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Ground Investigations Ireland

Hackettstown, Skerries

DBFL

Waste Classification & Groundwater Assessment Report

June 2020

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APPENDICES

1.0 Preamble

Ground Investigations Ireland (GII) was appointed by DBFL Consulting Engineers to carry out a Waste Classification assessment for a proposed residential development at Hackettstown, Skerries, Co. Dublin. All site investigation works were carried out under the supervision of a GII Geo-Environmental Engineer. The site investigation works were completed between November 2019 and March 2020.

2.0 Purpose & Scope

It is understood that as part of the proposed development there may be an excavation to accommodate a foundations, services, access roads and car parking and as such the material which may be excavated and removed from site needs to be assessed in terms of waste disposal outlets. The waste classification was carried in parallel with a wider geotechnical site investigation.

The purpose of the waste classification exercise was as follows.

- Classification, in terms of waste management and final disposal outlets, of material that may require disposal following excavation during the construction phase; and
- Suitability for any material left on site for the proposed use following development; and
- Assess the materials suitability in terms of subsoil quality and potential environmental impact for removal from site as a by-product.

The scope of the work undertaken to facilitate the waste classification exercise included the following:

- Excavation of eight-teen (18 No.) trial pits;
- Collection of subsoil samples for chemical analysis;
- Environmental laboratory testing; and
- Waste classification;

The additional scope of the geotechnical investigation included the following:

- Visit project site to observe existing conditions
- Carry out 18 No. Trial Pits to a maximum depth of 4.0m BGL
- Carry out 8 No. Soakaways to determine a soil infiltration value to BRE digest 365
- Carry out 34 No. Dynamic Probes to determine soil strength/density characteristics
- Carry out 15 No. Cable Percussion boreholes to a maximum depth of 10.20m BGL
- Carry out 6 No Rotary boreholes
- Geotechnical Laboratory testing
- Report with recommendations

The geotechnical site investigation is discussed in the GII Site Investigation Report Dated April 2020.[1]

3.0 Limitations

GII has prepared this report for the sole use of DBFL. No other warranty, express or implied, is made as to the professional advice included in this report or other services provided by GII.

The conclusions and recommendations contained in this report are based upon information provided by others and the assumption that all relevant information has been provided by those bodies from whom it has been requested. Information obtained from third parties has not been independently verified by GII, unless otherwise stated in this report.

This report has been prepared in line with best industry standards and within the project's budgetary and time constraints. The methodology adopted and the sources of information used by GII in providing its services are outlined in this report.

The work described was undertaken between November 2019 and March 2020, this report is based on the conditions encountered and the information available during that period. The scope of this Report and the services are accordingly factually limited by these circumstances.

Site investigations locations were selected by the consultant engineer.

GII disclaim any undertaking or obligation to advise any person of any change in any matter affecting the Report, which may come or be brought to GII's attention after the date of the Report.

The conclusions presented in this report represent GII's best professional judgement based on review of site conditions observed during any site visit and the relevant information available at the time of writing. The opinions and conclusions presented are valid only to the extent that the information provided was accurate and complete.

The investigation was focused on a broad assessment of the subsoil quality across the site. The assessment did not extend to the identification of asbestos containing materials associated with any on-site structures, ground gases or groundwater.

The waste classification exercise is reflective of and applicable to the ground conditions on site at the time of the site investigation and sampling. Alterations to the ground conditions or any further excavations carried out on site following the investigation are not reflected in this report.

4.0 Site Location and Layout

The site is located on the outskirts of Skerries Village North County Dublin (Figure 1 Appendix 1). The northern part of the site is brownfield next to a recently constructed Balleygossan Park and appears to have been filled in places to raise the ground level. The southern part of the site is currently agricultural land.

5.0 Site History

GII reviewed the aerial photographs and historical maps maintained by the Ordnance Survey of Ireland (OSI) and the google imagery records. These included the 6-inch maps that were produced between 1829

[1] Ground Investigations Ireland, Hackettstown, Skerries, Ground Investigation Report, April 2020.

and 1842, the 25-inch maps that were produced between 1888 and 1913 and the 6-inch Cassini Maps that were produced between the 1830's and 1930's. The site is undeveloped on the 6-inch with the Dublin to Drogheda railway line and Milverton Quarry located to the west of the site. The site is still undeveloped on the 25-inch and Cassini maps. Milverton Quarry and the railway line are present on the 25-inch and Cassini maps. On the 1995 and 2000 OSI aerial photos the site is undeveloped. There are some buildings located to the south of the site. On the remainder of the OSI photos the site is undeveloped. Based on the google earth imagery the site is still in its current state with surrounding housing developments indicated.

6.0 Subsurface Exploration

6.1. General

During the ground investigation a programme of intrusive investigation specified by the Consulting Engineer was undertaken to determine the sub surface conditions at the proposed site. Regular sampling and in-situ testing was undertaken in the exploratory holes to facilitate the geotechnical descriptions and to enable laboratory testing to be carried out on the soil samples recovered during excavation and drilling.
The procedures used in this site investigation are in accordance with Eurocode 7 Part 2: Ground Investigation and testing (ISEN 1997 – 2:2007) and B.S. 5930:2015.

6.2. Trial Pits

The trial pits were excavated using an 8.5T tracked excavator at the locations shown in Figure 5. The locations were checked using a CAT scan to minimise the potential for encountering services during the excavation. The trial pits were sampled, logged and photographed by a Geotechnical Engineer/Engineering Geologist prior to backfilling with arisings. Notes were made of any services, inclusions, pit stability, groundwater encountered and the characteristics of the strata encountered and are presented on the trial pit logs which are provided in Appendix 2 of this Report.

6.3. Surveying

The exploratory hole locations have been recorded using a Trimble R10 GNSS System which records the coordinates and elevation of the locations to ITM or Irish National Grid as required by the project specification. The coordinates and elevations are provided on the exploratory hole logs in the appendices of this Report.

7.0 Ground Conditions

7.1. General

The ground conditions encountered during the investigation are summarised below with reference to insitu and laboratory test results. The full details of the strata encountered during the ground investigation are provided in the exploratory hole logs included in the appendices of this report. For full geotechnical descriptions of the ground conditions refer to the geotechnical site investigation report refenced in Section 2.0.

The sequence of strata encountered were consistent across the site and are generally comprised;

- Topsoil
- Made Ground
- Cohesive Deposits
- Granular Deposits

TOPSOIL: Topsoil was encountered in all of the exploratory holes on the southern part of the site and was present to a maximum depth of 0.5m BGL. The topsoil in the investigation locations on the northern part of the site has been stripped and at these locations cohesive deposits or made ground was encountered from the surface.

MADE GROUND: Made Ground deposits were encountered in places on the northern part of the site beneath the Topsoil or from the surface and were present to varying depths of between 0.5m and 4.9m BGL. These deposits were described generally as *brown slightly sandy slightly gravelly Clay* or *slightly clayey sandy Gravel.* These deposits had some, occasional or frequent cobble and boulder content where noted on the exploratory hole logs. In some places these deposits contained *occasional fragments of tarmac, brick, plastic, and timber*

COHESIVE DEPOSITS: Cohesive deposits were encountered beneath the Made Ground or topsoil and were described typically as *brown sandy gravelly CLAY* or *silty CLAY with occasional cobbles and boulders*. The secondary sand and gravel constituents varied across the site and with depth, with granular lenses occasionally present in the glacial till matrix. These deposits had some, occasional or frequent cobble and boulder content where noted on the exploratory hole logs.
The strength of the cohesive deposits varied across the site but generally increased with depth and was typically soft to depths of between 1.7 and 3.4m BGL overlaying firm, firm to stiff or stiff in the majority of the exploratory holes.

GRANULAR DEPOSITS: The granular deposits were encountered within the cohesive deposits and were typically described as *grey or brown clayey sandy sub rounded to sub angular fine to coarse GRAVEL with occasional cobbles* or *gravelly fine to coarse SAND.* The secondary sand/gravel and silt/clay constituents varied across the site and with depth while occasional or frequent cobble and boulder content also present where noted on the exploratory hole logs.

8.0 Groundwater Quality

Groundwater monitoring wells were installed in BH-07, BH-101, BH-103 and RC-09 upon the completion of the boreholes. This was to enable sampling and the determination of the equilibrium groundwater level as well as enabling the collection fog groundwater samples. The typical groundwater installation consists of a 50mm HDPE slotted pipe with a pea gravel response zone and bentonite seal installed to the Engineers specification. The installation details are provided on the exploratory hole logs in the appendices of this

Report. Groundwater samples were collected from the wells installed in BH-07, BH-101, BH-103 and RC-09 on the 20th May 2020 by a GII Geo-Environmental Engineer.

The groundwater level in each well was recorded using a Geotechnical Instruments water level probe after which, the well was purged to remove the stagnant water in the well and surrounding gravel pack. Purging is necessary to ensure that the groundwater parameters measured are representative of the formation and not the stagnant water in the monitoring well or surrounding gravel filter.

8.1. Field Observations

No evidence of contamination was noted during the sampling of the groundwater wells. Groundwater field parameters were measured in situ using calibrated hand probes. Measurement included pH, electrical conductivity, temperature and redox potential (ORP). The recorded field data is summarised in Table 1.

Table 1 Groundwater Field Measurements

Sample ID	Sample Date	pH (pH Units)	Electrical Conductivity (mS/cm)	Temperature (Celsius)	Redox Potential (mV)	Odour	Colour
BH-07	20/05/2020	6.85	0.77	12.7	159	None	Light brown
BH-101	20/05/2020	6.88	0.88	15.4	135	None	Light brown
BH-103	20/05/2020	7.30	0.95	13.9	107	None	Light brown
RC-09	20/05/2020	7.45	0.80	13.1	148	None	Light brown

8.2. Laboratory Analysis

The laboratory analysis undertaken on the samples collected from the boreholes included for dissolved arsenic, boron, cadmium, copper, chromium, cyanide, lead, mercury, nickel, manganese and zinc, aliphatic and aromatic petroleum hydrocarbons, polycyclic aromatic hydrocarbons (PAH), methyl tert butyl ether (MTBE), benzene toluene ethylbenzene and toluene (BTEX), total phenols, pH, electrical conductivity, nitrate, nitrite, chloride, sulphate, ammonia and potassium. The parameter range was based on the site history and the need to establish a comprehensive environmental baseline for the groundwater quality for the site. The samples collected from the trial pits were analysed for aliphatic and aromatic petroleum hydrocarbons, volatile organic compounds (VOCs), methyl tert butyl ether (MTBE), benzene toluene ethylbenzene and toluene (BTEX).

The laboratory testing was competed by Element Materials Technology in the UK; EMT is a UKAS accredited laboratory. The full laboratory reports are included in Appendix 7. The analytical methodologies are all ISO/CEN approved or equivalent.

8.3. Laboratory Results

The full laboratory test report is presented in Appendix 7 and the results are summarised in Tables 2 to 4 The tables include Interim Guideline Values (IGV) published by the EPA and the Groundwater Threshold Values (GTV) set out in the European Communities Environmental Objectives (Groundwater) Regulations (S.I. 9 of 2010).

The IGVs are not statutory but were developed to assist in the assessment of impacts on groundwater quality. The IGVs are based on, but are more conservative than, the Drinking Water quality standards. GTVs have only been established for core indicator parameters. To ensure a comprehensive assessment of the groundwater quality, the IGVs are presented for parameters for which there are no GTV.

The level of manganese in BH-07 and BH-103 exceeded the IGV. The level of nitrate in BH-101 and BH-103 exceeded the IGV. The elevated levels of nitrate are likely linked to local agricultural practices with the manganese likely to be naturally occurring.

Table 2 Groundwater Metals and Inorganics

Parameter	BH-07	BH101	BH103	RC09	LOD	Unit	EPA IGV[2]	GTV[3]
Dissolved Arsenic	<2.5	2.7	<2.5	<2.5	<2.5	ug/l	-	7.5
Dissolved Boron	70	56	53	35	<12	ug/l	-	750
Dissolved Cadmium	<0.5	<0.5	<0.5	<0.5	<0.5	ug/l	-	3.75
Total Dissolved Chromium	<1.5	<1.5	<1.5	<1.5	<1.5	ug/l	-	37.5
Dissolved Copper	<7	<7	<7	<7	<7	ug/l	-	1,500
Dissolved Lead	<5	<5	<5	<5	<5	ug/l	-	18.75
Dissolved Manganese	161	34	199	2	<2	ug/l	50	ne[4]
Dissolved Mercury	<1	<1	<1	<1	<1	ug/l	-	0.75
Dissolved Nickel	2	2	6	<2	<2	ug/l	-	15
Dissolved Potassium	3.4	5.0	1.7	0.7	<0.1	mg/l	5	ne
Dissolved Zinc	<3	<3	<3	<3	<3	ug/l	100	ne
Sulphate	26.2	60.1	89.9	21.3	<0.5	mg/l	-	187.5
Chloride	31.2	27.0	49.6	51.2	<0.3	mg/l	-	187.5
Nitrate as NO_3	26.2	45.4	65.2	26.8	<0.2	mg/l	-	37.5
Total Cyanide	<0.01	<0.01	<0.01	<0.01	<0.01	mg/l	-	0.0375
Ammoniacal Nitrogen as NH_3	<0.03	<0.03	0.13	<0.03	<0.03	mg/l	-	0.175
Electrical Conductivity @25C #	522	487	483	400	<2	µS/cm	1,000	1,875

[2] EPA Report – Towards Setting Guideline Values for the Protection of Groundwater in Ireland, Interim Report, 2003.
[3] Groundwater Threshold Values as set out in S.I. 9 of 2010.
[4] ne – not established.

Parameter	BH-07	BH101	BH103	RC09	LOD	Unit	EPA IGV[2]	GTV[3]
pH	7.64	7.82	7.79	7.63	<0.01	pH units	≥ 6.5 - ≤ 9.5	ne

Table 3 Groundwater PAHs

Parameter	BH-07	BH101	BH103	RC09	LOD	Unit	EPA IGV	GTV
Naphthalene	<0.1	<0.1	<0.1	<0.1	<0.013	µg/l	1	ne
Acenaphthylene	<0.013	<0.013	<0.013	<0.013	<0.013	µg/l	ne	ne
Acenaphthene	<0.013	<0.013	<0.013	<0.013	<0.014	µg/l	ne	ne
Fluorene	<0.014	<0.014	<0.014	<0.014	<0.011	µg/l	ne	ne
Phenanthrene	<0.011	<0.011	<0.011	<0.011	<0.013	µg/l	ne	ne
Anthracene	<0.013	<0.013	<0.013	<0.013	<0.012	µg/l	10,000	ne
Fluoranthene	<0.012	<0.012	0.012	<0.012	<0.013	µg/l	1	ne
Pyrene	0.030	<0.013	<0.013	<0.013	<0.015	µg/l	ne	ne
Benzo(a)anthracene	<0.015	<0.015	<0.015	<0.015	<0.011	µg/l	ne	ne
Chrysene	<0.011	<0.011	<0.011	<0.011	<0.018	µg/l	ne	ne
Benzo(bk)fluoranthene	<0.018	<0.018	<0.018	<0.018	<0.016	µg/l	ne	ne
Benzo(a)pyrene	<0.016	<0.016	<0.016	<0.016	<0.011	µg/l	0.01	0.0075
Indeno(123cd)pyrene	<0.011	<0.011	<0.011	<0.011	<0.01	µg/l	0.05	ne
Dibenzo(ah)anthracene	<0.01	<0.01	<0.01	<0.01	<0.011	µg/l	ne	ne
Benzo(ghi)perylene	<0.011	<0.011	<0.011	<0.011	<0.195	µg/l	0.05	ne
PAH 16 Total	<0.195	<0.195	<0.195	<0.195	<0.01	µg/l	ne	0.075
Benzo(b)fluoranthene	<0.01	<0.01	<0.01	<0.01	<0.01	µg/l	0.5	ne
Benzo(k)fluoranthene	<0.01	<0.01	<0.01	<0.01	<0.1	µg/l	0.05	ne

Table 4 Groundwater Hydrocarbons

Parameter	BH-07	BH101	BH103	RC09	LOD	Unit	EPA IGV	GTV
TPH CWG								
Aliphatics								
>C5-C6	<10	<10	<10	<10	<10	µg/l	ne	ne
>C6-C8	<10	<10	<10	<10	<10	µg/l	ne	ne
>C8-C10	<10	<10	<10	<10	<10	µg/l	ne	ne
>C10-C12	<5	<5	<5	<5	<5	µg/l	ne	ne
>C12-C16	<10	<10	<10	<10	<10	µg/l	ne	ne
>C16-C21	<10	<10	<10	<10	<10	µg/l	ne	ne
>C21-C35	<10	<10	<10	<10	<10	µg/l	ne	ne
Total aliphatics C5-35	<10	<10	<10	<10	<10	µg/l	0.01	ne
Aromatics								
>C5-EC7	<10	<10	<10	<10	<10	µg/l	ne	ne
>EC7-EC8	<10	<10	<10	<10	<10	µg/l	ne	ne
>EC8-EC10	<10	<10	<10	<10	<10	µg/l	ne	ne

Parameter	BH-07	BH101	BH103	RC09	LOD	Unit	EPA IGV	GTV
>EC10-EC12	<5	<5	<5	<5	<10	µg/l	ne	ne
>EC12-EC16	<10	<10	<10	<10	<10	µg/l	ne	ne
>EC16-EC21	<10	<10	<10	<10	<10	µg/l	ne	ne
>EC21-EC35	<10	<10	<10	<10	<10	µg/l	ne	ne
Total aromatics C5-35	<10	<10	<10	<10	<10	µg/l	0.01	ne
Total aliphatics and aromatics(C5-35)	<10	<10	<10	<10	<10	µg/l	0.01	ne
Total Phenols HPLC	<0.15	<0.15	<0.15	<0.15	<0.15	mg/l	0.5	ne
MTBE	<5	<5	<5	<5	<5	µg/l	30	ne
Benzene	<5	<5	<5	<5	<5	µg/l	ne	0.75
Toluene	<5	<5	<5	<5	<5	µg/l	10	ne
Ethylbenzene	<5	<5	<5	<5	<5	µg/l	10	ne
m/p-Xylene	<5	<5	<5	<5	<5	µg/l	10	ne
o-Xylene	<5	<5	<5	<5	<5	µg/l	10	ne

9.0 Subsoil Laboratory Analysis

9.1. Analysis Suite

In order to assess materials, which may be excavated and removed from site, in terms of waste classification, 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 soils in terms of suitability for placement at various categories of landfill. The parameter list for the RILTA 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 RILTA 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 pH, total organic carbon (TOC), speciated aliphatic and aromatic petroleum hydrocarbons, BTEX, phenol, polychlorinated biphenyls (PCB) and PAH.

In line with the requirement of Council Decision 2003/33/EC a leachate was generated from the solid samples which was in turn analysed for antimony, arsenic, barium, cadmium, chromium, copper, lead, mercury, molybdenum, nickel, selenium, zinc, chloride, fluoride, soluble sulphate, sulphide, phenols, dissolved organic carbon (DOC) and total dissolved solids (TDS). The suite was selected due to the unknown origin of the material underlying the site and no evidence of specific contaminants of concern highlighted in the site history. The laboratory testing was competed by Element Materials Technology (EMT) in the UK; EMT is a UKAS accredited laboratory. The full laboratory reports are included in Appendix 3.

9.2. Asbestos

Asbestos fibres were **not** detected in the samples. The laboratory did **not** identify asbestos containing materials (ACMs) in the sample.

10.0 Waste Classification

GII understands that any materials which may be excavated from site would meet the definition of waste under the Waste Framework Directive. This may not be the case at the time of excavation when all or some of the materials may have been declared a by-product in line with Article 27 of the European Communities (Waste Directive) Regulations 2011[5].

Excess soil and stone resulting from excavation works (the primary purpose of which is not the production of soil and stone) may be declared a by-product if all four by-product conditions are met.[6]

a) further use of the soil and stone is certain;

b) the soil and stone can be used directly without any further processing other than normal industrial practice;

c) the soil and stone is produced as an integral part of a production process; and

d) further use is lawful in that the soil and stone fulfils all relevant requirements for the specific use and will not lead to overall adverse environmental or human health impacts.

Due to the varying levels of anthropogenic materials encountered in the made ground there are potentially two sets of List of Waste (LoW)[7] codes with “mirror” entries which may be applied to excavated materials to be removed from site.

1. 17-05-03* (soil and stone containing dangerous substances, classified as hazardous) or 17-05-04 (soil and stone other than those mentioned in 17-05-03, not hazardous); or
2. 17-09-03* (other construction and demolition wastes (including mixed wastes) containing hazardous substances) or 17-09-04 (mixed construction and demolition wastes other than those mentioned in 17 09 01, 17 09 02 and 17 09 03).

Where waste is a mirror entry in the LoW, it can be classified via a process of analysis against standard criteria set out in the Waste Framework Directive. The assessment process is described in detail in guidance published by the Irish (EPA Waste Classification, List of Waste & Determining if Waste is Hazardous or Non-Hazardous, June 2015) and UK regulatory authorities (Guidance on the Classification

[5] S.I. No. 126/2011 - European Communities (Waste Directive) Regulations 2011 (Article 27).
[6] Irish EPA (June 2019), Guidance on Soil and Stone By-Products.
[7] Formerly European Waste Catalogue Codes (EWC Codes)

and Assessment of Waste: Technical Guidance WM3, 2015). The assessment involves comparison of the concentration of various parameters against defined threshold values.

The specific LoW code which should be applied to the material at each sample location is summarised in Table 1 below. These codes are only applicable where the material is being removed for site as a waste.

GII use HazWasteOnline™, 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. The use of the online tool is accepted by the EPA (EPA 2014).

The conclusions presented in the report are based on GII's professional opinion. **It should be noted that the environmental regulator (in this case the EPA) and the waste acceptor (in this case a landfill operator) shall decide whether a waste is hazardous or non-hazardous and suitable for disposal at their facility.**

10.1. HazWasteOnLineTM Results

In total, six (6 No.) samples were assessed using the HazWasteOnLine™ Tool. All samples were classified as being non-hazardous. The complete HazWasteOnLine™ report for all samples is included in Appendix 4.

The specific LoW code which should be applied to the material at each SI location is summarised in Table 5 below. The assigning of the LoW code is based on observations recorded in the trial pits an estimation of the % of anthropogenic material present and the results of the HazWasteOnline™ output. The final LoW codes applied at the time of disposal may vary due to variations in % of anthropogenic material observed in the excavation phase. Where there is in excess of 2%[8] anthropogenic material observed the LoW code 17 09 04 may be applied.

Table 5 LoW Codes

SI Location	Depth (m)	Hazardous/Non-Hazardous	Asbestos Type if Present	LoW Code
TP05	0.50	Non-Hazardous	NAD[9]	17 05 04
TP06	0.50	Non-Hazardous	NAD	17 05 04
TP10	0.50	Non-Hazardous	NAD	17 05 04
TP101	0.50	Non-Hazardous	NAD	17 05 04
TP101	0.50	Non-Hazardous	NAD	17 05 04
TP104	0.50	Non-Hazardous	NAD	17 05 04

[8] EPA (2020) - Guidance on Waste Acceptance Criteria at Authorised Soil Recovery Facilities.
[9] NAD – no asbestos detected.

10.2. Landfill Waste Acceptance Criteria

Waste Acceptance Criteria (WAC) have been agreed by the EU (Council Decision 2003/33/EC) and are only applicable to material if it is to be disposed of as a waste at a landfill facility. Each individual member state and licensed operators of landfills may apply more stringent WAC. WAC limits and the associated laboratory analysis are not suitable for use in the determination of whether a waste is hazardous or non-hazardous. The data have been compared to the WAC limits set out in Council Decision 2003/33/EC as well as the specific WAC which the EPA have applied to the Integrated Materials Solutions (IMS) Landfill in north County Dublin. The IMS landfill has higher limits for a range of parameters while still operating under an inert landfill licence. The WAC data considered in combination with the waste classification outlined in Section 12.0 allows the most suitable waste category to be applied to the material tested. The applicable waste categories are summarised in Table 6. A summary of the WAC data is presented in Appendix 5. The waste category assigned to each sample is summarised in Table 7.

Table 6 Waste Category for Disposal/Recovery

Waste Category	Classification Criteria
Category A Unlined Soil Recovery Facilities	Soil and Stone only which are free from[10] anthropogenic materials such as concrete, brock timber. Soil must be free from "contamination" e.g. PAHs, Hydrocarbons[11].
Category B1 Inert Landfill	Reported concentrations within inert waste limits, which are set out by the adopted EU Council Decision 2003/33/EC establishing criteria and procedures for the acceptance of waste at landfills pursuant to Article 16 and Annex II of Directive 1999/31/EC (2002). Results also found to be non-hazardous using the HWOL[12] application.
Category B2 Inert Landfill	Reported concentrations greater than Category B1 criteria but less than IMS Hollywood Landfill acceptance criteria, as set out in their Waste Licence W0129-02. Results also found to be non-hazardous using the HWOL application.
Category C Non-Haz Landfill	Reported concentrations greater than Category B2 criteria but within non-haz landfill waste acceptance limits set out by the adopted EU Council Decision 2003/33/EC establishing criteria and procedures for the acceptance of waste at landfills pursuant to Article 16 and Annex II of Directive 1999/31/EC (2002). Results also found to be non-hazardous using the HWOL application.
Category C 1 Non-Haz Landfill	As Category C but containing < 0.001% w/w asbestos fibres.
Category C 2 Non-Haz Landfill	As Category C but containing >0.001% and <0.01% w/w asbestos fibres

[10] Free from equates to less than 2%.
[11] Total BTEX 0.05mg/kg, Mineral Oil 50mg/kg, Total PAHs 1mg/kg, Total PCBs 0.05mg/kg and Asbestos No Asbestos Detected – EPA Guidance on Waste Acceptance Criteria at Authorised Soil Recovery Facilities, 2020.
[12] HazWasteOnLine™ Tool.

Category C 3 Non-Haz Landfill	As Category C but containing >0.01% and <0.1% w/w asbestos fibres.
Category D Hazardous Treatment	Results found to be hazardous using HWOL Application.
Category D 1 Hazardous Disposal	Results found to be hazardous due to the presence of asbestos (>0.1%).

10.3. Final Waste Categorisation

All samples were assessed in terms of waste classification using the HazWasteOnLine™ tool and also the WAC set out in Council Decision 2003/33/EC and the IMS specific WAC to give a final waste categorisation to determine the most appropriate disposal route for any waste generated. The final and most applicable waste category for each sample is summarised in Table 7.

Table 7 Individual Sample Waste Category

Sample ID	Sample Depth (m)	Material Type	Waste Category	LoW Code
TP-05	0.50	Sand	Category A	17 05 04
TP-06	0.50	Clay	Category A	17 05 04
TP-10	0.50	Made Ground	Category A	17 05 04
TPI-101	0.50	Made Ground	Category A	17 05 04
TP-101	0.50	Made Ground	Category A	17 05 04
TP-104	0.50	Made Ground	Category A	17 05 04

11.0 Suitable for Use Assessment

GII assessed the soil data collected from the trial pits against the LQM/CIEH S4ULs for Human Health Risk Assessment (S4ULs)[13]. The S4ULs present soil assessment criteria for an extended range of 89 substances. For each substance, S4ULs have been derived for a range of generic land uses and Soil Organic Matter (%SOM) contents. All toxicological and physical-chemical inputs used in the derivation of the S4ULs are clearly identified and discussed. For each substance, S4ULs have been derived for six generic land uses (including the two Public Open Space land uses defined in C4SL guidance) and a range of Soil Organic Matter contents (organic contaminants only). All toxicological and physical-chemical data inputs used in the derivation of the S4ULs are presented and discussed in the publication. The proposed future use of the site is residential. In order to be conservative in terms of assessing any potential risk to future site users, the residential with homegrown produce S4UL criteria have been applied to the data. All samples were all within the residential without homegrown produce S4ULs. A full summary of the S4UL data is presented in Appendix 6.

