.01
MNR	0.07	0.08	0.09	0.95
Total	**0.21**	**0.24**	**0.30**	**2.76**

Table 4.2 Estimated waste generation for the proposed development for the main waste types

Waste type	Waste Volume (m^3/week)			
	Supermarket (Individual)	Medical Unit (Individual)	Pharmacy Unit (Individual)	Other Commercial Units (Combined)
Organic Waste	0.20	0.04	0.02	0.61
DMR	0.90	0.96	0.53	4.53
Glass	1.67	0.01	0.01	0.11
MNR	0.11	0.42	0.23	2.79
Cardboard	3.11	-	-	-
Confidential Paper	-	0.39	0.22	-
Medical Waste	-	0.28	0.07	-
Total	**6.00**	**2.10**	**1.08**	**8.04**

Table 4.3 Estimated waste generation for the proposed development for the main waste types

The BS5906:2005 Waste Management in Buildings – Code of Practice [21] was considered in the estimations of the waste arising. It has been assumed that waste will be generated by the residents, supermarket, pharmacy and other commercials unit's unit over a 7-day period, while the creche and medical unit facility will operate over a 5-day period. It is anticipated that the conservative estimation of waste quantities from the residential units will be sufficient to cover the small quantities likely to be generated in the communal areas on a weekly basis.

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 FCC. In particular, consideration has been given to the following documents:

- BS 5906:2005 Waste Management in Buildings – Code of Practice;
- EMR Waste Management Plan 2015 – 2021;
- DoEHLG*, Sustainable Urban Housing: Design Standards for New Apartments, Guidelines for Planning Authorities* (section 4.8-4.9) (2020) [22];

- *Fingal County Council Development Plan 2017 – 2023* (2017); and
- Fingal County Council *Segregation Storage, Presentation and of Household and Commercial Waste (2018)*

Waste Storage Areas

Unit Blocks A & D

11 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 floor level, in close proximity to cores.

Duplex/Unit Blocks B1 & B2

2 no. shared WSAs have been allocated in the development design for use by the duplex & apartment units in these blocks.

Duplex/Unit Blocks C1a & C1b

2 no. shared WSAs have been allocated in the development design for use by the duplex & apartment units in these blocks.

Houses units

Houses will have their own individual WSAs allocated at the rear of their home where external access to the rear yard is possible. When external access to the rear of the property is unavailable (such as the terraced houses), bins will be stored at the front of the unit, shielded from view of the road.

Creche and Supermarket

The creche and supermarket units will have their own individual WSAs allocated on ground floor level which can be viewed on the planning drawings.

Pharmacy, Medical and other Commercial Units

3 no. WSAs have been allocated for use by the pharmacy, medical and remaining mix of commercial units consisting of retail, food and beverage and gym units. The pharmacy and medical units will have their own individual WSA for the storage of medical waste allocated at the rear of their units. While the other commercial units will share a WSA located under Block D.

The waste receptacles from the apartment block and duplex WSAs will be brought by personnel nominated by the facilities management company to the curtilage for collection. Residents in houses will be responsible for taking their owns bins to the curb for collection.

All WSAs and temporary waste collection points for Blocks A & D can be viewed on the drawings submitted with the planning application.

Using the estimated waste generation volumes in Table 4.1, 4.2 and 4.3, the waste receptacle requirements for MNR, DMR, organic waste, cardboard and glass have been established for the WSAs. These are presented in Table 5.1.

Area/Use	Bins Required					Equipment
	MNR*	DMR**	Organic	Glass	Bales	
Houses (Individual)	1 x 240L	1 x 240L	1 x 120L	Bottle Bank	-	-
Residential Apartment Block A (Shared)	16 x 1100L	29 x 1100L	19 x 240L	6 x 240L	-	-
Residential Apartment Block D (Shared)	16 x 1100L	30 x 1100L	19 x 240L	5 x 240L	-	-
Residential Apartment Block B1 & B2 (Shared)	5 x 1100L	8 x 1100L 1 x 240L	6 x 240L	2 x 120L	-	-
Residential Apartment Block C1a & C1b (Shared)	4 x 1100L	7 x 1100L	5 x 240L	2 x 120L	-	-
Creche (Individual)	1 x 1100L	2 x 1100L	1 x 120L	1 x 120L	-	-
Supermarket (Individual)	1 x 1100L	2 x 1100L	1 x 240L	1 x 240L	4	Bramidan B3 Baler
Medical Unit (Individual)	2 x 240L	1 x 1100L	1 x 120L	1 x 120L	-	Medical Waste bin
Pharmacy Unit (Individual)	2 x 240L	1 x 1100L	1 x 120L	1 x 120L	-	Medical Waste bin
Other Commercial Units (Shared)	3 x 1100L	5 x 1100L	3 x 240L	1 x 120L	-	-

*Note: * = Mixed Non-Recyclables*

*** = Dry Mixed Recyclables*

Table 5.1 *Waste storage requirements for the proposed development*

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 facilities management company in the shared residential WSAs. Residents in houses will be responsible for providing their own bins.

