

Chapter 7:  
Land and Soils

## 7.0 LAND AND SOILS

### 7.1 INTRODUCTION

This chapter of the Environmental Impact Assessment Report (EIAR) document comprises an assessment of the likely effects on land and soils of the proposed construction of a residential development at Golf Lane, Carrickmines, Dublin 18, during the construction and operational phases of the proposed development. It will also identify the characteristics, predicted impact and mitigation measures arising from the different phases. This chapter was prepared by Nick Fenner MEng (Hons) CEng MIEI, Associate (Civils) DBFL Consulting Engineers.

The application site has an area of c. 2.56 hectares and is bound to the north by the M50 motorway, to the east by Golf Lane, to the west by Glenamuck Road, and to the south by existing residential development. The proposed development seeks to provide for the construction of 482 no. residential units, a childcare facility, residential amenity spaces, open space and all associated site and infrastructural works.

The associated site and infrastructural works include foul and surface water drainage, internal accesses and footpaths, car parking spaces and bicycle spaces, public open space, landscaping, street lighting, walls and fences. The proposal includes for access to the Glenamuck Road from the development via a pedestrian and cycle bridge across the Golf Stream.

### 7.2 STUDY METHODOLOGY

The methodology followed for this section is in accordance with the European Commission's Guidance on the preparation of the Environmental Impact Assessment Report (2017), EPA "Revised Guidelines on the Information to be contained in Environmental Impact Statements, Draft September 2017" and "Advice Notes for Preparing Environmental Impact Statements Draft September 2017" and Guidelines for Planning Authorities and An Bord Pleanála on carrying out Environmental Impact Assessment August 2018. Information on the subject site and surrounding lands and soils was assembled from the following sources:

- Geological Survey of Ireland (GSI) interactive mapping;
- Site Investigations carried out by Ground Investigations Ireland Ltd in March 2020 comprising 10 no. trial pits, 2 no. surface water soakaway tests, 3 no in-situ plate bearing tests to determine soil CBR, 5 no. rotary core boreholes and 2 no. groundwater monitoring wells. Refer to Appendix 7.1 for the Site Investigation Report by Ground Investigations Ireland Ltd;
- Environmental Protection Agency (EPA) interactive mapping;
- Teagasc soil and sub-soil data;
- Ordnance Survey Ireland (OSI) mapping;
- Topographical Survey;
- Site Inspection / walkover;
- Hydrological and Hydrogeological Risk Assessment

The classification of impacts detailed in this chapter have been taken using the "Revised Guidelines on the Information to be contained in Environmental Impact Statements, Draft September 2017".

## **7.3 THE EXISTING RECEIVING ENVIRONMENT**

### **7.3.1 Site Description, Topography and Land Use**

The subject site is located in Carrickmines and is bordered to the north by the existing M50 motorway, to the west by Glenamuck Road, and to the east Golf Lane.

There are two EPA designated watercourses in the vicinity of the site include the Carrickmines River which enters and exits at the north west corner of the site and the Glenamuck / Golf Stream runs within the site parallel to the Glenamuck Road. The two watercourses converge in the north west corner of the site.

The subject site's topography generally falls from south-east to north-west towards the river valley, ranging from approximately 80m AOD in the south to 75m AOD at the top of the river embankment and 70m AOD at the lowest river level.

A ground investigation for the subject site was undertaken by Ground Investigations Ireland.

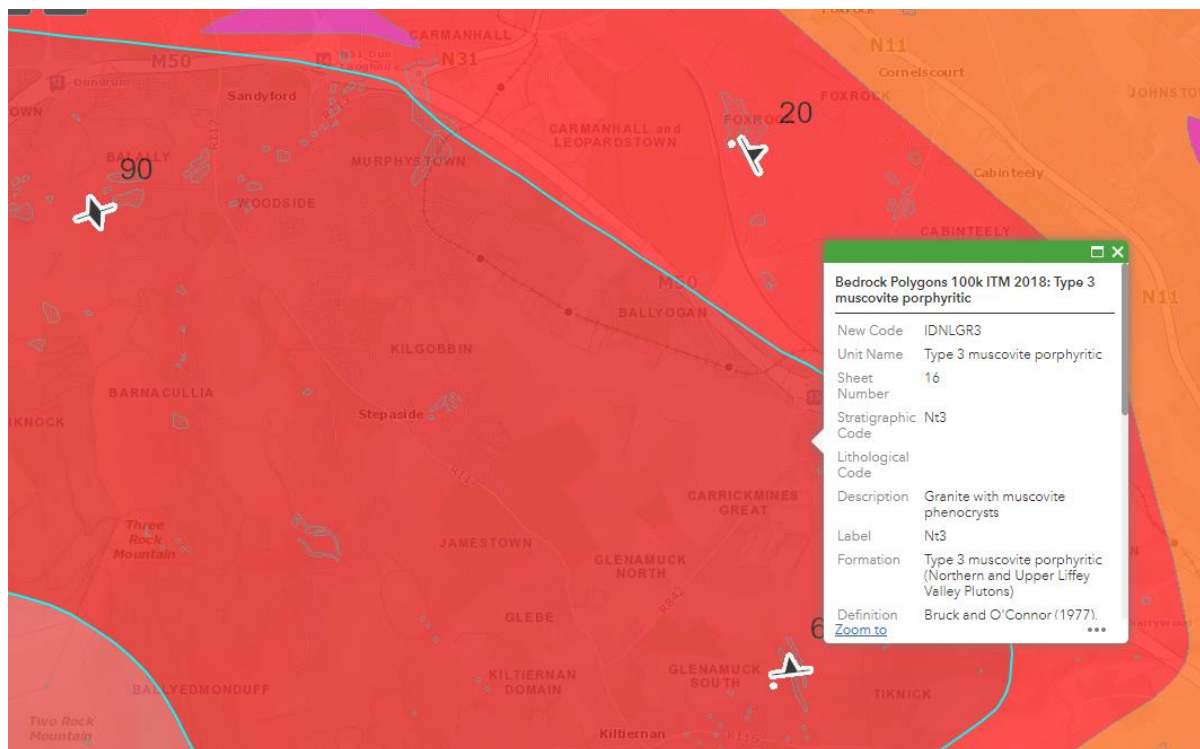
The report revealed that the strata encountered consisted mainly of Topsoil or Surfacing on Made Ground (slightly sandy slightly gravelly clay with many cobbles and boulders) present at depths between 0.6m and 2.5m below ground level. Cohesive deposits were encountered beneath the Made Ground and were described typically as brown slightly sandy gravelly CLAY with occasional cobbles and boulders.

Bedrock was encountered at depths ranging from 0.35m to 3.5m BGL and consisted mainly of medium strong to very strong massive coarse-grained crystalline Granite.

### **7.3.2 Bedrock Geology**

The 1:100,000 GSI bedrock Geology Map (Sheet 16) indicates that the subject site is underlain by Granite Bedrock. The bedrock is described in geological mapping as a Caledonian Age Granite and is part of a formation known as the Northern and Upper Liffey Valley Plutons. This formation is present from the Blessington Lakes area in Wicklow to the coast at Dun Laoghaire. The rock description is a granite with muscovite phenocrysts. The rock classification within the site extents is a Type 3 muscovite porphyritic. An extract from GSI mapping is presented in Figure 7.1.

In general, the rock encountered during the ground investigation is consistent with the published geology for the area. 5 rotary core boreholes were carried out across the site to a maximum depth of 6.9m. Bedrock was encountered in all 5 of the boreholes at depth ranging from 0.35m - 3.35m. Where encountered, rock was described as a strong coarse-grained crystalline Granite.



**Figure 7.1: Bedrock Geology Map (source: GSI Online Mapping)**

### 7.3.3 Subsoil (quaternary) Geology

The quaternary period is the most recent stage of the geological time period. It marks the period of the Ice Age and the postglacial period which extends to the present day. Most surface deposits were deposited in the Quaternary Period and provide the parent materials for the soils in the area.

Most sediments of the Quaternary period were deposited during the Ice Age itself either directly from the huge ice sheets or by meltwater from the sheets as they melted. Ice sheets would have slowly eroded the underlying bedrock producing sediment. This sediment may include particles of all sizes ranging from clay to boulder and which when spread over the surface by glacial ice, takes the form of till (boulder clay). Alternatively, sediment may be carried and sorted by meltwater and deposited as sand and gravel, with silt and clay deposited separately in lake systems or carried away to the sea. Glacial deposits therefore contain fragments of the type of bedrock over which the ice originally passed.

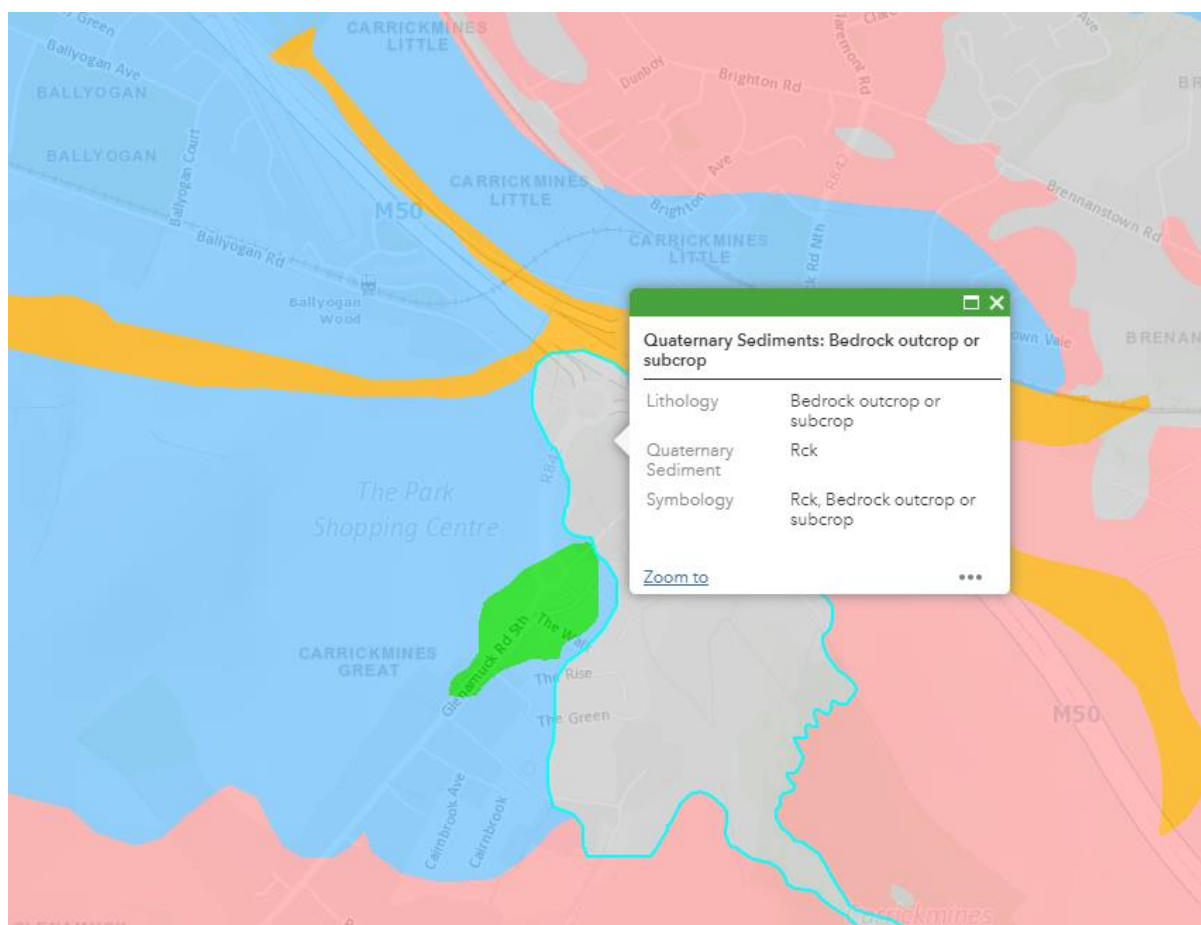
The Site Investigations reports indicate made ground and cohesive deposits generally as brown slightly sandy gravelly clay with occasional boulders.

### 7.3.4 Soils

The GSI soils map indicates the site predominantly being defined as Bedrock outcrop or subcrop. An extract from the GSI soils map relevant to Golf Lane is detailed in Figure 7.2 below.

Site investigation information indicates that the subsoil material generally comprises of brown slightly sandy gravelly clay with occasional boulders.





**Figure 7.2: Bedrock Geology Map (source: GSI Online Mapping)**

Environmental testing was carried out on 18 no. soil samples from the trail pits. The results of the 18 no. samples taken for WAC analysis are below the criteria limits for inert waste landfill. One test indicated that a sample had narrowly exceeded the inert parameter for total organic carbon.

### 7.3.5 Hydrogeology

The design team has engaged with a Hydrogeologist to undertake a Hydrology and Hydrogeological Risk assessment to assess the risk of the development to undertake a desk top review is confirm any hydrological pathway to Natura 2000 sites and determine the risks to water quality based on the construction and operation of the proposed development. The report concludes that due to the nature of the development and the proposed design, there is no potential for impact on water quality at the Natura 2000 sites.

#### Regional Hydrogeology

Groundwater can be defined as water that is stored in, or moves through, pores and cracks in sub soils. Aquifers are rocks or deposits that contain sufficient void spaces and which are permeable enough to allow water to flow through them in significant quantities. The potential of the rock to store and transport water is governed by permeability, of which there are two types, intergranular and fissure permeability.

Intergranular permeability is found in sediments, sands, gravels and clays. Fissure permeability is found in bedrock, where water moves through (and is stored in) cracks, fissures, planes and solution openings.

When considering groundwater, it is important to consider the underlying geology, its complexity including faults, the large amounts of water and rainfall available for recharge and the overlying

Quaternary deposits. The bedrock geology of this area is defined as granite with muscovite porphyritic. The bedrock mapping for the area as defined in the GSI is included as Figure 7.1 above.

The Geological Survey of Ireland has devised a system for classifying the aquifers in Ireland based on the hydrogeological characteristics, size and productivity of the groundwater resource. The three main classifications are Regionally Important Aquifers, Locally Important Aquifers and Poor Aquifers.

The bedrock underlying the study area is classified by the GSI as a Poor Aquifer which is generally unproductive except for local zones with no karst features in this area.

There are no groundwater wells or springs recorded on the GSI Groundwater Data Viewer mapping on or near the site. Granites with this aquifer classification typically exhibit low storativity.

A site investigation was carried out in 2020 in order to assess the soil infiltration rates. The assessment of soil infiltration was undertaken by excavating trial pits based on the requirements of BRE Digest 365 and CIRIA SuDS Manual C753. The FSR (Winter Rain Acceptance) SOIL value determined was used to calculate the pre-development characteristics of the in-situ soil and the corresponding greenfield run-off of the site.

The results of these tests are included in the Site Investigation Report and further detail on the methodology used is included within the DBFL Infrastructure Design Report Appendices.

### Groundwater vulnerability

Aquifer or groundwater vulnerability is a relative measure of the ease with which the groundwater could be contaminated by human activity and depends on the aquifer's intrinsic geological and hydrogeological characteristics. The vulnerability is determined by the permeability of any overlying deposits. For example, bedrock with a thick, low permeability, clay-rich overburden is less vulnerable than bedrock with a thin, high permeability, gravelly overburden.

Groundwater vulnerability categories are defined by the GSI as – Extreme rock at or near surface or karst (X), Extreme (E), High (H), Moderate (M) and Low (L) for mapping purposes and in the assessment of risk to ground waters. The classifications are based on the thickness and permeability of the sub-soils overlying the aquifer. The GSI has classified the aquifer vulnerability underlying the site as E (extreme) which infers groundwater or bedrock is present within 1 to 3m of the surface). Flow paths are generally not connected and limited to within the upper weathered zones identified. As such any potential for off-site migration through the underlying granite is considered low.

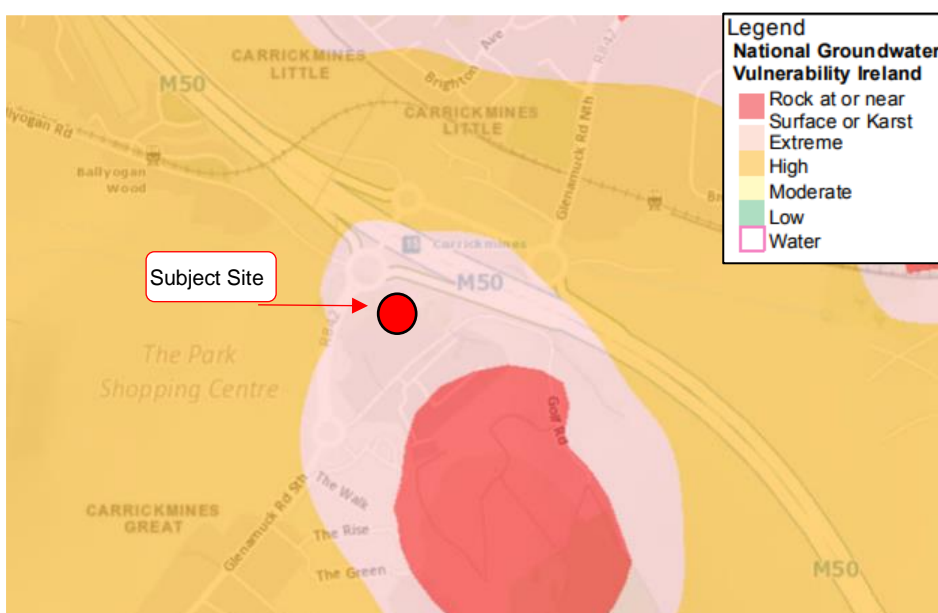


Figure 7.3: Ground Water Vulnerability Map (source: GSI Online Mapping)

## Local groundwater usage and source protection area

The GSI online map does not identify any significant or notable abstraction wells within the vicinity of the proposed development. No groundwater protection zones are marked in proximity to the site.

## Recharge

Effective rainfall is the amount of rainfall available as either recharge to ground or run-off to surface water after evaporation or taken up by plants and is 100mm/yr. The recharge coefficient, which is the proportion of effective rainfall to recharge groundwater, varies from 60% for the site. Recharge is the amount of rainfall that replenishes the aquifer, it is a function of the effective rainfall, the permeability and thickness of the subsoil and the aquifer characteristics. According to GSI the maximum recharge capacity to the bedrock is 100 mm/yr across the site.

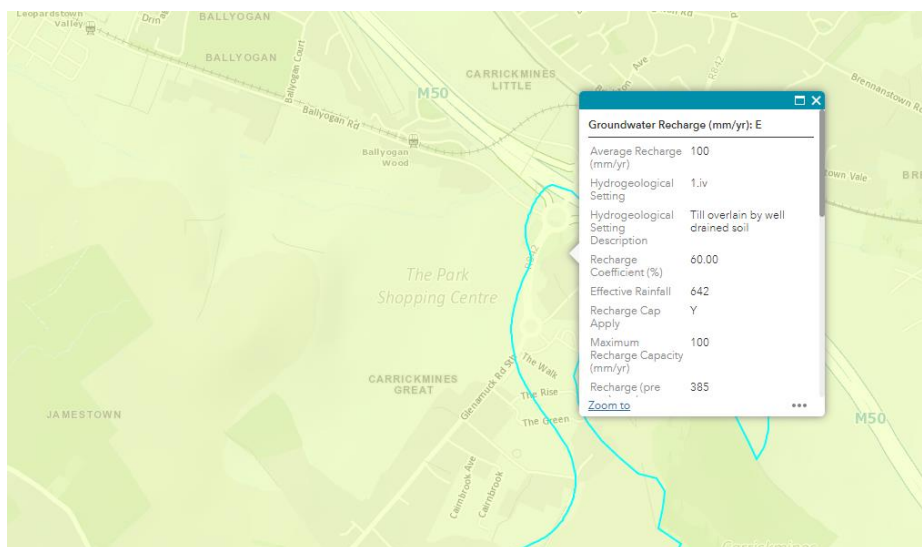


Figure 7.4: Groundwater Recharge Map (source: GSI Online Mapping)

## Site Hydrogeology

Site investigation data shows ingress of groundwater level in the trial pits and two standpipes were installed to allow the determination of the equilibrium groundwater level.

The characteristics of the underlying granite bedrock and local topography appear to have a strong influence in the hydrogeology of the site. Groundwater is present within the upper levels of the bedrock and is recorded at 2.54m below ground level and 2.74m below ground level within the 2 standpipes. Groundwater flows follow the topographical relief of the area and generally flow in a northerly direction towards the Carrickmines River and Golf Stream.

## 7.4 CHARACTERISTICS OF THE PROPOSED DEVELOPMENT

The proposed development comprises a residential development of 482 no. units (all apartments) in 7no. blocks ranging from 4 to 22 storeys, along with ancillary residential amenities, and provision of a childcare facility, gym, and local shop. Two basement levels are proposed, providing car parking spaces (299 no.), bin stores, plant rooms, bicycle parking (1,000 no. spaces), and circulation areas. A further 240 no. bicycle parking spaces are provided at ground level. The proposed development includes landscaping, boundary treatments, public, private and communal open space (including roof terraces), two cycle / pedestrian crossings over the stream at the western side of the site, along with a new pedestrian and cycle crossing of Glenamuck Road South at the west of the site, cycle and pedestrian facilities, play facilities, and lighting. The proposed buildings include the provision of private open space in the form of balconies and winter gardens to all elevations of the proposed buildings. The development also includes vehicular, pedestrian, and cycle accesses, drop off areas, boundary treatments, services, and all associated ancillary and site development works.

## 7.5 POTENTIAL IMPACT OF THE PROPOSED DEVELOPMENT

The predicted impacts of the proposed development with regard to the soil environment are assessed below for the construction and operational phases.

### 7.5.1 Construction Phase

Approximately 30,500m<sup>3</sup> of material will need to be excavated from site to accommodate the construction of the basements for the proposed development including headroom based on a precautionary approach. This includes approximately 20,000m<sup>3</sup> of rock excavation. The volumes stated above have been calculated by 3D modelling and have allowed for a small overestimate to ensure a suitable tolerance has been included. This will result in the exposure of the bedrock to various elements including weather and construction traffic. Therefore, the impact may be characterised as a likely, short term, slight, adverse impact on the natural strength of the bedrock and subsequently resulting in deeper foundations being required.

The foundations for the development will take the form of reinforced concrete pad foundations to columns and reinforced concrete strip footings to retaining walls and load bearing walls. The concrete grade and specification will be suitable for the environment based on site testing results carried out. The basement construction will be against the rock head/face and possibly redirect groundwater paths. This is likely to have a neutral, moderate, permanent impact on the ground water and aquifers within the subject site.

Rutting and deterioration of the topsoil layer and any exposed subsoil layers or bedrock by earthworks plant and construction traffic. As such the impact may be characterised as likely, short term, moderate, adverse impact on subsoil, the consequence of which will be erosion and generation of sediment laden runoff.

Excavations are required to accommodate the attenuation tanks around the site. This landscaping activity will likely have a moderate, permanent impact on the soil and ground profile.

There is a potential risk of localised contamination from construction materials leeching into the underlying soils by exposure, dewatering or construction related spillages resulting in a Permanent Negative impact on the soils. In the case of soils, the magnitude of this impact is Slight and Adverse as it may result in the requirement to excavate/remediate a small proportion of contamination or result in a low risk of pollution to the soils. As a result, its significance is Imperceptible for all important soils features.

During the construction period, large machinery and associated fuel and fuel storage will be present on site daily. As a result, accidental spills and leaks (e.g. storage of oils and fuels on site); use of cement; and concrete during construction works may occur during the construction phase. As such, in the

absence of mitigation, the impact may be characterised as a likely, temporary, regionally short term, moderate adverse impact on subsoil and ground water and other water courses.

The potential likely and significant impact on hydrogeology during the construction phase is considered to be short term, temporary and moderate without mitigation measures in place.

### **7.5.2 Operational Phase**

The day-to-day activities of the completed development would be unlikely to have any direct impact on the groundwater environment. Minor impacts may include reduced infiltration and therefore reduced recharge volumes entering the groundwater. This is directly related to the creation of impermeable development areas which pending their arrangement could increase run-off volumes and reduce existing "greenfield" infiltration potential. The risk of spills or leaks of fuels and oils from residential vehicles may impact if the surface water system is not designed to address this.

On completion of the construction phase, it is not envisaged that there would be a further direct impact on the soil or geological structure. Ensuring appropriately designed and constructed site services will protect the soils and geology from future contamination arising from operation of the developments.

The impacts on soils and geology arising from the operational phase will be temporary and imperceptible.

## **7.6 POTENTIAL CUMULATIVE IMPACTS**

There are no predicted cumulative impacts arising from the construction or operational phase of the development or, in combination with the Park Quadrant 3 development or the Glenamuck District Distributor Road project, or any other proposed or permitted developments in the vicinity.

## **7.7 DO NOTHING IMPACT**

If the proposed development did not proceed there would be no impact on the existing soils or geology of the site. It is envisaged that the land use would remain unchanged. There are no predicted impacts should the proposed development not proceed.

## **7.8 MITIGATION MEASURES**

### **7.8.1 Construction Phase**

#### **L&S CONST 1:**

The mitigation measures proposed for implementation during the construction phase are set out in the Construction and Environmental Management Plan [CEMP] and include the following:

- Stripping of topsoil will be carried out in a controlled and carefully managed way.
- Topsoil stockpiles will be protected for the duration of the works and not located in areas where sediment laden runoff may enter existing surface water drains.
- Topsoil stockpiles will also be located on site so as not to necessitate double handling.
- Topsoil will be re-used where possible in gardens and landscaped areas.

- Disturbed subsoil layers will be stabilised as soon as practicable. Therefore, backfilling of service trenches, construction of road capping layers, construction of building foundations and completion of landscaping, will all be carried out promptly to minimise the duration that subsoil layers are exposed to the effects of weather.
- Similar to comments regarding stripped topsoil, stockpiles of excavated subsoil material will be protected for the duration of the works. Stockpiles of subsoil material will be located separately from topsoil stockpiles.
- Measures will be implemented to capture and treat sediment laden surface water runoff (e.g. sediment retention ponds, surface water inlet protection and earth bunding adjacent to open drainage ditches).
- Where feasible, excavated material will be reused as part of the site development works (e.g. for landscaping works and for backfill in trenches under non-trafficked areas).
- The bedrock material excavated during construction will be crushed, screened and tested for use within the designed works to reduce the volume of material required to leave the site. This will also reduce the volume of material to be imported to the site.
- Subsoil drainage systems will be installed to manage groundwater flow paths.
- Earthworks plant and vehicles delivering construction materials to site will be confined to predetermined haul routes around the site.
- Construction site mitigation such as wheel wash and dust suppression measures will be implemented as part of the construction process and will be detailed the appointed contractor's construction management plan.
- All oils, fuels, paints and other chemicals will be stored in a secure bunded hardstand area,
- Refuelling and servicing of construction machinery will take place in a designated hardstanding area.

### 7.8.2: Operational Phase

#### L&S OPER 1:

The mitigation measures proposed for implementation during the operational phase include the following:

- The surface water run-off from the development will be collected by an appropriately designed system. This system should ensure that contaminants are removed prior to discharge e.g. via a light liquids separator or by an appropriate treatment train of Sustainable Urban Drainage Systems as outlined in the Greater Dublin Strategic Drainage Study (GDSDS). Any separators and drainage systems will be maintained and operated in accordance with the manufacturers recommendations.
- Ensuring appropriately designed, constructed and maintained site services will protect the soils and geology from future contamination arising from operation of the development.

## 7.9 PREDICTED RESIDUAL IMPACTS OF THE PROPOSED DEVELOPMENT

The proposed development will alter the current land use from primarily greenfield to a residential development and associated public open space and landscape areas. The impact on soil, geology and hydrogeology from accidental spillages of fuel and lubricants used during the construction phase of the development is predicted to be negligible given the implementation of mitigation measures. After implementation of the mitigation measures recommended in section 7.8 for the construction phase, the proposed development will not give rise to any significant long-term adverse impact. Moderate negative

impacts during the construction phase will be short term only in duration. Excavation of bedrock material will expose the bedrock to the effects of weather and construction traffic.

### **7.10 MONITORING**

Soil removed during the construction phase will be monitored to maximise potential for re-use on site. Monitoring of any hazardous material stored on-site will form part of the proposed Construction & Waste Management Plan. A dust management/monitoring programme will be implemented during the construction phase of the development. The quantities of topsoil, subsoil and rock removed off site will be recorded.

No monitoring is required during the operational phase.

### **7.11 REINSTATEMENT**

In open space areas where finished ground levels are altered and extensive excavation of topsoil and subsoil is required, the areas should be seeded and landscaped in a timely manner to ensure weathering of subsoils is limited.

### **7.12 INTERACTIONS**

The interactions of "Land and Soil" Aspects with other factors include:

- Water and Hydrology – Surface water run-off may have the limited potential to enter soil and groundwater. Implementation of appropriate mitigation measures as outlined in Chapter 8 (Water) will eliminate the potential for the influx of surface contaminants into the underlying geology and hydrogeology.
- Landscape - Visual aspects due to the proposed landscaping operation for reinstating the overland flood flow path between the Golf Stream and the M50 The design team has been in regular contact with each other throughout the design process to minimise the environmental impacts and that the landscape and land and soils elements have been fully co-ordinated.

### **7.13 DIFFICULTIES ENCOUNTERED IN COMPILING**

No difficulties were encountered in compiling this chapter of the EIAR.

### **7.14 REFERENCES**

- Site Investigations Report by GII
- GSI On Line Mapping
- Teagasc On Line Mapping
- EPA On Line Mapping
- Site Specific Flood Risk Assessment by DBFL
- Infrastructure Design Report by DBFL
- Hydrological and Hydrogeological Risk Assessment Report (By AWN)

## **APPENDIX 7.1: SITE INVESTIGATION REPORTS**





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# Ground Investigations Ireland

## Glenamuck Road

### Environmental Assessment Report

#### April 2020





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Project No	9376-01-20
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Rev.	Status	Author(s)	Reviewed By	Approved By	Office of Origin	Issue Date
A	Final	P Moloney	B Sexton	B Sexton	Dublin	03 April 2020

*Ground Investigations Ireland Ltd. present the results of the fieldworks and laboratory testing in accordance with the specification and related documents provided by or on behalf of the client. The possibility of variation in the ground and/or groundwater conditions between or below exploratory locations or due to the investigation techniques employed must be taken into account when this report and the appendices inform designs or decisions where such variation may be considered relevant. Ground and/or groundwater conditions may vary due to seasonal, man-made or other activities not apparent during the fieldworks and no responsibility can be taken for such variation. The data presented and the recommendations included in this report and associated appendices are intended for the use of the client and the client's geotechnical representative only and any duty of care to others is excluded unless approved in writing.*



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## GROUND INVESTIGATIONS IRELAND

Geotechnical & Environmental

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## 1.0 Preamble

Ground Investigations Ireland (GII) was appointed by DBFL Consulting Engineers carry out an Environmental Assessment for a proposed development at Glenamuck Road, Dublin 18. All site investigation works were carried out under the supervision of a GII Geo-Environmental Engineer. The site investigation works were completed between January and March 2020.

## 2.0 Purpose & Scope

It is understood that as part of the proposed development there will be an excavation to accommodate the construction of foundations, services and pavements 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. GII understand that the proposed end use of the site will be residential.

The purpose of the environmental assessment was as follows.

- Assess the site in terms of historical use and environmental setting;
- Classification, in terms of waste management and final disposal outlets, of material that may require disposal following excavation during the construction phase;
- 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 ten (10 No.) trial pits;
- Collection of subsoil samples for chemical analysis;
- Environmental laboratory testing;
- Waste classification; and
- Assessment of subsoil quality against human health Generic Assessment Criteria (GAC); and
- By-product suitability assessment.

The additional scope of the geotechnical investigation included the following:

- Carry out 2 No. Soakaways to determine a soil infiltration value to BRE digest 365;
- Carry out 3 No. Insitu Plate Bearing Tests to determine soil CBR;
- Carry out 5 No. Rotary Core Boreholes;

- Installation of two (2 No.) groundwater monitoring wells; and
- Geotechnical Laboratory testing.

The geotechnical site investigation is discussed in the GII Site Investigation Report Dated 27<sup>th</sup> March 2020.<sup>1</sup>

### **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 January 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 between Glenamuck Road and Golf Lane in Carrickmines, Dublin 18 (Figure 1 Appendix 1). At the time of the assessment the site was an open parcel of land which was overgrown with vegetation.

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<sup>1</sup> Ground Investigations Ireland, Glenamuck Road, Ground Investigation Report, 27<sup>th</sup> March 2020.

There were the remnants of several demolished houses with rubble presumed to be related to the demolition of the houses still on site. The site was bounded to the north east and north by the M50 and the Junction 15 M50 Interchange. The site was bounded to the south and south east by Golf Lane with housing beyond that. The site was bounded to the west by Glenamuck Road with the Carrickmines Retail centre located beyond that.

## 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 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 and 25-inch maps. The site is occupied by several houses on the Cassini map.

Based on a review of the OSI and Google Imagery aerial photograph records the houses on site appear to have been demolished between 2014 and 2015.

## 6.0 Environmental Setting

Details of the environmental setting are outlined in Table 1. Data relating to site topography, hydrology, geology, hydrogeology and ecology of the area have been obtained from resources held by the Environmental Protection Agency (EPA), the Geological Survey of Ireland (GSI), OSI, National Parks and Wildlife Service (NPWS), the Water Framework Directive (Water Matters) website and the Office of Public Works (OPW) Flood Maps Viewer. All relevant environmental setting data is presented in Figures 5 to 11 in Appendix 1.

**Table 1 Environmental Setting**

<b>Environmental Feature</b>	<b>Relevant Details</b>
<b><i>Topography</i></b>	The site slopes to the north towards the M50. The elevation on site ranges from approximately 79mOD in the south of the site to approximately 74.5mOD in the south.
<b><i>Hydrology &amp; Catchment</i></b>	<u>Surface Water Courses:</u> The closest surface water feature is the Glenamuck stream which flows adjacent to the site's south western boundary. The Glenamuck Stream flows into the Carrickmines Stream approximately 200m to the north of the site. The site is situated within the Carrickmines Water Body Catchment (IE_EA_10_1219). The surface water report indicates the status of the water

Environmental Feature	Relevant Details
	<p>body is 'Moderate' (Appendix 2). The risks for the catchment are diffuse source of contamination.</p>
<b>Geology</b>	<p><u>Quaternary Geology:</u>                      The GSI Quaternary Geology map classifies the subsoil underlying the site as either rock outcrop or subcrop. The subsoils surrounding the site are mapped as either till derived from Granite (TGr) or till derived from Limestone (TLs).</p> <p><u>Bedrock Geology:</u>                      The bedrock underlying the site is the Type 3 Muscovite Porphyritic which is comprised of granite with muscovite phenocrysts.</p> <p><u>Karst Features:</u>                      There are no recorded karst features within 10km of the site.</p>
<b>Hydrogeology</b>	<p><u>Aquifer Classification:</u>                      The Type 3 Muscovite Porphyritic has been classified by the GSI as a Poor Aquifer which is generally unproductive except for local zones (PI).                       The Eastern River Basin District (ERBD) Management Plan identifies that the groundwater body (GWB) beneath the site is part of the Dublin Urban Groundwater Body (IE_EA_G_005). The groundwater body report indicates the status of the water body is 'Good' (Appendix 2).</p> <p><u>Aquifer Vulnerability:</u>                      The GSI have developed a system that ranks an aquifer in terms of the intrinsic geological and hydrogeological characteristics that determine the ease with which that aquifer may be contaminated by human activities. The GSI have used this system assigned a "vulnerability" category to each aquifer nationwide. The vulnerability of groundwater depends on:</p> <ul style="list-style-type: none"> <li>▪ The time of travel of infiltrating water (and contaminants);</li> <li>▪ The relative quantity of contaminants that can reach the groundwater; and</li> <li>▪ The contaminant attenuation capacity of the geological materials through which the water and contaminants infiltrate.</li> </ul> <p>The depth of subsoil and the subsoil type overlying the aquifer are directly linked to the vulnerability. The GSI vulnerability map indicates that the vulnerability at the site is extreme with rock within 3m of the surface.</p>



Environmental Feature	Relevant Details
	<p><u>Groundwater Flow Direction:</u> The groundwater flow direction is assumed to reflect the regional topography and be to the north.</p> <p><u>Well Search:</u> A review of the GSI groundwater well database indicates that there are no recorded wells within 1km of the site.</p>
<b>Flood Risk</b>	<p>The Office of Public Works (OPW) has produced flood risk maps that identify areas that may be susceptible to flooding during extreme events. The flood maps are predictive flood maps, as they provide predicted flood extent and other information for a design flood event that has an estimated probability of occurrence rather than information of floods that have occurred in the past. The maps identify the risk from fluvial and coastal flooding. The OPW rates risk in terms of %. These percentages are linked to return events or chance of occurrence in any given year:</p> <ul style="list-style-type: none"> <li>▪ 10% - 1 in 10 chance in any given year;</li> <li>▪ 1% - 1 in 100 chance in any given year; and</li> <li>▪ 0.1% - 1 in 1,000 chance in any given year.</li> </ul> <p>They are also commonly referred to in terms of a return period (e.g., the 100-year flood event), although it should be understood that this does not mean the length of time that will elapse between two such events occurring, as, although unlikely, two or more very severe events may occur within a very short space of time. Based on the review of the OPW maps the northern section of the site may be at risk during all probability events with the site most affected during low probability events. The OPW flood maps for low, moderate and high probability events for the site are presented in Appendix 3.</p>
<b>Radon</b>	<p>A review of the EPA national radon map was carried out. The radon map is broken into 10km<sup>2</sup> grids. Each grid is ranked based on the percentage of dwellings within that grid where radon is present at levels greater than 200 Becquerel per metre cubed (Bq/m<sup>3</sup>). The radon map has five categories: &lt;1 %, 1 to 5 %, 5 to 10 %, 10 to 20 % and greater than 20 %. The subject site is located within a grid where between 5% and 10% of the residences will have radon levels greater than 200Bq/m<sup>3</sup>, making it low to moderate risk for radon.</p>

Environmental Feature	Relevant Details
<b>Natura 2000 Sites</b>	A review of the National Parks and Wildlife Services (NPWS) databases indicates that the closest protected sites are the Dalkey Island Special Protection Area (SPA) (site code 004172) and Rockabill to Dalkey Island Special Area of Conservation (SAC) (site code 003000) which are located approximately 6.5km to the north east of the site.

## 7.0 Subsurface Exploration

### 7.1. 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.

### 7.2. Trial Pits

The trial pits were excavated using a 23T 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 4 of this Report.

### 7.3. Rotary Boreholes

The rotary coring was carried out by a track mounted T44 Beretta rig at the locations shown in Figure 5. The rotary boreholes were completed from the ground surface.

The T44 Beretta is equipped with rubber tracks which allow for short travel on pavement surfaces avoiding any damage to the surface. The T44 Beretta utilises a triple tube core barrel system operated using a wireline drilling process. The outer barrel is rotated by the drill rods and at its lower end, carries the coring bit. The inner barrel is mounted on a swivel so that it does not rotate during the process. The third barrel or liner is placed within the second one to retain the core intact and to preserve as much as possible the fabric of the drilling stratum. The core is cut by the coring bit and passes to the inner liner. The core is brought up to the surface within the inner barrel on a small diameter wire rope or line attached to the “overshoot” recovery tool which is then placed into a core box in order of recovery. A drilling fluid, typically air mist or

water flush is passed from the surface through hollow drill rods to the drill bit, and is used to cool the drill bit. Temporary casing is used in some situations to support unstable ground or to seal off fissures or voids. It should be noted that the rotary coring can only achieve limited recovery in overburden, particularly granular or weakly cemented strata due to the flushing medium washing away the cohesive fraction during coring. The recovery achieved, where required is noted on the borehole logs and core photographs are provided to allow assessment of the core recovered. The rotary borehole logs are provided in Appendix 5 of this Report.

#### 7.4. 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 as required by the project specification. The coordinates and elevations are provided on the exploratory hole logs in the appendices of this Report.

### 8.0 Ground Conditions

#### 8.1. 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 referenced in Section 2.0.

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

- Made Ground
- Cohesive Deposits
- Weathered Bedrock
- Bedrock

**SURFACING:** At the location of TP6, tarmacadam surfacing was present to a depth of 0.10m BGL. At the location of RC5, concrete surfacing was present to a depth of 0.10m BGL.

**MADE GROUND:** Made Ground deposits were encountered from ground level or beneath the surfacing and were present to a depth of between 0.60m and 2.50m BGL. These deposits were described generally as *grey/brown slightly sandy slightly gravelly Clay with many cobbles and boulders and contained pieces and fragments of concrete, red brick, glass, plastic, timber, gas canisters, scrap metal, concrete blocks, waste ash (General Builders Rubble).*

**COHESIVE DEPOSITS:** Cohesive deposits were encountered beneath the Made Ground and were described typically as *brown slightly sandy gravelly CLAY with occasional cobbles and boulders.* These

deposits had some, occasional or many cobble and boulder content where noted on the exploratory hole logs.

**WEATHERED BEDROCK:** Residual rock was encountered in IT01 which was diggable up to the scheduled depth of the soakaway hole (1.20m below top of stratum). This was recovered as *orange/light grey slightly clayey sandy angular fine to coarse Gravel with occasional angular cobbles of granite*. The trial pits were terminated upon encountering the bedrock, in which excavation became too difficult. Rockhead was variable in each trial pit, and was generally unable to be excavated. The variation in the depth to rock in each pit is reflected in the trial pit logs, however it should be noted that the excavator was generally unable to progress once the top of intact rock was encountered.

**BEDROCK:** The rotary core boreholes recovered *medium strong to very strong massive light grey coarse grained crystalline GRANITE with brown staining and quartz veins. Partially to distinctly weathered*. Reduced recovery in the upper run of RC04 and RC05 may be due to some clay and sand being present within the rock mass either from weathering or as infilling, and being washed away by the rotary flush. The depth to rock varies from 0.35m BGL in RC04 to a maximum of 3.50m BGL in TP4. The total core recovery is good, typically 100% with some of the uppermost runs dropping to 80 or 90%. The SCR and RQD both are relatively poor in the upper weathered zone, often recovered as non-intact, however both indices show an increase with depth in each of the boreholes.

**HYDROCARBON IMPACTED MATERIAL:** Hydrocarbon odours were noted from the made ground deposits in TP-03 and TP-05.

## 9.0 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 total pollutant content analysis also provides analytical data which can be used to assess the quality of the subsoils underlying the site and allow an assessment of their suitability for a range of proposed uses against generic assessment criteria.

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 completed by Element Materials Technology (EMT) in the UK; EMT is a UKAS accredited laboratory. The full laboratory reports are included in Appendix 6.

## 9.2. Asbestos

Asbestos fibres were detected in the sample TP-02 at 0.5m BGL. The level detected was lower than the laboratory detection limit of <0.001%. The laboratory did **not** identify asbestos containing materials (ACMs) in the samples.

## 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<sup>2</sup>.

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.<sup>3</sup>

- 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)<sup>4</sup> codes with "mirror" entries which may be applied to excavated materials to be removed from site.

<sup>2</sup> S.I. No. 126/2011 - European Communities (Waste Directive) Regulations 2011 (Article 27).

<sup>3</sup> Irish EPA (June 2019), Guidance on Soil and Stone By-Products.

<sup>4</sup> Formerly European Waste Catalogue Codes (EWC Codes)

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 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. HazWasteOnLine™ Results

In total, eighteen (18 No.) samples were assessed using the HazWasteOnLine™ Tool. All samples were classified as being not hazardous. The complete HazWasteOnLine™ report for all samples is included in Appendix 7. The specific LoW code which should be applied to the material at each SI location is summarised in Table 2 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%<sup>5</sup> anthropogenic material observed the LoW code 17 09 04 may be applied.

**Table 2 LoW Codes**

SI Location	Depth (m)	Hazardous/Non-Hazardous	Asbestos Type if Present	LoW Code
TP1	0.50	Non-Hazardous	NAD <sup>6</sup>	17 05 04

<sup>5</sup> EPA (2020) - Guidance on Waste Acceptance Criteria at Authorised Soil Recovery Facilities.

<sup>6</sup> NAD – no asbestos detected.

SI Location	Depth (m)	Hazardous/Non-Hazardous	Asbestos Type if Present	LoW Code
TP1	1.50	Non-Hazardous	NAD	17 05 04
TP2	0.50	Non-Hazardous	Chrysotile <0.001%	17 05 04
TP2	1.50	Non-Hazardous	NAD	17 05 04
TP3	0.50	Non-Hazardous	NAD	17 05 04
TP3	1.50	Non-Hazardous	NAD	17 05 04
TP3	2.50	Non-Hazardous	NAD	17 05 04
TP4	0.50	Non-Hazardous	NAD	17 05 04
TP4	1.50	Non-Hazardous	NAD	17 05 04
TP4	2.50	Non-Hazardous	NAD	17 05 04
TP5	0.50	Non-Hazardous	NAD	17 05 04
TP5	1.50	Non-Hazardous	NAD	17 05 04
TP6	0.50	Non-Hazardous	NAD	17 05 04
TP6	1.50	Non-Hazardous	NAD	17 05 04
TP7	0.50	Non-Hazardous	NAD	17 05 04
TP8	0.50	Non-Hazardous	NAD	17 05 04
TP9	0.50	Non-Hazardous	NAD	17 05 04
TP10	0.50	Non-Hazardous	NAD	17 05 04

**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 3. A summary of the WAC data is presented in Appendix 8. The waste category assigned to each sample is summarised in Table 4.

**Table 3 Waste Category for Disposal/Recovery**

Waste Category	Classification Criteria
Category A Unlined Soil Recovery Facilities	Soil and Stone only which are free from <sup>7</sup> anthropogenic materials such as concrete, brock timber. Soil must be free from “contamination” e.g. PAHs, Hydrocarbons <sup>8</sup> .

<sup>7</sup> Free from equates to less than 2%.

<sup>8</sup> 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.

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 <sup>9</sup> 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
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 4 and Figures 13 and 14. The made ground sample at TP-03 at 1.5m BGL exceed the Category B1 criteria for TOC. The presence of trace levels of asbestos in the made ground sample TP-02 at 0.5m places it in Category C1. The remainder of the made ground material sampled can be considered to be inert and meet the Category B1 criteria. The natural subsoils sample can be considered to be inert and meet the Category A criteria.

<sup>9</sup> HazWasteOnLine™ Tool.



**Table 4 Individual Sample Waste Category**

Sample ID	Sample Depth (m)	Material Type	Waste Category	LoW Code
TP1	0.50	Made Ground	Category B1	17 05 04
TP1	1.50	Clay	Category A	17 05 04
TP2	0.50	Made Ground	Category C1	17 05 04
TP2	1.50	Clay	Category A	17 05 04
TP3	0.50	Made Ground	Category B1	17 05 04
TP3	1.50	Made Ground	Category B2	17 05 04
TP3	2.50	Clay	Category A	17 05 04
TP4	0.50	Made Ground	Category B1	17 05 04
TP4	1.50	Made Ground	Category B1	17 05 04
TP4	2.50	Clay	Category A	17 05 04
TP5	0.50	Made Ground	Category B1	17 05 04
TP5	1.50	Clay	Category A	17 05 04
TP6	0.50	Made Ground	Category B1	17 05 04
TP6	1.50	Clay	Category A	17 05 04
TP7	0.50	Made Ground	Category B1	17 05 04
TP8	0.50	Made Ground	Category B1	17 05 04
TP9	0.50	Made Ground	Category B1	17 05 04
TP10	0.50	Made Ground	Category B1	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)<sup>10</sup>. 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 and as such the residential S4UL criteria have been applied to the data. The level of PAH detected in the made ground samples at TP-01 and 09 exceed the residential with homegrown produce S4UL for benzo(a)pyrene, Dibenzo(ah)anthracene and Benzo(b)fluoranthene. For the remaining parameters tested for the samples analysed were within the residential with homegrown produce S4ULs. A full summary of the S4UL data is presented in Appendix 9.

### 12.0 Whole Waste Body Classification (Non-Parametric Statistical Test Limit)

The HazWasteOnLine™ Tool analysis combined with the WAC analysis will deliver a waste classification of an individual sample. The whole waste classification assessment attempts to classify the waste as a

<sup>10</sup> LQM/CIEH 'Suitable 4 Use Levels' (S4ULs). Copyright Land Quality Management Limited reproduced with permission; Publication Number S4UL3746. All rights reserved.

whole rather than as individual samples using statistical methods. The assessment highlights limit failures which are not representative of the majority of the results and under most circumstances would be considered as statistical outliers, that is to say that the primary objective is to demonstrate that the waste population being considered is below a specific WAC limit (to a pre-defined level of confidence), primarily by demonstrating that specific limit exceedances are not representative of the whole population.

Waste operators and waste producers might assume that a waste material is within a certain waste classification if any of the individual samples collected from the material exceeds a particular threshold. Alternatively, the waste operator or producer may consider the waste body as a whole and apply statistical analysis such as those set out in Appendix 2 of Environment Agency (2013), *Waste Sampling and Testing for Disposal to Landfill*. The guidance outlines a methodology for a statistical analysis which relates the classification of individual samples to the classification of the waste as a whole.

This method is based on a sample median (50th percentile) and a probabilistic demonstration that:

- At least 95% of samples are within the WAC limit; and
- When the analytical variation is taken into account, average concentrations are within the limit for each substance. For waste acceptance purposes where, statistical techniques are being used, the primary objective is to demonstrate that the waste population being considered is below the WAC limit (to a pre-defined level of confidence), primarily by demonstrating that any limit exceedances are not representative of the whole population.

Where the average waste concentration and the 95th percentile ranked samples, concentration is below the WAC limit, a case could be made that the waste population being considered is acceptable for disposal by landfilling. In this case the upper metre of material across the site is considered a single waste population which will be removed from the site.

The statistical analysis has been carried out for the samples collected from the made ground material sampled across the site.

For the single TOC detection greater than the Category B1 threshold in the made ground material across the site, the upper 90% confidence values were below the respective Category B1 thresholds, and therefore there is 95% confidence that the 50th percentile concentration is below the Category B1 waste threshold for this parameter. The average concentration for TOC was also below the Category B1 threshold.

The made ground material sampled across the site can therefore be considered to comply with the Category B1 threshold in terms of TOC.

**Following the procedure set out in the guidance the made ground material across the site as a whole if excavated in bulk will meet the Category B1 threshold for TOC.**

In order to determine whether sufficient samples have been taken to reach this conclusion GII used the guidance and equation in Appendix 1 of the AGS guidance on waste classification<sup>11</sup>. Following procedure set out in the guidance GII concluded that sufficient samples had been taken. A summary of the whole waste classification is presented in Appendix 10.

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<sup>11</sup> AGS – Waste Classification for Soils – A Practitioners Guide (2019).

**The acceptance of the material at such a facility is at the discretion of the waste facility operator or the EPA.**

### **13.0 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.

#### **13.1. Conclusions**

##### **13.1.1. Waste Classification**

Based on the results of the HazWasteOnLine™ tool the material sampled across the site can be classified as not hazardous.

##### **13.1.2. Waste Categories**

The most applicable waste category for each of the samples has been presented in Table 4. The waste categories for the material across the site are presented in Figure 13 and 14. The whole waste classification approach has been applied when producing these figures.

##### **13.1.3. Asbestos**

Asbestos was detected in the sample TP-02 at 0.5m at a level less than the laboratory detection limit of <0.001%.

##### **13.1.4. By-Product Suitability**

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

The made ground deposits are not suitable for removal from site as a by-product which will *not lead to overall adverse environmental or human health impacts*.

### 13.2. S4UL Assessment

The levels of PAHs in the made ground deposits at TP-01 and TP-09 exceeded the residential with home grown produce S4UL.

### 13.3. Flood Risk

Based on the OPW flood risk maps the northern section of the site may be at risk from flooding during all predicated/modelled events.

### 13.4. Recommendations

#### 13.4.1. 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 as a waste should be removed to the most appropriate facility under the waste categories and LoW codes identified in Figures 13 and 14. Potential outlets for the various waste categories are presented in Appendix 11, this list is not exhaustive and applicable at the time of the writing this report.

The non-hazardous material across the site if excavated as a waste 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.

The asbestos containing subsoils at TP-02 if excavated as a waste should be removed from site to an appropriate facility under either the LoW codes 17 05 04 or 17 09 04 that is licensed to accept subsoil containing trace levels of asbestos. 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.

#### 13.4.2. S4UL Assessment

There is no special action required for the made ground material which will underly the footprint of the proposed building or any hard-standing areas such as roadways or footpaths. The made ground are suitable for use on site in soft landscaped areas if covered with at least 1m of clean suitable inert soil which would short circuit potential human contact routes i.e. dermal contact, ingestion or inhalation.

### **13.4.3. Removal of Material as a By-Product**

The natural subsoil 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.

### **13.4.4. Excavation**

The excavation and management of soils on site should take cognisance of the Categories outline in Figures 13 and 14.

### **13.4.5. Flood Risk**

It is recommended that the potential flood risk highlighted in the OPW predictive mapping is investigated by a suitably qualified civil engineer or hydrologist to assess the potential impact on any future development.

## 14.0 References

Environment Agency (2013). *Waste Sampling and Testing for Disposal to Landfill*. Available at: [https://www.gov.uk/government/uploads/system/uploads/attachment\\_data/file/321207/Sampling\\_and\\_testing\\_of\\_waste\\_for\\_landfill.pdf](https://www.gov.uk/government/uploads/system/uploads/attachment_data/file/321207/Sampling_and_testing_of_waste_for_landfill.pdf)

Environment Agency (2015). *Technical Guidance WM3 - Guidance on the classification and assessment of waste (1st edition 2015) Technical Guidance WM3*. Available at: [https://www.gov.uk/government/uploads/system/uploads/attachment\\_data/file/427077/LIT\\_10121.pdf](https://www.gov.uk/government/uploads/system/uploads/attachment_data/file/427077/LIT_10121.pdf)

Environmental Protection Agency (EPA) (2014). Letter to Licences *Re: Waste Classification & Haz Waste On-Line™*. Available at: <https://www.hazwasteonline.com/marketing/media/downloads/EPA%20Waste%20classification%20communication%2020may14.pdf>

Environmental Protection Agency (EPA) (2015). *Waste Classification List of Waste & Determining if Waste is Hazardous or Non-hazardous*. Available at: [https://www.epa.ie/pubs/reports/waste/stats/wasteclassification/EPA\\_Waste\\_Classification\\_2015\\_Web.pdf](https://www.epa.ie/pubs/reports/waste/stats/wasteclassification/EPA_Waste_Classification_2015_Web.pdf)

Environmental Protection Agency (EPA) (2020). *Guidance on Waste Acceptance Criteria at Authorised Soil Recovery Facilities*. <https://www.epa.ie/pubs/advice/waste/waste/wasteacceptancecriteria.html>

Environmental Protection Agency (EPA) (June 2019). *Guidance on Soil and Stone By-products in the context of article 27 of the European Communities (Waste Directive) Regulations 2011 Version 3*. Available at: [https://www.epa.ie/pubs/advice/waste/product/Guidance\\_on\\_Soil\\_and\\_Stone\\_By\\_Product.pdf](https://www.epa.ie/pubs/advice/waste/product/Guidance_on_Soil_and_Stone_By_Product.pdf)

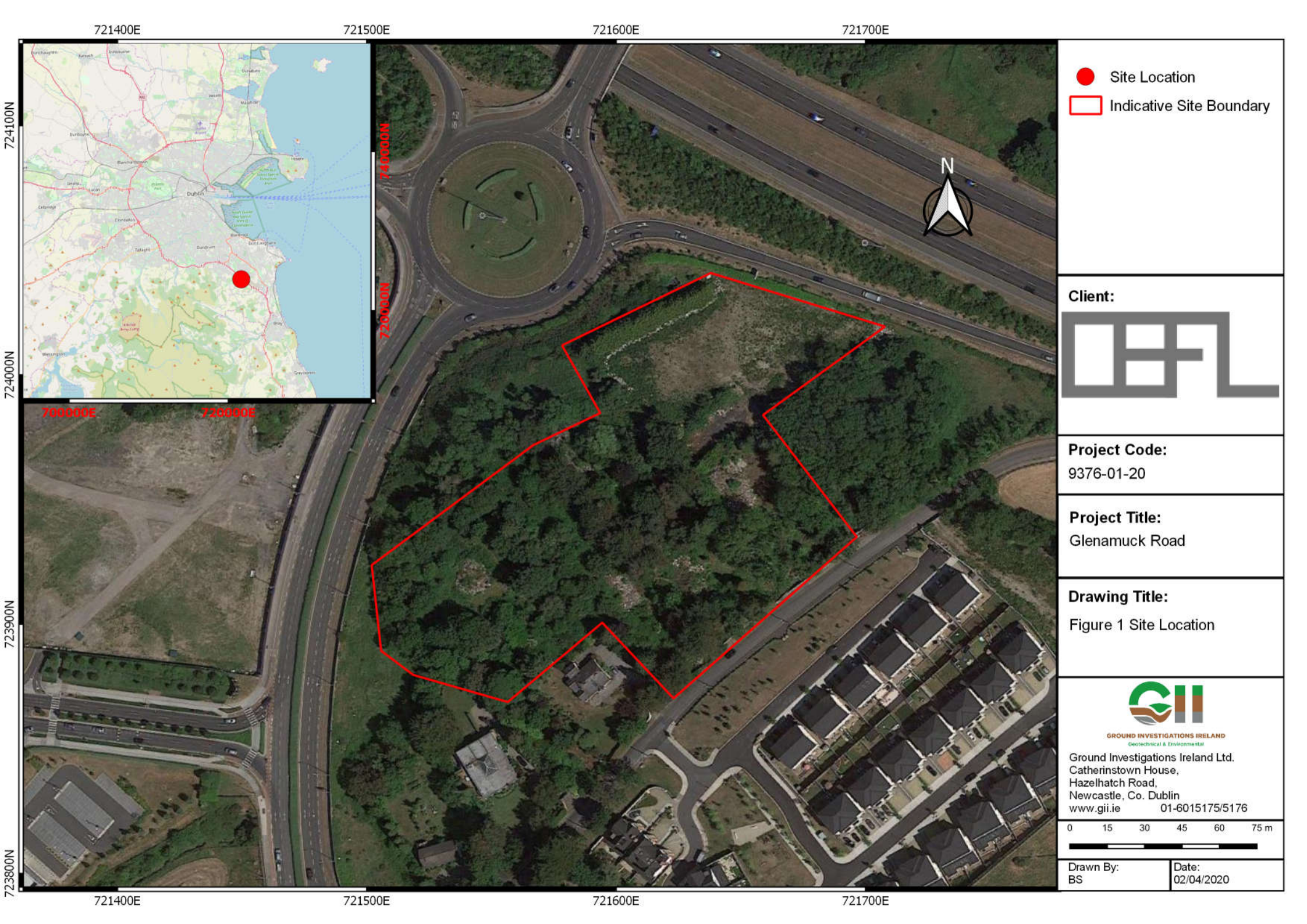
Association of Geotechnical and Geoenvironmental Specialists (2019). *Waste Classification for Soils – A Practitioners Guide*.

Nathanial, C.P.; McCaffrey, C.; Gillett, A.G.; Ogden, R.C. & Nathanial, J.F., *The LQM/CIEH S4ULs for Human Health Risk Assessment*, Land Quality Press, Nottingham (2015).