[13] LQM/CIEH 'Suitable 4 Use Levels' (S4ULs). Copyright Land Quality Management Limited reproduced with permission; Publication Number S4UL3746. All rights reserved.

12.0 Conclusions & Recommendations

The conclusions and recommendations given and opinions expressed in this report are based on the findings of the site investigation works and laboratory testing undertaken. Where any opinion is expressed on the classification of material between site investigations locations, this is for guidance only and no liability can be accepted for its accuracy. No responsibility can be accepted for conditions which have not been revealed by the findings at the site investigation locations.

12.1. Conclusions

12.1.1. Waste Classification

Based on the results of the HazWasteOnLine™ tool the material sampled across the site can be classified as non-hazardous.

12.1.2. Waste Categories

The most applicable waste category for each of the samples has been presented in Table 3.

12.2. S4UL Assessment

The material analysed is suitable for retention on site post development.

12.2.1. Asbestos

Asbestos was **not** detected in the soil samples.

12.2.2. By-Product Suitability

The material sampled is suitable for removal from site as a by-product which will *not lead to overall adverse environmental or human health impacts*.

12.2.3. Groundwater

The analytical data from the four wells samples does not indicate contamination of concern of the underlying groundwater.

12.3. Recommendations

12.3.1. Waste Transfer

In the event that material is excavated for removal from site, any firm engaged to transport waste material from site and the operator of any waste facility that will accept subsoils excavated from this site should be furnished with, at a minimum, copies of the **full unabridged** laboratory reports and HazWasteOnLine™ report for all samples presented in this report.

The material on site if excavated should be removed to the most appropriate facility under the waste categories and LoW codes identified in Table 3. Potential outlets for the various waste categories are presented in Appendix 7, this list is not exhaustive and applicable at the time of the writing this report.

The non-hazardous material across the site if excavated should be removed from site to an appropriate facility under either the LoW codes 17 05 04 or 17 09 04. Where during excavation there is noted to be in excess of 2% anthropogenic material the appropriate LoW code which should be applied is 17 09 04.

12.3.2. Removal of Material as a By-Product

The material sampled is suitable from an environmental impact perspective for removal from site as a by-product in line with Article 27 of the European Communities (Waste Directive) Regulations 2011. The material may only be declared a by-product if all four by-product conditions are met.

a) further use of the soil and stone is certain;

b) the soil and stone can be used directly without any further processing other than normal industrial practice;

c) the soil and stone is produced as an integral part of a production process; and

d) further use is lawful in that the soil and stone fulfils all relevant requirements for the specific use and will not lead to overall adverse environmental or human health impacts.

13.0 References

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APPENDIX 1 - Figures

GROUND INVESTIGATIONS IRELAND
Geotechnical & Environmental

Ground Investigations Ireland Ltd.
Catherinstown House,
Hazelhatch Road,
Newcastle, Co. Dublin
www.gii.ie 01-6015175/5176

Client:

Project Title:
Hackettstown, Skerries

Drawing Title:
Figure 1 Site Location

GII Project Reference:
9225-11-19

0 50 100 150 m

Drawn By:
NM

Date:
20/04/2020

Legend

- Site Location
- Indicative Site Boundary

Indicative Site Boundary

Client:

Project Code:
9225-11-19

Project Title:
Hackettstown, Skerries

Drawing Title:
Figure 2 OSI 25 Inch Map

GROUND INVESTIGATIONS IRELAND
Geotechnical & Environmental
Ground Investigations Ireland Ltd.
Catherinstown House,
Hazelhatch Road,
Newcastle, Co. Dublin
www.gii.ie 01-6015175/5176

Drawn By:	Date:
NM	20/04/2020

Indicative Site Boundary

Client:

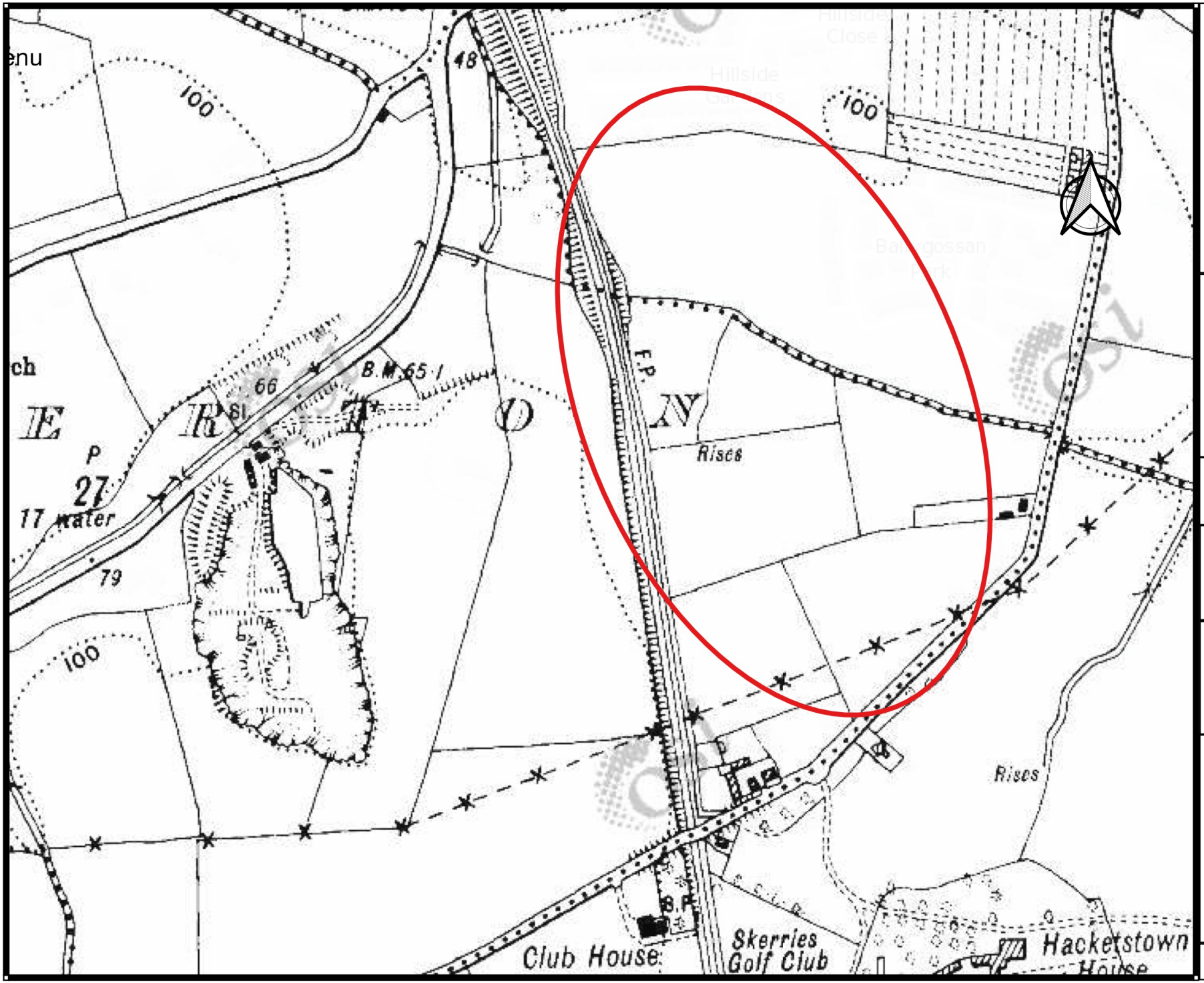
Project Code:
9225-11-19

Project Title:
Hackettstown, Skerries

Drawing Title:
Figure 3 OSI 6 Inch Map

GROUND INVESTIGATIONS IRELAND
Geotechnical & Environmental
Ground Investigations Ireland Ltd.
Catherinstown House,
Hazelhatch Road,
Newcastle, Co. Dublin
www.gii.ie 01-6015175/5176

Drawn By:	Date:
NM	20/04/2020



Client:

Project Code:
9225-11-19

Project Title:
Hackettstown, Skerries

Drawing Title:
Figure 4 OSI Cassini Map

GROUND INVESTIGATIONS IRELAND
Geotechnical & Environmental
Ground Investigations Ireland Ltd.
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Hazelhatch Road,
Newcastle, Co. Dublin
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Drawn By:	Date:
NM	20/04/2020

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Hazelhatch Road,
Newcastle, Co. Dublin
www.gii.ie 01-6015175/5176

Client:

0 20 40 60 m

Project Title:
Hackettstown

Drawing Title:
Figure 5 Trial Pit Locations

GII Project Reference:
9225-11-19

Drawn By:
BS

Date:
23/04/2020

Indicative Site Boundary

Trial Pit

APPENDIX 2 – Trial Pit Records

Ground Investigations Ireland Ltd
www.gii.ie

Site Hackettstown, Skerries			**Trial Pit Number** TP01
Machine : 8.5T Excavator **Method :** Trial Pit	**Dimensions** 1.0m x 2.5m x 3.40m	**Ground Level (mOD)** 24.45	**Client** DBFL	**Job Number** 9225-11-19
	Location (dGPS) 724937.8 E 758999.6 N	**Dates** 28/11/2019	**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 sandy slightly gravelly TOPSOIL.		
				24.25	0.20	Soft to firm orange brown slightly sandy slightly gravelly CLAY. Gravel is sub-angular to sub rounded fine to coarse. Sand is fine to coarse.		
0.70	B				(1.00)			
				23.25	1.20	Firm brown slightly sandy slightly gravelly CLAY with some cobbles and occasional boulders. (Band of clayey gravel at 1.5m-2.30m). Gravel is sub-angular to sub-rounded fine to coarse. Sand is fine to coarse.		
1.50	B		Water strike(1) at 1.50m.		(0.60)			▽1
				22.65	1.80	Firm to stiff brown slightly sandy slightly gravelly CLAY with some cobbles and occasional boulders. (Band of clayey gravel at 1.5m-2.30m). Gravel is sub-angular to sub-rounded fine to coarse. Sand is fine to coarse.		
					(0.50)			
				22.15	2.30	Firm to stiff reddish brown slightly sandy slightly gravelly silty CLAY with occasional cobbles and boulders. Gravel is sub-angular to sub-rounded fine to coarse. Sand is fine to coarse.		
2.70	B				(0.80)			
				21.35	3.10	Stiff reddish brown slightly sandy slightly gravelly CLAY with occasional cobbles and boulders. Gravel is sub-angular to sub-rounded fine to coarse. Sand is fine to coarse.		
					(0.30)			
				21.05	3.40	Complete at 3.40m		

Plan

Remarks

Trial pit side wall collapse from 0.5-3.0m
Trial pit complete at 3.40m due to collapse.
Trial pit backfilled on completion.
Groundwater seepage from 1.5-2.0m

Scale (approx)	Logged By	Figure No.
1:25	MS	9225-11-19.TP01

Ground Investigations Ireland Ltd
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Site Hackettstown, Skerries			**Trial Pit Number** TP02
Machine : 8.5T Excavator **Method :** Trial Pit	**Dimensions** 10m x 2.5m x 3.6m	**Ground Level (mOD)** 23.91	**Client** DBFL	**Job Number** 9225-11-19
	Location (dGPS) 724920.1 E 759057.4 N	**Dates** 28/11/2019	**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 slightly sandy TOPSOIL.		
				23.61	0.30			
0.50	B1				(0.70)	Soft to firm brown slightly sandy slightly gravelly CLAY with occasional sub-angular to sub-rounded cobbles. Gravel is sub-angular to sub-rounded, fine to coarse. Sand is fine to coarse.		
				22.91	1.00			
1.20	B2				(1.00)	Soft to frim brown slightly sandy slightly gravelly CLAY with occasional sub-angular to sub-rounded cobbles. Gravel is sub-angular to sub-rounded, fine to coarse. Sand is fine to coarse.		
				21.91	2.00			
					(0.50)	Firm reddish brown slightly sandy slightly gravelly CLAY with occasional sub-angular to sub-rounded cobbles. Gravel is sub-angular to sub-rounded, fine to coarse.		
				21.41	2.50			
2.80	B3				(1.10)	Stiff reddish brown slightly sandy slightly gravelly CLAY with occasional sub-angular to sub-rounded cobbles. Gravel is sub-angular to sub-rounded, fine to coarse.		
			Water strike(1) at 3.30m.					▽1
				20.31	3.60			
						Complete at 3.60m		

Plan

Remarks

Moderate water inflow from 3.30m.
Trial pit terminated due to collapse and water inflow.
Trial pit sidewall collapse from all sides.
Trial pit backfilled on completion.

Scale (approx)	Logged By	Figure No.
1:25	MS	9225-11-19.TP02

Ground Investigations Ireland Ltd
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Site Hackettstown, Skerries			**Trial Pit Number** TP03
Machine : 8.5T Excavator **Method :** Trial Pit	**Dimensions** 1m x 2.5m x 3.7m	**Ground Level (mOD)** 23.76	**Client** DBFL	**Job Number** 9225-11-19
	Location (dGPS) 724916.1 E 759098.7 N	**Dates** 28/11/2019	**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 sandy slightly gravelly TOPSOIL.		
				23.46	0.30			
0.50	B				(0.40)	Soft brown slightly sandy slightly gravelly silty CLAY. Gravel is sub-angular to sub-rounded fine to coarse. Sand is fine to coarse.		
				23.06	0.70			
1.00	B					Soft orangey brown slightly sandy slightly gravelly CLAY.Gravel is sub-angular to sub-rounded fine to coarse. Sand is fine to coarse.		
1.20	B				(1.30)			
2.00	B			21.76	2.00	Soft slightly gravelly sandy CLAY with occasional sub-angular to rounded cobbles. Gravel is sub-angular to rounded fine to coarse. Sand is fine to coarse.		
					(0.50)			
				21.26	2.50	Loose red brown very clayey gravelly fine to coarse SAND with occasional sub-angular to rounded cobbles. Gravel is sub-angular to rounded fine to coarse.		
3.00	B				(0.90)			
				20.36	3.40	Medium dense red brown very clayey gravelly fine to coarse SAND with occasional sub-angular to rounded cobbles. Gravel is sub-angular to rounded fine to coarse.		
					(0.30)			
				20.06	3.70	Complete at 3.70m		

Plan

Remarks

Trial pit side wall collapse.
Trial pit terminated due to collapse.
Trial pit backfilled on completion.
No groundwater encountered during excavation.

Scale (approx)	Logged By	Figure No.
1:25	MS	9225-11-19.TP03

Ground Investigations Ireland Ltd
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Site Hackettstown, Skerries			**Trial Pit Number** TP04
Machine : 8.5T Excavator **Method :** Trial Pit	**Dimensions** 1.0m x 2.5m x 3.30m	**Ground Level (mOD)** 23.11	**Client** DBFL	**Job Number** 9225-11-19
	Location (dGPS) 724923.6 E 759150.2 N	**Dates** 29/11/2019	**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)	TOPSOIL.		
				22.91	0.20	Soft brown sandy gravelly silty CLAY with occasional sub-angular to sub-rounded cobbles and occasional sandy lenses. Gravel is sub-angular to sub-rounded, fine to coarse. Sand is fine to coarse.		
0.50	B				(0.90)			
			Water strike(1) at 0.90m.					▽1
				22.01	1.10	Soft to firm brown sandy gravelly silty CLAY with occasional sub-angular to sub-rounded cobbles and occasional sandy lenses. Gravel is sub-angular to sub-rounded, fine to coarse. Sand is fine to coarse.		
1.50	B							
					(1.70)			
2.50	B							
				20.31	2.80	Firm to stiff brown sandy gravelly silty CLAY with occasional sub-angular to sub-rounded cobbles and occasional sandy lenses. Gravel is sub-angular to sub-rounded, fine to coarse. Sand is fine to coarse.		
					(0.50)			
			Water strike(2) at 3.30m.	19.81	3.30	Complete at 3.30m		▽2

Plan

Remarks

Groundwater encountered at 0.9m. Steady trickle.
Groundwater encountered at 3.30m.
Trial pit side wall collapse.
Trial pit terminated due to unstability.
Trial pit backfilled on completion.

Scale (approx)	Logged By	Figure No.
1:25	MMC	9225-11-19.TP04

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Site Hackettstown, Skerries			**Trial Pit Number** TP05
Machine : 8.5T Excavator **Method :** Trial Pit	**Dimensions** 1.0m x 2.5m x 3.5m	**Ground Level (mOD)** 24.89	**Client** DBFL	**Job Number** 9225-11-19
	Location (dGPS) 724969.3 E 759108.8 N	**Dates** 28/11/2019	**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)	Dark brown slightly sandy slightly gravelly TOPSOIL		
				24.49	0.40			
0.60	B				(0.90)	Loose reddish brown clayey gravelly fine to coarse SAND. Gravel is sub-angular to sub-rounded, fine to coarse.		
				23.59	1.30			
1.50	B				(0.90)	Firm to stiff brown slightly sandy slightly gravelly CLAY with occasional sub-angular to sub-rounded cobbles.Gravel is sub-angular to sub-rounded, fine to coarse. Sand is fine to coarse.		
				22.69	2.20			
2.50	B				(1.30)	Yellow brown clayey gravelly fine to coarse SAND with occasional sub-angular to sub-rounded cobbles. Gravel is sub-angular to sub-rounded fine to coarse. Sand is predominantly fine to medium.		
				21.39	3.50			
3.50	B					Complete at 3.50m		

Plan

Remarks

Trial pit terminated due to difficult excavation.
No groundwater encountered during excavation.
Trial pit stable.
Trial pit backfilled on completion.

Scale (approx)	Logged By	Figure No.
1:25	MS	9225-11-19.TP05

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Site Hackettstown, Skerries			**Trial Pit Number** TP06
Machine : 8.5T Excavator **Method :** Trial Pit	**Dimensions**	**Ground Level (mOD)** 24.90	**Client** DBFL	**Job Number** 9225-11-19
	Location (dGPS) 725007.9 E 758992.1 N	**Dates** 28/11/2019	**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 sandy slightly gravelly TOPSOIL.		
				24.70	0.20	Soft to firm brown slightly gravelly very sandy CLAY.Gravel is sub-angular to sub-rounded, fine to coarse. Sand is fine to coarse.		
0.50	B				(0.70)			
				24.00	0.90	Soft to firm slightly gravelly sandy CLAY with occasional sub-angular to sub-rounded cobbles and occasional lenses of yellow brown fine sand. Gravel is sub-angular to sub-rounded, fine to coarse.		▽1
			Water strike(1) at 1.00m.					
					(0.90)			
1.50	B		Water strike(2) at 1.50m.					▽2
				23.10	1.80	Firm slightly gravelly sandy CLAY with occasional sub-angular to sub-rounded cobbles and occasional lenses of yellow brown fine sand. Gravel is sub-angular to sub-rounded, fine to coarse.		
					(0.40)			
				22.70	2.20	Firm to Stiff slightly gravelly sandy CLAY with occasional sub-angular to sub-rounded cobbles and occasional lenses of yellow brown fine sand. Gravel is sub-angular to sub-rounded, fine to coarse.		
					(0.30)			
2.50	B			22.40	2.50	Complete at 2.50m		

Plan

Remarks

Moderate groundwater inflow from 1.0m and 1.5m.
Collapse from all sides of trial pit.
Trial pit terminated due to collapse.
Trial pit backfilled on completion.

Scale (approx)	Logged By	Figure No.
1:25	MS	9225-11-19.TP06

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Site Hackettstown, Skerries			**Trial Pit Number** TP07
Machine : 8.5T Excavator **Method :** Trial Pit	**Dimensions** 1.0m x 2.5m x 3.4m	**Ground Level (mOD)** 25.04	**Client** DBFL	**Job Number** 9225-11-19
	Location (dGPS) 725056.8 E 758992.8 N	**Dates** 28/11/2019	**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 sandy slightly gravelly TOPSOIL.		
				24.74	0.30			
0.50	B					Soft to firm orange brown slightly sandy slightly gravelly CLAY. Gravel is sub-angular to sub-rounded, fine to coarse. Sand is fine to coarse.		
					(1.20)			
1.20	B							
			Water strike(1) at 1.50m.	23.54	1.50			▽1
					(0.80)	Firm orange brown slightly sandy slightly gravelly CLAY. Gravel is sub-angular to sub-rounded, fine to coarse. Sand is fine to coarse.		
2.20	B							
				22.74	2.30			
					(0.70)	Stiff brown slightly sandy slightly gravelly CLAY with occasional sub-angular to sub-rounded cobbles and boulders. Gravel is sub-angular to sub-rounded, fine to coarse. Sand is fine to coarse.		
3.00	B			22.04	3.00			
					(0.40)	Very stiff brown slightly sandy slightly gravelly CLAY with occasional sub-angular to sub-rounded cobbles and boulders. Gravel is sub-angular to sub-rounded, fine to coarse.		
				21.64	3.40			
						Complete at 3.40m		

Plan

Remarks

Groundwater seepage from 1.5m to 2.6m from all faces.
Minor trial pit side wall collapse.
Trial pit terminated at 3.4m due to hard digging.

Scale (approx)	Logged By	Figure No.
1:25	MS	9225-11-19.TP07

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Site Hackettstown, Skerries			**Trial Pit Number** TP08
Machine : 8.5T Excavator **Method :** Trial Pit	**Dimensions** 1.0m x 2.5m x 4.0m	**Ground Level (mOD)** 23.42	**Client** DBFL	**Job Number** 9225-11-19
	Location (dGPS) 725105.6 E 759041.7 N	**Dates** 28/11/2019	**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
				23.32	(0.10) 0.10	TOPSOIL.		
						Soft brown slightly sandy slightly gravelly silty CLAY. Gravel is sub-angular to sub-rounded, fine to coarse. Sand is fine to coarse.		
				22.97	(0.35) 0.45			
0.50	B1					Soft to firm orange brown slightly sandy slightly gravelly CLAY with occasional sub-angular to sub-rounded cobbles. Gravel is sub-angular to sub-rounded fine to coarse.		
1.00	B2				(1.05)			
				21.92	1.50	Firm orange brown slightly sandy slightly gravelly CLAY with occasional sub-angular to sub-rounded cobbles. Gravel is sub-angular to sub-rounded fine to coarse.		
2.00	B3				(1.00)			
			Water strike(1) at 2.50m.	20.92	2.50	Firm to stiff orange brown sandy slightly gravelly CLAY with occasional sub-angular to sub-rounded cobbles. Gravel is sub-angular to sub-rounded fine to coarse.		▽1
					(0.40)			
				20.52	2.90	Stiff orange brown slightly sandy slightly gravelly CLAY with occasional sub-angular to sub-rounded cobbles and boulders. Gravel is sub-angular to sub-rounded, fine to coarse. Sand is fine to coarse.		
3.50	B4				(1.10)			
				19.42	4.00			

Plan

Remarks

Trial pit backfilled on completion.
Minor groudnwater seepage from 2.5m to 3.5m.
Minor trial pit side wall collapse from 2.5m to 3.5m.

Scale (approx)	Logged By	Figure No.
1:25	MS	9225-11-19.TP08

Ground Investigations Ireland Ltd
www.gii.ie

Site Hackettstown, Skerries			**Trial Pit Number** TP09
Machine : 8.5T Excavator **Method :** Trial Pit	**Dimensions** 1.0m x 2.5m x 2.7m	**Ground Level (mOD)** 21.94	**Client** DBFL	**Job Number** 9225-11-19
	Location (dGPS) 725089.1 E 759118.7 N	**Dates** 29/11/2019	**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 slightly sandy TOPSOIL.		
				21.74	0.20	Soft brown sandy gravelly silty CLAY with occasional sub-angular to sub-rounded cobbles. Gravels are sub-angular to sub-rounded, fine to coarse. Sand is fine to coarse.		
0.50	B							
					(2.30)			
1.50	B		Water strike(1) at 1.80m.					▽1
				19.44	2.50			
					(0.20)	Stiff brown sandy gravelly silty CLAY with occasional sub-angular to sub-rounded cobbles. Gravels are sub-angular to sub-rounded, fine to coarse. Sand is fine to coarse.		
				19.24	2.70	Complete at 2.70m		

Plan

Remarks

Groundwater encountered at 1.8m. High amount of water causing weakness and major sidewall collapse.
Trial pit terminated due to unstability.
Trial pit backfilled on completion.

Scale (approx)	Logged By	Figure No.
1:25	MMC	9225-11-19.TP09

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Site Hackettstown, Skerries			**Trial Pit Number** TP10
Machine : 8.5T Excavator **Method :** Trial Pit	**Dimensions**	**Ground Level (mOD)** 17.33	**Client** DBFL	**Job Number** 9225-11-19
	Location (dGPS) 725088.4 E 759191.9 N	**Dates** 29/11/2019	**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
				17.13	(0.20) 0.20	TOPSOIL.		
0.50	B				(0.80)	MADE GROUND: Brown sandy gravelly CLAY with some angular to sub-rounded cobbles. Fragments of red bricks. Gravel is sub-angular to sub-rounded, fine to coarse. Sand is fine to coarse.		
				16.33	1.00			
1.50	B				(1.10)	Firm to stiff brown slightly sandy gravelly silty CLAY with some sub-rounded cobbles and occasional sub-rounded boulders. Gravel is sub-angular to sub-rounded, fine to coarse. Sand is fine to coarse.		
				15.23	2.10			
2.50	B		Water strike(1) at 3.00m.		(1.10)	Stiff brown slightly sandy gravelly silty CLAY with some sub-rounded cobbles and occasional sub-rounded boulders. Gravel is sub-angular to sub-rounded, fine to coarse. Sand is fine to coarse.		▽1
				14.13	3.20			
3.50	B				(0.80)	Stiff dark brown/grey slightly sandy gravelly CLAY with some sub-rounded cobbles.Gravel is sub-angular to sub-rounded, fine to coarse.		
				13.33	4.00			

Plan

Remarks

Groundwater seepage encountered at 3.00m.
Trial pit stable.
Trial pit backfilled on completion.

Scale (approx)	Logged By	Figure No.
1:25	MMC	9225-11-19.TP10

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Site Hackettstown, Skerries			**Trial Pit Number** TP11
Machine : 8.5T Excavator **Method :** Trial Pit	**Dimensions**	**Ground Level (mOD)** 19.24	**Client** DBFL	**Job Number** 9225-11-19
	Location (dGPS) 725030.4 E 759208.9 N	**Dates** 29/11/2019	**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
				19.14	(0.10) 0.10	TOPSOIL with rootlets.		
0.50	B					Soft brown sandy gravelly silty CLAY with some angular to sub-angular cobbles. Gravels are sub-angular to sub-rounded fine to coarse. Sand is fine to coarse.		
			Water strike(1) at 1.00m.		(1.70)			▽1
1.50	B		Water strike(2) at 1.50m.					▽2
				17.44	1.80	Firm brown sandy gravelly silty CLAY with some angular to sub-angular cobbles. Gravels are sub-angular to sub-rounded fine to coarse. Sand is fine to coarse.		
					(0.70)			
2.50	B			16.74	2.50	Stiff brown sandy gravelly silty CLAY with some angular to sub-angular cobbles. Gravels are sub-angular to sub-rounded fine to coarse. Sand is fine to coarse.		
					(0.90)			
				15.84	3.40	Complete at 3.40m		

Plan

Remarks

Groundwater seepage encountered at 1.00m and at 1.50m.
Trial pit unstable.
Trial pit terminated due to unstability.
Trial pit backfilled on completion.

Scale (approx)	Logged By	Figure No.
1:25	MMC	9225-11-19.TP11

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Site Hackettstown, Skerries			**Trial Pit Number** TP12
Machine : 8.5T Excavator **Method :** Trial Pit	**Dimensions**	**Ground Level (mOD)** 16.16	**Client** DBFL	**Job Number** 9225-11-19
	Location 724994.3 E 759248.2 N	**Dates** 27/11/2019	**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 sandy slightly gravelly TOPSOIL.		
				15.96	0.20	Soft brown sandy gravelly silty CLAY. Gravel is sub-angular to sub-rounded, fine to coarse. Sand is fine to coarse.		
0.50	B				(0.60)			
				15.36	0.80	Loose greyish brown clayey slightly gravelly SAND.Gravel is sub-angular to sub-rounded, fine to coarse.		
1.00	B				(0.70)			▼1
			Water strike(1) at 1.50m, rose to 1.30m in 5 mins.	14.66	1.50	Complete at 1.50m		▽1

Plan

Remarks

Groundwater encountered at 1.5m. Water filled back to 1.3m BGL after 5min.
Trial pit terminated at 1.5m due to groundwater inflow.
Trial pit backfilled on completion.