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 WSAs 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.

Figure 5.1 *Typical waste receptacles of varying size (240L and 1100L)*

5.1 Waste Storage – Apartment Block & Duplex Units

Residents will be required to segregate waste into the following main waste streams:

- DMR;
- Organic waste;
- Glass; and
- MNR.

Residents will be required to take their segregated waste materials to their designated residential WSA and dispose of their segregated waste into the appropriate bins. Space will be provided in the residential units to accommodate 3 no. bin types to facilitate waste segregation at source.

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 apartment and duplex blocks WSAs will be restricted to authorised residents, facilities management and waste contractors by means of a key or electronic fob access.

Using the estimated figures in Table 4.1, DMR, MNR, organic waste and glass will be collected on a weekly basis. At the designated collection times, bins will be brought by personnel nominated by the facilities management company from the shared WSAs directly to the designated collection point at the closest road.

Other waste materials such as 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 5.7.

5.2 Waste Storage – Houses

Residents in the houses will be required to segregate their waste into the following waste categories within their own units:

- DMR;
- Organic waste;
- Glass; and
- MNR.

It is anticipated that residents with external access to the rear of the property and will store waste in bins at the back of the house. For houses with no external access to the rear, a dedicated shielded area for storage of 2 no. 240l and 1 no. 120l litre wheelie bins have been allocated at the front or side of the property.

Residents will be required to place their segregated waste materials into these bins as necessary.

It is anticipated that DMR, MNR and organic waste will be collected on a weekly basis. Glass waste will be required to be brought to the nearest bottle bank for disposal.

Other waste materials such as 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 5.7.

5.3 Waste Storage – Creche

Staff will be required to segregate their waste into the following waste categories within their own units:

- DMR;
- Organic waste;
- Glass; and
- MNR.

As required, the staff will need to bring segregated DMR, MNR, glass and organic waste to their WSA.

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 WSA will be restricted to authorised childcare facility staff and building management by means of a key or electronic fob access.

Based on the recommended bin requirements in Table 5.1, DMR, MNR and organic waste will be required to be collected weekly and glass will be collected as required.

Other waste materials such as batteries, WEEE 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 5.7.

5.4 Waste Storage – Medical and Pharmacy 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 on the ground floor level of the building. This room will have at least 2 no. 240 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 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 5.7.

5.5 Waste Storage – Supermarket and Commercial Units

The Supermarket and Commercial tenants will be required to segregate waste within their own unit into the following main waste types:

- DMR;
- Organic waste;
- Glass;
- MNR; and
- Carboard

Tenants will be required to take their segregated waste materials to their designated commercial WSA and dispose of their segregated waste into the appropriate bins. Locations of all WSAs can found on the plans submitted with the application.

Tenants in Block A and D will be required to allocate a waste store within their own unit temporarily before moving waste to the commercial WSAs under block A & D or in the case of the supermarket to their own individual WSA under block A.

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 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;
- Dish-wash and Glass-wash Area; and
- Bar Area.

Small bins will be placed adjacent to each of these areas for temporary storage of waste generated during the day. Waste will then be transferred from each of these areas to the appropriate waste store within their unit.

All bins/containers in the tenants areas as well as 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 wastes can be put in each. Using the estimated figures in Tables 4.3, DMR, MNR, organic waste, cardboard and glass will be collected on a weekly basis.

Other waste materials such as batteries, WEEE 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 5.7

5.6 Waste Collection

There are numerous private contractors that provide waste collection services in the Fingal County 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.

All residential waste from shared WSAs, requiring collection by the appointed waste contractor will be transferred from the WSAs by personnel nominated by facilities management company to the collection point.

All commercial waste from shared and individual WSAs, requiring collection by the appointed waste contractor will be transferred from the WSAs by personnel nominated by facilities management company to the collection point.