# APPENDIX 1 - Figures







721400E

721500E

721600E

721700E

724100N

724000N

723900N

723800N

721400E

721500E

721600E

721700E

- Site Location
- Indicative Site Boundary



**Client:**



**Project Code:**

9376-01-20

**Project Title:**

Glenamuck Road

**Drawing Title:**

Figure 1 Site Location



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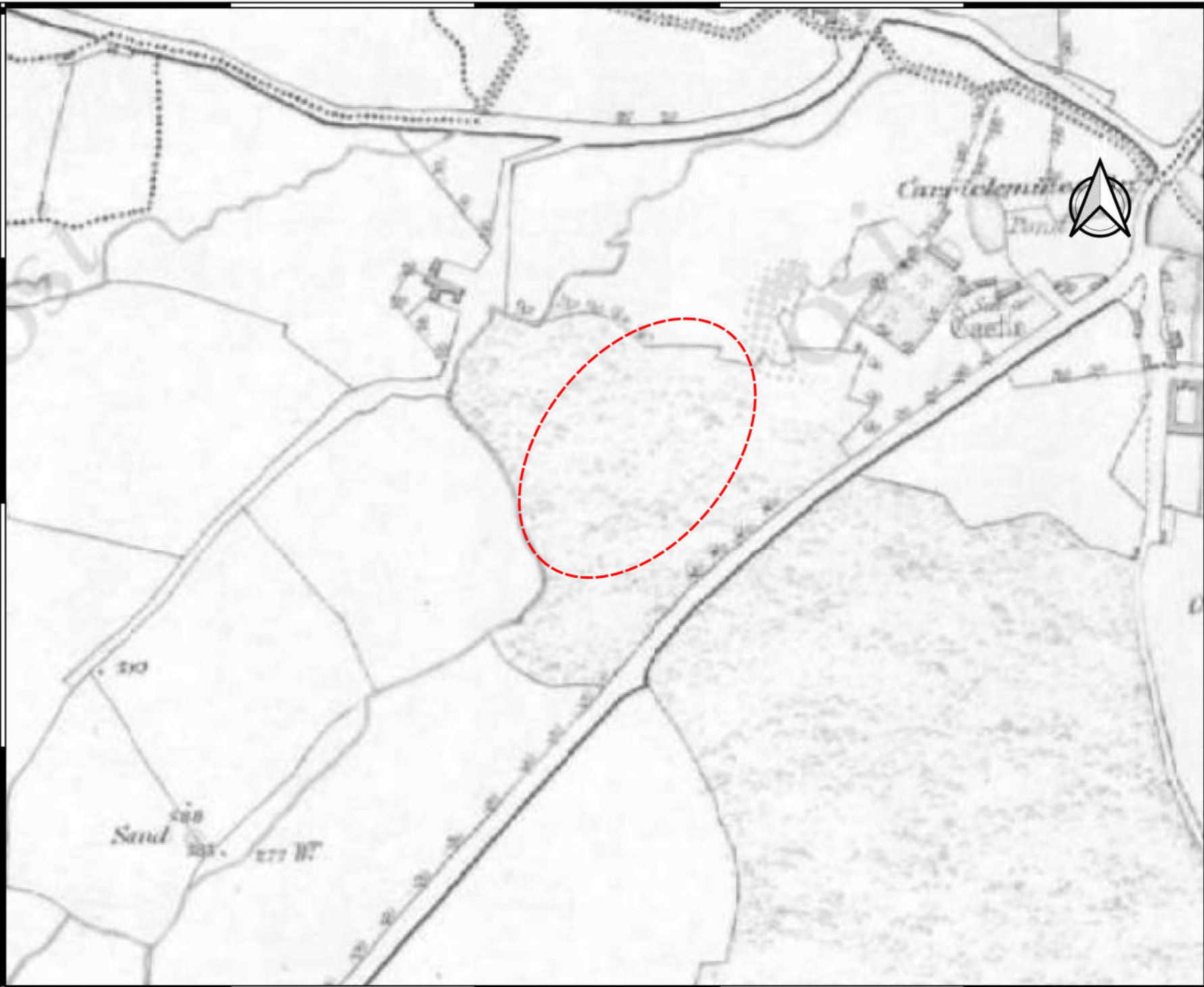
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Hazelhatch Road,  
Newcastle, Co. Dublin  
www.gii.ie 01-6015175/5176



Drawn By:  
BS

Date:  
02/04/2020





 Indicative Site Location

**Client:**



**Project Code:**

9376-01-20

**Project Title:**

Glenamuck Road

**Drawing Title:**

Figure 2 OSI 6-Inch Map

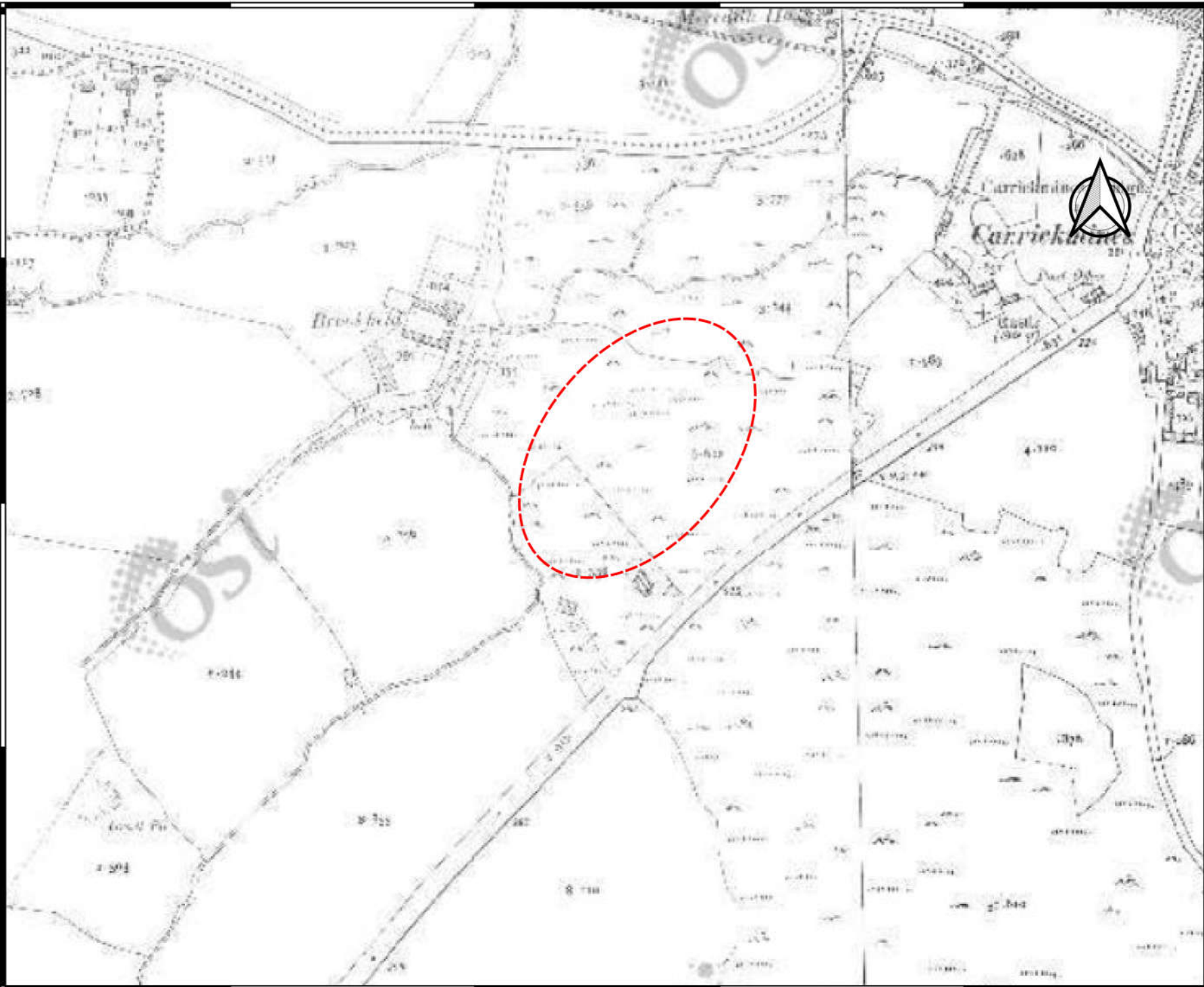


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 Indicative Site Location

**Client:**



**Project Code:**

9376-01-20

**Project Title:**

Glenamuck Road

**Drawing Title:**

Figure 3 OSI 25-Inch Map



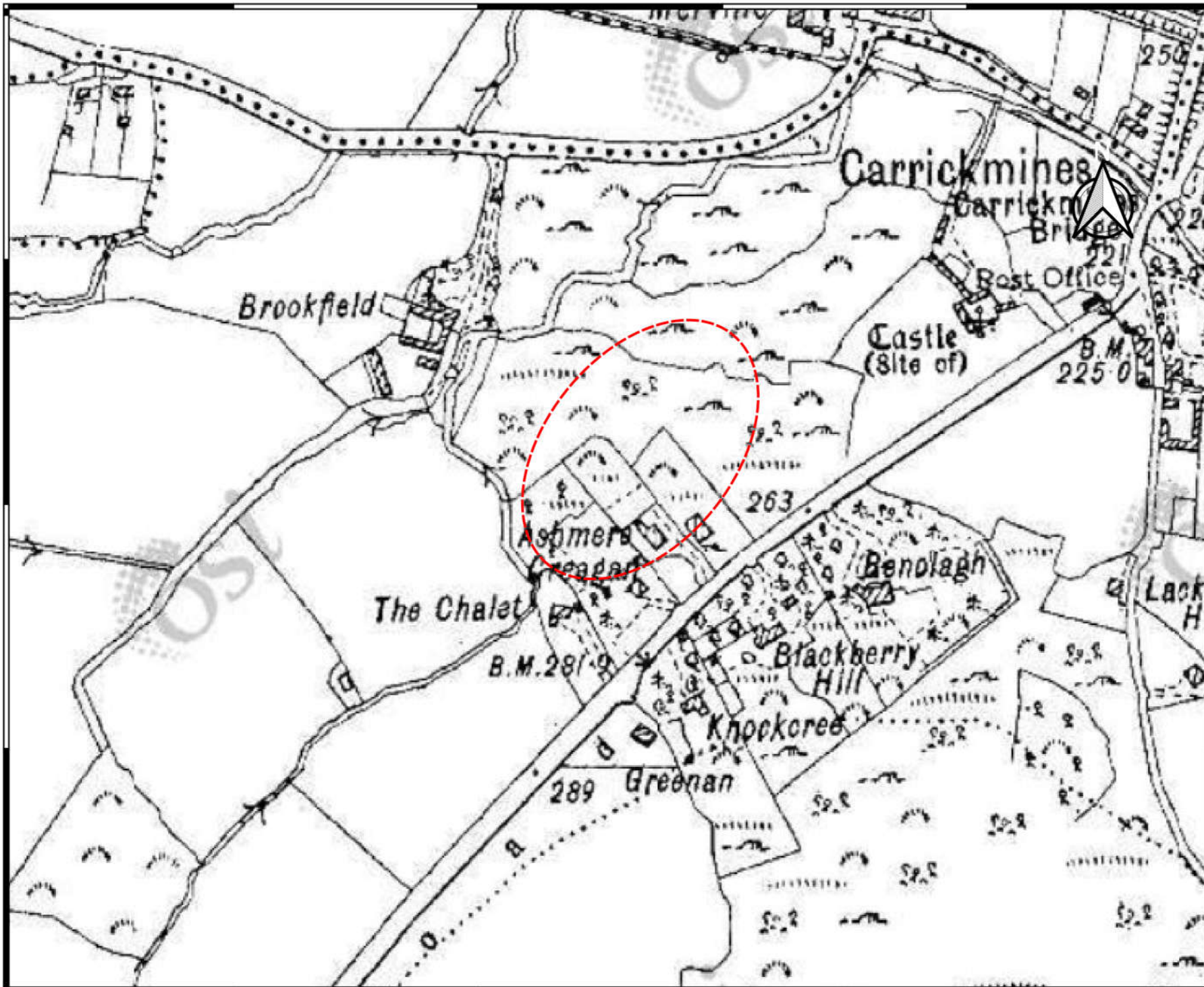
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 Indicative Site Location

Client:



Project Code:  
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Project Title:  
Glenamuck Road

Drawing Title:  
Figure 4 OSI Cassini Map



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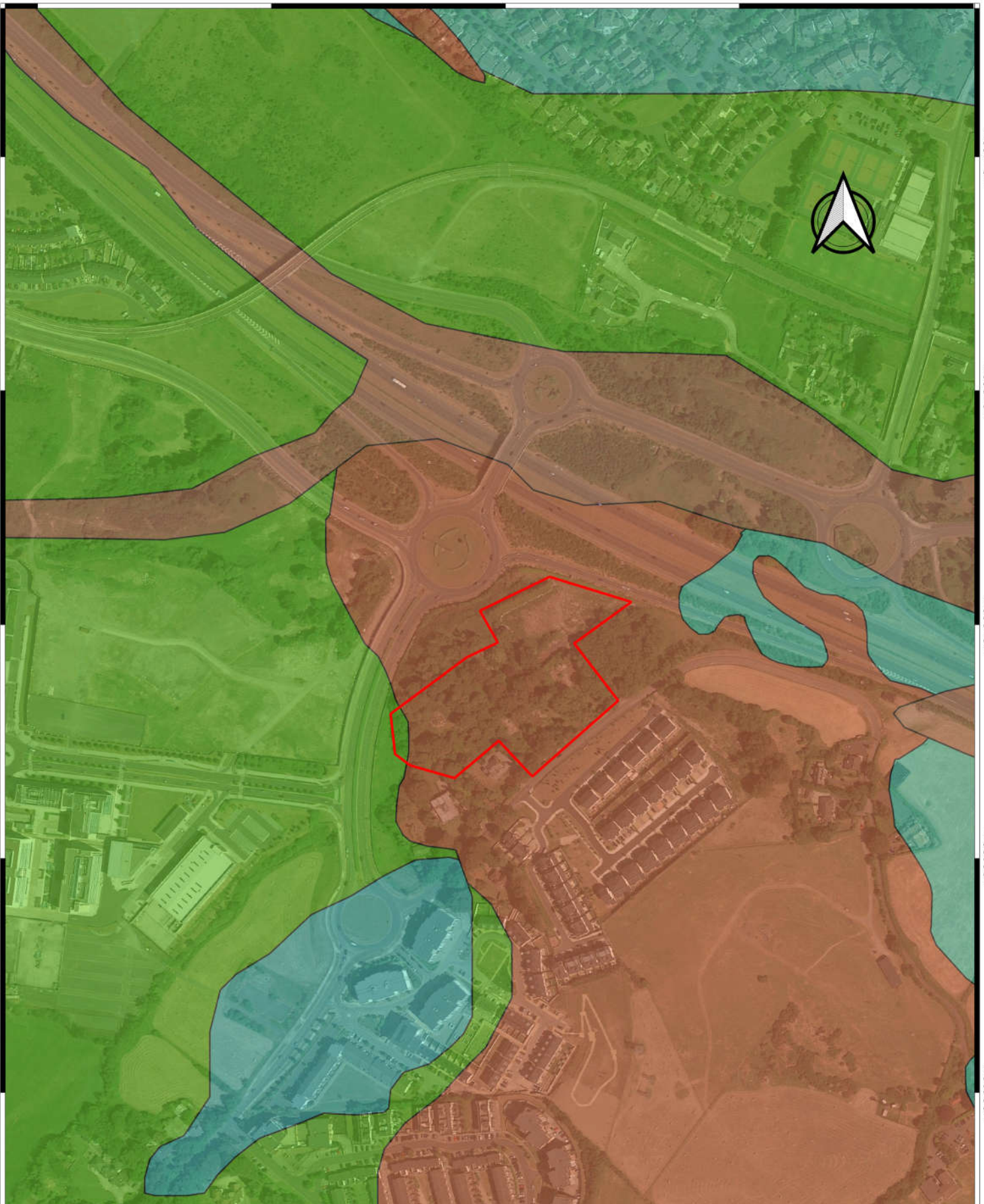
Date:  
02/04/2020



721200E 721400E 721600E 721800E 722000E

724400N  
724200N  
724000N  
723800N  
723600N

724400N  
724200N  
724000N  
723800N  
723600N



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**Client:**



**Project Title:**

Glenamuck Road

**Drawing Title:**

Figure 5 Quaternary Geology

**GII Project Reference:**

9376-01-20

Drawn By:  
BS

Date:  
02/04/2020

Indicative Site Boundary

**Subsoil Type**

- A
- GGr
- Rck
- TGr
- TLs



721200E

721400E

721600E

721800E

722000E

724400N

724200N

724000N

723800N

723600N

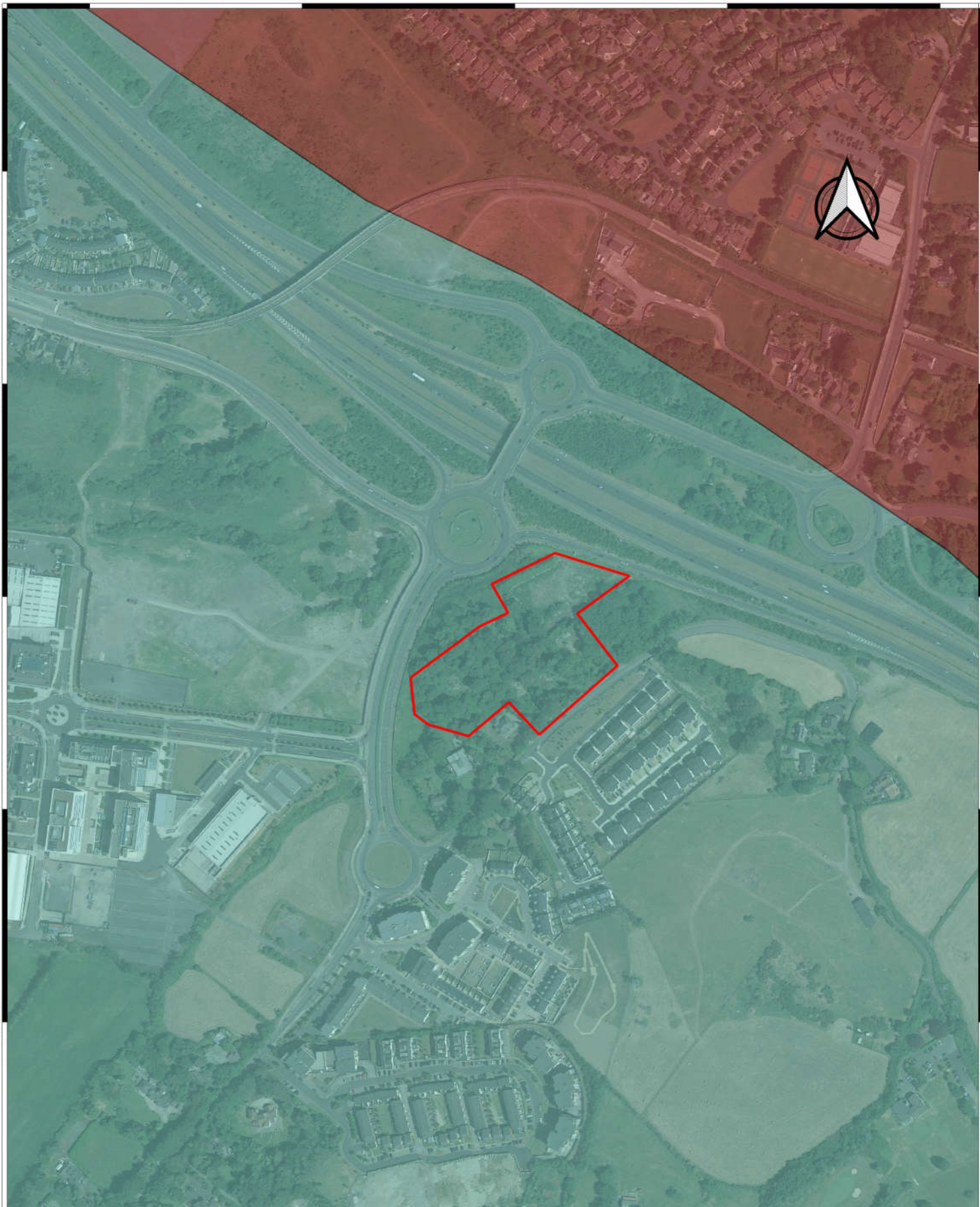
724400N

724200N

724000N

723800N

723600N



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**Project Title:**

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**Drawing Title:**


Figure 6 Bedrock Geology

**GII Project Reference:**

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Drawn By:  
BS

Date:  
02/042020

 Indicative Site Boundary

**Bedrock Geology**

 Type 3 muscovite por

 Type 2e equigranular



717500E

720000E

722500E

725000E

727500E

732500N

730000N

727500N

725000N

722500N

720000N

717500N

732500N

730000N

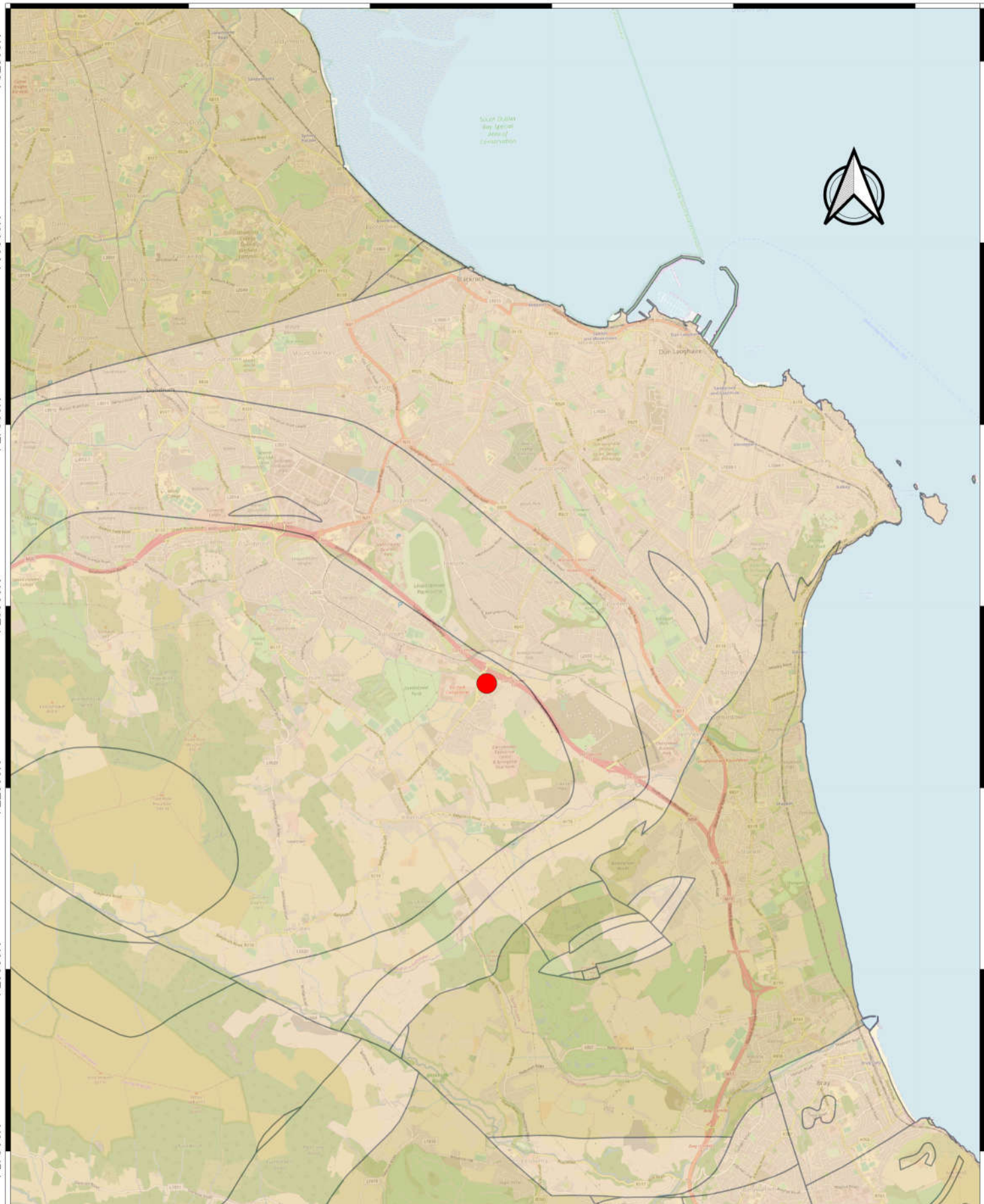
727500N

725000N

722500N

720000N

717500N



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**Project Title:**

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**Drawing Title:**

Figure 7 Aquifer Category

**GII Project Reference:**

9376-01-20

**Drawn By:**  
BS

**Date:**  
02/04/2020

 Site Location

**Bedrock Aquifer**

 LI

 PI



721200E

721600E

722000E

724800N

724800N

724400N

724400N

724000N

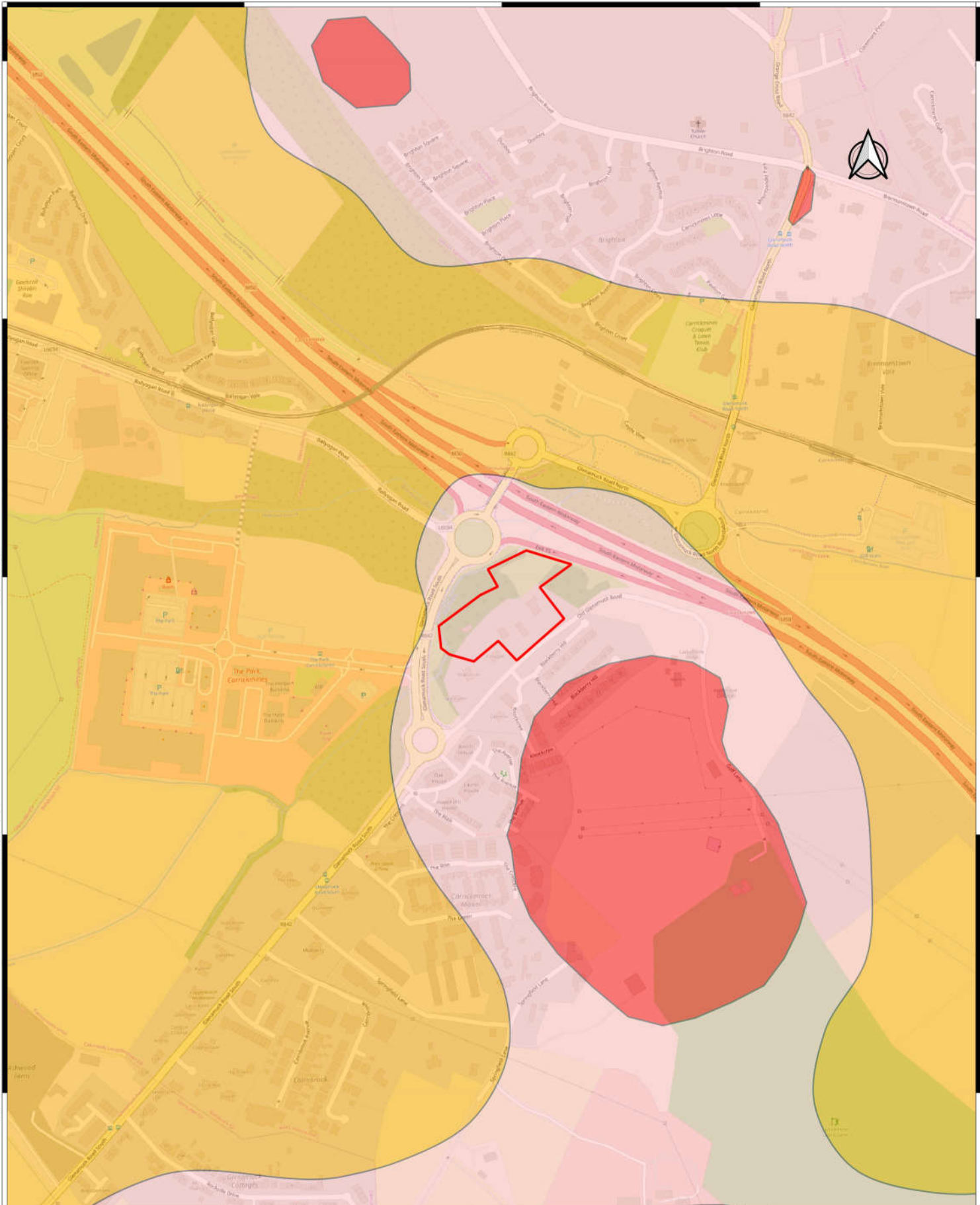
724000N

723600N

723600N

723200N

723200N



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**Project Title:**  
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**Drawing Title:**  
Figure 8 Aquifer Vulnerability

**GII Project Reference:**  
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Drawn By:  
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Date:  
02/04/2020

Indicative Site Boundary

**Vulnerability**

E

H

X



715000E

720000E

725000E

730000E

735000N

730000N

725000N

720000N

715000N

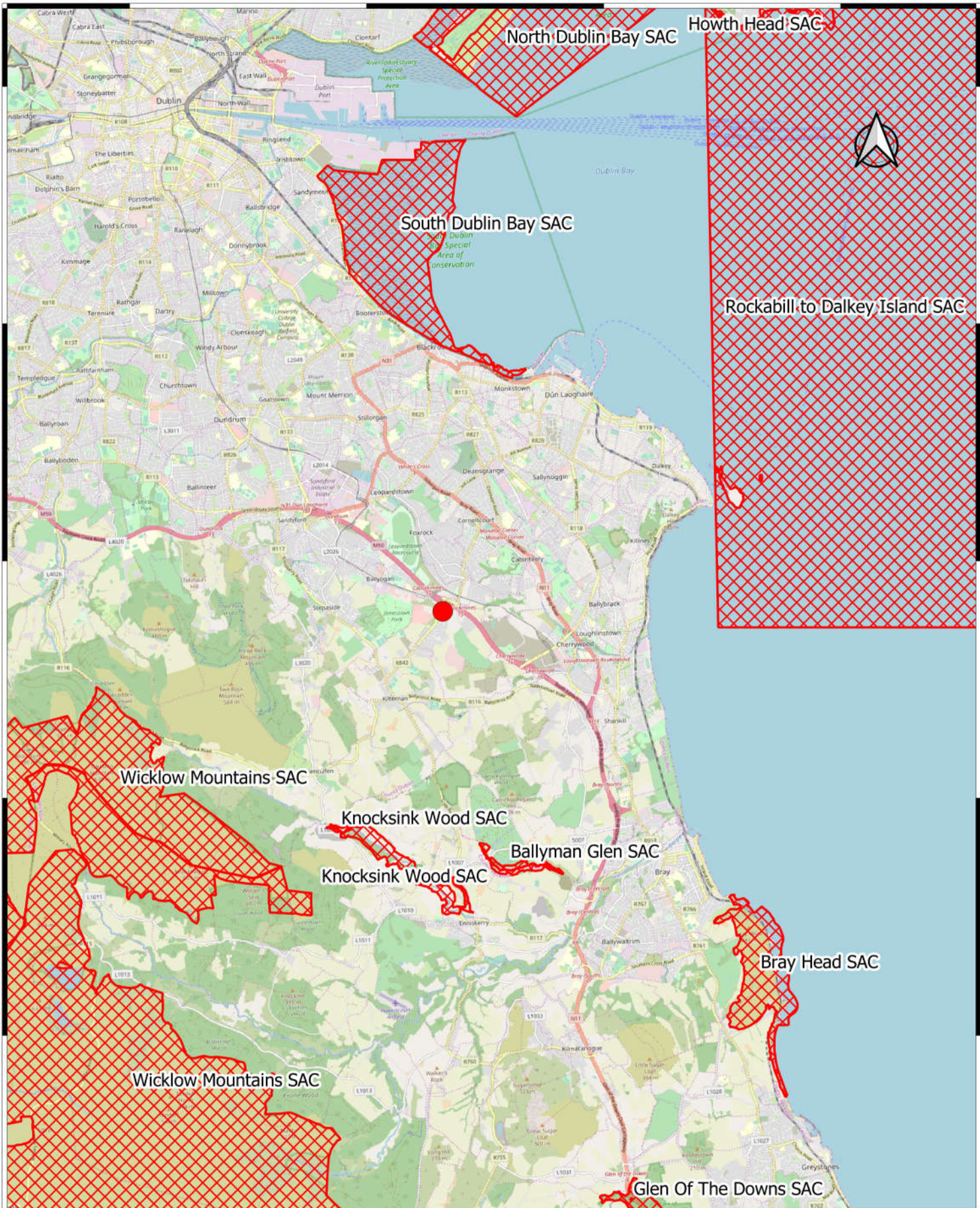
735000N

730000N

725000N

720000N

715000N



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**Client:**



0 1 2 3 4 km



**Project Title:**

Glenamuck Road

**Drawing Title:**

Figure 9 Special Area of Conservation

**GII Project Reference:**

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Date:  
02/04/2020

● Site Location

▨ SAC







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**Project Title:**  
Glenamuck Road

**Drawing Title:**  
Figure 10 Special Protected

**GII Project Reference:**  
9376-01-20

0 1 2 3 4 km




**Project Title:**  
Glenamuck Road


**Drawing Title:**  
Figure 10 Special Protected

**GII Project Reference:**  
9376-01-20

Drawn By:  
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Date:  
02/04/2020

 Site Location

 SPA



708000E

714000E

720000E

726000E

732000E

744000N

738000N

732000N

726000N

720000N

714000N

744000N

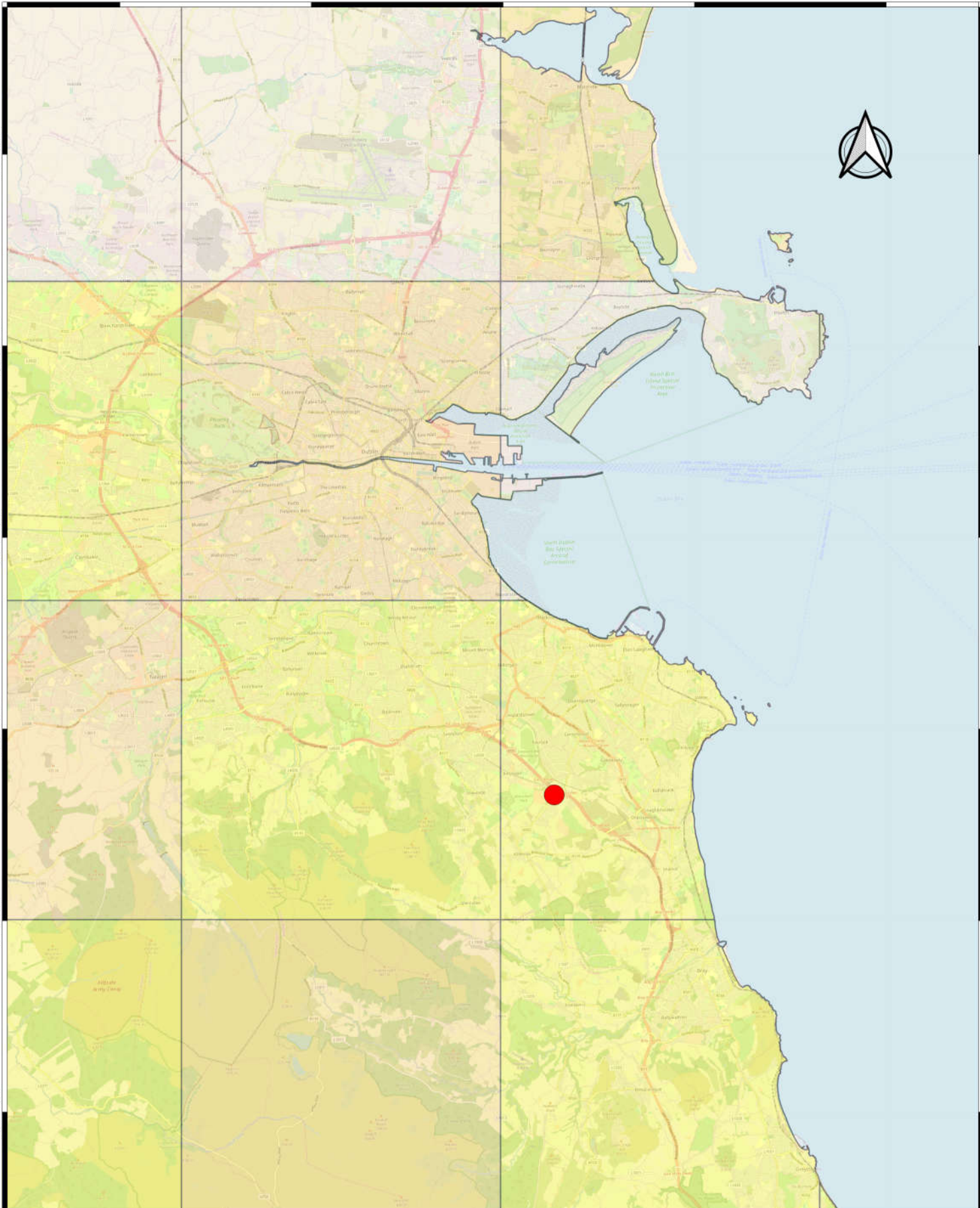
738000N

732000N

726000N

720000N

714000N



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**Client:**



0 2.5 5 km



**Project Title:**  
Glenamuck Road

**Drawing Title:**  
Figure 11 Radon

**GII Project Reference:**  
9376-01-20


Drawn By:  
BS


Date:  
02/04/2020

 Site Location

**Radon**

 <1%

 1% - 5%

 5% - 10%



721500E

721550E

721600E



721650E

721700E

724000N

723900N



-  Indicative Site Boundary
-  Borehole
-  Trial Pit

Client:



Project Code:

9376-01-20

Project Title:

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Drawing Title:

Figure 12 SI Locations



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Drawn By:  
BS

Date:  
02/04/2020

721500E

721550E

721600E

721650E

721700E



721500E

721550E

721600E

721650E

721700E

724000N

723900N



-  Indicative Site Boundary
-  Borehole
-  Trial Pit
-  Category B1
-  Category C1

Client:



Project Code:

9376-01-20

Project Title:

Glenamuck Road

Drawing Title:

Figure 13 Made Ground Waste Categories



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Date:  
03/04/2020

721500E

721550E

721600E

721650E

721700E



721500E

721550E

721600E



721650E

721700E

724000N

723900N



-  Indicative Site Boundary
-  Borehole
-  Trial Pit
-  Category A

Client:



Project Code:

9376-01-20

Project Title:

Glenamuck Road

Drawing Title:

Figure 14 Natural Ground Waste Categories



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Date:  
03/04/2020

721500E

721550E

721600E

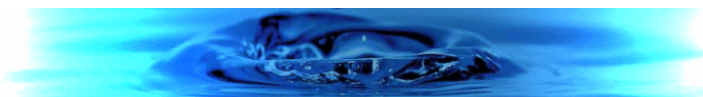
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721700E

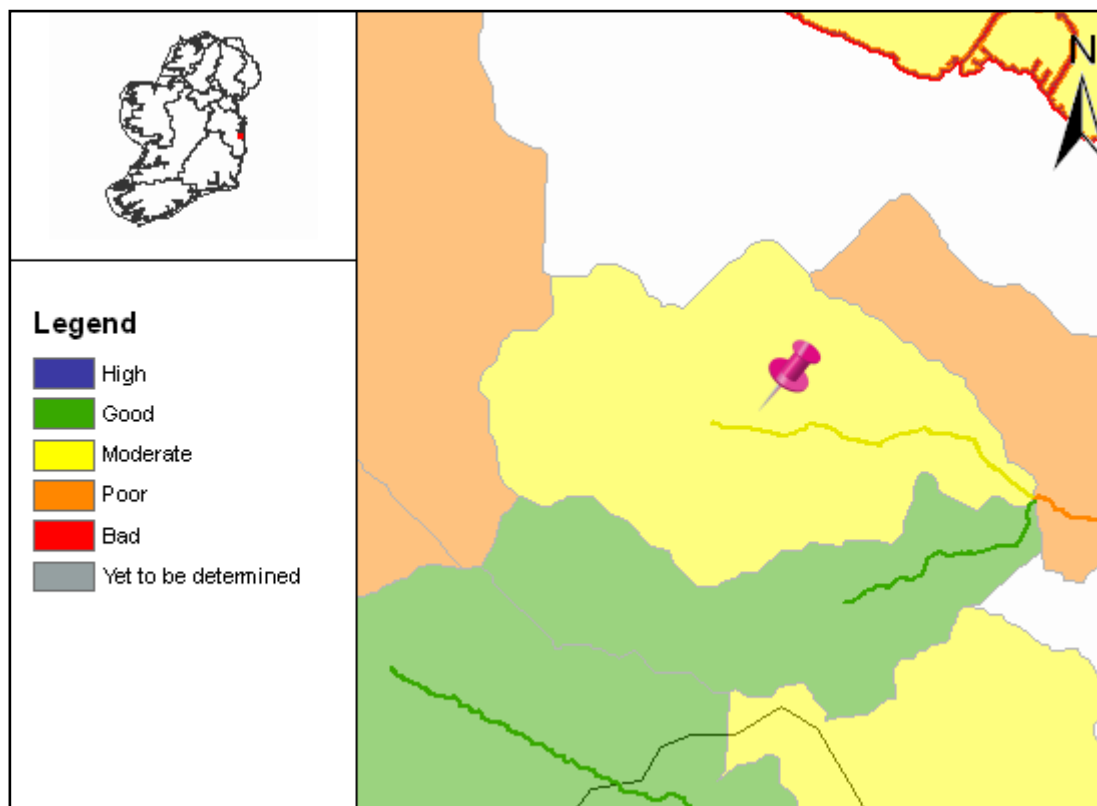


# APPENDIX 2 – Water Body Reports





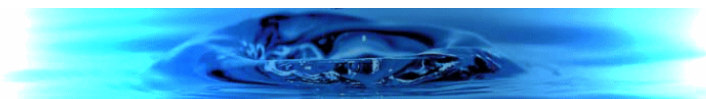
## Full Report for Waterbody Carrickmines



River Basin Management Plans (RBMPs) have been published for all River Basin Districts in Ireland in accordance with the requirements of the Water Framework Directive. The WaterMaps viewer is an integral part of the River Basin Management Plan and provides access to information at individual waterbody level and at Water Management Unit level for all the River Basin Districts in Ireland.

The following report provides summary plan information about the selected waterbody (indicated by the pin in the map above) relating to its status, risks, objectives, and measures proposed to retain status where this is adequate, or improve it where necessary. Waterbodies can relate to surface waters (these include rivers, lakes, estuaries [transitional waters], and coastal waters), or to groundwaters. Other relevant information not included in this report can be viewed using the WaterMaps viewer, including areas listed in the Register of Protected Areas.

You will find brief notes at the bottom of some of the individual report sheets that will help you in interpreting the information presented. More detailed information can be obtained in relation to all aspects of the RBMPs at [www.wfdireland.ie](http://www.wfdireland.ie).



**Summary Information:**

**Water Management Unit:** IE\_EA\_Shanganagh

**WaterBody Category:** River Waterbody

**WaterBody Name:** Carrickmines

**WaterBody Code:** IE\_EA\_10\_1219

**Overall Status:** Moderate

**Overall Objective:** Restore\_2021

**Overall Risk:** 1a At Risk

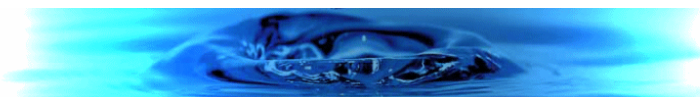
**Heavily Modified:** No



Report data based upon final RBMP, 2009-2015.

The information provided above is a summary of the principal findings related to the selected waterbody. Further details and explanation of individual elements of the report are outlined in the following pages.





<b>Status Report</b>	
<b>Water Management Unit:</b>	IE_EA_Shanganagh
<b>WaterBody Category:</b>	River Waterbody
<b>WaterBody Name:</b>	Carrickmines
<b>WaterBody Code:</b>	IE_EA_10_1219
<b>Overall Status Result:</b>	Moderate
<b>Heavily Modified:</b>	No



	<b>Status Element Description</b>	<b>Result</b>
<b>Status information</b>		
Q	Macroinvertebrate status	Moderate
PC	General physico-chemical status	Good
FPQ	Freshwater Pearl Mussel / Macroinvertebrate status	N/A
DIA	Diatoms status	N/A
HYM	Hydromorphology status	N/A
FIS	Fish status	N/A
SP	Specific Pollutants status (SP)	N/A
ES	Overall ecological status	Moderate
CS	Overall chemical status (PAS)	n/a
EXT	Extrapolated status	N/A
MON	Monitored water body	YES
DON	Donor water bodies	N/A

n/a - not assessed

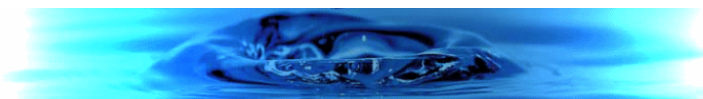
**Status**

By 'Status' we mean the condition of the water in the waterbody. It is defined by its chemical status and its ecological status, whichever is worse. Waters are ranked in one of 5 status classes: High, Good, Moderate, Poor, Bad. However, not all waterbodies have been monitored, and in such cases the status of a similar nearby waterbody has been used (extrapolated) to assign status. If this has been done the first line of the status report shows the code of the waterbody used to extrapolate.

You can read more about status and how it is measured in our RBMP Document Library at [www.wfdireland.ie](http://www.wfdireland.ie) (Directory 15 Status).

Date Reported to Europe: July 2010

Date Report Created 02/04/2020



**Risk Report**

**Water Management Unit:** IE\_EA\_Shanganagh

**WaterBody Category:** River Waterbody

**WaterBody Name:** Carrickmines

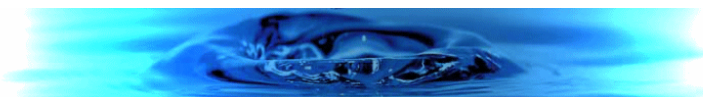
**WaterBody Code:** IE\_EA\_10\_1219

**Overall Risk Result:** **1a** At Risk

**Heavily Modified:** No



<b>Risk Test Description</b>		<b>Risk</b>	
<b>Diffuse Risk Sources</b>			
RD1	EPA diffuse model (2008)	<b>1a</b>	At Risk
RD2a	Road Wash - Soluble Copper	2a	Probably Not At Risk
RD2b	Road Wash - Total Zinc	2a	Probably Not At Risk
RD2c	Road Wash - Total Hydrocarbons	<b>1b</b>	Probably At Risk
RD3	Railways	2b	Not At Risk
RD4a	Forestry - Acidification (2008)	2b	Not At Risk
RD4b	Forestry - Suspended Solids (2008)	2b	Not At Risk
RD4c	Forestry - Eutrophication (2008)	2a	Probably Not At Risk
RD5	Overall Unsewered (2008)	2b	Not At Risk
RD5a	Unsewered Areas - Pathogens (2008)	2a	Probably Not At Risk
RD5b	Unsewered Phosphorus (2008)	2b	Not At Risk
RD6a	Arable	2b	Not At Risk
RD6b	Sheep Dip	2b	Not At Risk
RD6c	Forestry - Dangerous Substances	2b	Not At Risk
RDO	Diffuse Overall -Worst Case (2008)	<b>1a</b>	At Risk
<b>Hydrology</b>			
RHY1	Water balance - Abstraction	2b	Not At Risk
<b>Morphological Risk Sources</b>			
RM1	Channelisation (2008)	2b	Not At Risk
RM2	Embankments (2008)	2b	Not At Risk
RM3	Impoundments	2b	Not At Risk
RM4	Water Regulation	2b	Not At Risk
RM5	Intensive Landuse		N/A
RMO	Morphology Overall - Worst Case (2008)	2b	Not At Risk
<b>Overall Risk</b>			
RA	Rivers Overall - Worst Case (2008)	<b>1a</b>	At Risk

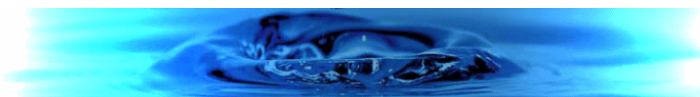


<b>Point Risk Sources</b>		
RP1	WWTPs (2008)	2b Not At Risk
RP2	CSOs	2a Probably Not At Risk
RP3	IPPCs (2008)	2b Not At Risk
RP4	Section 4s (2008)	2b Not At Risk
RP5	WTPs/Mines/Quarries/Landfills	N/A
RPO	Overall Risk from Point Sources - Worst Case (2008)	2a Probably Not At Risk
<b>Q Value</b>		
Q	EPA Q rating and Margaritifera Assessment	N/A
<b>Q/RDI or Point/Diffuse</b>		
QPD	Q class/EPA Diffuse Model or worst case of Point and Diffuse (2008)	1a At Risk
<b>Rivers Direct Impacts</b>		
RDI1	Rivers Direct Impacts - Dangerous Substances	N/A

**Risk**

By 'risk' we mean the risk that a waterbody will not achieve good ecological or good chemical status/potential at least by 2015. To examine risk the various pressures acting on the waterbody were identified along with any evidence of impact on water status. Depending on the extent of the pressure and its potential for impact, and the amount of information available, the risk to the water body was placed in one of four categories: 1a at risk; 1b probably at risk; 2a probably not at risk; 2b not at risk. Note that '2008' after the risk category means that the risk assessment was revised in 2008. All other risks were determined as part of an earlier risk assessment in 2005.

You can read more about risk assessment in our 'WFD Risk Assessment Update' document in the RBMP document library, and other documents at [www.wfdireland.ie](http://www.wfdireland.ie) (Directory 31 Risk Assessments).



<b>Objectives Report</b>	
<b>Water Management Unit:</b>	IE_EA_Shanganagh
<b>WaterBody Category:</b>	River Waterbody
<b>WaterBody Name:</b>	Carrickmines
<b>WaterBody Code:</b>	IE_EA_10_1219
<b>Overall Objective:</b>	Restore_2021
<b>Heavily Modified:</b>	No



<b>Objectives Description</b>		<b>Result</b>
<b>Objectives information</b>		
OB1	Prevent deterioration objective	No Status
OB2	Restore at least good status objective	Restore_2021
OB3	Reduce chemical pollution objective	No Status
OB4	Protected areas objective	No Status
OB5	Northern Ireland Environment Agency objective	No Status
OBO	Overall objectives	Restore_2021

**Extended timescales**

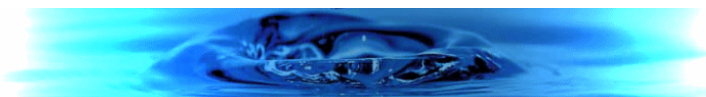
Extended timescales have been set for certain waters due to technical, economic, environmental or recovery constraints. Extended timescales are usually of one planning cycle (6 years, to 2021) but in some cases are two planning cycles (to 2027).

**Objectives**

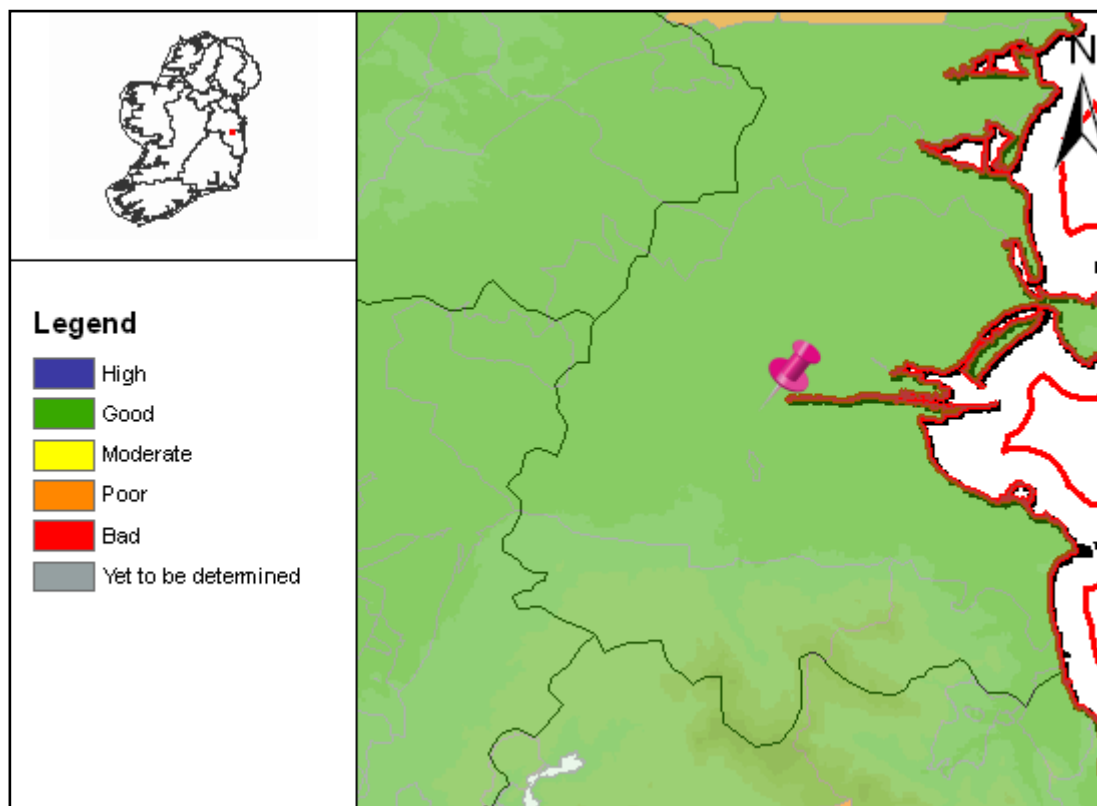
In general, we are required to ensure that our waters achieve at least good status/potential by 2015, and that their status does not deteriorate. Having identified the status of waters (this is given earlier in this report), the next stage is to set objectives for waters. Objectives consider waters that require protection from deterioration as well as waters that require restoration and the timescales needed for recovery. Four default objectives have been set initially:-

- Prevent Deterioration*
- Restore Good Status*
- Reduce Chemical Pollution*
- Achieve Protected Areas Objectives*

These objectives have been refined based on the measures available to achieve them, the latter's likely effectiveness, and consideration of cost-effective combinations of measures. Where it is considered necessary extended deadlines have been set for achieving objectives in 2021 or 2027.



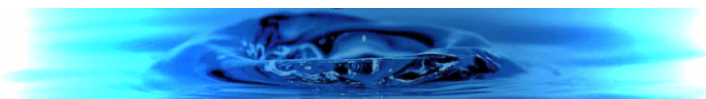
## Full Report for Waterbody Dublin Urban



River Basin Management Plans (RBMPs) have been published for all River Basin Districts in Ireland in accordance with the requirements of the Water Framework Directive. The WaterMaps viewer is an integral part of the River Basin Management Plan and provides access to information at individual waterbody level and at Water Management Unit level for all the River Basin Districts in Ireland.

The following report provides summary plan information about the selected waterbody (indicated by the pin in the map above) relating to its status, risks, objectives, and measures proposed to retain status where this is adequate, or improve it where necessary. Waterbodies can relate to surface waters (these include rivers, lakes, estuaries [transitional waters], and coastal waters), or to groundwaters. Other relevant information not included in this report can be viewed using the WaterMaps viewer, including areas listed in the Register of Protected Areas.

You will find brief notes at the bottom of some of the individual report sheets that will help you in interpreting the information presented. More detailed information can be obtained in relation to all aspects of the RBMPs at [www.wfdireland.ie](http://www.wfdireland.ie).



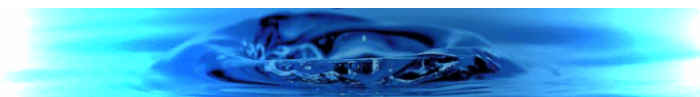
**Summary Information:**

**Water Management Unit:** N/A  
**WaterBody Category:** Groundwater Waterbody  
**WaterBody Name:** Dublin Urban  
**WaterBody Code:** IE\_EA\_G\_005  
**Overall Status:** Good  
**Overall Objective:** Protect  
**Overall Risk:** 1a At Risk  
**Heavily Modified:** No



Report data based upon final RBMP, 2009-2015.

The information provided above is a summary of the principal findings related to the selected waterbody. Further details and explanation of individual elements of the report are outlined in the following pages.



### Chemical and Quantitative Status Report

**Water Management Unit:** N/A  
**WaterBody Category:** Groundwater Waterbody  
**WaterBody Name:** Dublin Urban  
**WaterBody Code:** IE\_EA\_G\_005  
**Overall Status Result:** Good  
**Heavily Modified:** No



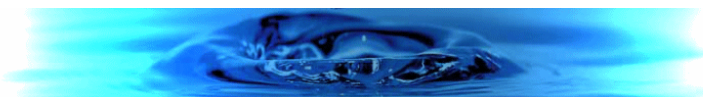
Status Element Description		Result
<b>Status information</b>		
INS	Status associated with saline intrusion into groundwater	N/A
DWS	Status associated with exceedances of water quality above specific standards	N/A
DS	Chemical status of groundwater due to pressure from diffuse sources of pollution	N/A
CLS	Chemical status of groundwater due to pressure from contaminated soil or land.	N/A
MS	Chemical status of groundwater due to pressure from mine sites (active or closed).	N/A
UAS	Chemical status of groundwater due to pressures from urban areas	N/A
GWS	General groundwater quality status	N/A
RPS	Status associated with MRP loading to rivers	N/A
TNS	Status associated with nitrate loading to transitional and coastal waters	N/A
SWS	Overall status associated with nutrient loadings to rivers and transitional and coastal waters	N/A
SQS	Status associated with dependant surface water quantitative status	N/A
GDS	Groundwater dependant terrestrial ecosystems status	N/A
QSO	Quantitative status overall	Good
CSO	Chemical status overall	Good
OS	Overall status	Good

GS -HC : Good status High Confidence  
 GS- LC : Good status Low Confidence  
 n/a - not assessed

**Status**

By 'Status' we mean the condition of the water in the waterbody. It is defined by its chemical status and quantitative status, whichever is worse. Groundwaters are ranked in one of 2 status classes: Good or Poor.

You can read more about status and how it is measured in our RBMP Document Library at [www.wfdireland.ie](http://www.wfdireland.ie) (Directory 15 Status).



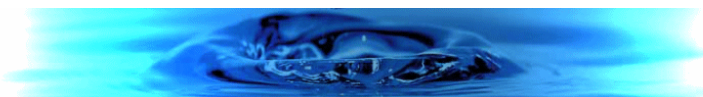
**Risk Report**

**Water Management Unit:** N/A  
**WaterBody Category:** Groundwater Waterbody  
**WaterBody Name:** Dublin Urban  
**WaterBody Code:** IE\_EA\_G\_005  
**Overall Risk Result:** 1a At Risk  
**Heavily Modified:** No



	<b>Risk Test Description</b>	<b>Risk</b>
	<b>Groundwater Dependent Terrestrial Ecosystems</b>	
TE	GWDTE Risk	N/A
	<b>Groundwater Quality</b>	
DIF	Diffuse Elements (General) Risk	N/A
DW	Drinking Waters Risk	N/A
INT	Intrusions Risk	N/A
WB	Water Balance Risk	N/A
	<b>Groundwater Quality (General)</b>	
GQ	General Groundwater Quality Risk	N/A
	<b>Groundwater Quality (Point Risk)</b>	
CL	Contaminated Land Risk	N/A
LF	Landfill Risk	N/A
MI	Mine Risk	N/A
QY	Quarry Risk	N/A
UR	Urban Risk	N/A
UW	UWWT Risk	N/A
	<b>GW Diffuse Risk Sources</b>	
WB3	Mobile Nutrients (NO3)	N/A
WB4	Mobile Chemicals	N/A
WB5	Clustered OSWTSs and leaking urban sewerage systems	N/A
	<b>GW Hydrology</b>	
WB1	Water balance - Abstraction	N/A
WB2	Abstraction - Intrusion	N/A



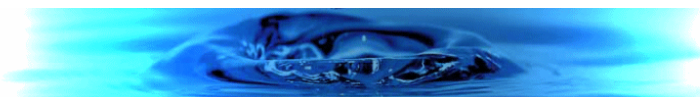


<b>GW Point Risk Sources</b>		
WB10	Risk from Point sources of pollution - Contaminated Land	N/A
WB11	Risk from Point sources of pollution - Trade Effluent Discharges	N/A
WB12	Risk from Point sources of pollution - Urban Wastewater Discharges	N/A
WB6	Risk from Point sources of pollution - Mines	N/A
WB7	Risk from Point sources of pollution - Quarries	N/A
WB8	Risk from Point sources of pollution - Landfills	N/A
WB9	Risk from Point sources of pollution - Oil Industry Infrastructure	N/A
<b>Overall Risk</b>		
RA	Groundwater Overall - Worst Case	N/A
<b>Risk information</b>		
CLR	Contaminated land risk	1a At Risk
DR	Risk of groundwater due to pressure from diffuse sources of pollution	2a Probably Not At Risk
DWR	Risk associated with exceedances of water quality above specific standards	2b Not At Risk
GDR	Groundwater dependant terrestrial ecosystems risk	1b Probably At Risk
GWR	General groundwater quality risk	1a At Risk
INR	Risk associated with saline intrusion into groundwater	2b Not At Risk
LR	Risk due to landfills sites/old closed dump sites	2b Not At Risk
MR	Mines risk	2b Not At Risk
NULL	Diffuse nitrates from agriculture risk	N/A
QR	Risk due to quarries	2b Not At Risk
RA	Revised risk assessment	1a At Risk
RPR	Risk associated with MRP loading to rivers	2b Not At Risk
SQR	Risk associated with dependant surface water quantitative status	2b Not At Risk
SWR	Overall risk associated with nutrient loadings to rivers and transitional and coastal waters	2a Probably Not At Risk
TNR	Risk associated with nitrate loading to transitional and coastal waters	2a Probably Not At Risk
UAR	Risk of groundwater due to pressures from urban areas	1a At Risk
UWR	Risk due to direct discharges of urban wastewater	2b Not At Risk

**Risk**

By 'risk' we mean the risk that a waterbody will not achieve good ecological or good chemical status/potential at least by 2015. To examine risk the various pressures acting on the waterbody were identified along with any evidence of impact on water status. Depending on the extent of the pressure and its potential for impact, and the amount of information available, the risk to the water body was placed in one of four categories: 1a at risk; 1b probably at risk; 2a probably not at risk; 2b not at risk. Note that '2008' after the risk category means that the risk assessment was revised in 2008. All other risks were determined as part of an earlier risk assessment in 2005.

You can read more about risk assessment in our 'WFD Risk Assessment Update' document in the RBMP document library, and other documents at [www.wfdireland.ie](http://www.wfdireland.ie) (Directory 31 Risk Assessments).



## Objectives Report

**Water Management Unit:** N/A

**WaterBody Category:** Groundwater Waterbody

**WaterBody Name:** Dublin Urban

**WaterBody Code:** IE\_EA\_G\_005

**Overall Objective:** Protect

**Heavily Modified:** No



Objectives Description		Result
Objectives information		
OB1	Prevent deterioration objective	No Status
OB2	Restore at least good status objective	No Status
OB3	Reduce chemical pollution objective	No Status
OB4	Protected areas objective	Protect
OBO	Overall objectives - objective	Protect

### Extended timescales

Extended timescales have been set for certain waters due to technical, economic, environmental or recovery constraints. Extended timescales are usually of one planning cycle (6 years, to 2021) but in some cases are two planning cycles (to 2027).

### Objectives

In general, we are required to ensure that our waters achieve at least good status/potential by 2015, and that their status does not deteriorate. Having identified the status of waters (this is given earlier in this report), the next stage is to set objectives for waters. Objectives consider waters that require protection from deterioration as well as waters that require restoration and the timescales needed for recovery. Four default objectives have been set initially:-

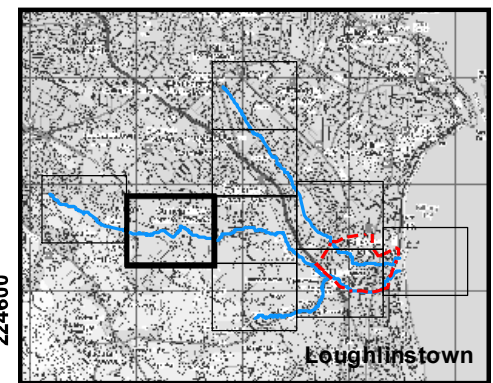
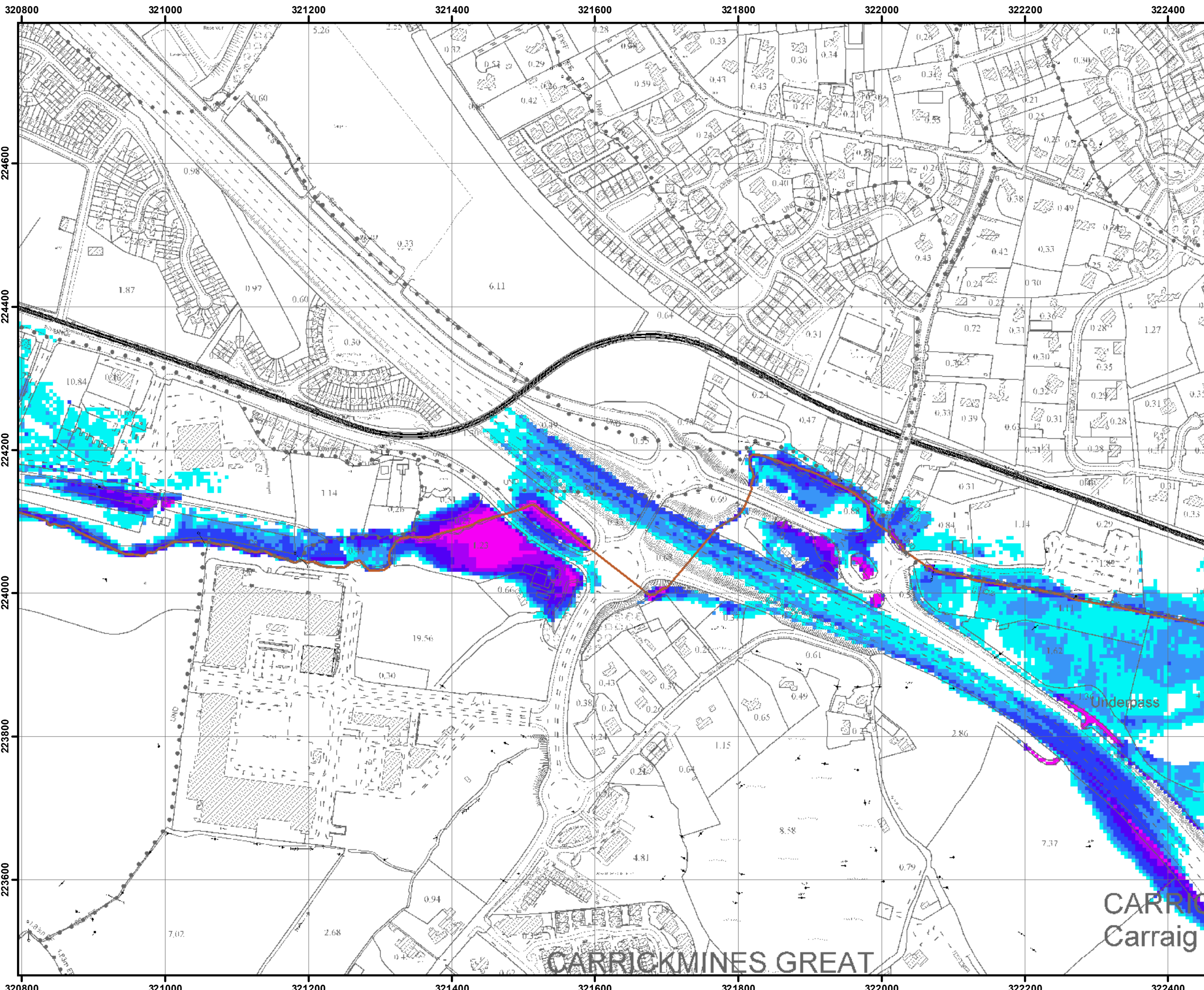
*Prevent Deterioration*  
*Restore Good Status*  
*Reduce Chemical Pollution*  
*Achieve Protected Areas Objectives*

These objectives have been refined based on the measures available to achieve them, the latter's likely effectiveness, and consideration of cost-effective combinations of measures. Where it is considered necessary extended deadlines have been set for achieving objectives in 2021 or 2027.

# APPENDIX 3 – Flood Maps







**IMPORTANT USER NOTE:**  
 THE VIEWER OF THIS MAP SHOULD REFER TO THE DISCLAIMER, GUIDANCE NOTES AND CONDITIONS OF USE THAT ACCOMPANY THIS MAP.