Scale (approx)	Logged By	Figure No.
1:25	MMC	9225-11-19.TP12

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Site Hackettstown, Skerries			**Trial Pit Number** TP13
Machine : 8.5T Excavator **Method :** Trial Pit	**Dimensions** 1.0m x 2.5m x 2.6m	**Ground Level (mOD)** 19.43	**Client** DBFL	**Job Number** 9225-11-19
	Location (dGPS) 725035.4 E 759292.5 N	**Dates** 29/11/2019	**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
					(0.15)	MADE GROUND: Angular fine to coarse gravel.		
				19.28	0.15	MADE GROUND: Brown sandy very gravelly CLAY with many cobbles. Fragments of plastic present. Gravel is sub-angular to sub-rounded, fine to coarse.		
0.50	B				(0.65)			
				18.63	0.80	Medium dense brown slightly clayey gravelly SAND with some sub-rounded cobbles. Gravel is sub-angular to sub-rounded, fine to coarse.		
1.00	B							
					(1.80)			
				16.83	2.60	Complete at 2.60m		

Plan

Remarks

Trial pit stable.
Trial pit backfilled on completion.
No groundwater encountered duriing excavation.

Scale (approx)	Logged By	Figure No.
1:25	MMC	9225-11-19.TP13

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Site Hackettstown, Skerries			**Trial Pit Number** TPI14
Machine : 8.5T Excavator **Method :** Trial Pit	**Dimensions** 2.1m x 0.6m x 2.0m (L x W x D)	**Ground Level (mOD)** 25.54	**Client** DBFL	**Job Number** 9225-11-19
	Location 724983.3 E 759070.1 N	**Dates** 27/11/2019	**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
					(0.15)	TOPSOIL.		
				25.39	0.15	Soft brown sandy gravelly silty CLAY with occasional sub-angular to sub-rounded cobbles. Gravel is sub-angular to sub-rounded, fine to coarse. Sand is fine to coarse.		
0.50	B				(0.85)			
				24.54	1.00	Medium dense brown gravelly slightly clayey SAND with occasional sub-angular to sub-rounded cobbles and occasional sub-rounded boulders. Gravel is sub-angular to sub-rounded, fine to coarse. Sand is fine to coarse.		
1.50	B				(1.00)			
				23.54	2.00	Dense brown gravelly slightly clayey SAND with occasional sub-angular to sub-rounded cobbles and occasional sub-rounded boulders. Gravel is sub-angular to sub-rounded, fine to coarse. Sand is fine to coarse.		
					(0.60)			
				22.94	2.60	Brown slightly clayey gravelly SAND with occasional sub-angular to sub-rounded cobbles and occasional sub-rounded boulders. Gravel is sub-angular to sub-rounded, fine to coarse. Sand is fine to coarse.		
					(1.40)			
				21.54	4.00			

Plan

Remarks

No groundwater encountered during excavation.
Trial pit stable.
Soakaway test carried out in pit at 2.00m BGL.
Trial pit backfilled on completion.

Scale (approx)	Logged By	Figure No.
1:25	MMC	9225-11-19.TPI14

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Site Hackettstown, Skerries			**Trial Pit Number** TPI15
Machine : 8.5T Excavator **Method :** Trial Pit	**Dimensions** 2.5m x 0.5m x 2.0m (L x W x D)	**Ground Level (mOD)** 23.15	**Client** DBFL	**Job Number** 9225-11-19
	Location 725099.2 E 759083.8 N	**Dates** 27/11/2019	**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
				23.00	(0.15) 0.15	TOPSOIL.		
0.50	B				(1.65)	Soft brown sandy gravelly/silty CLAY with occasional angular to sub-angular cobbles.Gravel is sub-angular to sub-rounded, fine to coarse. Sand is fine to coarse.		
1.50	B			21.35	1.80			
					(0.30)	Firm to stiff brown sandy gravelly/silty CLAY with occasional angular to sub-angular cobbles.Gravel is sub-angular to sub-rounded, fine to coarse. Sand is fine to coarse.		
2.50	B			21.05	2.10			
					(0.90)	Stiff brown sandy gravelly silty CLAY with occasional angular to sub-angular cobbles. Gravel is sub-angular to sub-rounded, fine to coarse. Sand is fine to coarse.		
				20.15	3.00			
						Complete at 3.00m		

Plan

Remarks

No groundwater encountered during excavation.
Trial pit stable.
Soakaway test carried out in pit at 2.0mBGL
Trial pit terminated due to hard digging at 3m.

Scale (approx)	Logged By	Figure No.
1:25	MMC	9225-11-19.TPI15

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Site Hackettstown, Skerries			**Trial Pit Number** TPI16
Machine : 8.5T Excavator **Method :** Trial Pit	**Dimensions** 2.2m x 0.6m x 2.00m (L x W x D)	**Ground Level (mOD)** 24.06	**Client** DBFL	**Job Number** 9225-11-19
	Location (dGPS) 724961.1 E 759157.1 N	**Dates** 27/11/2019	**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
					(0.15)	TOPSOIL.		
				23.91	0.15	Soft brown sandy gravelly silty CLAY with occasional sub-angular to sub-rounded cobbles. Gravel is sub-angular to sub-rounded, fine to coarse. Sand is fine to coarse.		
0.50	B				(0.85)			
				23.06	1.00	Brown slightly clayey gravelly SAND with occasional sub-angular to sub-rounded cobbles. Gravel is sub-angular to sub-rounded, fine to coarse. Sand is fine to coarse.		
1.50	B				(1.10)			
				21.96	2.10	Brown very gravelly slightly clayey SAND with many sub-rounded cobbles.		
2.50	B				(1.90)			
3.50	B		Water strike(1) at 3.70m.					▽1
				20.06	4.00			

Plan

Remarks

Moderate groundwater encountered at 3.7m, moderate flow.
Trial Pit Stable.
Soakaway test carried out in pit at 2.0m
Trial Pit backfilled on completion.

Scale (approx)	Logged By	Figure No.
1:25	MMC	9225-11-19.TPI16

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Site Hackettstown, Skerries			**Trial Pit Number** TPI17
Machine : 8.5T Excavator **Method :** Trial Pit	**Dimensions**	**Ground Level (mOD)** 15.13	**Client** DBFL	**Job Number** 9225-11-19
	Location (dGPS) 725145 E 759187.4 N	**Dates** 27/11/2019	**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
					(0.15)	TOPSOIL		
				14.98	0.15	MADE GROUND: Brown sandy slightly gravelly silty clay. Fragments of bricks/clay pipe.		
0.50	B				(0.55)			
				14.43	0.70	Soft to firm grey mottled orange sandy slightly gravelly silty CLAY. Gravel is sub-angular to sub-rounded, fine to coarse.		
			Water strike(1) at 1.40m.		(1.00)			▽1
1.50	B							
				13.43	1.70	Brownish grey clayey sandy GRAVEL. Gravel is sub-angular to sub-rounded.		
					(0.40)			
2.00	B			13.03	2.10	Complete at 2.10m		

Plan

Remarks

Trial Pit terminated due to collapse in gravel with presence of water.
Pit filling with water - unsuitable for soakaway.
Groundwater encountered at 1.40m. Fast flow.

Scale (approx)	Logged By	Figure No.
1:25	MMC	9225-11-19.TPI17

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Site Hackettstown, Skerries			**Trial Pit Number** TPI17A
Machine : 8T 360 **Method :** Trial Pit	**Dimensions** 2.2m x 0.5m x 1.70m (L x W x D)	**Ground Level (mOD)** 15.74	**Client** DBFL	**Job Number** 9225-11-19
	Location (dGPS) 725147.5 E 759174.8 N	**Dates** 27/11/2019	**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
					(0.15)	TOPSOIL.		
				15.59	0.15	MADE GROUND: Brown sandy slightly gravelly silty CLAY. Fragments of rope and clay pipe.		
					(0.45)			
				15.14	0.60	Soft brown sandy slightly gravelly silty CLAY with occasional angular to sub-rounded cobbles. Gravel is sub-angular to sub-rounded, fine to coarse. Sand is fine to coarse.		
			Water strike(1) at 1.20m.		(1.10)			▽1
			Water strike(2) at 1.70m.	14.04	1.70	Complete at 1.70m		▽2

Plan

Remarks

Groundwater seepage encountered at 1.20m.
Moderate groundwater flow encountered at 1.70m.
Re dig of Trial Pit TPI17.
Soakaway test carried out in pit at 1.70m BGL
Trial pit backfilled on completion.
Trial pit stable.

Scale (approx)	Logged By	Figure No.
1:25	MMC	9225-11-19.TPI17A

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Site Hackettstown, Skerries			**Trial Pit Number** TPI18
Machine : 8.5T Excavator **Method :** Trial Pit	**Dimensions** 2.4m x 0.5m x 2.00m (L x W x D)	**Ground Level (mOD)** 16.10	**Client** DBFL	**Job Number** 9225-11-19
	Location (dGPS) 724942.5 E 759265.5 N	**Dates** 27/11/2019	**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)	TOPSOIL.		
				15.90	0.20	Soft brown sandy gravelly CLAY. Gravel is sub-angular to sub-rounded, fine to coarse.		
0.50	B				(0.50)			
				15.40	0.70	Soft to firm grey matt brown sandy silty CLAY with occasional sub-angular to sub-rounded cobbles. Gravel is sub-angular to sub-rounded, fine to coarse. Sand is fine to coarse.		▽1
			Water strike(1) at 1.00m.					
1.50	B				(1.30)			
				14.10	2.00	Complete at 2.00m		

Plan

Remarks

Groundwater seepage encountered at 1.00m.
Trial pit stable.
Soakway test carried out in pit at 2.0 mBGL
Trial pit backfilled on completion.

Scale (approx)	Logged By	Figure No.
1:25	MMC	9225-11-19.TPI18

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Site Hackettstown, Skerries			**Trial Pit Number** TP100
Machine : 8.5T Excavator **Method :** Trial Pit	**Dimensions** 2.80m X 1.05m X 3.60m	**Ground Level (mOD)** 22.95	**Client** DBFL	**Job Number** 9225-11-19
	Location (dGPS) 724845.8 E 759413.7 N	**Dates** 29/01/2020	**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
					(0.60)	MADE GROUND: Brown slightly clayey sandy angular to subangular fine to coarse Gravel with some angular cobbles and fragments of crushed tarmac present. Sand is fine to coarse		
0.50	B			22.35	0.60			
					(0.70)	Medium dense brown slightly gravelly fine to coarse SAND with occasional subrounded cobbles. Gravel is subrounded fine to coarse. (Possible Made Ground - Reworked?)		
1.50	B			21.65	1.30			
					(1.50)	Brown slightly gravelly fine to coarse SAND with occasional subrounded cobbles. Gravel is subrounded fine to coarse. (Possible Made Ground - Reworked?)		
2.50	B			20.15	2.80			
					(0.80)	Brown gravelly fine to coarse SAND. Gravel is subrounded fine to coarse		
3.50	B			19.35	3.60			
						Complete at 3.60m		

Plan

Remarks

No Groundwater encountered during excavation
Trial Pit Stable
Trial Pit backfilled on completion

Scale (approx)	Logged By	Figure No.
1:25	MMC	9225-11-19.TP100

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Site Hackettstown, Skerries			**Trial Pit Number** TP101
Machine : 8.5T Excavator **Method :** Trial Pit	**Dimensions** 3.80m X 1.05m X 3.00m	**Ground Level (mOD)** 16.08	**Client** DBFL	**Job Number** 9225-11-19
	Location (dGPS) 725199.4 E 759244.2 N	**Dates** 30/01/2020	**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
0.10	B			15.88	(0.20) 0.20	MADE GROUND: Grey sandy angular fine to coarse Gravel with Geotextile membrane underlying. Sand is fine to coarse		
0.50	B				(0.90)	MADE GROUND: Brown slightly sandy gravelly Clay with occasional subangular cobbles and fragments of bricks present. Sand is fine to coarse. Gravel is subangular fine to coarse		
1.50	B			14.98	1.10	Soft brown slightly sandy slightly gravelly silty CLAY. Sand is fine to coarse. Gravel is subrounded fine to coarse		
2.50	B			14.08	(0.90) 2.00	Soft brown slightly sandy gravelly CLAY with occasional subrounded cobbles. Sand is fine to coarse. Gravel is subrounded fine to coarse		
				13.08	(1.00) 3.00	Complete at 3.00m		

Plan

Remarks

No Groundwater encountered during excavation
Trial Pit stable
Terminated due to boulders
Trial Pit backfilled on completion

Scale (approx)	Logged By	Figure No.
1:25	MMC	9225-11-19.TP101

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Site Hackettstown, Skerries			**Trial Pit Number** TP102
Machine : 8.5T Excavator **Method :** Trial Pit	**Dimensions** 3.80m X 1.05m X 3.50m	**Ground Level (mOD)** 23.19	**Client** DBFL	**Job Number** 9225-11-19
	Location (dGPS) 724962.9 E 759422.9 N	**Dates** 29/01/2020	**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
				23.14	0.05	MADE GROUND: Grey angular fine to coarse Gravel		
					(0.40)	MADE GROUND: Brown slightly silty gravelly fine to coarse Sand with fragments of tarmac present. Gravel is subangular fine to coarse		
0.30	B			22.74	0.45	Firm grey slightly sandy gravelly CLAY. Sand is fine to coarse. Gravel is subangular fine to coarse		
					(0.65)			
1.00	B			22.09	1.10	Firm brown slightly sandy gravelly CLAY. Sand is fine to coarse. Gravel is subangular fine to coarse		
1.50	B				(0.70)			
				21.39	1.80	Medium dense brown slightly clayey gravelly fine to coarse SAND with occasional subrounded cobbles		
2.00	B				(1.70)			
3.50	B			19.69	3.50	Complete at 3.50m		

Plan

Remarks

No Groundwater encountered during excavation
Slight sidewall collapse in Sand strata
Hard digging in Clay strata
Trial Pit backfilled on completion

Scale (approx)	Logged By	Figure No.
1:25	MMC	9225-11-19.TP102

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Site Hackettstown, Skerries			**Trial Pit Number** TP103
Machine : 8.5T Excavator **Method :** Trial Pit	**Dimensions** 3.10m X 1.05m X 3.50m	**Ground Level (mOD)** 22.56	**Client** DBFL	**Job Number** 9225-11-19
	Location (dGPS) 724995.6 E 759375.1 N	**Dates** 30/01/2020	**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
					(0.20)	MADE GROUND: Brownish grey slightly sandy angular fine to coarse Gravel with Geotextile membrane underlying and fragments of conrete present. Sand is fine to coarse		
				22.36	0.20			
0.50	B					Brown gravelly fine to coarse SAND with occasional subrounded cobbles and lenses of brown sandy Clay present. Gravel is subangular fine to coarse		
					(1.70)			
1.50	B							
				20.66	1.90	Yellowish brown silty gravelly fine to coarse SAND. Gravel is subangular to subrounded fine to coarse		
2.50	B							
					(1.60)			
3.50	B			19.06	3.50	Complete at 3.50m		

Plan

Remarks

No Groundwater encountered during excavation
Trial Pit stable
Trail Pit backfilled on completion

Scale (approx)	Logged By	Figure No.
1:25	MMC	9225-11-19.TP103

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Site Hackettstown, Skerries			**Trial Pit Number** TP104
Machine : 8.5T Excavator **Method :** Trial Pit	**Dimensions** 2.90m X 1.05m X 2.70m	**Ground Level (mOD)** 20.88	**Client** DBFL	**Job Number** 9225-11-19
	Location (dGPS) 724994.1 E 759349.6 N	**Dates** 30/01/2020	**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
					(0.60)	MADE GROUND: Greyish brown slightly sandy clayey subangular fine to coarse Gravel with fragments of domestic refuse and plastic present. Sand is fine to coarse		
0.50	B			20.28	0.60			
					(1.00)	Firm brown slightly gravelly sandy CLAY. Gravel is subangular fine to coarse. Sand is fine to coarse (Possible Made Ground - Reworked?)		
1.50	B			19.28	1.60			
					(1.10)	Medium dense brownish grey slightly clayey gravelly fine to coarse SAND. Gravel is sub angular fine to coarse		
2.50	B		Water strike(1) at 2.70m.	18.18	2.70			▽1
						Complete at 2.70m		

Plan

Remarks

Groundwater seepage at 2.70m BGL - Fast flow
Pit collapsing in Sand strata
Terminated due to collapse
Trial Pit backfilled on completion

Scale (approx)	Logged By	Figure No.
1:25	MMC	9225-11-19.TP104

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Site Hackettstown, Skerries			**Trial Pit Number** TPI100
Machine : 8.5T Excavator **Method :** Trial Pit	**Dimensions** 2.00m X 0.40m X 2.30m	**Ground Level (mOD)** 21.29	**Client** DBFL	**Job Number** 9225-11-19
	Location (dGPS) 724901.9 E 759380.6 N	**Dates** 29/01/2020	**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
					(0.70)	MADE GROUND: Greyish brown slightly clayey sandy angular to subangular Gravel with occasional subangular cobbles and timber fragments. Sand is fine to coarse		
0.50	B			20.59	0.70			
					(1.00)	Firm brown slightly sandy gravelly CLAY with occasional subrounded cobbles and occasional subangular boulders. Sand is fine to coarse. Gravel is subangular fine to coarse		
1.50	B			19.59	1.70			
					(0.30)	Stiff brown slightly sandy gravelly CLAY with occasional subrounded cobbles and occasional subangular boulders. Sand is fine to coarse. Gravel is subangular fine to coarse		
				19.29	2.00			
					(0.30)	Dense brown slightly gravelly slightly silty fine to coarse SAND with occasional subrounded cobbles. Gravel is subrounded fine to coarse		
2.30	B			18.99	2.30	Complete at 2.30m		

Plan

Remarks

No Groundwater encountered during excavation
Trial Pit Stable
Soakaway Test carried out in Pit
Trial Pit backfilled on completion

Scale (approx)	Logged By	Figure No.
1:25	MMC	9225-11-19.TPI100

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Site Hackettstown, Skerries			**Trial Pit Number** TPI101
Machine : 8.5T Excavator **Method :** Trial Pit	**Dimensions** 2.10m X 0.40m X 2.50m	**Ground Level (mOD)** 21.29	**Client** DBFL	**Job Number** 9225-11-19
	Location (dGPS) 724901.9 E 759380.6 N	**Dates** 29/01/2020	**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	B				(1.00)	MADE GROUND: Brown slightly sandy gravelly Clay with some subangular cobbles and fragments of timber. Sand is fine to coarse. Gravel is subangular fine to coarse		
1.50	B			20.29	1.00	MADE GROUND: Greyish brown slightly silty gravelly fine to coarse Sand with occasional subrounded cobbles and occasional lenses of grey sandy Clay with fragments of red bricks and plastic. Gravel is subrounded fine to coarse		
2.00	B				(1.50)			
				18.79	2.50	Complete at 2.50m		

Plan

Remarks

No Groundwater encountered during excavation
Trial Pit Stable
Soakaway Test carried out in Pit
Trial Pit backfilled on completion

Scale (approx)	Logged By	Figure No.
1:25	MMC	9225-11-19.TPI101

Ground Investigations Ireland Ltd
www.gii.ie

Site Hackettstown, Skerries			**Trial Pit Number** TPI102
Machine : 8.5T Excavator **Method :** Trial Pit	**Dimensions** 3.00m X 1.05m X 2.50m	**Ground Level (mOD)** 19.20	**Client** DBFL	**Job Number** 9225-11-19
	Location (dGPS) 724999 E 759308.4 N	**Dates** 29/01/2020	**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	B				(1.00)	MADE GROUND: Greyish brown slightly silty sandy subangular fine to coarse Gravel with some subangular cobbles and fragments of rubbish and timber present. Sand is fine to coarse		
				18.20	1.00			
1.50	B				(0.80)	MADE GROUND: Brown slightly gravelly sandy Clay with fragments of timber present. Gravel is subangular fine to coarse. Sand is fine to coarse		
				17.40	1.80			
2.00	B				(0.70)	Brown slightly gravelly slightly clayey fine to coarse SAND with some subrounded cobbles. Gravel is subrounded fine to coarse		
				16.70	2.50			
						Complete at 2.50m		

Plan

Remarks

No Groundwater encountered during excavation
Trial Pit Stable
Soakaway Test carried out in Pit
Terminated due to hard digging
Trial Pit backfilled on completion

Scale (approx)	Logged By	Figure No.
1:25	MMC	9225-11-19.TPI102

APPENDIX 3 – Laboratory Testing

Element Materials Technology
Unit 3 Deeside Point
Zone 3
Deeside Industrial Park
Deeside
CH5 2UA

P: +44 (0) 1244 833780
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W: www.element.com

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

Attention :	Mike Sutton
Date :	16th December, 2019
Your reference :	9225-11-19
Our reference :	Test Report 19/19841 Batch 1
Location :	Hackettstown
Date samples received :	4th December, 2019
Status :	Final report
Issue :	1

Three samples were received for analysis on 4th December, 2019 of which three 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: 9225-11-19
Location: Hackettstown
Contact: Mike Sutton
EMT Job No: 19/19841

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								LOD/LOR	Units	Method No.
Sample ID	TP05	TP06	TP10										
Depth	0.50	0.50	0.50										
COC No / misc													
Containers	V J T	V J T	V J T										
Sample Date	29/11/2019	29/11/2019	29/11/2019										
Sample Type	Soil	Soil	Soil										
Batch Number	1	1	1										
Date of Receipt	04/12/2019	04/12/2019	04/12/2019										
Antimony	1	2	1								<1	mg/kg	TM30/PM15
Arsenic #	10.7	8.4	9.3								<0.5	mg/kg	TM30/PM15
Barium #	58	65	67								<1	mg/kg	TM30/PM15
Cadmium #	0.5	0.4	0.5								<0.1	mg/kg	TM30/PM15
Chromium #	53.4	63.6	64.5								<0.5	mg/kg	TM30/PM15
Copper #	20	14	15								<1	mg/kg	TM30/PM15
Lead #	10	15	10								<5	mg/kg	TM30/PM15
Mercury #	<0.1	<0.1	<0.1								<0.1	mg/kg	TM30/PM15
Molybdenum #	1.2	2.6	1.2								<0.1	mg/kg	TM30/PM15
Nickel #	45.1	27.9	39.1								<0.7	mg/kg	TM30/PM15
Selenium #	1	<1	<1								<1	mg/kg	TM30/PM15
Zinc #	53	53	47								<5	mg/kg	TM30/PM15
PAH MS													
Naphthalene #	<0.04	<0.04	<0.04								<0.04	mg/kg	TM4/PM8
Acenaphthylene	<0.03	<0.03	<0.03								<0.03	mg/kg	TM4/PM8
Acenaphthene #	<0.05	<0.05	<0.05								<0.05	mg/kg	TM4/PM8
Fluorene #	<0.04	<0.04	<0.04								<0.04	mg/kg	TM4/PM8
Phenanthrene #	<0.03	<0.03	<0.03								<0.03	mg/kg	TM4/PM8
Anthracene #	<0.04	<0.04	<0.04								<0.04	mg/kg	TM4/PM8
Fluoranthene #	<0.03	<0.03	<0.03								<0.03	mg/kg	TM4/PM8
Pyrene #	<0.03	<0.03	<0.03								<0.03	mg/kg	TM4/PM8
Benzo(a)anthracene #	<0.06	<0.06	<0.06								<0.06	mg/kg	TM4/PM8
Chrysene #	<0.02	<0.02	<0.02								<0.02	mg/kg	TM4/PM8
Benzo(bk)fluoranthene #	<0.07	<0.07	<0.07								<0.07	mg/kg	TM4/PM8
Benzo(a)pyrene #	<0.04	<0.04	<0.04								<0.04	mg/kg	TM4/PM8
Indeno(123cd)pyrene	<0.04	<0.04	<0.04								<0.04	mg/kg	TM4/PM8
Dibenzo(ah)anthracene #	<0.04	<0.04	<0.04								<0.04	mg/kg	TM4/PM8
Benzo(ghi)perylene #	<0.04	<0.04	<0.04								<0.04	mg/kg	TM4/PM8
Coronene	<0.04	<0.04	<0.04								<0.04	mg/kg	TM4/PM8
PAH 6 Total #	<0.22	<0.22	<0.22								<0.22	mg/kg	TM4/PM8
PAH 17 Total	<0.64	<0.64	<0.64								<0.64	mg/kg	TM4/PM8
Benzo(b)fluoranthene	<0.05	<0.05	<0.05								<0.05	mg/kg	TM4/PM8
Benzo(k)fluoranthene	<0.02	<0.02	<0.02								<0.02	mg/kg	TM4/PM8
Benzo(j)fluoranthene	<1	<1	<1								<1	mg/kg	TM4/PM8
PAH Surrogate % Recovery	97	98	92								<0	%	TM4/PM8
Mineral Oil (C10-C40)	<30	<30	<30								<30	mg/kg	TM5/PM8/PM16

Client Name: Ground Investigations Ireland
Reference: 9225-11-19
Location: Hackettstown
Contact: Mike Sutton
EMT Job No: 19/19841

Report : Solid

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

EMT Sample No.	1-3	4-6	7-9									
Sample ID	TP05	TP06	TP10									
Depth	0.50	0.50	0.50									
COC No / misc												
Containers	V J T	V J T	V J T									
Sample Date	29/11/2019	29/11/2019	29/11/2019									
Sample Type	Soil	Soil	Soil									
Batch Number	1	1	1									
Date of Receipt	04/12/2019	04/12/2019	04/12/2019									

Please see attached notes for all abbreviations and acronyms

											LOD/LOR	Units	Method No.
TPH CWG													
Aliphatics													
>C5-C6 #	<0.1	<0.1	<0.1								<0.1	mg/kg	TM36/PM12
>C6-C8 #	<0.1	<0.1	<0.1								<0.1	mg/kg	TM36/PM12
>C8-C10	<0.1	<0.1	<0.1								<0.1	mg/kg	TM36/PM12
>C10-C12 #	<0.2	<0.2	<0.2								<0.2	mg/kg	TM5/PM8/PM16
>C12-C16 #	<4	<4	<4								<4	mg/kg	TM5/PM8/PM16
>C16-C21 #	<7	<7	<7								<7	mg/kg	TM5/PM8/PM16
>C21-C35 #	<7	<7	<7								<7	mg/kg	TM5/PM8/PM16
>C35-C40	<7	<7	<7								<7	mg/kg	TM5/PM8/PM16
Total aliphatics C5-40	<26	<26	<26								<26	mg/kg	TM5/TM36/PM8/PM12/PM16
>C6-C10	<0.1	<0.1	<0.1								<0.1	mg/kg	TM36/PM12
>C10-C25	<10	<10	<10								<10	mg/kg	TM5/PM8/PM16
>C25-C35	<10	<10	<10								<10	mg/kg	TM5/PM8/PM16
Aromatics													
>C5-EC7 #	<0.1	<0.1	<0.1								<0.1	mg/kg	TM36/PM12
>EC7-EC8 #	<0.1	<0.1	<0.1								<0.1	mg/kg	TM36/PM12
>EC8-EC10 #	<0.1	<0.1	<0.1								<0.1	mg/kg	TM36/PM12
>EC10-EC12 #	<0.2	<0.2	<0.2								<0.2	mg/kg	TM5/PM8/PM16
>EC12-EC16 #	<4	<4	<4								<4	mg/kg	TM5/PM8/PM16
>EC16-EC21 #	<7	<7	<7								<7	mg/kg	TM5/PM8/PM16
>EC21-EC35 #	<7	<7	<7								<7	mg/kg	TM5/PM8/PM16
>EC35-EC40	<7	<7	<7								<7	mg/kg	TM5/PM8/PM16
Total aromatics C5-40	<26	<26	<26								<26	mg/kg	TM5/TM36/PM8/PM12/PM16
Total aliphatics and aromatics(C5-40)	<52	<52	<52								<52	mg/kg	TM5/TM36/PM8/PM12/PM16
>EC6-EC10 #	<0.1	<0.1	<0.1								<0.1	mg/kg	TM36/PM12
>EC10-EC25	<10	<10	<10								<10	mg/kg	TM5/PM8/PM16
>EC25-EC35	<10	<10	<10								<10	mg/kg	TM5/PM8/PM16
MTBE #	<5	<5	<5								<5	ug/kg	TM31/PM12
Benzene #	<5	<5	<5								<5	ug/kg	TM31/PM12
Toluene #	<5	<5	<5								<5	ug/kg	TM31/PM12
Ethylbenzene #	<5	<5	<5								<5	ug/kg	TM31/PM12
m/p-Xylene #	<5	<5	<5								<5	ug/kg	TM31/PM12
o-Xylene #	<5	<5	<5								<5	ug/kg	TM31/PM12
PCB 28 #	<5	<5	<5								<5	ug/kg	TM17/PM8
PCB 52 #	<5	<5	<5								<5	ug/kg	TM17/PM8
PCB 101 #	<5	<5	<5								<5	ug/kg	TM17/PM8
PCB 118 #	<5	<5	<5								<5	ug/kg	TM17/PM8
PCB 138 #	<5	<5	<5								<5	ug/kg	TM17/PM8
PCB 153 #	<5	<5	<5								<5	ug/kg	TM17/PM8
PCB 180 #	<5	<5	<5								<5	ug/kg	TM17/PM8
Total 7 PCBs #	<35	<35	<35								<35	ug/kg	TM17/PM8