Residents in houses will be responsible for transferring their own bins to/from their individual WSA to the street for collection.

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 suitable waste contractor.

5.7 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.

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 suitably 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 suitably 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 commercial 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 and tenants 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.

Covid-19 Waste

Any waste generated by residential and commercial tenants that have tested positive for Covid-19 should be manged in accordance with the current Covid-19 HSE Guidelines at the time that that waste arises. At the time this report was prepared, the HSE Guidelines require the following procedure for any waste from a person that tests positive for Covid-19:

- Put all waste (gloves, tissues, wipes, masks) from that person in a bin bag and tie when almost full;
- Put this bin bag into a second bin bag and tie a knot;

- Store this bag safely for 3 days, then put the bag into the non-recyclable waste/general waste wheelie bin for collection/emptying.

Please note that this guidance is likely to be updated by the time the development is open and occupied and the relevant guidance at the time will need to be reviewed.

5.8 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 with a recommended 6-10 air changes per hour for a mechanical system for internal WSAs;
- Provide suitable lighting – a minimum Lux rating of 220 is recommended;
- 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 signage placed above and on bins indicating correct use;
- Have access for potential control of vermin, if required; and
- Be fitted with CCTV for monitoring.

The facilities management company will be required to maintain the waste storage areas in good condition as required by the FCC Waste Bye-Laws.

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 *EMR Waste Management Plan 2015 – 2021*.

Adherence to this plan will also ensure that waste management at the development is carried out in accordance with the requirements of the *FCC 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 (S.I. No. 10 of 1996) as amended 2001 (S.I. No. 36 of 2001), 2003 (S.I. No. 27 of 2003) and 2011 (S.I. No. 20 of 2011). Sub-ordinate and associated legislation includes:
    - European Communities (Waste Directive) Regulations 2011 (S.I. No. 126 of 2011) as amended
    - Waste Management (Collection Permit) Regulations 2007 (S.I. No. 820 of 2007) as amended
    - Waste Management (Facility Permit and Registration) Regulations 2007 (S.I No. 821 of 2007) as amended
    - Waste Management (Licensing) Regulations 2000 (S.I No. 185 of 2000) as amended
    - European Union (Packaging) Regulations 2014 (S.I. No. 282 of 2014)
    - Waste Management (Planning) Regulations 1997 (S.I. No. 137 of 1997)
    - Waste Management (Landfill Levy) Regulations 2015 (S.I. No. 189 of 2015)
    - European Communities (Waste Electrical and Electronic Equipment) Regulations 2014 (S.I. No. 149 of 2014)
    - Waste Management (Batteries and Accumulators) Regulations 2014 (S.I. No. 283 of 2014) as amended
    - Waste Management (Food Waste) Regulations 2009 (S.I. No. 508 of 2009) as amended 2015 (S.I. No. 190 of 2015)
    - European Union (Household Food Waste and Bio-waste) Regulations 2015 (S.I. No. 191 of 2015)
    - Waste Management (Hazardous Waste) Regulations 1998 (S.I. No. 163 of 1998) as amended 2000 (S.I. No. 73 of 2000)
    - Waste Management (Shipments of Waste) Regulations 2007 (S.I. No. 419 of 2007) as amended
    - *European Communities (Transfrontier Shipment of Waste) Regulations 1994 (SI 121 of 1994)*
    - European Union (Properties of Waste which Render it Hazardous) Regulations 2015 (S.I. No. 233 of 2015)
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3. Litter Pollution Act 1997 (S.I. No. 12 of 1997) as amended
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12. Department of Communications, Climate Action and Environment (DCCAE), *Waste Action Plan for the Circular Economy - Ireland's National Waste Policy 2020-2025* (2020).
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14. DoELG, *Making Ireland's Development Sustainable – Review, Assessment and Future Action (World Summit on Sustainable Development)* (2002)

15. Environmental Protection Agency (EPA), *National Waste Database Reports 1998 – 2017*.
16. FCC*, Fingal County Development Plan 2017 – 2023* (2017)
17. 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).
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19. Hazardous Waste List - Council Decision 94/904/EC (as per Council Directive 91/689/EEC).
20. EPA, *European Waste Catalogue and Hazardous Waste List* (2002)
21. EPA, *Waste Classification – List of Waste & Determining if Waste is Hazardous or Non-Hazardous* (2015).
22. BS 5906:2005 Waste Management in Buildings – Code of Practice.
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