- Legend**
- 0.1% Fluvial AEP Flood Depth**
- 0 - 0.25m
  - 0.25 - 0.5m
  - 0.5 - 1m
  - 1.0 - 1.5m
  - 1.5 - 2m
  - >2m
- Modelled River Centreline
- - - AFA Extents

**FINAL**

REV:	NOTE:	DATE:
------	-------	-------



The Office of Public Works  
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 W www.rpsgroup.com  
 E ireland@rpsgroup.com

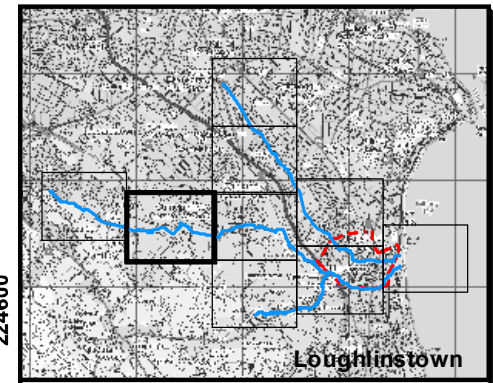
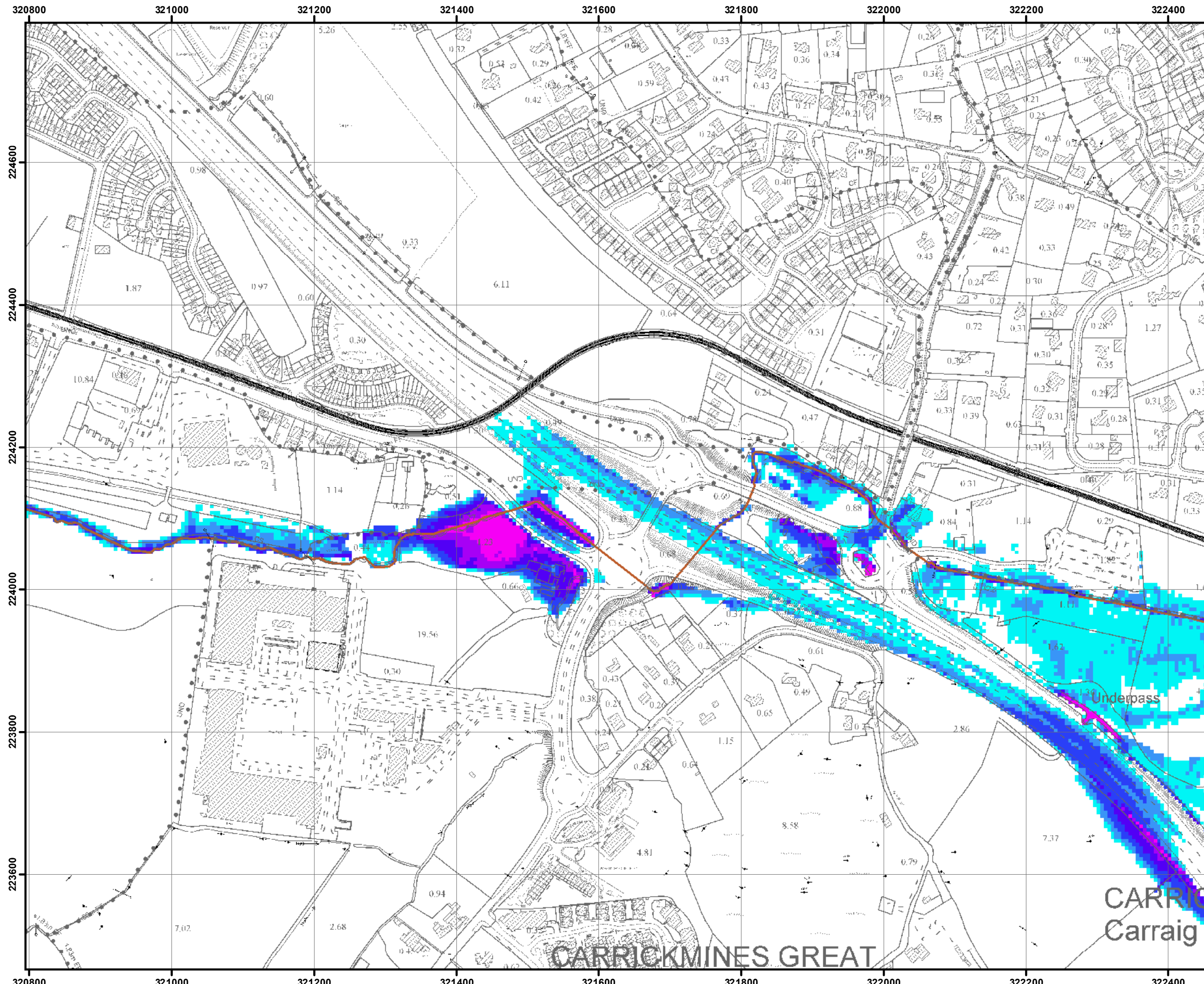
Map: Shanganagh-Carrickmines River Tidal Flood Depths

Map Type:	DEPTH		
Source:	FLUVIAL		
Map Area:	HPW		
Scenario:	CURRENT		
Drawn By:	C.C.	Date:	3 November 2017
Checked By:	A.S.	Date:	3 November 2017
Approved By:	G.G.	Date:	3 November 2017
Drawing No.:	E10LOU_DPFCD001_F1_02		

Map Series : Page 2 of 9  
 Drawing Scale : 1:5,000 @ A3







**IMPORTANT USER NOTE:**  
 THE VIEWER OF THIS MAP SHOULD REFER TO THE DISCLAIMER, GUIDANCE NOTES AND CONDITIONS OF USE THAT ACCOMPANY THIS MAP.

**Legend**

**1% Fluvial AEP Flood Depth**

- 0 - 0.25m
- 0.25 - 0.5m
- 0.5 - 1m
- 1.0 - 1.5m
- 1.5 - 2m
- >2m

Modelled River Centreline

AFA Extents

**FINAL**

REV:	NOTE:	DATE:
------	-------	-------





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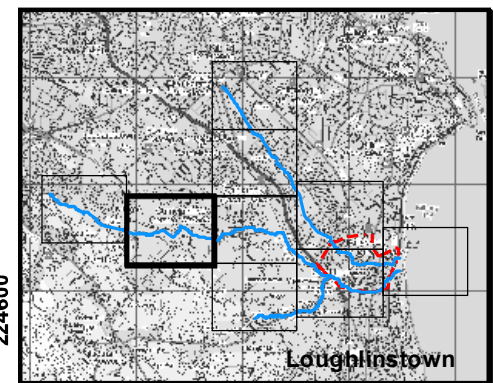
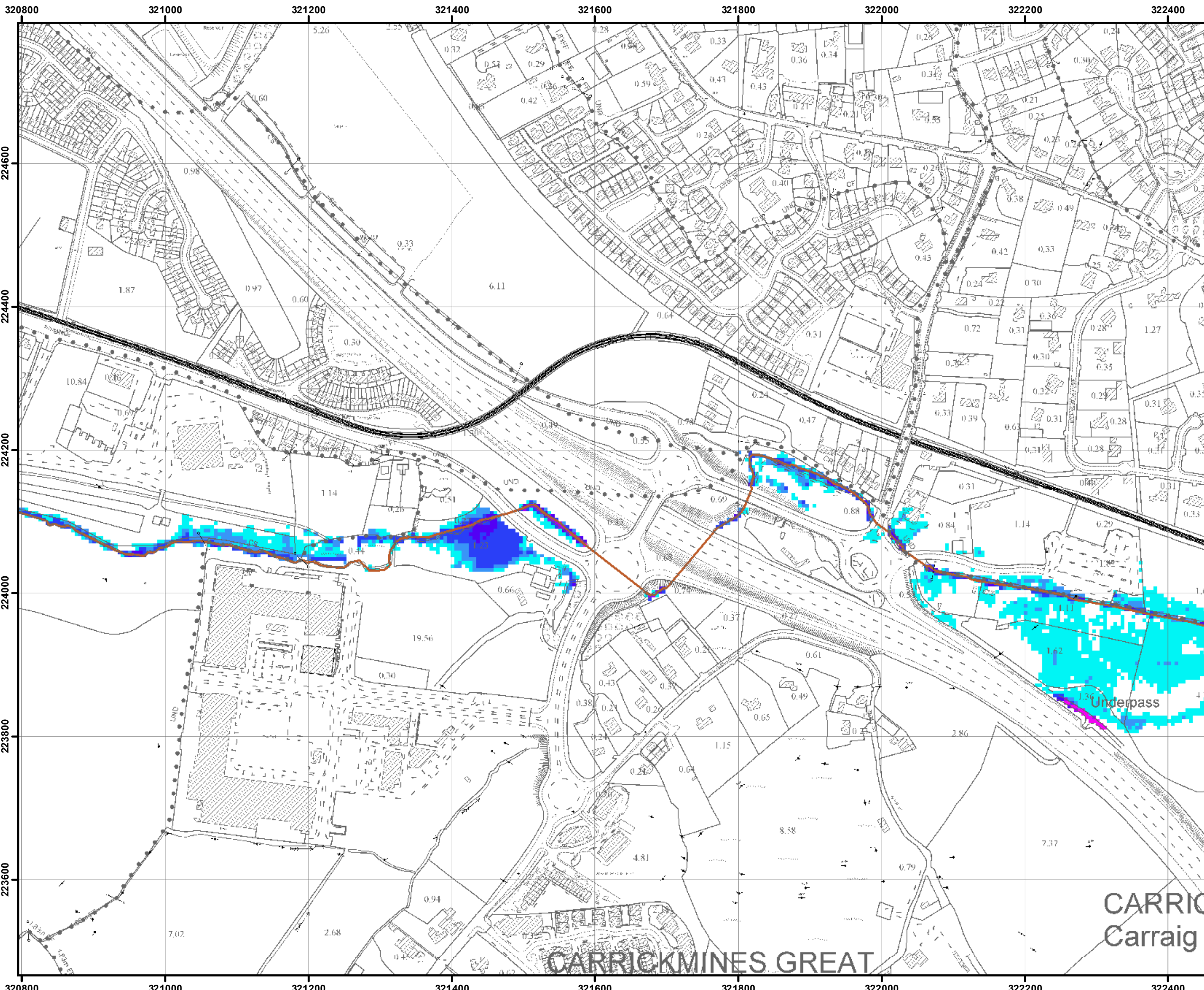
Map: Shanganagh-Carrickmines River Tidal Flood Depths

Map Type:	DEPTH		
Source:	FLUVIAL		
Map Area:	HPW		
Scenario:	CURRENT		
Drawn By:	C.C.	Date:	3 November 2017
Checked By:	A.S.	Date:	3 November 2017
Approved By:	G.G.	Date:	3 November 2017
Drawing No.:	E10LOU_DPFCD010_F1_02		

Map Series : Page 2 of 9  
 Drawing Scale : 1:5,000 @A3







**IMPORTANT USER NOTE:**  
 THE VIEWER OF THIS MAP SHOULD REFER TO THE DISCLAIMER, GUIDANCE NOTES AND CONDITIONS OF USE THAT ACCOMPANY THIS MAP.

**Legend**

**10% Fluvial AEP Flood Depth**

- 0 - 0.25m
- 0.25 - 0.5m
- 0.5 - 1m
- 1.0 - 1.5m
- 1.5 - 2m
- >2m

Modelled River Centreline

AFA Extents

**FINAL**

REV:	NOTE:	DATE:
------	-------	-------



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 E ireland@rpsgroup.com

Map: Shanganagh-Carrickmines River  
 Tidal Flood Depths

Map Type:	DEPTH
Source:	FLUVIAL
Map Area:	HPW
Scenario:	CURRENT
Drawn By:	C.C. Date: 3 November 2017
Checked By:	A.S. Date: 3 November 2017
Approved By:	G.G. Date: 3 November 2017
Drawing No.:	E10LOU_DPFCD100_F1_02

Map Series : Page 2 of 9  
 Drawing Scale : 1:5,000 @A3



# APPENDIX 4 – Trial Pit Records





<b>Machine</b> : 23 Tonne Tracked Excavator  <b>Method</b> : Trial Pit	<b>Dimensions</b> 4.30m X 1.00m X 2.50m	<b>Ground Level (mOD)</b> 77.81	<b>Client</b>	<b>Job Number</b> 9376-01-20
	<b>Location (dGPS)</b> 721532.9 E 723932.3 N	<b>Dates</b> 20/02/2020	<b>Engineer</b> DBFL	<b>Sheet</b> 1/1

Depth (m)	Sample / Tests	Water Depth (m)	Field Records	Level (mOD)	Depth (m) (Thickness)	Description	Legend	Water
0.50 0.50	B ES			77.51	(0.30)	MADE GROUND: Dark brown slightly sandy slightly gravelly organic Clay with roots and rootlets		
				77.01	(0.50)	MADE GROUND Brown/grey slightly sandy gravelly Clay with occasional cobbles and roots		
1.50 1.50	B ES		fast ingress(1) at 1.40m.	75.31 75.31	(1.70)	Firm grey mottled reddish brown slightly sandy gravelly silty CLAY with many angular cobbles, boulders and large boulders		∇1
				75.31 75.31	2.50 2.50	GRANITE BEDROCK - Not Ripable - Rockhead at 2.50m BGL  Complete at 2.50m		

<b>Plan</b> 	<b>Remarks</b>  Groundwater encountered at 1.40m BGL; fast ingress Trial pit unstable; side walls spalling Trial pit backfilled on completion		
	<table border="1"> <tr> <td><b>Scale (approx)</b> 1:25</td> <td><b>Logged By</b> JC</td> <td><b>Figure No.</b> 9376-01-20.TP1</td> </tr> </table>	<b>Scale (approx)</b> 1:25	<b>Logged By</b> JC
<b>Scale (approx)</b> 1:25	<b>Logged By</b> JC	<b>Figure No.</b> 9376-01-20.TP1	





<b>Machine</b> : 23 Tonne Tracked Excavator <b>Method</b> : Trial Pit	<b>Dimensions</b> 4.60m X 1.00m X 1.60m	<b>Ground Level (mOD)</b> 77.40	<b>Client</b>	<b>Job Number</b> 9376-01-20
	<b>Location (dGPS)</b> 721556.4 E 723952.7 N	<b>Dates</b> 20/02/2020	<b>Engineer</b> DBFL	<b>Sheet</b> 1/1

Depth (m)	Sample / Tests	Water Depth (m)	Field Records	Level (mOD)	Depth (m) (Thickness)	Description	Legend	Water
0.50 0.50	B ES			76.80	0.60 (0.30)	MADE GROUND: Dark brown slightly sandy slightly gravelly organic Clay with many roots and rootlets, some large boulders and pieces of ceramic and plastic		
				76.50	0.90 (0.70)	Possible MADE GROUND: Soft to firm brown slightly gravelly sandy CLAY with some angular cobbles and boulders		
						GRANITE BEDROCK - Not Ripable - Rockhead varies from 0.90m to 1.60m BGL - Soft to firm brown slightly gravelly sandy CLAY with some angular cobbles and boulders overlies rockhead		
1.50	ES		seepage(1) at 1.50m.	75.80	1.60	Complete at 1.60m		∇1

<b>Plan</b> .	<b>Remarks</b> Groundwater seepage at 1.50m BGL Trial pit unstable; side walls spalling Trial pit backfilled on completion		
	<table border="1"> <tr> <td><b>Scale (approx)</b> 1:25</td> <td><b>Logged By</b> JC</td> <td><b>Figure No.</b> 9376-01-20.TP2</td> </tr> </table>	<b>Scale (approx)</b> 1:25	<b>Logged By</b> JC
<b>Scale (approx)</b> 1:25	<b>Logged By</b> JC	<b>Figure No.</b> 9376-01-20.TP2	



<b>Machine</b> : 23 Tonne Tracked Excavator  <b>Method</b> : Trial Pit	<b>Dimensions</b> 6.00m X 1.80m X 2.90m	<b>Ground Level (mOD)</b> 75.17	<b>Client</b>	<b>Job Number</b> 9376-01-20
	<b>Location (dGPS)</b> 721626.3 E 723998.9 N	<b>Dates</b> 19/02/2020	<b>Engineer</b> DBFL	<b>Sheet</b> 1/1

Depth (m)	Sample / Tests	Water Depth (m)	Field Records	Level (mOD)	Depth (m) (Thickness)	Description	Legend	Water
0.50 0.50	B ES			74.37	(0.80)	MADE GROUND: Brown/grey slightly sandy gravelly Clay with some cobbles, and many pieces of timber, gas canisters, plastic, scrap metal and concrete		
1.50 1.50	B ES			73.67	(0.70)	MADE GROUND: Dark grey slightly sandy slightly gravelly Clay with some cobbles and boulders, and many pieces of timber, gas canisters, charcoal, bricks, waste ash, plant remains, plastic, scrap metal and concrete (strong hydrocarbon odour)		
2.50 2.50	B ES		medium ingress(1) at 2.80m.	72.67	(1.00)	MADE GROUND: Brown/grey slightly sandy slightly gravelly Clay with some cobbles and and occasional boulders, and occasional pieces of timber and plastic		
				72.27	(0.40)	GRANITE BEDROCK - Not Ripable - Rockhead varies from 2.50m to 2.90m BGL - Firm brown slightly sandy gravelly CLAY with some subangular cobbles and boulders of granite overlies rockhead		∇1
						Complete at 2.90m		

<b>Plan</b> 	<b>Remarks</b>  Groundwater encountered at 2.80m BGL; medium ingress Trial pit unstable; side walls collapsing Trial pit backfilled on completion		
	<table border="1"> <tr> <td><b>Scale (approx)</b> 1:25</td> <td><b>Logged By</b> JC</td> <td><b>Figure No.</b> 9376-01-20.TP3</td> </tr> </table>	<b>Scale (approx)</b> 1:25	<b>Logged By</b> JC
<b>Scale (approx)</b> 1:25	<b>Logged By</b> JC	<b>Figure No.</b> 9376-01-20.TP3	



<b>Machine</b> : 23 Tonne Tracked Excavator  <b>Method</b> : Trial Pit	<b>Dimensions</b> 6.00m X 1.50m X 3.50m	<b>Ground Level (mOD)</b> 74.45	<b>Client</b>	<b>Job Number</b> 9376-01-20
	<b>Location (dGPS)</b> 721650.6 E 724029.9 N	<b>Dates</b> 19/02/2020	<b>Engineer</b> DBFL	<b>Sheet</b> 1/1

Depth (m)	Sample / Tests	Water Depth (m)	Field Records	Level (mOD)	Depth (m) (Thickness)	Description	Legend	Water
0.50 0.50	B ES					MADE GROUND: Grey/brown slightly gravelly sandy Clay with some cobbles, many large boulders and pieces of tarmacadam, concrete, bricks, scrap metal, plastic and timber		
1.50 1.50	B ES				(2.20)			
2.50 2.50	B ES			72.25	2.20 (0.40)	Possible MADE GROUND: Firm brown slightly sandy gravelly CLAY with some subangular cobbles and boulders of granite		
				71.85	2.60 (0.90)	GRANITE BEDROCK - Not Ripable - Rockhead varies from 2.60m to 3.50m BGL - Firm brown slightly sandy gravelly CLAY with some subangular cobbles and boulders of granite overlies rockhead		
			fast ingress(1) at 3.50m.	70.95	3.50	Complete at 3.50m		∇1

<b>Plan</b> 	<b>Remarks</b> Groundwater encountered at 3.50m BGL; fast ingress Trial pit unstable; side walls collapsing Trial pit backfilled on completion
	<b>Scale (approx)</b> 1:25
	<b>Logged By</b> JC
	<b>Figure No.</b> 9376-01-20.TP4



Machine : 23 Tonne Tracked Excavator Method : Trial Pit	Dimensions 5.50m X 1.50m X 1.30m	Ground Level (mOD) 74.17	Client	Job Number 9376-01-20
	Location (dGPS) 721669.3 E 724003.6 N	Dates 19/02/2020	Engineer DBFL	Sheet 1/1

Depth (m)	Sample / Tests	Water Depth (m)	Field Records	Level (mOD)	Depth (m) (Thickness)	Description	Legend	Water
0.50 0.50	B ES				(1.00)	MADE GROUND: Grey/brown slightly gravelly sandy Clay with some cobbles, many boulders, concrete walls, plastic, bricks, timber, and scrap metal (hydrocarbon odour)		
				73.17	1.00 (0.30)	MADE GROUND: Brown slightly sandy gravelly Clay with some cobbles and pieces of timber		
				72.87	1.30 (0.30)	GRANITE BEDROCK - Not Ripable - Rockhead varies from 1.30m to 1.60m BGL - Firm brown slightly sandy gravelly CLAY with some subangular cobbles and boulders of granite overlies rockhead		
1.50 1.50	B ES			72.57	1.60	Complete at 1.60m		

<b>Plan</b> .	<b>Remarks</b> No groundwater encountered Trial pit unstable; side walls collapsing Trial pit backfilled on completion					
	<table border="1"> <tr> <td>Scale (approx)</td> <td>Logged By</td> <td>Figure No.</td> </tr> <tr> <td>1:25</td> <td>JC</td> <td>9376-01-20.TP5</td> </tr> </table>	Scale (approx)	Logged By	Figure No.	1:25	JC
Scale (approx)	Logged By	Figure No.				
1:25	JC	9376-01-20.TP5				



<b>Machine</b> : 23 Tonne Tracked Excavator  <b>Method</b> : Trial Pit	<b>Dimensions</b> 4.50m X 1.30m X 1.50m	<b>Ground Level (mOD)</b> 75.23	<b>Client</b>	<b>Job Number</b> 9376-01-20
	<b>Location (dGPS)</b> 721634.6 E 723971.9 N	<b>Dates</b> 19/02/2020	<b>Engineer</b> DBFL	<b>Sheet</b> 1/1

Depth (m)	Sample / Tests	Water Depth (m)	Field Records	Level (mOD)	Depth (m) (Thickness)	Description	Legend	Water
0.50 0.50	B ES			75.13 75.03	(0.10) (0.10) (0.10) 0.20	Tarmacadam  MADE GROUND: Red slightly clayey sandy angular fine to coarse Gravel  MADE GROUND: Grey slightly sandy gravelly Clay with some cobbles and boulders, and pieces of timber, tarmacadam, glass and metal		
1.50 1.50	B ES			74.33 73.73	0.90 (0.60) 1.50	GRANITE BEDROCK - Not Ripable - Rockhead varies from 0.90m to 1.50m BGL - Firm grey mottled brown slightly gravelly sandy CLAY with some angular cobbles of granite overlies rockhead  Complete at 1.50m		

<b>Plan</b> .	<b>Remarks</b>  No groundwater encountered Trial pit unstable; side walls spalling Trial pit backfilled on completion		
	<table border="1"> <tr> <td><b>Scale (approx)</b> 1:25</td> <td><b>Logged By</b> JC</td> <td><b>Figure No.</b> 9376-01-20.TP6</td> </tr> </table>	<b>Scale (approx)</b> 1:25	<b>Logged By</b> JC
<b>Scale (approx)</b> 1:25	<b>Logged By</b> JC	<b>Figure No.</b> 9376-01-20.TP6	



Machine : 23 Tonne Tracked Excavator Method : Trial Pit	Dimensions 4.60m X 1.00m X 0.80m	Ground Level (mOD)	Client	Job Number 9376-01-20
	Location (dGPS)	Dates 19/02/2020	Engineer DBFL	Sheet 1/1

Depth (m)	Sample / Tests	Water Depth (m)	Field Records	Level (mOD)	Depth (m) (Thickness)	Description	Legend	Water
0.50 0.50	B ES				(0.50) 0.50 (0.10) 0.60 (0.20) 0.80	<p>MADE GROUND: Grey clayey sandy subangular to subrounded fine Gravel with occasional pieces of concrete</p> <p>Firm to stiff brown slightly sandy slightly gravelly CLAY with occasional subangular cobbles of granite</p> <p>GRANITE BEDROCK - Not Ripable - Rockhead varies from 0.60m to 0.80m BGL - Firm brown slightly sandy slightly gravelly CLAY with some subangular cobbles and boulders of granite overlies rockhead</p> <p>Complete at 0.80m</p>		

<b>Plan</b> .	<b>Remarks</b>  No groundwater encountered Trial pit stable Trial pit backfilled on completion					
	<table border="1"> <tr> <td>Scale (approx)</td> <td>Logged By</td> <td>Figure No.</td> </tr> <tr> <td>1:25</td> <td>JC</td> <td>9376-01-20.TP7</td> </tr> </table>	Scale (approx)	Logged By	Figure No.	1:25	JC
Scale (approx)	Logged By	Figure No.				
1:25	JC	9376-01-20.TP7				



<b>Machine :</b> 23 Tonne Tracked Excavator  <b>Method :</b> Trial Pit	<b>Dimensions</b> 4.30m X 1.00m X 0.80m	<b>Ground Level (mOD)</b> 78.46	<b>Client</b>	<b>Job Number</b> 9376-01-20
	<b>Location (dGPS)</b> 721568.9 E 723910.1 N	<b>Dates</b> 20/02/2020	<b>Engineer</b> DBFL	<b>Sheet</b> 1/1

Depth (m)	Sample / Tests	Water Depth (m)	Field Records	Level (mOD)	Depth (m) (Thickness)	Description	Legend	Water
0.50 0.50	B ES			77.66 77.66	(0.80) 0.80 0.80	MADE GROUND: Dark brown slightly sandy slightly gravelly organic Clay with some roots and rootlets and large boulders  GRANITE BEDROCK - Not Ripable - Rockhead at 0.80m BGL  Complete at 0.80m		

<b>Plan</b> .	<b>Remarks</b>  No groundwater encountered Trial pit unstable; side walls spalling Trial pit backfilled on completion		
	<table border="1"> <tr> <td><b>Scale (approx)</b> 1:25</td> <td><b>Logged By</b> JC</td> <td><b>Figure No.</b> 9376-01-20.TP8</td> </tr> </table>	<b>Scale (approx)</b> 1:25	<b>Logged By</b> JC
<b>Scale (approx)</b> 1:25	<b>Logged By</b> JC	<b>Figure No.</b> 9376-01-20.TP8	



<b>Machine</b> : 23 Tonne Tracked Excavator  <b>Method</b> : Trial Pit	<b>Dimensions</b> 4.20m X 1.00m X 0.60m	<b>Ground Level (mOD)</b>	<b>Client</b>	<b>Job Number</b> 9376-01-20
	<b>Location (dGPS)</b>	<b>Dates</b> 19/02/2020	<b>Engineer</b> DBFL	<b>Sheet</b> 1/1

Depth (m)	Sample / Tests	Water Depth (m)	Field Records	Level (mOD)	Depth (m) (Thickness)	Description	Legend	Water
0.50 0.50	B ES				(0.30) 0.30 (0.30) 0.60	MADE GROUND: Dark brown slightly sandy slightly gravelly organic Clay with many roots and some concrete blocks and fragments of glass  GRANITE BEDROCK - Not Ripable - Rockhead varies from 0.30m to 0.60m BGL - MADE GROUND: Dark brown slightly sandy slightly gravelly organic Clay with many roots and some concrete blocks and fragments of glass overlies rockhead  Complete at 0.60m	 	

<b>Plan</b> .	<b>Remarks</b>  No groundwater encountered Trial pit unstable; side walls spalling Trial pit backfilled on completion		
	<table border="1"> <tr> <td><b>Scale (approx)</b> 1:25</td> <td><b>Logged By</b> JC</td> <td><b>Figure No.</b> 9376-01-20.TP9</td> </tr> </table>	<b>Scale (approx)</b> 1:25	<b>Logged By</b> JC
<b>Scale (approx)</b> 1:25	<b>Logged By</b> JC	<b>Figure No.</b> 9376-01-20.TP9	





Machine : 23 Tonne Tracked Excavator Method : Trial Pit	Dimensions 4.40m X 1.10m X 2.20m	Ground Level (mOD)	Client	Job Number 9376-01-20
	Location (dGPS)	Dates 20/02/2020	Engineer DBFL	Sheet 1/1

Depth (m)	Sample / Tests	Water Depth (m)	Field Records	Level (mOD)	Depth (m) (Thickness)	Description	Legend	Water
0.50 0.50	B ES				(0.70)	MADE GROUND: Dark brown slightly sandy slightly gravelly organic Clay with roots and rootlets		
					0.70 (0.30)	Soft to firm brown slightly gravelly sandy CLAY with some subangular to subrounded cobbles		
					1.00 (0.90)	COBBLES and BOULDERS of granite with some clay		
					1.90 (0.30)	Weathered GRANITE BEDROCK - Rockhead at 1.90m BGL - Ripable		
					2.20 2.20	GRANITE BEDROCK - Not Ripable Complete at 2.20m		

<b>Plan</b> .	<b>Remarks</b>  No groundwater encountered Trial pit unstable; side walls spalling Trial pit backfilled on completion					
	<table border="1"> <tr> <td>Scale (approx)</td> <td>Logged By</td> <td>Figure No.</td> </tr> <tr> <td>1:25</td> <td>JC</td> <td>9376-01-20.TP10</td> </tr> </table>	Scale (approx)	Logged By	Figure No.	1:25	JC
Scale (approx)	Logged By	Figure No.				
1:25	JC	9376-01-20.TP10				

# APPENDIX 5 – Rotary Borehole Records





Machine : Beretta T47s		Casing Diameter 68mm cased to 6.90m		Ground Level (mOD)		Client		Job Number 9376-01-20	
Flush : Water		Location		Dates 11/03/2020		Engineer DBFL		Sheet 1/1	
Core Dia: 68 mm									
Method : Rotary Cored									

Depth (m)	TCR	SCR	RQD	FI	Field Records	Level (mOD)	Depth (m) (Thickness)	Description	Legend	Water
0.40							0.40	Recovery consists of: MADE GROUND: Light grey slightly sandy fine to coarse angular to subangular Gravel. Driller notes sandy Gravel		
	50	35	28	10			(3.10)	Weak to medium strong massive light grey coarse grained crystalline GRANITE with brown staining and quartz veins. Partially to distinctly weathered  0.40m-2.40m BGL: Two Fracture sets. F1: Very close to closely spaced, 0-20 degrees, undulating rough with brown staining. F2: Close spaced, 40-60 degrees, undulating rough with brown staining,		
2.40				NI				2.40m-3.50m BGL: Non Intact		
3.50	87	47	20				3.50	Medium strong to strong massive light grey coarse grained crystalline GRANITE with brown staining and an aplite vein. Partially weathered		
3.90							(3.40)	3.50m-6.90m BGL: Two Fracture sets. F1: Closely to medium spaced, 0-20 degrees, undulating rough with brown staining. F2: medium to widely spaced, 40-60 degrees, undulating rough with brown staining,		
5.40	100	100	77	5						
	100	93	80				6.90	Complete at 6.90m		
6.90										

<b>Remarks</b> Complete at 6.90m BGL Borehole backfilled upon completion	Scale (approx)	Logged By
	1:50	AB
	<b>Figure No.</b> 9376-01-20.RC01	



Machine : Beretta T47s Flush : Water Core Dia: 68 mm Method : Rotary Cored	Casing Diameter 68mm cased to 6.90m	Ground Level (mOD)	Client	Job Number 9376-01-20
	Location	Dates 06/03/2020	Engineer DBFL	Sheet 1/1

Depth (m)	TCR	SCR	RQD	FI	Field Records	Level (mOD)	Depth (m) (Thickness)	Description	Legend	Water
0.60	46	33	39				0.60	Recovery consists of: MADE GROUND: Grey medium subrounded Gravel. Driller notes Gravel		
2.40	100	100	97	5			(6.30)	Strong to very strong massive light grey coarse grained crystalline GRANITE. Partially weathered		
3.90	93	87	73					0.60m-6.90m BGL: Two Fracture Sets. F1: Closely to widely spaced, 0-20 degrees, undulating rough with occasional brown staining. F2: Medium to widely spaced, 40-60 degrees, undulating rough with occasional brown staining,		
5.40	100	100	97							
6.90							6.90	Complete at 6.90m		

<b>Remarks</b> Complete at 6.90m BGL Borehole backfilled upon completion	Scale (approx)	Logged By
	1:50	AB
	<b>Figure No.</b> 9376-01-20.RC02	



Machine : Beretta T47s		Casing Diameter 68mm cased to 6.90m		Ground Level (mOD)		Client		Job Number 9376-01-20	
Flush : Water		Location		Dates 05/03/2020		Engineer DBFL		Sheet 1/1	
Core Dia: 68 mm									
Method : Rotary Cored									

Depth (m)	TCR	SCR	RQD	FI	Field Records	Level (mOD)	Depth (m) (Thickness)	Description	Legend	Water	Instr
							(1.20)	Recovery consists of: MADE GROUND: Grey slightly sandy gravelly Cobbles and Boulders. Driller notes clayey Cobbles			
	33						1.20	Recovery consists of: MADE GROUND: Timber. Driller notes Timber			
2.40							(1.50)				
2.70	80	40	40				2.70	Weak to medium strong massive light grey coarse grained crystalline GRANITE with brown staining. Partially to distinctly weathered			
3.90							(4.20)	2.70m-6.90m BGL: Two Fracture Sets. F1: Very closely to medium spaced, 0-20 degrees, undulating rough with brown staining. F2: Medium spaced, 40-60 degree, undulating rough, with brown staining.			
5.40	100	100	77	7							
6.90	100	80	77				6.90	Complete at 6.90m			

<b>Remarks</b> Complete at 6.90m BGL 50mm Standpipe installed in borehole upon completion, slotted from 6.90m BGL to 1.00m BGL, plain from 1.00m BGL to Gound Level, with bentonite seal and raised cover.									<b>Scale (approx)</b> 1:50	<b>Logged By</b> AB
									<b>Figure No.</b> 9376-01-20.RC03	



Machine : Beretta T47s		Casing Diameter 68mm cased to 6.90m		Ground Level (mOD)		Client		Job Number 9376-01-20	
Flush : Water		Location		Dates 10/03/2020		Engineer DBFL		Sheet 1/1	
Core Dia: 68 mm									
Method : Rotary Cored									

Depth (m)	TCR	SCR	RQD	FI	Field Records	Level (mOD)	Depth (m) (Thickness)	Description	Legend	Water	Instr
0.35							0.35	Recovery consists of: MADE GROUND: Light grey slightly sandy fine to coarse subangular to subrounded Gravel. Driller notes sandy Clay			
	45	46	49				(2.05)	Medium strong to strong massive light grey coarse grained crystalline GRANITE with occasional brown staining. Partially weathered. (Recovery 66%)			
2.40							2.40	Strong to very strong massive light grey coarse grained crystalline GRANITE with occasional brown staining. Partially weathered			
	100	100	100	3			(4.50)	0.35m-6.90m BGL: Two Fracture Sets. F1: Closely to widely spaced, 0-20 degrees, undulating rough with brown staining. F2: Medium to widely spaced, 40-60 degree, undulating rough with brown staining.			
3.90											
	100	100	93								
5.40											
	100	100	93								
6.90							6.90	Complete at 6.90m			

<b>Remarks</b> Complete at 6.90m BGL 50mm Standpipe installed in borehole upon completion, slotted from 6.90m BGL to 1.00m BGL, plain from 1.00m BGL to Ground Level, with bentonite seal and raised cover.	Scale (approx)	Logged By
	1:50	AB
	<b>Figure No.</b> 9376-01-20.RC04	





Machine : Beretta T47s		Casing Diameter 68mm cased to 6.00m		Ground Level (mOD)		Client		Job Number 9376-01-20	
Flush : Water		Location		Dates 09/03/2020		Engineer DBFL		Sheet 1/1	
Core Dia: 68 mm									
Method : Rotary Cored									

Depth (m)	TCR	SCR	RQD	FI	Field Records	Level (mOD)	Depth (m) (Thickness)	Description	Legend	Water
0.40							0.10 (0.30) 0.40	CONCRETE Recovery consists of: MADE GROUND: Grey coarse angular Gravel. Driller notes clayey Cobbles		
	50	35	43				(1.50)	Medium strong to strong massive light grey coarse grained crystalline GRANITE with occasional brown staining. Partially weathered. (Recovery 40%)		
2.40							1.90	Medium strong to very strong massive light grey coarse grained crystalline GRANITE with large quartz veins. Partially weathered		
	100	100	93	3			(4.10)	0.40m-6.00m BGL: Two Fracture Sets. F1: Closely to widely spaced, 0-20 degrees, undulating rough with brown staining. F2: Medium to widely spaced, 40-60 degree, undulating rough with brown staining.		
3.90										
	100	100	97							
5.40										
	100	100	83							
6.00							6.00	Complete at 6.00m		

<b>Remarks</b> Complete at 6.00m BGL Borehole backfilled upon completion	Scale (approx)	Logged By
	1:50	AB
	<b>Figure No.</b> 9376-01-20.RC05	

# APPENDIX 6 – Laboratory Testing



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



**Attention :** Stephen Kealy  
**Date :** 19th March, 2020  
**Your reference :** 9376-01-20  
**Our reference :** Test Report 20/2972 Batch 1  
**Location :** Site at Glenamuck Road  
**Date samples received :** 25th February, 2020  
**Status :** Final report  
**Issue :** 2

Eighteen samples were received for analysis on 25th February, 2020 of which eighteen were scheduled for analysis. Please find attached our Test Report which should be read with notes at the end of the report and should include all sections if reproduced. Interpretations and opinions are outside the scope of any accreditation, and all results relate only to samples supplied.

All analysis is carried out on as received samples and reported on a dry weight basis unless stated otherwise. Results are not surrogate corrected.

**Authorised By:**



**Phil Sommerton BSc**

**Senior Project Manager**

Please include all sections of this report if it is reproduced

# Element Materials Technology

**Client Name:** Ground Investigations Ireland  
**Reference:** 9376-01-20  
**Location:** Site at Glenamuck Road  
**Contact:** Stephen Kealy  
**EMT Job No:** 20/2972

**Report : Solid**

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

EMT Sample No.	1-3	4-6	7-9	10-12	13-15	16-18	19-21	22-24	25-27	28-30	Please see attached notes for all abbreviations and acronyms		
Sample ID	TP1	TP1	TP2	TP2	TP3	TP3	TP3	TP4	TP4	TP4			
Depth	0.50	1.50	0.50	1.50	0.50	1.50	2.50	0.50	1.50	2.50			
COC No / misc													
Containers	V J T	V J T	V J T	V J T	V J T	V J T	V J T	V J T	V J T	V J T			
Sample Date	20/02/2020	20/02/2020	20/02/2020	19/02/2020	19/02/2020	19/02/2020	19/02/2020	19/02/2020	19/02/2020	19/02/2020			
Sample Type	Soil	Soil	Soil	Soil	Soil	Soil	Soil	Soil	Soil	Soil			
Batch Number	1	1	1	1	1	1	1	1	1	1			
Date of Receipt	25/02/2020	25/02/2020	25/02/2020	25/02/2020	25/02/2020	25/02/2020	25/02/2020	25/02/2020	25/02/2020	25/02/2020	LOD/LOR	Units	Method No.
Antimony	1	1	-	<1	4	3	2	2	2	2	<1	mg/kg	TM30/PM15
Arsenic #	12.1	23.5	-	16.7	17.9	17.2	25.4	20.5	18.5	23.1	<0.5	mg/kg	TM30/PM15
Barium #	69	112	-	26	89	95	55	53	66	74	<1	mg/kg	TM30/PM15
Cadmium #	0.9	2.1	-	0.1	0.2	1.1	0.6	0.2	0.4	1.3	<0.1	mg/kg	TM30/PM15
Chromium #	44.5	50.6	-	42.5	63.9	44.9	37.8	42.2	42.3	53.1	<0.5	mg/kg	TM30/PM15
Copper #	24	29	-	10	30	38	21	21	22	30	<1	mg/kg	TM30/PM15
Lead #	44	130	-	31	220	126	51	160	188	56	<5	mg/kg	TM30/PM15
Mercury #	<0.1	<0.1	-	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	mg/kg	TM30/PM15
Molybdenum #	2.9	2.9	-	3.6	1.7	3.6	3.5	2.5	2.8	3.9	<0.1	mg/kg	TM30/PM15
Nickel #	25.6	27.6	-	10.6	35.7	30.8	19.9	12.9	13.3	37.7	<0.7	mg/kg	TM30/PM15
Selenium #	1	2	-	2	<1	1	1	<1	<1	<1	<1	mg/kg	TM30/PM15
Zinc #	85	149	-	75	135	152	94	94	119	112	<5	mg/kg	TM30/PM15
Antimony	-	-	<1	-	-	-	-	-	-	-	<1	mg/kg	TM30/PM62
Arsenic	-	-	22.6	-	-	-	-	-	-	-	<0.5	mg/kg	TM30/PM62
Barium	-	-	62	-	-	-	-	-	-	-	<1	mg/kg	TM30/PM62
Cadmium	-	-	0.3	-	-	-	-	-	-	-	<0.1	mg/kg	TM30/PM62
Chromium	-	-	19.3	-	-	-	-	-	-	-	<0.5	mg/kg	TM30/PM62
Copper	-	-	22	-	-	-	-	-	-	-	<1	mg/kg	TM30/PM62
Lead	-	-	66	-	-	-	-	-	-	-	<5	mg/kg	TM30/PM62
Mercury	-	-	<0.1	-	-	-	-	-	-	-	<0.1	mg/kg	TM30/PM62
Molybdenum	-	-	2.4	-	-	-	-	-	-	-	<0.1	mg/kg	TM30/PM62
Nickel	-	-	20.2	-	-	-	-	-	-	-	<0.7	mg/kg	TM30/PM62
Selenium	-	-	3	-	-	-	-	-	-	-	<1	mg/kg	TM30/PM62
Zinc	-	-	129	-	-	-	-	-	-	-	<5	mg/kg	TM30/PM62



# Element Materials Technology

**Client Name:** Ground Investigations Ireland  
**Reference:** 9376-01-20  
**Location:** Site at Glenamuck Road  
**Contact:** Stephen Kealy  
**EMT Job No:** 20/2972

**Report : Solid**

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

EMT Sample No.	1-3	4-6	7-9	10-12	13-15	16-18	19-21	22-24	25-27	28-30			
Sample ID	TP1	TP1	TP2	TP2	TP3	TP3	TP3	TP4	TP4	TP4			
Depth	0.50	1.50	0.50	1.50	0.50	1.50	2.50	0.50	1.50	2.50			
COC No / misc													
Containers	V J T	V J T	V J T	V J T	V J T	V J T	V J T	V J T	V J T	V J T			
Sample Date	20/02/2020	20/02/2020	20/02/2020	19/02/2020	19/02/2020	19/02/2020	19/02/2020	19/02/2020	19/02/2020	19/02/2020			
Sample Type	Soil	Soil	Soil	Soil	Soil	Soil	Soil	Soil	Soil	Soil			
Batch Number	1	1	1	1	1	1	1	1	1	1			
Date of Receipt	25/02/2020	25/02/2020	25/02/2020	25/02/2020	25/02/2020	25/02/2020	25/02/2020	25/02/2020	25/02/2020	25/02/2020	LOD/LOR	Units	Method No.
PAH MS													
Naphthalene #	0.10	<0.04	<0.04	<0.04	<0.04	<0.04	<0.04	<0.04	<0.04	<0.04	<0.04	mg/kg	TM4/PM8
Acenaphthylene	0.15	<0.03	0.15	<0.03	<0.03	<0.03	<0.03	<0.03	<0.03	<0.03	<0.03	mg/kg	TM4/PM8
Acenaphthene #	0.41	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	mg/kg	TM4/PM8
Fluorene #	0.25	<0.04	<0.04	<0.04	<0.04	<0.04	<0.04	<0.04	<0.04	<0.04	<0.04	mg/kg	TM4/PM8
Phenanthrene #	1.19	<0.03	0.11	<0.03	0.04	0.37	<0.03	0.06	0.06	<0.03	<0.03	mg/kg	TM4/PM8
Anthracene #	0.66	<0.04	0.34	<0.04	<0.04	0.09	<0.04	<0.04	<0.04	<0.04	<0.04	mg/kg	TM4/PM8
Fluoranthene #	6.59	0.04	0.49	<0.03	0.11	0.56	0.05	0.11	0.12	<0.03	<0.03	mg/kg	TM4/PM8
Pyrene #	5.52	0.04	0.47	<0.03	0.12	0.50	0.05	0.13	0.09	<0.03	<0.03	mg/kg	TM4/PM8
Benzo(a)anthracene #	2.95	<0.06	0.57	<0.06	0.08	0.38	<0.06	0.07	0.09	<0.06	<0.06	mg/kg	TM4/PM8
Chrysene #	2.67	0.03	0.58	<0.02	0.09	0.31	<0.02	0.06	0.06	<0.02	<0.02	mg/kg	TM4/PM8
Benzo(bk)fluoranthene #	5.49	<0.07	1.20	<0.07	0.16	0.57	<0.07	0.09	0.11	<0.07	<0.07	mg/kg	TM4/PM8
Benzo(a)pyrene #	2.93	<0.04	0.43	<0.04	0.08	0.31	<0.04	0.06	0.06	<0.04	<0.04	mg/kg	TM4/PM8
Indeno(123cd)pyrene	1.89	<0.04	0.38	<0.04	0.07	0.20	<0.04	<0.04	<0.04	<0.04	<0.04	mg/kg	TM4/PM8
Dibenzo(ah)anthracene #	0.26	<0.04	0.14	<0.04	<0.04	<0.04	<0.04	<0.04	<0.04	<0.04	<0.04	mg/kg	TM4/PM8
Benzo(ghi)perylene #	1.71	<0.04	0.41	<0.04	0.09	0.23	<0.04	0.06	0.04	<0.04	<0.04	mg/kg	TM4/PM8
Coronene	0.32	<0.04	0.12	<0.04	<0.04	<0.04	<0.04	<0.04	<0.04	<0.04	<0.04	mg/kg	TM4/PM8
PAH 6 Total #	18.61	<0.22	2.91	<0.22	0.51	1.87	<0.22	0.32	0.33	<0.22	<0.22	mg/kg	TM4/PM8
PAH 17 Total	33.09	<0.64	5.39	<0.64	0.84	3.52	<0.64	0.64	<0.64	<0.64	<0.64	mg/kg	TM4/PM8
Benzo(b)fluoranthene	3.95	<0.05	0.86	<0.05	0.12	0.41	<0.05	0.06	0.08	<0.05	<0.05	mg/kg	TM4/PM8
Benzo(k)fluoranthene	1.54	<0.02	0.34	<0.02	0.04	0.16	<0.02	0.03	0.03	<0.02	<0.02	mg/kg	TM4/PM8
Benzo(j)fluoranthene	1	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	mg/kg	TM4/PM8
PAH Surrogate % Recovery	96	91	103	94	96	94	92	95	94	97	<0	%	TM4/PM8
Mineral Oil (C10-C40)													
	<30	<30	41	<30	<30	41	<30	<30	45	<30	<30	mg/kg	TM5/PM8/PM16
TPH CWG													
Aliphatics													
>C5-C6 #	<0.1	<0.1	<0.1 <sup>SV</sup>	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	mg/kg	TM36/PM12
>C6-C8 #	<0.1	<0.1	<0.1 <sup>SV</sup>	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	mg/kg	TM36/PM12
>C8-C10	<0.1	<0.1	<0.1 <sup>SV</sup>	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	mg/kg	TM36/PM12
>C10-C12 #	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2	mg/kg	TM5/PM8/PM16
>C12-C16 #	<4	<4	<4	<4	<4	<4	<4	<4	<4	<4	<4	mg/kg	TM5/PM8/PM16
>C16-C21 #	<7	<7	<7	<7	<7	9	<7	<7	<7	<7	<7	mg/kg	TM5/PM8/PM16
>C21-C35 #	<7	<7	41	<7	29	32	<7	<7	45	<7	<7	mg/kg	TM5/PM8/PM16
>C35-C40	<7	<7	<7	<7	<7	<7	<7	<7	<7	<7	<7	mg/kg	TM5/PM8/PM16
Total aliphatics C5-40	<26	<26	41	<26	29	41	<26	<26	45	<26	<26	mg/kg	TM5/PM8/PM16/PM12
>C6-C10	<0.1	<0.1	<0.1 <sup>SV</sup>	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	mg/kg	TM36/PM12
>C10-C25	<10	<10	<10	<10	<10	16	<10	<10	<10	<10	<10	mg/kg	TM5/PM8/PM16
>C25-C35	<10	<10	31	<10	25	21	<10	<10	40	<10	<10	mg/kg	TM5/PM8/PM16

Please see attached notes for all abbreviations and acronyms

# Element Materials Technology

**Client Name:** Ground Investigations Ireland  
**Reference:** 9376-01-20  
**Location:** Site at Glenamuck Road  
**Contact:** Stephen Kealy  
**EMT Job No:** 20/2972

**Report : Solid**

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

EMT Sample No.	1-3	4-6	7-9	10-12	13-15	16-18	19-21	22-24	25-27	28-30	Please see attached notes for all abbreviations and acronyms		
Sample ID	TP1	TP1	TP2	TP2	TP3	TP3	TP3	TP4	TP4	TP4	LOD/LOR	Units	Method No.
Depth	0.50	1.50	0.50	1.50	0.50	1.50	2.50	0.50	1.50	2.50			
COC No / misc													
Containers	V J T	V J T	V J T	V J T	V J T	V J T	V J T	V J T	V J T	V J T			
Sample Date	20/02/2020	20/02/2020	20/02/2020	19/02/2020	19/02/2020	19/02/2020	19/02/2020	19/02/2020	19/02/2020	19/02/2020			
Sample Type	Soil	Soil	Soil	Soil	Soil	Soil	Soil	Soil	Soil	Soil			
Batch Number	1	1	1	1	1	1	1	1	1	1			
Date of Receipt	25/02/2020	25/02/2020	25/02/2020	25/02/2020	25/02/2020	25/02/2020	25/02/2020	25/02/2020	25/02/2020	25/02/2020			
TPH CWG													
<b>Aromatics</b>													
>C5-EC7 #	<0.1	<0.1	<0.1 <sup>SV</sup>	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	mg/kg	TM36/PM12
>EC7-EC8 #	<0.1	<0.1	<0.1 <sup>SV</sup>	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	mg/kg	TM36/PM12
>EC8-EC10 #	<0.1	<0.1	<0.1 <sup>SV</sup>	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	mg/kg	TM36/PM12
>EC10-EC12 #	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2	mg/kg	TMS/PM8/PM16
>EC12-EC16 #	<4	<4	<4	<4	<4	<4	<4	<4	<4	<4	<4	mg/kg	TMS/PM8/PM16
>EC16-EC21 #	<7	<7	<7	<7	<7	<7	<7	<7	<7	<7	<7	mg/kg	TMS/PM8/PM16
>EC21-EC35 #	<7	<7	118	<7	<7	79	<7	<7	39	<7	<7	mg/kg	TMS/PM8/PM16
>EC35-EC40	<7	<7	27	<7	<7	22	<7	<7	<7	<7	<7	mg/kg	TMS/PM8/PM16
Total aromatics C5-40	<26	<26	145	<26	<26	101	<26	<26	39	<26	<26	mg/kg	TMS/PM8/PM16/PM12/PM15
Total aliphatics and aromatics(C5-40)	<52	<52	186	<52	<52	142	<52	<52	84	<52	<52	mg/kg	TMS/PM8/PM16/PM12/PM15
>EC6-EC10 #	<0.1	<0.1	<0.1 <sup>SV</sup>	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	mg/kg	TM36/PM12
>EC10-EC25	<10	<10	31	<10	<10	<10	<10	<10	<10	<10	<10	mg/kg	TMS/PM8/PM16
>EC25-EC35	<10	<10	87	<10	<10	68	<10	<10	39	<10	<10	mg/kg	TMS/PM8/PM16
MTBE #	<5	<5	<5 <sup>SV</sup>	<5	<5	<5	<5	<5	<5	<5	<5	ug/kg	TM31/PM12
Benzene #	<5	<5	<5 <sup>SV</sup>	<5	<5	<5	<5	<5	<5	<5	<5	ug/kg	TM31/PM12
Toluene #	<5	<5	<5 <sup>SV</sup>	<5	<5	<5	<5	<5	<5	<5	<5	ug/kg	TM31/PM12
Ethylbenzene #	<5	<5	<5 <sup>SV</sup>	<5	<5	<5	<5	<5	<5	<5	<5	ug/kg	TM31/PM12
m/p-Xylene #	<5	<5	<5 <sup>SV</sup>	<5	<5	<5	<5	<5	<5	<5	<5	ug/kg	TM31/PM12
o-Xylene #	<5	<5	<5 <sup>SV</sup>	<5	<5	<5	<5	<5	<5	<5	<5	ug/kg	TM31/PM12
PCB 28 #	<5	<5	<5	<5	<5	<5	<5	<5	<5	<5	<5	ug/kg	TM17/PM8
PCB 52 #	<5	<5	<5	<5	<5	<5	<5	<5	<5	<5	<5	ug/kg	TM17/PM8
PCB 101 #	<5	<5	<5	<5	<5	<5	<5	<5	<5	<5	<5	ug/kg	TM17/PM8
PCB 118 #	<5	<5	<5	<5	<5	<5	<5	<5	<5	<5	<5	ug/kg	TM17/PM8
PCB 138 #	<5	<5	<5	<5	<5	<5	<5	<5	<5	<5	<5	ug/kg	TM17/PM8
PCB 153 #	<5	<5	<5	<5	<5	<5	<5	<5	<5	<5	<5	ug/kg	TM17/PM8
PCB 180 #	<5	<5	<5	<5	<5	<5	<5	<5	<5	<5	<5	ug/kg	TM17/PM8
Total 7 PCBs #	<35	<35	<35	<35	<35	<35	<35	<35	<35	<35	<35	ug/kg	TM17/PM8
Natural Moisture Content	12.6	36.1	35.3	24.3	11.6	22.1	17.8	14.9	12.0	22.4	<0.1	%	PM4/PM0
Moisture Content (% Wet Weight)	11.2	26.5	26.1	19.5	10.4	18.1	15.1	13.0	10.7	18.3	<0.1	%	PM4/PM0
Hexavalent Chromium #	<0.3	<0.3	<0.3	<0.3	<0.3	<0.3	<0.3	<0.3	<0.3	<0.3	<0.3	mg/kg	TM38/PM20
Sulphate as SO4 (2:1 Ext) #	-	0.0366	-	-	-	-	-	-	-	0.0397	<0.0015	g/l	TM38/PM20
Chromium III	44.5	50.6	-	42.5	63.9	44.9	37.8	42.2	42.3	53.1	<0.5	mg/kg	NONE/NONE
Chromium III	-	-	19.3	-	-	-	-	-	-	-	<0.5	mg/kg	NONE/NONE
Total Organic Carbon #	1.11	1.72	NDP	0.91	0.85	3.79	0.85	0.65	0.67	0.92	<0.02	%	TM21/PM24
pH #	8.33	7.63	7.05	7.07	8.04	7.72	7.60	8.27	8.23	8.18	<0.01	pH units	TM73/PM11



# Element Materials Technology

**Client Name:** Ground Investigations Ireland  
**Reference:** 9376-01-20  
**Location:** Site at Glenamuck Road  
**Contact:** Stephen Kealy  
**EMT Job No:** 20/2972

**Report : Solid**

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

EMT Sample No.	31-33	34-36	37-39	40-42	43-45	46-48	49-51	52-54				
Sample ID	TP5	TP5	TP6	TP6	TP7	TP8	TP9	TP10				
Depth	0.50	1.50	0.50	1.50	0.50	0.50	0.50	0.50				
COC No / misc												
Containers	V J T	V J T	V J T	V J T	V J T	V J T	V J T	V J T				
Sample Date	19/02/2020	19/02/2020	19/02/2020	19/02/2020	19/02/2020	20/02/2020	20/02/2020	20/02/2020				
Sample Type	Soil	Soil	Soil	Soil	Soil	Soil	Soil	Soil				
Batch Number	1	1	1	1	1	1	1	1				
Date of Receipt	25/02/2020	25/02/2020	25/02/2020	25/02/2020	25/02/2020	25/02/2020	25/02/2020	25/02/2020				
										LOD/LOR	Units	Method No.
Antimony	13	2	2	<1	1	<1	2	<1		<1	mg/kg	TM30/PM15
Arsenic #	26.8	14.9	12.1	20.4	26.4	16.5	17.1	12.7		<0.5	mg/kg	TM30/PM15
Barium #	112	53	85	17	63	67	83	29		<1	mg/kg	TM30/PM15
Cadmium #	0.3	0.3	0.5	<0.1	0.2	0.3	0.6	0.2		<0.1	mg/kg	TM30/PM15
Chromium #	47.5	51.1	40.4	35.3	50.0	46.1	49.9	51.2		<0.5	mg/kg	TM30/PM15
Copper #	27	22	23	41	22	19	19	13		<1	mg/kg	TM30/PM15
Lead #	783	104	73	15	25	85	69	30		<5	mg/kg	TM30/PM15
Mercury #	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1		<0.1	mg/kg	TM30/PM15
Molybdenum #	3.2	3.1	2.4	2.1	2.1	3.9	3.1	3.6		<0.1	mg/kg	TM30/PM15
Nickel #	11.0	18.1	21.8	4.7	29.5	13.1	15.5	17.9		<0.7	mg/kg	TM30/PM15
Selenium #	<1	<1	<1	<1	1	1	1	<1		<1	mg/kg	TM30/PM15
Zinc #	351	104	136	40	99	121	121	70		<5	mg/kg	TM30/PM15
Antimony	-	-	-	-	-	-	-	-		<1	mg/kg	TM30/PM62
Arsenic	-	-	-	-	-	-	-	-		<0.5	mg/kg	TM30/PM62
Barium	-	-	-	-	-	-	-	-		<1	mg/kg	TM30/PM62
Cadmium	-	-	-	-	-	-	-	-		<0.1	mg/kg	TM30/PM62
Chromium	-	-	-	-	-	-	-	-		<0.5	mg/kg	TM30/PM62
Copper	-	-	-	-	-	-	-	-		<1	mg/kg	TM30/PM62
Lead	-	-	-	-	-	-	-	-		<5	mg/kg	TM30/PM62
Mercury	-	-	-	-	-	-	-	-		<0.1	mg/kg	TM30/PM62
Molybdenum	-	-	-	-	-	-	-	-		<0.1	mg/kg	TM30/PM62
Nickel	-	-	-	-	-	-	-	-		<0.7	mg/kg	TM30/PM62
Selenium	-	-	-	-	-	-	-	-		<1	mg/kg	TM30/PM62
Zinc	-	-	-	-	-	-	-	-		<5	mg/kg	TM30/PM62

Please see attached notes for all abbreviations and acronyms



# Element Materials Technology

**Client Name:** Ground Investigations Ireland  
**Reference:** 9376-01-20  
**Location:** Site at Glenamuck Road  
**Contact:** Stephen Kealy  
**EMT Job No:** 20/2972

**Report : Solid**

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

EMT Sample No.	31-33	34-36	37-39	40-42	43-45	46-48	49-51	52-54					
Sample ID	TP5	TP5	TP6	TP6	TP7	TP8	TP9	TP10					
Depth	0.50	1.50	0.50	1.50	0.50	0.50	0.50	0.50					
COC No / misc													
Containers	V J T	V J T	V J T	V J T	V J T	V J T	V J T	V J T					
Sample Date	19/02/2020	19/02/2020	19/02/2020	19/02/2020	19/02/2020	20/02/2020	20/02/2020	20/02/2020					
Sample Type	Soil	Soil	Soil	Soil	Soil	Soil	Soil	Soil					
Batch Number	1	1	1	1	1	1	1	1					
Date of Receipt	25/02/2020	25/02/2020	25/02/2020	25/02/2020	25/02/2020	25/02/2020	25/02/2020	25/02/2020					
										LOD/LOR	Units	Method No.	
PAH MS													
Naphthalene #	<0.04	<0.04	0.30	<0.04	<0.04	<0.04	0.07	<0.04		<0.04	mg/kg	TM4/PM8	
Acenaphthylene	<0.03	<0.03	0.03	<0.03	<0.03	<0.03	0.28	<0.03		<0.03	mg/kg	TM4/PM8	
Acenaphthene #	<0.05	<0.05	0.43	<0.05	<0.05	<0.05	<0.05	<0.05		<0.05	mg/kg	TM4/PM8	
Fluorene #	<0.04	<0.04	0.32	<0.04	<0.04	<0.04	0.06	<0.04		<0.04	mg/kg	TM4/PM8	
Phenanthrene #	0.10	<0.03	2.39	0.06	<0.03	0.20	0.42	<0.03		<0.03	mg/kg	TM4/PM8	
Anthracene #	<0.04	<0.04	0.36	<0.04	<0.04	0.08	0.19	<0.04		<0.04	mg/kg	TM4/PM8	
Fluoranthene #	0.12	0.09	2.11	0.06	0.05	0.93	0.84	0.06		<0.03	mg/kg	TM4/PM8	
Pyrene #	0.26	0.08	1.86	0.04	0.03	0.79	0.74	0.06		<0.03	mg/kg	TM4/PM8	
Benzo(a)anthracene #	0.08	0.12	0.65	<0.06	<0.06	0.55	0.58	<0.06		<0.06	mg/kg	TM4/PM8	
Chrysene #	0.07	0.07	0.70	<0.02	<0.02	0.46	0.78	<0.02		<0.02	mg/kg	TM4/PM8	
Benzo(bk)fluoranthene #	0.14	0.14	1.18	<0.07	<0.07	1.01	2.95	<0.07		<0.07	mg/kg	TM4/PM8	
Benzo(a)pyrene #	0.07	0.06	0.62	<0.04	<0.04	0.55	2.56	<0.04		<0.04	mg/kg	TM4/PM8	
Indeno(123cd)pyrene	0.06	0.05	0.37	<0.04	<0.04	0.35	2.07	<0.04		<0.04	mg/kg	TM4/PM8	
Dibenzo(ah)anthracene #	<0.04	<0.04	0.12	<0.04	<0.04	0.07	0.48	<0.04		<0.04	mg/kg	TM4/PM8	
Benzo(ghi)perylene #	0.06	0.05	0.46	<0.04	<0.04	0.32	1.88	<0.04		<0.04	mg/kg	TM4/PM8	
Coronene	<0.04	<0.04	0.09	<0.04	<0.04	0.07	0.43	<0.04		<0.04	mg/kg	TM4/PM8	
PAH 6 Total #	0.45	0.39	4.74	<0.22	<0.22	3.16	10.30	<0.22		<0.22	mg/kg	TM4/PM8	
PAH 17 Total	0.96	0.66	11.99	<0.64	<0.64	5.38	14.33	<0.64		<0.64	mg/kg	TM4/PM8	
Benzo(b)fluoranthene	0.10	0.10	0.85	<0.05	<0.05	0.73	2.12	<0.05		<0.05	mg/kg	TM4/PM8	
Benzo(k)fluoranthene	0.04	0.04	0.33	<0.02	<0.02	0.28	0.83	<0.02		<0.02	mg/kg	TM4/PM8	
Benzo(j)fluoranthene	<1	<1	<1	<1	<1	<1	<1	<1		<1	mg/kg	TM4/PM8	
PAH Surrogate % Recovery	92	90	95	93	93	94	92	98		<0	%	TM4/PM8	
Mineral Oil (C10-C40)	354	<30	180	<30	<30	<30	<30	<30		<30	mg/kg	TM5/PM8/PM16	
TPH CWG													
Aliphatics													
>C5-C6 #	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1		<0.1	mg/kg	TM36/PM12	
>C6-C8 #	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1		<0.1	mg/kg	TM36/PM12	
>C8-C10	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1		<0.1	mg/kg	TM36/PM12	
>C10-C12 #	4.1	<0.2	6.3	<0.2	<0.2	<0.2	<0.2	<0.2		<0.2	mg/kg	TM5/PM8/PM16	
>C12-C16 #	71	<4	16	<4	<4	<4	<4	<4		<4	mg/kg	TM5/PM8/PM16	
>C16-C21 #	151	<7	15	<7	<7	<7	<7	<7		<7	mg/kg	TM5/PM8/PM16	
>C21-C35 #	128	27	119	<7	<7	<7	23	<7		<7	mg/kg	TM5/PM8/PM16	
>C35-C40	<7	<7	24	<7	<7	<7	<7	<7		<7	mg/kg	TM5/PM8/PM16	
Total aliphatics C5-40	354	27	180	<26	<26	<26	<26	<26		<26	mg/kg	TM5/PM8/PM16/PM12/PM15	
>C6-C10	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1		<0.1	mg/kg	TM36/PM12	
>C10-C25	311	<10	65	<10	<10	<10	<10	<10		<10	mg/kg	TM5/PM8/PM16	
>C25-C35	54	22	99	<10	<10	<10	23	<10		<10	mg/kg	TM5/PM8/PM16	