Element Materials Technology

Client Name: Ground Investigations Ireland
Reference: 9225-11-19
Location: Hackettstown
Contact: Mike Sutton
EMT Job No: 19/19841

Report : Solid

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

EMT Sample No.	1-3	4-6	7-9									
Sample ID	TP05	TP06	TP10									
Depth	0.50	0.50	0.50									
COC No / misc												
Containers	V J T	V J T	V J T									
Sample Date	29/11/2019	29/11/2019	29/11/2019									
Sample Type	Soil	Soil	Soil									
Batch Number	1	1	1									
Date of Receipt	04/12/2019	04/12/2019	04/12/2019									

Please see attached notes for all abbreviations and acronyms

											LOD/LOR	Units	Method No.
Natural Moisture Content	10.5	14.7	11.8								<0.1	%	PM4/PM0
Moisture Content (% Wet Weight)	9.5	12.8	10.5								<0.1	%	PM4/PM0
Hexavalent Chromium #	<0.3	<0.3	<0.3								<0.3	mg/kg	TM38/PM20
Chromium III	53.4	63.6	64.5								<0.5	mg/kg	NONE/NONE
Total Organic Carbon #	0.18	1.75	0.25								<0.02	%	TM21/PM24
pH #	7.30	7.12	7.04								<0.01	pH units	TM73/PM11
Mass of raw test portion	0.1006	0.1154	0.1056									kg	NONE/PM17
Mass of dried test portion	0.09	0.09	0.09									kg	NONE/PM17

Client Name: Ground Investigations Ireland
Reference: 9225-11-19
Location: Hackettstown
Contact: Mike Sutton
EMT Job No: 19/19841

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									
Sample ID	TP05	TP06	TP10									
Depth	0.50	0.50	0.50									
COC No / misc												
Containers	V J T	V J T	V J T									
Sample Date	29/11/2019	29/11/2019	29/11/2019									
Sample Type	Soil	Soil	Soil									
Batch Number	1	1	1									
Date of Receipt	04/12/2019	04/12/2019	04/12/2019									

Please see attached notes for all abbreviations and acronyms

											LOD/LOR	Units	Method No.
Dissolved Antimony #	0.002	<0.002	<0.002								<0.002	mg/l	TM30/PM17
Dissolved Antimony (A10) #	<0.02	<0.02	<0.02								<0.02	mg/kg	TM30/PM17
Dissolved Arsenic #	<0.0025	<0.0025	<0.0025								<0.0025	mg/l	TM30/PM17
Dissolved Arsenic (A10) #	<0.025	<0.025	<0.025								<0.025	mg/kg	TM30/PM17
Dissolved Barium #	<0.003	<0.003	<0.003								<0.003	mg/l	TM30/PM17
Dissolved Barium (A10) #	<0.03	<0.03	<0.03								<0.03	mg/kg	TM30/PM17
Dissolved Cadmium #	<0.0005	<0.0005	<0.0005								<0.0005	mg/l	TM30/PM17
Dissolved Cadmium (A10) #	<0.005	<0.005	<0.005								<0.005	mg/kg	TM30/PM17
Dissolved Chromium #	<0.0015	<0.0015	<0.0015								<0.0015	mg/l	TM30/PM17
Dissolved Chromium (A10) #	<0.015	<0.015	<0.015								<0.015	mg/kg	TM30/PM17
Dissolved Copper #	<0.007	<0.007	<0.007								<0.007	mg/l	TM30/PM17
Dissolved Copper (A10) #	<0.07	<0.07	<0.07								<0.07	mg/kg	TM30/PM17
Dissolved Lead #	<0.005	<0.005	<0.005								<0.005	mg/l	TM30/PM17
Dissolved Lead (A10) #	<0.05	<0.05	<0.05								<0.05	mg/kg	TM30/PM17
Dissolved Molybdenum #	<0.002	<0.002	<0.002								<0.002	mg/l	TM30/PM17
Dissolved Molybdenum (A10) #	<0.02	<0.02	<0.02								<0.02	mg/kg	TM30/PM17
Dissolved Nickel #	<0.002	<0.002	<0.002								<0.002	mg/l	TM30/PM17
Dissolved Nickel (A10) #	<0.02	<0.02	<0.02								<0.02	mg/kg	TM30/PM17
Dissolved Selenium #	<0.003	<0.003	<0.003								<0.003	mg/l	TM30/PM17
Dissolved Selenium (A10) #	<0.03	<0.03	<0.03								<0.03	mg/kg	TM30/PM17
Dissolved Zinc #	0.004	0.005	0.004								<0.003	mg/l	TM30/PM17
Dissolved Zinc (A10) #	0.04	0.05	0.04								<0.03	mg/kg	TM30/PM17
Mercury Dissolved by CVAF #	0.00001	0.00002	<0.00001								<0.00001	mg/l	TM61/PM0
Mercury Dissolved by CVAF #	<0.0001	0.0002	<0.0001								<0.0001	mg/kg	TM61/PM0
Phenol	<0.01	<0.01	<0.01								<0.01	mg/l	TM26/PM0
Phenol	<0.1	<0.1	<0.1								<0.1	mg/kg	TM26/PM0
Fluoride	<0.3	<0.3	<0.3								<0.3	mg/l	TM173/PM0
Fluoride	<3	<3	<3								<3	mg/kg	TM173/PM0
Sulphate as SO4 #	0.7	<0.5	<0.5								<0.5	mg/l	TM38/PM0
Sulphate as SO4 #	7	<5	<5								<5	mg/kg	TM38/PM0
Chloride #	<0.3	<0.3	<0.3								<0.3	mg/l	TM38/PM0
Chloride #	<3	<3	<3								<3	mg/kg	TM38/PM0
Dissolved Organic Carbon	6	4	3								<2	mg/l	TM60/PM0
Dissolved Organic Carbon	60	40	30								<20	mg/kg	TM60/PM0
pH	6.89	7.08	6.97								<0.01	pH units	TM73/PM0
Total Dissolved Solids #	42	44	50								<35	mg/l	TM20/PM0
Total Dissolved Solids #	420	440	500								<350	mg/kg	TM20/PM0

Element Materials Technology

Client Name: Ground Investigations Ireland
Reference: 9225-11-19
Location: Hackettstown
Contact: Mike Sutton
EMT Job No: 19/19841

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													
Sample ID	TP05	TP06	TP10													
Depth	0.50	0.50	0.50													
COC No / misc																
Containers	V J T	V J T	V J T													
Sample Date	29/11/2019	29/11/2019	29/11/2019													
Sample Type	Soil	Soil	Soil													
Batch Number	1	1	1													
Date of Receipt	04/12/2019	04/12/2019	04/12/2019													
											Inert	Stable Non-reactive	Hazardous	LOD LOR	Units	Method No.
Solid Waste Analysis																
Total Organic Carbon #	0.18	1.75	0.25								3	5	6	<0.02	%	TM21/PM24
Sum of BTEX	<0.025	<0.025	<0.025								6	-	-	<0.025	mg/kg	TM31/PM12
Sum of 7 PCBs #	<0.035	<0.035	<0.035								1	-	-	<0.035	mg/kg	TM17/PM8
Mineral Oil	<30	<30	<30								500	-	-	<30	mg/kg	TM5/PM8/PM16
PAH Sum of 6 #	<0.22	<0.22	<0.22								-	-	-	<0.22	mg/kg	TM4/PM8
PAH Sum of 17	<0.64	<0.64	<0.64								100	-	-	<0.64	mg/kg	TM4/PM8
CEN 10:1 Leachate																
Arsenic #	<0.025	<0.025	<0.025								0.5	2	25	<0.025	mg/kg	TM30/PM17
Barium #	<0.03	<0.03	<0.03								20	100	300	<0.03	mg/kg	TM30/PM17
Cadmium #	<0.005	<0.005	<0.005								0.04	1	5	<0.005	mg/kg	TM30/PM17
Chromium #	<0.015	<0.015	<0.015								0.5	10	70	<0.015	mg/kg	TM30/PM17
Copper #	<0.07	<0.07	<0.07								2	50	100	<0.07	mg/kg	TM30/PM17
Mercury #	<0.0001	0.0002	<0.0001								0.01	0.2	2	<0.0001	mg/kg	TM61/PM0
Molybdenum #	<0.02	<0.02	<0.02								0.5	10	30	<0.02	mg/kg	TM30/PM17
Nickel #	<0.02	<0.02	<0.02								0.4	10	40	<0.02	mg/kg	TM30/PM17
Lead #	<0.05	<0.05	<0.05								0.5	10	50	<0.05	mg/kg	TM30/PM17
Antimony #	<0.02	<0.02	<0.02								0.06	0.7	5	<0.02	mg/kg	TM30/PM17
Selenium #	<0.03	<0.03	<0.03								0.1	0.5	7	<0.03	mg/kg	TM30/PM17
Zinc #	0.04	0.05	0.04								4	50	200	<0.03	mg/kg	TM30/PM17
Total Dissolved Solids #	420	440	500								4000	60000	100000	<350	mg/kg	TM20/PM0
Dissolved Organic Carbon	60	40	30								500	800	1000	<20	mg/kg	TM60/PM0
Mass of raw test portion	0.1006	0.1154	0.1056								-	-	-		kg	NONE/PM17
Dry Matter Content Ratio	89.4	77.9	85.1								-	-	-	<0.1	%	NONE/PM4
Leachant Volume	0.889	0.875	0.884								-	-	-		l	NONE/PM17
Eluate Volume	0.8	0.78	0.8								-	-	-		l	NONE/PM17
pH #	7.30	7.12	7.04								-	-	-	<0.01	pH units	TM73/PM11
Phenol	<0.1	<0.1	<0.1								1	-	-	<0.1	mg/kg	TM26/PM0
Fluoride	<3	<3	<3								-	-	-	<3	mg/kg	TM173/PM0
Sulphate as SO4 #	7	<5	<5								1000	20000	50000	<5	mg/kg	TM38/PM0
Chloride #	<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: 9225-11-19

Location: Hackettstown

Contact: Mike Sutton

Matrix : Solid

EMT Job No.	Batch	Sample ID	Depth	EMT Sample No.	EPH Interpretation
19/19841	1	TP05	0.50	1-3	No interpretation possible
19/19841	1	TP06	0.50	4-6	No interpretation possible
19/19841	1	TP10	0.50	7-9	No interpretation possible

Client Name: Ground Investigations Ireland
Reference: 19/11/9225
Location: Hackettstown
Contact: Mike Sutton

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
19/19841	1	TP05	0.50	2	05/12/2019	**General Description (Bulk Analysis)**	Soil/Stone
					05/12/2019	**Asbestos Fibres**	NAD
					05/12/2019	**Asbestos ACM**	NAD
					05/12/2019	**Asbestos Type**	NAD
					05/12/2019	**Asbestos Level Screen**	NAD
19/19841	1	TP06	0.50	5	05/12/2019	**General Description (Bulk Analysis)**	Soil/Stone
					05/12/2019	**Asbestos Fibres**	NAD
					05/12/2019	**Asbestos ACM**	NAD
					05/12/2019	**Asbestos Type**	NAD
					05/12/2019	**Asbestos Level Screen**	NAD
19/19841	1	TP10	0.50	8	05/12/2019	**General Description (Bulk Analysis)**	Soil/Stone
					05/12/2019	**Asbestos Fibres**	NAD
					05/12/2019	**Asbestos ACM**	NAD
					05/12/2019	**Asbestos Type**	NAD
					05/12/2019	**Asbestos Level Screen**	NAD

Client Name: Ground Investigations Ireland
Reference: 9225-11-19
Location: Hackettstown
Contact: Mike Sutton

EMT Job No.	Batch	Sample ID	Depth	EMT Sample No.	Analysis	Reason
No deviating sample report results for job 19/19841						

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.: 19/19841

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: 19/19841

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: 19/19841

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: 19/19841

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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Hazelhatch Road
Newcastle
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Ireland

Attention :	Mike Sutton
Date :	13th February, 2020
Your reference :	9225-11-19
Our reference :	Test Report 20/1623 Batch 1
Location :	Hackettstown
Date samples received :	3rd February, 2020
Status :	Final report
Issue :	1

Five samples were received for analysis on 3rd February, 2020 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:

Bruce Leslie
Project Manager

Element Materials Technology

Client Name: Ground Investigations Ireland
Reference: 9225-11-19
Location: Hackettstown
Contact: Mike Sutton
EMT Job No: 20/1623

Report : Solid

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

EMT Sample No.	1	2-4	5-7	8-10	11						LOD/LOR	Units	Method No.
Sample ID	TPI 100	TPI 101	TP 101	TP 104	TP 101								
Depth	1.50	0.50	0.50	0.50	1.50								
COC No / misc													
Containers	T	V J T	V J T	V J T	T								
Sample Date	29/01/2020	29/01/2020	30/01/2020	30/01/2020	30/01/2020								
Sample Type	Soil	Soil	Soil	Soil	Soil								
Batch Number	1	1	1	1	1								
Date of Receipt	03/02/2020	03/02/2020	03/02/2020	03/02/2020	03/02/2020								
Antimony	-	2	2	2	-						<1	mg/kg	TM30/PM15
Arsenic #	-	11.9	9.1	12.4	-						<0.5	mg/kg	TM30/PM15
Barium #	-	59	96	67	-						<1	mg/kg	TM30/PM15
Cadmium #	-	0.3	0.3	0.2	-						<0.1	mg/kg	TM30/PM15
Chromium #	-	83.7	92.9	82.1	-						<0.5	mg/kg	TM30/PM15
Copper #	-	22	19	26	-						<1	mg/kg	TM30/PM15
Lead #	-	12	12	18	-						<5	mg/kg	TM30/PM15
Mercury #	-	<0.1	<0.1	<0.1	-						<0.1	mg/kg	TM30/PM15
Molybdenum #	-	5.2	4.2	4.9	-						<0.1	mg/kg	TM30/PM15
Nickel #	-	42.8	38.3	37.4	-						<0.7	mg/kg	TM30/PM15
Selenium #	-	2	1	2	-						<1	mg/kg	TM30/PM15
Zinc #	-	57	62	57	-						<5	mg/kg	TM30/PM15
PAH MS													
Naphthalene #	-	<0.04	<0.04	<0.04	-						<0.04	mg/kg	TM4/PM8
Acenaphthylene	-	<0.03	<0.03	<0.03	-						<0.03	mg/kg	TM4/PM8
Acenaphthene #	-	<0.05	<0.05	<0.05	-						<0.05	mg/kg	TM4/PM8
Fluorene #	-	<0.04	<0.04	<0.04	-						<0.04	mg/kg	TM4/PM8
Phenanthrene #	-	0.08	<0.03	<0.03	-						<0.03	mg/kg	TM4/PM8
Anthracene #	-	<0.04	<0.04	<0.04	-						<0.04	mg/kg	TM4/PM8
Fluoranthene #	-	0.16	<0.03	<0.03	-						<0.03	mg/kg	TM4/PM8
Pyrene #	-	0.12	<0.03	<0.03	-						<0.03	mg/kg	TM4/PM8
Benzo(a)anthracene #	-	0.11	<0.06	<0.06	-						<0.06	mg/kg	TM4/PM8
Chrysene #	-	0.09	<0.02	<0.02	-						<0.02	mg/kg	TM4/PM8
Benzo(bk)fluoranthene #	-	0.10	<0.07	<0.07	-						<0.07	mg/kg	TM4/PM8
Benzo(a)pyrene #	-	<0.04	<0.04	<0.04	-						<0.04	mg/kg	TM4/PM8
Indeno(123cd)pyrene	-	<0.04	<0.04	<0.04	-						<0.04	mg/kg	TM4/PM8
Dibenzo(ah)anthracene #	-	<0.04	<0.04	<0.04	-						<0.04	mg/kg	TM4/PM8
Benzo(ghi)perylene #	-	<0.04	<0.04	<0.04	-						<0.04	mg/kg	TM4/PM8
Coronene	-	<0.04	<0.04	<0.04	-						<0.04	mg/kg	TM4/PM8
PAH 6 Total #	-	0.26	<0.22	<0.22	-						<0.22	mg/kg	TM4/PM8
PAH 17 Total	-	0.66	<0.64	<0.64	-						<0.64	mg/kg	TM4/PM8
Benzo(b)fluoranthene	-	0.07	<0.05	<0.05	-						<0.05	mg/kg	TM4/PM8
Benzo(k)fluoranthene	-	0.03	<0.02	<0.02	-						<0.02	mg/kg	TM4/PM8
Benzo(j)fluoranthene	-	<1	<1	<1	-						<1	mg/kg	TM4/PM8
PAH Surrogate % Recovery	-	108	99	99	-						<0	%	TM4/PM8
Mineral Oil (C10-C40)	-	<30	<30	<30	-						<30	mg/kg	TM5/PM8/PM16

Please see attached notes for all abbreviations and acronyms

Client Name: Ground Investigations Ireland
Reference: 9225-11-19
Location: Hackettstown
Contact: Mike Sutton
EMT Job No: 20/1623

Report : Solid

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

EMT Sample No.	1	2-4	5-7	8-10	11						LOD/LOR	Units	Method No.
Sample ID	TPI 100	TPI 101	TP 101	TP 104	TP 101								
Depth	1.50	0.50	0.50	0.50	1.50								
COC No / misc													
Containers	T	V J T	V J T	V J T	T								
Sample Date	29/01/2020	29/01/2020	30/01/2020	30/01/2020	30/01/2020								
Sample Type	Soil	Soil	Soil	Soil	Soil								
Batch Number	1	1	1	1	1								
Date of Receipt	03/02/2020	03/02/2020	03/02/2020	03/02/2020	03/02/2020								
TPH CWG													
Aliphatics													
>C5-C6 #	-	<0.1	<0.1	<0.1	-						<0.1	mg/kg	TM36/PM12
>C6-C8 #	-	<0.1	<0.1	<0.1	-						<0.1	mg/kg	TM36/PM12
>C8-C10	-	<0.1	<0.1	<0.1	-						<0.1	mg/kg	TM36/PM12
>C10-C12 #	-	<0.2	<0.2	<0.2	-						<0.2	mg/kg	TM5/PM8/PM16
>C12-C16 #	-	<4	<4	<4	-						<4	mg/kg	TM5/PM8/PM16
>C16-C21 #	-	<7	<7	<7	-						<7	mg/kg	TM5/PM8/PM16
>C21-C35 #	-	<7	<7	<7	-						<7	mg/kg	TM5/PM8/PM16
>C35-C40	-	<7	<7	<7	-						<7	mg/kg	TM5/PM8/PM16
Total aliphatics C5-40	-	<26	<26	<26	-						<26	mg/kg	TM5/TM36/PM8/PM12/PM16
>C6-C10	-	<0.1	<0.1	<0.1	-						<0.1	mg/kg	TM36/PM12
>C10-C25	-	<10	<10	<10	-						<10	mg/kg	TM5/PM8/PM16
>C25-C35	-	<10	<10	<10	-						<10	mg/kg	TM5/PM8/PM16
Aromatics													
>C5-EC7 #	-	<0.1	<0.1	<0.1	-						<0.1	mg/kg	TM36/PM12
>EC7-EC8 #	-	<0.1	<0.1	<0.1	-						<0.1	mg/kg	TM36/PM12
>EC8-EC10 #	-	<0.1	<0.1	<0.1	-						<0.1	mg/kg	TM36/PM12
>EC10-EC12 #	-	<0.2	<0.2	<0.2	-						<0.2	mg/kg	TM5/PM8/PM16
>EC12-EC16 #	-	<4	<4	<4	-						<4	mg/kg	TM5/PM8/PM16
>EC16-EC21 #	-	<7	<7	<7	-						<7	mg/kg	TM5/PM8/PM16
>EC21-EC35 #	-	<7	<7	<7	-						<7	mg/kg	TM5/PM8/PM16
>EC35-EC40	-	<7	<7	<7	-						<7	mg/kg	TM5/PM8/PM16
Total aromatics C5-40	-	<26	<26	<26	-						<26	mg/kg	TM5/TM36/PM8/PM12/PM16
Total aliphatics and aromatics(C5-40)	-	<52	<52	<52	-						<52	mg/kg	TM5/TM36/PM8/PM12/PM16
>EC6-EC10 #	-	<0.1	<0.1	<0.1	-						<0.1	mg/kg	TM36/PM12
>EC10-EC25	-	<10	<10	<10	-						<10	mg/kg	TM5/PM8/PM16
>EC25-EC35	-	<10	<10	<10	-						<10	mg/kg	TM5/PM8/PM16
MTBE #	-	<5	<5	<5	-						<5	ug/kg	TM31/PM12
Benzene #	-	<5	<5	<5	-						<5	ug/kg	TM31/PM12
Toluene #	-	<5	<5	<5	-						<5	ug/kg	TM31/PM12
Ethylbenzene #	-	<5	<5	<5	-						<5	ug/kg	TM31/PM12
m/p-Xylene #	-	<5	<5	<5	-						<5	ug/kg	TM31/PM12
o-Xylene #	-	<5	<5	<5	-						<5	ug/kg	TM31/PM12
PCB 28 #	-	<5	<5	<5	-						<5	ug/kg	TM17/PM8
PCB 52 #	-	<5	<5	<5	-						<5	ug/kg	TM17/PM8
PCB 101 #	-	<5	<5	<5	-						<5	ug/kg	TM17/PM8
PCB 118 #	-	<5	<5	<5	-						<5	ug/kg	TM17/PM8
PCB 138 #	-	<5	<5	<5	-						<5	ug/kg	TM17/PM8
PCB 153 #	-	<5	<5	<5	-						<5	ug/kg	TM17/PM8
PCB 180 #	-	<5	<5	<5	-						<5	ug/kg	TM17/PM8
Total 7 PCBs #	-	<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: 9225-11-19
Location: Hackettstown
Contact: Mike Sutton
EMT Job No: 20/1623

Report : Solid

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

EMT Sample No.	1	2-4	5-7	8-10	11						LOD/LOR	Units	Method No.
Sample ID	TPI 100	TPI 101	TP 101	TP 104	TP 101								
Depth	1.50	0.50	0.50	0.50	1.50								
COC No / misc													
Containers	T	V J T	V J T	V J T	T								
Sample Date	29/01/2020	29/01/2020	30/01/2020	30/01/2020	30/01/2020								
Sample Type	Soil	Soil	Soil	Soil	Soil								
Batch Number	1	1	1	1	1								
Date of Receipt	03/02/2020	03/02/2020	03/02/2020	03/02/2020	03/02/2020								
Natural Moisture Content	-	9.1	11.7	11.8	-						<0.1	%	PM4/PM0
Moisture Content (% Wet Weight)	-	8.3	10.5	10.6	-						<0.1	%	PM4/PM0
Hexavalent Chromium #	-	<0.3	<0.3	<0.3	-						<0.3	mg/kg	TM38/PM20
Sulphate as SO4 (2:1 Ext) #	0.0125	-	-	-	0.0148						<0.0015	g/l	TM38/PM20
Chromium III	-	83.7	92.9	82.1	-						<0.5	mg/kg	NONE/NONE
Total Organic Carbon #	-	0.18	0.27	0.30	-						<0.02	%	TM21/PM24
pH #	7.75	8.27	7.91	8.11	6.94						<0.01	pH units	TM73/PM11
Mass of raw test portion	-	0.1006	0.1042	0.1032	-							kg	NONE/PM17
Mass of dried test portion	-	0.09	0.09	0.09	-							kg	NONE/PM17

Please see attached notes for all abbreviations and acronyms

Client Name: Ground Investigations Ireland
Reference: 9225-11-19
Location: Hackettstown
Contact: Mike Sutton
EMT Job No: 20/1623

Report : CEN 10:1 1 Batch

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

EMT Sample No.	2-4	5-7	8-10								LOD/LOR	Units	Method No.
Sample ID	TPI 101	TP 101	TP 104										
Depth	0.50	0.50	0.50										
COC No / misc													
Containers	V J T	V J T	V J T										
Sample Date	29/01/2020	30/01/2020	30/01/2020										
Sample Type	Soil	Soil	Soil										
Batch Number	1	1	1										
Date of Receipt	03/02/2020	03/02/2020	03/02/2020										
Dissolved Antimony #	<0.002	<0.002	<0.002								<0.002	mg/l	TM30/PM17
Dissolved Antimony (A10) #	<0.02	<0.02	<0.02								<0.02	mg/kg	TM30/PM17
Dissolved Arsenic #	0.0040	0.0027	0.0033								<0.0025	mg/l	TM30/PM17
Dissolved Arsenic (A10) #	0.040	0.027	0.033								<0.025	mg/kg	TM30/PM17
Dissolved Barium #	<0.003	<0.003	0.003								<0.003	mg/l	TM30/PM17
Dissolved Barium (A10) #	<0.03	<0.03	0.03								<0.03	mg/kg	TM30/PM17
Dissolved Cadmium #	<0.0005	<0.0005	<0.0005								<0.0005	mg/l	TM30/PM17
Dissolved Cadmium (A10) #	<0.005	<0.005	<0.005								<0.005	mg/kg	TM30/PM17
Dissolved Chromium #	<0.0015	<0.0015	<0.0015								<0.0015	mg/l	TM30/PM17
Dissolved Chromium (A10) #	<0.015	<0.015	<0.015								<0.015	mg/kg	TM30/PM17
Dissolved Copper #	<0.007	<0.007	<0.007								<0.007	mg/l	TM30/PM17
Dissolved Copper (A10) #	<0.07	<0.07	<0.07								<0.07	mg/kg	TM30/PM17
Dissolved Lead #	<0.005	<0.005	<0.005								<0.005	mg/l	TM30/PM17
Dissolved Lead (A10) #	<0.05	<0.05	<0.05								<0.05	mg/kg	TM30/PM17
Dissolved Molybdenum #	<0.002	<0.002	<0.002								<0.002	mg/l	TM30/PM17
Dissolved Molybdenum (A10) #	<0.02	<0.02	<0.02								<0.02	mg/kg	TM30/PM17
Dissolved Nickel #	<0.002	<0.002	<0.002								<0.002	mg/l	TM30/PM17
Dissolved Nickel (A10) #	<0.02	<0.02	<0.02								<0.02	mg/kg	TM30/PM17
Dissolved Selenium #	<0.003	<0.003	<0.003								<0.003	mg/l	TM30/PM17
Dissolved Selenium (A10) #	<0.03	<0.03	<0.03								<0.03	mg/kg	TM30/PM17
Dissolved Zinc #	<0.003	0.004	<0.003								<0.003	mg/l	TM30/PM17
Dissolved Zinc (A10) #	<0.03	0.04	<0.03								<0.03	mg/kg	TM30/PM17
Mercury Dissolved by CVAF #	<0.00001	<0.00001	<0.00001								<0.00001	mg/l	TM61/PM0
Mercury Dissolved by CVAF #	<0.0001	<0.0001	<0.0001								<0.0001	mg/kg	TM61/PM0
Phenol	<0.01	<0.01	<0.01								<0.01	mg/l	TM26/PM0
Phenol	<0.1	<0.1	<0.1								<0.1	mg/kg	TM26/PM0
Fluoride	0.5	0.3	0.5								<0.3	mg/l	TM173/PM0
Fluoride	5	3	5								<3	mg/kg	TM173/PM0
Sulphate as SO4 #	4.2	0.6	6.7								<0.5	mg/l	TM38/PM0
Sulphate as SO4 #	42	6	67								<5	mg/kg	TM38/PM0
Chloride #	<0.3	<0.3	<0.3								<0.3	mg/l	TM38/PM0
Chloride #	<3	<3	<3								<3	mg/kg	TM38/PM0
Dissolved Organic Carbon	3	4	10								<2	mg/l	TM60/PM0
Dissolved Organic Carbon	30	40	100								<20	mg/kg	TM60/PM0
pH	8.18	8.03	8.04								<0.01	pH units	TM73/PM0
Total Dissolved Solids #	112	43	116								<35	mg/l	TM20/PM0
Total Dissolved Solids #	1120	430	1161								<350	mg/kg	TM20/PM0