Please see attached notes for all abbreviations and acronyms

# Element Materials Technology

**Client Name:** Ground Investigations Ireland  
**Reference:** 9376-01-20  
**Location:** Site at Glenamuck Road  
**Contact:** Stephen Kealy  
**EMT Job No:** 20/2972

**Report : Solid**

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

EMT Sample No.	31-33	34-36	37-39	40-42	43-45	46-48	49-51	52-54					
Sample ID	TP5	TP5	TP6	TP6	TP7	TP8	TP9	TP10					
Depth	0.50	1.50	0.50	1.50	0.50	0.50	0.50	0.50					
COC No / misc													
Containers	V J T	V J T	V J T	V J T	V J T	V J T	V J T	V J T					
Sample Date	19/02/2020	19/02/2020	19/02/2020	19/02/2020	19/02/2020	20/02/2020	20/02/2020	20/02/2020					
Sample Type	Soil	Soil	Soil	Soil	Soil	Soil	Soil	Soil					
Batch Number	1	1	1	1	1	1	1	1					
Date of Receipt	25/02/2020	25/02/2020	25/02/2020	25/02/2020	25/02/2020	25/02/2020	25/02/2020	25/02/2020					
										LOD/LOR	Units	Method No.	
TPH CWG													
<b>Aromatics</b>													
>C5-EC7 #	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	mg/kg	TM36/PM12	
>EC7-EC8 #	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	mg/kg	TM36/PM12	
>EC8-EC10 #	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	mg/kg	TM36/PM12	
>EC10-EC12 #	4.5	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2	mg/kg	TMS/PM8/PM16	
>EC12-EC16 #	56	<4	9	<4	<4	<4	<4	<4	<4	<4	mg/kg	TMS/PM8/PM16	
>EC16-EC21 #	121	<7	20	<7	<7	<7	11	<7	<7	<7	mg/kg	TMS/PM8/PM16	
>EC21-EC35 #	100	<7	165	<7	<7	<7	164	<7	<7	<7	mg/kg	TMS/PM8/PM16	
>EC35-EC40	<7	<7	54	<7	<7	<7	32	<7	<7	<7	mg/kg	TMS/PM8/PM16	
Total aromatics C5-40	282	<26	248	<26	<26	<26	207	<26	<26	<26	mg/kg	TMS/PM8/PM16/PM12/PM15	
Total aliphatics and aromatics(C5-40)	636	<52	428	<52	<52	<52	207	<52	<52	<52	mg/kg	TMS/PM8/PM16/PM12/PM15	
>EC6-EC10 #	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	mg/kg	TM36/PM12	
>EC10-EC25	236	<10	51	<10	<10	<10	33	<10	<10	<10	mg/kg	TMS/PM8/PM16	
>EC25-EC35	49	<10	148	<10	<10	<10	133	<10	<10	<10	mg/kg	TMS/PM8/PM16	
MTBE #	<5	<5	<5	<5	<5	<5	<5	<5	<5	<5	ug/kg	TM31/PM12	
Benzene #	<5	<5	<5	<5	<5	<5	<5	<5	<5	<5	ug/kg	TM31/PM12	
Toluene #	<5	<5	<5	<5	<5	<5	<5	<5	<5	<5	ug/kg	TM31/PM12	
Ethylbenzene #	<5	<5	<5	<5	<5	<5	<5	<5	<5	<5	ug/kg	TM31/PM12	
m/p-Xylene #	<5	<5	<5	<5	<5	<5	<5	<5	<5	<5	ug/kg	TM31/PM12	
o-Xylene #	<5	<5	<5	<5	<5	<5	<5	<5	<5	<5	ug/kg	TM31/PM12	
PCB 28 #	<5	<5	<5	<5	<5	<5	<5	<5	<5	<5	ug/kg	TM17/PM8	
PCB 52 #	<5	<5	<5	<5	<5	<5	<5	<5	<5	<5	ug/kg	TM17/PM8	
PCB 101 #	<5	<5	<5	<5	<5	<5	<5	<5	<5	<5	ug/kg	TM17/PM8	
PCB 118 #	<5	<5	<5	<5	<5	<5	<5	<5	<5	<5	ug/kg	TM17/PM8	
PCB 138 #	<5	<5	<5	<5	<5	<5	<5	<5	<5	<5	ug/kg	TM17/PM8	
PCB 153 #	<5	<5	<5	<5	<5	<5	<5	<5	<5	<5	ug/kg	TM17/PM8	
PCB 180 #	<5	<5	<5	<5	<5	<5	<5	<5	<5	<5	ug/kg	TM17/PM8	
Total 7 PCBs #	<35	<35	<35	<35	<35	<35	<35	<35	<35	<35	ug/kg	TM17/PM8	
Natural Moisture Content	13.4	16.7	15.3	11.2	13.9	17.8	23.5	22.3		<0.1	%	PM4/PM0	
Moisture Content (% Wet Weight)	11.8	14.3	13.3	10.1	12.2	15.1	19.0	18.2		<0.1	%	PM4/PM0	
Hexavalent Chromium #	<0.3	<0.3	<0.3	<0.3	<0.3	<0.3	<0.3	<0.3	<0.3	<0.3	mg/kg	TM38/PM20	
Sulphate as SO4 (2:1 Ext) #	-	-	0.0391	-	-	-	-	-	-	<0.0015	g/l	TM38/PM20	
Chromium III	47.5	51.1	40.4	35.3	50.0	46.1	49.9	51.2		<0.5	mg/kg	NONE/NONE	
Chromium III	-	-	-	-	-	-	-	-		<0.5	mg/kg	NONE/NONE	
Total Organic Carbon #	0.70	0.89	1.76	0.15	0.82	1.46	2.14	0.75		<0.02	%	TM21/PM24	
pH #	8.21	8.02	8.07	8.22	7.99	7.23	7.91	7.93		<0.01	pH units	TM73/PM11	

Please see attached notes for all abbreviations and acronyms



# Element Materials Technology

**Client Name:** Ground Investigations Ireland  
**Reference:** 9376-01-20  
**Location:** Site at Glenamuck Road  
**Contact:** Stephen Kealy  
**EMT Job No:** 20/2972

**Report :** CEN 10:1 1 Batch

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

EMT Sample No.	1-3	4-6	7-9	10-12	13-15	16-18	19-21	22-24	25-27	28-30	Please see attached notes for all abbreviations and acronyms		
Sample ID	TP1	TP1	TP2	TP2	TP3	TP3	TP3	TP4	TP4	TP4			
Depth	0.50	1.50	0.50	1.50	0.50	1.50	2.50	0.50	1.50	2.50			
COC No / misc													
Containers	V J T	V J T	V J T	V J T	V J T	V J T	V J T	V J T	V J T	V J T			
Sample Date	20/02/2020	20/02/2020	20/02/2020	19/02/2020	19/02/2020	19/02/2020	19/02/2020	19/02/2020	19/02/2020	19/02/2020			
Sample Type	Soil	Soil	Soil	Soil	Soil	Soil	Soil	Soil	Soil	Soil			
Batch Number	1	1	1	1	1	1	1	1	1	1			
Date of Receipt	25/02/2020	25/02/2020	25/02/2020	25/02/2020	25/02/2020	25/02/2020	25/02/2020	25/02/2020	25/02/2020	25/02/2020	LOD/LOR	Units	Method No.
Dissolved Antimony #	<0.002	<0.002	<0.002	<0.002	0.005	0.002	0.003	0.004	0.003	<0.002	<0.002	mg/l	TM30/PM17
Dissolved Antimony (A10) #	<0.02	<0.02	<0.02	<0.02	0.05	<0.02	0.03	0.04	0.03	<0.02	<0.02	mg/kg	TM30/PM17
Dissolved Arsenic #	<0.0025	<0.0025	<0.0025	<0.0025	<0.0025	<0.0025	0.0030	<0.0025	<0.0025	<0.0025	<0.0025	mg/l	TM30/PM17
Dissolved Arsenic (A10) #	<0.025	<0.025	<0.025	<0.025	<0.025	<0.025	0.030	<0.025	<0.025	<0.025	<0.025	mg/kg	TM30/PM17
Dissolved Barium #	0.003	0.005	0.005	<0.003	0.011	0.027	0.012	0.008	0.006	0.004	<0.003	mg/l	TM30/PM17
Dissolved Barium (A10) #	0.03	0.05	0.05	<0.03	0.11	0.27	0.12	0.08	0.06	0.04	<0.03	mg/kg	TM30/PM17
Dissolved Cadmium #	<0.0005	<0.0005	<0.0005	<0.0005	<0.0005	<0.0005	<0.0005	<0.0005	<0.0005	<0.0005	<0.0005	mg/l	TM30/PM17
Dissolved Cadmium (A10) #	<0.005	<0.005	<0.005	<0.005	<0.005	<0.005	<0.005	<0.005	<0.005	<0.005	<0.005	mg/kg	TM30/PM17
Dissolved Chromium #	<0.0015	<0.0015	<0.0015	<0.0015	<0.0015	<0.0015	<0.0015	<0.0015	<0.0015	<0.0015	<0.0015	mg/l	TM30/PM17
Dissolved Chromium (A10) #	<0.015	<0.015	<0.015	<0.015	<0.015	<0.015	<0.015	<0.015	<0.015	<0.015	<0.015	mg/kg	TM30/PM17
Dissolved Copper #	<0.007	<0.007	<0.007	<0.007	<0.007	<0.007	<0.007	<0.007	<0.007	<0.007	<0.007	mg/l	TM30/PM17
Dissolved Copper (A10) #	<0.07	<0.07	<0.07	<0.07	<0.07	<0.07	<0.07	<0.07	<0.07	<0.07	<0.07	mg/kg	TM30/PM17
Dissolved Lead #	<0.005	<0.005	<0.005	<0.005	<0.005	<0.005	<0.005	<0.005	<0.005	<0.005	<0.005	mg/l	TM30/PM17
Dissolved Lead (A10) #	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	mg/kg	TM30/PM17
Dissolved Molybdenum #	0.005	0.003	0.003	0.002	0.004	0.008	0.007	0.003	0.003	0.003	<0.002	mg/l	TM30/PM17
Dissolved Molybdenum (A10) #	0.05	0.03	0.03	0.02	0.04	0.08	0.07	0.03	0.03	0.03	<0.02	mg/kg	TM30/PM17
Dissolved Nickel #	<0.002	<0.002	<0.002	<0.002	<0.002	<0.002	<0.002	<0.002	<0.002	<0.002	<0.002	mg/l	TM30/PM17
Dissolved Nickel (A10) #	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	mg/kg	TM30/PM17
Dissolved Selenium #	<0.003	<0.003	<0.003	<0.003	<0.003	<0.003	<0.003	<0.003	<0.003	<0.003	<0.003	mg/l	TM30/PM17
Dissolved Selenium (A10) #	<0.03	<0.03	<0.03	<0.03	<0.03	<0.03	<0.03	<0.03	<0.03	<0.03	<0.03	mg/kg	TM30/PM17
Dissolved Zinc #	<0.003	0.007	0.012	0.011	<0.003	0.004	<0.003	<0.003	<0.003	0.004	<0.003	mg/l	TM30/PM17
Dissolved Zinc (A10) #	<0.03	0.07	0.12	0.11	<0.03	0.04	<0.03	<0.03	<0.03	0.04	<0.03	mg/kg	TM30/PM17
Mercury Dissolved by CVAF #	<0.00001	<0.00001	0.00002	0.00002	<0.00001	<0.00001	<0.00001	<0.00001	<0.00001	<0.00001	<0.00001	mg/l	TM61/PM0
Mercury Dissolved by CVAF #	<0.0001	<0.0001	0.0002	0.0002	<0.0001	<0.0001	<0.0001	<0.0001	<0.0001	<0.0001	<0.0001	mg/kg	TM61/PM0
Phenol	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	mg/l	TM26/PM0
Phenol	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	mg/kg	TM26/PM0
Fluoride	0.4	0.4	<0.3	<0.3	0.5	0.4	0.3	0.5	0.4	0.4	<0.3	mg/l	TM173/PM0
Fluoride	4	4	<3	<3	5	4	<3	5	4	4	<3	mg/kg	TM173/PM0
Sulphate as SO4 #	14.6	3.6	<0.5	<0.5	27.1	63.2	36.1	<0.5	13.3	7.6	<0.5	mg/l	TM38/PM0
Sulphate as SO4 #	146	36	<5	<5	271	632	361	<5	133	76	<5	mg/kg	TM38/PM0
Chloride #	0.5	0.9	2.1	1.4	0.4	0.5	<0.3	<0.3	0.4	<0.3	<0.3	mg/l	TM38/PM0
Chloride #	5	9	21	14	4	5	<3	<3	4	<3	<3	mg/kg	TM38/PM0
Dissolved Organic Carbon	5	12	31	22	4	9	7	7	7	5	<2	mg/l	TM60/PM0
Dissolved Organic Carbon	50	120	310	220	40	90	70	70	70	50	<20	mg/kg	TM60/PM0
pH	8.07	7.70	7.63	7.35	8.13	8.14	8.23	8.98	8.22	8.22	<0.01	pH units	TM73/PM0
Total Dissolved Solids #	79	38	157	79	35	183	205	74	104	77	<35	mg/l	TM20/PM0
Total Dissolved Solids #	790	380	1569	790	<350	1829	2050	740	1040	770	<350	mg/kg	TM20/PM0



# Element Materials Technology

**Client Name:** Ground Investigations Ireland  
**Reference:** 9376-01-20  
**Location:** Site at Glenamuck Road  
**Contact:** Stephen Kealy  
**EMT Job No:** 20/2972

**Report :** CEN 10:1 1 Batch

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

EMT Sample No.	31-33	34-36	37-39	40-42	43-45	46-48	49-51	52-54						
Sample ID	TP5	TP5	TP6	TP6	TP7	TP8	TP9	TP10						
Depth	0.50	1.50	0.50	1.50	0.50	0.50	0.50	0.50						
COC No / misc														
Containers	V J T	V J T	V J T	V J T	V J T	V J T	V J T	V J T						
Sample Date	19/02/2020	19/02/2020	19/02/2020	19/02/2020	19/02/2020	20/02/2020	20/02/2020	20/02/2020						
Sample Type	Soil	Soil	Soil	Soil	Soil	Soil	Soil	Soil						
Batch Number	1	1	1	1	1	1	1	1						
Date of Receipt	25/02/2020	25/02/2020	25/02/2020	25/02/2020	25/02/2020	25/02/2020	25/02/2020	25/02/2020						
											LOD/LOR	Units	Method No.	
Dissolved Antimony #	0.004	<0.002	0.005	0.002	0.003	<0.002	<0.002	<0.002			<0.002	mg/l	TM30/PM17	
Dissolved Antimony (A10) #	0.04	<0.02	0.05	<0.02	0.03	<0.02	<0.02	<0.02			<0.02	mg/kg	TM30/PM17	
Dissolved Arsenic #	<0.0025	<0.0025	0.0089	0.0100	0.0037	<0.0025	<0.0025	<0.0025			<0.0025	mg/l	TM30/PM17	
Dissolved Arsenic (A10) #	<0.025	<0.025	0.089	0.100	0.037	<0.025	<0.025	<0.025			<0.025	mg/kg	TM30/PM17	
Dissolved Barium #	0.007	0.007	0.011	<0.003	0.004	<0.003	0.006	<0.003			<0.003	mg/l	TM30/PM17	
Dissolved Barium (A10) #	0.07	0.07	0.11	<0.03	0.04	<0.03	0.06	<0.03			<0.03	mg/kg	TM30/PM17	
Dissolved Cadmium #	<0.0005	<0.0005	<0.0005	<0.0005	<0.0005	<0.0005	<0.0005	<0.0005			<0.0005	mg/l	TM30/PM17	
Dissolved Cadmium (A10) #	<0.005	<0.005	<0.005	<0.005	<0.005	<0.005	<0.005	<0.005			<0.005	mg/kg	TM30/PM17	
Dissolved Chromium #	<0.0015	<0.0015	<0.0015	<0.0015	<0.0015	<0.0015	<0.0015	<0.0015			<0.0015	mg/l	TM30/PM17	
Dissolved Chromium (A10) #	<0.015	<0.015	<0.015	<0.015	<0.015	<0.015	<0.015	<0.015			<0.015	mg/kg	TM30/PM17	
Dissolved Copper #	<0.007	<0.007	<0.007	<0.007	<0.007	<0.007	<0.007	<0.007			<0.007	mg/l	TM30/PM17	
Dissolved Copper (A10) #	<0.07	<0.07	<0.07	<0.07	<0.07	<0.07	<0.07	<0.07			<0.07	mg/kg	TM30/PM17	
Dissolved Lead #	<0.005	<0.005	<0.005	<0.005	<0.005	<0.005	<0.005	<0.005			<0.005	mg/l	TM30/PM17	
Dissolved Lead (A10) #	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05			<0.05	mg/kg	TM30/PM17	
Dissolved Molybdenum #	0.003	0.003	0.016	0.002	0.007	<0.002	<0.002	<0.002			<0.002	mg/l	TM30/PM17	
Dissolved Molybdenum (A10) #	0.03	0.03	0.16	<0.02	0.07	<0.02	<0.02	<0.02			<0.02	mg/kg	TM30/PM17	
Dissolved Nickel #	<0.002	<0.002	<0.002	<0.002	<0.002	<0.002	<0.002	<0.002			<0.002	mg/l	TM30/PM17	
Dissolved Nickel (A10) #	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02			<0.02	mg/kg	TM30/PM17	
Dissolved Selenium #	<0.003	<0.003	<0.003	<0.003	<0.003	<0.003	<0.003	<0.003			<0.003	mg/l	TM30/PM17	
Dissolved Selenium (A10) #	<0.03	<0.03	<0.03	<0.03	<0.03	<0.03	<0.03	<0.03			<0.03	mg/kg	TM30/PM17	
Dissolved Zinc #	0.005	0.004	0.005	0.005	0.004	0.007	0.004	0.005			<0.003	mg/l	TM30/PM17	
Dissolved Zinc (A10) #	0.05	0.04	0.05	0.05	0.04	0.07	0.04	0.05			<0.03	mg/kg	TM30/PM17	
Mercury Dissolved by CVA#	<0.00001	<0.00001	0.00001	0.00003	<0.00001	0.00001	0.00001	<0.00001			<0.00001	mg/l	TM61/PM0	
Mercury Dissolved by CVA#	<0.0001	<0.0001	0.0001	0.0003	<0.0001	0.0001	0.0001	<0.0001			<0.0001	mg/kg	TM61/PM0	
Phenol	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01			<0.01	mg/l	TM26/PM0	
Phenol	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1			<0.1	mg/kg	TM26/PM0	
Fluoride	0.5	0.5	0.3	0.6	<0.3	<0.3	<0.3	<0.3			<0.3	mg/l	TM173/PM0	
Fluoride	5	5	3	6	<3	<3	<3	<3			<3	mg/kg	TM173/PM0	
Sulphate as SO4 #	<0.5	11.3	17.8	3.7	6.7	<0.5	<0.5	<0.5			<0.5	mg/l	TM38/PM0	
Sulphate as SO4 #	<5	113	178	37	67	<5	<5	<5			<5	mg/kg	TM38/PM0	
Chloride #	<0.3	0.4	0.5	0.4	0.7	0.7	0.6	0.3			<0.3	mg/l	TM38/PM0	
Chloride #	<3	4	5	4	7	7	6	3			<3	mg/kg	TM38/PM0	
Dissolved Organic Carbon	8	7	12	5	8	9	6	6			<2	mg/l	TM60/PM0	
Dissolved Organic Carbon	80	70	120	50	80	90	60	60			<20	mg/kg	TM60/PM0	
pH	8.14	8.13	8.15	8.06	8.20	7.60	7.98	7.94			<0.01	pH units	TM73/PM0	
Total Dissolved Solids #	95	92	184	99	138	63	97	91			<35	mg/l	TM20/PM0	
Total Dissolved Solids #	950	920	1841	989	1380	630	970	910			<350	mg/kg	TM20/PM0	

Please see attached notes for all abbreviations and acronyms

**Element Materials Technology**

**Client Name:** Ground Investigations Ireland  
**Reference:** 9376-01-20  
**Location:** Site at Glenamuck Road  
**Contact:** Stephen Kealy  
**EMT Job No:** 20/2972

**Report :** EN12457\_2  
**Solids:** V=60g VOC jar, J=250g glass jar, T=plastic tub

EMT Sample No.	1-3	4-6	7-9	10-12	13-15	16-18	19-21	22-24	25-27	28-30	Inert	Stable Non-reactive	Hazardous	LOD LOR	Units	Method No.
<b>Sample ID</b>	TP1	TP1	TP2	TP2	TP3	TP3	TP3	TP4	TP4	TP4						
<b>Depth</b>	0.50	1.50	0.50	1.50	0.50	1.50	2.50	0.50	1.50	2.50						
<b>COC No / misc</b>																
<b>Containers</b>	V J T	V J T	V J T	V J T	V J T	V J T	V J T	V J T	V J T	V J T						
<b>Sample Date</b>	20/02/2020	20/02/2020	20/02/2020	19/02/2020	19/02/2020	19/02/2020	19/02/2020	19/02/2020	19/02/2020	19/02/2020						
<b>Sample Type</b>	Soil	Soil	Soil	Soil	Soil	Soil	Soil	Soil	Soil	Soil						
<b>Batch Number</b>	1	1	1	1	1	1	1	1	1	1						
<b>Date of Receipt</b>	25/02/2020	25/02/2020	25/02/2020	25/02/2020	25/02/2020	25/02/2020	25/02/2020	25/02/2020	25/02/2020	25/02/2020						
<b>Solid Waste Analysis</b>																
Total Organic Carbon #	1.11	1.72	NDP	0.91	0.85	3.79	0.85	0.65	0.67	0.92	3	5	6	<0.02	%	TM21/PM24
Sum of BTEX	<0.025	<0.025	<0.025 <sup>SV</sup>	<0.025	<0.025	<0.025	<0.025	<0.025	<0.025	<0.025	6	-	-	<0.025	mg/kg	TM31/PM12
Sum of 7 PCBs #	<0.035	<0.035	<0.035	<0.035	<0.035	<0.035	<0.035	<0.035	<0.035	<0.035	1	-	-	<0.035	mg/kg	TM17/PM8
Mineral Oil	<30	<30	41	<30	<30	41	<30	<30	45	<30	500	-	-	<30	mg/kg	TM5/PM8/PM16
PAH Sum of 6 #	18.61	<0.22	2.91	<0.22	0.51	1.87	<0.22	0.32	0.33	<0.22	-	-	-	<0.22	mg/kg	TM4/PM8
PAH Sum of 17	33.09	<0.64	5.39	<0.64	0.84	3.52	<0.64	0.64	<0.64	<0.64	100	-	-	<0.64	mg/kg	TM4/PM8
<b>CEN 10:1 Leachate</b>																
Arsenic #	<0.025	<0.025	<0.025	<0.025	<0.025	<0.025	0.030	<0.025	<0.025	<0.025	0.5	2	25	<0.025	mg/kg	TM30/PM17
Barium #	0.03	0.05	0.05	<0.03	0.11	0.27	0.12	0.08	0.06	0.04	20	100	300	<0.03	mg/kg	TM30/PM17
Cadmium #	<0.005	<0.005	<0.005	<0.005	<0.005	<0.005	<0.005	<0.005	<0.005	<0.005	0.04	1	5	<0.005	mg/kg	TM30/PM17
Chromium #	<0.015	<0.015	<0.015	<0.015	<0.015	<0.015	<0.015	<0.015	<0.015	<0.015	0.5	10	70	<0.015	mg/kg	TM30/PM17
Copper #	<0.07	<0.07	<0.07	<0.07	<0.07	<0.07	<0.07	<0.07	<0.07	<0.07	2	50	100	<0.07	mg/kg	TM30/PM17
Mercury #	<0.0001	<0.0001	0.0002	0.0002	<0.0001	<0.0001	<0.0001	<0.0001	<0.0001	<0.0001	0.01	0.2	2	<0.0001	mg/kg	TM61/PM0
Molybdenum #	0.05	0.03	0.03	0.02	0.04	0.08	0.07	0.03	0.03	0.03	0.5	10	30	<0.02	mg/kg	TM30/PM17
Nickel #	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	0.4	10	40	<0.02	mg/kg	TM30/PM17
Lead #	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	0.5	10	50	<0.05	mg/kg	TM30/PM17
Antimony #	<0.02	<0.02	<0.02	<0.02	0.05	<0.02	0.03	0.04	0.03	<0.02	0.06	0.7	5	<0.02	mg/kg	TM30/PM17
Selenium #	<0.03	<0.03	<0.03	<0.03	<0.03	<0.03	<0.03	<0.03	<0.03	<0.03	0.1	0.5	7	<0.03	mg/kg	TM30/PM17
Zinc #	<0.03	0.07	0.12	0.11	<0.03	0.04	<0.03	<0.03	<0.03	0.04	4	50	200	<0.03	mg/kg	TM30/PM17
Total Dissolved Solids #	790	380	1569	790	<350	1829	2050	740	1040	770	4000	60000	100000	<350	mg/kg	TM20/PM0
Dissolved Organic Carbon	50	120	310	220	40	90	70	70	70	50	500	800	1000	<20	mg/kg	TM60/PM0
Mass of raw test portion	0.1055	0.1278	0.1251	0.1249	0.1071	0.116	0.115	0.104	0.1012	0.1073	-	-	-		kg	NONE/PM17
Dry Matter Content Ratio	85.6	70.6	72.2	71.9	84.2	77.8	78.3	86.9	88.6	83.7	-	-	-	<0.1	%	NONE/PM4
Leachant Volume	0.885	0.862	0.865	0.865	0.883	0.874	0.875	0.887	0.888	0.882	-	-	-		l	NONE/PM17
Eluate Volume	0.85	0.8	0.82	0.85	0.85	0.8	0.78	0.8	0.75	0.8	-	-	-		l	NONE/PM17
pH #	8.33	7.63	7.05	7.07	8.04	7.72	7.60	8.27	8.23	8.18	-	-	-	<0.01	pH units	TM73/PM11
Phenol	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	1	-	-	<0.1	mg/kg	TM26/PM0
Fluoride	4	4	<3	<3	5	4	<3	5	4	4	-	-	-	<3	mg/kg	TM173/PM0
Sulphate as SO4 #	146	36	<5	<5	271	632	361	<5	133	76	1000	20000	50000	<5	mg/kg	TM38/PM0
Chloride #	5	9	21	14	4	5	<3	<3	4	<3	800	15000	25000	<3	mg/kg	TM38/PM0

Please see attached notes for all abbreviations and acronyms

**Element Materials Technology**

**Client Name:** Ground Investigations Ireland  
**Reference:** 9376-01-20  
**Location:** Site at Glenamuck Road  
**Contact:** Stephen Kealy  
**EMT Job No:** 20/2972

**Report :** EN12457\_2  
**Solids:** V=60g VOC jar, J=250g glass jar, T=plastic tub

EMT Sample No.	31-33	34-36	37-39	40-42	43-45	46-48	49-51	52-54							
Sample ID	TP5	TP5	TP6	TP6	TP7	TP8	TP9	TP10							
Depth	0.50	1.50	0.50	1.50	0.50	0.50	0.50	0.50							
COC No / misc															
Containers	V J T	V J T	V J T	V J T	V J T	V J T	V J T	V J T							
Sample Date	19/02/2020	19/02/2020	19/02/2020	19/02/2020	19/02/2020	20/02/2020	20/02/2020	20/02/2020							
Sample Type	Soil	Soil	Soil	Soil	Soil	Soil	Soil	Soil							
Batch Number	1	1	1	1	1	1	1	1							
Date of Receipt	25/02/2020	25/02/2020	25/02/2020	25/02/2020	25/02/2020	25/02/2020	25/02/2020	25/02/2020							
										Inert	Stable Non-reactive	Hazardous	LOD LOR	Units	Method No.
<b>Solid Waste Analysis</b>															
Total Organic Carbon #	0.70	0.89	1.76	0.15	0.82	1.46	2.14	0.75		3	5	6	<0.02	%	TM21/PM24
Sum of BTEX	<0.025	<0.025	<0.025	<0.025	<0.025	<0.025	<0.025	<0.025		6	-	-	<0.025	mg/kg	TM31/PM12
Sum of 7 PCBs #	<0.035	<0.035	<0.035	<0.035	<0.035	<0.035	<0.035	<0.035		1	-	-	<0.035	mg/kg	TM17/PM8
Mineral Oil	354	<30	180	<30	<30	<30	<30	<30		500	-	-	<30	mg/kg	TM5/PM8/PM16
PAH Sum of 6 #	0.45	0.39	4.74	<0.22	<0.22	3.16	10.30	<0.22		-	-	-	<0.22	mg/kg	TM4/PM8
PAH Sum of 17	0.96	0.66	11.99	<0.64	<0.64	5.38	14.33	<0.64		100	-	-	<0.64	mg/kg	TM4/PM8
<b>CEN 10:1 Leachate</b>															
Arsenic #	<0.025	<0.025	0.089	0.100	0.037	<0.025	<0.025	<0.025		0.5	2	25	<0.025	mg/kg	TM30/PM17
Barium #	0.07	0.07	0.11	<0.03	0.04	<0.03	0.06	<0.03		20	100	300	<0.03	mg/kg	TM30/PM17
Cadmium #	<0.005	<0.005	<0.005	<0.005	<0.005	<0.005	<0.005	<0.005		0.04	1	5	<0.005	mg/kg	TM30/PM17
Chromium #	<0.015	<0.015	<0.015	<0.015	<0.015	<0.015	<0.015	<0.015		0.5	10	70	<0.015	mg/kg	TM30/PM17
Copper #	<0.07	<0.07	<0.07	<0.07	<0.07	<0.07	<0.07	<0.07		2	50	100	<0.07	mg/kg	TM30/PM17
Mercury #	<0.0001	<0.0001	0.0001	0.0003	<0.0001	0.0001	0.0001	<0.0001		0.01	0.2	2	<0.0001	mg/kg	TM61/PM0
Molybdenum #	0.03	0.03	0.16	<0.02	0.07	<0.02	<0.02	<0.02		0.5	10	30	<0.02	mg/kg	TM30/PM17
Nickel #	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02		0.4	10	40	<0.02	mg/kg	TM30/PM17
Lead #	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05		0.5	10	50	<0.05	mg/kg	TM30/PM17
Antimony #	0.04	<0.02	0.05	<0.02	0.03	<0.02	<0.02	<0.02		0.06	0.7	5	<0.02	mg/kg	TM30/PM17
Selenium #	<0.03	<0.03	<0.03	<0.03	<0.03	<0.03	<0.03	<0.03		0.1	0.5	7	<0.03	mg/kg	TM30/PM17
Zinc #	0.05	0.04	0.05	0.05	0.04	0.07	0.04	0.05		4	50	200	<0.03	mg/kg	TM30/PM17
Total Dissolved Solids #	950	920	1841	989	1380	630	970	910		4000	60000	100000	<350	mg/kg	TM20/PM0
Dissolved Organic Carbon	80	70	120	50	80	90	60	60		500	800	1000	<20	mg/kg	TM60/PM0
Mass of raw test portion	0.1034	0.1052	0.1062	0.1018	0.1017	0.108	0.1099	0.1091		-	-	-		kg	NONE/PM17
Dry Matter Content Ratio	87.2	85.2	84.7	88.7	88.4	83.0	81.8	82.5		-	-	-	<0.1	%	NONE/PM4
Leachant Volume	0.887	0.884	0.884	0.888	0.888	0.882	0.88	0.881		-	-	-		l	NONE/PM17
Eluate Volume	0.8	0.85	0.8	0.85	0.79	0.8	0.8	0.78		-	-	-		l	NONE/PM17
pH #	8.21	8.02	8.07	8.22	7.99	7.23	7.91	7.93		-	-	-	<0.01	pH units	TM73/PM11
Phenol	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1		1	-	-	<0.1	mg/kg	TM26/PM0
Fluoride	5	5	3	6	<3	<3	<3	<3		-	-	-	<3	mg/kg	TM173/PM0
Sulphate as SO4 #	<5	113	178	37	67	<5	<5	<5		1000	20000	50000	<5	mg/kg	TM38/PM0
Chloride #	<3	4	5	4	7	7	6	3		800	15000	25000	<3	mg/kg	TM38/PM0

Please see attached notes for all abbreviations and acronyms



**Client Name:** Ground Investigations Ireland  
**Reference:** 20/01/9376  
**Location:** Site at Glenamuck Road  
**Contact:** Stephen Kealy

**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
20/2972	1	TP1	0.50	2	27/02/2020	<b>General Description (Bulk Analysis)</b>	soil/stones
					27/02/2020	<b>Asbestos Fibres</b>	NAD
					27/02/2020	<b>Asbestos ACM</b>	NAD
					27/02/2020	<b>Asbestos Type</b>	NAD
					27/02/2020	<b>Asbestos Level Screen</b>	NAD
20/2972	1	TP1	1.50	5	27/02/2020	<b>General Description (Bulk Analysis)</b>	soil-stones
					27/02/2020	<b>Asbestos Fibres</b>	NAD
					27/02/2020	<b>Asbestos ACM</b>	NAD
					27/02/2020	<b>Asbestos Type</b>	NAD
					27/02/2020	<b>Asbestos Level Screen</b>	NAD
20/2972	1	TP2	0.50	8	27/02/2020	<b>General Description (Bulk Analysis)</b>	soil.stones
					27/02/2020	<b>Asbestos Fibres</b>	Fibre Bundles
					27/02/2020	<b>Asbestos ACM</b>	NAD
					27/02/2020	<b>Asbestos Type</b>	Chrysotile
					27/02/2020	<b>Asbestos Level Screen</b>	less than 0.1%
					12/03/2020	<b>Total ACM Gravimetric Quantification (% Asb)</b>	<0.001 (mass %)
					12/03/2020	<b>Total Detailed Gravimetric Quantification (% Asb)</b>	<0.001 (mass %)
					12/03/2020	<b>Total Gravimetric Quantification (ACM + Detailed) (% Asb)</b>	<0.001 (mass %)
20/2972	1	TP2	1.50	11	27/02/2020	<b>General Description (Bulk Analysis)</b>	soil-stones
					27/02/2020	<b>Asbestos Fibres</b>	NAD
					27/02/2020	<b>Asbestos ACM</b>	NAD
					27/02/2020	<b>Asbestos Type</b>	NAD
					27/02/2020	<b>Asbestos Level Screen</b>	NAD
20/2972	1	TP3	0.50	14	27/02/2020	<b>General Description (Bulk Analysis)</b>	soil-stones
					27/02/2020	<b>Asbestos Fibres</b>	NAD
					27/02/2020	<b>Asbestos ACM</b>	NAD
					27/02/2020	<b>Asbestos Type</b>	NAD
					27/02/2020	<b>Asbestos Level Screen</b>	NAD
20/2972	1	TP3	1.50	17	27/02/2020	<b>General Description (Bulk Analysis)</b>	Soil/Stone
					27/02/2020	<b>Asbestos Fibres</b>	NAD
					27/02/2020	<b>Asbestos ACM</b>	NAD
					27/02/2020	<b>Asbestos Type</b>	NAD
					27/02/2020	<b>Asbestos Level Screen</b>	NAD



**Client Name:** Ground Investigations Ireland  
**Reference:** 20/01/9376  
**Location:** Site at Glenamuck Road  
**Contact:** Stephen Kealy

EMT Job No.	Batch	Sample ID	Depth	EMT Sample No.	Date Of Analysis	Analysis	Result
20/2972	1	TP3	2.50	20	27/02/2020	General Description (Bulk Analysis)	soil.stones
					27/02/2020	Asbestos Fibres	NAD
					27/02/2020	Asbestos ACM	NAD
					27/02/2020	Asbestos Type	NAD
					27/02/2020	Asbestos Level Screen	NAD
20/2972	1	TP4	0.50	23	27/02/2020	General Description (Bulk Analysis)	soil.stones
					27/02/2020	Asbestos Fibres	NAD
					27/02/2020	Asbestos ACM	NAD
					27/02/2020	Asbestos Type	NAD
					27/02/2020	Asbestos Level Screen	NAD
20/2972	1	TP4	1.50	26	27/02/2020	General Description (Bulk Analysis)	soil.stones
					27/02/2020	Asbestos Fibres	NAD
					27/02/2020	Asbestos ACM	NAD
					27/02/2020	Asbestos Type	NAD
					27/02/2020	Asbestos Level Screen	NAD
20/2972	1	TP4	2.50	29	27/02/2020	General Description (Bulk Analysis)	soil/stones
					27/02/2020	Asbestos Fibres	NAD
					27/02/2020	Asbestos ACM	NAD
					27/02/2020	Asbestos Type	NAD
					27/02/2020	Asbestos Level Screen	NAD
20/2972	1	TP5	0.50	32	27/02/2020	General Description (Bulk Analysis)	soil.stones
					27/02/2020	Asbestos Fibres	NAD
					27/02/2020	Asbestos ACM	NAD
					27/02/2020	Asbestos Type	NAD
					27/02/2020	Asbestos Level Screen	NAD
20/2972	1	TP5	1.50	35	27/02/2020	General Description (Bulk Analysis)	soil.stones
					27/02/2020	Asbestos Fibres	NAD
					27/02/2020	Asbestos ACM	NAD
					27/02/2020	Asbestos Type	NAD
					27/02/2020	Asbestos Level Screen	NAD
20/2972	1	TP6	0.50	38	27/02/2020	General Description (Bulk Analysis)	soil-stones
					27/02/2020	Asbestos Fibres	NAD
					27/02/2020	Asbestos ACM	NAD
					27/02/2020	Asbestos Type	NAD
					27/02/2020	Asbestos Level Screen	NAD
20/2972	1	TP6	1.50	41	27/02/2020	General Description (Bulk Analysis)	soil/stones
					27/02/2020	Asbestos Fibres	NAD
					27/02/2020	Asbestos ACM	NAD
					27/02/2020	Asbestos Type	NAD
					27/02/2020	Asbestos Level Screen	NAD
20/2972	1	TP7	0.50	44	27/02/2020	General Description (Bulk Analysis)	soil.stones
					27/02/2020	Asbestos Fibres	NAD
					27/02/2020	Asbestos ACM	NAD
					27/02/2020	Asbestos Type	NAD
					27/02/2020	Asbestos Level Screen	NAD

**Client Name:** Ground Investigations Ireland  
**Reference:** 20/01/9376  
**Location:** Site at Glenamuck Road  
**Contact:** Stephen Kealy

EMT Job No.	Batch	Sample ID	Depth	EMT Sample No.	Date Of Analysis	Analysis	Result
20/2972	1	TP8	0.50	47	27/02/2020	General Description (Bulk Analysis)	soil-stones
					27/02/2020	Asbestos Fibres	NAD
					27/02/2020	Asbestos ACM	NAD
					27/02/2020	Asbestos Type	NAD
					27/02/2020	Asbestos Level Screen	NAD
20/2972	1	TP9	0.50	50	27/02/2020	General Description (Bulk Analysis)	Soil/Stone
					27/02/2020	Asbestos Fibres	NAD
					27/02/2020	Asbestos ACM	NAD
					27/02/2020	Asbestos Type	NAD
					27/02/2020	Asbestos Level Screen	NAD
20/2972	1	TP10	0.50	53	27/02/2020	General Description (Bulk Analysis)	soil-stones
					27/02/2020	Asbestos Fibres	NAD
					27/02/2020	Asbestos ACM	NAD
					27/02/2020	Asbestos Type	NAD
					27/02/2020	Asbestos Level Screen	NAD





## NOTES TO ACCOMPANY ALL SCHEDULES AND REPORTS

EMT Job No.: 20/2972

### 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 overestimate 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.

Please include all sections of this report if it is reproduced



**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: 20/2972

Test Method No.	Description	Prep Method No. (if appropriate)	Description	ISO 17025 (UKAS/S ANAS)	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: 20/2972

Test Method No.	Description	Prep Method No. (if appropriate)	Description	ISO 17025 (UKAS/S ANAS)	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
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	PM62	Acid digestion of as received solid samples using Aqua Regia refluxed at 112.5 °C.			AR	Yes
TM31	Modified USEPA 8015B. Determination of Methylterbutylether, 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 Methylterbutylether, 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

EMT Job No: 20/2972

Test Method No.	Description	Prep Method No. (if appropriate)	Description	ISO 17025 (UKAS/S ANAS)	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		AD	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
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
TM131	Quantification of Asbestos Fibres and ACM, based on HSG248 and SCA method.	PM42	Solid samples undergo a thorough visual inspection for asbestos fibres prior to asbestos identification using TM065.	Yes		AR	Yes
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

EMT Job No: 20/2972

Test Method No.	Description	Prep Method No. (if appropriate)	Description	ISO 17025 (UKAS/S ANAS)	MCERTS (UK soils only)	Analysis done on As Received (AR) or Dried (AD)	Reported on dry weight basis
NONE	No Method Code	NONE	No Method Code			AR	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	



# APPENDIX 7 – HazWasteOnLine™ Report



# Waste Classification Report



A7XRR-QTG6Y-S7U6T

## Job name

Glenamuck Road

## Description/Comments

## Project

9376-01-20

## Site

Glenamuck Road

## Related Documents

#	Name	Description
1	Glenamuck Road.HWOL	.hwol file used to create the Job

## Waste Stream Template

Example waste stream template for contaminated soils

## Classified by

Name:	Company:	HazWasteOnline™ Training Record:	
<b>Barry Sexton</b>	<b>Ground Investigations Ireland</b>	<b>Course</b>	<b>Date</b>
Date: <b>31 Mar 2020 09:01 GMT</b>	<b>Catherinstown House, Hazelhatch Road, Newcastle Co. Dublin</b>	Hazardous Waste Classification	09 Apr 2019
Telephone: <b>00353876119640</b>		Advanced Hazardous Waste Classification	10 Apr 2019

## Report

Created by: Barry Sexton  
Created date: 31 Mar 2020 09:01 GMT

## Job summary

#	Sample Name	Depth [m]	Classification Result	Hazard properties	Page
1	TP1-20/02/2020-0.50m		Non Hazardous		3
2	TP1-20/02/2020-1.50m		Non Hazardous		6
3	TP2-20/02/2020-0.50m		Non Hazardous		9
4	TP2-19/02/2020-1.50m		Non Hazardous		12
5	TP3-19/02/2020-0.50m		Non Hazardous		15
6	TP3-19/02/2020-1.50m		Non Hazardous		18
7	TP3-19/02/2020-2.50m		Non Hazardous		21
8	TP4-19/02/2020-0.50m		Non Hazardous		24
9	TP4-19/02/2020-1.50m		Non Hazardous		27
10	TP4-19/02/2020-2.50m		Non Hazardous		30
11	TP5-19/02/2020-0.50m		Non Hazardous		33
12	TP5-19/02/2020-1.50m		Non Hazardous		36



#	Sample Name	Depth [m]	Classification Result	Hazard properties	Page
13	TP6-19/02/2020-0.50m		Non Hazardous		39
14	TP6-19/02/2020-1.50m		Non Hazardous		42
15	TP7-19/02/2020-0.50m		Non Hazardous		45
16	TP8-20/02/2020-0.50m		Non Hazardous		48
17	TP9-20/02/2020-0.50m		Non Hazardous		51
18	TP10-20/02/2020-0.50m		Non Hazardous		54

Appendices	Page
Appendix A: Classifier defined and non CLP determinands	57
Appendix B: Rationale for selection of metal species	58
Appendix C: Version	59

### Classification of sample: TP1-20/02/2020-0.50m

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

### Sample details

Sample Name: <b>TP1-20/02/2020-0.50m</b>	LoW Code: Chapter:	17: Construction and Demolition Wastes (including excavated soil from contaminated sites)
Moisture content: <b>11.2%</b> (wet weight correction)	Entry:	17 05 04 (Soil and stones other than those mentioned in 17 05 03)

### Hazard properties

None identified

### Determinands

Moisture content: 11.2% 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 }				1	mg/kg	1.197	1.063	mg/kg	0.000106 %	✓	
	051-005-00-X	215-175-0	1309-64-4									
2	arsenic { arsenic trioxide }				12.1	mg/kg	1.32	14.187	mg/kg	0.00142 %	✓	
	033-003-00-0	215-481-4	1327-53-3									
3	cadmium { cadmium oxide }				0.9	mg/kg	1.142	0.913	mg/kg	0.0000913 %	✓	
	048-002-00-0	215-146-2	1306-19-0									
4	chromium in chromium(III) compounds { chromium(III) oxide }				44.5	mg/kg	1.462	57.755	mg/kg	0.00578 %	✓	
		215-160-9	1308-38-9									
5	chromium in chromium(VI) compounds { chromium(VI) oxide }				<0.3	mg/kg	1.923	<0.577	mg/kg	<0.0000577 %		<LOD
	024-001-00-0	215-607-8	1333-82-0									
6	copper { dicopper oxide; copper (I) oxide }				24	mg/kg	1.126	23.995	mg/kg	0.0024 %	✓	
	029-002-00-X	215-270-7	1317-39-1									
7	lead { lead chromate }			1	44	mg/kg	1.56	60.945	mg/kg	0.00391 %	✓	
	082-004-00-2	231-846-0	7758-97-6									
8	mercury { mercury dichloride }				<0.1	mg/kg	1.353	<0.135	mg/kg	<0.0000135 %		<LOD
	080-010-00-X	231-299-8	7487-94-7									
9	molybdenum { molybdenum(VI) oxide }				2.9	mg/kg	1.5	3.863	mg/kg	0.000386 %	✓	
	042-001-00-9	215-204-7	1313-27-5									
10	nickel { nickel chromate }				25.6	mg/kg	2.976	67.659	mg/kg	0.00677 %	✓	
	028-035-00-7	238-766-5	14721-18-7									
11	selenium { selenium compounds with the exception of cadmium sulphoselenide and those specified elsewhere in this Annex }				1	mg/kg	2.554	2.268	mg/kg	0.000227 %	✓	
	034-002-00-8											
12	zinc { zinc chromate }				85	mg/kg	2.774	209.393	mg/kg	0.0209 %	✓	
	024-007-00-3											
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				<0.005	mg/kg		<0.005	mg/kg	<0.0000005 %		<LOD
	603-181-00-X	216-653-1	1634-04-4									







#	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				8.33 pH		8.33 pH	8.33 pH		
			PH							
20	naphthalene				0.1 mg/kg		0.0888 mg/kg	0.00000888 %	✓	
	601-052-00-2	202-049-5	91-20-3							
21	acenaphthylene				0.15 mg/kg		0.133 mg/kg	0.0000133 %	✓	
		205-917-1	208-96-8							
22	acenaphthene				0.41 mg/kg		0.364 mg/kg	0.0000364 %	✓	
		201-469-6	83-32-9							
23	fluorene				0.25 mg/kg		0.222 mg/kg	0.0000222 %	✓	
		201-695-5	86-73-7							
24	phenanthrene				1.19 mg/kg		1.057 mg/kg	0.000106 %	✓	
		201-581-5	85-01-8							
25	anthracene				0.66 mg/kg		0.586 mg/kg	0.0000586 %	✓	
		204-371-1	120-12-7							
26	fluoranthene				6.59 mg/kg		5.852 mg/kg	0.000585 %	✓	
		205-912-4	206-44-0							
27	pyrene				5.52 mg/kg		4.902 mg/kg	0.00049 %	✓	
		204-927-3	129-00-0							
28	benzo[a]anthracene				2.95 mg/kg		2.62 mg/kg	0.000262 %	✓	
	601-033-00-9	200-280-6	56-55-3							
29	chrysene				2.67 mg/kg		2.371 mg/kg	0.000237 %	✓	
	601-048-00-0	205-923-4	218-01-9							
30	benzo[b]fluoranthene				3.95 mg/kg		3.508 mg/kg	0.000351 %	✓	
	601-034-00-4	205-911-9	205-99-2							
31	benzo[k]fluoranthene				1.54 mg/kg		1.368 mg/kg	0.000137 %	✓	
	601-036-00-5	205-916-6	207-08-9							
32	benzo[a]pyrene; benzo[def]chrysene				2.93 mg/kg		2.602 mg/kg	0.00026 %	✓	
	601-032-00-3	200-028-5	50-32-8							
33	indeno[123-cd]pyrene				1.89 mg/kg		1.678 mg/kg	0.000168 %	✓	
		205-893-2	193-39-5							
34	dibenz[a,h]anthracene				0.26 mg/kg		0.231 mg/kg	0.0000231 %	✓	
	601-041-00-2	200-181-8	53-70-3							
35	benzo[ghi]perylene				1.71 mg/kg		1.518 mg/kg	0.000152 %	✓	
		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 }				69 mg/kg	1.117	68.411 mg/kg	0.00684 %	✓	
		215-127-9	1304-28-5							
38	coronene				0.32 mg/kg		0.284 mg/kg	0.0000284 %	✓	
		205-881-7	191-07-1							
39	benzo[j]fluoranthene				1 mg/kg		0.888 mg/kg	0.0000888 %	✓	
	601-035-00-X	205-910-3	205-82-3							
Total:								0.0572 %		



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 Determinand - Unless the Determinand is Note 1, the Conversion Factor is used to calculate the compound concentration
<b>&lt;LOD</b>	Below limit of detection
<b>ND</b>	Not detected
CLP: Note 1	Only the metal concentration has been used for classification

**Classification of sample: TP1-20/02/2020-1.50m**

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

**Sample details**

Sample Name: <b>TP1-20/02/2020-1.50m</b>	LoW Code: Chapter:	17: Construction and Demolition Wastes (including excavated soil from contaminated sites)
Moisture content: <b>26.5%</b> (wet weight correction)	Entry:	17 05 04 (Soil and stones other than those mentioned in 17 05 03)

**Hazard properties**

None identified

**Determinands**

Moisture content: 26.5% Wet Weight Moisture Correction applied (MC)

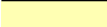



#	Determinand			CLP Note	User entered data	Conv. Factor	Compound conc.		Classification value	MC Applied	Conc. Not Used
	CLP index number	EC Number	CAS Number								
1	antimony { antimony trioxide }				1 mg/kg	1.197	0.88	mg/kg	0.000088 %	✓	
	051-005-00-X	215-175-0	1309-64-4								
2	arsenic { arsenic trioxide }				23.5 mg/kg	1.32	22.805	mg/kg	0.00228 %	✓	
	033-003-00-0	215-481-4	1327-53-3								
3	cadmium { cadmium oxide }				2.1 mg/kg	1.142	1.763	mg/kg	0.000176 %	✓	
	048-002-00-0	215-146-2	1306-19-0								
4	chromium in chromium(III) compounds { chromium(III) oxide }				50.6 mg/kg	1.462	54.357	mg/kg	0.00544 %	✓	
		215-160-9	1308-38-9								
5	chromium in chromium(VI) compounds { chromium(VI) oxide }				<0.3 mg/kg	1.923	<0.577	mg/kg	<0.0000577 %		<LOD
	024-001-00-0	215-607-8	1333-82-0								
6	copper { dicopper oxide; copper (I) oxide }				29 mg/kg	1.126	23.998	mg/kg	0.0024 %	✓	
	029-002-00-X	215-270-7	1317-39-1								
7	lead { lead chromate }			1	130 mg/kg	1.56	149.04	mg/kg	0.00955 %	✓	
	082-004-00-2	231-846-0	7758-97-6								
8	mercury { mercury dichloride }				<0.1 mg/kg	1.353	<0.135	mg/kg	<0.0000135 %		<LOD
	080-010-00-X	231-299-8	7487-94-7								
9	molybdenum { molybdenum(VI) oxide }				2.9 mg/kg	1.5	3.198	mg/kg	0.00032 %	✓	
	042-001-00-9	215-204-7	1313-27-5								
10	nickel { nickel chromate }				27.6 mg/kg	2.976	60.377	mg/kg	0.00604 %	✓	
	028-035-00-7	238-766-5	14721-18-7								
11	selenium { selenium compounds with the exception of cadmium sulphoselenide and those specified elsewhere in this Annex }				2 mg/kg	2.554	3.754	mg/kg	0.000375 %	✓	
	034-002-00-8										
12	zinc { zinc chromate }				149 mg/kg	2.774	303.811	mg/kg	0.0304 %	✓	
	024-007-00-3										
13	TPH (C6 to C40) petroleum group				<52 mg/kg		<52	mg/kg	<0.0052 %		<LOD
			TPH								
14	tert-butyl methyl ether; MTBE; 2-methoxy-2-methylpropane				<0.005 mg/kg		<0.005	mg/kg	<0.0000005 %		<LOD
	603-181-00-X	216-653-1	1634-04-4								

#	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	<0.000005 %		<LOD
	601-020-00-8	200-753-7	71-43-2							
16	toluene				<0.005 mg/kg		<0.005 mg/kg	<0.000005 %		<LOD
	601-021-00-3	203-625-9	108-88-3							
17	ethylbenzene				<0.005 mg/kg		<0.005 mg/kg	<0.000005 %		<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				7.63 pH		7.63 pH	7.63 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				0.04 mg/kg		0.0294 mg/kg	0.00000294 %	✓	
		205-912-4	206-44-0							
27	pyrene				0.04 mg/kg		0.0294 mg/kg	0.00000294 %	✓	
		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				0.03 mg/kg		0.0221 mg/kg	0.00000221 %	✓	
	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 }				112 mg/kg	1.117	91.911 mg/kg	0.00919 %	✓	
		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:								0.0717 %		



Key

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	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 Determinand - Unless the Determinand is Note 1, the Conversion Factor is used to calculate the compound concentration
<b>&lt;LOD</b>	Below limit of detection
<b>ND</b>	Not detected
CLP: Note 1	Only the metal concentration has been used for classification

### Classification of sample: TP2-20/02/2020-0.50m

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

### Sample details

Sample Name: <b>TP2-20/02/2020-0.50m</b>	LoW Code: Chapter:	17: Construction and Demolition Wastes (including excavated soil from contaminated sites)
Moisture content: <b>26.1%</b> (wet weight correction)	Entry:	17 05 04 (Soil and stones other than those mentioned in 17 05 03)

### Hazard properties

None identified

### Determinands

Moisture content: 26.1% 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 }				<1 mg/kg	1.197	<1.197 mg/kg	<0.00012 %		<LOD
	051-005-00-X	215-175-0	1309-64-4							
2	arsenic { arsenic trioxide }				22.6 mg/kg	1.32	22.051 mg/kg	0.00221 %	✓	
	033-003-00-0	215-481-4	1327-53-3							
3	cadmium { cadmium oxide }				0.3 mg/kg	1.142	0.253 mg/kg	0.0000253 %	✓	
	048-002-00-0	215-146-2	1306-19-0							
4	chromium in chromium(III) compounds { chromium(III) oxide }				19.3 mg/kg	1.462	20.846 mg/kg	0.00208 %	✓	
		215-160-9	1308-38-9							
5	chromium in chromium(VI) compounds { chromium(VI) oxide }				<0.3 mg/kg	1.923	<0.577 mg/kg	<0.0000577 %		<LOD
	024-001-00-0	215-607-8	1333-82-0							
6	copper { dicopper oxide; copper (I) oxide }				22 mg/kg	1.126	18.305 mg/kg	0.00183 %	✓	
	029-002-00-X	215-270-7	1317-39-1							
7	lead { lead chromate }			1	66 mg/kg	1.56	76.078 mg/kg	0.00488 %	✓	
	082-004-00-2	231-846-0	7758-97-6							
8	mercury { mercury dichloride }				<0.1 mg/kg	1.353	<0.135 mg/kg	<0.0000135 %		<LOD
	080-010-00-X	231-299-8	7487-94-7							
9	molybdenum { molybdenum(VI) oxide }				2.4 mg/kg	1.5	2.661 mg/kg	0.000266 %	✓	
	042-001-00-9	215-204-7	1313-27-5							
10	nickel { nickel chromate }				20.2 mg/kg	2.976	44.429 mg/kg	0.00444 %	✓	
	028-035-00-7	238-766-5	14721-18-7							
11	selenium { selenium compounds with the exception of cadmium sulphoselenide and those specified elsewhere in this Annex }				3 mg/kg	2.554	5.661 mg/kg	0.000566 %	✓	
	034-002-00-8									
12	zinc { zinc chromate }				129 mg/kg	2.774	264.462 mg/kg	0.0264 %	✓	
	024-007-00-3									
13	TPH (C6 to C40) petroleum group		TPH		186 mg/kg		137.454 mg/kg	0.0137 %	✓	
14	tert-butyl methyl ether; MTBE; 2-methoxy-2-methylpropane				<0.005 mg/kg		<0.005 mg/kg	<0.0000005 %		<LOD
	603-181-00-X	216-653-1	1634-04-4							









#	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				7.05 pH		7.05 pH	7.05 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				0.15 mg/kg		0.111 mg/kg	0.0000111 %	✓	
		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				0.11 mg/kg		0.0813 mg/kg	0.00000813 %	✓	
		201-581-5	85-01-8							
25	anthracene				0.34 mg/kg		0.251 mg/kg	0.0000251 %	✓	
		204-371-1	120-12-7							
26	fluoranthene				0.49 mg/kg		0.362 mg/kg	0.0000362 %	✓	
		205-912-4	206-44-0							
27	pyrene				0.47 mg/kg		0.347 mg/kg	0.0000347 %	✓	
		204-927-3	129-00-0							
28	benzo[a]anthracene				0.57 mg/kg		0.421 mg/kg	0.0000421 %	✓	
	601-033-00-9	200-280-6	56-55-3							
29	chrysene				0.58 mg/kg		0.429 mg/kg	0.0000429 %	✓	
	601-048-00-0	205-923-4	218-01-9							
30	benzo[b]fluoranthene				0.86 mg/kg		0.636 mg/kg	0.0000636 %	✓	
	601-034-00-4	205-911-9	205-99-2							
31	benzo[k]fluoranthene				0.34 mg/kg		0.251 mg/kg	0.0000251 %	✓	
	601-036-00-5	205-916-6	207-08-9							
32	benzo[a]pyrene; benzo[def]chrysene				0.43 mg/kg		0.318 mg/kg	0.0000318 %	✓	
	601-032-00-3	200-028-5	50-32-8							
33	indeno[123-cd]pyrene				0.38 mg/kg		0.281 mg/kg	0.0000281 %	✓	
		205-893-2	193-39-5							
34	dibenz[a,h]anthracene				0.14 mg/kg		0.103 mg/kg	0.0000103 %	✓	
	601-041-00-2	200-181-8	53-70-3							
35	benzo[ghi]perylene				0.41 mg/kg		0.303 mg/kg	0.0000303 %	✓	
		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 }				62 mg/kg	1.117	51.156 mg/kg	0.00512 %	✓	
		215-127-9	1304-28-5							
38	coronene				0.12 mg/kg		0.0887 mg/kg	0.00000887 %	✓	
		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							
40	asbestos				<10 mg/kg		<10 mg/kg	<0.001 %		<LOD
	650-013-00-6	-----	12001-28-4 132207-32-0 12172-73-5 77536-66-4 77536-68-6 77536-67-5 12001-29-5							

#	Determinand			CLP Note	User entered data	Conv. Factor	Compound conc.	Classification value	MC Applied	Conc. Not Used
	CLP index number	EC Number	CAS Number							
							Total:	0.0633 %		

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 Determinand - Unless the Determinand is Note 1, the Conversion Factor is used to calculate the compound concentration
<b>&lt;LOD</b>	Below limit of detection
<b>ND</b>	Not detected
CLP: Note 1	Only the metal concentration has been used for classification

### Supplementary Hazardous Property Information

**HP 3(i): Flammable** "flammable liquid waste: liquid waste having a flash point below 60°C or waste gas oil, diesel and light heating oils having a flash point > 55°C and <= 75°C"

**Force this Hazardous property to non hazardous because** Solid waste without liquid phase

Hazard Statements hit:

**Fam. Liq. 3; H226** "Flammable liquid and vapour."

Because of determinand:

TPH (C6 to C40) petroleum group: (conc.: 0.0137%)

**Classification of sample: TP2-19/02/2020-1.50m**

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

**Sample details**

Sample Name: <b>TP2-19/02/2020-1.50m</b>	LoW Code: Chapter:	17: Construction and Demolition Wastes (including excavated soil from contaminated sites)
Moisture content: <b>19.5%</b> (wet weight correction)	Entry:	17 05 04 (Soil and stones other than those mentioned in 17 05 03)

**Hazard properties**

None identified

**Determinands**

Moisture content: 19.5% Wet Weight Moisture Correction applied (MC)

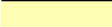



#	Determinand			CLP Note	User entered data		Conv. Factor	Compound conc.		Classification value	MC Applied	Conc. Not Used
	CLP index number	EC Number	CAS Number									
1	antimony { antimony trioxide }				<1	mg/kg	1.197	<1.197	mg/kg	<0.00012 %		<LOD
	051-005-00-X	215-175-0	1309-64-4									
2	arsenic { arsenic trioxide }				16.7	mg/kg	1.32	17.75	mg/kg	0.00177 %	✓	
	033-003-00-0	215-481-4	1327-53-3									
3	cadmium { cadmium oxide }				0.1	mg/kg	1.142	0.092	mg/kg	0.0000092 %	✓	
	048-002-00-0	215-146-2	1306-19-0									
4	chromium in chromium(III) compounds { chromium(III) oxide }				42.5	mg/kg	1.462	50.003	mg/kg	0.005 %	✓	
		215-160-9	1308-38-9									
5	chromium in chromium(VI) compounds { chromium(VI) oxide }				<0.3	mg/kg	1.923	<0.577	mg/kg	<0.0000577 %		<LOD
	024-001-00-0	215-607-8	1333-82-0									
6	copper { dicopper oxide; copper (I) oxide }				10	mg/kg	1.126	9.063	mg/kg	0.000906 %	✓	
	029-002-00-X	215-270-7	1317-39-1									
7	lead { lead chromate }			1	31	mg/kg	1.56	38.925	mg/kg	0.0025 %	✓	
	082-004-00-2	231-846-0	7758-97-6									
8	mercury { mercury dichloride }				<0.1	mg/kg	1.353	<0.135	mg/kg	<0.0000135 %		<LOD
	080-010-00-X	231-299-8	7487-94-7									
9	molybdenum { molybdenum(VI) oxide }				3.6	mg/kg	1.5	4.348	mg/kg	0.000435 %	✓	
	042-001-00-9	215-204-7	1313-27-5									
10	nickel { nickel chromate }				10.6	mg/kg	2.976	25.396	mg/kg	0.00254 %	✓	
	028-035-00-7	238-766-5	14721-18-7									
11	selenium { selenium compounds with the exception of cadmium sulphoselenide and those specified elsewhere in this Annex }				2	mg/kg	2.554	4.111	mg/kg	0.000411 %	✓	
	034-002-00-8											
12	zinc { zinc chromate }				75	mg/kg	2.774	167.489	mg/kg	0.0167 %	✓	
	024-007-00-3											
13	TPH (C6 to C40) petroleum group				<52	mg/kg		<52	mg/kg	<0.0052 %		<LOD
			TPH									
14	tert-butyl methyl ether; MTBE; 2-methoxy-2-methylpropane				<0.005	mg/kg		<0.005	mg/kg	<0.0000005 %		<LOD
	603-181-00-X	216-653-1	1634-04-4									