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: 9225-11-19
Location: Hackettstown
Contact: Mike Sutton
EMT Job No: 20/1623

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.	2-4	5-7	8-10								Inert	Stable Non-reactive	Hazardous	LOD LOR	Units	Method No.
Sample ID	TPI 101	TP 101	TP 104													
Depth	0.50	0.50	0.50													
COC No / misc																
Containers	V J T	V J T	V J T													
Sample Date	29/01/2020	30/01/2020	30/01/2020													
Sample Type	Soil	Soil	Soil													
Batch Number	1	1	1													
Date of Receipt	03/02/2020	03/02/2020	03/02/2020													
Solid Waste Analysis																
Total Organic Carbon #	0.18	0.27	0.30								3	5	6	<0.02	%	TM21/PM24
Sum of BTEX	<0.025	<0.025	<0.025								6	-	-	<0.025	mg/kg	TM31/PM12
Sum of 7 PCBs #	<0.035	<0.035	<0.035								1	-	-	<0.035	mg/kg	TM17/PM8
Mineral Oil	<30	<30	<30								500	-	-	<30	mg/kg	TM5/PM8/PM16
PAH Sum of 6 #	0.26	<0.22	<0.22								-	-	-	<0.22	mg/kg	TM4/PM8
PAH Sum of 17	0.66	<0.64	<0.64								100	-	-	<0.64	mg/kg	TM4/PM8
CEN 10:1 Leachate																
Arsenic #	0.040	0.027	0.033								0.5	2	25	<0.025	mg/kg	TM30/PM17
Barium #	<0.03	<0.03	0.03								20	100	300	<0.03	mg/kg	TM30/PM17
Cadmium #	<0.005	<0.005	<0.005								0.04	1	5	<0.005	mg/kg	TM30/PM17
Chromium #	<0.015	<0.015	<0.015								0.5	10	70	<0.015	mg/kg	TM30/PM17
Copper #	<0.07	<0.07	<0.07								2	50	100	<0.07	mg/kg	TM30/PM17
Mercury #	<0.0001	<0.0001	<0.0001								0.01	0.2	2	<0.0001	mg/kg	TM61/PM0
Molybdenum #	<0.02	<0.02	<0.02								0.5	10	30	<0.02	mg/kg	TM30/PM17
Nickel #	<0.02	<0.02	<0.02								0.4	10	40	<0.02	mg/kg	TM30/PM17
Lead #	<0.05	<0.05	<0.05								0.5	10	50	<0.05	mg/kg	TM30/PM17
Antimony #	<0.02	<0.02	<0.02								0.06	0.7	5	<0.02	mg/kg	TM30/PM17
Selenium #	<0.03	<0.03	<0.03								0.1	0.5	7	<0.03	mg/kg	TM30/PM17
Zinc #	<0.03	0.04	<0.03								4	50	200	<0.03	mg/kg	TM30/PM17
Total Dissolved Solids #	1120	430	1161								4000	60000	100000	<350	mg/kg	TM20/PM0
Dissolved Organic Carbon	30	40	100								500	800	1000	<20	mg/kg	TM60/PM0
Mass of raw test portion	0.1006	0.1042	0.1032								-	-	-		kg	NONE/PM17
Dry Matter Content Ratio	89.2	86.4	87.0								-	-	-	<0.1	%	NONE/PM4
Leachant Volume	0.889	0.886	0.887								-	-	-		l	NONE/PM17
Eluate Volume	0.8	0.65	0.45								-	-	-		l	NONE/PM17
pH #	8.27	7.91	8.11								-	-	-	<0.01	pH units	TM73/PM11
Phenol	<0.1	<0.1	<0.1								1	-	-	<0.1	mg/kg	TM26/PM0
Fluoride	5	3	5								-	-	-	<3	mg/kg	TM173/PM0
Sulphate as SO4 #	42	6	67								1000	20000	50000	<5	mg/kg	TM38/PM0
Chloride #	<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: 9225-11-19

Location: Hackettstown

Contact: Mike Sutton

Matrix : Solid

EMT Job No.	Batch	Sample ID	Depth	EMT Sample No.	EPH Interpretation
20/1623	1	TPI 101	0.50	2-4	No interpretation possible
20/1623	1	TP 101	0.50	5-7	No interpretation possible
20/1623	1	TP 104	0.50	8-10	No interpretation possible

Client Name: Ground Investigations Ireland
Reference: 19/11/9225
Location: Hackettstown
Contact: Mike Sutton

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
20/1623	1	TPI 101	0.50	3	05/02/2020	**General Description (Bulk Analysis)**	soil.stones
					05/02/2020	**Asbestos Fibres**	NAD
					05/02/2020	**Asbestos ACM**	NAD
					05/02/2020	**Asbestos Type**	NAD
					05/02/2020	**Asbestos Level Screen**	NAD
20/1623	1	TP 101	0.50	6	05/02/2020	**General Description (Bulk Analysis)**	Soil/Stones
					05/02/2020	**Asbestos Fibres**	NAD
					05/02/2020	**Asbestos ACM**	NAD
					05/02/2020	**Asbestos Type**	NAD
					05/02/2020	**Asbestos Level Screen**	NAD
20/1623	1	TP 104	0.50	9	05/02/2020	**General Description (Bulk Analysis)**	soil-stones
					05/02/2020	**Asbestos Fibres**	NAD
					05/02/2020	**Asbestos ACM**	NAD
					05/02/2020	**Asbestos Type**	NAD
					05/02/2020	**Asbestos Level Screen**	NAD

Client Name: Ground Investigations Ireland
Reference: 9225-11-19
Location: Hackettstown
Contact: Mike Sutton

EMT Job No.	Batch	Sample ID	Depth	EMT Sample No.	Analysis	Reason
No deviating sample report results for job 20/1623						

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.: 20/1623

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: 20/1623

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: 20/1623

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: 20/1623

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: 20/1623

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 :	Mike Sutton
Date :	1st June, 2020
Your reference :	9225-11-19
Our reference :	Test Report 20/6499 Batch 1
Location :	Hackettstown, Skerries
Date samples received :	22nd May, 2020
Status :	Final report
Issue :	1

Four samples were received for analysis on 22nd May, 2020 of which four 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: 9225-11-19
Location: Hackettstown, Skerries
Contact: Mike Sutton
EMT Job No: 20/6499

Report : Liquid

Liquids/products: V=40ml vial, G=glass bottle, P=plastic bottle
$H=H_2SO_4$, Z=ZnAc, N=NaOH, HN=$HN0_3$

EMT Sample No.	1-8	9-16	17-24	25-32							LOD/LOR	Units	Method No.
Sample ID	BH07	BH101	BH103	RC09									
Depth													
COC No / misc													
Containers	V H HNUF HCL Z P G	V H HNUF HCL Z P G	V H HNUF HCL Z P G	V H HNUF HCL Z P G									
Sample Date	20/05/2020	20/05/2020	20/05/2020	20/05/2020									
Sample Type	Ground Water	Ground Water	Ground Water	Ground Water									
Batch Number	1	1	1	1									
Date of Receipt	22/05/2020	22/05/2020	22/05/2020	22/05/2020									
Dissolved Arsenic #	<2.5	2.7	<2.5	<2.5							<2.5	ug/l	TM30/PM14
Dissolved Boron	70	56	53	35							<12	ug/l	TM30/PM14
Dissolved Cadmium #	<0.5	<0.5	<0.5	<0.5							<0.5	ug/l	TM30/PM14
Total Dissolved Chromium #	<1.5	<1.5	<1.5	<1.5							<1.5	ug/l	TM30/PM14
Dissolved Copper #	<7	<7	<7	<7							<7	ug/l	TM30/PM14
Dissolved Lead #	<5	<5	<5	<5							<5	ug/l	TM30/PM14
Dissolved Magnesium #	12.5	17.7	17.7	17.6							<0.1	mg/l	TM30/PM14
Dissolved Manganese #	161	34	199	2							<2	ug/l	TM30/PM14
Dissolved Mercury #	<1	<1	<1	<1							<1	ug/l	TM30/PM14
Dissolved Nickel #	2	2	6	<2							<2	ug/l	TM30/PM14
Dissolved Potassium #	3.4	5.0	1.7	0.7							<0.1	mg/l	TM30/PM14
Dissolved Zinc #	<3	<3	<3	<3							<3	ug/l	TM30/PM14
PAH MS													
Naphthalene #	<0.1	<0.1	<0.1	<0.1							<0.1	ug/l	TM4/PM30
Acenaphthylene #	<0.013	<0.013	<0.013	<0.013							<0.013	ug/l	TM4/PM30
Acenaphthene #	<0.013	<0.013	<0.013	<0.013							<0.013	ug/l	TM4/PM30
Fluorene #	<0.014	<0.014	<0.014	<0.014							<0.014	ug/l	TM4/PM30
Phenanthrene #	<0.011	<0.011	<0.011	<0.011							<0.011	ug/l	TM4/PM30
Anthracene #	<0.013	<0.013	<0.013	<0.013							<0.013	ug/l	TM4/PM30
Fluoranthene #	<0.012	<0.012	0.012	<0.012							<0.012	ug/l	TM4/PM30
Pyrene #	0.030	<0.013	<0.013	<0.013							<0.013	ug/l	TM4/PM30
Benzo(a)anthracene #	<0.015	<0.015	<0.015	<0.015							<0.015	ug/l	TM4/PM30
Chrysene #	<0.011	<0.011	<0.011	<0.011							<0.011	ug/l	TM4/PM30
Benzo(bk)fluoranthene #	<0.018	<0.018	<0.018	<0.018							<0.018	ug/l	TM4/PM30
Benzo(a)pyrene #	<0.016	<0.016	<0.016	<0.016							<0.016	ug/l	TM4/PM30
Indeno(123cd)pyrene #	<0.011	<0.011	<0.011	<0.011							<0.011	ug/l	TM4/PM30
Dibenzo(ah)anthracene #	<0.01	<0.01	<0.01	<0.01							<0.01	ug/l	TM4/PM30
Benzo(ghi)perylene #	<0.011	<0.011	<0.011	<0.011							<0.011	ug/l	TM4/PM30
PAH 16 Total #	<0.195	<0.195	<0.195	<0.195							<0.195	ug/l	TM4/PM30
Benzo(b)fluoranthene	<0.01	<0.01	<0.01	<0.01							<0.01	ug/l	TM4/PM30
Benzo(k)fluoranthene	<0.01	<0.01	<0.01	<0.01							<0.01	ug/l	TM4/PM30
PAH Surrogate % Recovery	76	76	76	76							<0	%	TM4/PM30
MTBE #	<5	<5	<5	<5							<5	ug/l	TM36/PM12
Benzene #	<5	<5	<5	<5							<5	ug/l	TM36/PM12
Toluene #	<5	<5	<5	<5							<5	ug/l	TM36/PM12
Ethylbenzene #	<5	<5	<5	<5							<5	ug/l	TM36/PM12
m/p-Xylene #	<5	<5	<5	<5							<5	ug/l	TM36/PM12
o-Xylene #	<5	<5	<5	<5							<5	ug/l	TM36/PM12

Please see attached notes for all abbreviations and acronyms

Element Materials Technology

Client Name: Ground Investigations Ireland
Reference: 9225-11-19
Location: Hackettstown, Skerries
Contact: Mike Sutton
EMT Job No: 20/6499

Report : Liquid

Liquids/products: V=40ml vial, G=glass bottle, P=plastic bottle
H=H_2SO_4, Z=ZnAc, N=NaOH, HN=$HN0_3$

Please see attached notes for all abbreviations and acronyms

EMT Sample No.	1-8	9-16	17-24	25-32							LOD/LOR	Units	Method No.
Sample ID	BH07	BH101	BH103	RC09									
Depth													
COC No / misc													
Containers	V H HNUF HCL Z P G	V H HNUF HCL Z P G	V H HNUF HCL Z P G	V H HNUF HCL Z P G									
Sample Date	20/05/2020	20/05/2020	20/05/2020	20/05/2020									
Sample Type	Ground Water	Ground Water	Ground Water	Ground Water									
Batch Number	1	1	1	1									
Date of Receipt	22/05/2020	22/05/2020	22/05/2020	22/05/2020									
TPH CWG													
Aliphatics													
>C5-C6 #	<10	<10	<10	<10							<10	ug/l	TM36/PM12
>C6-C8 #	<10	<10	<10	<10							<10	ug/l	TM36/PM12
>C8-C10 #	<10	<10	<10	<10							<10	ug/l	TM36/PM12
>C10-C12 #	<5	<5	<5	<5							<5	ug/l	TM5/PM16/PM30
>C12-C16 #	<10	<10	<10	<10							<10	ug/l	TM5/PM16/PM30
>C16-C21 #	<10	<10	<10	<10							<10	ug/l	TM5/PM16/PM30
>C21-C35 #	<10	<10	<10	<10							<10	ug/l	TM5/PM16/PM30
Total aliphatics C5-35 #	<10	<10	<10	<10							<10	ug/l	TM5/TM36/PM12/PM16/PM30
Aromatics													
>C5-EC7 #	<10	<10	<10	<10							<10	ug/l	TM36/PM12
>EC7-EC8 #	<10	<10	<10	<10							<10	ug/l	TM36/PM12
>EC8-EC10 #	<10	<10	<10	<10							<10	ug/l	TM36/PM12
>EC10-EC12 #	<5	<5	<5	<5							<5	ug/l	TM5/PM16/PM30
>EC12-EC16 #	<10	<10	<10	<10							<10	ug/l	TM5/PM16/PM30
>EC16-EC21 #	<10	<10	<10	<10							<10	ug/l	TM5/PM16/PM30
>EC21-EC35 #	<10	<10	<10	<10							<10	ug/l	TM5/PM16/PM30
Total aromatics C5-35 #	<10	<10	<10	<10							<10	ug/l	TM5/TM36/PM12/PM16/PM30
Total aliphatics and aromatics(C5-35) #	<10	<10	<10	<10							<10	ug/l	TM5/TM36/PM12/PM16/PM30
Total Phenols HPLC	<0.15	<0.15	<0.15	<0.15							<0.15	mg/l	TM26/PM0
Sulphate as SO4 #	26.2	60.1	89.9	21.3							<0.5	mg/l	TM38/PM0
Chloride #	31.2	27.0	49.6	51.2							<0.3	mg/l	TM38/PM0
Nitrate as NO3 #	26.2	45.4	65.2	26.8							<0.2	mg/l	TM38/PM0
Total Cyanide #	<0.01	<0.01	<0.01	<0.01							<0.01	mg/l	TM89/PM0
Ammoniacal Nitrogen as NH3 #	<0.03	<0.03	0.13	<0.03							<0.03	mg/l	TM38/PM0
Ammoniacal Nitrogen as NH4 #	0.03	<0.03	0.14	<0.03							<0.03	mg/l	TM38/PM0
Carbonate Alkalinity as CaCO3	<1	<1	<1	<1							<1	mg/l	TM75/PM0
Electrical Conductivity @25C #	522	487	483	400							<2	uS/cm	TM76/PM0
pH #	7.64	7.82	7.79	7.63							<0.01	pH units	TM73/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: 9225-11-19
Location: Hackettstown, Skerries
Contact: Mike Sutton

EMT Job No.	Batch	Sample ID	Depth	EMT Sample No.	Analysis	Reason
No deviating sample report results for job 20/6499						

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.: 20/6499

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: 20/6499

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
TM4	Modified USEPA 8270D v5:2014 method for the solvent extraction and determination of PAHs by GC-MS.	PM30	Water samples are extracted with solvent using a magnetic stirrer to create a vortex.				
TM4	Modified USEPA 8270D v5:2014 method for the solvent extraction and determination of PAHs by GC-MS.	PM30	Water samples are extracted with solvent using a magnetic stirrer to create a vortex.	Yes			
TM5	Modified 8015B v2:1996 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/PM30	Fractionation into aliphatic and aromatic fractions using a Rapid Trace SPE/Water samples are extracted with solvent using a magnetic stirrer to create a vortex.	Yes			
TM5/TM36	please refer to TM5 and TM36 for method details	PM12/PM16/PM30	please refer to PM16/PM30 and PM12 for method details	Yes			
TM26	Determination of phenols by Reversed Phased High Performance Liquid Chromatography and Electro-Chemical Detection.	PM0	No preparation is required.				
TM30	Determination of Trace Metals by ICP-OES (Inductively Coupled Plasma – Optical Emission Spectrometry): WATERS by Modified USEPA Method 200.7, Rev. 4.4, 1994; Modified EPA Method 6010B, Rev.2, Dec 1996; Modified BS EN ISO 11885:2009: SOILS by Modified USEP	PM14	Preparation of waters and leachates for metals by ICP OES/ICP MS. Samples are filtered for Dissolved metals, and remain unfiltered for Total metals then acidified				
TM30	Determination of Trace Metals by ICP-OES (Inductively Coupled Plasma – Optical Emission Spectrometry): WATERS by Modified USEPA Method 200.7, Rev. 4.4, 1994; Modified EPA Method 6010B, Rev.2, Dec 1996; Modified BS EN ISO 11885:2009: SOILS by Modified USEP	PM14	Preparation of waters and leachates for metals by ICP OES/ICP MS. Samples are filtered for Dissolved metals, and remain unfiltered for Total metals then acidified	Yes			
TM36	Modified US EPA method 8015B v2:1996. 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 re	PM12	Modified US EPA method 5021A v2:2014. Preparation of solid and liquid samples for GC headspace analysis.	Yes			
TM38	Soluble Ion analysis using Discrete Analyser. Modified US EPA methods: Chloride 325.2 (1978), Sulphate 375.4 (Rev.2 1993), o-Phosphate 365.2 (Rev.2 1993), TON 353.1 (Rev.2 1993), Nitrite 354.1 (1971), Hex Cr 7196A (1992), NH4+ 350.1 (Rev.2 1993 (comparabl	PM0	No preparation is required.	Yes			
TM73	Modified US EPA methods 150.1 (1982) and 9045D Rev. 4 - 2004) and BS1377-3:1990. Determination of pH by Metrohm automated probe analyser.	PM0	No preparation is required.	Yes			

EMT Job No: 20/6499

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
TM75	Modified US EPA method 310.1 (1978). Determination of Alkalinity by Metrohm automated titration analyser.	PM0	No preparation is required.				
TM76	Modified US EPA method 120.1 (1982). Determination of Specific Conductance by Metrohm automated probe analyser.	PM0	No preparation is required.	Yes			
TM89	Modified USEPA method OIA-1667 (1999). Determination of cyanide by Flow Injection Analyser. Where WAD cyanides are required a Ligand displacement step is carried out before analysis.	PM0	No preparation is required.	Yes			

APPENDIX 4 – HazWasteOnLine™ Report

Waste Classification Report

KQRJM-M77KR-G6JX3

Job name

Hackettstown, Skerries

Description/Comments

Project

9225-11-19

Site

Hackettstown, Skerries

Related Documents

#	Name	Description
1	EMT-20-1623-Batch-1-File-1.hwol	.hwol file used to create the Job

Waste Stream Template

Example waste stream template for contaminated soils

Classified by

Name:
Nicholas Morgan
Date:
08 Apr 2020 09:30 GMT
Telephone:
(0)1 601 5175

Company:
Ground Investigations Ireland
Catherinestown House,
Hazelhatch Road, Newcastle
Co. Dublin

HazWasteOnline™ Training Record:

Course	Date
Hazardous Waste Classification	-
Advanced Hazardous Waste Classification	-

Report

Created by: Nicholas Morgan
Created date: 08 Apr 2020 09:30 GMT

Job summary

#	Sample Name	Depth [m]	Classification Result	Hazard properties	Page
1	TPI 100-29/01/2020-1.50m		Non Hazardous		2
2	TPI 101-29/01/2020-0.50m		Non Hazardous		3
3	TP 101-30/01/2020-0.50m		Non Hazardous		6
4	TP 104-30/01/2020-0.50m		Non Hazardous		9
5	TP 101-30/01/2020-1.50m		Non Hazardous		12

Classification of sample: TPI 100-29/01/2020-1.50m

Non Hazardous Waste
Classified as **17 05 04**
in the List of Waste

Sample details

Sample Name:
TPI 100-29/01/2020-1.50m

LoW Code:
Chapter: 17: Construction and Demolition Wastes (including excavated soil from contaminated sites)
Entry: 17 05 04 (Soil and stones other than those mentioned in 17 05 03)

Hazard properties

None identified

Determinands

Moisture content: 0% Wet Weight Moisture Correction applied (MC)

#		Determinand			CLP Note	User entered data	Conv. Factor	Compound conc.	Classification value	MC Applied	Conc. Not Used
		CLP index number	EC Number	CAS Number							
1	●	pH		PH		7.75 pH		7.75 pH	7.75 pH		
								Total:	0%		

Key

	User supplied data
●	Determinand defined or amended by HazWasteOnline (see Appendix A)

Classification of sample: TPI 101-29/01/2020-0.50m

Non Hazardous Waste
Classified as **17 05 04**
in the List of Waste

Sample details

Sample Name:
TPI 101-29/01/2020-0.50m
Moisture content:
8.3%
(wet weight correction)

LoW Code:
Chapter: 17: Construction and Demolition Wastes (including excavated soil from contaminated sites)
Entry: 17 05 04 (Soil and stones other than those mentioned in 17 05 03)

Hazard properties

None identified

Determinands

Moisture content: 8.3% Wet Weight Moisture Correction applied (MC)

#	Determinand	CLP Note	User entered data	Conv. Factor	Compound conc.	Classification value	MC Applied	Conc. Not Used
	CLP index number / EC Number / CAS Number							
1	antimony { antimony trioxide } 051-005-00-X / 215-175-0 / 1309-64-4		2 mg/kg	1.197	2.195 mg/kg	0.00022 %	✓	
2	arsenic { arsenic trioxide } 033-003-00-0 / 215-481-4 / 1327-53-3		11.9 mg/kg	1.32	14.408 mg/kg	0.00144 %	✓	
3	cadmium { cadmium oxide } 048-002-00-0 / 215-146-2 / 1306-19-0		0.3 mg/kg	1.142	0.314 mg/kg	0.0000314 %	✓	
4	chromium in chromium(III) compounds { chromium(III) oxide } 215-160-9 / 1308-38-9		83.7 mg/kg	1.462	112.179 mg/kg	0.0112 %	✓	
5	chromium in chromium(VI) compounds { chromium(VI) oxide } 024-001-00-0 / 215-607-8 / 1333-82-0		<0.3 mg/kg	1.923	<0.577 mg/kg	<0.0000577 %		<**LOD**
6	copper { dicopper oxide; copper (I) oxide } 029-002-00-X / 215-270-7 / 1317-39-1		22 mg/kg	1.126	22.714 mg/kg	0.00227 %	✓	
7	lead { lead chromate } 082-004-00-2 / 231-846-0 / 7758-97-6	1	12 mg/kg	1.56	17.164 mg/kg	0.0011 %	✓	
8	mercury { mercury dichloride } 080-010-00-X / 231-299-8 / 7487-94-7		<0.1 mg/kg	1.353	<0.135 mg/kg	<0.0000135 %		<**LOD**
9	molybdenum { molybdenum(VI) oxide } 042-001-00-9 / 215-204-7 / 1313-27-5		5.2 mg/kg	1.5	7.154 mg/kg	0.000715 %	✓	
10	nickel { nickel chromate } 028-035-00-7 / 238-766-5 / 14721-18-7		42.8 mg/kg	2.976	116.811 mg/kg	0.0117 %	✓	
11	selenium { selenium compounds with the exception of cadmium sulphoselenide and those specified elsewhere in this Annex } 034-002-00-8		2 mg/kg	2.554	4.683 mg/kg	0.000468 %	✓	
12	zinc { zinc chromate } 024-007-00-3		57 mg/kg	2.774	145.002 mg/kg	0.0145 %	✓	
13	TPH (C6 to C40) petroleum group TPH		<52 mg/kg		<52 mg/kg	<0.0052 %		<**LOD**
14	tert-butyl methyl ether; MTBE; 2-methoxy-2-methylpropane 603-181-00-X / 216-653-1 / 1634-04-4		<0.005 mg/kg		<0.005 mg/kg	<0.0000005 %		<**LOD**

#		Determinand	CLP index number	EC Number	CAS Number	CLP Note	User entered data		Conv. Factor	Compound conc.		Classification value	MC Applied	Conc. Not Used
15		benzene	601-020-00-8	200-753-7	71-43-2		<0.005	mg/kg		<0.005	mg/kg	<0.0000005 %		<**LOD**
16		toluene	601-021-00-3	203-625-9	108-88-3		<0.005	mg/kg		<0.005	mg/kg	<0.0000005 %		<**LOD**
17		ethylbenzene	601-023-00-4	202-849-4	100-41-4		<0.005	mg/kg		<0.005	mg/kg	<0.0000005 %		<**LOD**
18		xylene	601-022-00-9	202-422-2 [1] 203-396-5 [2] 203-576-3 [3] 215-535-7 [4]	95-47-6 [1] 106-42-3 [2] 108-38-3 [3] 1330-20-7 [4]		<0.01	mg/kg		<0.01	mg/kg	<0.000001 %		<**LOD**
19		pH			PH		8.27	pH		8.27	pH	8.27 pH		
20		naphthalene	601-052-00-2	202-049-5	91-20-3		<0.04	mg/kg		<0.04	mg/kg	<0.000004 %		<**LOD**
21		acenaphthylene		205-917-1	208-96-8		<0.03	mg/kg		<0.03	mg/kg	<0.000003 %		<**LOD**
22		acenaphthene		201-469-6	83-32-9		<0.05	mg/kg		<0.05	mg/kg	<0.000005 %		<**LOD**
23		fluorene		201-695-5	86-73-7		<0.04	mg/kg		<0.04	mg/kg	<0.000004 %		<**LOD**
24		phenanthrene		201-581-5	85-01-8		0.08	mg/kg		0.0734	mg/kg	0.00000734 %	✓	
25		anthracene		204-371-1	120-12-7		<0.04	mg/kg		<0.04	mg/kg	<0.000004 %		<**LOD**
26		fluoranthene		205-912-4	206-44-0		0.16	mg/kg		0.147	mg/kg	0.0000147 %	✓	
27		pyrene		204-927-3	129-00-0		0.12	mg/kg		0.11	mg/kg	0.000011 %	✓	
28		benzo[a]anthracene	601-033-00-9	200-280-6	56-55-3		0.11	mg/kg		0.101	mg/kg	0.0000101 %	✓	
29		chrysene	601-048-00-0	205-923-4	218-01-9		0.09	mg/kg		0.0825	mg/kg	0.00000825 %	✓	
30		benzo[b]fluoranthene	601-034-00-4	205-911-9	205-99-2		0.07	mg/kg		0.0642	mg/kg	0.00000642 %	✓	
31		benzo[k]fluoranthene	601-036-00-5	205-916-6	207-08-9		0.03	mg/kg		0.0275	mg/kg	0.00000275 %	✓	
32		benzo[a]pyrene; benzo[def]chrysene	601-032-00-3	200-028-5	50-32-8		<0.04	mg/kg		<0.04	mg/kg	<0.000004 %		<**LOD**
33		indeno[123-cd]pyrene		205-893-2	193-39-5		<0.04	mg/kg		<0.04	mg/kg	<0.000004 %		<**LOD**
34		dibenz[a,h]anthracene	601-041-00-2	200-181-8	53-70-3		<0.04	mg/kg		<0.04	mg/kg	<0.000004 %		<**LOD**
35		benzo[ghi]perylene		205-883-8	191-24-2		<0.04	mg/kg		<0.04	mg/kg	<0.000004 %		<**LOD**
36		polychlorobiphenyls; PCB	602-039-00-4	215-648-1	1336-36-3		<0.035	mg/kg		<0.035	mg/kg	<0.0000035 %		<**LOD**
37		barium { barium oxide }		215-127-9	1304-28-5		59	mg/kg	1.117	60.406	mg/kg	0.00604 %	✓	
38		coronene		205-881-7	191-07-1		<0.04	mg/kg		<0.04	mg/kg	<0.000004 %		<**LOD**
39		benzo[j]fluoranthene	601-035-00-X	205-910-3	205-82-3		<1	mg/kg		<1	mg/kg	<0.0001 %		<**LOD**
											Total:	0.0552 %		