#	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	<0.000005 %		<LOD
	601-020-00-8	200-753-7	71-43-2							
16	toluene				<0.005 mg/kg		<0.005 mg/kg	<0.000005 %		<LOD
	601-021-00-3	203-625-9	108-88-3							
17	ethylbenzene				<0.005 mg/kg		<0.005 mg/kg	<0.000005 %		<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				7.07 pH		7.07 pH	7.07 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 }				26 mg/kg	1.117	23.368 mg/kg	0.00234 %	✓	
		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:								0.0382 %		



Key

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	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 Determinand - Unless the Determinand is Note 1, the Conversion Factor is used to calculate the compound concentration
<b>&lt;LOD</b>	Below limit of detection
<b>ND</b>	Not detected
CLP: Note 1	Only the metal concentration has been used for classification



**Classification of sample: TP3-19/02/2020-0.50m**

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

**Sample details**

Sample Name: <b>TP3-19/02/2020-0.50m</b>	LoW Code: Chapter:	17: Construction and Demolition Wastes (including excavated soil from contaminated sites)
Moisture content: <b>10.4%</b> (wet weight correction)	Entry:	17 05 04 (Soil and stones other than those mentioned in 17 05 03)

**Hazard properties**

None identified

**Determinands**

Moisture content: 10.4% Wet Weight Moisture Correction applied (MC)

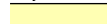



#	Determinand			CLP Note	User entered data	Conv. Factor	Compound conc.	Classification value	MC Applied	Conc. Not Used
	CLP index number	EC Number	CAS Number							
1	antimony { antimony trioxide }				4 mg/kg	1.197	4.29 mg/kg	0.000429 %	✓	
	051-005-00-X	215-175-0	1309-64-4							
2	arsenic { arsenic trioxide }				17.9 mg/kg	1.32	21.176 mg/kg	0.00212 %	✓	
	033-003-00-0	215-481-4	1327-53-3							
3	cadmium { cadmium oxide }				0.2 mg/kg	1.142	0.205 mg/kg	0.0000205 %	✓	
	048-002-00-0	215-146-2	1306-19-0							
4	chromium in chromium(III) compounds { chromium(III) oxide }				63.9 mg/kg	1.462	83.68 mg/kg	0.00837 %	✓	
		215-160-9	1308-38-9							
5	chromium in chromium(VI) compounds { chromium(VI) oxide }				<0.3 mg/kg	1.923	<0.577 mg/kg	<0.0000577 %		<LOD
	024-001-00-0	215-607-8	1333-82-0							
6	copper { dicopper oxide; copper (I) oxide }				30 mg/kg	1.126	30.264 mg/kg	0.00303 %	✓	
	029-002-00-X	215-270-7	1317-39-1							
7	lead { lead chromate }			1	220 mg/kg	1.56	307.471 mg/kg	0.0197 %	✓	
	082-004-00-2	231-846-0	7758-97-6							
8	mercury { mercury dichloride }				<0.1 mg/kg	1.353	<0.135 mg/kg	<0.0000135 %		<LOD
	080-010-00-X	231-299-8	7487-94-7							
9	molybdenum { molybdenum(VI) oxide }				1.7 mg/kg	1.5	2.285 mg/kg	0.000229 %	✓	
	042-001-00-9	215-204-7	1313-27-5							
10	nickel { nickel chromate }				35.7 mg/kg	2.976	95.202 mg/kg	0.00952 %	✓	
	028-035-00-7	238-766-5	14721-18-7							
11	selenium { selenium compounds with the exception of cadmium sulphoselenide and those specified elsewhere in this Annex }				<1 mg/kg	2.554	<2.554 mg/kg	<0.000255 %		<LOD
	034-002-00-8									
12	zinc { zinc chromate }				135 mg/kg	2.774	335.561 mg/kg	0.0336 %	✓	
	024-007-00-3									
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				<0.005 mg/kg		<0.005 mg/kg	<0.0000005 %		<LOD
	603-181-00-X	216-653-1	1634-04-4							



#	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				8.04 pH		8.04 pH	8.04 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				0.04 mg/kg		0.0358 mg/kg	0.00000358 %	✓	
		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				0.11 mg/kg		0.0986 mg/kg	0.00000986 %	✓	
		205-912-4	206-44-0							
27	pyrene				0.12 mg/kg		0.108 mg/kg	0.0000108 %	✓	
		204-927-3	129-00-0							
28	benzo[a]anthracene				0.08 mg/kg		0.0717 mg/kg	0.00000717 %	✓	
	601-033-00-9	200-280-6	56-55-3							
29	chrysene				0.09 mg/kg		0.0806 mg/kg	0.00000806 %	✓	
	601-048-00-0	205-923-4	218-01-9							
30	benzo[b]fluoranthene				0.12 mg/kg		0.108 mg/kg	0.0000108 %	✓	
	601-034-00-4	205-911-9	205-99-2							
31	benzo[k]fluoranthene				0.04 mg/kg		0.0358 mg/kg	0.00000358 %	✓	
	601-036-00-5	205-916-6	207-08-9							
32	benzo[a]pyrene; benzo[def]chrysene				0.08 mg/kg		0.0717 mg/kg	0.00000717 %	✓	
	601-032-00-3	200-028-5	50-32-8							
33	indeno[123-cd]pyrene				0.07 mg/kg		0.0627 mg/kg	0.00000627 %	✓	
		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				0.09 mg/kg		0.0806 mg/kg	0.00000806 %	✓	
		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 }				89 mg/kg	1.117	89.035 mg/kg	0.0089 %	✓	
		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:								0.0916 %		

Key

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	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 Determinand - Unless the Determinand is Note 1, the Conversion Factor is used to calculate the compound concentration
<b>&lt;LOD</b>	Below limit of detection
<b>ND</b>	Not detected
CLP: Note 1	Only the metal concentration has been used for classification

**Classification of sample: TP3-19/02/2020-1.50m**

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

**Sample details**

Sample Name: <b>TP3-19/02/2020-1.50m</b>	LoW Code: Chapter:	17: Construction and Demolition Wastes (including excavated soil from contaminated sites)
Moisture content: <b>18.1%</b> (wet weight correction)	Entry:	17 05 04 (Soil and stones other than those mentioned in 17 05 03)

**Hazard properties**

None identified

**Determinands**

Moisture content: 18.1% Wet Weight Moisture Correction applied (MC)

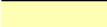



#	Determinand			CLP Note	User entered data	Conv. Factor	Compound conc.		Classification value	MC Applied	Conc. Not Used
	CLP index number	EC Number	CAS Number								
1	antimony { antimony trioxide }				3 mg/kg	1.197	2.941 mg/kg	0.000294 %	✓		
	051-005-00-X	215-175-0	1309-64-4								
2	arsenic { arsenic trioxide }				17.2 mg/kg	1.32	18.599 mg/kg	0.00186 %	✓		
	033-003-00-0	215-481-4	1327-53-3								
3	cadmium { cadmium oxide }				1.1 mg/kg	1.142	1.029 mg/kg	0.000103 %	✓		
	048-002-00-0	215-146-2	1306-19-0								
4	chromium in chromium(III) compounds { chromium(III) oxide }				44.9 mg/kg	1.462	53.746 mg/kg	0.00537 %	✓		
		215-160-9	1308-38-9								
5	chromium in chromium(VI) compounds { chromium(VI) oxide }				<0.3 mg/kg	1.923	<0.577 mg/kg	<0.0000577 %		<LOD	
	024-001-00-0	215-607-8	1333-82-0								
6	copper { dicopper oxide; copper (I) oxide }				38 mg/kg	1.126	35.04 mg/kg	0.0035 %	✓		
	029-002-00-X	215-270-7	1317-39-1								
7	lead { lead chromate }			1	126 mg/kg	1.56	160.964 mg/kg	0.0103 %	✓		
	082-004-00-2	231-846-0	7758-97-6								
8	mercury { mercury dichloride }				<0.1 mg/kg	1.353	<0.135 mg/kg	<0.0000135 %		<LOD	
	080-010-00-X	231-299-8	7487-94-7								
9	molybdenum { molybdenum(VI) oxide }				3.6 mg/kg	1.5	4.423 mg/kg	0.000442 %	✓		
	042-001-00-9	215-204-7	1313-27-5								
10	nickel { nickel chromate }				30.8 mg/kg	2.976	75.077 mg/kg	0.00751 %	✓		
	028-035-00-7	238-766-5	14721-18-7								
11	selenium { selenium compounds with the exception of cadmium sulphoselenide and those specified elsewhere in this Annex }				1 mg/kg	2.554	2.091 mg/kg	0.000209 %	✓		
	034-002-00-8										
12	zinc { zinc chromate }				152 mg/kg	2.774	345.348 mg/kg	0.0345 %	✓		
	024-007-00-3										
13	TPH (C6 to C40) petroleum group		TPH		142 mg/kg		116.298 mg/kg	0.0116 %	✓		
14	tert-butyl methyl ether; MTBE; 2-methoxy-2-methylpropane				<0.005 mg/kg		<0.005 mg/kg	<0.0000005 %		<LOD	
	603-181-00-X	216-653-1	1634-04-4								

#	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				7.72 pH		7.72 pH	7.72 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				0.37 mg/kg		0.303 mg/kg	0.0000303 %		✓
		201-581-5	85-01-8							
25	anthracene				0.09 mg/kg		0.0737 mg/kg	0.00000737 %		✓
		204-371-1	120-12-7							
26	fluoranthene				0.56 mg/kg		0.459 mg/kg	0.0000459 %		✓
		205-912-4	206-44-0							
27	pyrene				0.5 mg/kg		0.41 mg/kg	0.000041 %		✓
		204-927-3	129-00-0							
28	benzo[a]anthracene				0.38 mg/kg		0.311 mg/kg	0.0000311 %		✓
	601-033-00-9	200-280-6	56-55-3							
29	chrysene				0.31 mg/kg		0.254 mg/kg	0.0000254 %		✓
	601-048-00-0	205-923-4	218-01-9							
30	benzo[b]fluoranthene				0.41 mg/kg		0.336 mg/kg	0.0000336 %		✓
	601-034-00-4	205-911-9	205-99-2							
31	benzo[k]fluoranthene				0.16 mg/kg		0.131 mg/kg	0.0000131 %		✓
	601-036-00-5	205-916-6	207-08-9							
32	benzo[a]pyrene; benzo[def]chrysene				0.31 mg/kg		0.254 mg/kg	0.0000254 %		✓
	601-032-00-3	200-028-5	50-32-8							
33	indeno[123-cd]pyrene				0.2 mg/kg		0.164 mg/kg	0.0000164 %		✓
		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				0.23 mg/kg		0.188 mg/kg	0.0000188 %		✓
		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 }				95 mg/kg	1.117	86.87 mg/kg	0.00869 %		✓
		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:								0.085 %		



Key

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	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 Determinand - Unless the Determinand is Note 1, the Conversion Factor is used to calculate the compound concentration
<b>&lt;LOD</b>	Below limit of detection
<b>ND</b>	Not detected
CLP: Note 1	Only the metal concentration has been used for classification

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## Supplementary Hazardous Property Information

**HP 3(i): Flammable** "flammable liquid waste: liquid waste having a flash point below 60°C or waste gas oil, diesel and light heating oils having a flash point > 55°C and <= 75°C"

**Force this Hazardous property to non hazardous because** Solid waste without liquid phase

Hazard Statements hit:

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**Flam. Liq. 3; H226** "Flammable liquid and vapour."

Because of determinand:

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TPH (C6 to C40) petroleum group: (conc.: 0.0116%)

**Classification of sample: TP3-19/02/2020-2.50m**

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

**Sample details**

Sample Name: <b>TP3-19/02/2020-2.50m</b>	LoW Code: Chapter:	17: Construction and Demolition Wastes (including excavated soil from contaminated sites)
Moisture content: <b>15.1%</b> (wet weight correction)	Entry:	17 05 04 (Soil and stones other than those mentioned in 17 05 03)

**Hazard properties**

None identified

**Determinands**

Moisture content: 15.1% 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 }				2	mg/kg	1.197	2.033	mg/kg	0.000203 %	✓	
	051-005-00-X	215-175-0	1309-64-4									
2	arsenic { arsenic trioxide }				25.4	mg/kg	1.32	28.472	mg/kg	0.00285 %	✓	
	033-003-00-0	215-481-4	1327-53-3									
3	cadmium { cadmium oxide }				0.6	mg/kg	1.142	0.582	mg/kg	0.0000582 %	✓	
	048-002-00-0	215-146-2	1306-19-0									
4	chromium in chromium(III) compounds { chromium(III) oxide }				37.8	mg/kg	1.462	46.905	mg/kg	0.00469 %	✓	
		215-160-9	1308-38-9									
5	chromium in chromium(VI) compounds { chromium(VI) oxide }				<0.3	mg/kg	1.923	<0.577	mg/kg	<0.0000577 %		<LOD
	024-001-00-0	215-607-8	1333-82-0									
6	copper { dicopper oxide; copper (I) oxide }				21	mg/kg	1.126	20.073	mg/kg	0.00201 %	✓	
	029-002-00-X	215-270-7	1317-39-1									
7	lead { lead chromate }			1	51	mg/kg	1.56	67.538	mg/kg	0.00433 %	✓	
	082-004-00-2	231-846-0	7758-97-6									
8	mercury { mercury dichloride }				<0.1	mg/kg	1.353	<0.135	mg/kg	<0.0000135 %		<LOD
	080-010-00-X	231-299-8	7487-94-7									
9	molybdenum { molybdenum(VI) oxide }				3.5	mg/kg	1.5	4.458	mg/kg	0.000446 %	✓	
	042-001-00-9	215-204-7	1313-27-5									
10	nickel { nickel chromate }				19.9	mg/kg	2.976	50.284	mg/kg	0.00503 %	✓	
	028-035-00-7	238-766-5	14721-18-7									
11	selenium { selenium compounds with the exception of cadmium sulphoselenide and those specified elsewhere in this Annex }				1	mg/kg	2.554	2.168	mg/kg	0.000217 %	✓	
	034-002-00-8											
12	zinc { zinc chromate }				94	mg/kg	2.774	221.394	mg/kg	0.0221 %	✓	
	024-007-00-3											
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				<0.005	mg/kg		<0.005	mg/kg	<0.0000005 %		<LOD
	603-181-00-X	216-653-1	1634-04-4									



#	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				7.6 pH		7.6 pH	7.6 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				0.05 mg/kg		0.0425 mg/kg	0.00000425 %	✓	
		205-912-4	206-44-0							
27	pyrene				0.05 mg/kg		0.0425 mg/kg	0.00000425 %	✓	
		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 }				55 mg/kg	1.117	52.135 mg/kg	0.00521 %	✓	
		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:								0.0526 %		

Key

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	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 Determinand - Unless the Determinand is Note 1, the Conversion Factor is used to calculate the compound concentration
<b>&lt;LOD</b>	Below limit of detection
<b>ND</b>	Not detected
CLP: Note 1	Only the metal concentration has been used for classification

**Classification of sample: TP4-19/02/2020-0.50m**

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

**Sample details**

Sample Name: <b>TP4-19/02/2020-0.50m</b>	LoW Code: Chapter:	17: Construction and Demolition Wastes (including excavated soil from contaminated sites)
Moisture content: <b>13%</b> (wet weight correction)	Entry:	17 05 04 (Soil and stones other than those mentioned in 17 05 03)

**Hazard properties**

None identified

**Determinands**

Moisture content: 13% Wet Weight Moisture Correction applied (MC)

#	Determinand			CLP Note	User entered data	Conv. Factor	Compound conc.	Classification value	MC Applied	Conc. Not Used
	CLP index number	EC Number	CAS Number							
1	antimony { antimony trioxide }				2 mg/kg	1.197	2.083 mg/kg	0.000208 %	✓	
	051-005-00-X	215-175-0	1309-64-4							
2	arsenic { arsenic trioxide }				20.5 mg/kg	1.32	23.548 mg/kg	0.00235 %	✓	
	033-003-00-0	215-481-4	1327-53-3							
3	cadmium { cadmium oxide }				0.2 mg/kg	1.142	0.199 mg/kg	0.0000199 %	✓	
	048-002-00-0	215-146-2	1306-19-0							
4	chromium in chromium(III) compounds { chromium(III) oxide }				42.2 mg/kg	1.462	53.66 mg/kg	0.00537 %	✓	
		215-160-9	1308-38-9							
5	chromium in chromium(VI) compounds { chromium(VI) oxide }				<0.3 mg/kg	1.923	<0.577 mg/kg	<0.0000577 %		<LOD
	024-001-00-0	215-607-8	1333-82-0							
6	copper { dicopper oxide; copper (I) oxide }				21 mg/kg	1.126	20.57 mg/kg	0.00206 %	✓	
	029-002-00-X	215-270-7	1317-39-1							
7	lead { lead chromate }			1	160 mg/kg	1.56	217.126 mg/kg	0.0139 %	✓	
	082-004-00-2	231-846-0	7758-97-6							
8	mercury { mercury dichloride }				<0.1 mg/kg	1.353	<0.135 mg/kg	<0.0000135 %		<LOD
	080-010-00-X	231-299-8	7487-94-7							
9	molybdenum { molybdenum(VI) oxide }				2.5 mg/kg	1.5	3.263 mg/kg	0.000326 %	✓	
	042-001-00-9	215-204-7	1313-27-5							
10	nickel { nickel chromate }				12.9 mg/kg	2.976	33.403 mg/kg	0.00334 %	✓	
	028-035-00-7	238-766-5	14721-18-7							
11	selenium { selenium compounds with the exception of cadmium sulphoselenide and those specified elsewhere in this Annex }				<1 mg/kg	2.554	<2.554 mg/kg	<0.000255 %		<LOD
	034-002-00-8									
12	zinc { zinc chromate }				94 mg/kg	2.774	226.87 mg/kg	0.0227 %	✓	
	024-007-00-3									
13	TPH (C6 to C40) petroleum group				<52 mg/kg		<52 mg/kg	<0.0052 %		<LOD
			TPH							
14	tert-butyl methyl ether; MTBE; 2-methoxy-2-methylpropane				<0.005 mg/kg		<0.005 mg/kg	<0.0000005 %		<LOD
	603-181-00-X	216-653-1	1634-04-4							



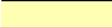





#	Determinand			CLP Note	User entered data	Conv. Factor	Compound conc.	Classification value	MC Applied	Conc. Not Used
	CLP index number	EC Number	CAS Number							
15	benzene				<0.005 mg/kg		<0.005 mg/kg	<0.0000005 %		<LOD
	601-020-00-8	200-753-7	71-43-2							
16	toluene				<0.005 mg/kg		<0.005 mg/kg	<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				8.27 pH		8.27 pH	8.27 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				0.06 mg/kg		0.0522 mg/kg	0.00000522 %	✓	
		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				0.11 mg/kg		0.0957 mg/kg	0.00000957 %	✓	
		205-912-4	206-44-0							
27	pyrene				0.13 mg/kg		0.113 mg/kg	0.0000113 %	✓	
		204-927-3	129-00-0							
28	benzo[a]anthracene				0.07 mg/kg		0.0609 mg/kg	0.00000609 %	✓	
	601-033-00-9	200-280-6	56-55-3							
29	chrysene				0.06 mg/kg		0.0522 mg/kg	0.00000522 %	✓	
	601-048-00-0	205-923-4	218-01-9							
30	benzo[b]fluoranthene				0.06 mg/kg		0.0522 mg/kg	0.00000522 %	✓	
	601-034-00-4	205-911-9	205-99-2							
31	benzo[k]fluoranthene				0.03 mg/kg		0.0261 mg/kg	0.00000261 %	✓	
	601-036-00-5	205-916-6	207-08-9							
32	benzo[a]pyrene; benzo[def]chrysene				0.06 mg/kg		0.0522 mg/kg	0.00000522 %	✓	
	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				0.06 mg/kg		0.0522 mg/kg	0.00000522 %	✓	
		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 }				53 mg/kg	1.117	51.482 mg/kg	0.00515 %	✓	
		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:								0.0611 %		



Key

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	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 Determinand - Unless the Determinand is Note 1, the Conversion Factor is used to calculate the compound concentration
<b>&lt;LOD</b>	Below limit of detection
<b>ND</b>	Not detected
CLP: Note 1	Only the metal concentration has been used for classification

## Classification of sample: TP4-19/02/2020-1.50m

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

### Sample details

Sample Name: <b>TP4-19/02/2020-1.50m</b>	LoW Code: Chapter:	17: Construction and Demolition Wastes (including excavated soil from contaminated sites)
Moisture content: <b>10.7%</b> (wet weight correction)	Entry:	17 05 04 (Soil and stones other than those mentioned in 17 05 03)

### Hazard properties

None identified

### Determinands

Moisture content: 10.7% 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 }				2 mg/kg	1.197	2.138 mg/kg	0.000214 %	✓	
	051-005-00-X	215-175-0	1309-64-4							
2	arsenic { arsenic trioxide }				18.5 mg/kg	1.32	21.812 mg/kg	0.00218 %	✓	
	033-003-00-0	215-481-4	1327-53-3							
3	cadmium { cadmium oxide }				0.4 mg/kg	1.142	0.408 mg/kg	0.0000408 %	✓	
	048-002-00-0	215-146-2	1306-19-0							
4	chromium in chromium(III) compounds { chromium(III) oxide }				42.3 mg/kg	1.462	55.209 mg/kg	0.00552 %	✓	
		215-160-9	1308-38-9							
5	chromium in chromium(VI) compounds { chromium(VI) oxide }				<0.3 mg/kg	1.923	<0.577 mg/kg	<0.0000577 %		<LOD
	024-001-00-0	215-607-8	1333-82-0							
6	copper { dicopper oxide; copper (I) oxide }				22 mg/kg	1.126	22.119 mg/kg	0.00221 %	✓	
	029-002-00-X	215-270-7	1317-39-1							
7	lead { lead chromate }			1	188 mg/kg	1.56	261.868 mg/kg	0.0168 %	✓	
	082-004-00-2	231-846-0	7758-97-6							
8	mercury { mercury dichloride }				<0.1 mg/kg	1.353	<0.135 mg/kg	<0.0000135 %		<LOD
	080-010-00-X	231-299-8	7487-94-7							
9	molybdenum { molybdenum(VI) oxide }				2.8 mg/kg	1.5	3.751 mg/kg	0.000375 %	✓	
	042-001-00-9	215-204-7	1313-27-5							
10	nickel { nickel chromate }				13.3 mg/kg	2.976	35.349 mg/kg	0.00353 %	✓	
	028-035-00-7	238-766-5	14721-18-7							
11	selenium { selenium compounds with the exception of cadmium sulphoselenide and those specified elsewhere in this Annex }				<1 mg/kg	2.554	<2.554 mg/kg	<0.000255 %		<LOD
	034-002-00-8									
12	zinc { zinc chromate }				119 mg/kg	2.774	294.8 mg/kg	0.0295 %	✓	
	024-007-00-3									
13	TPH (C6 to C40) petroleum group		TPH		84 mg/kg		75.012 mg/kg	0.0075 %	✓	
14	tert-butyl methyl ether; MTBE; 2-methoxy-2-methylpropane				<0.005 mg/kg		<0.005 mg/kg	<0.0000005 %		<LOD
	603-181-00-X	216-653-1	1634-04-4							



#	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				8.23 pH		8.23 pH	8.23 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				0.06 mg/kg		0.0536 mg/kg	0.00000536 %	✓	
		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				0.12 mg/kg		0.107 mg/kg	0.0000107 %	✓	
		205-912-4	206-44-0							
27	pyrene				0.09 mg/kg		0.0804 mg/kg	0.00000804 %	✓	
		204-927-3	129-00-0							
28	benzo[a]anthracene				0.09 mg/kg		0.0804 mg/kg	0.00000804 %	✓	
	601-033-00-9	200-280-6	56-55-3							
29	chrysene				0.06 mg/kg		0.0536 mg/kg	0.00000536 %	✓	
	601-048-00-0	205-923-4	218-01-9							
30	benzo[b]fluoranthene				0.08 mg/kg		0.0714 mg/kg	0.00000714 %	✓	
	601-034-00-4	205-911-9	205-99-2							
31	benzo[k]fluoranthene				0.03 mg/kg		0.0268 mg/kg	0.00000268 %	✓	
	601-036-00-5	205-916-6	207-08-9							
32	benzo[a]pyrene; benzo[def]chrysene				0.06 mg/kg		0.0536 mg/kg	0.00000536 %	✓	
	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		0.0357 mg/kg	0.00000357 %	✓	
		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 }				66 mg/kg	1.117	65.805 mg/kg	0.00658 %	✓	
		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:								0.075 %		

Key

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	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 Determinand - Unless the Determinand is Note 1, the Conversion Factor is used to calculate the compound concentration
<b>&lt;LOD</b>	Below limit of detection
<b>ND</b>	Not detected

CLP: Note 1 Only the metal concentration has been used for classification

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### Supplementary Hazardous Property Information

**HP 3(i): Flammable** "flammable liquid waste: liquid waste having a flash point below 60°C or waste gas oil, diesel and light heating oils having a flash point > 55°C and <= 75°C"

**Force this Hazardous property to non hazardous because** Solid waste without liquid phase

Hazard Statements hit:

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**Flam. Liq. 3; H226** "Flammable liquid and vapour."

Because of determinand:

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TPH (C6 to C40) petroleum group: (conc.: 0.0075%)

**Classification of sample: TP4-19/02/2020-2.50m**

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

**Sample details**

Sample Name: <b>TP4-19/02/2020-2.50m</b>	LoW Code: Chapter:	17: Construction and Demolition Wastes (including excavated soil from contaminated sites)
Moisture content: <b>18.3%</b> (wet weight correction)	Entry:	17 05 04 (Soil and stones other than those mentioned in 17 05 03)

**Hazard properties**

None identified

**Determinands**

Moisture content: 18.3% 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 }				2 mg/kg	1.197	1.956 mg/kg	0.000196 %	✓	
	051-005-00-X	215-175-0	1309-64-4							
2	arsenic { arsenic trioxide }				23.1 mg/kg	1.32	24.918 mg/kg	0.00249 %	✓	
	033-003-00-0	215-481-4	1327-53-3							
3	cadmium { cadmium oxide }				1.3 mg/kg	1.142	1.213 mg/kg	0.000121 %	✓	
	048-002-00-0	215-146-2	1306-19-0							
4	chromium in chromium(III) compounds { chromium(III) oxide }				53.1 mg/kg	1.462	63.406 mg/kg	0.00634 %	✓	
		215-160-9	1308-38-9							
5	chromium in chromium(VI) compounds { chromium(VI) oxide }				<0.3 mg/kg	1.923	<0.577 mg/kg	<0.0000577 %		<LOD
	024-001-00-0	215-607-8	1333-82-0							
6	copper { dicopper oxide; copper (I) oxide }				30 mg/kg	1.126	27.596 mg/kg	0.00276 %	✓	
	029-002-00-X	215-270-7	1317-39-1							
7	lead { lead chromate }			1	56 mg/kg	1.56	71.365 mg/kg	0.00458 %	✓	
	082-004-00-2	231-846-0	7758-97-6							
8	mercury { mercury dichloride }				<0.1 mg/kg	1.353	<0.135 mg/kg	<0.0000135 %		<LOD
	080-010-00-X	231-299-8	7487-94-7							
9	molybdenum { molybdenum(VI) oxide }				3.9 mg/kg	1.5	4.78 mg/kg	0.000478 %	✓	
	042-001-00-9	215-204-7	1313-27-5							
10	nickel { nickel chromate }				37.7 mg/kg	2.976	91.672 mg/kg	0.00917 %	✓	
	028-035-00-7	238-766-5	14721-18-7							
11	selenium { selenium compounds with the exception of cadmium sulphoselenide and those specified elsewhere in this Annex }				<1 mg/kg	2.554	<2.554 mg/kg	<0.000255 %		<LOD
	034-002-00-8									
12	zinc { zinc chromate }				112 mg/kg	2.774	253.846 mg/kg	0.0254 %	✓	
	024-007-00-3									
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				<0.005 mg/kg		<0.005 mg/kg	<0.0000005 %		<LOD
	603-181-00-X	216-653-1	1634-04-4							





#	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	<0.000005 %		<LOD
	601-020-00-8	200-753-7	71-43-2							
16	toluene				<0.005 mg/kg		<0.005 mg/kg	<0.000005 %		<LOD
	601-021-00-3	203-625-9	108-88-3							
17	ethylbenzene				<0.005 mg/kg		<0.005 mg/kg	<0.000005 %		<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				8.18 pH		8.18 pH	8.18 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 }				74 mg/kg	1.117	67.502 mg/kg	0.00675 %	✓	
		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:								0.064 %		



Key

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	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 Determinand - Unless the Determinand is Note 1, the Conversion Factor is used to calculate the compound concentration
<b>&lt;LOD</b>	Below limit of detection
<b>ND</b>	Not detected
CLP: Note 1	Only the metal concentration has been used for classification

**Classification of sample: TP5-19/02/2020-0.50m**

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

**Sample details**

Sample Name: <b>TP5-19/02/2020-0.50m</b>	LoW Code: Chapter:	17: Construction and Demolition Wastes (including excavated soil from contaminated sites)
Moisture content: <b>11.8%</b> (wet weight correction)	Entry:	17 05 04 (Soil and stones other than those mentioned in 17 05 03)

**Hazard properties**

None identified

**Determinands**

Moisture content: 11.8% 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 }				13 mg/kg	1.197	13.726 mg/kg	0.00137 %	✓	
	051-005-00-X	215-175-0	1309-64-4							
2	arsenic { arsenic trioxide }				26.8 mg/kg	1.32	31.209 mg/kg	0.00312 %	✓	
	033-003-00-0	215-481-4	1327-53-3							
3	cadmium { cadmium oxide }				0.3 mg/kg	1.142	0.302 mg/kg	0.0000302 %	✓	
	048-002-00-0	215-146-2	1306-19-0							
4	chromium in chromium(III) compounds { chromium(III) oxide }				47.5 mg/kg	1.462	61.232 mg/kg	0.00612 %	✓	
		215-160-9	1308-38-9							
5	chromium in chromium(VI) compounds { chromium(VI) oxide }				<0.3 mg/kg	1.923	<0.577 mg/kg	<0.0000577 %		<LOD
	024-001-00-0	215-607-8	1333-82-0							
6	copper { dicopper oxide; copper (I) oxide }				27 mg/kg	1.126	26.812 mg/kg	0.00268 %	✓	
	029-002-00-X	215-270-7	1317-39-1							
7	lead { lead chromate }			1	783 mg/kg	1.56	1077.218 mg/kg	0.0691 %	✓	
	082-004-00-2	231-846-0	7758-97-6							
8	mercury { mercury dichloride }				<0.1 mg/kg	1.353	<0.135 mg/kg	<0.0000135 %		<LOD
	080-010-00-X	231-299-8	7487-94-7							
9	molybdenum { molybdenum(VI) oxide }				3.2 mg/kg	1.5	4.234 mg/kg	0.000423 %	✓	
	042-001-00-9	215-204-7	1313-27-5							
10	nickel { nickel chromate }				11 mg/kg	2.976	28.876 mg/kg	0.00289 %	✓	
	028-035-00-7	238-766-5	14721-18-7							
11	selenium { selenium compounds with the exception of cadmium sulphoselenide and those specified elsewhere in this Annex }				<1 mg/kg	2.554	<2.554 mg/kg	<0.000255 %		<LOD
	034-002-00-8									
12	zinc { zinc chromate }				351 mg/kg	2.774	858.826 mg/kg	0.0859 %	✓	
	024-007-00-3									
13	TPH (C6 to C40) petroleum group		TPH		636 mg/kg		560.952 mg/kg	0.0561 %	✓	
14	tert-butyl methyl ether; MTBE; 2-methoxy-2-methylpropane				<0.005 mg/kg		<0.005 mg/kg	<0.0000005 %		<LOD
	603-181-00-X	216-653-1	1634-04-4							



#	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				8.21 pH		8.21 pH	8.21 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				0.1 mg/kg		0.0882 mg/kg	0.00000882 %	✓	
		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				0.12 mg/kg		0.106 mg/kg	0.0000106 %	✓	
		205-912-4	206-44-0							
27	pyrene				0.26 mg/kg		0.229 mg/kg	0.0000229 %	✓	
		204-927-3	129-00-0							
28	benzo[a]anthracene				0.08 mg/kg		0.0706 mg/kg	0.00000706 %	✓	
	601-033-00-9	200-280-6	56-55-3							
29	chrysene				0.07 mg/kg		0.0617 mg/kg	0.00000617 %	✓	
	601-048-00-0	205-923-4	218-01-9							
30	benzo[b]fluoranthene				0.1 mg/kg		0.0882 mg/kg	0.00000882 %	✓	
	601-034-00-4	205-911-9	205-99-2							
31	benzo[k]fluoranthene				0.04 mg/kg		0.0353 mg/kg	0.00000353 %	✓	
	601-036-00-5	205-916-6	207-08-9							
32	benzo[a]pyrene; benzo[def]chrysene				0.07 mg/kg		0.0617 mg/kg	0.00000617 %	✓	
	601-032-00-3	200-028-5	50-32-8							
33	indeno[123-cd]pyrene				0.06 mg/kg		0.0529 mg/kg	0.00000529 %	✓	
		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				0.06 mg/kg		0.0529 mg/kg	0.00000529 %	✓	
		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 }				112 mg/kg	1.117	110.293 mg/kg	0.011 %	✓	
		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:								0.239 %		

Key

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	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 Determinand - Unless the Determinand is Note 1, the Conversion Factor is used to calculate the compound concentration
<b>&lt;LOD</b>	Below limit of detection
<b>ND</b>	Not detected

CLP: Note 1 Only the metal concentration has been used for classification

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### Supplementary Hazardous Property Information

**HP 3(i): Flammable** "flammable liquid waste: liquid waste having a flash point below 60°C or waste gas oil, diesel and light heating oils having a flash point > 55°C and <= 75°C"

**Force this Hazardous property to non hazardous because** Solid waste without liquid phase

Hazard Statements hit:

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**Flam. Liq. 3; H226** "Flammable liquid and vapour."

Because of determinand:

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TPH (C6 to C40) petroleum group: (conc.: 0.0561%)

**Classification of sample: TP5-19/02/2020-1.50m**

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

**Sample details**

Sample Name: <b>TP5-19/02/2020-1.50m</b>	LoW Code: Chapter:	17: Construction and Demolition Wastes (including excavated soil from contaminated sites)
Moisture content: <b>14.3%</b> (wet weight correction)	Entry:	17 05 04 (Soil and stones other than those mentioned in 17 05 03)

**Hazard properties**

None identified

**Determinands**

Moisture content: 14.3% 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 }				2 mg/kg	1.197	2.052 mg/kg	0.000205 %	✓		
	051-005-00-X	215-175-0	1309-64-4								
2	arsenic { arsenic trioxide }				14.9 mg/kg	1.32	16.86 mg/kg	0.00169 %	✓		
	033-003-00-0	215-481-4	1327-53-3								
3	cadmium { cadmium oxide }				0.3 mg/kg	1.142	0.294 mg/kg	0.0000294 %	✓		
	048-002-00-0	215-146-2	1306-19-0								
4	chromium in chromium(III) compounds { chromium(III) oxide }				51.1 mg/kg	1.462	64.005 mg/kg	0.0064 %	✓		
		215-160-9	1308-38-9								
5	chromium in chromium(VI) compounds { chromium(VI) oxide }				<0.3 mg/kg	1.923	<0.577 mg/kg	<0.0000577 %		<LOD	
	024-001-00-0	215-607-8	1333-82-0								
6	copper { dicopper oxide; copper (I) oxide }				22 mg/kg	1.126	21.227 mg/kg	0.00212 %	✓		
	029-002-00-X	215-270-7	1317-39-1								
7	lead { lead chromate }			1	104 mg/kg	1.56	139.023 mg/kg	0.00891 %	✓		
	082-004-00-2	231-846-0	7758-97-6								
8	mercury { mercury dichloride }				<0.1 mg/kg	1.353	<0.135 mg/kg	<0.0000135 %		<LOD	
	080-010-00-X	231-299-8	7487-94-7								
9	molybdenum { molybdenum(VI) oxide }				3.1 mg/kg	1.5	3.986 mg/kg	0.000399 %	✓		
	042-001-00-9	215-204-7	1313-27-5								
10	nickel { nickel chromate }				18.1 mg/kg	2.976	46.167 mg/kg	0.00462 %	✓		
	028-035-00-7	238-766-5	14721-18-7								
11	selenium { selenium compounds with the exception of cadmium sulphoselenide and those specified elsewhere in this Annex }				<1 mg/kg	2.554	<2.554 mg/kg	<0.000255 %		<LOD	
	034-002-00-8										
12	zinc { zinc chromate }				104 mg/kg	2.774	247.254 mg/kg	0.0247 %	✓		
	024-007-00-3										
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				<0.005 mg/kg		<0.005 mg/kg	<0.0000005 %		<LOD	
	603-181-00-X	216-653-1	1634-04-4								



#	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				8.02 pH		8.02 pH	8.02 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				0.09 mg/kg		0.0771 mg/kg	0.00000771 %	✓	
		205-912-4	206-44-0							
27	pyrene				0.08 mg/kg		0.0686 mg/kg	0.00000686 %	✓	
		204-927-3	129-00-0							
28	benzo[a]anthracene				0.12 mg/kg		0.103 mg/kg	0.0000103 %	✓	
	601-033-00-9	200-280-6	56-55-3							
29	chrysene				0.07 mg/kg		0.06 mg/kg	0.000006 %	✓	
	601-048-00-0	205-923-4	218-01-9							
30	benzo[b]fluoranthene				0.1 mg/kg		0.0857 mg/kg	0.00000857 %	✓	
	601-034-00-4	205-911-9	205-99-2							
31	benzo[k]fluoranthene				0.04 mg/kg		0.0343 mg/kg	0.00000343 %	✓	
	601-036-00-5	205-916-6	207-08-9							
32	benzo[a]pyrene; benzo[def]chrysene				0.06 mg/kg		0.0514 mg/kg	0.00000514 %	✓	
	601-032-00-3	200-028-5	50-32-8							
33	indeno[123-cd]pyrene				0.05 mg/kg		0.0429 mg/kg	0.00000428 %	✓	
		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				0.05 mg/kg		0.0429 mg/kg	0.00000428 %	✓	
		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 }				53 mg/kg	1.117	50.713 mg/kg	0.00507 %	✓	
		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:								0.0599 %		



Key

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	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 Determinand - Unless the Determinand is Note 1, the Conversion Factor is used to calculate the compound concentration
<b>&lt;LOD</b>	Below limit of detection
<b>ND</b>	Not detected
CLP: Note 1	Only the metal concentration has been used for classification

**Classification of sample: TP6-19/02/2020-0.50m**

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

**Sample details**

Sample Name: <b>TP6-19/02/2020-0.50m</b>	LoW Code: Chapter:	17: Construction and Demolition Wastes (including excavated soil from contaminated sites)
Moisture content: <b>13.3%</b> (wet weight correction)	Entry:	17 05 04 (Soil and stones other than those mentioned in 17 05 03)

**Hazard properties**

None identified

**Determinands**

Moisture content: 13.3% Wet Weight Moisture Correction applied (MC)

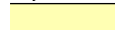



#	Determinand			CLP Note	User entered data	Conv. Factor	Compound conc.	Classification value	MC Applied	Conc. Not Used
	CLP index number	EC Number	CAS Number							
1	antimony { antimony trioxide }				2 mg/kg	1.197	2.076 mg/kg	0.000208 %	✓	
	051-005-00-X	215-175-0	1309-64-4							
2	arsenic { arsenic trioxide }				12.1 mg/kg	1.32	13.851 mg/kg	0.00139 %	✓	
	033-003-00-0	215-481-4	1327-53-3							
3	cadmium { cadmium oxide }				0.5 mg/kg	1.142	0.495 mg/kg	0.0000495 %	✓	
	048-002-00-0	215-146-2	1306-19-0							
4	chromium in chromium(III) compounds { chromium(III) oxide }				40.4 mg/kg	1.462	51.194 mg/kg	0.00512 %	✓	
		215-160-9	1308-38-9							
5	chromium in chromium(VI) compounds { chromium(VI) oxide }				<0.3 mg/kg	1.923	<0.577 mg/kg	<0.0000577 %		<LOD
	024-001-00-0	215-607-8	1333-82-0							
6	copper { dicopper oxide; copper (I) oxide }				23 mg/kg	1.126	22.451 mg/kg	0.00225 %	✓	
	029-002-00-X	215-270-7	1317-39-1							
7	lead { lead chromate }			1	73 mg/kg	1.56	98.722 mg/kg	0.00633 %	✓	
	082-004-00-2	231-846-0	7758-97-6							
8	mercury { mercury dichloride }				<0.1 mg/kg	1.353	<0.135 mg/kg	<0.0000135 %		<LOD
	080-010-00-X	231-299-8	7487-94-7							
9	molybdenum { molybdenum(VI) oxide }				2.4 mg/kg	1.5	3.122 mg/kg	0.000312 %	✓	
	042-001-00-9	215-204-7	1313-27-5							
10	nickel { nickel chromate }				21.8 mg/kg	2.976	56.253 mg/kg	0.00563 %	✓	
	028-035-00-7	238-766-5	14721-18-7							
11	selenium { selenium compounds with the exception of cadmium sulphoselenide and those specified elsewhere in this Annex }				<1 mg/kg	2.554	<2.554 mg/kg	<0.000255 %		<LOD
	034-002-00-8									
12	zinc { zinc chromate }				136 mg/kg	2.774	327.105 mg/kg	0.0327 %	✓	
	024-007-00-3									
13	TPH (C6 to C40) petroleum group		TPH		428 mg/kg		371.076 mg/kg	0.0371 %	✓	
14	tert-butyl methyl ether; MTBE; 2-methoxy-2-methylpropane				<0.005 mg/kg		<0.005 mg/kg	<0.0000005 %		<LOD
	603-181-00-X	216-653-1	1634-04-4							



#	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				8.07 pH		8.07 pH	8.07 pH		
			PH							
20	naphthalene				0.3 mg/kg		0.26 mg/kg	0.000026 %	✓	
	601-052-00-2	202-049-5	91-20-3							
21	acenaphthylene				0.03 mg/kg		0.026 mg/kg	0.0000026 %	✓	
		205-917-1	208-96-8							
22	acenaphthene				0.43 mg/kg		0.373 mg/kg	0.0000373 %	✓	
		201-469-6	83-32-9							
23	fluorene				0.32 mg/kg		0.277 mg/kg	0.0000277 %	✓	
		201-695-5	86-73-7							
24	phenanthrene				2.39 mg/kg		2.072 mg/kg	0.000207 %	✓	
		201-581-5	85-01-8							
25	anthracene				0.36 mg/kg		0.312 mg/kg	0.0000312 %	✓	
		204-371-1	120-12-7							
26	fluoranthene				2.11 mg/kg		1.829 mg/kg	0.000183 %	✓	
		205-912-4	206-44-0							
27	pyrene				1.86 mg/kg		1.613 mg/kg	0.000161 %	✓	
		204-927-3	129-00-0							
28	benzo[a]anthracene				0.65 mg/kg		0.564 mg/kg	0.0000564 %	✓	
	601-033-00-9	200-280-6	56-55-3							
29	chrysene				0.7 mg/kg		0.607 mg/kg	0.0000607 %	✓	
	601-048-00-0	205-923-4	218-01-9							
30	benzo[b]fluoranthene				0.85 mg/kg		0.737 mg/kg	0.0000737 %	✓	
	601-034-00-4	205-911-9	205-99-2							
31	benzo[k]fluoranthene				0.33 mg/kg		0.286 mg/kg	0.0000286 %	✓	
	601-036-00-5	205-916-6	207-08-9							
32	benzo[a]pyrene; benzo[def]chrysene				0.62 mg/kg		0.538 mg/kg	0.0000538 %	✓	
	601-032-00-3	200-028-5	50-32-8							
33	indeno[123-cd]pyrene				0.37 mg/kg		0.321 mg/kg	0.0000321 %	✓	
		205-893-2	193-39-5							
34	dibenz[a,h]anthracene				0.12 mg/kg		0.104 mg/kg	0.0000104 %	✓	
	601-041-00-2	200-181-8	53-70-3							
35	benzo[ghi]perylene				0.46 mg/kg		0.399 mg/kg	0.0000399 %	✓	
		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 }				85 mg/kg	1.117	82.281 mg/kg	0.00823 %	✓	
		215-127-9	1304-28-5							
38	coronene				0.09 mg/kg		0.078 mg/kg	0.0000078 %	✓	
		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:								0.101 %		

Key

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	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 Determinand - Unless the Determinand is Note 1, the Conversion Factor is used to calculate the compound concentration
<b>&lt;LOD</b>	Below limit of detection
<b>ND</b>	Not detected

CLP: Note 1 Only the metal concentration has been used for classification

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### Supplementary Hazardous Property Information

**HP 3(i): Flammable** "flammable liquid waste: liquid waste having a flash point below 60°C or waste gas oil, diesel and light heating oils having a flash point > 55°C and <= 75°C"

**Force this Hazardous property to non hazardous because** Solid waste without liquid phase

Hazard Statements hit:

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**Flam. Liq. 3; H226** "Flammable liquid and vapour."

Because of determinand:

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TPH (C6 to C40) petroleum group: (conc.: 0.0371%)

**Classification of sample: TP6-19/02/2020-1.50m**

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

**Sample details**

Sample Name: <b>TP6-19/02/2020-1.50m</b>	LoW Code: Chapter:	17: Construction and Demolition Wastes (including excavated soil from contaminated sites)
Moisture content: <b>10.1%</b> (wet weight correction)	Entry:	17 05 04 (Soil and stones other than those mentioned in 17 05 03)

**Hazard properties**

None identified

**Determinands**

Moisture content: 10.1% 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 }				<1	mg/kg	1.197	<1.197	mg/kg	<0.00012 %		<LOD
	051-005-00-X	215-175-0	1309-64-4									
2	arsenic { arsenic trioxide }				20.4	mg/kg	1.32	24.214	mg/kg	0.00242 %	✓	
	033-003-00-0	215-481-4	1327-53-3									
3	cadmium { cadmium oxide }				<0.1	mg/kg	1.142	<0.114	mg/kg	<0.0000114 %		<LOD
	048-002-00-0	215-146-2	1306-19-0									
4	chromium in chromium(III) compounds { chromium(III) oxide }				35.3	mg/kg	1.462	46.382	mg/kg	0.00464 %	✓	
		215-160-9	1308-38-9									
5	chromium in chromium(VI) compounds { chromium(VI) oxide }				<0.3	mg/kg	1.923	<0.577	mg/kg	<0.0000577 %		<LOD
	024-001-00-0	215-607-8	1333-82-0									
6	copper { dicopper oxide; copper (I) oxide }				41	mg/kg	1.126	41.499	mg/kg	0.00415 %	✓	
	029-002-00-X	215-270-7	1317-39-1									
7	lead { lead chromate }			1	15	mg/kg	1.56	21.034	mg/kg	0.00135 %	✓	
	082-004-00-2	231-846-0	7758-97-6									
8	mercury { mercury dichloride }				<0.1	mg/kg	1.353	<0.135	mg/kg	<0.0000135 %		<LOD
	080-010-00-X	231-299-8	7487-94-7									
9	molybdenum { molybdenum(VI) oxide }				2.1	mg/kg	1.5	2.832	mg/kg	0.000283 %	✓	
	042-001-00-9	215-204-7	1313-27-5									
10	nickel { nickel chromate }				4.7	mg/kg	2.976	12.576	mg/kg	0.00126 %	✓	
	028-035-00-7	238-766-5	14721-18-7									
11	selenium { selenium compounds with the exception of cadmium sulphoselenide and those specified elsewhere in this Annex }				<1	mg/kg	2.554	<2.554	mg/kg	<0.000255 %		<LOD
	034-002-00-8											
12	zinc { zinc chromate }				40	mg/kg	2.774	99.758	mg/kg	0.00998 %	✓	
	024-007-00-3											
13	TPH (C6 to C40) petroleum group				<52	mg/kg		<52	mg/kg	<0.0052 %		<LOD
			TPH									
14	tert-butyl methyl ether; MTBE; 2-methoxy-2-methylpropane				<0.005	mg/kg		<0.005	mg/kg	<0.0000005 %		<LOD
	603-181-00-X	216-653-1	1634-04-4									



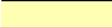





#	Determinand			CLP Note	User entered data	Conv. Factor	Compound conc.	Classification value	MC Applied	Conc. Not Used
	CLP index number	EC Number	CAS Number							
15	benzene				<0.005 mg/kg		<0.005 mg/kg	<0.000005 %		<LOD
	601-020-00-8	200-753-7	71-43-2							
16	toluene				<0.005 mg/kg		<0.005 mg/kg	<0.000005 %		<LOD
	601-021-00-3	203-625-9	108-88-3							
17	ethylbenzene				<0.005 mg/kg		<0.005 mg/kg	<0.000005 %		<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				8.22 pH		8.22 pH	8.22 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				0.06 mg/kg		0.0539 mg/kg	0.00000539 %	✓	
		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				0.06 mg/kg		0.0539 mg/kg	0.00000539 %	✓	
		205-912-4	206-44-0							
27	pyrene				0.04 mg/kg		0.036 mg/kg	0.0000036 %	✓	
		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 }				17 mg/kg	1.117	17.064 mg/kg	0.00171 %	✓	
		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:								0.0316 %		



Key

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	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 Determinand - Unless the Determinand is Note 1, the Conversion Factor is used to calculate the compound concentration
<b>&lt;LOD</b>	Below limit of detection
<b>ND</b>	Not detected
CLP: Note 1	Only the metal concentration has been used for classification

## Classification of sample: TP7-19/02/2020-0.50m

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

### Sample details

Sample Name: <b>TP7-19/02/2020-0.50m</b>	LoW Code: Chapter:	17: Construction and Demolition Wastes (including excavated soil from contaminated sites)
Moisture content: <b>12.2%</b> (wet weight correction)	Entry:	17 05 04 (Soil and stones other than those mentioned in 17 05 03)

### Hazard properties

None identified

### Determinands

Moisture content: 12.2% Wet Weight Moisture Correction applied (MC)

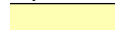



#	Determinand			CLP Note	User entered data		Conv. Factor	Compound conc.		Classification value	MC Applied	Conc. Not Used
	CLP index number	EC Number	CAS Number									
1	antimony { antimony trioxide }				1	mg/kg	1.197	1.051	mg/kg	0.000105 %	✓	
	051-005-00-X	215-175-0	1309-64-4									
2	arsenic { arsenic trioxide }				26.4	mg/kg	1.32	30.604	mg/kg	0.00306 %	✓	
	033-003-00-0	215-481-4	1327-53-3									
3	cadmium { cadmium oxide }				0.2	mg/kg	1.142	0.201	mg/kg	0.0000201 %	✓	
	048-002-00-0	215-146-2	1306-19-0									
4	chromium in chromium(III) compounds { chromium(III) oxide }				50	mg/kg	1.462	64.162	mg/kg	0.00642 %	✓	
		215-160-9	1308-38-9									
5	chromium in chromium(VI) compounds { chromium(VI) oxide }				<0.3	mg/kg	1.923	<0.577	mg/kg	<0.0000577 %		<LOD
	024-001-00-0	215-607-8	1333-82-0									
6	copper { dicopper oxide; copper (I) oxide }				22	mg/kg	1.126	21.748	mg/kg	0.00217 %	✓	
	029-002-00-X	215-270-7	1317-39-1									
7	lead { lead chromate }			1	25	mg/kg	1.56	34.238	mg/kg	0.00219 %	✓	
	082-004-00-2	231-846-0	7758-97-6									
8	mercury { mercury dichloride }				<0.1	mg/kg	1.353	<0.135	mg/kg	<0.0000135 %		<LOD
	080-010-00-X	231-299-8	7487-94-7									
9	molybdenum { molybdenum(VI) oxide }				2.1	mg/kg	1.5	2.766	mg/kg	0.000277 %	✓	
	042-001-00-9	215-204-7	1313-27-5									
10	nickel { nickel chromate }				29.5	mg/kg	2.976	77.088	mg/kg	0.00771 %	✓	
	028-035-00-7	238-766-5	14721-18-7									
11	selenium { selenium compounds with the exception of cadmium sulphoselenide and those specified elsewhere in this Annex }				1	mg/kg	2.554	2.242	mg/kg	0.000224 %	✓	
	034-002-00-8											
12	zinc { zinc chromate }				99	mg/kg	2.774	241.134	mg/kg	0.0241 %	✓	
	024-007-00-3											
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				<0.005	mg/kg		<0.005	mg/kg	<0.0000005 %		<LOD
	603-181-00-X	216-653-1	1634-04-4									



#	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				7.99 pH		7.99 pH	7.99 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				0.05 mg/kg		0.0439 mg/kg	0.00000439 %	✓	
		205-912-4	206-44-0							
27	pyrene				0.03 mg/kg		0.0263 mg/kg	0.00000263 %	✓	
		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 }				63 mg/kg	1.117	61.758 mg/kg	0.00618 %	✓	
		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

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	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 Determinand - Unless the Determinand is Note 1, the Conversion Factor is used to calculate the compound concentration
<b>&lt;LOD</b>	Below limit of detection
<b>ND</b>	Not detected
CLP: Note 1	Only the metal concentration has been used for classification

**Classification of sample: TP8-20/02/2020-0.50m**

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

**Sample details**

Sample Name: <b>TP8-20/02/2020-0.50m</b>	LoW Code: Chapter:	17: Construction and Demolition Wastes (including excavated soil from contaminated sites)
Moisture content: <b>15.1%</b> (wet weight correction)	Entry:	17 05 04 (Soil and stones other than those mentioned in 17 05 03)

**Hazard properties**

None identified

**Determinands**

Moisture content: 15.1% 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 }				<1 mg/kg	1.197	<1.197 mg/kg	<0.00012 %			<LOD
	051-005-00-X	215-175-0	1309-64-4								
2	arsenic { arsenic trioxide }				16.5 mg/kg	1.32	18.496 mg/kg	0.00185 %		✓	
	033-003-00-0	215-481-4	1327-53-3								
3	cadmium { cadmium oxide }				0.3 mg/kg	1.142	0.291 mg/kg	0.0000291 %		✓	
	048-002-00-0	215-146-2	1306-19-0								
4	chromium in chromium(III) compounds { chromium(III) oxide }				46.1 mg/kg	1.462	57.204 mg/kg	0.00572 %		✓	
		215-160-9	1308-38-9								
5	chromium in chromium(VI) compounds { chromium(VI) oxide }				<0.3 mg/kg	1.923	<0.577 mg/kg	<0.0000577 %			<LOD
	024-001-00-0	215-607-8	1333-82-0								
6	copper { dicopper oxide; copper (I) oxide }				19 mg/kg	1.126	18.162 mg/kg	0.00182 %		✓	
	029-002-00-X	215-270-7	1317-39-1								
7	lead { lead chromate }			1	85 mg/kg	1.56	112.564 mg/kg	0.00722 %		✓	
	082-004-00-2	231-846-0	7758-97-6								
8	mercury { mercury dichloride }				<0.1 mg/kg	1.353	<0.135 mg/kg	<0.0000135 %			<LOD
	080-010-00-X	231-299-8	7487-94-7								
9	molybdenum { molybdenum(VI) oxide }				3.9 mg/kg	1.5	4.967 mg/kg	0.000497 %		✓	
	042-001-00-9	215-204-7	1313-27-5								
10	nickel { nickel chromate }				13.1 mg/kg	2.976	33.102 mg/kg	0.00331 %		✓	
	028-035-00-7	238-766-5	14721-18-7								
11	selenium { selenium compounds with the exception of cadmium sulphoselenide and those specified elsewhere in this Annex }				1 mg/kg	2.554	2.168 mg/kg	0.000217 %		✓	
	034-002-00-8										
12	zinc { zinc chromate }				121 mg/kg	2.774	284.985 mg/kg	0.0285 %		✓	
	024-007-00-3										
13	TPH (C6 to C40) petroleum group				<52 mg/kg		<52 mg/kg	<0.0052 %			<LOD
			TPH								
14	tert-butyl methyl ether; MTBE; 2-methoxy-2-methylpropane				<0.005 mg/kg		<0.005 mg/kg	<0.0000005 %			<LOD
	603-181-00-X	216-653-1	1634-04-4								





#	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	<0.000005 %		<LOD
	601-020-00-8	200-753-7	71-43-2							
16	toluene				<0.005 mg/kg		<0.005 mg/kg	<0.000005 %		<LOD
	601-021-00-3	203-625-9	108-88-3							
17	ethylbenzene				<0.005 mg/kg		<0.005 mg/kg	<0.000005 %		<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				7.23 pH		7.23 pH	7.23 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				0.2 mg/kg		0.17 mg/kg	0.000017 %		✓
		201-581-5	85-01-8							
25	anthracene				0.08 mg/kg		0.0679 mg/kg	0.00000679 %		✓
		204-371-1	120-12-7							
26	fluoranthene				0.93 mg/kg		0.79 mg/kg	0.000079 %		✓
		205-912-4	206-44-0							
27	pyrene				0.79 mg/kg		0.671 mg/kg	0.0000671 %		✓
		204-927-3	129-00-0							
28	benzo[a]anthracene				0.55 mg/kg		0.467 mg/kg	0.0000467 %		✓
	601-033-00-9	200-280-6	56-55-3							
29	chrysene				0.46 mg/kg		0.391 mg/kg	0.0000391 %		✓
	601-048-00-0	205-923-4	218-01-9							
30	benzo[b]fluoranthene				0.73 mg/kg		0.62 mg/kg	0.000062 %		✓
	601-034-00-4	205-911-9	205-99-2							
31	benzo[k]fluoranthene				0.28 mg/kg		0.238 mg/kg	0.0000238 %		✓
	601-036-00-5	205-916-6	207-08-9							
32	benzo[a]pyrene; benzo[def]chrysene				0.55 mg/kg		0.467 mg/kg	0.0000467 %		✓
	601-032-00-3	200-028-5	50-32-8							
33	indeno[123-cd]pyrene				0.35 mg/kg		0.297 mg/kg	0.0000297 %		✓
		205-893-2	193-39-5							
34	dibenz[a,h]anthracene				0.07 mg/kg		0.0594 mg/kg	0.00000594 %		✓
	601-041-00-2	200-181-8	53-70-3							
35	benzo[ghi]perylene				0.32 mg/kg		0.272 mg/kg	0.0000272 %		✓
		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	63.51 mg/kg	0.00635 %		✓
		215-127-9	1304-28-5							
38	coronene				0.07 mg/kg		0.0594 mg/kg	0.00000594 %		✓
		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:								0.0615 %		



Key

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	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 Determinand - Unless the Determinand is Note 1, the Conversion Factor is used to calculate the compound concentration
<b>&lt;LOD</b>	Below limit of detection
<b>ND</b>	Not detected
CLP: Note 1	Only the metal concentration has been used for classification

**Classification of sample: TP9-20/02/2020-0.50m**

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

**Sample details**

Sample Name: <b>TP9-20/02/2020-0.50m</b>	LoW Code: Chapter:	17: Construction and Demolition Wastes (including excavated soil from contaminated sites)
Moisture content: <b>19%</b> (wet weight correction)	Entry:	17 05 04 (Soil and stones other than those mentioned in 17 05 03)

**Hazard properties**

None identified

**Determinands**

Moisture content: 19% 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 }				2 mg/kg	1.197	1.939 mg/kg	0.000194 %	✓	
	051-005-00-X	215-175-0	1309-64-4							
2	arsenic { arsenic trioxide }				17.1 mg/kg	1.32	18.288 mg/kg	0.00183 %	✓	
	033-003-00-0	215-481-4	1327-53-3							
3	cadmium { cadmium oxide }				0.6 mg/kg	1.142	0.555 mg/kg	0.0000555 %	✓	
	048-002-00-0	215-146-2	1306-19-0							
4	chromium in chromium(III) compounds { chromium(III) oxide }				49.9 mg/kg	1.462	59.075 mg/kg	0.00591 %	✓	
		215-160-9	1308-38-9							
5	chromium in chromium(VI) compounds { chromium(VI) oxide }				<0.3 mg/kg	1.923	<0.577 mg/kg	<0.0000577 %		<LOD
	024-001-00-0	215-607-8	1333-82-0							
6	copper { dicopper oxide; copper (I) oxide }				19 mg/kg	1.126	17.327 mg/kg	0.00173 %	✓	
	029-002-00-X	215-270-7	1317-39-1							
7	lead { lead chromate }			1	69 mg/kg	1.56	87.178 mg/kg	0.00559 %	✓	
	082-004-00-2	231-846-0	7758-97-6							
8	mercury { mercury dichloride }				<0.1 mg/kg	1.353	<0.135 mg/kg	<0.0000135 %		<LOD
	080-010-00-X	231-299-8	7487-94-7							
9	molybdenum { molybdenum(VI) oxide }				3.1 mg/kg	1.5	3.767 mg/kg	0.000377 %	✓	
	042-001-00-9	215-204-7	1313-27-5							
10	nickel { nickel chromate }				15.5 mg/kg	2.976	37.367 mg/kg	0.00374 %	✓	
	028-035-00-7	238-766-5	14721-18-7							
11	selenium { selenium compounds with the exception of cadmium sulphoselenide and those specified elsewhere in this Annex }				1 mg/kg	2.554	2.068 mg/kg	0.000207 %	✓	
	034-002-00-8									
12	zinc { zinc chromate }				121 mg/kg	2.774	271.894 mg/kg	0.0272 %	✓	
	024-007-00-3									
13	TPH (C6 to C40) petroleum group		TPH		207 mg/kg		167.67 mg/kg	0.0168 %	✓	
14	tert-butyl methyl ether; MTBE; 2-methoxy-2-methylpropane				<0.005 mg/kg		<0.005 mg/kg	<0.0000005 %		<LOD
	603-181-00-X	216-653-1	1634-04-4							



#	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				0.07 mg/kg		0.0567 mg/kg	0.00000567 %	✓	
	601-052-00-2	202-049-5	91-20-3							
21	acenaphthylene				0.28 mg/kg		0.227 mg/kg	0.0000227 %	✓	
		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				0.06 mg/kg		0.0486 mg/kg	0.00000486 %	✓	
		201-695-5	86-73-7							
24	phenanthrene				0.42 mg/kg		0.34 mg/kg	0.000034 %	✓	
		201-581-5	85-01-8							
25	anthracene				0.19 mg/kg		0.154 mg/kg	0.0000154 %	✓	
		204-371-1	120-12-7							
26	fluoranthene				0.84 mg/kg		0.68 mg/kg	0.000068 %	✓	
		205-912-4	206-44-0							
27	pyrene				0.74 mg/kg		0.599 mg/kg	0.0000599 %	✓	
		204-927-3	129-00-0							
28	benzo[a]anthracene				0.58 mg/kg		0.47 mg/kg	0.000047 %	✓	
	601-033-00-9	200-280-6	56-55-3							
29	chrysene				0.78 mg/kg		0.632 mg/kg	0.0000632 %	✓	
	601-048-00-0	205-923-4	218-01-9							
30	benzo[b]fluoranthene				2.12 mg/kg		1.717 mg/kg	0.000172 %	✓	
	601-034-00-4	205-911-9	205-99-2							
31	benzo[k]fluoranthene				0.83 mg/kg		0.672 mg/kg	0.0000672 %	✓	
	601-036-00-5	205-916-6	207-08-9							
32	benzo[a]pyrene; benzo[def]chrysene				2.56 mg/kg		2.074 mg/kg	0.000207 %	✓	
	601-032-00-3	200-028-5	50-32-8							
33	indeno[123-cd]pyrene				2.07 mg/kg		1.677 mg/kg	0.000168 %	✓	
		205-893-2	193-39-5							
34	dibenz[a,h]anthracene				0.48 mg/kg		0.389 mg/kg	0.0000389 %	✓	
	601-041-00-2	200-181-8	53-70-3							
35	benzo[ghi]perylene				1.88 mg/kg		1.523 mg/kg	0.000152 %	✓	
		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 }				83 mg/kg	1.117	75.063 mg/kg	0.00751 %	✓	
		215-127-9	1304-28-5							
38	coronene				0.43 mg/kg		0.348 mg/kg	0.0000348 %	✓	
		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:								0.0724 %		

Key

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	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 Determinand - Unless the Determinand is Note 1, the Conversion Factor is used to calculate the compound concentration
<b>&lt;LOD</b>	Below limit of detection
<b>ND</b>	Not detected

CLP: Note 1 Only the metal concentration has been used for classification

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### Supplementary Hazardous Property Information

**HP 3(i): Flammable** "flammable liquid waste: liquid waste having a flash point below 60°C or waste gas oil, diesel and light heating oils having a flash point > 55°C and <= 75°C"

Force this Hazardous property to non hazardous because Solid waste without liquid phase

Hazard Statements hit:

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**Flam. Liq. 3; H226** "Flammable liquid and vapour."