Key

	User supplied data
	Determinand values ignored for classification, see column 'Conc. Not Used' for reason
	Determinand defined or amended by HazWasteOnline (see Appendix A)
	Speciated Deteminand - Unless the Determinand is Note 1, the Conversion Factor is used to calculate the compound concentration
<LOD	Below limit of detection
ND	Not detected
CLP: Note 1	Only the metal concentration has been used for classification

Classification of sample: TP 101-30/01/2020-0.50m

Non Hazardous Waste
Classified as **17 05 04**
in the List of Waste

Sample details

Sample Name:
TP 101-30/01/2020-0.50m
Moisture content:
10.5%
(wet weight correction)

LoW Code:
Chapter: 17: Construction and Demolition Wastes (including excavated soil from contaminated sites)
Entry: 17 05 04 (Soil and stones other than those mentioned in 17 05 03)

Hazard properties

None identified

Determinands

Moisture content: 10.5% Wet Weight Moisture Correction applied (MC)

#	Determinand	CLP index number	EC Number	CAS Number	CLP Note	User entered data	Conv. Factor	Compound conc.	Classification value	MC Applied	Conc. Not Used
1	antimony { antimony trioxide }	051-005-00-X	215-175-0	1309-64-4		2 mg/kg	1.197	2.143 mg/kg	0.000214 %	✓	
2	arsenic { arsenic trioxide }	033-003-00-0	215-481-4	1327-53-3		9.1 mg/kg	1.32	10.753 mg/kg	0.00108 %	✓	
3	cadmium { cadmium oxide }	048-002-00-0	215-146-2	1306-19-0		0.3 mg/kg	1.142	0.307 mg/kg	0.0000307 %	✓	
4	chromium in chromium(III) compounds { chromium(III) oxide }		215-160-9	1308-38-9		92.9 mg/kg	1.462	121.522 mg/kg	0.0122 %	✓	
5	chromium in chromium(VI) compounds { chromium(VI) oxide }	024-001-00-0	215-607-8	1333-82-0		<0.3 mg/kg	1.923	<0.577 mg/kg	<0.0000577 %		<**LOD**
6	copper { dicopper oxide; copper (I) oxide }	029-002-00-X	215-270-7	1317-39-1		19 mg/kg	1.126	19.146 mg/kg	0.00191 %	✓	
7	lead { lead chromate }	082-004-00-2	231-846-0	7758-97-6	1	12 mg/kg	1.56	16.752 mg/kg	0.00107 %	✓	
8	mercury { mercury dichloride }	080-010-00-X	231-299-8	7487-94-7		<0.1 mg/kg	1.353	<0.135 mg/kg	<0.0000135 %		<**LOD**
9	molybdenum { molybdenum(VI) oxide }	042-001-00-9	215-204-7	1313-27-5		4.2 mg/kg	1.5	5.639 mg/kg	0.000564 %	✓	
10	nickel { nickel chromate }	028-035-00-7	238-766-5	14721-18-7		38.3 mg/kg	2.976	102.022 mg/kg	0.0102 %	✓	
11	selenium { selenium compounds with the exception of cadmium sulphoselenide and those specified elsewhere in this Annex }	034-002-00-8				1 mg/kg	2.554	2.285 mg/kg	0.000229 %	✓	
12	zinc { zinc chromate }	024-007-00-3				62 mg/kg	2.774	153.937 mg/kg	0.0154 %	✓	
13	TPH (C6 to C40) petroleum group			TPH		<52 mg/kg		<52 mg/kg	<0.0052 %		<**LOD**
14	tert-butyl methyl ether; MTBE; 2-methoxy-2-methylpropane	603-181-00-X	216-653-1	1634-04-4		<0.005 mg/kg		<0.005 mg/kg	<0.0000005 %		<**LOD**

#		Determinand			CLP Note	User entered data		Conv. Factor	Compound conc.		Classification value	MC Applied	Conc. Not Used
		CLP index number	EC Number	CAS Number									
15		benzene				<0.005	mg/kg		<0.005	mg/kg	<0.0000005 %		<LOD
		601-020-00-8	200-753-7	71-43-2									
16		toluene				<0.005	mg/kg		<0.005	mg/kg	<0.0000005 %		<LOD
		601-021-00-3	203-625-9	108-88-3									
17		ethylbenzene				<0.005	mg/kg		<0.005	mg/kg	<0.0000005 %		<LOD
		601-023-00-4	202-849-4	100-41-4									
18		xylene				<0.01	mg/kg		<0.01	mg/kg	<0.000001 %		<LOD
		601-022-00-9	202-422-2 [1] 203-396-5 [2] 203-576-3 [3] 215-535-7 [4]	95-47-6 [1] 106-42-3 [2] 108-38-3 [3] 1330-20-7 [4]									
19		pH				7.91	pH		7.91	pH	7.91 pH		
				PH									
20		naphthalene				<0.04	mg/kg		<0.04	mg/kg	<0.000004 %		<LOD
		601-052-00-2	202-049-5	91-20-3									
21		acenaphthylene				<0.03	mg/kg		<0.03	mg/kg	<0.000003 %		<LOD
			205-917-1	208-96-8									
22		acenaphthene				<0.05	mg/kg		<0.05	mg/kg	<0.000005 %		<LOD
			201-469-6	83-32-9									
23		fluorene				<0.04	mg/kg		<0.04	mg/kg	<0.000004 %		<LOD
			201-695-5	86-73-7									
24		phenanthrene				<0.03	mg/kg		<0.03	mg/kg	<0.000003 %		<LOD
			201-581-5	85-01-8									
25		anthracene				<0.04	mg/kg		<0.04	mg/kg	<0.000004 %		<LOD
			204-371-1	120-12-7									
26		fluoranthene				<0.03	mg/kg		<0.03	mg/kg	<0.000003 %		<LOD
			205-912-4	206-44-0									
27		pyrene				<0.03	mg/kg		<0.03	mg/kg	<0.000003 %		<LOD
			204-927-3	129-00-0									
28		benzo[a]anthracene				<0.06	mg/kg		<0.06	mg/kg	<0.000006 %		<LOD
		601-033-00-9	200-280-6	56-55-3									
29		chrysene				<0.02	mg/kg		<0.02	mg/kg	<0.000002 %		<LOD
		601-048-00-0	205-923-4	218-01-9									
30		benzo[b]fluoranthene				<0.05	mg/kg		<0.05	mg/kg	<0.000005 %		<LOD
		601-034-00-4	205-911-9	205-99-2									
31		benzo[k]fluoranthene				<0.02	mg/kg		<0.02	mg/kg	<0.000002 %		<LOD
		601-036-00-5	205-916-6	207-08-9									
32		benzo[a]pyrene; benzo[def]chrysene				<0.04	mg/kg		<0.04	mg/kg	<0.000004 %		<LOD
		601-032-00-3	200-028-5	50-32-8									
33		indeno[123-cd]pyrene				<0.04	mg/kg		<0.04	mg/kg	<0.000004 %		<LOD
			205-893-2	193-39-5									
34		dibenz[a,h]anthracene				<0.04	mg/kg		<0.04	mg/kg	<0.000004 %		<LOD
		601-041-00-2	200-181-8	53-70-3									
35		benzo[ghi]perylene				<0.04	mg/kg		<0.04	mg/kg	<0.000004 %		<LOD
			205-883-8	191-24-2									
36		polychlorobiphenyls; PCB				<0.035	mg/kg		<0.035	mg/kg	<0.0000035 %		<LOD
		602-039-00-4	215-648-1	1336-36-3									
37		barium { barium oxide }				96	mg/kg	1.117	95.93	mg/kg	0.00959 %	✓	
			215-127-9	1304-28-5									
38		coronene				<0.04	mg/kg		<0.04	mg/kg	<0.000004 %		<LOD
			205-881-7	191-07-1									
39		benzo[j]fluoranthene				<1	mg/kg		<1	mg/kg	<0.0001 %		<LOD
		601-035-00-X	205-910-3	205-82-3									
										Total:	0.0579 %		

Key

	User supplied data
	Determinand values ignored for classification, see column 'Conc. Not Used' for reason
	Determinand defined or amended by HazWasteOnline (see Appendix A)
	Speciated Deteminand - Unless the Determinand is Note 1, the Conversion Factor is used to calculate the compound concentration
<LOD	Below limit of detection
ND	Not detected
CLP: Note 1	Only the metal concentration has been used for classification

Classification of sample: TP 104-30/01/2020-0.50m

Non Hazardous Waste
Classified as **17 05 04**
in the List of Waste

Sample details

Sample Name:
TP 104-30/01/2020-0.50m
Moisture content:
10.6%
(wet weight correction)

LoW Code:
Chapter: 17: Construction and Demolition Wastes (including excavated soil from contaminated sites)
Entry: 17 05 04 (Soil and stones other than those mentioned in 17 05 03)

Hazard properties

None identified

Determinands

Moisture content: 10.6% Wet Weight Moisture Correction applied (MC)

#	Determinand	CLP Note	User entered data	Conv. Factor	Compound conc.	Classification value	MC Applied	Conc. Not Used
	CLP index number / EC Number / CAS Number							
1	antimony { antimony trioxide } 051-005-00-X / 215-175-0 / 1309-64-4		2 mg/kg	1.197	2.14 mg/kg	0.000214 %	✓	
2	arsenic { arsenic trioxide } 033-003-00-0 / 215-481-4 / 1327-53-3		12.4 mg/kg	1.32	14.637 mg/kg	0.00146 %	✓	
3	cadmium { cadmium oxide } 048-002-00-0 / 215-146-2 / 1306-19-0		0.2 mg/kg	1.142	0.204 mg/kg	0.0000204 %	✓	
4	chromium in chromium(III) compounds { chromium(III) oxide } / 215-160-9 / 1308-38-9		82.1 mg/kg	1.462	107.274 mg/kg	0.0107 %	✓	
5	chromium in chromium(VI) compounds { chromium(VI) oxide } 024-001-00-0 / 215-607-8 / 1333-82-0		<0.3 mg/kg	1.923	<0.577 mg/kg	<0.0000577 %		<LOD
6	copper { dicopper oxide; copper (I) oxide } 029-002-00-X / 215-270-7 / 1317-39-1		26 mg/kg	1.126	26.17 mg/kg	0.00262 %	✓	
7	lead { lead chromate } 082-004-00-2 / 231-846-0 / 7758-97-6	1	18 mg/kg	1.56	25.101 mg/kg	0.00161 %	✓	
8	mercury { mercury dichloride } 080-010-00-X / 231-299-8 / 7487-94-7		<0.1 mg/kg	1.353	<0.135 mg/kg	<0.0000135 %		<LOD
9	molybdenum { molybdenum(VI) oxide } 042-001-00-9 / 215-204-7 / 1313-27-5		4.9 mg/kg	1.5	6.572 mg/kg	0.000657 %	✓	
10	nickel { nickel chromate } 028-035-00-7 / 238-766-5 / 14721-18-7		37.4 mg/kg	2.976	99.513 mg/kg	0.00995 %	✓	
11	selenium { selenium compounds with the exception of cadmium sulphoselenide and those specified elsewhere in this Annex } 034-002-00-8		2 mg/kg	2.554	4.566 mg/kg	0.000457 %	✓	
12	zinc { zinc chromate } 024-007-00-3		57 mg/kg	2.774	141.365 mg/kg	0.0141 %	✓	
13	TPH (C6 to C40) petroleum group TPH		<52 mg/kg		<52 mg/kg	<0.0052 %		<LOD
14	tert-butyl methyl ether; MTBE; 2-methoxy-2-methylpropane 603-181-00-X / 216-653-1 / 1634-04-4		<0.005 mg/kg		<0.005 mg/kg	<0.0000005 %		<LOD

#		Determinand	CLP index number	EC Number	CAS Number	CLP Note	User entered data		Conv. Factor	Compound conc.		Classification value	MC Applied	Conc. Not Used
15		benzene	601-020-00-8	200-753-7	71-43-2		<0.005	mg/kg		<0.005	mg/kg	<0.0000005 %		<LOD
16		toluene	601-021-00-3	203-625-9	108-88-3		<0.005	mg/kg		<0.005	mg/kg	<0.0000005 %		<LOD
17		ethylbenzene	601-023-00-4	202-849-4	100-41-4		<0.005	mg/kg		<0.005	mg/kg	<0.0000005 %		<LOD
18		xylene	601-022-00-9	202-422-2 [1] 203-396-5 [2] 203-576-3 [3] 215-535-7 [4]	95-47-6 [1] 106-42-3 [2] 108-38-3 [3] 1330-20-7 [4]		<0.01	mg/kg		<0.01	mg/kg	<0.000001 %		<LOD
19		pH			PH		8.11	pH		8.11	pH	8.11 pH		
20		naphthalene	601-052-00-2	202-049-5	91-20-3		<0.04	mg/kg		<0.04	mg/kg	<0.000004 %		<LOD
21		acenaphthylene		205-917-1	208-96-8		<0.03	mg/kg		<0.03	mg/kg	<0.000003 %		<LOD
22		acenaphthene		201-469-6	83-32-9		<0.05	mg/kg		<0.05	mg/kg	<0.000005 %		<LOD
23		fluorene		201-695-5	86-73-7		<0.04	mg/kg		<0.04	mg/kg	<0.000004 %		<LOD
24		phenanthrene		201-581-5	85-01-8		<0.03	mg/kg		<0.03	mg/kg	<0.000003 %		<LOD
25		anthracene		204-371-1	120-12-7		<0.04	mg/kg		<0.04	mg/kg	<0.000004 %		<LOD
26		fluoranthene		205-912-4	206-44-0		<0.03	mg/kg		<0.03	mg/kg	<0.000003 %		<LOD
27		pyrene		204-927-3	129-00-0		<0.03	mg/kg		<0.03	mg/kg	<0.000003 %		<LOD
28		benzo[a]anthracene	601-033-00-9	200-280-6	56-55-3		<0.06	mg/kg		<0.06	mg/kg	<0.000006 %		<LOD
29		chrysene	601-048-00-0	205-923-4	218-01-9		<0.02	mg/kg		<0.02	mg/kg	<0.000002 %		<LOD
30		benzo[b]fluoranthene	601-034-00-4	205-911-9	205-99-2		<0.05	mg/kg		<0.05	mg/kg	<0.000005 %		<LOD
31		benzo[k]fluoranthene	601-036-00-5	205-916-6	207-08-9		<0.02	mg/kg		<0.02	mg/kg	<0.000002 %		<LOD
32		benzo[a]pyrene; benzo[def]chrysene	601-032-00-3	200-028-5	50-32-8		<0.04	mg/kg		<0.04	mg/kg	<0.000004 %		<LOD
33		indeno[123-cd]pyrene		205-893-2	193-39-5		<0.04	mg/kg		<0.04	mg/kg	<0.000004 %		<LOD
34		dibenz[a,h]anthracene	601-041-00-2	200-181-8	53-70-3		<0.04	mg/kg		<0.04	mg/kg	<0.000004 %		<LOD
35		benzo[ghi]perylene		205-883-8	191-24-2		<0.04	mg/kg		<0.04	mg/kg	<0.000004 %		<LOD
36		polychlorobiphenyls; PCB	602-039-00-4	215-648-1	1336-36-3		<0.035	mg/kg		<0.035	mg/kg	<0.0000035 %		<LOD
37		barium { barium oxide }		215-127-9	1304-28-5		67	mg/kg	1.117	66.876	mg/kg	0.00669 %	✓	
38		coronene		205-881-7	191-07-1		<0.04	mg/kg		<0.04	mg/kg	<0.000004 %		<LOD
39		benzo[j]fluoranthene	601-035-00-X	205-910-3	205-82-3		<1	mg/kg		<1	mg/kg	<0.0001 %		<LOD
											Total:	0.054 %		

Key

	User supplied data
	Determinand values ignored for classification, see column 'Conc. Not Used' for reason
	Determinand defined or amended by HazWasteOnline (see Appendix A)
	Speciated Deteminand - Unless the Determinand is Note 1, the Conversion Factor is used to calculate the compound concentration
<LOD	Below limit of detection
ND	Not detected
CLP: Note 1	Only the metal concentration has been used for classification

Classification of sample: TP 101-30/01/2020-1.50m

Non Hazardous Waste
Classified as **17 05 04**
in the List of Waste

Sample details

Sample Name:
TP 101-30/01/2020-1.50m

LoW Code:
Chapter: 17: Construction and Demolition Wastes (including excavated soil from contaminated sites)
Entry: 17 05 04 (Soil and stones other than those mentioned in 17 05 03)

Hazard properties

None identified

Determinands

Moisture content: 0% Wet Weight Moisture Correction applied (MC)

#		Determinand			CLP Note	User entered data	Conv. Factor	Compound conc.	Classification value	MC Applied	Conc. Not Used
		CLP index number	EC Number	CAS Number							
1	●	pH		PH		6.94 pH		6.94 pH	6.94 pH		
								Total:	0%		

Key

	User supplied data
●	Determinand defined or amended by HazWasteOnline (see Appendix A)

Appendix A: Classifier defined and non CLP determinands

pH (CAS Number: PH)

Description/Comments: Appendix C4
Data source: WM3 1st Edition 2015
Data source date: 25 May 2015
Hazard Statements: None.

chromium(III) oxide (EC Number: 215-160-9, CAS Number: 1308-38-9)

Conversion factor: 1.462
Description/Comments: Data from C&L Inventory Database
Data source: http://echa.europa.eu/web/guest/information-on-chemicals/cl-inventory-database
Data source date: 17 Jul 2015
Hazard Statements: Aquatic Chronic 1 H410 , Aquatic Acute 1 H400 , Repr. 1B H360FD , Skin Sens. 1 H317 , Resp. Sens. 1 H334 , Skin Irrit. 2 H315 , STOT SE 3 H335 , Eye Irrit. 2 H319 , Acute Tox. 4 H302 , Acute Tox. 4 H332

TPH (C6 to C40) petroleum group (CAS Number: TPH)

Description/Comments: Hazard statements taken from WM3 1st Edition 2015; Risk phrases: WM2 3rd Edition 2013
Data source: WM3 1st Edition 2015
Data source date: 25 May 2015
Hazard Statements: Aquatic Chronic 2 H411 , Repr. 2 H361d , Carc. 1B H350 , Muta. 1B H340 , STOT RE 2 H373 , Asp. Tox. 1 H304 , Flam. Liq. 3 H226

ethylbenzene (EC Number: 202-849-4, CAS Number: 100-41-4)

CLP index number: 601-023-00-4
Description/Comments:
Data source: Commission Regulation (EU) No 605/2014 – 6th Adaptation to Technical Progress for Regulation (EC) No 1272/2008. (ATP6)
Additional Hazard Statement(s): Carc. 2 H351
Reason for additional Hazards Statement(s):
03 Jun 2015 - Carc. 2 H351 hazard statement sourced from: IARC Group 2B (77) 2000

acenaphthylene (EC Number: 205-917-1, CAS Number: 208-96-8)

Description/Comments: Data from C&L Inventory Database
Data source: http://echa.europa.eu/web/guest/information-on-chemicals/cl-inventory-database
Data source date: 17 Jul 2015
Hazard Statements: Skin Irrit. 2 H315 , STOT SE 3 H335 , Eye Irrit. 2 H319 , Acute Tox. 1 H310 , Acute Tox. 1 H330 , Acute Tox. 4 H302

acenaphthene (EC Number: 201-469-6, CAS Number: 83-32-9)

Description/Comments: Data from C&L Inventory Database
Data source: http://echa.europa.eu/web/guest/information-on-chemicals/cl-inventory-database
Data source date: 17 Jul 2015
Hazard Statements: Aquatic Chronic 2 H411 , Aquatic Chronic 1 H410 , Aquatic Acute 1 H400 , Skin Irrit. 2 H315 , STOT SE 3 H335 , Eye Irrit. 2 H319

fluorene (EC Number: 201-695-5, CAS Number: 86-73-7)

Description/Comments: Data from C&L Inventory Database
Data source: http://echa.europa.eu/web/guest/information-on-chemicals/cl-inventory-database
Data source date: 06 Aug 2015
Hazard Statements: Aquatic Chronic 1 H410 , Aquatic Acute 1 H400

phenanthrene (EC Number: 201-581-5, CAS Number: 85-01-8)

Description/Comments: Data from C&L Inventory Database
Data source: http://echa.europa.eu/web/guest/information-on-chemicals/cl-inventory-database
Data source date: 06 Aug 2015
Hazard Statements: Skin Irrit. 2 H315 , Aquatic Chronic 1 H410 , Aquatic Acute 1 H400 , Skin Sens. 1 H317 , Carc. 2 H351 , STOT SE 3 H335 , Eye Irrit. 2 H319 , Acute Tox. 4 H302

anthracene (EC Number: 204-371-1, CAS Number: 120-12-7)

Description/Comments: Data from C&L Inventory Database
Data source: http://echa.europa.eu/web/guest/information-on-chemicals/cl-inventory-database
Data source date: 17 Jul 2015
Hazard Statements: Aquatic Chronic 1 H410 , Aquatic Acute 1 H400 , Skin Sens. 1 H317 , Skin Irrit. 2 H315 , STOT SE 3 H335 , Eye Irrit. 2 H319

- **fluoranthene** (EC Number: 205-912-4, CAS Number: 206-44-0)

Description/Comments: Data from C&L Inventory Database
Data source: http://echa.europa.eu/web/guest/information-on-chemicals/cl-inventory-database
Data source date: 21 Aug 2015
Hazard Statements: Aquatic Chronic 1 H410 , Aquatic Acute 1 H400 , Acute Tox. 4 H302

- **pyrene** (EC Number: 204-927-3, CAS Number: 129-00-0)

Description/Comments: Data from C&L Inventory Database; SDS Sigma Aldrich 2014
Data source: http://echa.europa.eu/web/guest/information-on-chemicals/cl-inventory-database
Data source date: 21 Aug 2015
Hazard Statements: Aquatic Chronic 1 H410 , Aquatic Acute 1 H400 , STOT SE 3 H335 , Eye Irrit. 2 H319 , Skin Irrit. 2 H315

- **indeno[123-cd]pyrene** (EC Number: 205-893-2, CAS Number: 193-39-5)

Description/Comments: Data from C&L Inventory Database
Data source: http://echa.europa.eu/web/guest/information-on-chemicals/cl-inventory-database
Data source date: 06 Aug 2015
Hazard Statements: Carc. 2 H351

- **benzo[ghi]perylene** (EC Number: 205-883-8, CAS Number: 191-24-2)

Description/Comments: Data from C&L Inventory Database; SDS Sigma Aldrich 28/02/2015
Data source: http://echa.europa.eu/web/guest/information-on-chemicals/cl-inventory-database
Data source date: 23 Jul 2015
Hazard Statements: Aquatic Chronic 1 H410 , Aquatic Acute 1 H400

- **polychlorobiphenyls; PCB** (EC Number: 215-648-1, CAS Number: 1336-36-3)

CLP index number: 602-039-00-4
Description/Comments: Worst Case: IARC considers PCB Group 1; Carcinogenic to humans; POP specific threshold from ATP1 (Regulation 756/2010/EU) to POPs Regulation (Regulation 850/2004/EC). Where applicable, the calculation method laid down in European standards EN 12766-1 and EN 12766-2 shall be applied.
Data source: Regulation 1272/2008/EC - Classification, labelling and packaging of substances and mixtures. (CLP)
Additional Hazard Statement(s): Carc. 1A H350
Reason for additional Hazards Statement(s):
29 Sep 2015 - Carc. 1A H350 hazard statement sourced from: IARC Group 1 (23, Sup 7, 100C) 2012

- **barium oxide** (EC Number: 215-127-9, CAS Number: 1304-28-5)

Conversion factor: 1.117
Description/Comments: Data from ECHA's C&L Inventory Database, Sigma Aldrich SDS dated 6/2/20
Data source: https://echa.europa.eu/information-on-chemicals/cl-inventory-database/-/discli/details/88825
Data source date: 02 Apr 2020
Hazard Statements: Acute Tox. 3 H301 , Skin Corr. 1B H314 , Eye Dam. 1 H318 , Acute Tox. 1 H332

- **coronene** (EC Number: 205-881-7, CAS Number: 191-07-1)

Description/Comments: Data from C&L Inventory Database; no entries in Registered Substances or Pesticides Properties databases; SDS: Sigma Aldrich, 1907/2006 compliant, dated 2012 - no entries; IARC – Group 3, not carcinogenic.
Data source:
http://clp-inventory.echa.europa.eu/SummaryOfClassAndLabelling.aspx?SubstanceID=17010&HarmOnly=no?fc=true&lang=en
Data source date: 16 Jun 2014
Hazard Statements: STOT SE 2 H371

Appendix B: Rationale for selection of metal species

antimony {antimony trioxide}

Worst case CLP species based on hazard statements/molecular weight and low solubility. Industrial sources include: flame retardants in electrical apparatus, textiles and coatings (edit as required)

arsenic {arsenic trioxide}

Reasonable case CLP species based on hazard statements/molecular weight and most common (stable) oxide of arsenic. Industrial sources include: smelting; main precursor to other arsenic compounds (edit as required)

cadmium {cadmium oxide}

Reasonable case CLP species based on hazard statements/molecular weight, very low solubility in water. Industrial sources include: electroplating baths, electrodes for storage batteries, catalysts, ceramic glazes, phosphors, pigments and nematocides. (edit as required) Worst case compounds in CLP: cadmium sulphate, chloride, fluoride & iodide not expected as either very soluble and/or compound's industrial usage not related to site history (edit as required)

chromium in chromium(III) compounds {chromium(III) oxide}

Reasonable case species based on hazard statements/molecular weight. Industrial sources include: tanning, pigment in paint, inks and glass (edit as required)

chromium in chromium(VI) compounds {chromium(VI) oxide}

Worst case CLP species based on hazard statements/molecular weight. Industrial sources include: production stainless steel, electroplating, wood preservation, anti-corrosion agents or coatings, pigments (edit as required)

copper {dicopper oxide; copper (I) oxide}

Reasonable case CLP species based on hazard statements/molecular weight and insolubility in water. Industrial sources include: oxidised copper metal, brake pads, pigments, antifouling paints, fungicide. (edit as required) Worse case copper sulphate is very soluble and likely to have been leached away if ever present and/or not enough soluble sulphate detected. (edit as required)

lead {lead chromate}

Worst case CLP species based on hazard statements/molecular weight (edit as required)

mercury {mercury dichloride}

Worst case CLP species based on hazard statements/molecular weight (edit as required)

molybdenum {molybdenum(VI) oxide}

Worst case CLP species based on hazard statements/molecular weight (edit as required)

nickel {nickel chromate}

Worst case CLP species based on hazard statements/molecular weight (edit as required)

selenium {selenium compounds with the exception of cadmium sulphoselenide and those specified elsewhere in this Annex}

Harmonised group entry used as most reasonable case. Pigment cadmium sulphoselenide not likely to be present in this soil. No evidence for the other CLP entries: sodium selenite, nickel II selenite and nickel selenide, to be present in this soil. (edit as required)

zinc {zinc chromate}

Worst case CLP species based on hazard statements/molecular weight (edit as required)

barium {barium oxide}

Cr VI not detected.