Because of determinand:

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TPH (C6 to C40) petroleum group: (conc.: 0.0168%)

**Classification of sample: TP10-20/02/2020-0.50m**

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

**Sample details**

Sample Name: <b>TP10-20/02/2020-0.50m</b>	LoW Code: Chapter:	17: Construction and Demolition Wastes (including excavated soil from contaminated sites)
Moisture content: <b>18.2%</b> (wet weight correction)	Entry:	17 05 04 (Soil and stones other than those mentioned in 17 05 03)

**Hazard properties**

None identified

**Determinands**

Moisture content: 18.2% 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 }				<1	mg/kg	1.197	<1.197	mg/kg	<0.00012 %		<LOD
	051-005-00-X	215-175-0	1309-64-4									
2	arsenic { arsenic trioxide }				12.7	mg/kg	1.32	13.716	mg/kg	0.00137 %	✓	
	033-003-00-0	215-481-4	1327-53-3									
3	cadmium { cadmium oxide }				0.2	mg/kg	1.142	0.187	mg/kg	0.0000187 %	✓	
	048-002-00-0	215-146-2	1306-19-0									
4	chromium in chromium(III) compounds { chromium(III) oxide }				51.2	mg/kg	1.462	61.212	mg/kg	0.00612 %	✓	
		215-160-9	1308-38-9									
5	chromium in chromium(VI) compounds { chromium(VI) oxide }				<0.3	mg/kg	1.923	<0.577	mg/kg	<0.0000577 %		<LOD
	024-001-00-0	215-607-8	1333-82-0									
6	copper { dicopper oxide; copper (I) oxide }				13	mg/kg	1.126	11.973	mg/kg	0.0012 %	✓	
	029-002-00-X	215-270-7	1317-39-1									
7	lead { lead chromate }			1	30	mg/kg	1.56	38.278	mg/kg	0.00245 %	✓	
	082-004-00-2	231-846-0	7758-97-6									
8	mercury { mercury dichloride }				<0.1	mg/kg	1.353	<0.135	mg/kg	<0.0000135 %		<LOD
	080-010-00-X	231-299-8	7487-94-7									
9	molybdenum { molybdenum(VI) oxide }				3.6	mg/kg	1.5	4.418	mg/kg	0.000442 %	✓	
	042-001-00-9	215-204-7	1313-27-5									
10	nickel { nickel chromate }				17.9	mg/kg	2.976	43.579	mg/kg	0.00436 %	✓	
	028-035-00-7	238-766-5	14721-18-7									
11	selenium { selenium compounds with the exception of cadmium sulphoselenide and those specified elsewhere in this Annex }				<1	mg/kg	2.554	<2.554	mg/kg	<0.000255 %		<LOD
	034-002-00-8											
12	zinc { zinc chromate }				70	mg/kg	2.774	158.848	mg/kg	0.0159 %	✓	
	024-007-00-3											
13	TPH (C6 to C40) petroleum group				<52	mg/kg		<52	mg/kg	<0.0052 %		<LOD
			TPH									
14	tert-butyl methyl ether; MTBE; 2-methoxy-2-methylpropane				<0.005	mg/kg		<0.005	mg/kg	<0.0000005 %		<LOD
	603-181-00-X	216-653-1	1634-04-4									





#	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	<0.000005 %		<LOD
	601-020-00-8	200-753-7	71-43-2							
16	toluene				<0.005 mg/kg		<0.005 mg/kg	<0.000005 %		<LOD
	601-021-00-3	203-625-9	108-88-3							
17	ethylbenzene				<0.005 mg/kg		<0.005 mg/kg	<0.000005 %		<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				7.93 pH		7.93 pH	7.93 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				0.06 mg/kg		0.0491 mg/kg	0.0000491 %	✓	
		205-912-4	206-44-0							
27	pyrene				0.06 mg/kg		0.0491 mg/kg	0.0000491 %	✓	
		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 }				29 mg/kg	1.117	26.486 mg/kg	0.00265 %	✓	
		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:								0.0403 %		



Key

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	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 Determinand - Unless the Determinand is Note 1, the Conversion Factor is used to calculate the compound concentration
<b>&lt;LOD</b>	Below limit of detection
<b>ND</b>	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 C&L Inventory Database; No entries in Registered Substances Database, IARC or Pesticide Properties Database  
Data source:  
<http://clp-inventory.echa.europa.eu/SummaryOfClassAndLabelling.aspx?SubstanceID=88825&HarmOnly=no?fc=true&lang=en>  
Data source date: 02 Jun 2014  
Hazard Statements: Skin Irrit. 2 H315 , STOT SE 3 H335 , Eye Irrit. 2 H319 , Skin Corr. 1A H314 , Acute Tox. 3 H301 , Acute Tox. 4 H302 , Acute Tox. 4 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 8 – WAC Summary Data





Waste Categorisation Summary Table  
Glenamuck Road, February 2020



Sample ID	TP1	TP1	TP2	TP2	TP3	TP3	TP3	TP4						
Sample Depth (m)	0.50	1.50	0.50	1.50	0.50	1.50	2.50	0.50						
Material Description	Made Ground	Clay	Made Ground	Clay	Made Ground	Made Ground	Clay	Made Ground						
Sample Date	20/02/2020	20/02/2020	20/02/2020	19/02/2020	19/02/2020	19/02/2020	19/02/2020	19/02/2020						
LoW Code	17 05 04	17 05 04	17 05 04	17 05 04	17 05 04	17 05 04	17 05 04	17 05 04						
Waste Category	Category B1	Category A	Category C1	Category A	Category B1	Category B2	Category A	Category B1	Inert Criteria	IMS* Criteria	Hazardous Criteria	LOD LOR	Units	
<b>Metals</b>														
Antimony	1	1	<1	<1	4	3	2	2	-	-	HazWaste	<1	mg/kg	
Arsenic	12.1	23.5	22.6	16.7	17.9	17.2	25.4	20.5	-	-	HazWaste	<0.5	mg/kg	
Barium	69	112	62	26	89	95	55	53	-	-	HazWaste	<1	mg/kg	
Cadmium	0.9	2.1	0.3	0.1	0.2	1.1	0.6	0.2	-	-	HazWaste	<0.1	mg/kg	
Chromium	44.5	50.6	19.3	42.5	63.9	44.9	37.8	42.2	-	-	HazWaste	<0.5	mg/kg	
Copper	24	29	22	10	30	38	21	21	-	-	HazWaste	<1	mg/kg	
Lead	44	130	66	31	220	126	51	160	-	-	HazWaste	<5	mg/kg	
Mercury	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	-	-	HazWaste	<0.1	mg/kg	
Molybdenum	2.9	2.9	2.4	3.6	1.7	3.6	3.5	2.5	-	-	HazWaste	<0.1	mg/kg	
Nickel	25.6	27.6	20.2	10.6	35.7	30.8	19.9	12.9	-	-	HazWaste	<0.7	mg/kg	
Selenium	1	2	3	2	<1	1	1	<1	-	-	HazWaste	<1	mg/kg	
Zinc	85	149	129	75	135	152	94	94	-	-	HazWaste	<5	mg/kg	
Hexavalent Chromium	<0.3	<0.3	<0.3	<0.3	<0.3	<0.3	<0.3	<0.3	-	-	HazWaste	<0.3	mg/kg	
pH (solid sample)	8.33	7.63	7.05	7.07	8.04	7.72	7.6	8.27	-	-	HazWaste	<0.01	pH units	
alkali reserve									-	-	-	<0.000	gNaOH/100g	
<b>Asbestos</b>														
Asbestos Fibres	NAD	NAD	<0.001	NAD	NAD	NAD	NAD	NAD	-	-	0.1	<0.001	%	
ACM Detected	-	-	NAD	-	-	-	-	-	-	-	-	Presence	Presence	
<b>PAHs</b>														
Naphthalene	0.1	<0.04	<0.04	<0.04	<0.04	<0.04	<0.04	<0.04	-	-	HazWaste	<0.04	mg/kg	
Acenaphthylene	0.15	<0.03	0.15	<0.03	<0.03	<0.03	<0.03	<0.03	-	-	HazWaste	<0.03	mg/kg	
Acenaphthene	0.41	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	-	-	HazWaste	<0.05	mg/kg	
Fluorene	0.25	<0.04	<0.04	<0.04	<0.04	<0.04	<0.04	<0.04	-	-	HazWaste	<0.04	mg/kg	
Phenanthrene	1.19	<0.03	0.11	<0.03	0.04	0.37	<0.03	0.06	-	-	HazWaste	<0.03	mg/kg	
Anthracene	0.66	<0.04	0.34	<0.04	<0.04	0.09	<0.04	<0.04	-	-	HazWaste	<0.04	mg/kg	
Fluoranthene	6.59	0.04	0.49	<0.03	0.11	0.56	0.05	0.11	-	-	HazWaste	<0.03	mg/kg	
Pyrene	5.52	0.04	0.47	<0.03	0.12	0.5	0.05	0.13	-	-	HazWaste	<0.03	mg/kg	
Benzo(a)anthracene	2.95	<0.06	0.57	<0.06	0.08	0.38	<0.06	0.07	-	-	HazWaste	<0.06	mg/kg	
Chrysene	2.67	0.03	0.58	<0.02	0.09	0.31	<0.02	0.06	-	-	HazWaste	<0.02	mg/kg	
Benzo(b)fluoranthene	5.49	<0.07	1.2	<0.07	0.16	0.57	<0.07	0.09	-	-	HazWaste	<0.07	mg/kg	
Benzo(a)pyrene	2.93	<0.04	0.43	<0.04	0.08	0.31	<0.04	0.06	-	-	HazWaste	<0.04	mg/kg	
Indeno(123cd)pyrene	1.89	<0.04	0.38	<0.04	0.07	0.2	<0.04	<0.04	-	-	HazWaste	<0.04	mg/kg	
Dibenzo(ah)anthracene	0.26	<0.04	0.14	<0.04	<0.04	<0.04	<0.04	<0.04	-	-	HazWaste	<0.04	mg/kg	
Benzo(ghi)perylene	1.71	<0.04	0.41	<0.04	0.09	0.23	<0.04	0.06	-	-	HazWaste	<0.04	mg/kg	
Coronene	0.32	<0.04	0.12	<0.04	<0.04	<0.04	<0.04	<0.04	-	-	HazWaste	<0.04	mg/kg	
PAH 6 Total	18.61	<0.22	2.91	<0.22	0.51	1.87	<0.22	0.32	-	-	-	<0.22	mg/kg	
PAH 17 Total	33.09	<0.64	5.39	<0.64	0.84	3.52	<0.64	0.64	100	100	-	<0.64	mg/kg	
Benzo(b)fluoranthene	3.95	<0.05	0.86	<0.05	0.12	0.41	<0.05	0.06	-	-	HazWaste	<0.05	mg/kg	
Benzo(k)fluoranthene	1.54	<0.02	0.34	<0.02	0.04	0.16	<0.02	0.03	-	-	HazWaste	<0.02	mg/kg	
Benzo(j)fluoranthene	1	<1	<1	<1	<1	<1	<1	<1	-	-	HazWaste	<1	mg/kg	
<b>Hydrocarbons</b>														
TPH (C5-40)	<52	<52	186	<52	<52	142	<52	<52	-	-	HazWaste	<52	mg/kg	
MTBE	<5	<5	<5	<5	<5	<5	<5	<5	-	-	HazWaste	<5	ug/kg	
Benzene	<5	<5	<5	<5	<5	<5	<5	<5	-	-	HazWaste	<5	ug/kg	
Toluene	<5	<5	<5	<5	<5	<5	<5	<5	-	-	HazWaste	<5	ug/kg	
Ethylbenzene	<5	<5	<5	<5	<5	<5	<5	<5	-	-	HazWaste	<5	ug/kg	
m/p-Xylene	<5	<5	<5	<5	<5	<5	<5	<5	-	-	HazWaste	<5	ug/kg	
o-Xylene	<5	<5	<5	<5	<5	<5	<5	<5	-	-	HazWaste	<5	ug/kg	
Total 7 PCBs	<35	<35	<35	<35	<35	<35	<35	<35	1,000	1,000	HazWaste	<35	ug/kg	
<b>WAC** Solid Sample Summary</b>														
Total Organic Carbon *	1.11	1.72	NDP	0.91	0.85	3.79	0.85	0.65	3	6	-	<0.02	%	
Sum of BTEX	<0.025	<0.025	<0.025	<0.025	<0.025	<0.025	<0.025	<0.025	6	6	-	<0.025	mg/kg	
Sum of 7 PCBs	<0.035	<0.035	<0.035	<0.035	<0.035	<0.035	<0.035	<0.035	1	1	-	<0.035	mg/kg	
Mineral Oil	<30	<30	41	<30	<30	41	<30	<30	500	500	-	<30	mg/kg	
PAH Sum of 6	18.61	<0.22	2.91	<0.22	0.51	1.87	<0.22	0.32	-	-	-	<0.22	mg/kg	
PAH Sum of 17	33.09	<0.64	5.39	<0.64	0.84	3.52	<0.64	0.64	100	100	-	<0.64	mg/kg	
<b>WAC** Leachate Data</b>														
Arsenic	<0.025	<0.025	<0.025	<0.025	<0.025	<0.025	0.030	<0.025	0.5	1.5	-	<0.025	mg/kg	
Barium	0.03	0.05	0.05	<0.03	0.11	0.27	0.12	0.08	20	20	-	<0.03	mg/kg	
Cadmium	<0.005	<0.005	<0.005	<0.005	<0.005	<0.005	<0.005	<0.005	0.04	0.04	-	<0.005	mg/kg	
Chromium	<0.015	<0.015	<0.015	<0.015	<0.015	<0.015	<0.015	<0.015	0.5	0.5	-	<0.015	mg/kg	
Copper	<0.07	<0.07	<0.07	<0.07	<0.07	<0.07	<0.07	<0.07	2	2	-	<0.07	mg/kg	
Mercury	<0.0001	<0.0001	0.0002	0.0002	<0.0001	<0.0001	<0.0001	<0.0001	0.01	0.01	-	<0.0001	mg/kg	
Molybdenum	0.05	0.03	0.03	0.02	0.04	0.08	0.07	0.03	0.5	1.5	-	<0.02	mg/kg	
Nickel	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	0.4	0.4	-	<0.02	mg/kg	
Lead	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	0.5	0.5	-	<0.05	mg/kg	
Antimony	<0.02	<0.02	<0.02	<0.02	0.05	<0.02	0.03	0.04	0.06	0.18	-	<0.02	mg/kg	
Selenium	<0.03	<0.03	<0.03	<0.03	<0.03	<0.03	<0.03	<0.03	0.1	0.3	-	<0.03	mg/kg	
Zinc	<0.03	0.07	0.12	0.11	<0.03	0.04	<0.03	<0.03	4	4	-	<0.03	mg/kg	
Total Dissolved Solids	790	380	1569	790	<350	1829	2050	740	4000	12,000	-	<350	mg/kg	
Dissolved Organic Carbon	50	120	310	220	40	90	70	70	500	500	-	<20	mg/kg	
Phenol	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	1	1	-	<0.1	mg/kg	
Sulphate as SO4	146	36	<5	<5	271	632	361	<5	1000	3,000	-	<0.5	mg/kg	
Chloride	5	9	21	14	4	5	<3	<3	800	2,400	-	<3	mg/kg	

NAD- no asbestos detected

\* - Integrated Materials Solutions Landfill, Hollywood Great, Nag's Head, The Naul, Co. Dublin

\*\* - limits as specified in Council Decision 2003/33/EC

Waste Categorisation Summary Table  
Glenamuck Road, February 2020



Sample ID	TP4	TP4	TP5	TP5	TP6	TP6	TP7	TP8						
Sample Depth (m)	1.50	2.50	0.50	1.50	0.50	1.50	0.50	0.50						
Material Description	Made Ground	Clay	Made Ground	Clay	Made Ground	Clay	Made Ground	Made Ground						
Sample Date	19/02/2020	19/02/2020	19/02/2020	19/02/2020	19/02/2020	19/02/2020	19/02/2020	20/02/2020						
LoW Code	17 05 04	17 05 04	17 05 04	17 05 04	17 05 04	17 05 04	17 05 04	17 05 04						
Waste Category	Category B1	Category A	Category B1	Category A	Category B1	Category A	Category B1	Category B1		Inert Criteria	IMS* Criteria	Hazardous Criteria	LOD LOR	Units
<b>Metals</b>														
Antimony	2	2	13	2	2	<1	1	<1	-	-	-	HazWaste	<1	mg/kg
Arsenic	18.5	23.1	26.8	14.9	12.1	20.4	26.4	16.5	-	-	-	HazWaste	<0.5	mg/kg
Barium	66	74	112	53	85	17	63	67	-	-	-	HazWaste	<1	mg/kg
Cadmium	0.4	1.3	0.3	0.3	0.5	<0.1	0.2	0.3	-	-	-	HazWaste	<0.1	mg/kg
Chromium	42.3	53.1	47.5	51.1	40.4	35.3	50	46.1	-	-	-	HazWaste	<0.5	mg/kg
Copper	22	30	27	22	23	41	22	19	-	-	-	HazWaste	<1	mg/kg
Lead	188	56	783	104	73	15	25	85	-	-	-	HazWaste	<5	mg/kg
Mercury	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	-	-	-	HazWaste	<0.1	mg/kg
Molybdenum	2.8	3.9	3.2	3.1	2.4	2.1	2.1	3.9	-	-	-	HazWaste	<0.1	mg/kg
Nickel	13.3	37.7	11	18.1	21.8	4.7	29.5	13.1	-	-	-	HazWaste	<0.7	mg/kg
Selenium	<1	<1	<1	<1	<1	<1	1	1	-	-	-	HazWaste	<1	mg/kg
Zinc	119	112	351	104	136	40	99	121	-	-	-	HazWaste	<5	mg/kg
Hexavalent Chromium	<0.3	<0.3	<0.3	<0.3	<0.3	<0.3	<0.3	<0.3	-	-	-	HazWaste	<0.3	mg/kg
pH (solid sample)	8.23	8.18	8.21	8.02	8.07	8.22	7.99	7.23	-	-	-	HazWaste	<0.01	pH units
alkali reserve									-	-	-	-	<0.000	gNaOH/100g
<b>Asbestos</b>														
Asbestos Fibres	NAD	NAD	NAD	NAD	NAD	NAD	NAD	NAD	-	-	-	0.1	<0.001	%
ACM Detected	-	-	-	-	-	-	-	-	-	-	-	-	Presence	Presence
<b>PAHs</b>														
Naphthalene	<0.04	<0.04	<0.04	<0.04	0.3	<0.04	<0.04	<0.04	-	-	-	HazWaste	<0.04	mg/kg
Acenaphthylene	<0.03	<0.03	<0.03	<0.03	0.03	<0.03	<0.03	<0.03	-	-	-	HazWaste	<0.03	mg/kg
Acenaphthene	<0.05	<0.05	<0.05	<0.05	0.43	<0.05	<0.05	<0.05	-	-	-	HazWaste	<0.05	mg/kg
Fluorene	<0.04	<0.04	<0.04	<0.04	0.32	<0.04	<0.04	<0.04	-	-	-	HazWaste	<0.04	mg/kg
Phenanthrene	0.06	<0.03	0.1	<0.03	2.39	0.06	<0.03	0.2	-	-	-	HazWaste	<0.03	mg/kg
Anthracene	<0.04	<0.04	<0.04	<0.04	0.36	<0.04	<0.04	0.08	-	-	-	HazWaste	<0.04	mg/kg
Fluoranthene	0.12	<0.03	0.12	0.09	2.11	0.06	0.05	0.93	-	-	-	HazWaste	<0.03	mg/kg
Pyrene	0.09	<0.03	0.26	0.08	1.86	0.04	0.03	0.79	-	-	-	HazWaste	<0.03	mg/kg
Benzo(a)anthracene	0.09	<0.06	0.08	0.12	0.65	<0.06	<0.06	0.55	-	-	-	HazWaste	<0.06	mg/kg
Chrysene	0.06	<0.02	0.07	0.07	0.7	<0.02	<0.02	0.46	-	-	-	HazWaste	<0.02	mg/kg
Benzo(bk)fluoranthene	0.11	<0.07	0.14	0.14	1.18	<0.07	<0.07	1.01	-	-	-	HazWaste	<0.07	mg/kg
Benzo(a)pyrene	0.06	<0.04	0.07	0.06	0.62	<0.04	<0.04	0.55	-	-	-	HazWaste	<0.04	mg/kg
Indeno(123cd)pyrene	<0.04	<0.04	0.06	0.05	0.37	<0.04	<0.04	0.35	-	-	-	HazWaste	<0.04	mg/kg
Dibenzo(ah)anthracene	<0.04	<0.04	<0.04	<0.04	0.12	<0.04	<0.04	0.07	-	-	-	HazWaste	<0.04	mg/kg
Benzo(ghi)perylene	0.04	<0.04	0.06	0.05	0.46	<0.04	<0.04	0.32	-	-	-	HazWaste	<0.04	mg/kg
Coronene	<0.04	<0.04	<0.04	<0.04	0.09	<0.04	<0.04	0.07	-	-	-	HazWaste	<0.04	mg/kg
PAH 6 Total	0.33	<0.22	0.45	0.39	4.74	<0.22	<0.22	3.16	-	-	-	-	<0.22	mg/kg
PAH 17 Total	<0.64	<0.64	0.96	0.66	11.99	<0.64	<0.64	5.38	100	100	-	-	<0.64	mg/kg
Benzo(b)fluoranthene	0.08	<0.05	0.1	0.1	0.85	<0.05	<0.05	0.73	-	-	-	HazWaste	<0.05	mg/kg
Benzo(k)fluoranthene	0.03	<0.02	0.04	0.04	0.33	<0.02	<0.02	0.28	-	-	-	HazWaste	<0.02	mg/kg
Benzo(j)fluoranthene	<1	<1	<1	<1	<1	<1	<1	<1	-	-	-	HazWaste	<1	mg/kg
<b>Hydrocarbons</b>														
TPH (C5-40)	84	<52	636	<52	428	<52	<52	<52	-	-	-	HazWaste	<52	mg/kg
MTBE	<5	<5	<5	<5	<5	<5	<5	<5	-	-	-	HazWaste	<5	ug/kg
Benzene	<5	<5	<5	<5	<5	<5	<5	<5	-	-	-	HazWaste	<5	ug/kg
Toluene	<5	<5	<5	<5	<5	<5	<5	<5	-	-	-	HazWaste	<5	ug/kg
Ethylbenzene	<5	<5	<5	<5	<5	<5	<5	<5	-	-	-	HazWaste	<5	ug/kg
m/p-Xylene	<5	<5	<5	<5	<5	<5	<5	<5	-	-	-	HazWaste	<5	ug/kg
o-Xylene	<5	<5	<5	<5	<5	<5	<5	<5	-	-	-	HazWaste	<5	ug/kg
Total 7 PCBs	<35	<35	<35	<35	<35	<35	<35	<35	1,000	1,000	-	HazWaste	<35	ug/kg
<b>WAC** Solid Sample Summary</b>														
Total Organic Carbon *	0.67	0.92	0.70	0.89	1.76	0.15	0.82	1.46	3	6	-	-	<0.02	%
Sum of BTEX	<0.025	<0.025	<0.025	<0.025	<0.025	<0.025	<0.025	<0.025	6	6	-	-	<0.025	mg/kg
Sum of 7 PCBs	<0.035	<0.035	<0.035	<0.035	<0.035	<0.035	<0.035	<0.035	1	1	-	-	<0.035	mg/kg
Mineral Oil	45	<30	354	<30	180	<30	<30	<30	500	500	-	-	<30	mg/kg
PAH Sum of 6	0.33	<0.22	0.45	0.39	4.74	<0.22	<0.22	3.16	-	-	-	-	<0.22	mg/kg
PAH Sum of 17	<0.64	<0.64	0.96	0.66	11.99	<0.64	<0.64	5.38	100	100	-	-	<0.64	mg/kg
<b>WAC** Leachate Data</b>														
Arsenic	<0.025	<0.025	<0.025	<0.025	0.089	0.100	0.037	<0.025	0.5	1.5	-	-	<0.025	mg/kg
Barium	0.06	0.04	0.07	0.07	0.11	<0.03	0.04	<0.03	20	20	-	-	<0.03	mg/kg
Cadmium	<0.005	<0.005	<0.005	<0.005	<0.005	<0.005	<0.005	<0.005	0.04	0.04	-	-	<0.005	mg/kg
Chromium	<0.015	<0.015	<0.015	<0.015	<0.015	<0.015	<0.015	<0.015	0.5	0.5	-	-	<0.015	mg/kg
Copper	<0.07	<0.07	<0.07	<0.07	<0.07	<0.07	<0.07	<0.07	2	2	-	-	<0.07	mg/kg
Mercury	<0.0001	<0.0001	<0.0001	<0.0001	0.0001	0.0003	<0.0001	0.0001	0.01	0.01	-	-	<0.0001	mg/kg
Molybdenum	0.03	0.03	0.03	0.03	0.16	<0.02	0.07	<0.02	0.5	1.5	-	-	<0.02	mg/kg
Nickel	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	0.4	0.4	-	-	<0.02	mg/kg
Lead	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	0.5	0.5	-	-	<0.05	mg/kg
Antimony	0.03	<0.02	0.04	<0.02	0.05	<0.02	0.03	<0.02	0.06	0.18	-	-	<0.02	mg/kg
Selenium	<0.03	<0.03	<0.03	<0.03	<0.03	<0.03	<0.03	<0.03	0.1	0.3	-	-	<0.03	mg/kg
Zinc	<0.03	0.04	0.05	0.04	0.05	0.05	0.04	0.07	4	4	-	-	<0.03	mg/kg
Total Dissolved Solids	1040	770	950	920	1841	989	1380	630	4000	12,000	-	-	<350	mg/kg
Dissolved Organic Carbon	70	50	80	70	120	50	80	90	500	500	-	-	<20	mg/kg
Phenol	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	1	1	-	-	<0.1	mg/kg
Sulphate as SO4	133	76	<5	113	178	37	67	<5	1000	3,000	-	-	<0.5	mg/kg
Chloride	4	<3	<3	4	5	4	7	7	800	2,400	-	-	<3	mg/kg

NAD- no asbestos detected

\* - Integrated Materials Solutions Landfill, Hollywood Great, Nag's Head, The Naul, Co. Dublin

\*\* - limits as specified in Council Decision 2003/33/EC

Waste Categorisation Summary Table  
Glenamuck Road, February 2020

Sample ID	TP9	TP10
Sample Depth (m)	0.50	0.50
Material Description	Made Ground	Made Ground
Sample Date	20/02/2020	20/02/2020
LoW Code	17 05 04	17 05 04
Waste Category	Category B1	Category B1
<b>Metals</b>		
Antimony	2	<1
Arsenic	17.1	12.7
Barium	83	29
Cadmium	0.6	0.2
Chromium	49.9	51.2
Copper	19	13
Lead	69	30
Mercury	<0.1	<0.1
Molybdenum	3.1	3.6
Nickel	15.5	17.9
Selenium	1	<1
Zinc	121	70
Hexavalent Chromium	<0.3	<0.3
pH (solid sample)	7.91	7.93
alkali reserve		
<b>Asbestos</b>		
Asbestos Fibres	NAD	NAD
ACM Detected	-	-
<b>PAHs</b>		
Naphthalene	0.07	<0.04
Acenaphthylene	0.28	<0.03
Acenaphthene	<0.05	<0.05
Fluorene	0.06	<0.04
Phenanthrene	0.42	<0.03
Anthracene	0.19	<0.04
Fluoranthene	0.84	0.06
Pyrene	0.74	0.06
Benzo(a)anthracene	0.58	<0.06
Chrysene	0.78	<0.02
Benzo(k)fluoranthene	2.95	<0.07
Benzo(a)pyrene	2.56	<0.04
Indeno(123cd)pyrene	2.07	<0.04
Dibenzo(ah)anthracene	0.48	<0.04
Benzo(ghi)perylene	1.88	<0.04
Coronene	0.43	<0.04
PAH 6 Total	10.3	<0.22
PAH 17 Total	14.33	<0.64
Benzo(b)fluoranthene	2.12	<0.05
Benzo(k)fluoranthene	0.83	<0.02
Benzo(j)fluoranthene	<1	<1
<b>Hydrocarbons</b>		
TPH (C5-40)	207	<52
MTBE	<5	<5
Benzene	<5	<5
Toluene	<5	<5
Ethylbenzene	<5	<5
m/p-Xylene	<5	<5
o-Xylene	<5	<5
Total 7 PCBs	<35	<35
<b>WAC** Solid Sample Summary</b>		
Total Organic Carbon *	2.14	0.75
Sum of BTEX	<0.025	<0.025
Sum of 7 PCBs	<0.035	<0.035
Mineral Oil	<30	<30
PAH Sum of 6	10.30	<0.22
PAH Sum of 17	14.33	<0.64
<b>WAC** Leachate Data</b>		
Arsenic	<0.025	<0.025
Barium	0.06	<0.03
Cadmium	<0.005	<0.005
Chromium	<0.015	<0.015
Copper	<0.07	<0.07
Mercury	0.0001	<0.0001
Molybdenum	<0.02	<0.02
Nickel	<0.02	<0.02
Lead	<0.05	<0.05
Antimony	<0.02	<0.02
Selenium	<0.03	<0.03
Zinc	0.04	0.05
Total Dissolved Solids	970	910
Dissolved Organic Carbon	60	60
Phenol	<0.1	<0.1
Sulphate as SO4	<5	<5
Chloride	6	3

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



GROUND INVESTIGATIONS IRELAND  
Geotechnical & Environmental

Inert Criteria	IMS* Criteria	Hazardous Criteria	LOD LOR	Units
-	-	HazWaste	<1	mg/kg
-	-	HazWaste	<0.5	mg/kg
-	-	HazWaste	<1	mg/kg
-	-	HazWaste	<0.1	mg/kg
-	-	HazWaste	<0.5	mg/kg
-	-	HazWaste	<1	mg/kg
-	-	HazWaste	<5	mg/kg
-	-	HazWaste	<0.1	mg/kg
-	-	HazWaste	<0.1	mg/kg
-	-	HazWaste	<0.7	mg/kg
-	-	HazWaste	<1	mg/kg
-	-	HazWaste	<5	mg/kg
-	-	HazWaste	<0.3	mg/kg
-	-	HazWaste	<0.01	pH units
-	-	-	<0.000	gNaOH/100g
-	-	-		
-	-	0.1	<0.001	%
-	-	-	Presence	Presence
-	-	-		
-	-	HazWaste	<0.04	mg/kg
-	-	HazWaste	<0.03	mg/kg
-	-	HazWaste	<0.05	mg/kg
-	-	HazWaste	<0.04	mg/kg
-	-	HazWaste	<0.03	mg/kg
-	-	HazWaste	<0.03	mg/kg
-	-	HazWaste	<0.06	mg/kg
-	-	HazWaste	<0.02	mg/kg
-	-	HazWaste	<0.07	mg/kg
-	-	HazWaste	<0.04	mg/kg
-	-	HazWaste	<0.04	mg/kg
-	-	HazWaste	<0.04	mg/kg
-	-	HazWaste	<0.04	mg/kg
-	-	HazWaste	<0.04	mg/kg
-	-	-	<0.22	mg/kg
100	100	-	<0.64	mg/kg
-	-	HazWaste	<0.05	mg/kg
-	-	HazWaste	<0.02	mg/kg
-	-	HazWaste	<1	mg/kg
-	-	-		
-	-	HazWaste	<52	mg/kg
-	-	HazWaste	<5	ug/kg
-	-	HazWaste	<5	ug/kg
-	-	HazWaste	<5	ug/kg
-	-	HazWaste	<5	ug/kg
-	-	HazWaste	<5	ug/kg
-	-	HazWaste	<5	ug/kg
1,000	1,000	HazWaste	<35	ug/kg
-	-	-		
3	6	-	<0.02	%
6	6	-	<0.025	mg/kg
1	1	-	<0.035	mg/kg
500	500	-	<30	mg/kg
-	-	-	<0.22	mg/kg
100	100	-	<0.64	mg/kg
-	-	-		
0.5	1.5	-	<0.025	mg/kg
20	20	-	<0.03	mg/kg
0.04	0.04	-	<0.005	mg/kg
0.5	0.5	-	<0.015	mg/kg
2	2	-	<0.07	mg/kg
0.01	0.01	-	<0.0001	mg/kg
0.5	1.5	-	<0.02	mg/kg
0.4	0.4	-	<0.02	mg/kg
0.5	0.5	-	<0.05	mg/kg
0.06	0.18	-	<0.02	mg/kg
0.1	0.3	-	<0.03	mg/kg
4	4	-	<0.03	mg/kg
4000	12,000	-	<350	mg/kg
500	500	-	<20	mg/kg
1	1	-	<0.1	mg/kg
1000	3,000	-	<0.5	mg/kg
800	2,400	-	<3	mg/kg

# APPENDIX 9 – Suitable 4 Waste Data



**S4UL - Metals (Residential with homegrown produce), Glenamuck Road, February 2020**

Sample ID	TP1	TP1	TP2	TP2	TP3	TP3	TP3	TP4	TP4	TP4	Max Level Detected	Units	Residential with homegrown produce
Sample Depth (m)	0.5	1.50	0.50	1.50	0.50	1.50	2.50	0.50	1.50	2.50			
Antimony	1	1	<1	<1	4	3	2	2	2	2	4	mg/kg	ne
Arsenic	12.1	23.5	22.6	16.7	17.9	17.2	25.4	20.5	18.5	23.1	25.4	mg/kg	37
Barium	69	112	62	26	89	95	55	53	66	74	112	mg/kg	ne
Cadmium	0.9	2.1	0.3	0.1	0.2	1.1	0.6	0.2	0.4	1.3	2.1	mg/kg	11
Chromium	44.5	50.6	19.3	42.5	63.9	44.9	37.8	42.2	42.3	53.1	63.9	mg/kg	910
Copper	24	29	22	10	30	38	21	21	22	30	38	mg/kg	2,400
Lead	44	130	66	31	220	126	51	160	188	56	220	mg/kg	ne
Mercury	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	0	mg/kg	1.2
Molybdenum	2.9	2.9	2.4	3.6	1.7	3.6	3.5	2.5	2.8	3.9	3.9	mg/kg	ne
Nickel	25.6	27.6	20.2	10.6	35.7	30.8	19.9	12.9	13.3	37.7	37.7	mg/kg	130
Selenium	1	2	3	2	<1	1	1	<1	<1	<1	3	mg/kg	250
Zinc	85	149	129	75	135	152	94	94	119	112	152	mg/kg	3,700
Hexavalent Chromium	<0.3	<0.3	<0.3	<0.3	<0.3	<0.3	<0.3	<0.3	<0.3	<0.3	0	mg/kg	6*

**S4UL - Metals (Residential with homegrown produce), Glenamuck Road, February 2020**

Sample ID	TP5	TP5	TP6	TP6	TP7	TP8	TP9	TP10
Sample Depth (m)	0.5	1.50	0.50	1.50	0.50	0.50	0.50	0.50
Antimony	13	2	2	<1	1	<1	2	<1
Arsenic	26.8	14.9	12.1	20.4	26.4	16.5	17.1	12.7
Barium	112	53	85	17	63	67	83	29
Cadmium	0.3	0.3	0.5	<0.1	0.2	0.3	0.6	0.2
Chromium	47.5	51.1	40.4	35.3	50	46.1	49.9	51.2
Copper	27	22	23	41	22	19	19	13
Lead	783	104	73	15	25	85	69	30
Mercury	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1
Molybdenum	3.2	3.1	2.4	2.1	2.1	3.9	3.1	3.6
Nickel	11	18.1	21.8	4.7	29.5	13.1	15.5	17.9
Selenium	<1	<1	<1	<1	1	1	1	<1
Zinc	351	104	136	40	99	121	121	70
Hexavalent Chromium	<0.3	<0.3	<0.3	<0.3	<0.3	<0.3	<0.3	<0.3

Max Level Detected	Units	Residential with homegrown produce
13	mg/kg	ne
26.8	mg/kg	37
112	mg/kg	ne
0.6	mg/kg	11
51.2	mg/kg	910
41	mg/kg	2,400
783	mg/kg	ne
0	mg/kg	1.2
3.9	mg/kg	ne
29.5	mg/kg	130
1	mg/kg	250
351	mg/kg	3,700
0	mg/kg	6*

S4UL - Organic Compounds (Residential with homegrown produce), Glenamuck Road, February 2020

Residential	TP1	TP1	TP2	TP2	TP3	TP3	TP3	TP4	TP4	TP4	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	
<b>Aliphatics</b>																
>C5-C6	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	0.00	mg/kg	42	78	160	
>C6-C8	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	0.00	mg/kg	100	230	530	
>C8-C10	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	0.00	mg/kg	27	65	150	
>C10-C12	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2	0.00	mg/kg	130	330	760	
>C12-C16	<4	<4	<4	<4	<4	<4	<4	<4	<4	<4	0.00	mg/kg	1,100	2,400	4,300	
>C16-C21	<7	<7	<7	<7	<7	9	<7	<7	<7	<7	9.00	mg/kg	ne	ne	ne	
>C21-C35	<7	<7	41	<7	29	32	<7	<7	45	<7	45.00	mg/kg	ne	ne	ne	
>C16-C35	<14	<14	41	<14	29	41	<14	<14	45	<14	45.00	mg/kg	65000	92000	110000	
>C35-C40	<7	<7	<7	<7	<7	<7	<7	<7	<7	<7	0.00	mg/kg	ne	ne	ne	
Total aliphatics C5-40	<26	<26	41	<26	29	41	<26	<26	45	<26	45.00	mg/kg	ne	ne	ne	
>C6-C10	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	0.00	mg/kg	ne	ne	ne	
>C10-C25	<10	<10	<10	<10	<10	16	<10	<10	<10	<10	16.00	mg/kg	ne	ne	ne	
>C25-C35	<10	<10	31.00	<10	25.00	21.00	<10	<10	40.00	<10	40.00	mg/kg	ne	ne	ne	
<b>Aromatics</b>																
>C5-EC7	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	0.00	mg/kg	70	140	300	
>EC7-EC8	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	0.00	mg/kg	130	290	660	
>EC8-EC10	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	0.00	mg/kg	34	83	190	
>EC10-EC12	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2	0.00	mg/kg	74	180	380	
>EC12-EC16	<4	<4	<4	<4	<4	<4	<4	<4	<4	<4	0.00	mg/kg	140	330	660	
>EC16-EC21	<7	<7	<7	<7	<7	<7	<7	<7	<7	<7	0.00	mg/kg	260	540	930	
>EC21-EC35	<7	<7	118	<7	<7	79	<7	<7	39	<7	118.00	mg/kg	1,100	1,500	1,700	
>EC35-EC40	<7	<7	27	<7	<7	22	<7	<7	<7	<7	27.00	mg/kg	ne	ne	ne	
Total aromatics C5-40	<26	<26	145	<26	<26	101	<26	<26	39	<26	145.00	mg/kg	ne	ne	ne	
Total aliphatics and aromatics(C5-40)	<52	<52	186	<52	<52	142	<52	<52	84	<52	186.00	mg/kg	ne	ne	ne	
>EC6-EC10	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	0.00	mg/kg	ne	ne	ne	
>EC10-EC25	<10	<10	31	<10	<10	<10	<10	<10	<10	<10	31.00	mg/kg	ne	ne	ne	
>EC25-EC35	<10	<10	87	<10	<10	68	<10	<10	39	<10	87.00	mg/kg	ne	ne	ne	
<b>BTEX</b>																
MTBE	<0.005	<0.005	<0.005	<0.005	<0.005	<0.005	<0.005	<0.005	<0.005	<5	0.00	mg/kg	ne	ne	ne	
Benzene	<0.005	<0.005	<0.005	<0.005	<0.005	<0.005	<0.005	<0.005	<0.005	<5	0.00	mg/kg	0.087	0.17	0.37	
Toluene	<0.005	<0.005	<0.005	<0.005	<0.005	<0.005	<0.005	<0.005	<0.005	<5	0.00	mg/kg	130	290	660	
Ethylbenzene	<0.005	<0.005	<0.005	<0.005	<0.005	<0.005	<0.005	<0.005	<0.005	<5	0.00	mg/kg	47	110	260	
m/p-Xylene	<0.005	<0.005	<0.005	<0.005	<0.005	<0.005	<0.005	<0.005	<0.005	<5	0.00	mg/kg	56	130	310	
o-Xylene	<0.005	<0.005	<0.005	<0.005	<0.005	<0.005	<0.005	<0.005	<0.005	<5	0.000	mg/kg	60	140	330	
TOC	1.11	1.72	NAD	0.91	0.85	3.79	0.85	0.65	0.67	0.92		%				
SOM (Note 1)	1.91	2.97	NAD	1.57	1.47	6.53	1.47	1.12	1.16							

Note 1 - TOC \* 1.724



S4UL - Organic Compounds (Residential with homegrown produce), White Pines East, March 2020

Residential	TP5	TP5	TP6	TP6	TP7	TP8	TP9	TP10
	0.50	1.50	0.50	1.50	0.50	0.50	0.50	0.50
<b>Aliphatics</b>								
>C5-C6	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1
>C6-C8	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1
>C8-C10	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1
>C10-C12	4.1	<0.2	6.3	<0.2	<0.2	<0.2	<0.2	<0.2
>C12-C16	71	<4	16	<4	<4	<4	<4	<4
>C16-C21	151	<7	15	<7	<7	<7	<7	<7
>C21-C35	128	27	119	<7	<7	<7	23	<7
>C16-C35	279	27	134	<14	<14	<14	23	<14
>C35-C40	<7	<7	24	<7	<7	<7	<7	<7
Total aliphatics C5-40	354	27	180	<26	<26	<26	<26	<26
>C6-C10	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1
>C10-C25	311	<10	65	<10	<10	<10	<10	<10
>C25-C35	54.00	22.00	99.00	<10	<10	<10	23.00	<10
<b>Aromatics</b>								
>C5-EC7	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1
>EC7-EC8	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1
>EC8-EC10	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1
>EC10-EC12	4.5	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2
>EC12-EC16	56	<4	9	<4	<4	<4	<4	<4
>EC16-EC21	121	<7	20	<7	<7	<7	11	<7
>EC21-EC35	100	<7	165	<7	<7	<7	164	<7
>EC35-EC40	<7	<7	54	<7	<7	<7	32	<7
Total aromatics C5-40	282	<26	248	<26	<26	<26	207	<26
Total aliphatics and aromatics(C5-40)	636	<52	428	<52	<52	<52	207	<52
>EC6-EC10	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1
>EC10-EC25	236	<10	51	<10	<10	<10	33	<10
>EC25-EC35	49	<10	148	<10	<10	<10	133	<10
<b>BTEX</b>								
MTBE	<5	<5	<5	<5	<5	<5	<5	<5
Benzene	<5	<5	<5	<5	<5	<5	<5	<5
Toluene	<5	<5	<5	<5	<5	<5	<5	<5
Ethylbenzene	<5	<5	<5	<5	<5	<5	<5	<5
m/p-Xylene	<5	<5	<5	<5	<5	<5	<5	<5
o-Xylene	<5	<5	<5	<5	<5	<5	<5	<5
TOC	0.7	0.89	1.76	0.15	0.82	1.46	2.14	0.75
SOM (Note 1)	1.21	1.53	3.03	0.26	1.41	2.52	3.69	1.29

Note 1 - TOC \* 1.724

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
0.00	mg/kg	42	78	160
0.00	mg/kg	100	230	530
0.00	mg/kg	27	65	150
6.30	mg/kg	130	330	760
71.00	mg/kg	1,100	2,400	4,300
151.00	mg/kg	ne	ne	ne
128.00	mg/kg	ne	ne	ne
279.00	mg/kg	65000	92000	110000
24.00	mg/kg	ne	ne	ne
354.00	mg/kg	ne	ne	ne
0.00	mg/kg	ne	ne	ne
311.00	mg/kg	ne	ne	ne
99.00	mg/kg	ne	ne	ne
0.00	mg/kg	70	140	300
0.00	mg/kg	130	290	660
0.00	mg/kg	34	83	190
4.50	mg/kg	74	180	380
56.00	mg/kg	140	330	660
121.00	mg/kg	260	540	930
165.00	mg/kg	1,100	1,500	1,700
54.00	mg/kg	ne	ne	ne
282.00	mg/kg	ne	ne	ne
636.00	mg/kg	ne	ne	ne
0.00	mg/kg	ne	ne	ne
236.00	mg/kg	ne	ne	ne
148.00	mg/kg	ne	ne	ne
0.00	mg/kg	ne	ne	ne
0.00	mg/kg	0.087	0.17	0.37
0.00	mg/kg	130	290	660
0.00	mg/kg	47	110	260
0.00	mg/kg	56	130	310
0.000	mg/kg	60	140	330
	%			

S4UL - PAHs (Residential with homegrown produce), Glenamuck Road, February 2020

	TP1	TP1	TP2	TP2	TP3	TP3	TP3	TP4	TP4	TP4	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
Naphthalene	0.1	<0.04	<0.04	<0.04	<0.04	<0.04	<0.04	<0.04	<0.04	<0.04	0.10	mg/kg	2.3	5.6	13
Acenaphthylene	0.15	<0.03	0.15	<0.03	<0.03	<0.03	<0.03	<0.03	<0.03	<0.03	0.15	mg/kg	170	420	920
Acenaphthene	0.41	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	0.41	mg/kg	210	510	1,100
Fluorene	0.25	<0.04	<0.04	<0.04	<0.04	<0.04	<0.04	<0.04	<0.04	<0.04	0.25	mg/kg	170	400	860
Phenanthrene	1.19	<0.03	0.11	<0.03	0.04	0.37	<0.03	0.06	0.06	<0.03	1.19	mg/kg	95	220	440
Anthracene	0.66	<0.04	0.34	<0.04	<0.04	0.09	<0.04	<0.04	<0.04	<0.04	0.66	mg/kg	2,400	5,400	11,000
Fluoranthene	6.59	0.04	0.49	<0.03	0.11	0.56	0.05	0.11	0.12	<0.03	6.59	mg/kg	280	560	890
Pyrene	5.52	0.04	0.47	<0.03	0.12	0.5	0.05	0.13	0.09	<0.03	5.52	mg/kg	620	1,200	2,000
Benzo(a)anthracene	2.95	<0.06	0.57	<0.06	0.08	0.38	<0.06	0.07	0.09	<0.06	2.95	mg/kg	7.2	11	13
Chrysene	2.67	0.03	0.58	<0.02	0.09	0.31	<0.02	0.06	0.06	<0.02	2.67	mg/kg	15	22	27
Benzo(bk)fluoranthene	5.49	<0.07	1.2	<0.07	0.16	0.57	<0.07	0.09	0.11	<0.07	5.49	mg/kg	ne	ne	ne
Benzo(a)pyrene	2.93	<0.04	0.43	<0.04	0.08	0.31	<0.04	0.06	0.06	<0.04	2.93	mg/kg	2.2	2.7	3
Indeno(123cd)pyrene	1.89	<0.04	0.38	<0.04	0.07	0.2	<0.04	<0.04	<0.04	<0.04	1.89	mg/kg	27	36	41
Dibenzo(ah)anthracene	0.26	<0.04	0.14	<0.04	<0.04	<0.04	<0.04	<0.04	<0.04	<0.04	0.26	mg/kg	0.24	0.28	0.3
Benzo(ghi)perylene	1.71	<0.04	0.41	<0.04	0.09	0.23	<0.04	0.06	0.04	<0.04	1.71	mg/kg	320	340	350
Coronene	0.32	<0.04	0.12	<0.04	<0.04	<0.04	<0.04	<0.04	<0.04	<0.04	0.32	mg/kg	ne	ne	ne
PAH 6 Total	18.61	<0.22	2.91	<0.22	0.51	1.87	<0.22	0.32	0.33	<0.22	18.61	mg/kg	ne	ne	ne
PAH 17 Total	33.09	<0.64	5.39	<0.64	0.84	3.52	<0.64	0.64	<0.64	<0.64	33.09	mg/kg	ne	ne	ne
Benzo(b)fluoranthene	3.95	<0.05	0.86	<0.05	0.12	0.41	<0.05	0.06	0.08	<0.05	3.95	mg/kg	2.6	3.3	3.7
Benzo(k)fluoranthene	1.54	<0.02	0.34	<0.02	0.04	0.16	<0.02	0.03	0.03	<0.02	1.54	mg/kg	77	93	100
Benzo(j)fluoranthene	1	<1	<1	<1	<1	<1	<1	<1	<1	<1	1.00	mg/kg	ne	ne	ne
TOC	1.11	1.72	NAD	0.91	0.85	3.79	0.85	0.65	0.67	0.92		%			
SOM (Note 1)	1.91	2.97	NAD	1.57	1.47	6.53	1.47	1.12	1.16	1.59					

Note 1 - TOC \* 1.724

S4UL - PAHs (Residential with homegrown produce), Glenamuck Road, February 2020

	TP5	TP5	TP6	TP6	TP7	TP8	TP9	TP10
	0.50	1.50	0.50	1.50	0.50	0.50	0.50	0.50
Naphthalene	<0.04	<0.04	0.3	<0.04	<0.04	<0.04	0.07	<0.04
Acenaphthylene	<0.03	<0.03	0.03	<0.03	<0.03	<0.03	0.28	<0.03
Acenaphthene	<0.05	<0.05	0.43	<0.05	<0.05	<0.05	<0.05	<0.05
Fluorene	<0.04	<0.04	0.32	<0.04	<0.04	<0.04	0.06	<0.04
Phenanthrene	0.1	<0.03	2.39	0.06	<0.03	0.2	0.42	<0.03
Anthracene	<0.04	<0.04	0.36	<0.04	<0.04	0.08	0.19	<0.04
Fluoranthene	0.12	0.09	2.11	0.06	0.05	0.93	0.84	0.06
Pyrene	0.26	0.08	1.86	0.04	0.03	0.79	0.74	0.06
Benzo(a)anthracene	0.08	0.12	0.65	<0.06	<0.06	0.55	0.58	<0.06
Chrysene	0.07	0.07	0.7	<0.02	<0.02	0.46	0.78	<0.02
Benzo(bk)fluoranthene	0.14	0.14	1.18	<0.07	<0.07	1.01	2.95	<0.07
Benzo(a)pyrene	0.07	0.06	0.62	<0.04	<0.04	0.55	2.56	<0.04
Indeno(123cd)pyrene	0.06	0.05	0.37	<0.04	<0.04	0.35	2.07	<0.04
Dibenzo(ah)anthracene	<0.04	<0.04	0.12	<0.04	<0.04	0.07	0.48	<0.04
Benzo(ghi)perylene	0.06	0.05	0.46	<0.04	<0.04	0.32	1.88	<0.04
Coronene	<0.04	<0.04	0.09	<0.04	<0.04	0.07	0.43	<0.04
PAH 6 Total	0.45	0.39	4.74	<0.22	<0.22	3.16	10.3	<0.22
PAH 17 Total	0.96	0.66	11.99	<0.64	<0.64	5.38	14.33	<0.64
Benzo(b)fluoranthene	0.1	0.1	0.85	<0.05	<0.05	0.73	2.12	<0.05
Benzo(k)fluoranthene	0.04	0.04	0.33	<0.02	<0.02	0.28	0.83	<0.02
Benzo(j)fluoranthene	<1	<1	<1	<1	<1	<1	<1	<1
TOC	0.70	0.89	1.76	0.15	0.82	1.46	2.14	0.75
SOM (Note 1)	1.21	1.53	3.03	0.26	1.41	2.52	3.69	1.29

Note 1 - TOC \* 1.724

		Residential with homegrown produce		
Max Level Detected	Units	LQM/CIIEH Suitable 4 Use Levels (S4ULs) [mg/kg DW]		
		1 % SOM	2.5 % SOM	6 % SOM
0.30	mg/kg	2.3	5.6	13
0.28	mg/kg	170	420	920
0.43	mg/kg	210	510	1,100
0.32	mg/kg	170	400	860
2.39	mg/kg	95	220	440
0.36	mg/kg	2,400	5,400	11,000
2.11	mg/kg	280	560	890
1.86	mg/kg	620	1,200	2,000
0.65	mg/kg	7.2	11	13
0.78	mg/kg	15	22	27
2.95	mg/kg	ne	ne	ne
2.56	mg/kg	2.2	2.7	3
2.07	mg/kg	27	36	41
0.48	mg/kg	0.24	0.28	0.3
1.88	mg/kg	320	340	350
0.43	mg/kg	ne	ne	ne
10.30	mg/kg	ne	ne	ne
14.33	mg/kg	ne	ne	ne
2.12	mg/kg	2.6	3.3	3.7
0.83	mg/kg	77	93	100
0.00	mg/kg	ne	ne	ne
	%			

# APPENDIX 10 – Whole Waste Body Classification Data



**Whole Waste Classification: Glenamuck Road, 2020**

Rank ( r )	r-1	CumB	TOC
1	0	0.000	0.65
2	1	0.006	0.67
3	2	0.033	0.7
4	3	0.113	0.75
5	4	0.274	0.82
6	5	0.500	0.85
7	6	0.726	1.110
8	7	0.887	1.460
Minimum number of samples which must pass the limit (WAC limit) test and average concentration be within the limit			
9	8	0.967	1.760
10	9	0.994	2.140
11	10	1.000	3.790

where CumB <0.05

where CumB >0.95

Average (mean) concentration	<b>1.34</b>
Average (mean) concentration Pass/Fail	<b>Pass</b>
<b>Inert WAC</b>	<b>3</b>
Max Allowable Failures of Inert WAC	3
No of Samples Above Inert WAC	1
No of Samples Above Inert WAC (Pass/Fail)	<b>Pass</b>
X50	6
X50 Level (median Concentration)	0.85

\* Where result is the LOD that limit has been assigned as the test values (red text)

**Non-Parametric Statistical Test Limit - Sample Number Check**

Rank	TOC Levels		TOC
1	0.65		
2	0.67		
3	0.7	<b>WAC Limit</b>	<b>3.00</b>
4	0.75	<b>Median</b>	<b>0.85</b>
5	0.82	<b>Precision</b>	<b>2.15</b>
6	0.85		
7	1.11		<b>Site Data</b>
8	1.46	<b>s (standard deviation)</b>	<b>0.95</b>
9	1.76		
10	2.14	<b>d (precision)</b>	<b>2.15</b>
11	3.79		
<b>No of Samples</b>	11		
<b>Minimum</b>	0.65		
<b>Maximum</b>	3.79		
<b>Median</b>	0.85		
<b>Mean</b>	1.34		
<b>Stand Dev</b>	0.95		
<b>Lower Con</b>	0.7		
<b>Upper Con</b>	1.76		
<b>Inert Limit</b>	3.00		
<b>Median</b>	0.85		
<b>Precision</b>	2.15		

<b>Samples Required = 4.4 x (s/d)<sup>2</sup></b>	<b>1</b>
<b>Samles Collected</b>	<b>11</b>



# APPENDIX 11 – Potential Material Outlets



<b>Waste Category</b>	<b>Classification Criteria</b>	<b>Potential Outlets</b>
Category A Unlined Soil Recovery Facilities	Soil and Stone only which are free from <sup>12</sup> 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). <sup>13</sup>
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 <sup>14</sup>
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 <sup>15</sup>  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.

<sup>12</sup> Free from equates to less than 2%.

<sup>13</sup> S.I. No. 126/2011 - European Communities (Waste Directive) Regulations 2011 (Article 27).

<sup>14</sup> Licenced to accept Category B2 material for recovery.

<sup>15</sup> 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



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# Ground Investigations Ireland

## Site at Glenamuck Road

DBFL

## Ground Investigation Report

January to March 2020





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## **DOCUMENT CONTROL SHEET**

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*Ground Investigations Ireland Ltd. present the results of the fieldworks and laboratory testing in accordance with the specification and related documents provided by or on behalf of the client. The possibility of variation in the ground and/or groundwater conditions between or below exploratory locations or due to the investigation techniques employed must be taken into account when this report and the appendices inform designs or decisions where such variation may be considered relevant. Ground and/or groundwater conditions may vary due to seasonal, man-made or other activities not apparent during the fieldworks and no responsibility can be taken for such variation. The data presented and the recommendations included in this report and associated appendices are intended for the use of the client and the client's geotechnical representative only and any duty of care to others is excluded unless approved in writing.*



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## GROUND INVESTIGATIONS IRELAND

Geotechnical & Environmental

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Appendix 3	Soakaway Records
Appendix 4	Insitu Plate Bearing Test Records



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<b>Appendix 5</b>	<b>Rotary Core Records</b>
<b>Appendix 6</b>	<b>Laboratory Testing</b>
<b>Appendix 7</b>	<b>Groundwater Monitoring</b>



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## **1.0 Preamble**

On the instructions of DBFL Consulting Engineers, a site investigation was carried out by Ground Investigations Ireland Ltd., between January and March 2020 at the site of the proposed residential development at Glenamuck Road, Dublin 18.

## **2.0 Overview**

### **2.1. Background**

It is proposed to construct a new residential development consisting of five apartment blocks with associated services, access roads and car parking at the proposed site. The site is currently brownfield and situated in Carrickmines, Dublin 18. The proposed construction is envisaged to consist of conventional foundations and pavement make up with some local excavations for services and plant. A double basement is proposed at the location of RC03, which will require deeper excavations.

### **2.2. Purpose and Scope**

The purpose of the site investigation was to investigate subsurface conditions utilising a variety of investigative methods in accordance with the project specification. The scope of the work undertaken for this project included the following:

- Visit project site to observe existing conditions
- Carry out 10 No. Trial Pits to a maximum depth of 3.5m BGL
- Carry out 2 No. Soakaways to determine a soil infiltration value to BRE digest 365
- Carry out 3 No. Insitu Plate Bearing Tests to determine soil CBR
- Carry out 5 No. Rotary Core Boreholes to a maximum depth of 6.90m BGL
- Installation of 2 No. Groundwater Monitoring Wells
- Geotechnical & Environmental Laboratory testing
- Report with recommendations

## **3.0 Subsurface Exploration**

### **3.1. 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.

### **3.2. Trial Pits**

The trial pits were excavated using a 23T tracked excavator at the locations shown in the exploratory hole location plan in Appendix 1. 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.

### **3.3. Soakaway Testing**

The soakaway testing was carried out in selected trial pits at the locations shown in the exploratory hole location plan in Appendix 1. These pits were carefully excavated and filled with water to assess the infiltration characteristics of the proposed site. The pits were allowed to drain and the drop in water level was recorded over time as required by BRE Digest 365. The pits were logged prior to completing the soakaway test and were backfilled with arising's upon completion. The soakaway test results are provided in Appendix 3 of this Report.

### **3.4. Rotary Boreholes**

The rotary coring was carried out by a track mounted T44 Beretta rig at the locations shown on the location plan in Appendix 1. The rotary boreholes were completed from the ground surface.

The T44 Beretta is equipped with rubber tracks which allow for short travel on pavement surfaces avoiding any damage to the surface. The T44 Beretta utilises a triple tube core barrel system operated using a wireline drilling process. The outer barrel is rotated by the drill rods and at its lower end, carries the coring bit. The inner barrel is mounted on a swivel so that it does not rotate during the process. The third barrel or liner is placed within the second one to retain the core intact and to preserve as much as possible the fabric of the drilling stratum. The core is cut by the coring bit and passes to the inner liner. The core is brought up to the surface within the inner barrel on a small diameter wire rope or line attached to the "overshoot" recovery tool which is then placed into a core box in order of recovery. A drilling fluid, typically air mist or water flush is passed from the surface through hollow drill rods to the drill bit, and is used to cool the drill bit. Temporary casing is used in some situations to support unstable ground or to seal off fissures or voids. It should be noted that the rotary coring can only achieve limited recovery in overburden, particularly granular or weakly cemented strata due to the flushing medium washing away the cohesive fraction during coring. The recovery achieved, where required is noted on the borehole logs and core photographs are provided to allow assessment of the core recovered. The rotary borehole logs are provided in Appendix 5 of this Report.

### **3.5. 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 as required by the project specification. The coordinates and elevations are provided on the exploratory hole logs in the appendices of this Report.

### **3.6. Groundwater Monitoring Installations**

Groundwater Monitoring Installations were installed upon the completion of the boreholes to enable sampling and the determination of the equilibrium groundwater level. The typical groundwater monitoring installation consists of a 50mm HDPE slotted pipe with a pea gravel response zone and bentonite seal installed to the Engineers specification. Where required the standpipe is sealed with a gas tap and finished with a durable steel cover fixed in place with a concrete surround. The installation details are provided on the exploratory hole logs in the appendices of this Report.

The results of the groundwater monitoring are included in Appendix 7 of this Report.

### **3.7. Insitu Plate Bearing Test**

The plate bearing tests were carried out using a 450mm diameter plate at the locations shown on the site plan in Appendix 1. The plate was loaded in increments using a hydraulic jack and an excavator to provide a reaction and the displacement was monitored in accordance with BS1377 Part 9 using independently mounted digital strain gauges. The constrained modulus and equivalent CBR are calculated in accordance with HD29/75 and are provided on the test reports in Appendix 4 of this Report.

### **3.8. Laboratory Testing**

Samples were selected from the exploratory holes for a range of geotechnical and environmental testing to assist in the classification of soils and to provide information for the proposed design.

Environmental & Chemical testing as required by the specification, including the Rilta Suite and pH and sulphate testing was carried out by Element Materials Technology Laboratory in the UK. The Rilta suite testing includes both Solid Waste and Leachate Waste Acceptance Criteria.

Geotechnical testing consisting of moisture content, Atterberg limits and Particle Size Distribution (PSD) tests were carried out in NMTL's Geotechnical Laboratory in Carlow.

The results of the laboratory testing are included in Appendix 6 of this Report.

## 4.0 Ground Conditions

### 4.1. 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.

The sequence of strata encountered were variable across the site but generally comprised;

- Made Ground
- Cohesive Deposits
- Weathered Bedrock
- Bedrock

**SURFACING:** At the location of TP6, tarmacadam surfacing was present to a depth of 0.10m BGL. At the location of RC5, concrete surfacing was present to a depth of 0.10m BGL.

**MADE GROUND:** Made Ground deposits were encountered from ground level or beneath the surfacing and were present to a depth of between 0.60m and 2.50m BGL. These deposits were described generally as *grey/brown slightly sandy slightly gravelly Clay with many cobbles and boulders and contained pieces and fragments of concrete, red brick, glass, plastic, timber, gas canisters, scrap metal, concrete blocks, waste ash (General Builders Rubble).*

**COHESIVE DEPOSITS:** Cohesive deposits were encountered beneath the Made Ground and were described typically as *brown slightly sandy gravelly CLAY with occasional cobbles and boulders.* These deposits had some, occasional or many cobble and boulder content where noted on the exploratory hole logs.

**WEATHERED BEDROCK:** Residual rock was encountered in IT01 which was diggable up to the scheduled depth of the soakaway hole (1.20m below top of stratum). This was recovered of as *orange/light grey slightly clayey sandy angular fine to coarse Gravel with occasional angular cobbles of granite.* The trial pits were terminated upon encountering the bedrock, in which excavation became too difficult. Rockhead was variable in each trial pit, and was generally unable to be excavated. The variation in the depth to rock in each pit is reflected in the trial pit logs, however it should be noted that the excavator was generally unable to progress once the top of intact rock was encountered..

**BEDROCK:** The rotary core boreholes recovered *medium strong to very strong massive light grey coarse grained crystalline GRANITE with brown staining and quartz veins. Partially to distinctly weathered.* Reduced recovery in the upper run of RC04 and RC05 may be due to some clay and sand being present within the rock mass either from weathering or as infilling, and being washed away by the rotary flush. The

depth to rock varies from 0.35m BGL in RC04 to a maximum of 3.50m BGL in TP4. The total core recovery is good, typically 100% with some of the uppermost runs dropping to 80 or 90%. The SCR and RQD both are relatively poor in the upper weathered zone, often recovered as non-intact, however both indices show an increase with depth in each of the boreholes.

## **4.2. Groundwater**

Groundwater strikes are noted on the exploratory hole logs where they occurred and where possible drilling was suspended for twenty minutes to allow the subsequent rise in groundwater to be recorded. We would point out that these exploratory holes did not remain open for sufficiently long periods of time to establish the hydrogeological regime and groundwater levels would be expected to vary with the tide, time of year, rainfall, nearby construction and other factors. For this reason, standpipes were installed in RC03 and RC04 to allow the equilibrium groundwater level to be determined. The groundwater monitoring is included in Appendix 7 of this Report.

## **4.3. Laboratory Testing**

### **4.3.1. Geotechnical Laboratory Testing**

The geotechnical testing carried out on soil samples recovered generally confirm the descriptions on the logs with the primary constituent of the cohesive deposits found to be a clayey SILT of intermediate to high plasticity. The Particle Size Distribution tests confirm that generally the cohesive deposits are well-graded with percentages of sands and gravels ranging between 5.80% and 55.0% generally with fines contents of 19.10 to 63.30%.

### **4.3.2. Chemical Laboratory Testing**

The pH and sulphate testing carried out indicate that pH results are near neutral and that the water soluble sulphate results is low when compared to the guideline values from BRE Special Digest 1:2005. The samples tested classify the soil as a Design Sulphate Level DS-1.

### **4.3.3. Environmental Laboratory Testing**

A number of samples were analysed for a suite of parameters which allows for the assessment of the sampled material in terms of total pollutant content for classification of materials as *hazardous* or *non-hazardous*. The suite also allows for the assessment of the sampled material in terms of suitability for placement at licenced landfills (inert, stable non-reactive, hazardous etc.). The parameter list for the suite includes analysis of the solid samples for arsenic, barium, cadmium, chromium, copper, cyanide, lead, nickel, mercury, zinc, speciated aliphatic and aromatic petroleum hydrocarbons, pH, sulphate, sulphide, moisture content, soil organic matter and an asbestos screen.

The suite also includes those parameters specified in the EU Council Decision establishing criteria for the acceptance of waste at Landfills (Council Decision 2003/33/EC), which for the solid samples are total



organic carbon (TOC), speciated aliphatic and aromatic petroleum hydrocarbons, BTEX, phenol, polychlorinated biphenyls (PCB) and PAH.

As part of the suite a leachate is generated from the solid sample which is 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).

While the laboratory report provides a comparison with the waste acceptance criteria limits it does not provide a waste classification of the material sampled nor does it comment on any potentially hazardous properties of the materials tested. The possibility for contamination, not revealed by the testing undertaken should be borne in mind particularly where Made Ground deposits are present or the previous site use or location indicate a risk of environmental variation. The waste classification report is included under the cover of a separate report by Ground Investigations Ireland.

The results from the completed laboratory testing is included in Appendix 6 of this report.

## **5.0 Recommendations & Conclusions**

### **5.1. General**

The recommendations given and opinions expressed in this report are based on the findings as detailed in the exploratory hole records. Where an opinion is expressed on the material between exploratory hole 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 exploratory holes. Limited information has been provided at the ground investigation stage and any designs based on the recommendations or conclusions should be completed in accordance with the current design codes, taking into account the variation and the specific details contained within the exploratory hole logs.

### **5.2. Foundations**

An allowable bearing capacity of 1000 kN/m<sup>2</sup> is recommended for conventional strip or pad foundations on the competent GRANITE bedrock at foundation level.

The pH and sulphate testing completed on samples recovered from the exploratory holes indicates the pH results are near neutral and the sulphate results are low, when compared to the guideline values from BRE Special Digest 1:2005. No special precautions are required for concrete foundations to prevent sulphate attack. The samples tested were below the limits of DS1 in the BRE Special Digest 1:2005.

### **5.3. External Pavements**

The proposed pavements are recommended to be designed in accordance with the CBR test results included in the Appendixes of this Report. The low CBR test results indicate that a capping layer or a sufficient depth of crushed stone fill may be required. Plate bearing tests are recommended at the time of construction to verify the design assumptions for the proposed pavement make up and to verify adequate compaction has been achieved.

The use of a geogrid and separation membrane may improve the performance of the proposed pavement and enable a more economical pavement design to be achieved, a specialist supplier is recommended to advise of the required strength, depth and type of geotextile for the proposed design.

### **5.4. Excavations**

Short term temporary excavations in the Made Ground deposits will remain stable for a limited time only and will require to be appropriately battered or the sides supported if the excavation is below 1.25m BGL or is required to permit man entry.

The groundwater and stability noted on the trial pit logs should be consulted when determining the most appropriate construction methods for excavations.

Excavations in the upper cohesive and weathered rock deposits are expected to be excavatable with conventional excavation equipment, with zones of more intact bedrock below this depth requiring rock

breaking techniques. The 23T excavator was unable to excavate within the confines of the trial pit on encountering the competent rock.

Any waste material to be removed off site should be disposed of to a suitably licenced landfill.

The environmental testing completed during the ground investigation is reported under the cover of a separate GII Waste Classification Assessment Report.

### **5.5. Soakaway Design**

An infiltration rate of  $f=9.263 \times 10^{-6}$  m/s was calculated for the soakaway location IT1. At the location of IT2 the water level dropped too slowly to allow calculation of 'f' the soil infiltration rate. This location is therefore not recommended as suitable for soakaway design and construction.

The recommendations provided in this report should be verified in the design of the proposed buildings, using the full details of the loading conditions and taking into consideration the allowable tolerable settlements/movements that the building can accommodate. The founding strata should be inspected and verified by a suitably qualified engineer prior to construction of the building foundations.

# APPENDIX 1 - Site Location Plan

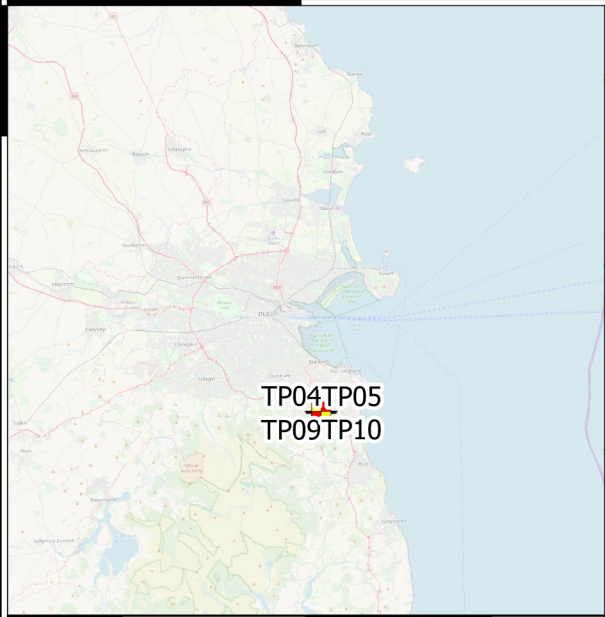






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721500E

721650E

724050N



- Glenamuck Road
-  CBR
  -  Infiltration test
  -  Rotary Core
  -  Trial Pit

Client:



Project Code:

9376-01-20

Project Title:

Glenamuck Road

Drawing Title:

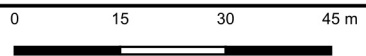
Figure 1 Site Location



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Drawn By:  
EB

Date:  
26/3/2020

721500E

721650E

723900N

## **APPENDIX 2 – Trial Pit Records**







<b>Machine :</b> 23 Tonne Tracked Excavator  <b>Method :</b> Trial Pit	<b>Dimensions</b> 4.30m X 1.00m X 2.50m	<b>Ground Level (mOD)</b> 77.81	<b>Client</b>	<b>Job Number</b> 9376-01-20
	<b>Location (dGPS)</b> 721532.9 E 723932.3 N	<b>Dates</b> 20/02/2020	<b>Engineer</b> DBFL	<b>Sheet</b> 1/1

Depth (m)	Sample / Tests	Water Depth (m)	Field Records	Level (mOD)	Depth (m) (Thickness)	Description	Legend	Water
0.50 0.50	B ES			77.51	(0.30)	MADE GROUND: Dark brown slightly sandy slightly gravelly organic Clay with roots and rootlets		
				77.01	(0.50)	MADE GROUND Brown/grey slightly sandy gravelly Clay with occasional cobbles and roots		
1.50 1.50	B ES		fast ingress(1) at 1.40m.	75.31 75.31	(1.70)	Firm grey mottled reddish brown slightly sandy gravelly silty CLAY with many angular cobbles, boulders and large boulders		∇1
					2.50 2.50	GRANITE BEDROCK - Not Ripable - Rockhead at 2.50m BGL  Complete at 2.50m		

<b>Plan</b> 	<b>Remarks</b>  Groundwater encountered at 1.40m BGL; fast ingress Trial pit unstable; side walls spalling Trial pit backfilled on completion		
	<table border="1"> <tr> <td><b>Scale (approx)</b> 1:25</td> <td><b>Logged By</b> JC</td> <td><b>Figure No.</b> 9376-01-20.TP1</td> </tr> </table>	<b>Scale (approx)</b> 1:25	<b>Logged By</b> JC
<b>Scale (approx)</b> 1:25	<b>Logged By</b> JC	<b>Figure No.</b> 9376-01-20.TP1	





Machine : 23 Tonne Tracked Excavator Method : Trial Pit	Dimensions 4.60m X 1.00m X 1.60m	Ground Level (mOD) 77.40	Client	Job Number 9376-01-20
	Location (dGPS) 721556.4 E 723952.7 N	Dates 20/02/2020	Engineer DBFL	Sheet 1/1

Depth (m)	Sample / Tests	Water Depth (m)	Field Records	Level (mOD)	Depth (m) (Thickness)	Description	Legend	Water
0.50 0.50	B ES			76.80	0.60 (0.30)	MADE GROUND: Dark brown slightly sandy slightly gravelly organic Clay with many roots and rootlets, some large boulders and pieces of ceramic and plastic  Possible MADE GROUND: Soft to firm brown slightly gravelly sandy CLAY with some angular cobbles and boulders		
1.50	ES		seepage(1) at 1.50m.	75.80	0.90 (0.70)	GRANITE BEDROCK - Not Ripable - Rockhead varies from 0.90m to 1.60m BGL - Soft to firm brown slightly gravelly sandy CLAY with some angular cobbles and boulders overlies rockhead		∇1
					1.60	Complete at 1.60m		

<b>Plan</b> .	<b>Remarks</b>  Groundwater seepage at 1.50m BGL Trial pit unstable; side walls spalling Trial pit backfilled on completion	
		<b>Scale (approx)</b> 1:25



<b>Machine</b> : 23 Tonne Tracked Excavator  <b>Method</b> : Trial Pit	<b>Dimensions</b> 6.00m X 1.80m X 2.90m	<b>Ground Level (mOD)</b> 75.17	<b>Client</b>	<b>Job Number</b> 9376-01-20
	<b>Location (dGPS)</b> 721626.3 E 723998.9 N	<b>Dates</b> 19/02/2020	<b>Engineer</b> DBFL	<b>Sheet</b> 1/1

Depth (m)	Sample / Tests	Water Depth (m)	Field Records	Level (mOD)	Depth (m) (Thickness)	Description	Legend	Water
0.50 0.50	B ES			74.37	(0.80)	MADE GROUND: Brown/grey slightly sandy gravelly Clay with some cobbles, and many pieces of timber, gas canisters, plastic, scrap metal and concrete		
1.50 1.50	B ES			73.67	(0.70)	MADE GROUND: Dark grey slightly sandy slightly gravelly Clay with some cobbles and boulders, and many pieces of timber, gas canisters, charcoal, bricks, waste ash, plant remains, plastic, scrap metal and concrete (strong hydrocarbon odour)		
2.50 2.50	B ES		medium ingress(1) at 2.80m.	72.67	(1.00)	MADE GROUND: Brown/grey slightly sandy slightly gravelly Clay with some cobbles and and occasional boulders, and occasional pieces of timber and plastic		
				72.27	(0.40)	GRANITE BEDROCK - Not Ripable - Rockhead varies from 2.50m to 2.90m BGL - Firm brown slightly sandy gravelly CLAY with some subangular cobbles and boulders of granite overlies rockhead		∇1
						Complete at 2.90m		

<b>Plan</b> 	<b>Remarks</b> Groundwater encountered at 2.80m BGL; medium ingress Trial pit unstable; side walls collapsing Trial pit backfilled on completion		
	<table border="1"> <tr> <td><b>Scale (approx)</b> 1:25</td> <td><b>Logged By</b> JC</td> <td><b>Figure No.</b> 9376-01-20.TP3</td> </tr> </table>	<b>Scale (approx)</b> 1:25	<b>Logged By</b> JC
<b>Scale (approx)</b> 1:25	<b>Logged By</b> JC	<b>Figure No.</b> 9376-01-20.TP3	



<b>Machine</b> : 23 Tonne Tracked Excavator  <b>Method</b> : Trial Pit	<b>Dimensions</b> 6.00m X 1.50m X 3.50m	<b>Ground Level (mOD)</b> 74.45	<b>Client</b>	<b>Job Number</b> 9376-01-20
	<b>Location (dGPS)</b> 721650.6 E 724029.9 N	<b>Dates</b> 19/02/2020	<b>Engineer</b> DBFL	<b>Sheet</b> 1/1

Depth (m)	Sample / Tests	Water Depth (m)	Field Records	Level (mOD)	Depth (m) (Thickness)	Description	Legend	Water
0.50 0.50	B ES					MADE GROUND: Grey/brown slightly gravelly sandy Clay with some cobbles, many large boulders and pieces of tarmacadam, concrete, bricks, scrap metal, plastic and timber		
1.50 1.50	B ES				(2.20)			
2.50 2.50	B ES			72.25	2.20 (0.40)	Possible MADE GROUND: Firm brown slightly sandy gravelly CLAY with some subangular cobbles and boulders of granite		
				71.85	2.60 (0.90)	GRANITE BEDROCK - Not Ripable - Rockhead varies from 2.60m to 3.50m BGL - Firm brown slightly sandy gravelly CLAY with some subangular cobbles and boulders of granite overlies rockhead		
			fast ingress(1) at 3.50m.	70.95	3.50	Complete at 3.50m		∇1

<b>Plan</b> .	<b>Remarks</b>  Groundwater encountered at 3.50m BGL; fast ingress Trial pit unstable; side walls collapsing Trial pit backfilled on completion		
	<table border="1"> <tr> <td><b>Scale (approx)</b> 1:25</td> <td><b>Logged By</b> JC</td> <td><b>Figure No.</b> 9376-01-20.TP4</td> </tr> </table>	<b>Scale (approx)</b> 1:25	<b>Logged By</b> JC
<b>Scale (approx)</b> 1:25	<b>Logged By</b> JC	<b>Figure No.</b> 9376-01-20.TP4	



Machine : 23 Tonne Tracked Excavator Method : Trial Pit	Dimensions 5.50m X 1.50m X 1.30m	Ground Level (mOD) 74.17	Client	Job Number 9376-01-20
	Location (dGPS) 721669.3 E 724003.6 N	Dates 19/02/2020	Engineer DBFL	Sheet 1/1

Depth (m)	Sample / Tests	Water Depth (m)	Field Records	Level (mOD)	Depth (m) (Thickness)	Description	Legend	Water
0.50 0.50	B ES				(1.00)	MADE GROUND: Grey/brown slightly gravelly sandy Clay with some cobbles, many boulders, concrete walls, plastic, bricks, timber, and scrap metal (hydrocarbon odour)		
				73.17	1.00 (0.30)	MADE GROUND: Brown slightly sandy gravelly Clay with some cobbles and pieces of timber		
				72.87	1.30 (0.30)	GRANITE BEDROCK - Not Ripable - Rockhead varies from 1.30m to 1.60m BGL - Firm brown slightly sandy gravelly CLAY with some subangular cobbles and boulders of granite overlies rockhead		
1.50 1.50	B ES			72.57	1.60	Complete at 1.60m		

<b>Plan</b> .	<b>Remarks</b>  No groundwater encountered Trial pit unstable; side walls collapsing Trial pit backfilled on completion	
		<b>Scale (approx)</b> 1:25



<b>Machine :</b> 23 Tonne Tracked Excavator  <b>Method :</b> Trial Pit	<b>Dimensions</b> 4.50m X 1.30m X 1.50m	<b>Ground Level (mOD)</b> 75.23	<b>Client</b>	<b>Job Number</b> 9376-01-20
	<b>Location (dGPS)</b> 721634.6 E 723971.9 N	<b>Dates</b> 19/02/2020	<b>Engineer</b> DBFL	<b>Sheet</b> 1/1

Depth (m)	Sample / Tests	Water Depth (m)	Field Records	Level (mOD)	Depth (m) (Thickness)	Description	Legend	Water
0.50 0.50	B ES			75.13 75.03	(0.10) (0.10) (0.10) 0.20	Tarmacadam  MADE GROUND: Red slightly clayey sandy angular fine to coarse Gravel  MADE GROUND: Grey slightly sandy gravelly Clay with some cobbles and boulders, and pieces of timber, tarmacadam, glass and metal		
1.50 1.50	B ES			74.33 73.73	0.90 (0.60) 1.50	GRANITE BEDROCK - Not Ripable - Rockhead varies from 0.90m to 1.50m BGL - Firm grey mottled brown slightly gravelly sandy CLAY with some angular cobbles of granite overlies rockhead  Complete at 1.50m		

<b>Plan</b> 	<b>Remarks</b>  No groundwater encountered Trial pit unstable; side walls spalling Trial pit backfilled on completion					
	<table border="1"> <tr> <td><b>Scale (approx)</b></td> <td><b>Logged By</b></td> <td><b>Figure No.</b></td> </tr> <tr> <td>1:25</td> <td>JC</td> <td>9376-01-20.TP6</td> </tr> </table>	<b>Scale (approx)</b>	<b>Logged By</b>	<b>Figure No.</b>	1:25	JC
<b>Scale (approx)</b>	<b>Logged By</b>	<b>Figure No.</b>				
1:25	JC	9376-01-20.TP6				



Machine : 23 Tonne Tracked Excavator Method : Trial Pit	Dimensions 4.60m X 1.00m X 0.80m	Ground Level (mOD)	Client	Job Number 9376-01-20
	Location (dGPS)	Dates 19/02/2020	Engineer DBFL	Sheet 1/1

Depth (m)	Sample / Tests	Water Depth (m)	Field Records	Level (mOD)	Depth (m) (Thickness)	Description	Legend	Water
0.50 0.50	B ES				(0.50) 0.50 (0.10) 0.60 (0.20) 0.80	MADE GROUND: Grey clayey sandy subangular to subrounded fine Gravel with occasional pieces of concrete  Firm to stiff brown slightly sandy slightly gravelly CLAY with occasional subangular cobbles of granite  GRANITE BEDROCK - Not Ripable - Rockhead varies from 0.60m to 0.80m BGL - Firm brown slightly sandy slightly gravelly CLAY with some subangular cobbles and boulders of granite overlies rockhead  Complete at 0.80m		

<b>Plan</b> .	<b>Remarks</b>  No groundwater encountered Trial pit stable Trial pit backfilled on completion					
	<table border="1"> <tr> <td>Scale (approx)</td> <td>Logged By</td> <td>Figure No.</td> </tr> <tr> <td>1:25</td> <td>JC</td> <td>9376-01-20.TP7</td> </tr> </table>	Scale (approx)	Logged By	Figure No.	1:25	JC
Scale (approx)	Logged By	Figure No.				
1:25	JC	9376-01-20.TP7				



<b>Machine</b> : 23 Tonne Tracked Excavator  <b>Method</b> : Trial Pit	<b>Dimensions</b> 4.30m X 1.00m X 0.80m	<b>Ground Level (mOD)</b> 78.46	<b>Client</b>	<b>Job Number</b> 9376-01-20
	<b>Location (dGPS)</b> 721568.9 E 723910.1 N	<b>Dates</b> 20/02/2020	<b>Engineer</b> DBFL	<b>Sheet</b> 1/1

Depth (m)	Sample / Tests	Water Depth (m)	Field Records	Level (mOD)	Depth (m) (Thickness)	Description	Legend	Water
0.50 0.50	B ES			77.66 77.66	(0.80) 0.80 0.80	MADE GROUND: Dark brown slightly sandy slightly gravelly organic Clay with some roots and rootlets and large boulders  GRANITE BEDROCK - Not Ripable - Rockhead at 0.80m BGL  Complete at 0.80m		

<b>Plan</b> .	<b>Remarks</b>  No groundwater encountered Trial pit unstable; side walls spalling Trial pit backfilled on completion		
	<table border="1"> <tr> <td><b>Scale (approx)</b> 1:25</td> <td><b>Logged By</b> JC</td> <td><b>Figure No.</b> 9376-01-20.TP8</td> </tr> </table>	<b>Scale (approx)</b> 1:25	<b>Logged By</b> JC
<b>Scale (approx)</b> 1:25	<b>Logged By</b> JC	<b>Figure No.</b> 9376-01-20.TP8	





<b>Machine :</b> 23 Tonne Tracked Excavator  <b>Method :</b> Trial Pit	<b>Dimensions</b> 4.20m X 1.00m X 0.60m	<b>Ground Level (mOD)</b>	<b>Client</b>	<b>Job Number</b> 9376-01-20
	<b>Location (dGPS)</b>	<b>Dates</b> 19/02/2020	<b>Engineer</b> DBFL	<b>Sheet</b> 1/1

Depth (m)	Sample / Tests	Water Depth (m)	Field Records	Level (mOD)	Depth (m) (Thickness)	Description	Legend	Water
0.50 0.50	B ES				(0.30) 0.30 (0.30) 0.60	MADE GROUND: Dark brown slightly sandy slightly gravelly organic Clay with many roots and some concrete blocks and fragments of glass  GRANITE BEDROCK - Not Ripable - Rockhead varies from 0.30m to 0.60m BGL - MADE GROUND: Dark brown slightly sandy slightly gravelly organic Clay with many roots and some concrete blocks and fragments of glass overlies rockhead  Complete at 0.60m	 	

<b>Plan</b> .	<b>Remarks</b>  No groundwater encountered Trial pit unstable; side walls spalling Trial pit backfilled on completion		
	<table border="1"> <tr> <td><b>Scale (approx)</b> 1:25</td> <td><b>Logged By</b> JC</td> <td><b>Figure No.</b> 9376-01-20.TP9</td> </tr> </table>	<b>Scale (approx)</b> 1:25	<b>Logged By</b> JC
<b>Scale (approx)</b> 1:25	<b>Logged By</b> JC	<b>Figure No.</b> 9376-01-20.TP9	



Machine : 23 Tonne Tracked Excavator Method : Trial Pit	Dimensions 4.40m X 1.10m X 2.20m	Ground Level (mOD)	Client	Job Number 9376-01-20
	Location (dGPS)	Dates 20/02/2020	Engineer DBFL	Sheet 1/1

Depth (m)	Sample / Tests	Water Depth (m)	Field Records	Level (mOD)	Depth (m) (Thickness)	Description	Legend	Water
0.50 0.50	B ES				(0.70)	MADE GROUND: Dark brown slightly sandy slightly gravelly organic Clay with roots and rootlets		
					0.70 (0.30)	Soft to firm brown slightly gravelly sandy CLAY with some subangular to subrounded cobbles		
					1.00 (0.90)	COBBLES and BOULDERS of granite with some clay		
					1.90 (0.30)	Weathered GRANITE BEDROCK - Rockhead at 1.90m BGL - Ripable		
					2.20 2.20	GRANITE BEDROCK - Not Ripable Complete at 2.20m		

<b>Plan</b> .	<b>Remarks</b>  No groundwater encountered Trial pit unstable; side walls spalling Trial pit backfilled on completion					
	<table border="1"> <tr> <td>Scale (approx)</td> <td>Logged By</td> <td>Figure No.</td> </tr> <tr> <td>1:25</td> <td>JC</td> <td>9376-01-20.TP10</td> </tr> </table>	Scale (approx)	Logged By	Figure No.	1:25	JC
Scale (approx)	Logged By	Figure No.				
1:25	JC	9376-01-20.TP10				

**Site at Glenamuck Road – Trial Pit Photographs**

**TP1**



**TP1**





TP1



TP1





TP2



TP2





TP2



TP2





**TP3**



**TP3**





**TP3**



**TP3**





**TP4**



**TP4**





**TP4**



**TP4**





TP5



TP5





**TP5**



**TP5**





**TP6**



**TP6**





**TP6**



**TP6**





TP7



TP7





TP7



TP7





TP8



TP8





**TP8**



**TP8**





TP9



TP9





**TP9**



**TP9**





**TP10**



**TP10**





**TP10**



**TP10**



## **APPENDIX 3 – Soakaway Records**







<b>Machine :</b> 23 Tonne Tracked Excavator  <b>Method :</b> Trial Pit	<b>Dimensions</b> 2.10m X 0.80m X 1.50m	<b>Ground Level (mOD)</b> 79.14	<b>Client</b>	<b>Job Number</b> 9376-01-20
	<b>Location (dGPS)</b> 721575 E 723894.3 N	<b>Dates</b> 20/02/2020	<b>Engineer</b> DBFL	<b>Sheet</b> 1/1

Depth (m)	Sample / Tests	Water Depth (m)	Field Records	Level (mOD)	Depth (m) (Thickness)	Description	Legend	Water
				78.84	0.30	MADE GROUND: Dark brown slightly sandy slightly gravelly organic Clay with roots, rootlets and plastic		
				77.64	1.50	Orange/light grey slightly clayey sandy angular fine to coarse GRAVEL with occasional angular cobbles of granite (possibly residual Granite)		
						Complete at 1.50m		

<b>Plan</b> 	<b>Remarks</b> No groundwater encountered Trial pit stable Soakaway test carried out in trial pit Trial pit backfilled on completion		
	<table border="1"> <tr> <td><b>Scale (approx)</b> 1:25</td> <td><b>Logged By</b> JC</td> <td><b>Figure No.</b> 9376-01-20.IT1</td> </tr> </table>	<b>Scale (approx)</b> 1:25	<b>Logged By</b> JC
<b>Scale (approx)</b> 1:25	<b>Logged By</b> JC	<b>Figure No.</b> 9376-01-20.IT1	



Machine : 23 Tonne Tracked Excavator Method : Trial Pit	Dimensions 2.50m X 0.60m X 1.10m	Ground Level (mOD)	Client	Job Number 9376-01-20
	Location (dGPS)	Dates 20/02/2020	Engineer DBFL	Sheet 1/1

Depth (m)	Sample / Tests	Water Depth (m)	Field Records	Level (mOD)	Depth (m) (Thickness)	Description	Legend	Water
					(0.30)	MADE GROUND: Dark brown slightly sandy slightly gravelly organic Clay with roots, rootlets and tree stumps		
					0.30	Soft to firm brown slightly sandy slightly gravelly CLAY with some angular cobbles and boulders of granite		
					(0.80)			
					1.10	GRANITE BEDROCK - Not Ripable - Rockhead at 1.10m		
					1.10	BGL Complete at 1.10m		

<b>Plan</b> .	<b>Remarks</b> No groundwater encountered Trial pit stable Soakaway test carried out in trial pit Trial pit backfilled on completion					
	<table border="1"> <tr> <td>Scale (approx)</td> <td>Logged By</td> <td>Figure No.</td> </tr> <tr> <td>1:25</td> <td>JC</td> <td>9376-01-20.IT2</td> </tr> </table>	Scale (approx)	Logged By	Figure No.	1:25	JC
Scale (approx)	Logged By	Figure No.				
1:25	JC	9376-01-20.IT2				

**Site at Glenamuck Road – Soakaway Test Photographs**

**IT1**



**IT1**





**IT1**



**IT1**





IT1





**IT2**



**IT2**





**IT2**



**IT2**





IT2





Catherinstown House,  
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D22 YD52

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**IT1**

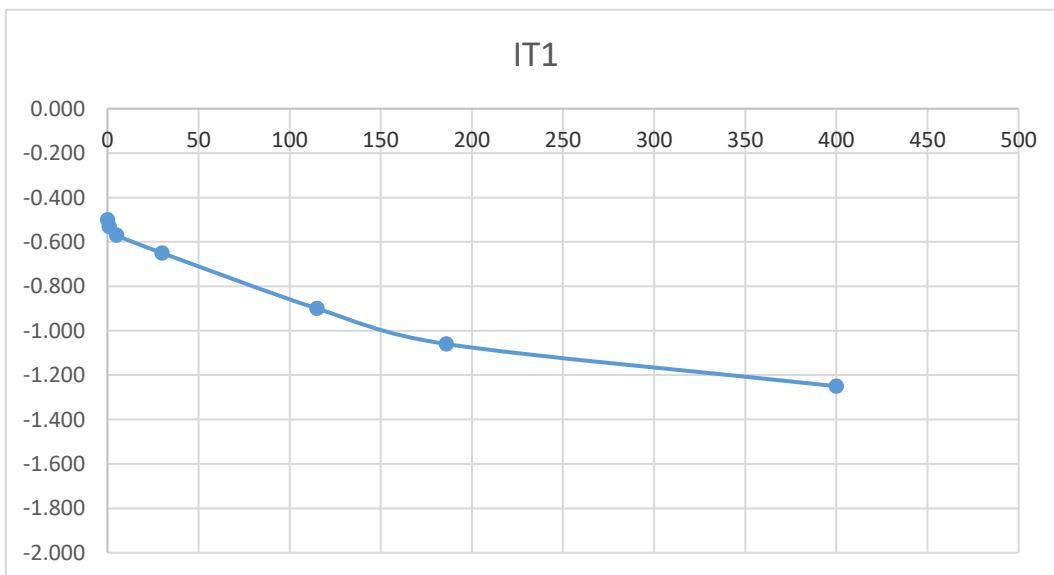
**Soakaway Test to BRE Digest 365**

**Trial Pit Dimensions: 2.10m x 0.80m 1.50m (L x W x D)**

Date	Time	Water level (m bgl)
20/02/2020	0	-0.500
20/02/2020	1	-0.530
20/02/2020	5	-0.570
20/02/2020	30	-0.650
20/02/2020	115	-0.900
20/02/2020	186	-1.060
20/02/2020	400	-1.250

\*Data extrapolated

<b>Start depth</b> <b>0.50</b>	<b>Depth of Pit</b> <b>1.500</b>	<b>Diff</b> <b>1.000</b>	<b>75% full</b> <b>0.75</b>	<b>25%full</b> <b>1.25</b>
Length of pit (m)	Width of pit (m)		75-25Ht (m)	Vp75-25 (m3)
2.100	0.800		0.500	0.84
Tp75-25 (from graph) (s)		<b>19800</b>	50% Eff Depth	ap50 (m2)
			0.500	4.58
<b>f =</b>	<b>9.263E-06</b>	<b>m/s</b>		





**GROUND INVESTIGATIONS IRELAND**  
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**IT2**

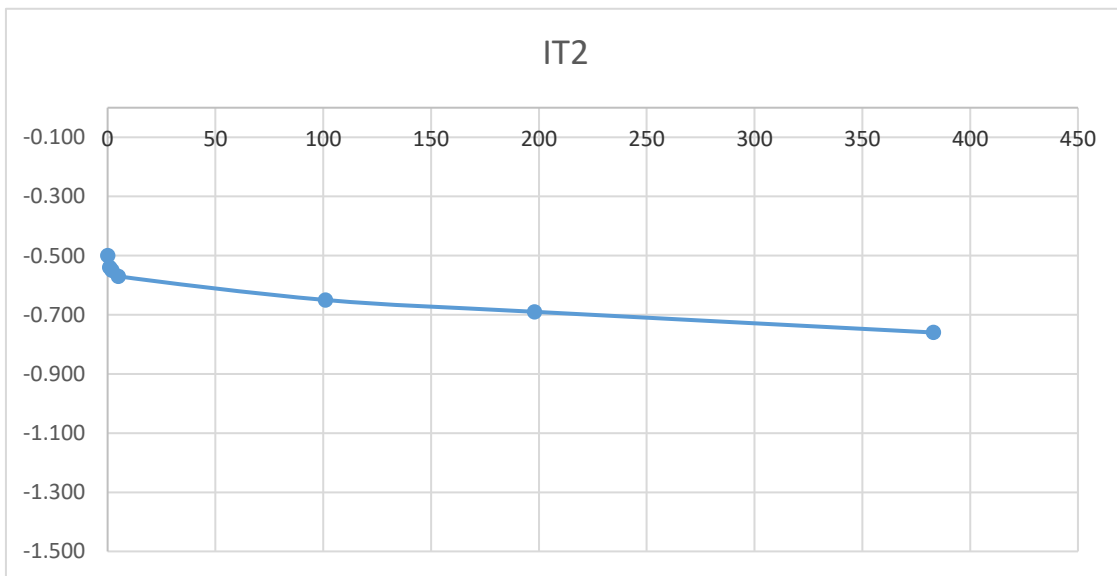
**Soakaway Test to BRE Digest 365**

**Trial Pit Dimensions: 2.50m x 0.60m 1.50m (L x W x D)**

Date	Time	Water level (m bgl)
20/02/2020	0	-0.500
20/02/2020	1	-0.540
20/02/2020	2	-0.550
20/02/2020	5	-0.570
20/02/2020	101	-0.650
20/02/2020	198	-0.690
20/02/2020	383	-0.760

**\*Soakaway failed - Pit backfilled**

Start depth	Depth of Pit	Diff	75% full	25%full
0.50	1.500	1.000	0.75	1.25





# APPENDIX 4 – Insitu Plate Bearing Test Records

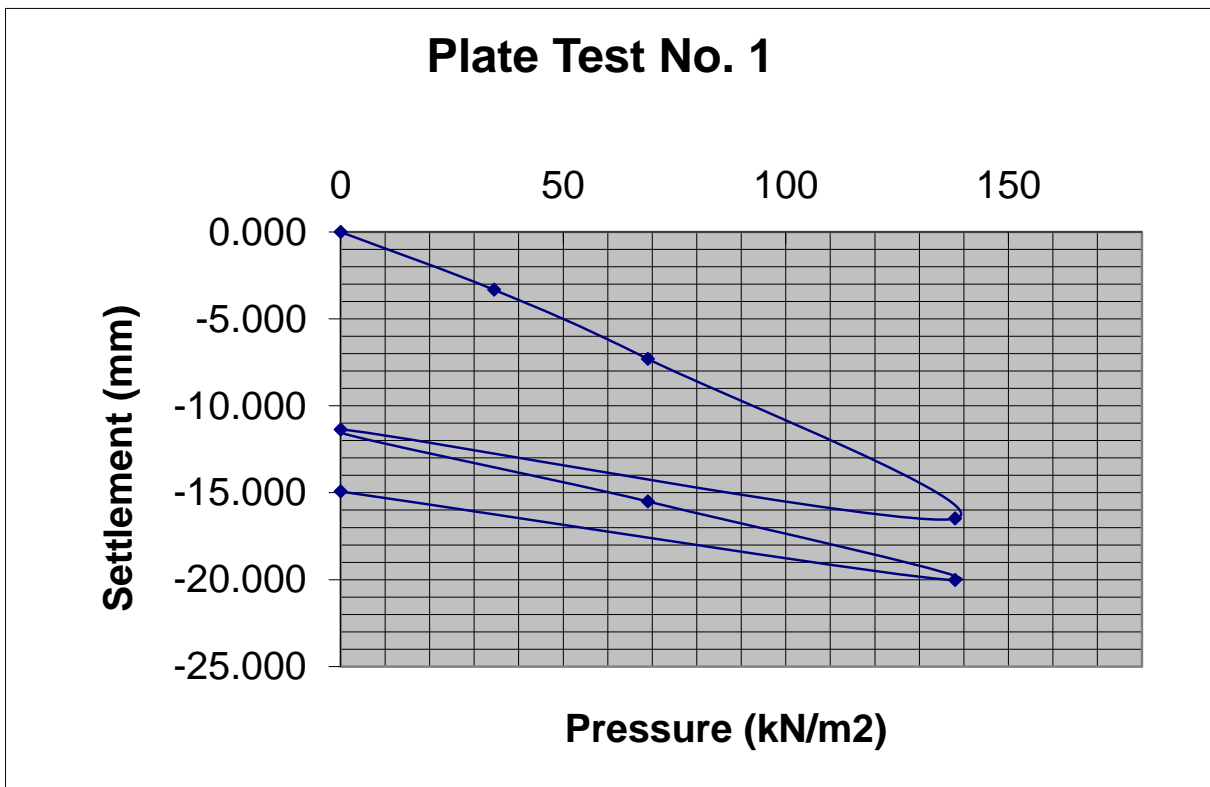


Applied Load	Gauge settlement
0	<b>0.000</b>
34.5	-3.33
69	-7.30
138	-16.49
0	-11.36
69	-15.50
138	-20.03
0	-14.93



**GROUND INVESTIGATIONS IRELAND**  
Geotechnical & Environmental

<b>LOCATION</b>	Glenamuck Road	<b>MATERIAL</b>	Soft to firm brown slightly sandy slightly gravelly CLAY with many angular cobbles and boulders
<b>CONTRACT NO.</b>	9376-01-20	<b>DEPTH</b>	0.50m BGL
<b>DATE</b>	20/02/2020	<b>NOTES</b>	
<b>ENGINEER</b>	DBFL	<b>SAMPLES</b>	
<b>PLATE DIAMETER</b>	457mm		
<b>TEST NO.</b>	CBR1		



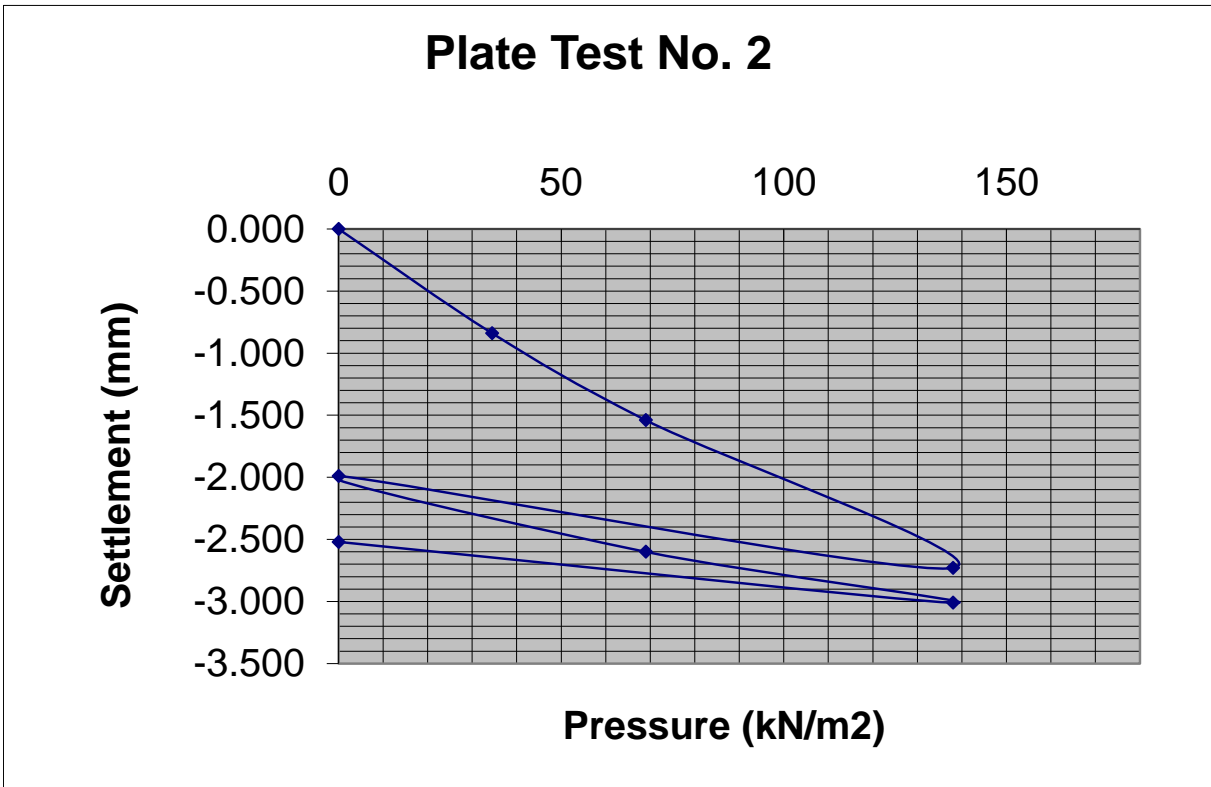
Modulus of subgrade reaction, K (Initial) = **6.39 MN/m<sup>2</sup>/m**  
 Modulus of subgrade reaction, K (Reload) = **11.26 MN/m<sup>2</sup>/m**

Equivalent CBR(initial)in accordance with HD25/94 volume7 section2 = **0.24 %**  
 Equivalent CBR(reload)in accordance with HD25/94 volume7 section2 = **0.64 %**

Applied Load	Gauge settlement
0	<b>0.000</b>
34.5	-0.84
69	-1.54
138	-2.73
0	-1.99
69	-2.60
138	-3.01
0	-2.52



<b>LOCATION</b>	Glenamuck Road	<b>MATERIAL</b>	Firm brown slightly sandy slightly gravelly CLAY with many angular cobbles and boulders
<b>CONTRACT NO.</b>	9376-01-20	<b>DEPTH</b>	0.50m BGL
<b>DATE</b>	20/02/2020	<b>NOTES</b>	
<b>ENGINEER</b>	DBFL	<b>SAMPLES</b>	
<b>PLATE DIAMETER</b>	457mm		
<b>TEST NO.</b>	CBR2		



Modulus of subgrade reaction, K (Initial) = **30.27 MN/m<sup>2</sup>/m**  
 Modulus of subgrade reaction, K (Reload) = **76.43 MN/m<sup>2</sup>/m**

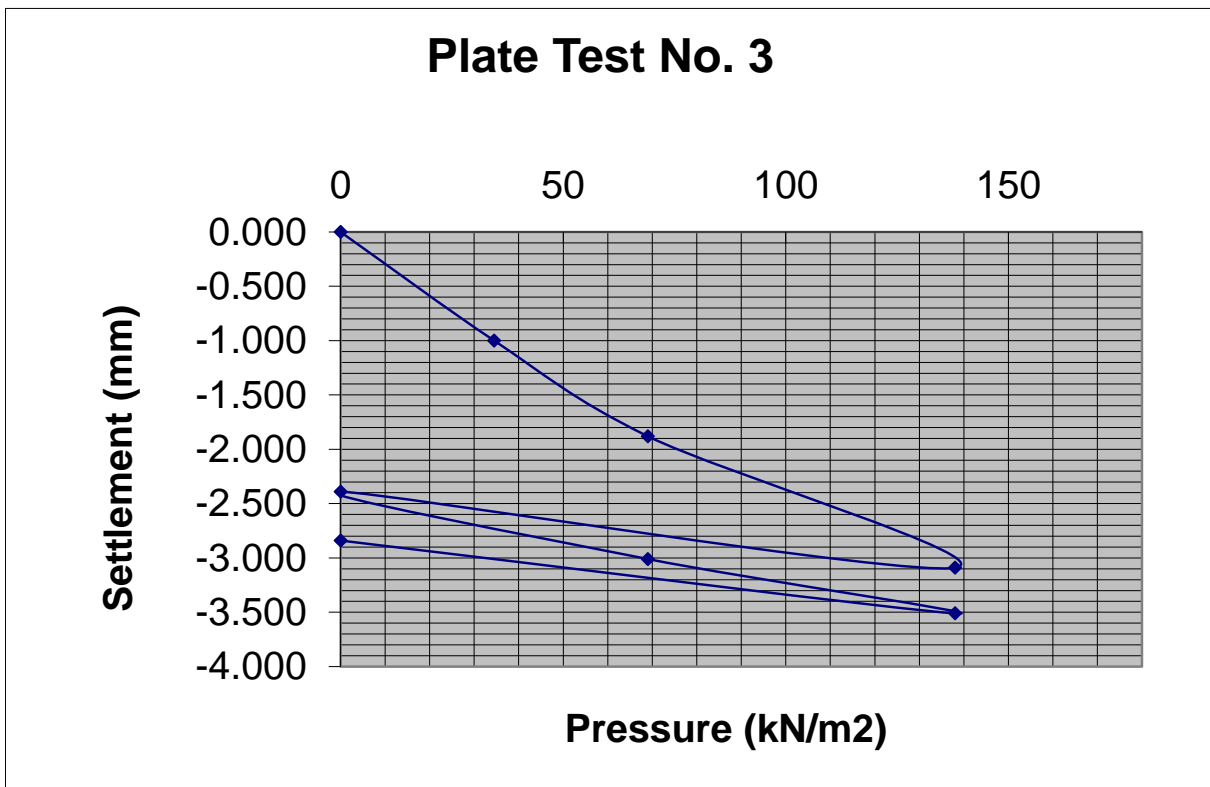
Equivalent CBR(initial)in accordance with HD25/94 volume7 section2 = **3.56 %**  
 Equivalent CBR(reload)in accordance with HD25/94 volume7 section2 = **17.70 %**

Applied Load	Gauge settlement
0	<b>0.000</b>
34.5	-1.00
69	-1.88
138	-3.09
0	-2.39
69	-3.01
138	-3.51
0	-2.84



**GROUND INVESTIGATIONS IRELAND**  
Geotechnical & Environmental

<b>LOCATION</b>	Glenamuck Road	<b>MATERIAL</b>	Firm brown slightly sandy slightly gravelly CLAY with some angular cobbles and boulders
<b>CONTRACT NO.</b>	9376-01-20	<b>DEPTH</b>	0.50m BGL
<b>DATE</b>	20/02/2020	<b>NOTES</b>	
<b>ENGINEER</b>	DBFL	<b>SAMPLES</b>	
<b>PLATE DIAMETER</b>	457mm		
<b>TEST NO.</b>	CBR3		



Modulus of subgrade reaction, K (Initial) = **24.80 MN/m<sup>2</sup>/m**  
 Modulus of subgrade reaction, K (Reload) = **75.20 MN/m<sup>2</sup>/m**

Equivalent CBR(initial)in accordance with HD25/94 volume7 section2 = **2.52 %**  
 Equivalent CBR(reload)in accordance with HD25/94 volume7 section2 = **17.21 %**



## **APPENDIX 5 – Rotary Borehole Records**





Machine : Beretta T47s		Casing Diameter 68mm cased to 6.90m		Ground Level (mOD)		Client		Job Number 9376-01-20	
Flush : Water		Location		Dates 11/03/2020		Engineer DBFL		Sheet 1/1	
Core Dia: 68 mm									
Method : Rotary Cored									

Depth (m)	TCR	SCR	RQD	FI	Field Records	Level (mOD)	Depth (m) (Thickness)	Description	Legend	Water
0.40							0.40	Recovery consists of: MADE GROUND: Light grey slightly sandy fine to coarse angular to subangular Gravel. Driller notes sandy Gravel		
	50	35	28	10			(3.10)	Weak to medium strong massive light grey coarse grained crystalline GRANITE with brown staining and quartz veins. Partially to distinctly weathered  0.40m-2.40m BGL: Two Fracture sets. F1: Very close to closely spaced, 0-20 degrees, undulating rough with brown staining. F2: Close spaced, 40-60 degrees, undulating rough with brown staining,		
2.40				NI				2.40m-3.50m BGL: Non Intact		
3.50	87	47	20				3.50	Medium strong to strong massive light grey coarse grained crystalline GRANITE with brown staining and an aplite vein. Partially weathered		
3.90							(3.40)	3.50m-6.90m BGL: Two Fracture sets. F1: Closely to medium spaced, 0-20 degrees, undulating rough with brown staining. F2: medium to widely spaced, 40-60 degrees, undulating rough with brown staining,		
5.40	100	100	77	5						
	100	93	80				6.90	Complete at 6.90m		
6.90										

<b>Remarks</b> Complete at 6.90m BGL Borehole backfilled upon completion	Scale (approx)	Logged By
	1:50	AB
	<b>Figure No.</b> 9376-01-20.RC01	



Machine : Beretta T47s		Casing Diameter 68mm cased to 6.90m		Ground Level (mOD)		Client		Job Number 9376-01-20	
Flush : Water		Location		Dates 06/03/2020		Engineer DBFL		Sheet 1/1	
Core Dia: 68 mm									
Method : Rotary Cored									

Depth (m)	TCR	SCR	RQD	FI	Field Records	Level (mOD)	Depth (m) (Thickness)	Description	Legend	Water
0.60	46	33	39				0.60	Recovery consists of: MADE GROUND: Grey medium subrounded Gravel. Driller notes Gravel		
2.40	100	100	97	5			(6.30)	Strong to very strong massive light grey coarse grained crystalline GRANITE. Partially weathered		
3.90	93	87	73					0.60m-6.90m BGL: Two Fracture Sets. F1: Closely to widely spaced, 0-20 degrees, undulating rough with occasional brown staining. F2: Medium to widely spaced, 40-60 degrees, undulating rough with occasional brown staining,		
5.40	100	100	97							
6.90							6.90	Complete at 6.90m		

<b>Remarks</b> Complete at 6.90m BGL Borehole backfilled upon completion								<b>Scale (approx)</b> 1:50	<b>Logged By</b> AB
								<b>Figure No.</b> 9376-01-20.RC02	



Machine : Beretta T47s Flush : Water Core Dia: 68 mm Method : Rotary Cored	Casing Diameter 68mm cased to 6.90m	Ground Level (mOD)	Client	Job Number 9376-01-20
	Location	Dates 05/03/2020	Engineer DBFL	Sheet 1/1

Depth (m)	TCR	SCR	RQD	FI	Field Records	Level (mOD)	Depth (m) (Thickness)	Description	Legend	Water	Instr
							(1.20)	Recovery consists of: MADE GROUND: Grey slightly sandy gravelly Cobbles and Boulders. Driller notes clayey Cobbles			
	33						1.20	Recovery consists of: MADE GROUND: Timber. Driller notes Timber			
2.40							(1.50)				
2.70	80	40	40				2.70	Weak to medium strong massive light grey coarse grained crystalline GRANITE with brown staining. Partially to distinctly weathered			
3.90							(4.20)	2.70m-6.90m BGL: Two Fracture Sets. F1: Very closely to medium spaced, 0-20 degrees, undulating rough with brown staining. F2: Medium spaced, 40-60 degree, undulating rough, with brown staining.			
5.40	100	100	77	7							
6.90	100	80	77				6.90	Complete at 6.90m			

<b>Remarks</b> Complete at 6.90m BGL 50mm Standpipe installed in borehole upon completion, slotted from 6.90m BGL to 1.00m BGL, plain from 1.00m BGL to Gound Level, with bentonite seal and raised cover.	Scale (approx)	Logged By
	1:50	AB
	Figure No. 9376-01-20.RC03	





<b>Machine :</b> Beretta T47s <b>Flush :</b> Water <b>Core Dia:</b> 68 mm <b>Method :</b> Rotary Cored	<b>Casing Diameter</b> 68mm cased to 6.90m	<b>Ground Level (mOD)</b>	<b>Client</b>	<b>Job Number</b> 9376-01-20
	<b>Location</b>	<b>Dates</b> 10/03/2020	<b>Engineer</b> DBFL	<b>Sheet</b> 1/1

Depth (m)	TCR	SCR	RQD	FI	Field Records	Level (mOD)	Depth (m) (Thickness)	Description	Legend	Water	Instr
0.35							0.35	Recovery consists of: MADE GROUND: Light grey slightly sandy fine to coarse subangular to subrounded Gravel. Driller notes sandy Clay			
	45	46	49				(2.05)	Medium strong to strong massive light grey coarse grained crystalline GRANITE with occasional brown staining. Partially weathered. (Recovery 66%)			
2.40							2.40	Strong to very strong massive light grey coarse grained crystalline GRANITE with occasional brown staining. Partially weathered			
	100	100	100	3			(4.50)	0.35m-6.90m BGL: Two Fracture Sets. F1: Closely to widely spaced, 0-20 degrees, undulating rough with brown staining. F2: Medium to widely spaced, 40-60 degree, undulating rough with brown staining.			
3.90											
	100	100	93								
5.40											
	100	100	93								
6.90							6.90	Complete at 6.90m			

<b>Remarks</b> Complete at 6.90m BGL 50mm Standpipe installed in borehole upon completion, slotted from 6.90m BGL to 1.00m BGL, plain from 1.00m BGL to Ground Level, with bentonite seal and raised cover.	<b>Scale (approx)</b> 1:50	<b>Logged By</b> AB
	<b>Figure No.</b> 9376-01-20.RC04	



Machine : Beretta T47s Flush : Water Core Dia: 68 mm Method : Rotary Cored	Casing Diameter 68mm cased to 6.00m	Ground Level (mOD)	Client	Job Number 9376-01-20
	Location	Dates 09/03/2020	Engineer DBFL	Sheet 1/1

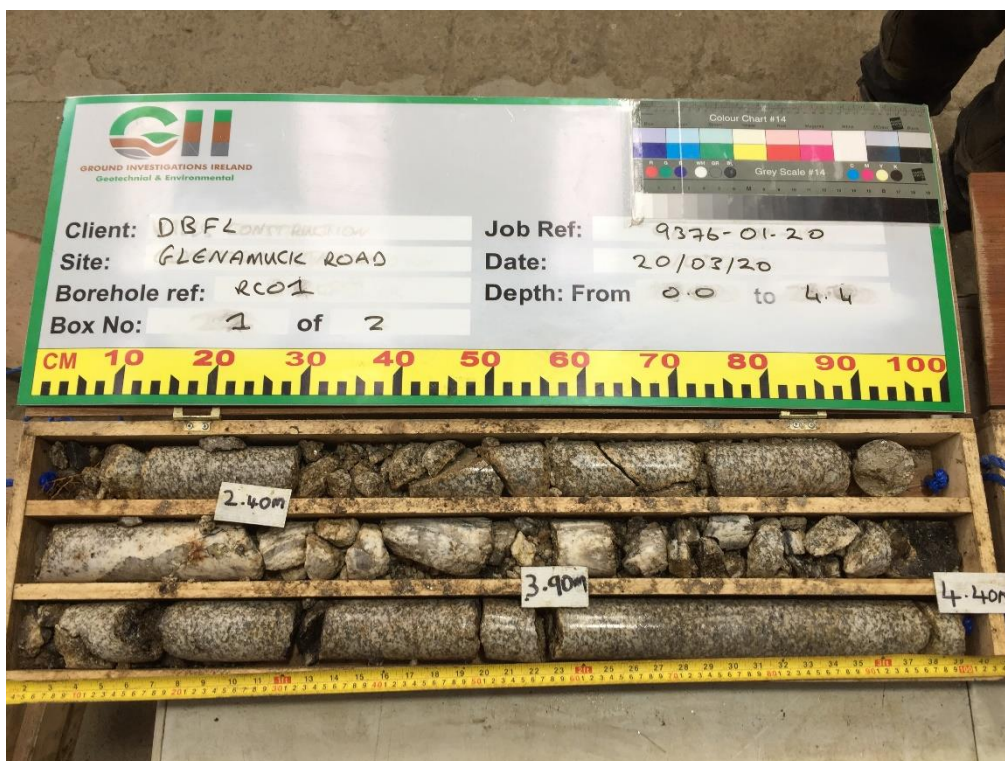
Depth (m)	TCR	SCR	RQD	FI	Field Records	Level (mOD)	Depth (m) (Thickness)	Description	Legend	Water
0.40							0.10 (0.30) 0.40	CONCRETE Recovery consists of: MADE GROUND: Grey coarse angular Gravel. Driller notes clayey Cobbles		
	50	35	43				(1.50)	Medium strong to strong massive light grey coarse grained crystalline GRANITE with occasional brown staining. Partially weathered. (Recovery 40%)		
2.40							1.90	Medium strong to very strong massive light grey coarse grained crystalline GRANITE with large quartz veins. Partially weathered		
	100	100	93	3			(4.10)	0.40m-6.00m BGL: Two Fracture Sets. F1: Closely to widely spaced, 0-20 degrees, undulating rough with brown staining. F2: Medium to widely spaced, 40-60 degree, undulating rough with brown staining.		
3.90										
	100	100	97							
5.40										
	100	100	83							
6.00							6.00	Complete at 6.00m		

Remarks Complete at 6.00m BGL Borehole backfilled upon completion	Scale (approx)	Logged By
	1:50	AB
	Figure No. 9376-01-20.RC05	

# Glenamuck Road

## RC Photos

### RC01

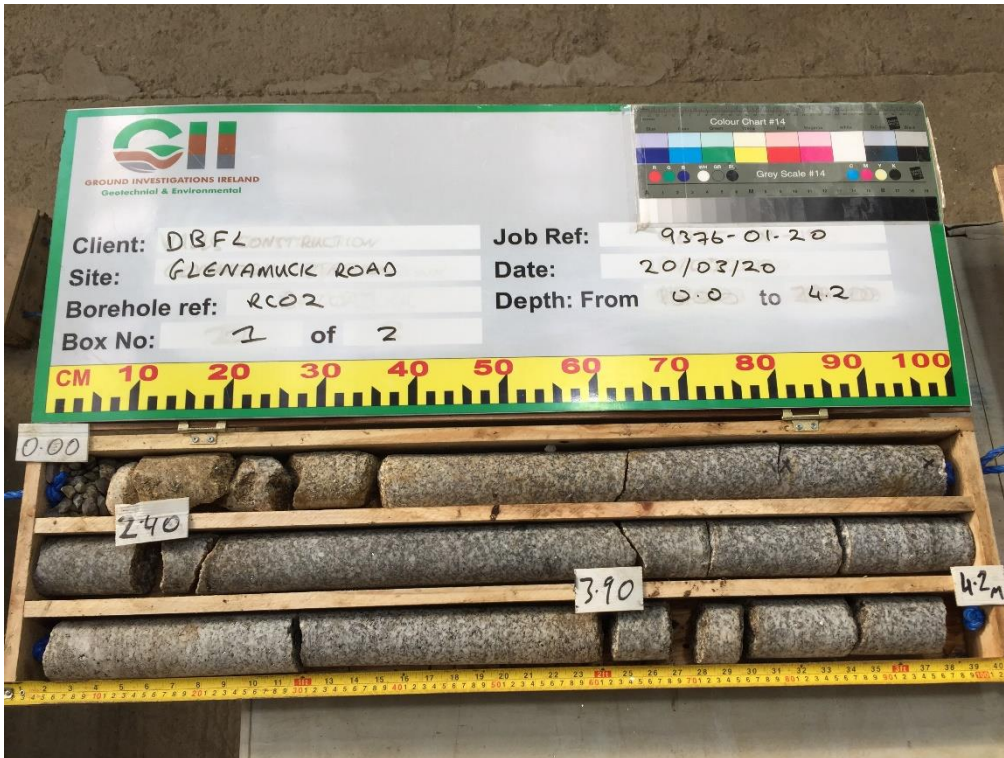


### RC01





RC02

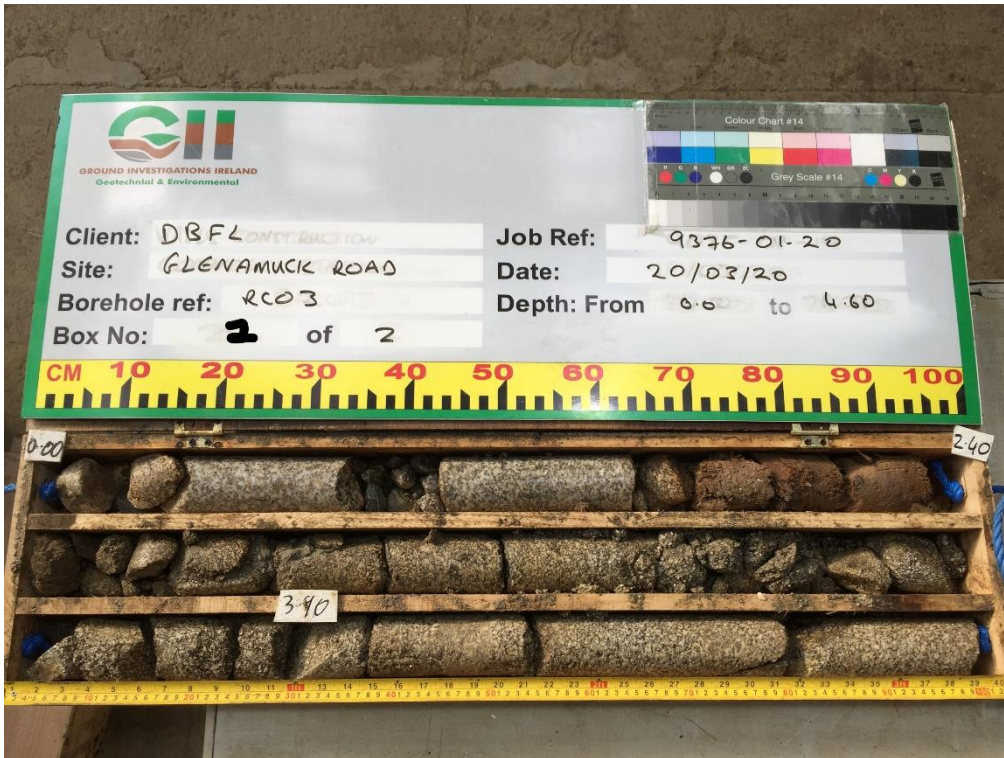


RC02

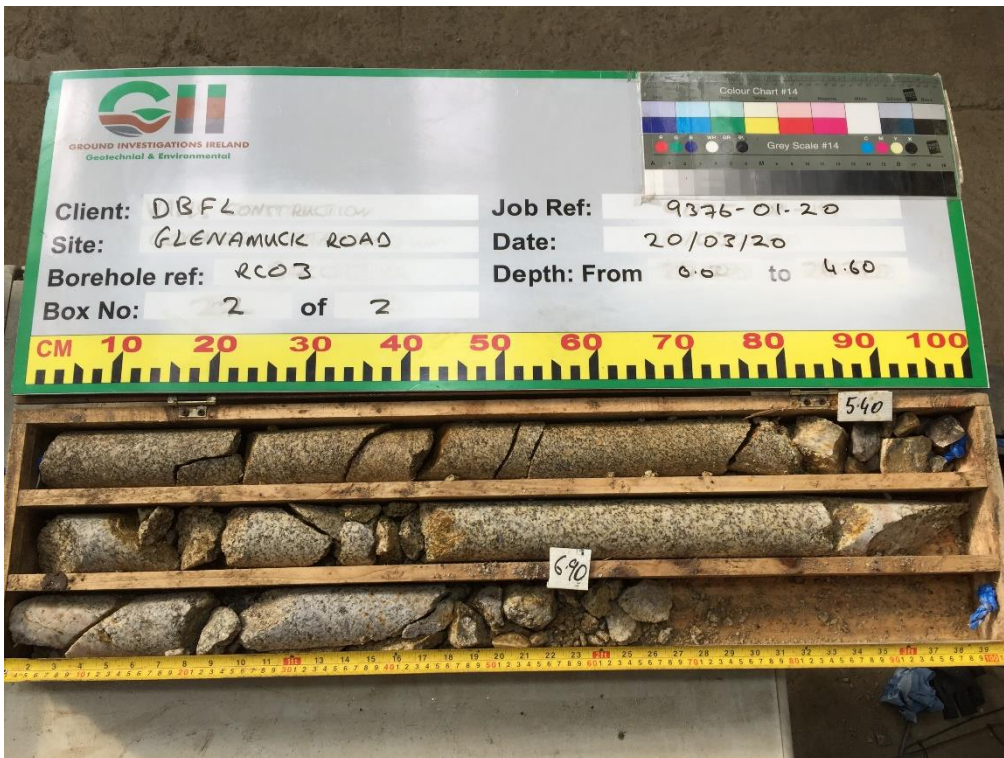




RC03



RC03





RC04



RC04



RC05



RC05





# APPENDIX 6 – Laboratory Testing

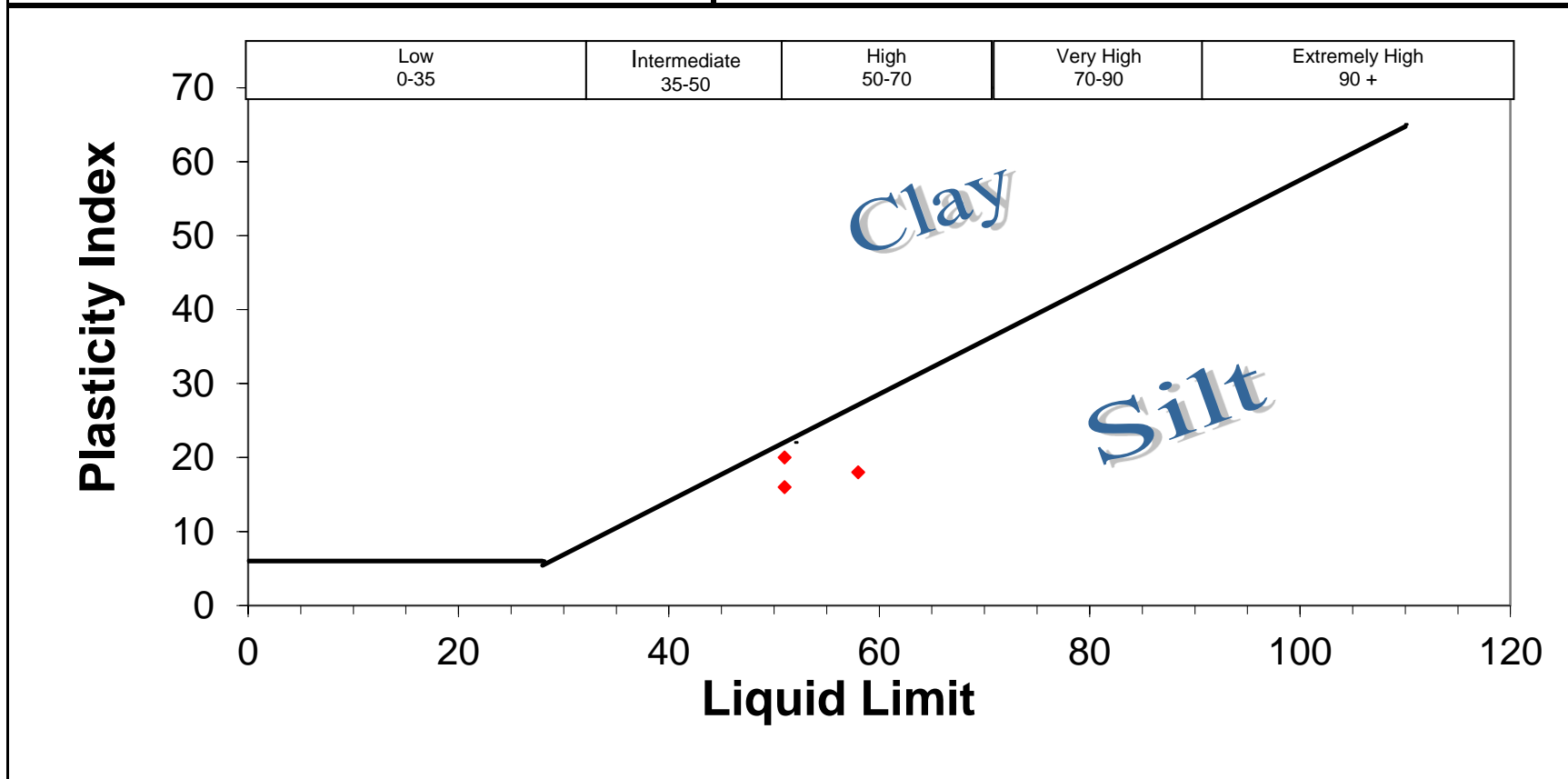






**NMTL LTD**  
Unit 18c, Tullow Industrial Estate  
Tullow  
County Carlow  
Tel: 00353 59 9180822  
Mob: 00353 872575508  
[billa@nmtl.ie](mailto:billa@nmtl.ie)

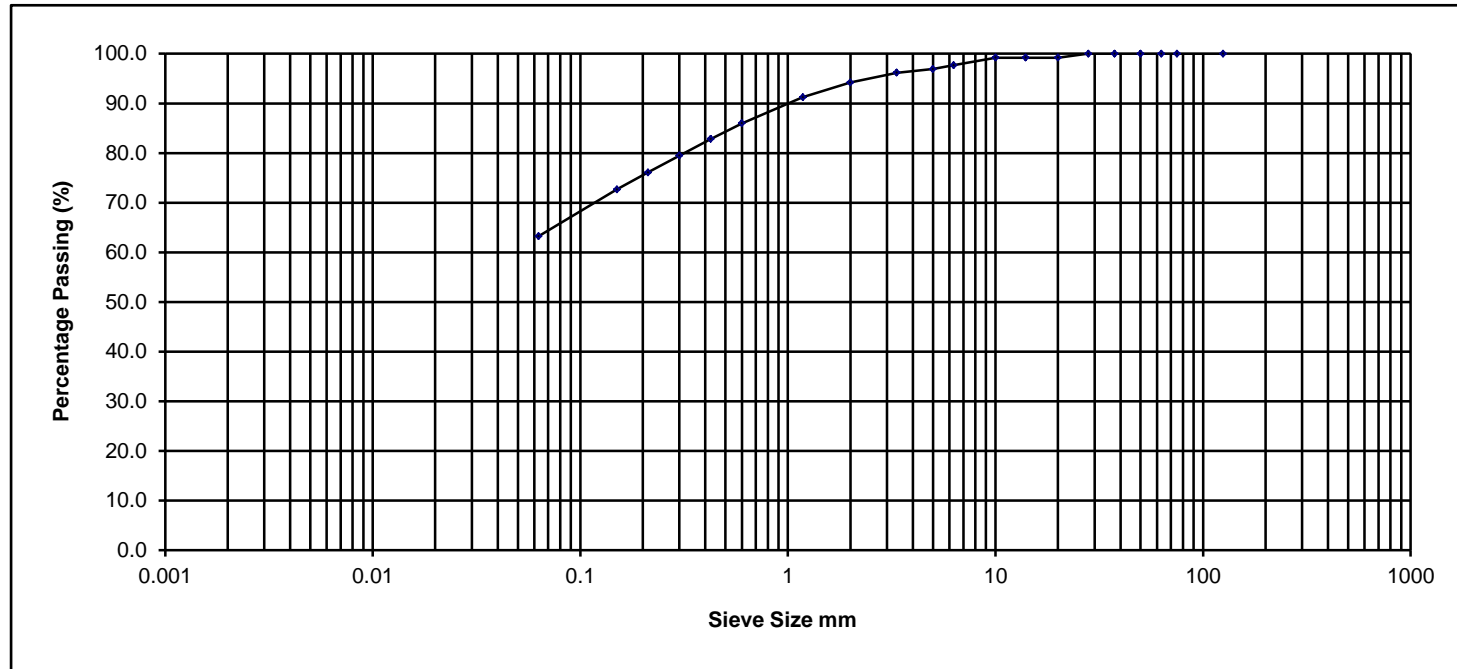
**Contract:** Site at Glenamuck Road  
**Client:** Ground Investigations Ireland Ltd  
**Engineer:** James Cashen  
**GII Project ID** 9376-01-20  
**Date:** 18/03/2020  
**Tested By:** Sb/Tch/Ms **Checked:** Bc  
**Job ref No.** NMTL 3166



**NMTL Ltd**

Sieve	%
Size mm	Passing
125.000	100.0
75.000	100.0
63.000	100.0
50.000	100.0
37.500	100.0
28.000	100.0
20.000	99.2
14.000	99.2
10.000	99.2
6.300	97.7
5.000	96.9
3.350	96.2
2.000	94.2
1.180	91.2
0.600	86.0
0.425	82.8
0.300	79.5
0.212	76.1
0.150	72.7
0.063	63.3

### Determination of Particle Size Distribution BS 1377 : 1990 : Part 2 : Clauses 9.2 & 9.5



Percentage Particle Size

Clay	Fine			Medium			Coarse			Cobbles	Boulder
	Fine	Medium	Coarse	Fine	Medium	Coarse	Fine	Medium	Coarse		
	Silt			Sand			Gravel				
	63.3			30.9			5.8			0.0	0.0

Sample Description Brown/grey/orange slightly gravelly clayey SILT

Project No.