Appendix C: Version

HazWasteOnline Classification Engine: WM3 1st Edition v1.1, May 2018
HazWasteOnline Classification Engine Version: 2020.88.4220.8373 (28 Mar 2020)
HazWasteOnline Database: 2020.88.4220.8373 (28 Mar 2020)

This classification utilises the following guidance and legislation:
WM3 v1.1 - Waste Classification - 1st Edition v1.1 - May 2018
CLP Regulation - Regulation 1272/2008/EC of 16 December 2008
1st ATP - Regulation 790/2009/EC of 10 August 2009
2nd ATP - Regulation 286/2011/EC of 10 March 2011
3rd ATP - Regulation 618/2012/EU of 10 July 2012
4th ATP - Regulation 487/2013/EU of 8 May 2013
Correction to 1st ATP - Regulation 758/2013/EU of 7 August 2013
5th ATP - Regulation 944/2013/EU of 2 October 2013
6th ATP - Regulation 605/2014/EU of 5 June 2014
WFD Annex III replacement - Regulation 1357/2014/EU of 18 December 2014
Revised List of Wastes 2014 - Decision 2014/955/EU of 18 December 2014
7th ATP - Regulation 2015/1221/EU of 24 July 2015
8th ATP - Regulation (EU) 2016/918 of 19 May 2016
9th ATP - Regulation (EU) 2016/1179 of 19 July 2016
10th ATP - Regulation (EU) 2017/776 of 4 May 2017
HP14 amendment - Regulation (EU) 2017/997 of 8 June 2017
13th ATP - Regulation (EU) 2018/1480 of 4 October 2018
POPs Regulation 2004 - Regulation 850/2004/EC of 29 April 2004
1st ATP to POPs Regulation - Regulation 756/2010/EU of 24 August 2010
2nd ATP to POPs Regulation - Regulation 757/2010/EU of 24 August 2010

Waste Classification Report

5X8KZ-VZL4V-BZ99M

Job name

Hackettstown, Skerries (1)

Description/Comments

Project

9225-11-19

Site

Hackettstown, Skerries

Related Documents

#	Name	Description
1	EMT-19-19841-Batch-1-File-1.hwol	.hwol file used to create the Job

Waste Stream Template

Example waste stream template for contaminated soils

Classified by

Name:
Nicholas Morgan
Date:
08 Apr 2020 09:32 GMT
Telephone:
(0)1 601 5175

Company:
Ground Investigations Ireland
Catherinestown House,
Hazelhatch Road, Newcastle
Co. Dublin

HazWasteOnline™ Training Record:

Course	Date
Hazardous Waste Classification	-
Advanced Hazardous Waste Classification	-

Report

Created by: Nicholas Morgan
Created date: 08 Apr 2020 09:32 GMT

Job summary

#	Sample Name	Depth [m]	Classification Result	Hazard properties	Page
1	TP05-29/11/2019-0.50m		Non Hazardous		2
2	TP06-29/11/2019-0.50m		Non Hazardous		5
3	TP10-29/11/2019-0.50m		Non Hazardous		8

Classification of sample: TP05-29/11/2019-0.50m

Non Hazardous Waste
Classified as **17 05 04**
in the List of Waste

Sample details

Sample Name:
TP05-29/11/2019-0.50m
Moisture content:
9.5%
(wet weight correction)

LoW Code:
Chapter: 17: Construction and Demolition Wastes (including excavated soil from contaminated sites)
Entry: 17 05 04 (Soil and stones other than those mentioned in 17 05 03)

Hazard properties

None identified

Determinands

Moisture content: 9.5% Wet Weight Moisture Correction applied (MC)

#	Determinand	CLP index number	EC Number	CAS Number	CLP Note	User entered data	Conv. Factor	Compound conc.	Classification value	MC Applied	Conc. Not Used
1	antimony { antimony trioxide }	051-005-00-X	215-175-0	1309-64-4		1 mg/kg	1.197	1.083 mg/kg	0.000108 %	✓	
2	arsenic { arsenic trioxide }	033-003-00-0	215-481-4	1327-53-3		10.7 mg/kg	1.32	12.785 mg/kg	0.00128 %	✓	
3	cadmium { cadmium oxide }	048-002-00-0	215-146-2	1306-19-0		0.5 mg/kg	1.142	0.517 mg/kg	0.0000517 %	✓	
4	chromium in chromium(III) compounds { chromium(III) oxide }		215-160-9	1308-38-9		53.4 mg/kg	1.462	70.633 mg/kg	0.00706 %	✓	
5	chromium in chromium(VI) compounds { chromium(VI) oxide }	024-001-00-0	215-607-8	1333-82-0		<0.3 mg/kg	1.923	<0.577 mg/kg	<0.0000577 %		<LOD
6	copper { dicopper oxide; copper (I) oxide }	029-002-00-X	215-270-7	1317-39-1		20 mg/kg	1.126	20.379 mg/kg	0.00204 %	✓	
7	lead { lead chromate }	082-004-00-2	231-846-0	7758-97-6	1	10 mg/kg	1.56	14.116 mg/kg	0.000905 %	✓	
8	mercury { mercury dichloride }	080-010-00-X	231-299-8	7487-94-7		<0.1 mg/kg	1.353	<0.135 mg/kg	<0.0000135 %		<LOD
9	molybdenum { molybdenum(VI) oxide }	042-001-00-9	215-204-7	1313-27-5		1.2 mg/kg	1.5	1.629 mg/kg	0.000163 %	✓	
10	nickel { nickel chromate }	028-035-00-7	238-766-5	14721-18-7		45.1 mg/kg	2.976	121.478 mg/kg	0.0121 %	✓	
11	selenium { selenium compounds with the exception of cadmium sulphoselenide and those specified elsewhere in this Annex }	034-002-00-8				1 mg/kg	2.554	2.311 mg/kg	0.000231 %	✓	
12	zinc { zinc chromate }	024-007-00-3				53 mg/kg	2.774	133.062 mg/kg	0.0133 %	✓	
13	TPH (C6 to C40) petroleum group			TPH		<52 mg/kg		<52 mg/kg	<0.0052 %		<LOD
14	tert-butyl methyl ether; MTBE; 2-methoxy-2-methylpropane	603-181-00-X	216-653-1	1634-04-4		<0.005 mg/kg		<0.005 mg/kg	<0.0000005 %		<LOD

#		Determinand			CLP Note	User entered data		Conv. Factor	Compound conc.		Classification value	MC Applied	Conc. Not Used
		CLP index number	EC Number	CAS Number									
15		benzene				<0.005	mg/kg		<0.005	mg/kg	<0.0000005 %		<LOD
		601-020-00-8	200-753-7	71-43-2									
16		toluene				<0.005	mg/kg		<0.005	mg/kg	<0.0000005 %		<LOD
		601-021-00-3	203-625-9	108-88-3									
17		ethylbenzene				<0.005	mg/kg		<0.005	mg/kg	<0.0000005 %		<LOD
		601-023-00-4	202-849-4	100-41-4									
18		xylene				<0.01	mg/kg		<0.01	mg/kg	<0.000001 %		<LOD
		601-022-00-9	202-422-2 [1] 203-396-5 [2] 203-576-3 [3] 215-535-7 [4]	95-47-6 [1] 106-42-3 [2] 108-38-3 [3] 1330-20-7 [4]									
19		pH				7.3	pH		7.3	pH	7.3 pH		
				PH									
20		naphthalene				<0.04	mg/kg		<0.04	mg/kg	<0.000004 %		<LOD
		601-052-00-2	202-049-5	91-20-3									
21		acenaphthylene				<0.03	mg/kg		<0.03	mg/kg	<0.000003 %		<LOD
			205-917-1	208-96-8									
22		acenaphthene				<0.05	mg/kg		<0.05	mg/kg	<0.000005 %		<LOD
			201-469-6	83-32-9									
23		fluorene				<0.04	mg/kg		<0.04	mg/kg	<0.000004 %		<LOD
			201-695-5	86-73-7									
24		phenanthrene				<0.03	mg/kg		<0.03	mg/kg	<0.000003 %		<LOD
			201-581-5	85-01-8									
25		anthracene				<0.04	mg/kg		<0.04	mg/kg	<0.000004 %		<LOD
			204-371-1	120-12-7									
26		fluoranthene				<0.03	mg/kg		<0.03	mg/kg	<0.000003 %		<LOD
			205-912-4	206-44-0									
27		pyrene				<0.03	mg/kg		<0.03	mg/kg	<0.000003 %		<LOD
			204-927-3	129-00-0									
28		benzo[a]anthracene				<0.06	mg/kg		<0.06	mg/kg	<0.000006 %		<LOD
		601-033-00-9	200-280-6	56-55-3									
29		chrysene				<0.02	mg/kg		<0.02	mg/kg	<0.000002 %		<LOD
		601-048-00-0	205-923-4	218-01-9									
30		benzo[b]fluoranthene				<0.05	mg/kg		<0.05	mg/kg	<0.000005 %		<LOD
		601-034-00-4	205-911-9	205-99-2									
31		benzo[k]fluoranthene				<0.02	mg/kg		<0.02	mg/kg	<0.000002 %		<LOD
		601-036-00-5	205-916-6	207-08-9									
32		benzo[a]pyrene; benzo[def]chrysene				<0.04	mg/kg		<0.04	mg/kg	<0.000004 %		<LOD
		601-032-00-3	200-028-5	50-32-8									
33		indeno[123-cd]pyrene				<0.04	mg/kg		<0.04	mg/kg	<0.000004 %		<LOD
			205-893-2	193-39-5									
34		dibenz[a,h]anthracene				<0.04	mg/kg		<0.04	mg/kg	<0.000004 %		<LOD
		601-041-00-2	200-181-8	53-70-3									
35		benzo[ghi]perylene				<0.04	mg/kg		<0.04	mg/kg	<0.000004 %		<LOD
			205-883-8	191-24-2									
36		polychlorobiphenyls; PCB				<0.035	mg/kg		<0.035	mg/kg	<0.0000035 %		<LOD
		602-039-00-4	215-648-1	1336-36-3									
37		barium { barium oxide }				58	mg/kg	1.117	58.605	mg/kg	0.00586 %	✓	
			215-127-9	1304-28-5									
38		coronene				<0.04	mg/kg		<0.04	mg/kg	<0.000004 %		<LOD
			205-881-7	191-07-1									
39		benzo[j]fluoranthene				<1	mg/kg		<1	mg/kg	<0.0001 %		<LOD
		601-035-00-X	205-910-3	205-82-3									
										Total:	0.0486 %		

Key

	User supplied data
	Determinand values ignored for classification, see column 'Conc. Not Used' for reason
	Determinand defined or amended by HazWasteOnline (see Appendix A)
	Speciated Deteminand - Unless the Determinand is Note 1, the Conversion Factor is used to calculate the compound concentration
<LOD	Below limit of detection
ND	Not detected
CLP: Note 1	Only the metal concentration has been used for classification

Classification of sample: TP06-29/11/2019-0.50m

Non Hazardous Waste
Classified as **17 05 04**
in the List of Waste

Sample details

Sample Name:
TP06-29/11/2019-0.50m
Moisture content:
12.8%
(wet weight correction)

LoW Code:
Chapter: 17: Construction and Demolition Wastes (including excavated soil from contaminated sites)
Entry: 17 05 04 (Soil and stones other than those mentioned in 17 05 03)

Hazard properties

None identified

Determinands

Moisture content: 12.8% Wet Weight Moisture Correction applied (MC)

#	Determinand	CLP Note	User entered data	Conv. Factor	Compound conc.	Classification value	MC Applied	Conc. Not Used
	CLP index number / EC Number / CAS Number							
1	antimony { antimony trioxide } 051-005-00-X / 215-175-0 / 1309-64-4		2 mg/kg	1.197	2.088 mg/kg	0.000209 %	✓	
2	arsenic { arsenic trioxide } 033-003-00-0 / 215-481-4 / 1327-53-3		8.4 mg/kg	1.32	9.671 mg/kg	0.000967 %	✓	
3	cadmium { cadmium oxide } 048-002-00-0 / 215-146-2 / 1306-19-0		0.4 mg/kg	1.142	0.398 mg/kg	0.0000398 %	✓	
4	chromium in chromium(III) compounds { chromium(III) oxide } / 215-160-9 / 1308-38-9		63.6 mg/kg	1.462	81.057 mg/kg	0.00811 %	✓	
5	chromium in chromium(VI) compounds { chromium(VI) oxide } 024-001-00-0 / 215-607-8 / 1333-82-0		<0.3 mg/kg	1.923	<0.577 mg/kg	<0.0000577 %		<LOD
6	copper { dicopper oxide; copper (I) oxide } 029-002-00-X / 215-270-7 / 1317-39-1		14 mg/kg	1.126	13.745 mg/kg	0.00137 %	✓	
7	lead { lead chromate } 082-004-00-2 / 231-846-0 / 7758-97-6	1	15 mg/kg	1.56	20.402 mg/kg	0.00131 %	✓	
8	mercury { mercury dichloride } 080-010-00-X / 231-299-8 / 7487-94-7		<0.1 mg/kg	1.353	<0.135 mg/kg	<0.0000135 %		<LOD
9	molybdenum { molybdenum(VI) oxide } 042-001-00-9 / 215-204-7 / 1313-27-5		2.6 mg/kg	1.5	3.401 mg/kg	0.00034 %	✓	
10	nickel { nickel chromate } 028-035-00-7 / 238-766-5 / 14721-18-7		27.9 mg/kg	2.976	72.409 mg/kg	0.00724 %	✓	
11	selenium { selenium compounds with the exception of cadmium sulphoselenide and those specified elsewhere in this Annex } 034-002-00-8		<1 mg/kg	2.554	<2.554 mg/kg	<0.000255 %		<LOD
12	zinc { zinc chromate } 024-007-00-3		53 mg/kg	2.774	128.21 mg/kg	0.0128 %	✓	
13	TPH (C6 to C40) petroleum group TPH		<52 mg/kg		<52 mg/kg	<0.0052 %		<LOD
14	tert-butyl methyl ether; MTBE; 2-methoxy-2-methylpropane 603-181-00-X / 216-653-1 / 1634-04-4		<0.005 mg/kg		<0.005 mg/kg	<0.0000005 %		<LOD

#		Determinand	CLP index number	EC Number	CAS Number	CLP Note	User entered data		Conv. Factor	Compound conc.		Classification value	MC Applied	Conc. Not Used
15		benzene	601-020-00-8	200-753-7	71-43-2		<0.005	mg/kg		<0.005	mg/kg	<0.0000005 %		<LOD
16		toluene	601-021-00-3	203-625-9	108-88-3		<0.005	mg/kg		<0.005	mg/kg	<0.0000005 %		<LOD
17		ethylbenzene	601-023-00-4	202-849-4	100-41-4		<0.005	mg/kg		<0.005	mg/kg	<0.0000005 %		<LOD
18		xylene	601-022-00-9	202-422-2 [1] 203-396-5 [2] 203-576-3 [3] 215-535-7 [4]	95-47-6 [1] 106-42-3 [2] 108-38-3 [3] 1330-20-7 [4]		<0.01	mg/kg		<0.01	mg/kg	<0.000001 %		<LOD
19		pH			PH		7.12	pH		7.12	pH	7.12 pH		
20		naphthalene	601-052-00-2	202-049-5	91-20-3		<0.04	mg/kg		<0.04	mg/kg	<0.000004 %		<LOD
21		acenaphthylene		205-917-1	208-96-8		<0.03	mg/kg		<0.03	mg/kg	<0.000003 %		<LOD
22		acenaphthene		201-469-6	83-32-9		<0.05	mg/kg		<0.05	mg/kg	<0.000005 %		<LOD
23		fluorene		201-695-5	86-73-7		<0.04	mg/kg		<0.04	mg/kg	<0.000004 %		<LOD
24		phenanthrene		201-581-5	85-01-8		<0.03	mg/kg		<0.03	mg/kg	<0.000003 %		<LOD
25		anthracene		204-371-1	120-12-7		<0.04	mg/kg		<0.04	mg/kg	<0.000004 %		<LOD
26		fluoranthene		205-912-4	206-44-0		<0.03	mg/kg		<0.03	mg/kg	<0.000003 %		<LOD
27		pyrene		204-927-3	129-00-0		<0.03	mg/kg		<0.03	mg/kg	<0.000003 %		<LOD
28		benzo[a]anthracene	601-033-00-9	200-280-6	56-55-3		<0.06	mg/kg		<0.06	mg/kg	<0.000006 %		<LOD
29		chrysene	601-048-00-0	205-923-4	218-01-9		<0.02	mg/kg		<0.02	mg/kg	<0.000002 %		<LOD
30		benzo[b]fluoranthene	601-034-00-4	205-911-9	205-99-2		<0.05	mg/kg		<0.05	mg/kg	<0.000005 %		<LOD
31		benzo[k]fluoranthene	601-036-00-5	205-916-6	207-08-9		<0.02	mg/kg		<0.02	mg/kg	<0.000002 %		<LOD
32		benzo[a]pyrene; benzo[def]chrysene	601-032-00-3	200-028-5	50-32-8		<0.04	mg/kg		<0.04	mg/kg	<0.000004 %		<LOD
33		indeno[123-cd]pyrene		205-893-2	193-39-5		<0.04	mg/kg		<0.04	mg/kg	<0.000004 %		<LOD
34		dibenz[a,h]anthracene	601-041-00-2	200-181-8	53-70-3		<0.04	mg/kg		<0.04	mg/kg	<0.000004 %		<LOD
35		benzo[ghi]perylene		205-883-8	191-24-2		<0.04	mg/kg		<0.04	mg/kg	<0.000004 %		<LOD
36		polychlorobiphenyls; PCB	602-039-00-4	215-648-1	1336-36-3		<0.035	mg/kg		<0.035	mg/kg	<0.0000035 %		<LOD
37		barium { barium oxide }		215-127-9	1304-28-5		65	mg/kg	1.117	63.284	mg/kg	0.00633 %	✓	
38		coronene		205-881-7	191-07-1		<0.04	mg/kg		<0.04	mg/kg	<0.000004 %		<LOD
39		benzo[j]fluoranthene	601-035-00-X	205-910-3	205-82-3		<1	mg/kg		<1	mg/kg	<0.0001 %		<LOD
											Total:	0.0444 %		

Key

	User supplied data
	Determinand values ignored for classification, see column 'Conc. Not Used' for reason
	Determinand defined or amended by HazWasteOnline (see Appendix A)
	Speciated Deteminand - Unless the Determinand is Note 1, the Conversion Factor is used to calculate the compound concentration
<LOD	Below limit of detection
ND	Not detected
CLP: Note 1	Only the metal concentration has been used for classification

Classification of sample: TP10-29/11/2019-0.50m

Non Hazardous Waste
Classified as **17 05 04**
in the List of Waste

Sample details

Sample Name:
TP10-29/11/2019-0.50m
Moisture content:
10.5%
(wet weight correction)

LoW Code:
Chapter: 17: Construction and Demolition Wastes (including excavated soil from contaminated sites)
Entry: 17 05 04 (Soil and stones other than those mentioned in 17 05 03)

Hazard properties

None identified

Determinands

Moisture content: 10.5% Wet Weight Moisture Correction applied (MC)

#	Determinand	CLP index number	EC Number	CAS Number	CLP Note	User entered data	Conv. Factor	Compound conc.	Classification value	MC Applied	Conc. Not Used
1	antimony { antimony trioxide }	051-005-00-X	215-175-0	1309-64-4		1 mg/kg	1.197	1.071 mg/kg	0.000107 %	✓	
2	arsenic { arsenic trioxide }	033-003-00-0	215-481-4	1327-53-3		9.3 mg/kg	1.32	10.99 mg/kg	0.0011 %	✓	
3	cadmium { cadmium oxide }	048-002-00-0	215-146-2	1306-19-0		0.5 mg/kg	1.142	0.511 mg/kg	0.0000511 %	✓	
4	chromium in chromium(III) compounds { chromium(III) oxide }		215-160-9	1308-38-9		64.5 mg/kg	1.462	84.372 mg/kg	0.00844 %	✓	
5	chromium in chromium(VI) compounds { chromium(VI) oxide }	024-001-00-0	215-607-8	1333-82-0		<0.3 mg/kg	1.923	<0.577 mg/kg	<0.0000577 %		<LOD
6	copper { dicopper oxide; copper (I) oxide }	029-002-00-X	215-270-7	1317-39-1		15 mg/kg	1.126	15.115 mg/kg	0.00151 %	✓	
7	lead { lead chromate }	082-004-00-2	231-846-0	7758-97-6	1	10 mg/kg	1.56	13.96 mg/kg	0.000895 %	✓	
8	mercury { mercury dichloride }	080-010-00-X	231-299-8	7487-94-7		<0.1 mg/kg	1.353	<0.135 mg/kg	<0.0000135 %		<LOD
9	molybdenum { molybdenum(VI) oxide }	042-001-00-9	215-204-7	1313-27-5		1.2 mg/kg	1.5	1.611 mg/kg	0.000161 %	✓	
10	nickel { nickel chromate }	028-035-00-7	238-766-5	14721-18-7		39.1 mg/kg	2.976	104.153 mg/kg	0.0104 %	✓	
11	selenium { selenium compounds with the exception of cadmium sulphoselenide and those specified elsewhere in this Annex }	034-002-00-8				<1 mg/kg	2.554	<2.554 mg/kg	<0.000255 %		<LOD
12	zinc { zinc chromate }	024-007-00-3				47 mg/kg	2.774	116.694 mg/kg	0.0117 %	✓	
13	TPH (C6 to C40) petroleum group			TPH		<52 mg/kg		<52 mg/kg	<0.0052 %		<LOD
14	tert-butyl methyl ether; MTBE; 2-methoxy-2-methylpropane	603-181-00-X	216-653-1	1634-04-4		<0.005 mg/kg		<0.005 mg/kg	<0.0000005 %		<LOD

#		Determinand			CLP Note	User entered data		Conv. Factor	Compound conc.		Classification value	MC Applied	Conc. Not Used
		CLP index number	EC Number	CAS Number									
15		benzene				<0.005	mg/kg		<0.005	mg/kg	<0.0000005 %		<LOD
		601-020-00-8	200-753-7	71-43-2									
16		toluene				<0.005	mg/kg		<0.005	mg/kg	<0.0000005 %		<LOD
		601-021-00-3	203-625-9	108-88-3									
17		ethylbenzene				<0.005	mg/kg		<0.005	mg/kg	<0.0000005 %		<LOD
		601-023-00-4	202-849-4	100-41-4									
18		xylene				<0.01	mg/kg		<0.01	mg/kg	<0.000001 %		<LOD
		601-022-00-9	202-422-2 [1] 203-396-5 [2] 203-576-3 [3] 215-535-7 [4]	95-47-6 [1] 106-42-3 [2] 108-38-3 [3] 1330-20-7 [4]									
19		pH				7.04	pH		7.04	pH	7.04 pH		
				PH									
20		naphthalene				<0.04	mg/kg		<0.04	mg/kg	<0.000004 %		<LOD
		601-052-00-2	202-049-5	91-20-3									
21		acenaphthylene				<0.03	mg/kg		<0.03	mg/kg	<0.000003 %		<LOD
			205-917-1	208-96-8									
22		acenaphthene				<0.05	mg/kg		<0.05	mg/kg	<0.000005 %		<LOD
			201-469-6	83-32-9									
23		fluorene				<0.04	mg/kg		<0.04	mg/kg	<0.000004 %		<LOD
			201-695-5	86-73-7									
24		phenanthrene				<0.03	mg/kg		<0.03	mg/kg	<0.000003 %		<LOD
			201-581-5	85-01-8									
25		anthracene				<0.04	mg/kg		<0.04	mg/kg	<0.000004 %		<LOD
			204-371-1	120-12-7									
26		fluoranthene				<0.03	mg/kg		<0.03	mg/kg	<0.000003 %		<LOD
			205-912-4	206-44-0									
27		pyrene				<0.03	mg/kg		<0.03	mg/kg	<0.000003 %		<LOD
			204-927-3	129-00-0									
28		benzo[a]anthracene				<0.06	mg/kg		<0.06	mg/kg	<0.000006 %		<LOD
		601-033-00-9	200-280-6	56-55-3									
29		chrysene				<0.02	mg/kg		<0.02	mg/kg	<0.000002 %		<LOD
		601-048-00-0	205-923-4	218-01-9									
30		benzo[b]fluoranthene				<0.05	mg/kg		<0.05	mg/kg	<0.000005 %		<LOD
		601-034-00-4	205-911-9	205-99-2									
31		benzo[k]fluoranthene				<0.02	mg/kg		<0.02	mg/kg	<0.000002 %		<LOD
		601-036-00-5	205-916-6	207-08-9									
32		benzo[a]pyrene; benzo[def]chrysene				<0.04	mg/kg		<0.04	mg/kg	<0.000004 %		<LOD
		601-032-00-3	200-028-5	50-32-8									
33		indeno[123-cd]pyrene				<0.04	mg/kg		<0.04	mg/kg	<0.000004 %		<LOD
			205-893-2	193-39-5									
34		dibenz[a,h]anthracene				<0.04	mg/kg		<0.04	mg/kg	<0.000004 %		<LOD
		601-041-00-2	200-181-8	53-70-3									
35		benzo[ghi]perylene				<0.04	mg/kg		<0.04	mg/kg	<0.000004 %		<LOD
			205-883-8	191-24-2									
36		polychlorobiphenyls; PCB				<0.035	mg/kg		<0.035	mg/kg	<0.0000035 %		<LOD
		602-039-00-4	215-648-1	1336-36-3									
37		barium { barium oxide }				67	mg/kg	1.117	66.951	mg/kg	0.0067 %	✓	
			215-127-9	1304-28-5									
38		coronene				<0.04	mg/kg		<0.04	mg/kg	<0.000004 %		<LOD
			205-881-7	191-07-1									
39		benzo[j]fluoranthene				<1	mg/kg		<1	mg/kg	<0.0001 %		<LOD
		601-035-00-X	205-910-3	205-82-3									
										Total:	0.0467 %		

Key

	User supplied data
	Determinand values ignored for classification, see column 'Conc. Not Used' for reason
	Determinand defined or amended by HazWasteOnline (see Appendix A)
	Speciated Deteminand - Unless the Determinand is Note 1, the Conversion Factor is used to calculate the compound concentration
<LOD	Below limit of detection
ND	Not detected
CLP: Note 1	Only the metal concentration has been used for classification

Appendix A: Classifier defined and non CLP determinands

chromium(III) oxide (EC Number: 215-160-9, CAS Number: 1308-38-9)

Conversion factor: 1.462
Description/Comments: Data from C&L Inventory Database
Data source: http://echa.europa.eu/web/guest/information-on-chemicals/cl-inventory-database
Data source date: 17 Jul 2015
Hazard Statements: Aquatic Chronic 1 H410 , Aquatic Acute 1 H400 , Repr. 1B H360FD , Skin Sens. 1 H317 , Resp. Sens. 1 H334 , Skin Irrit. 2 H315 , STOT SE 3 H335 , Eye Irrit. 2 H319 , Acute Tox. 4 H302 , Acute Tox. 4 H332

TPH (C6 to C40) petroleum group (CAS Number: TPH)

Description/Comments: Hazard statements taken from WM3 1st Edition 2015; Risk phrases: WM2 3rd Edition 2013
Data source: WM3 1st Edition 2015
Data source date: 25 May 2015
Hazard Statements: Aquatic Chronic 2 H411 , Repr. 2 H361d , Carc. 1B H350 , Muta. 1B H340 , STOT RE 2 H373 , Asp. Tox. 1 H304 , Flam. Liq. 3 H226

ethylbenzene (EC Number: 202-849-4, CAS Number: 100-41-4)

CLP index number: 601-023-00-4
Description/Comments:
Data source: Commission Regulation (EU) No 605/2014 – 6th Adaptation to Technical Progress for Regulation (EC) No 1272/2008. (ATP6)
Additional Hazard Statement(s): Carc. 2 H351
Reason for additional Hazards Statement(s):
03 Jun 2015 - Carc. 2 H351 hazard statement sourced from: IARC Group 2B (77) 2000

pH (CAS Number: PH)

Description/Comments: Appendix C4
Data source: WM3 1st Edition 2015
Data source date: 25 May 2015
Hazard Statements: None.

acenaphthylene (EC Number: 205-917-1, CAS Number: 208-96-8)

Description/Comments: Data from C&L Inventory Database
Data source: http://echa.europa.eu/web/guest/information-on-chemicals/cl-inventory-database
Data source date: 17 Jul 2015
Hazard Statements: Skin Irrit. 2 H315 , STOT SE 3 H335 , Eye Irrit. 2 H319 , Acute Tox. 1 H310 , Acute Tox. 1 H330 , Acute Tox. 4 H302

acenaphthene (EC Number: 201-469-6, CAS Number: 83-32-9)

Description/Comments: Data from C&L Inventory Database
Data source: http://echa.europa.eu/web/guest/information-on-chemicals/cl-inventory-database
Data source date: 17 Jul 2015
Hazard Statements: Aquatic Chronic 2 H411 , Aquatic Chronic 1 H410 , Aquatic Acute 1 H400 , Skin Irrit. 2 H315 , STOT SE 3 H335 , Eye Irrit. 2 H319

fluorene (EC Number: 201-695-5, CAS Number: 86-73-7)

Description/Comments: Data from C&L Inventory Database
Data source: http://echa.europa.eu/web/guest/information-on-chemicals/cl-inventory-database
Data source date: 06 Aug 2015
Hazard Statements: Aquatic Chronic 1 H410 , Aquatic Acute 1 H400

phenanthrene (EC Number: 201-581-5, CAS Number: 85-01-8)

Description/Comments: Data from C&L Inventory Database
Data source: http://echa.europa.eu/web/guest/information-on-chemicals/cl-inventory-database
Data source date: 06 Aug 2015
Hazard Statements: Skin Irrit. 2 H315 , Aquatic Chronic 1 H410 , Aquatic Acute 1 H400 , Skin Sens. 1 H317 , Carc. 2 H351 , STOT SE 3 H335 , Eye Irrit. 2 H319 , Acute Tox. 4 H302

anthracene (EC Number: 204-371-1, CAS Number: 120-12-7)

Description/Comments: Data from C&L Inventory Database
Data source: http://echa.europa.eu/web/guest/information-on-chemicals/cl-inventory-database
Data source date: 17 Jul 2015
Hazard Statements: Aquatic Chronic 1 H410 , Aquatic Acute 1 H400 , Skin Sens. 1 H317 , Skin Irrit. 2 H315 , STOT SE 3 H335 , Eye Irrit. 2 H319

- **fluoranthene** (EC Number: 205-912-4, CAS Number: 206-44-0)

Description/Comments: Data from C&L Inventory Database
Data source: http://echa.europa.eu/web/guest/information-on-chemicals/cl-inventory-database
Data source date: 21 Aug 2015
Hazard Statements: Aquatic Chronic 1 H410 , Aquatic Acute 1 H400 , Acute Tox. 4 H302

- **pyrene** (EC Number: 204-927-3, CAS Number: 129-00-0)

Description/Comments: Data from C&L Inventory Database; SDS Sigma Aldrich 2014
Data source: http://echa.europa.eu/web/guest/information-on-chemicals/cl-inventory-database
Data source date: 21 Aug 2015
Hazard Statements: Aquatic Chronic 1 H410 , Aquatic Acute 1 H400 , STOT SE 3 H335 , Eye Irrit. 2 H319 , Skin Irrit. 2 H315

- **indeno[123-cd]pyrene** (EC Number: 205-893-2, CAS Number: 193-39-5)

Description/Comments: Data from C&L Inventory Database
Data source: http://echa.europa.eu/web/guest/information-on-chemicals/cl-inventory-database
Data source date: 06 Aug 2015
Hazard Statements: Carc. 2 H351

- **benzo[ghi]perylene** (EC Number: 205-883-8, CAS Number: 191-24-2)

Description/Comments: Data from C&L Inventory Database; SDS Sigma Aldrich 28/02/2015
Data source: http://echa.europa.eu/web/guest/information-on-chemicals/cl-inventory-database
Data source date: 23 Jul 2015
Hazard Statements: Aquatic Chronic 1 H410 , Aquatic Acute 1 H400

- **polychlorobiphenyls; PCB** (EC Number: 215-648-1, CAS Number: 1336-36-3)

CLP index number: 602-039-00-4
Description/Comments: Worst Case: IARC considers PCB Group 1; Carcinogenic to humans; POP specific threshold from ATP1 (Regulation 756/2010/EU) to POPs Regulation (Regulation 850/2004/EC). Where applicable, the calculation method laid down in European standards EN 12766-1 and EN 12766-2 shall be applied.
Data source: Regulation 1272/2008/EC - Classification, labelling and packaging of substances and mixtures. (CLP)
Additional Hazard Statement(s): Carc. 1A H350
Reason for additional Hazards Statement(s):
29 Sep 2015 - Carc. 1A H350 hazard statement sourced from: IARC Group 1 (23, Sup 7, 100C) 2012

- **barium oxide** (EC Number: 215-127-9, CAS Number: 1304-28-5)

Conversion factor: 1.117
Description/Comments: Data from ECHA's C&L Inventory Database, Sigma Aldrich SDS dated 6/2/20
Data source: https://echa.europa.eu/information-on-chemicals/cl-inventory-database/-/discli/details/88825
Data source date: 02 Apr 2020
Hazard Statements: Acute Tox. 3 H301 , Skin Corr. 1B H314 , Eye Dam. 1 H318 , Acute Tox. 1 H332

- **coronene** (EC Number: 205-881-7, CAS Number: 191-07-1)

Description/Comments: Data from C&L Inventory Database; no entries in Registered Substances or Pesticides Properties databases; SDS: Sigma Aldrich, 1907/2006 compliant, dated 2012 - no entries; IARC – Group 3, not carcinogenic.
Data source:
http://clp-inventory.echa.europa.eu/SummaryOfClassAndLabelling.aspx?SubstanceID=17010&HarmOnly=no?fc=true&lang=en
Data source date: 16 Jun 2014
Hazard Statements: STOT SE 2 H371

Appendix B: Rationale for selection of metal species

antimony {antimony trioxide}

Worst case CLP species based on hazard statements/molecular weight and low solubility. Industrial sources include: flame retardants in electrical apparatus, textiles and coatings (edit as required)

arsenic {arsenic trioxide}

Reasonable case CLP species based on hazard statements/molecular weight and most common (stable) oxide of arsenic. Industrial sources include: smelting; main precursor to other arsenic compounds (edit as required)

cadmium {cadmium oxide}

Reasonable case CLP species based on hazard statements/molecular weight, very low solubility in water. Industrial sources include: electroplating baths, electrodes for storage batteries, catalysts, ceramic glazes, phosphors, pigments and nematocides. (edit as required) Worst case compounds in CLP: cadmium sulphate, chloride, fluoride & iodide not expected as either very soluble and/or compound's industrial usage not related to site history (edit as required)

chromium in chromium(III) compounds {chromium(III) oxide}

Reasonable case species based on hazard statements/molecular weight. Industrial sources include: tanning, pigment in paint, inks and glass (edit as required)

chromium in chromium(VI) compounds {chromium(VI) oxide}

Worst case CLP species based on hazard statements/molecular weight. Industrial sources include: production stainless steel, electroplating, wood preservation, anti-corrosion agents or coatings, pigments (edit as required)

copper {dicopper oxide; copper (I) oxide}

Reasonable case CLP species based on hazard statements/molecular weight and insolubility in water. Industrial sources include: oxidised copper metal, brake pads, pigments, antifouling paints, fungicide. (edit as required) Worse case copper sulphate is very soluble and likely to have been leached away if ever present and/or not enough soluble sulphate detected. (edit as required)

lead {lead chromate}

Worst case CLP species based on hazard statements/molecular weight (edit as required)

mercury {mercury dichloride}

Worst case CLP species based on hazard statements/molecular weight (edit as required)

molybdenum {molybdenum(VI) oxide}

Worst case CLP species based on hazard statements/molecular weight (edit as required)

nickel {nickel chromate}

Worst case CLP species based on hazard statements/molecular weight (edit as required)

selenium {selenium compounds with the exception of cadmium sulphoselenide and those specified elsewhere in this Annex}

Harmonised group entry used as most reasonable case. Pigment cadmium sulphoselenide not likely to be present in this soil. No evidence for the other CLP entries: sodium selenite, nickel II selenite and nickel selenide, to be present in this soil. (edit as required)

zinc {zinc chromate}

Worst case CLP species based on hazard statements/molecular weight (edit as required)

barium {barium oxide}

Cr VI not detected

Appendix C: Version

HazWasteOnline Classification Engine: WM3 1st Edition v1.1, May 2018
HazWasteOnline Classification Engine Version: 2020.88.4220.8373 (28 Mar 2020)
HazWasteOnline Database: 2020.88.4220.8373 (28 Mar 2020)

This classification utilises the following guidance and legislation:
WM3 v1.1 - Waste Classification - 1st Edition v1.1 - May 2018
CLP Regulation - Regulation 1272/2008/EC of 16 December 2008
1st ATP - Regulation 790/2009/EC of 10 August 2009
2nd ATP - Regulation 286/2011/EC of 10 March 2011
3rd ATP - Regulation 618/2012/EU of 10 July 2012
4th ATP - Regulation 487/2013/EU of 8 May 2013
Correction to 1st ATP - Regulation 758/2013/EU of 7 August 2013
5th ATP - Regulation 944/2013/EU of 2 October 2013
6th ATP - Regulation 605/2014/EU of 5 June 2014
WFD Annex III replacement - Regulation 1357/2014/EU of 18 December 2014
Revised List of Wastes 2014 - Decision 2014/955/EU of 18 December 2014
7th ATP - Regulation 2015/1221/EU of 24 July 2015
8th ATP - Regulation (EU) 2016/918 of 19 May 2016
9th ATP - Regulation (EU) 2016/1179 of 19 July 2016
10th ATP - Regulation (EU) 2017/776 of 4 May 2017
HP14 amendment - Regulation (EU) 2017/997 of 8 June 2017
13th ATP - Regulation (EU) 2018/1480 of 4 October 2018
POPs Regulation 2004 - Regulation 850/2004/EC of 29 April 2004
1st ATP to POPs Regulation - Regulation 756/2010/EU of 24 August 2010
2nd ATP to POPs Regulation - Regulation 757/2010/EU of 24 August 2010

APPENDIX 5 - WAC Summary Data

Waste Categorisation Summary Table

Hackettstown Skerries, November 2019 - January 2020

Sample ID	TP-05	TP-06	TP-10	TPI-101	TP-101	TP-104					
Sample Depth (m)	0.5	0.5	0.5	0.5	0.5	0.5					
Material Description	Sand	Clay	Made Ground	Made Ground	Made Ground	Made Ground					
Sample Date	29/11/2019	29/11/2019	29/11/2019	29/01/2020	30/01/2020	30/01/2020					
LoW Code	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 A	Category A	Category A	Category A					
Metals											
Antimony	1	2	1	2	2	2	-	-	HazWaste	<1	mg/kg
Arsenic	10.7	8.4	9.3	11.9	9.1	12.4	-	-	HazWaste	<0.5	mg/kg
Barium	58	65	67	59	96	67	-	-	HazWaste	<1	mg/kg
Cadmium	0.5	0.4	0.5	0.3	0.3	0.2	-	-	HazWaste	<0.1	mg/kg
Chromium	53.4	63.6	64.5	83.7	92.9	82.1	-	-	HazWaste	<0.5	mg/kg
Copper	20	14	15	22	19	26	-	-	HazWaste	<1	mg/kg
Lead	10	15	10	12	12	18	-	-	HazWaste	<5	mg/kg
Mercury	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	-	-	HazWaste	<0.1	mg/kg
Molybdenum	1.2	2.6	1.2	5.2	4.2	4.9	-	-	HazWaste	<0.1	mg/kg
Nickel	45.1	27.9	39.1	42.8	38.3	37.4	-	-	HazWaste	<0.7	mg/kg
Selenium	1	<1	<1	2	1	2	-	-	HazWaste	<1	mg/kg
Zinc	53	53	47	57	62	57	-	-	HazWaste	<5	mg/kg
Hexavalent Chromium	<0.3	<0.3	<0.3	<0.3	<0.3	<0.3	-	-	HazWaste	<0.3	mg/kg
pH (solid sample)	7.30	7.12	7.04	8.27	7.91	8.11	-	-	HazWaste	<0.01	pH units
alkali reserve	NA	NA	NA	NA	NA	NA	-	-	-	<0.000	gNaOH/100g
Asbestos											
Asbestos (Dry Weight)	NAD	NAD	NAD	NAD	NAD	NAD	-	-	-	-	%
Asbestos (Moisture Corrected Weight)	NAD	NAD	NAD	NAD	NAD	NAD	-	-	0.1	<0.001	%
ACM Detected	NAD	NAD	NAD	NAD	NAD	NAD	-	-	-	Presence	Presence
PAHs											
Naphthalene	<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	-	-	HazWaste	<0.03	mg/kg
Acenaphthene	<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	-	-	HazWaste	<0.04	mg/kg
Phenanthrene	<0.03	<0.03	<0.03	0.08	<0.03	<0.03	-	-	HazWaste	<0.03	mg/kg
Anthracene	<0.04	<0.04	<0.04	<0.04	<0.04	<0.04	-	-	HazWaste	<0.04	mg/kg
Fluoranthene	<0.03	<0.03	<0.03	0.16	<0.03	<0.03	-	-	HazWaste	<0.03	mg/kg
Pyrene	<0.03	<0.03	<0.03	0.12	<0.03	<0.03	-	-	HazWaste	<0.03	mg/kg
Benzo(a)anthracene	<0.06	<0.06	<0.06	0.11	<0.06	<0.06	-	-	HazWaste	<0.06	mg/kg
Chrysene	<0.02	<0.02	<0.02	0.09	<0.02	<0.02	-	-	HazWaste	<0.02	mg/kg
Benzo(bk)fluoranthene	<0.07	<0.07	<0.07	0.10	<0.07	<0.07	-	-	HazWaste	<0.07	mg/kg
Benzo(a)pyrene	<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	-	-	HazWaste	<0.04	mg/kg
Dibenzo(ah)anthracene	<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	-	-	HazWaste	<0.04	mg/kg
Coronene	<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	0.26	<0.22	<0.22	-	-	-	<0.22	mg/kg
PAH 17 Total	<0.64	<0.64	<0.64	0.66	<0.64	<0.64	100	100	-	<0.64	mg/kg
Benzo(b)fluoranthene	<0.05	<0.05	<0.05	0.07	<0.05	<0.05	-	-	HazWaste	<0.05	mg/kg
Benzo(k)fluoranthene	<0.02	<0.02	<0.02	0.03	<0.02	<0.02	-	-	HazWaste	<0.02	mg/kg
Benzo(j)fluoranthene	<1	<1	<1	<1	<1	<1	-	-	HazWaste	<1	mg/kg
Hydrocarbons											
TPH (C5-40)	<52	<52	<52	<52	<52	<52	-	-	HazWaste	<52	mg/kg
MTBE	<5	<5	<5	<5	<5	<5	-	-	HazWaste	<5	ug/kg
Benzene	<5	<5	<5	<5	<5	<5	-	-	HazWaste	<5	ug/kg
Toluene	<5	<5	<5	<5	<5	<5	-	-	HazWaste	<5	ug/kg
Ethylbenzene	<5	<5	<5	<5	<5	<5	-	-	HazWaste	<5	ug/kg
m/p-Xylene	<5	<5	<5	<5	<5	<5	-	-	HazWaste	<5	ug/kg
o-Xylene	<5	<5	<5	<5	<5	<5	-	-	HazWaste	<5	ug/kg
Total 7 PCBs	<35	<35	<35	<35	<35	<35	1,000	1,000	HazWaste	<35	ug/kg
WAC Solid Sample Summary**											
Total Organic Carbon *	0.18	1.75	0.25	0.18	0.27	0.30	3	6	-	<0.02	%
Sum of BTEX	<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	1	1	-	<0.035	mg/kg
Mineral Oil	<30	<30	<30	<30	<30	<30	500	500	-	<30	mg/kg
PAH Sum of 6	<0.22	<0.22	<0.22	0.26	<0.22	<0.22	-	-	-	<0.22	mg/kg
PAH Sum of 17	<0.64	<0.64	<0.64	0.66	<0.64	<0.64	100	100	-	<0.64	mg/kg
WAC Leachate Data**											
Arsenic	<0.025	<0.025	<0.025	0.040	0.027	0.033	0.5	1.5	-	<0.025	mg/kg
Barium	<0.03	<0.03	<0.03	<0.03	<0.03	0.03	20	20	-	<0.03	mg/kg
Cadmium	<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	0.5	0.5	-	<0.015	mg/kg
Copper	<0.07	<0.07	<0.07	<0.07	<0.07	<0.07	2	2	-	<0.07	mg/kg
Mercury	<0.0001	0.0002	<0.0001	<0.0001	<0.0001	<0.0001	0.01	0.01	-	<0.0001	mg/kg
Molybdenum	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	0.5	1.5	-	<0.02	mg/kg
Nickel	<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	0.5	0.5	-	<0.05	mg/kg
Antimony	<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	0.1	0.3	-	<0.03	mg/kg
Zinc	0.04	0.05	0.04	<0.03	0.04	<0.03	4	4	-	<0.03	mg/kg
Total Dissolved Solids	420	440	500	1120	430	1161	4000	12,000	-	<350	mg/kg
Dissolved Organic Carbon	60	40	30	30	40	100	500	500	-	<20	mg/kg
Phenol	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	1	1	-	<0.1	mg/kg
Sulphate as SO4	7	<5	<5	42	6	67	1000	3,000	-	<0.5	mg/kg
Chloride	<3	<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 6 – S4UL Data

S4UL - Metals (Residential with homegrown produce), Hackettstown, Skerries, November 2019 - January 2020

Sample ID	TP-05	TP-06	TP-10	TPI-101	TP-101	TP-104	Max Level Detected	Units	Residential with homegrown produce
Sample Depth (m)	**0.5**	**0.5**	**0.5**	**0.5**	**0.5**	**0.5**			
Antimony	1	2	1	2	2	2	2	mg/kg	ne
Arsenic	10.7	8.4	9.3	11.9	9.1	12.4	12.4	mg/kg	37
Barium	58	65	67	59	96	67	96	mg/kg	ne
Cadmium	0.5	0.4	0.5	0.3	0.3	0.2	0.5	mg/kg	11
Chromium	53.4	63.6	64.5	83.7	92.9	82.1	92.9	mg/kg	910
Copper	20	14	15	22	19	26	26	mg/kg	2,400
Lead	10	15	10	12	12	18	48	mg/kg	ne
Mercury	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	0	mg/kg	1.2
Molybdenum	1.2	2.6	1.2	5.2	4.2	4.9	5.2	mg/kg	ne
Nickel	45.1	27.9	39.1	42.8	38.3	37.4	45.1	mg/kg	130
Selenium	1	<1	<1	2	1	2	2	mg/kg	250
Zinc	53	53	47	57	62	57	62	mg/kg	3,700
Hexavalent Chromium	<0.3	<0.3	<0.3	<0.3	<0.3	<0.3	0	mg/kg	6*

S4UL - Organic Compounds (Residential with homegrown produce), Hackettstown, Skerries, November 2019 - January 2020

Residential	TP-05	TP-06	TP-10	TPI-101	TP-101	TP-104	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	<5	<5	<5	<5	<5	<5	0.00	mg/kg	ne	ne	ne
Benzene	<5	<5	<5	<5	<5	<5	0.00	mg/kg	0.087	0.17	0.37
Toluene	<5	<5	<5	<5	<5	<5	0.00	mg/kg	130	290	660
Ethylbenzene	<5	<5	<5	<5	<5	<5	0.00	mg/kg	47	110	260
m/p-Xylene	<5	<5	<5	<5	<5	<5	0.00	mg/kg	56	130	310
o-Xylene	<5	<5	<5	<5	<5	<5	0.000	mg/kg	60	140	330
TOC	0.18	1.75	0.25	0.18	0.27	0.3		%			
SOM (Note 1)	0.31	3.02	0.43	0.31	0.47	0.52					

Note 1 - TOC * 1.724

S4UL - PAHs (Residential with Homegrown Produce), Hackettstown, Skerries, November 2019 - January 2020

	TP-05	TP-06	TP-10	TPI-101	TP-101	TP-104
	0.5	0.5	0.5	0.5	0.5	0.5
Naphthalene	<0.04	<0.04	<0.04	<0.04	<0.04	<0.04
Acenaphthylene	<0.03	<0.03	<0.03	<0.03	<0.03	<0.03
Acenaphthene	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05
Fluorene	<0.04	<0.04	<0.04	<0.04	<0.04	<0.04
Phenanthrene	<0.03	<0.03	<0.03	0.08	<0.03	<0.03
Anthracene	<0.04	<0.04	<0.04	<0.04	<0.04	<0.04
Fluoranthene	<0.03	<0.03	<0.03	0.16	<0.03	<0.03
Pyrene	<0.03	<0.03	<0.03	0.12	<0.03	<0.03
Benzo(a)anthracene	<0.06	<0.06	<0.06	0.11	<0.06	<0.06
Chrysene	<0.02	<0.02	<0.02	0.09	<0.02	<0.02
Benzo(bk)fluoranthene	<0.07	<0.07	<0.07	0.1	<0.07	<0.07
Benzo(a)pyrene	<0.04	<0.04	<0.04	<0.04	<0.04	<0.04
Indeno(123cd)pyrene	<0.04	<0.04	<0.04	<0.04	<0.04	<0.04
Dibenzo(ah)anthracene	<0.04	<0.04	<0.04	<0.04	<0.04	<0.04
Benzo(ghi)perylene	<0.04	<0.04	<0.04	<0.04	<0.04	<0.04
Coronene	<0.04	<0.04	<0.04	<0.04	<0.04	<0.04
PAH 6 Total	<0.22	<0.22	<0.22	0.26	<0.22	<0.22
PAH 17 Total	<0.64	<0.64	<0.64	0.66	<0.64	<0.64
Benzo(b)fluoranthene	<0.05	<0.05	<0.05	0.07	<0.05	<0.05
Benzo(k)fluoranthene	<0.02	<0.02	<0.02	0.03	<0.02	<0.02
Benzo(j)fluoranthene	<1	<1	<1	<1	<1	<1
TOC	0.18	1.75	0.25	0.18	0.27	0.3
SOM (Note 1)	0.31	3.02	0.43	0.31	0.47	0.52

Note 1 - TOC * 1.724

		Residential with homegrown produce		
Max Level Detected	Units	LQM/CIEH Suitable 4 Use Levels (S4ULs) [mg/kg DW]		
		1 % SOM	2.5 % SOM	6 % SOM
0.00	mg/kg	2.3	5.6	13
0.00	mg/kg	170	420	920
0.00	mg/kg	210	510	1,100
0.00	mg/kg	170	400	860
0.08	mg/kg	95	220	440
0.00	mg/kg	2,400	5,400	11,000
0.16	mg/kg	280	560	890
0.12	mg/kg	620	1,200	2,000
0.11	mg/kg	7.2	11	13
0.09	mg/kg	15	22	27
0.10	mg/kg	ne	ne	ne
0.00	mg/kg	2.2	2.7	3
0.00	mg/kg	27	36	41
0.00	mg/kg	0.24	0.28	0.3
0.00	mg/kg	320	340	350
0.00	mg/kg	ne	ne	ne
0.26	mg/kg	ne	ne	ne
0.66	mg/kg	ne	ne	ne
0.07	mg/kg	2.6	3.3	3.7
0.03	mg/kg	77	93	100
0.00	mg/kg	ne	ne	ne
	%			

APPENDIX 7 – Potential Material Outlets

Waste Category	Classification Criteria	Potential Outlets
Category A Unlined Soil Recovery Facilities	Soil and Stone only which are free from[14] anthropogenic materials such as concrete, brock timber. Soil must be free from "contamination" e.g. PAHs, Hydrocarbons.	Soil Recovery Facilities, Waste Facility Permitted Sites, COR Sites or potential by-product if deemed not to be a waste and complying with requirements under Article 27 of European Waste Directive Regulations (2011).[15]
Category B1 Inert Landfill	Reported concentrations within inert waste limits, which are set out by the adopted EU Council Decision 2003/33/EC establishing criteria and procedures for the acceptance of waste at landfills pursuant to Article 16 and Annex II of Directive 1999/31/EC (2002). Results also found to be non-hazardous using the HWOL application.	Integrated Materials Solutions Limited Partnership (IMS), Naul, County Dublin W0129-02 Walshestown Landfill Walshestown, Blackhall, Tipperkevin & Bawnoge, Naas, County Kildare W0254-01
Category B2 Inert Landfill	Reported concentrations greater than Category B1 criteria but less than IMS Hollywood Landfill acceptance criteria, as set out in their Waste Licence W0129-02. Results also found to be non-hazardous using the HWOL application*	Integrated Materials Solutions Limited Partnership (IMS), Naul, County Dublin W0129-02 Walshestown Landfill Walshestown, Blackhall, Tipperkevin & Bawnoge, Naas, County Kildare W0254-01[16]
Category C Non-Haz Landfill	Reported concentrations greater than Category B2 criteria but within non-haz landfill waste acceptance limits set out by the adopted EU Council Decision 2003/33/EC establishing criteria and procedures for the acceptance of waste at landfills pursuant to Article 16 and Annex II of Directive 1999/31/EC (2002). Results also found to be non-hazardous using the HWOL application.	Walshestown Landfill Walshestown, Blackhall, Tipperkevin & Bawnoge, Naas, County Kildare W0254-01[17] Ballynagran Landfill, Co. Wicklow. W165-02 Drehid Landfill, Co. Kildare. W0201-01 East Galway Landfill, Co. Galway. W0178-02 Knockharley Landfill, Co. Meath. W0146-02
Category C 1 Non-Haz Landfill	As Category C but containing < 0.001% w/w asbestos fibres.	RILTA Environmental LTD. W0192-03 Enva Portlaoise.

[14] Free from equates to less than 2%.
[15] S.I. No. 126/2011 - European Communities (Waste Directive) Regulations 2011 (Article 27).
[16] Licenced to accept Category B2 material for recovery.
[17] Licenced to accept Category C material for recovery.

		W0184-02
Category C 2 Non-Haz Landfill	As Category C but containing >0.001% and <0.01% w/w asbestos fibres	RILTA Environmental LTD. W0192-03 Enva Portlaoise. W0184-02
Category C Non-Haz Landfill	As Category C but containing >0.01% and <0.1% w/w asbestos fibres.	RILTA Environmental LTD. W0192-03 Enva Portlaoise. W0184-02
Category D Hazardous Treatment	Results found to be hazardous using HWOL Application.	RILTA Environmental LTD. W0192-03 Enva Portlaoise. W0184-02
Category D 1 Hazardous Treatment	Results found to be hazardous due to the presence of asbestos (>0.1%).	RILTA Environmental LTD. W0192-03