NMTL 3166

BH/TP No.

TP1

Project

Site at Glenamuck Road

GII PROJECT ID: 9376-01-20

Sample No.

B

**NM**

**TL**

**Ltd**

Operator

Tch/Ms

Checked

Nc

Approved

Bc

Date sample tested

11/03/2020

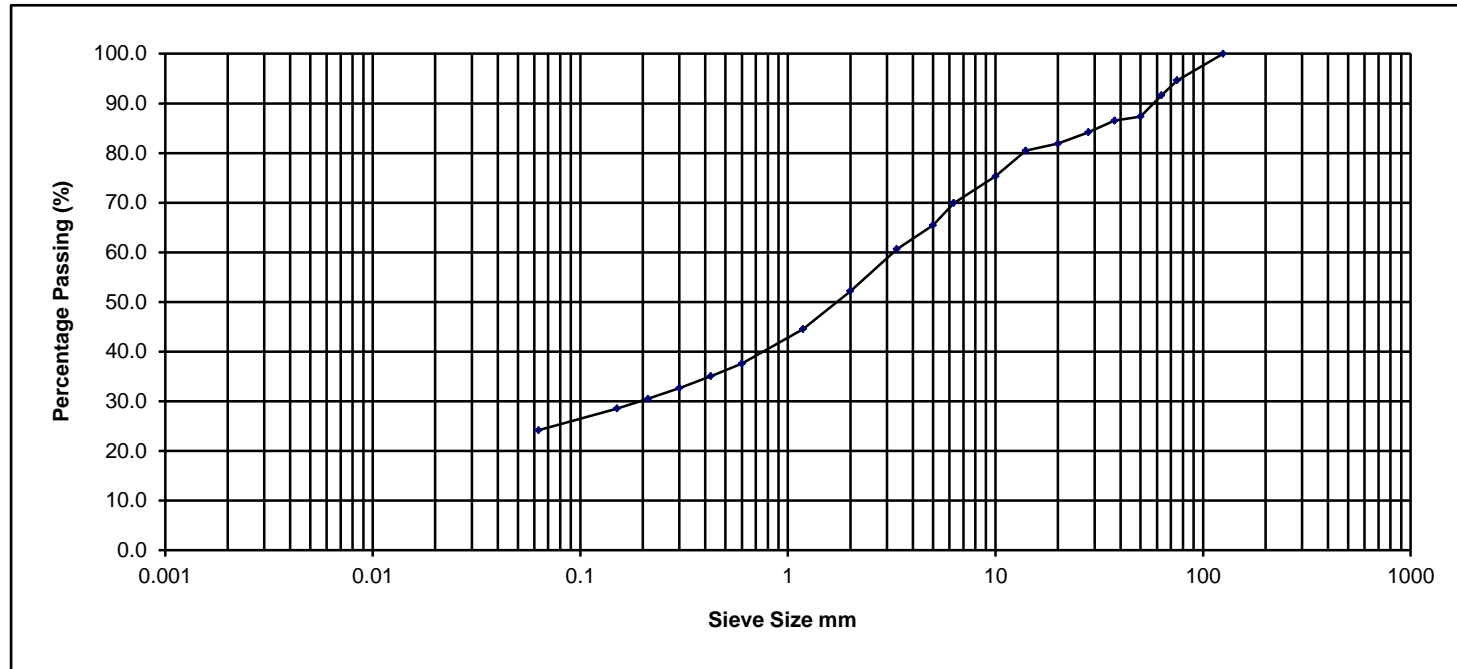
Depth

1.5m

**NMTL Ltd**

Sieve Size mm	% Passing
125.000	100.0
75.000	94.6
63.000	91.6
50.000	87.3
37.500	86.5
28.000	84.2
20.000	81.9
14.000	80.5
10.000	75.3
6.300	69.9
5.000	65.4
3.350	60.7
2.000	52.2
1.180	44.5
0.600	37.6
0.425	35.0
0.300	32.7
0.212	30.5
0.150	28.5
0.063	24.2

### Determination of Particle Size Distribution BS 1377 : 1990 : Part 2 : Clauses 9.2 & 9.5



Percentage Particle Size

Clay	Fine			Medium			Coarse			Cobbles	Boulder
	Fine	Medium	Coarse	Fine	Medium	Coarse	Fine	Medium	Coarse		
	Silt			Sand			Gravel				
	24.2			28.0			39.4			8.4	0.0

Sample Description: Brown slightly sandy gravelly clayey SILT with some cobbles

Project No.

NMTL 3166

BH/TP No.

TP4

Project: Site at Glenamuck Road

GII PROJECT ID: 9376-01-20

Sample No.

B

**NM**  
**TL**

**Ltd**

Operator

Tch/Ms

Checked

Nc

Approved

Bc

Date sample tested

11/03/2020

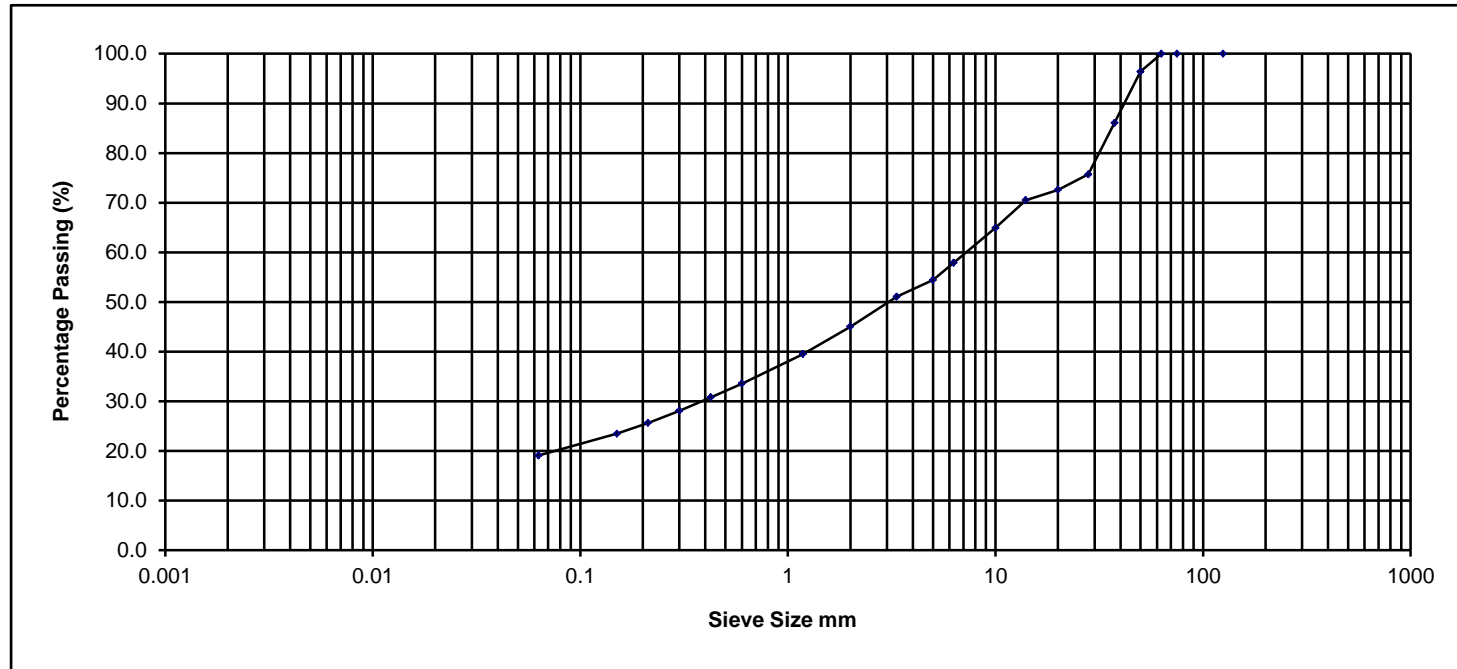
Depth

2.5m

**NMTL Ltd**

Sieve Size mm	% Passing
125.000	100.0
75.000	100.0
63.000	100.0
50.000	96.4
37.500	86.1
28.000	75.7
20.000	72.6
14.000	70.5
10.000	65.0
6.300	57.9
5.000	54.4
3.350	51.1
2.000	45.0
1.180	39.5
0.600	33.6
0.425	30.8
0.300	28.1
0.212	25.6
0.150	23.5
0.063	19.1

### Determination of Particle Size Distribution BS 1377 : 1990 : Part 2 : Clauses 9.2 & 9.5



Percentage Particle Size

Clay	Fine			Medium			Coarse			Cobbles	Boulder
	Fine	Medium	Coarse	Fine	Medium	Coarse	Fine	Medium	Coarse		
	Silt			Sand			Gravel				
	19.1			25.9			55.0			0.0	0.0

Sample Description Dark brown slightly sandy gravelly clayey SILT.

Project No.

NMTL 3166

BH/TP No.

TP6

Project

Site at Glenamuck Road

GII PROJECT ID: 9376-01-20

Sample No.

B

**NM**

**TL**

**Ltd**

Operator

Tch/Ms

Checked

Nc

Approved

Bc

Date sample tested

11/03/2020

Depth

0.5m



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



**Attention :** Stephen Kealy  
**Date :** 5th March, 2020  
**Your reference :** 9376-01-20  
**Our reference :** Test Report 20/2972 Batch 1  
**Location :** Site at Glenamuck Road  
**Date samples received :** 25th February, 2020  
**Status :** Final report  
**Issue :** 1

Eighteen samples were received for analysis on 25th February, 2020 of which eighteen were scheduled for analysis. Please find attached our Test Report which should be read with notes at the end of the report and should include all sections if reproduced. Interpretations and opinions are outside the scope of any accreditation, and all results relate only to samples supplied.  
All analysis is carried out on as received samples and reported on a dry weight basis unless stated otherwise. Results are not surrogate corrected.

**Authorised By:**



**Phil Sommerton BSc**  
Senior Project Manager

Please include all sections of this report if it is reproduced

# Element Materials Technology

**Client Name:** Ground Investigations Ireland  
**Reference:** 9376-01-20  
**Location:** Site at Glenamuck Road  
**Contact:** Stephen Kealy  
**EMT Job No:** 20/2972

**Report : Solid**

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

EMT Sample No.	1-3	4-6	7-9	10-12	13-15	16-18	19-21	22-24	25-27	28-30	Please see attached notes for all abbreviations and acronyms		
Sample ID	TP1	TP1	TP2	TP2	TP3	TP3	TP3	TP4	TP4	TP4			
Depth	0.50	1.50	0.50	1.50	0.50	1.50	2.50	0.50	1.50	2.50			
COC No / misc													
Containers	V J T	V J T	V J T	V J T	V J T	V J T	V J T	V J T	V J T	V J T			
Sample Date	20/02/2020	20/02/2020	20/02/2020	19/02/2020	19/02/2020	19/02/2020	19/02/2020	19/02/2020	19/02/2020	19/02/2020			
Sample Type	Soil	Soil	Soil	Soil	Soil	Soil	Soil	Soil	Soil	Soil			
Batch Number	1	1	1	1	1	1	1	1	1	1			
Date of Receipt	25/02/2020	25/02/2020	25/02/2020	25/02/2020	25/02/2020	25/02/2020	25/02/2020	25/02/2020	25/02/2020	25/02/2020	LOD/LOR	Units	Method No.
Antimony	1	1	-	<1	4	3	2	2	2	2	<1	mg/kg	TM30/PM15
Arsenic #	12.1	23.5	-	16.7	17.9	17.2	25.4	20.5	18.5	23.1	<0.5	mg/kg	TM30/PM15
Barium #	69	112	-	26	89	95	55	53	66	74	<1	mg/kg	TM30/PM15
Cadmium #	0.9	2.1	-	0.1	0.2	1.1	0.6	0.2	0.4	1.3	<0.1	mg/kg	TM30/PM15
Chromium #	44.5	50.6	-	42.5	63.9	44.9	37.8	42.2	42.3	53.1	<0.5	mg/kg	TM30/PM15
Copper #	24	29	-	10	30	38	21	21	22	30	<1	mg/kg	TM30/PM15
Lead #	44	130	-	31	220	126	51	160	188	56	<5	mg/kg	TM30/PM15
Mercury #	<0.1	<0.1	-	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	mg/kg	TM30/PM15
Molybdenum #	2.9	2.9	-	3.6	1.7	3.6	3.5	2.5	2.8	3.9	<0.1	mg/kg	TM30/PM15
Nickel #	25.6	27.6	-	10.6	35.7	30.8	19.9	12.9	13.3	37.7	<0.7	mg/kg	TM30/PM15
Selenium #	1	2	-	2	<1	1	1	<1	<1	<1	<1	mg/kg	TM30/PM15
Zinc #	85	149	-	75	135	152	94	94	119	112	<5	mg/kg	TM30/PM15
Antimony	-	-	<1	-	-	-	-	-	-	-	<1	mg/kg	TM30/PM62
Arsenic	-	-	22.6	-	-	-	-	-	-	-	<0.5	mg/kg	TM30/PM62
Barium	-	-	62	-	-	-	-	-	-	-	<1	mg/kg	TM30/PM62
Cadmium	-	-	0.3	-	-	-	-	-	-	-	<0.1	mg/kg	TM30/PM62
Chromium	-	-	19.3	-	-	-	-	-	-	-	<0.5	mg/kg	TM30/PM62
Copper	-	-	22	-	-	-	-	-	-	-	<1	mg/kg	TM30/PM62
Lead	-	-	66	-	-	-	-	-	-	-	<5	mg/kg	TM30/PM62
Mercury	-	-	<0.1	-	-	-	-	-	-	-	<0.1	mg/kg	TM30/PM62
Molybdenum	-	-	2.4	-	-	-	-	-	-	-	<0.1	mg/kg	TM30/PM62
Nickel	-	-	20.2	-	-	-	-	-	-	-	<0.7	mg/kg	TM30/PM62
Selenium	-	-	3	-	-	-	-	-	-	-	<1	mg/kg	TM30/PM62
Zinc	-	-	129	-	-	-	-	-	-	-	<5	mg/kg	TM30/PM62

# Element Materials Technology

**Client Name:** Ground Investigations Ireland  
**Reference:** 9376-01-20  
**Location:** Site at Glenamuck Road  
**Contact:** Stephen Kealy  
**EMT Job No:** 20/2972

**Report : Solid**

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

EMT Sample No.	1-3	4-6	7-9	10-12	13-15	16-18	19-21	22-24	25-27	28-30	Please see attached notes for all abbreviations and acronyms		
Sample ID	TP1	TP1	TP2	TP2	TP3	TP3	TP3	TP4	TP4	TP4			
Depth	0.50	1.50	0.50	1.50	0.50	1.50	2.50	0.50	1.50	2.50			
COC No / misc													
Containers	V J T	V J T	V J T	V J T	V J T	V J T	V J T	V J T	V J T	V J T			
Sample Date	20/02/2020	20/02/2020	20/02/2020	19/02/2020	19/02/2020	19/02/2020	19/02/2020	19/02/2020	19/02/2020	19/02/2020			
Sample Type	Soil	Soil	Soil	Soil	Soil	Soil	Soil	Soil	Soil	Soil			
Batch Number	1	1	1	1	1	1	1	1	1	1			
Date of Receipt	25/02/2020	25/02/2020	25/02/2020	25/02/2020	25/02/2020	25/02/2020	25/02/2020	25/02/2020	25/02/2020	25/02/2020	LOD/LOR	Units	Method No.
<b>PAH MS</b>													
Naphthalene #	0.10	<0.04	<0.04	<0.04	<0.04	<0.04	<0.04	<0.04	<0.04	<0.04	<0.04	mg/kg	TM4/PM8
Acenaphthylene	0.15	<0.03	0.15	<0.03	<0.03	<0.03	<0.03	<0.03	<0.03	<0.03	<0.03	mg/kg	TM4/PM8
Acenaphthene #	0.41	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	mg/kg	TM4/PM8
Fluorene #	0.25	<0.04	<0.04	<0.04	<0.04	<0.04	<0.04	<0.04	<0.04	<0.04	<0.04	mg/kg	TM4/PM8
Phenanthrene #	1.19	<0.03	0.11	<0.03	0.04	0.37	<0.03	0.06	0.06	<0.03	<0.03	mg/kg	TM4/PM8
Anthracene #	0.66	<0.04	0.34	<0.04	<0.04	0.09	<0.04	<0.04	<0.04	<0.04	<0.04	mg/kg	TM4/PM8
Fluoranthene #	6.59	0.04	0.49	<0.03	0.11	0.56	0.05	0.11	0.12	<0.03	<0.03	mg/kg	TM4/PM8
Pyrene #	5.52	0.04	0.47	<0.03	0.12	0.50	0.05	0.13	0.09	<0.03	<0.03	mg/kg	TM4/PM8
Benzo(a)anthracene #	2.95	<0.06	0.57	<0.06	0.08	0.38	<0.06	0.07	0.09	<0.06	<0.06	mg/kg	TM4/PM8
Chrysene #	2.67	0.03	0.58	<0.02	0.09	0.31	<0.02	0.06	0.06	<0.02	<0.02	mg/kg	TM4/PM8
Benzo(bk)fluoranthene #	5.49	<0.07	1.20	<0.07	0.16	0.57	<0.07	0.09	0.11	<0.07	<0.07	mg/kg	TM4/PM8
Benzo(a)pyrene #	2.93	<0.04	0.43	<0.04	0.08	0.31	<0.04	0.06	0.06	<0.04	<0.04	mg/kg	TM4/PM8
Indeno(123cd)pyrene	1.89	<0.04	0.38	<0.04	0.07	0.20	<0.04	<0.04	<0.04	<0.04	<0.04	mg/kg	TM4/PM8
Dibenzo(ah)anthracene #	0.26	<0.04	0.14	<0.04	<0.04	<0.04	<0.04	<0.04	<0.04	<0.04	<0.04	mg/kg	TM4/PM8
Benzo(ghi)perylene #	1.71	<0.04	0.41	<0.04	0.09	0.23	<0.04	0.06	0.04	<0.04	<0.04	mg/kg	TM4/PM8
Coronene	0.32	<0.04	0.12	<0.04	<0.04	<0.04	<0.04	<0.04	<0.04	<0.04	<0.04	mg/kg	TM4/PM8
PAH 6 Total #	18.61	<0.22	2.91	<0.22	0.51	1.87	<0.22	0.32	0.33	<0.22	<0.22	mg/kg	TM4/PM8
PAH 17 Total	33.09	<0.64	5.39	<0.64	0.84	3.52	<0.64	0.64	<0.64	<0.64	<0.64	mg/kg	TM4/PM8
Benzo(b)fluoranthene	3.95	<0.05	0.86	<0.05	0.12	0.41	<0.05	0.06	0.08	<0.05	<0.05	mg/kg	TM4/PM8
Benzo(k)fluoranthene	1.54	<0.02	0.34	<0.02	0.04	0.16	<0.02	0.03	0.03	<0.02	<0.02	mg/kg	TM4/PM8
Benzo(j)fluoranthene	1	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	mg/kg	TM4/PM8
PAH Surrogate % Recovery	96	91	103	94	96	94	92	95	94	97	<0	%	TM4/PM8
<b>Mineral Oil (C10-C40)</b>													
Mineral Oil (C10-C40)	<30	<30	41	<30	<30	41	<30	<30	45	<30	<30	mg/kg	TM5/PM8/PM16
<b>TPH CWG</b>													
<b>Aliphatics</b>													
>C5-C6 #	<0.1	<0.1	<0.1 <sup>SV</sup>	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	mg/kg	TM36/PM12
>C6-C8 #	<0.1	<0.1	<0.1 <sup>SV</sup>	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	mg/kg	TM36/PM12
>C8-C10	<0.1	<0.1	<0.1 <sup>SV</sup>	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	mg/kg	TM36/PM12
>C10-C12 #	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2	mg/kg	TM5/PM8/PM16
>C12-C16 #	<4	<4	<4	<4	<4	<4	<4	<4	<4	<4	<4	mg/kg	TM5/PM8/PM16
>C16-C21 #	<7	<7	<7	<7	<7	9	<7	<7	<7	<7	<7	mg/kg	TM5/PM8/PM16
>C21-C35 #	<7	<7	41	<7	29	32	<7	<7	45	<7	<7	mg/kg	TM5/PM8/PM16
>C35-C40	<7	<7	<7	<7	<7	<7	<7	<7	<7	<7	<7	mg/kg	TM5/PM8/PM16
Total aliphatics C5-40	<26	<26	41	<26	29	41	<26	<26	45	<26	<26	mg/kg	TM5/PM8/PM16
>C6-C10	<0.1	<0.1	<0.1 <sup>SV</sup>	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	mg/kg	TM36/PM12
>C10-C25	<10	<10	<10	<10	<10	16	<10	<10	<10	<10	<10	mg/kg	TM5/PM8/PM16
>C25-C35	<10	<10	31	<10	25	21	<10	<10	40	<10	<10	mg/kg	TM5/PM8/PM16

# Element Materials Technology

**Client Name:** Ground Investigations Ireland  
**Reference:** 9376-01-20  
**Location:** Site at Glenamuck Road  
**Contact:** Stephen Kealy  
**EMT Job No:** 20/2972

**Report : Solid**

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

EMT Sample No.	1-3	4-6	7-9	10-12	13-15	16-18	19-21	22-24	25-27	28-30	Please see attached notes for all abbreviations and acronyms		
Sample ID	TP1	TP1	TP2	TP2	TP3	TP3	TP3	TP4	TP4	TP4	LOD/LOR	Units	Method No.
Depth	0.50	1.50	0.50	1.50	0.50	1.50	2.50	0.50	1.50	2.50			
COC No / misc													
Containers	V J T	V J T	V J T	V J T	V J T	V J T	V J T	V J T	V J T	V J T			
Sample Date	20/02/2020	20/02/2020	20/02/2020	19/02/2020	19/02/2020	19/02/2020	19/02/2020	19/02/2020	19/02/2020	19/02/2020			
Sample Type	Soil	Soil	Soil	Soil	Soil	Soil	Soil	Soil	Soil	Soil			
Batch Number	1	1	1	1	1	1	1	1	1	1			
Date of Receipt	25/02/2020	25/02/2020	25/02/2020	25/02/2020	25/02/2020	25/02/2020	25/02/2020	25/02/2020	25/02/2020	25/02/2020			
TPH CWG													
<b>Aromatics</b>													
>C5-EC7 #	<0.1	<0.1	<0.1 <sup>SV</sup>	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	mg/kg	TM36/PM12
>EC7-EC8 #	<0.1	<0.1	<0.1 <sup>SV</sup>	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	mg/kg	TM36/PM12
>EC8-EC10 #	<0.1	<0.1	<0.1 <sup>SV</sup>	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	mg/kg	TM36/PM12
>EC10-EC12 #	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2	mg/kg	TMS/PM8/PM16
>EC12-EC16 #	<4	<4	<4	<4	<4	<4	<4	<4	<4	<4	<4	mg/kg	TMS/PM8/PM16
>EC16-EC21 #	<7	<7	<7	<7	<7	<7	<7	<7	<7	<7	<7	mg/kg	TMS/PM8/PM16
>EC21-EC35 #	<7	<7	118	<7	<7	79	<7	<7	39	<7	<7	mg/kg	TMS/PM8/PM16
>EC35-EC40	<7	<7	27	<7	<7	22	<7	<7	<7	<7	<7	mg/kg	TMS/PM8/PM16
Total aromatics C5-40	<26	<26	145	<26	<26	101	<26	<26	39	<26	<26	mg/kg	TMS/PM8/PM16/PM12/PM15
Total aliphatics and aromatics(C5-40)	<52	<52	186	<52	<52	142	<52	<52	84	<52	<52	mg/kg	TMS/PM8/PM16/PM12/PM15
>EC6-EC10 #	<0.1	<0.1	<0.1 <sup>SV</sup>	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	mg/kg	TM36/PM12
>EC10-EC25	<10	<10	31	<10	<10	<10	<10	<10	<10	<10	<10	mg/kg	TMS/PM8/PM16
>EC25-EC35	<10	<10	87	<10	<10	68	<10	<10	39	<10	<10	mg/kg	TMS/PM8/PM16
MTBE #	<5	<5	<5 <sup>SV</sup>	<5	<5	<5	<5	<5	<5	<5	<5	ug/kg	TM31/PM12
Benzene #	<5	<5	<5 <sup>SV</sup>	<5	<5	<5	<5	<5	<5	<5	<5	ug/kg	TM31/PM12
Toluene #	<5	<5	<5 <sup>SV</sup>	<5	<5	<5	<5	<5	<5	<5	<5	ug/kg	TM31/PM12
Ethylbenzene #	<5	<5	<5 <sup>SV</sup>	<5	<5	<5	<5	<5	<5	<5	<5	ug/kg	TM31/PM12
m/p-Xylene #	<5	<5	<5 <sup>SV</sup>	<5	<5	<5	<5	<5	<5	<5	<5	ug/kg	TM31/PM12
o-Xylene #	<5	<5	<5 <sup>SV</sup>	<5	<5	<5	<5	<5	<5	<5	<5	ug/kg	TM31/PM12
PCB 28 #	<5	<5	<5	<5	<5	<5	<5	<5	<5	<5	<5	ug/kg	TM17/PM8
PCB 52 #	<5	<5	<5	<5	<5	<5	<5	<5	<5	<5	<5	ug/kg	TM17/PM8
PCB 101 #	<5	<5	<5	<5	<5	<5	<5	<5	<5	<5	<5	ug/kg	TM17/PM8
PCB 118 #	<5	<5	<5	<5	<5	<5	<5	<5	<5	<5	<5	ug/kg	TM17/PM8
PCB 138 #	<5	<5	<5	<5	<5	<5	<5	<5	<5	<5	<5	ug/kg	TM17/PM8
PCB 153 #	<5	<5	<5	<5	<5	<5	<5	<5	<5	<5	<5	ug/kg	TM17/PM8
PCB 180 #	<5	<5	<5	<5	<5	<5	<5	<5	<5	<5	<5	ug/kg	TM17/PM8
Total 7 PCBs #	<35	<35	<35	<35	<35	<35	<35	<35	<35	<35	<35	ug/kg	TM17/PM8
Natural Moisture Content	12.6	36.1	35.3	24.3	11.6	22.1	17.8	14.9	12.0	22.4	<0.1	%	PM4/PM0
Moisture Content (% Wet Weight)	11.2	26.5	26.1	19.5	10.4	18.1	15.1	13.0	10.7	18.3	<0.1	%	PM4/PM0
Hexavalent Chromium #	<0.3	<0.3	<0.3	<0.3	<0.3	<0.3	<0.3	<0.3	<0.3	<0.3	<0.3	mg/kg	TM38/PM20
Sulphate as SO4 (2:1 Ext) #	-	0.0366	-	-	-	-	-	-	-	0.0397	<0.0015	g/l	TM38/PM20
Chromium III	44.5	50.6	-	42.5	63.9	44.9	37.8	42.2	42.3	53.1	<0.5	mg/kg	NONE/NONE
Chromium III	-	-	19.3	-	-	-	-	-	-	-	<0.5	mg/kg	NONE/NONE
Total Organic Carbon #	1.11	1.72	NDP	0.91	0.85	3.79	0.85	0.65	0.67	0.92	<0.02	%	TM21/PM24
pH #	8.33	7.63	7.05	7.07	8.04	7.72	7.60	8.27	8.23	8.18	<0.01	pH units	TM73/PM11





# Element Materials Technology

**Client Name:** Ground Investigations Ireland  
**Reference:** 9376-01-20  
**Location:** Site at Glenamuck Road  
**Contact:** Stephen Kealy  
**EMT Job No:** 20/2972

**Report : Solid**

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

EMT Sample No.	31-33	34-36	37-39	40-42	43-45	46-48	49-51	52-54				
Sample ID	TP5	TP5	TP6	TP6	TP7	TP8	TP9	TP10				
Depth	0.50	1.50	0.50	1.50	0.50	0.50	0.50	0.50				
COC No / misc												
Containers	V J T	V J T	V J T	V J T	V J T	V J T	V J T	V J T				
Sample Date	19/02/2020	19/02/2020	19/02/2020	19/02/2020	19/02/2020	20/02/2020	20/02/2020	20/02/2020				
Sample Type	Soil	Soil	Soil	Soil	Soil	Soil	Soil	Soil				
Batch Number	1	1	1	1	1	1	1	1				
Date of Receipt	25/02/2020	25/02/2020	25/02/2020	25/02/2020	25/02/2020	25/02/2020	25/02/2020	25/02/2020				
										LOD/LOR	Units	Method No.
Antimony	13	2	2	<1	1	<1	2	<1		<1	mg/kg	TM30/PM15
Arsenic #	26.8	14.9	12.1	20.4	26.4	16.5	17.1	12.7		<0.5	mg/kg	TM30/PM15
Barium #	112	53	85	17	63	67	83	29		<1	mg/kg	TM30/PM15
Cadmium #	0.3	0.3	0.5	<0.1	0.2	0.3	0.6	0.2		<0.1	mg/kg	TM30/PM15
Chromium #	47.5	51.1	40.4	35.3	50.0	46.1	49.9	51.2		<0.5	mg/kg	TM30/PM15
Copper #	27	22	23	41	22	19	19	13		<1	mg/kg	TM30/PM15
Lead #	783	104	73	15	25	85	69	30		<5	mg/kg	TM30/PM15
Mercury #	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1		<0.1	mg/kg	TM30/PM15
Molybdenum #	3.2	3.1	2.4	2.1	2.1	3.9	3.1	3.6		<0.1	mg/kg	TM30/PM15
Nickel #	11.0	18.1	21.8	4.7	29.5	13.1	15.5	17.9		<0.7	mg/kg	TM30/PM15
Selenium #	<1	<1	<1	<1	1	1	1	<1		<1	mg/kg	TM30/PM15
Zinc #	351	104	136	40	99	121	121	70		<5	mg/kg	TM30/PM15
Antimony	-	-	-	-	-	-	-	-		<1	mg/kg	TM30/PM62
Arsenic	-	-	-	-	-	-	-	-		<0.5	mg/kg	TM30/PM62
Barium	-	-	-	-	-	-	-	-		<1	mg/kg	TM30/PM62
Cadmium	-	-	-	-	-	-	-	-		<0.1	mg/kg	TM30/PM62
Chromium	-	-	-	-	-	-	-	-		<0.5	mg/kg	TM30/PM62
Copper	-	-	-	-	-	-	-	-		<1	mg/kg	TM30/PM62
Lead	-	-	-	-	-	-	-	-		<5	mg/kg	TM30/PM62
Mercury	-	-	-	-	-	-	-	-		<0.1	mg/kg	TM30/PM62
Molybdenum	-	-	-	-	-	-	-	-		<0.1	mg/kg	TM30/PM62
Nickel	-	-	-	-	-	-	-	-		<0.7	mg/kg	TM30/PM62
Selenium	-	-	-	-	-	-	-	-		<1	mg/kg	TM30/PM62
Zinc	-	-	-	-	-	-	-	-		<5	mg/kg	TM30/PM62

Please see attached notes for all abbreviations and acronyms

# Element Materials Technology

**Client Name:** Ground Investigations Ireland  
**Reference:** 9376-01-20  
**Location:** Site at Glenamuck Road  
**Contact:** Stephen Kealy  
**EMT Job No:** 20/2972

**Report : Solid**

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

EMT Sample No.	31-33	34-36	37-39	40-42	43-45	46-48	49-51	52-54					
Sample ID	TP5	TP5	TP6	TP6	TP7	TP8	TP9	TP10					
Depth	0.50	1.50	0.50	1.50	0.50	0.50	0.50	0.50					
COC No / misc													
Containers	V J T	V J T	V J T	V J T	V J T	V J T	V J T	V J T					
Sample Date	19/02/2020	19/02/2020	19/02/2020	19/02/2020	19/02/2020	20/02/2020	20/02/2020	20/02/2020					
Sample Type	Soil	Soil	Soil	Soil	Soil	Soil	Soil	Soil					
Batch Number	1	1	1	1	1	1	1	1					
Date of Receipt	25/02/2020	25/02/2020	25/02/2020	25/02/2020	25/02/2020	25/02/2020	25/02/2020	25/02/2020					
										LOD/LOR	Units	Method No.	
PAH MS													
Naphthalene #	<0.04	<0.04	0.30	<0.04	<0.04	<0.04	0.07	<0.04		<0.04	mg/kg	TM4/PM8	
Acenaphthylene	<0.03	<0.03	0.03	<0.03	<0.03	<0.03	0.28	<0.03		<0.03	mg/kg	TM4/PM8	
Acenaphthene #	<0.05	<0.05	0.43	<0.05	<0.05	<0.05	<0.05	<0.05		<0.05	mg/kg	TM4/PM8	
Fluorene #	<0.04	<0.04	0.32	<0.04	<0.04	<0.04	0.06	<0.04		<0.04	mg/kg	TM4/PM8	
Phenanthrene #	0.10	<0.03	2.39	0.06	<0.03	0.20	0.42	<0.03		<0.03	mg/kg	TM4/PM8	
Anthracene #	<0.04	<0.04	0.36	<0.04	<0.04	0.08	0.19	<0.04		<0.04	mg/kg	TM4/PM8	
Fluoranthene #	0.12	0.09	2.11	0.06	0.05	0.93	0.84	0.06		<0.03	mg/kg	TM4/PM8	
Pyrene #	0.26	0.08	1.86	0.04	0.03	0.79	0.74	0.06		<0.03	mg/kg	TM4/PM8	
Benzo(a)anthracene #	0.08	0.12	0.65	<0.06	<0.06	0.55	0.58	<0.06		<0.06	mg/kg	TM4/PM8	
Chrysene #	0.07	0.07	0.70	<0.02	<0.02	0.46	0.78	<0.02		<0.02	mg/kg	TM4/PM8	
Benzo(bk)fluoranthene #	0.14	0.14	1.18	<0.07	<0.07	1.01	2.95	<0.07		<0.07	mg/kg	TM4/PM8	
Benzo(a)pyrene #	0.07	0.06	0.62	<0.04	<0.04	0.55	2.56	<0.04		<0.04	mg/kg	TM4/PM8	
Indeno(123cd)pyrene	0.06	0.05	0.37	<0.04	<0.04	0.35	2.07	<0.04		<0.04	mg/kg	TM4/PM8	
Dibenzo(ah)anthracene #	<0.04	<0.04	0.12	<0.04	<0.04	0.07	0.48	<0.04		<0.04	mg/kg	TM4/PM8	
Benzo(ghi)perylene #	0.06	0.05	0.46	<0.04	<0.04	0.32	1.88	<0.04		<0.04	mg/kg	TM4/PM8	
Coronene	<0.04	<0.04	0.09	<0.04	<0.04	0.07	0.43	<0.04		<0.04	mg/kg	TM4/PM8	
PAH 6 Total #	0.45	0.39	4.74	<0.22	<0.22	3.16	10.30	<0.22		<0.22	mg/kg	TM4/PM8	
PAH 17 Total	0.96	0.66	11.99	<0.64	<0.64	5.38	14.33	<0.64		<0.64	mg/kg	TM4/PM8	
Benzo(b)fluoranthene	0.10	0.10	0.85	<0.05	<0.05	0.73	2.12	<0.05		<0.05	mg/kg	TM4/PM8	
Benzo(k)fluoranthene	0.04	0.04	0.33	<0.02	<0.02	0.28	0.83	<0.02		<0.02	mg/kg	TM4/PM8	
Benzo(j)fluoranthene	<1	<1	<1	<1	<1	<1	<1	<1		<1	mg/kg	TM4/PM8	
PAH Surrogate % Recovery	92	90	95	93	93	94	92	98		<0	%	TM4/PM8	
Mineral Oil (C10-C40)	354	<30	180	<30	<30	<30	<30	<30		<30	mg/kg	TM5/PM8/PM16	
TPH CWG													
Aliphatics													
>C5-C6 #	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1		<0.1	mg/kg	TM36/PM12	
>C6-C8 #	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1		<0.1	mg/kg	TM36/PM12	
>C8-C10	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1		<0.1	mg/kg	TM36/PM12	
>C10-C12 #	4.1	<0.2	6.3	<0.2	<0.2	<0.2	<0.2	<0.2		<0.2	mg/kg	TM5/PM8/PM16	
>C12-C16 #	71	<4	16	<4	<4	<4	<4	<4		<4	mg/kg	TM5/PM8/PM16	
>C16-C21 #	151	<7	15	<7	<7	<7	<7	<7		<7	mg/kg	TM5/PM8/PM16	
>C21-C35 #	128	27	119	<7	<7	<7	23	<7		<7	mg/kg	TM5/PM8/PM16	
>C35-C40	<7	<7	24	<7	<7	<7	<7	<7		<7	mg/kg	TM5/PM8/PM16	
Total aliphatics C5-40	354	27	180	<26	<26	<26	<26	<26		<26	mg/kg	TM5/PM8/PM16/PM12/PM11	
>C6-C10	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1		<0.1	mg/kg	TM36/PM12	
>C10-C25	311	<10	65	<10	<10	<10	<10	<10		<10	mg/kg	TM5/PM8/PM16	
>C25-C35	54	22	99	<10	<10	<10	23	<10		<10	mg/kg	TM5/PM8/PM16	

Please see attached notes for all abbreviations and acronyms

# Element Materials Technology

**Client Name:** Ground Investigations Ireland  
**Reference:** 9376-01-20  
**Location:** Site at Glenamuck Road  
**Contact:** Stephen Kealy  
**EMT Job No:** 20/2972

**Report : Solid**

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

EMT Sample No.	31-33	34-36	37-39	40-42	43-45	46-48	49-51	52-54				
Sample ID	TP5	TP5	TP6	TP6	TP7	TP8	TP9	TP10				
Depth	0.50	1.50	0.50	1.50	0.50	0.50	0.50	0.50				
COC No / misc												
Containers	V J T	V J T	V J T	V J T	V J T	V J T	V J T	V J T				
Sample Date	19/02/2020	19/02/2020	19/02/2020	19/02/2020	19/02/2020	20/02/2020	20/02/2020	20/02/2020				
Sample Type	Soil	Soil	Soil	Soil	Soil	Soil	Soil	Soil				
Batch Number	1	1	1	1	1	1	1	1				
Date of Receipt	25/02/2020	25/02/2020	25/02/2020	25/02/2020	25/02/2020	25/02/2020	25/02/2020	25/02/2020				
									LOD/LOR	Units	Method No.	
TPH CWG												
<b>Aromatics</b>												
>C5-EC7 #	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	mg/kg	TM36/PM12	
>EC7-EC8 #	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	mg/kg	TM36/PM12	
>EC8-EC10 #	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	mg/kg	TM36/PM12	
>EC10-EC12 #	4.5	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2	mg/kg	TMS/PM8/PM16	
>EC12-EC16 #	56	<4	9	<4	<4	<4	<4	<4	<4	mg/kg	TMS/PM8/PM16	
>EC16-EC21 #	121	<7	20	<7	<7	<7	11	<7	<7	mg/kg	TMS/PM8/PM16	
>EC21-EC35 #	100	<7	165	<7	<7	<7	164	<7	<7	mg/kg	TMS/PM8/PM16	
>EC35-EC40	<7	<7	54	<7	<7	<7	32	<7	<7	mg/kg	TMS/PM8/PM16	
Total aromatics C5-40	282	<26	248	<26	<26	<26	207	<26	<26	mg/kg	TMS/PM8/PM16	
Total aliphatics and aromatics(C5-40)	636	<52	428	<52	<52	<52	207	<52	<52	mg/kg	TMS/PM8/PM16	
>EC6-EC10 #	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	mg/kg	TM36/PM12	
>EC10-EC25	236	<10	51	<10	<10	<10	33	<10	<10	mg/kg	TMS/PM8/PM16	
>EC25-EC35	49	<10	148	<10	<10	<10	133	<10	<10	mg/kg	TMS/PM8/PM16	
MTBE #	<5	<5	<5	<5	<5	<5	<5	<5	<5	ug/kg	TM31/PM12	
Benzene #	<5	<5	<5	<5	<5	<5	<5	<5	<5	ug/kg	TM31/PM12	
Toluene #	<5	<5	<5	<5	<5	<5	<5	<5	<5	ug/kg	TM31/PM12	
Ethylbenzene #	<5	<5	<5	<5	<5	<5	<5	<5	<5	ug/kg	TM31/PM12	
m/p-Xylene #	<5	<5	<5	<5	<5	<5	<5	<5	<5	ug/kg	TM31/PM12	
o-Xylene #	<5	<5	<5	<5	<5	<5	<5	<5	<5	ug/kg	TM31/PM12	
PCB 28 #	<5	<5	<5	<5	<5	<5	<5	<5	<5	ug/kg	TM17/PM8	
PCB 52 #	<5	<5	<5	<5	<5	<5	<5	<5	<5	ug/kg	TM17/PM8	
PCB 101 #	<5	<5	<5	<5	<5	<5	<5	<5	<5	ug/kg	TM17/PM8	
PCB 118 #	<5	<5	<5	<5	<5	<5	<5	<5	<5	ug/kg	TM17/PM8	
PCB 138 #	<5	<5	<5	<5	<5	<5	<5	<5	<5	ug/kg	TM17/PM8	
PCB 153 #	<5	<5	<5	<5	<5	<5	<5	<5	<5	ug/kg	TM17/PM8	
PCB 180 #	<5	<5	<5	<5	<5	<5	<5	<5	<5	ug/kg	TM17/PM8	
Total 7 PCBs #	<35	<35	<35	<35	<35	<35	<35	<35	<35	ug/kg	TM17/PM8	
Natural Moisture Content	13.4	16.7	15.3	11.2	13.9	17.8	23.5	22.3	<0.1	%	PM4/PM0	
Moisture Content (% Wet Weight)	11.8	14.3	13.3	10.1	12.2	15.1	19.0	18.2	<0.1	%	PM4/PM0	
Hexavalent Chromium #	<0.3	<0.3	<0.3	<0.3	<0.3	<0.3	<0.3	<0.3	<0.3	mg/kg	TM38/PM20	
Sulphate as SO4 (2:1 Ext) #	-	-	0.0391	-	-	-	-	-	<0.0015	g/l	TM38/PM20	
Chromium III	47.5	51.1	40.4	35.3	50.0	46.1	49.9	51.2	<0.5	mg/kg	NONE/NONE	
Chromium III	-	-	-	-	-	-	-	-	<0.5	mg/kg	NONE/NONE	
Total Organic Carbon #	0.70	0.89	1.76	0.15	0.82	1.46	2.14	0.75	<0.02	%	TM21/PM24	
pH #	8.21	8.02	8.07	8.22	7.99	7.23	7.91	7.93	<0.01	pH units	TM73/PM11	

Please see attached notes for all abbreviations and acronyms





# Element Materials Technology

**Client Name:** Ground Investigations Ireland  
**Reference:** 9376-01-20  
**Location:** Site at Glenamuck Road  
**Contact:** Stephen Kealy  
**EMT Job No:** 20/2972

**Report :** CEN 10:1 1 Batch

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

EMT Sample No.	1-3	4-6	7-9	10-12	13-15	16-18	19-21	22-24	25-27	28-30	Please see attached notes for all abbreviations and acronyms		
Sample ID	TP1	TP1	TP2	TP2	TP3	TP3	TP3	TP4	TP4	TP4			
Depth	0.50	1.50	0.50	1.50	0.50	1.50	2.50	0.50	1.50	2.50			
COC No / misc													
Containers	V J T	V J T	V J T	V J T	V J T	V J T	V J T	V J T	V J T	V J T			
Sample Date	20/02/2020	20/02/2020	20/02/2020	19/02/2020	19/02/2020	19/02/2020	19/02/2020	19/02/2020	19/02/2020	19/02/2020			
Sample Type	Soil	Soil	Soil	Soil	Soil	Soil	Soil	Soil	Soil	Soil			
Batch Number	1	1	1	1	1	1	1	1	1	1			
Date of Receipt	25/02/2020	25/02/2020	25/02/2020	25/02/2020	25/02/2020	25/02/2020	25/02/2020	25/02/2020	25/02/2020	25/02/2020	LOD/LOR	Units	Method No.
Dissolved Antimony #	<0.002	<0.002	<0.002	<0.002	0.005	0.002	0.003	0.004	0.003	<0.002	<0.002	mg/l	TM30/PM17
Dissolved Antimony (A10) #	<0.02	<0.02	<0.02	<0.02	0.05	<0.02	0.03	0.04	0.03	<0.02	<0.02	mg/kg	TM30/PM17
Dissolved Arsenic #	<0.0025	<0.0025	<0.0025	<0.0025	<0.0025	<0.0025	0.0030	<0.0025	<0.0025	<0.0025	<0.0025	mg/l	TM30/PM17
Dissolved Arsenic (A10) #	<0.025	<0.025	<0.025	<0.025	<0.025	<0.025	0.030	<0.025	<0.025	<0.025	<0.025	mg/kg	TM30/PM17
Dissolved Barium #	0.003	0.005	0.005	<0.003	0.011	0.027	0.012	0.008	0.006	0.004	<0.003	mg/l	TM30/PM17
Dissolved Barium (A10) #	0.03	0.05	0.05	<0.03	0.11	0.27	0.12	0.08	0.06	0.04	<0.03	mg/kg	TM30/PM17
Dissolved Cadmium #	<0.0005	<0.0005	<0.0005	<0.0005	<0.0005	<0.0005	<0.0005	<0.0005	<0.0005	<0.0005	<0.0005	mg/l	TM30/PM17
Dissolved Cadmium (A10) #	<0.005	<0.005	<0.005	<0.005	<0.005	<0.005	<0.005	<0.005	<0.005	<0.005	<0.005	mg/kg	TM30/PM17
Dissolved Chromium #	<0.0015	<0.0015	<0.0015	<0.0015	<0.0015	<0.0015	<0.0015	<0.0015	<0.0015	<0.0015	<0.0015	mg/l	TM30/PM17
Dissolved Chromium (A10) #	<0.015	<0.015	<0.015	<0.015	<0.015	<0.015	<0.015	<0.015	<0.015	<0.015	<0.015	mg/kg	TM30/PM17
Dissolved Copper #	<0.007	<0.007	<0.007	<0.007	<0.007	<0.007	<0.007	<0.007	<0.007	<0.007	<0.007	mg/l	TM30/PM17
Dissolved Copper (A10) #	<0.07	<0.07	<0.07	<0.07	<0.07	<0.07	<0.07	<0.07	<0.07	<0.07	<0.07	mg/kg	TM30/PM17
Dissolved Lead #	<0.005	<0.005	<0.005	<0.005	<0.005	<0.005	<0.005	<0.005	<0.005	<0.005	<0.005	mg/l	TM30/PM17
Dissolved Lead (A10) #	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	mg/kg	TM30/PM17
Dissolved Molybdenum #	0.005	0.003	0.003	0.002	0.004	0.008	0.007	0.003	0.003	0.003	<0.002	mg/l	TM30/PM17
Dissolved Molybdenum (A10) #	0.05	0.03	0.03	0.02	0.04	0.08	0.07	0.03	0.03	0.03	<0.02	mg/kg	TM30/PM17
Dissolved Nickel #	<0.002	<0.002	<0.002	<0.002	<0.002	<0.002	<0.002	<0.002	<0.002	<0.002	<0.002	mg/l	TM30/PM17
Dissolved Nickel (A10) #	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	mg/kg	TM30/PM17
Dissolved Selenium #	<0.003	<0.003	<0.003	<0.003	<0.003	<0.003	<0.003	<0.003	<0.003	<0.003	<0.003	mg/l	TM30/PM17
Dissolved Selenium (A10) #	<0.03	<0.03	<0.03	<0.03	<0.03	<0.03	<0.03	<0.03	<0.03	<0.03	<0.03	mg/kg	TM30/PM17
Dissolved Zinc #	<0.003	0.007	0.012	0.011	<0.003	0.004	<0.003	<0.003	<0.003	0.004	<0.003	mg/l	TM30/PM17
Dissolved Zinc (A10) #	<0.03	0.07	0.12	0.11	<0.03	0.04	<0.03	<0.03	<0.03	0.04	<0.03	mg/kg	TM30/PM17
Mercury Dissolved by CVAF #	<0.00001	<0.00001	0.00002	0.00002	<0.00001	<0.00001	<0.00001	<0.00001	<0.00001	<0.00001	<0.00001	mg/l	TM61/PM0
Mercury Dissolved by CVAF #	<0.0001	<0.0001	0.0002	0.0002	<0.0001	<0.0001	<0.0001	<0.0001	<0.0001	<0.0001	<0.0001	mg/kg	TM61/PM0
Phenol	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	mg/l	TM26/PM0
Phenol	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	mg/kg	TM26/PM0
Fluoride	0.4	0.4	<0.3	<0.3	0.5	0.4	0.3	0.5	0.4	0.4	<0.3	mg/l	TM173/PM0
Fluoride	4	4	<3	<3	5	4	<3	5	4	4	<3	mg/kg	TM173/PM0
Sulphate as SO4 #	14.6	3.6	<0.5	<0.5	27.1	63.2	36.1	<0.5	13.3	7.6	<0.5	mg/l	TM38/PM0
Sulphate as SO4 #	146	36	<5	<5	271	632	361	<5	133	76	<5	mg/kg	TM38/PM0
Chloride #	0.5	0.9	2.1	1.4	0.4	0.5	<0.3	<0.3	0.4	<0.3	<0.3	mg/l	TM38/PM0
Chloride #	5	9	21	14	4	5	<3	<3	4	<3	<3	mg/kg	TM38/PM0
Dissolved Organic Carbon	5	12	31	22	4	9	7	7	7	5	<2	mg/l	TM60/PM0
Dissolved Organic Carbon	50	120	310	220	40	90	70	70	70	50	<20	mg/kg	TM60/PM0
pH	8.07	7.70	7.63	7.35	8.13	8.14	8.23	8.98	8.22	8.22	<0.01	pH units	TM73/PM0
Total Dissolved Solids #	79	38	157	79	35	183	205	74	104	77	<35	mg/l	TM20/PM0
Total Dissolved Solids #	790	380	1569	790	<350	1829	2050	740	1040	770	<350	mg/kg	TM20/PM0

# Element Materials Technology

**Client Name:** Ground Investigations Ireland  
**Reference:** 9376-01-20  
**Location:** Site at Glenamuck Road  
**Contact:** Stephen Kealy  
**EMT Job No:** 20/2972

**Report :** CEN 10:1 1 Batch

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

EMT Sample No.	31-33	34-36	37-39	40-42	43-45	46-48	49-51	52-54						
Sample ID	TP5	TP5	TP6	TP6	TP7	TP8	TP9	TP10						
Depth	0.50	1.50	0.50	1.50	0.50	0.50	0.50	0.50						
COC No / misc														
Containers	V J T	V J T	V J T	V J T	V J T	V J T	V J T	V J T						
Sample Date	19/02/2020	19/02/2020	19/02/2020	19/02/2020	19/02/2020	20/02/2020	20/02/2020	20/02/2020						
Sample Type	Soil	Soil	Soil	Soil	Soil	Soil	Soil	Soil						
Batch Number	1	1	1	1	1	1	1	1						
Date of Receipt	25/02/2020	25/02/2020	25/02/2020	25/02/2020	25/02/2020	25/02/2020	25/02/2020	25/02/2020						
											LOD/LOR	Units	Method No.	
Dissolved Antimony #	0.004	<0.002	0.005	0.002	0.003	<0.002	<0.002	<0.002			<0.002	mg/l	TM30/PM17	
Dissolved Antimony (A10) #	0.04	<0.02	0.05	<0.02	0.03	<0.02	<0.02	<0.02			<0.02	mg/kg	TM30/PM17	
Dissolved Arsenic #	<0.0025	<0.0025	0.0089	0.0100	0.0037	<0.0025	<0.0025	<0.0025			<0.0025	mg/l	TM30/PM17	
Dissolved Arsenic (A10) #	<0.025	<0.025	0.089	0.100	0.037	<0.025	<0.025	<0.025			<0.025	mg/kg	TM30/PM17	
Dissolved Barium #	0.007	0.007	0.011	<0.003	0.004	<0.003	0.006	<0.003			<0.003	mg/l	TM30/PM17	
Dissolved Barium (A10) #	0.07	0.07	0.11	<0.03	0.04	<0.03	0.06	<0.03			<0.03	mg/kg	TM30/PM17	
Dissolved Cadmium #	<0.0005	<0.0005	<0.0005	<0.0005	<0.0005	<0.0005	<0.0005	<0.0005			<0.0005	mg/l	TM30/PM17	
Dissolved Cadmium (A10) #	<0.005	<0.005	<0.005	<0.005	<0.005	<0.005	<0.005	<0.005			<0.005	mg/kg	TM30/PM17	
Dissolved Chromium #	<0.0015	<0.0015	<0.0015	<0.0015	<0.0015	<0.0015	<0.0015	<0.0015			<0.0015	mg/l	TM30/PM17	
Dissolved Chromium (A10) #	<0.015	<0.015	<0.015	<0.015	<0.015	<0.015	<0.015	<0.015			<0.015	mg/kg	TM30/PM17	
Dissolved Copper #	<0.007	<0.007	<0.007	<0.007	<0.007	<0.007	<0.007	<0.007			<0.007	mg/l	TM30/PM17	
Dissolved Copper (A10) #	<0.07	<0.07	<0.07	<0.07	<0.07	<0.07	<0.07	<0.07			<0.07	mg/kg	TM30/PM17	
Dissolved Lead #	<0.005	<0.005	<0.005	<0.005	<0.005	<0.005	<0.005	<0.005			<0.005	mg/l	TM30/PM17	
Dissolved Lead (A10) #	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05			<0.05	mg/kg	TM30/PM17	
Dissolved Molybdenum #	0.003	0.003	0.016	0.002	0.007	<0.002	<0.002	<0.002			<0.002	mg/l	TM30/PM17	
Dissolved Molybdenum (A10) #	0.03	0.03	0.16	<0.02	0.07	<0.02	<0.02	<0.02			<0.02	mg/kg	TM30/PM17	
Dissolved Nickel #	<0.002	<0.002	<0.002	<0.002	<0.002	<0.002	<0.002	<0.002			<0.002	mg/l	TM30/PM17	
Dissolved Nickel (A10) #	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02			<0.02	mg/kg	TM30/PM17	
Dissolved Selenium #	<0.003	<0.003	<0.003	<0.003	<0.003	<0.003	<0.003	<0.003			<0.003	mg/l	TM30/PM17	
Dissolved Selenium (A10) #	<0.03	<0.03	<0.03	<0.03	<0.03	<0.03	<0.03	<0.03			<0.03	mg/kg	TM30/PM17	
Dissolved Zinc #	0.005	0.004	0.005	0.005	0.004	0.007	0.004	0.005			<0.003	mg/l	TM30/PM17	
Dissolved Zinc (A10) #	0.05	0.04	0.05	0.05	0.04	0.07	0.04	0.05			<0.03	mg/kg	TM30/PM17	
Mercury Dissolved by CVA#	<0.00001	<0.00001	0.00001	0.00003	<0.00001	0.00001	0.00001	<0.00001			<0.00001	mg/l	TM61/PM0	
Mercury Dissolved by CVA#	<0.0001	<0.0001	0.0001	0.0003	<0.0001	0.0001	0.0001	<0.0001			<0.0001	mg/kg	TM61/PM0	
Phenol	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01			<0.01	mg/l	TM26/PM0	
Phenol	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1			<0.1	mg/kg	TM26/PM0	
Fluoride	0.5	0.5	0.3	0.6	<0.3	<0.3	<0.3	<0.3			<0.3	mg/l	TM173/PM0	
Fluoride	5	5	3	6	<3	<3	<3	<3			<3	mg/kg	TM173/PM0	
Sulphate as SO4 #	<0.5	11.3	17.8	3.7	6.7	<0.5	<0.5	<0.5			<0.5	mg/l	TM38/PM0	
Sulphate as SO4 #	<5	113	178	37	67	<5	<5	<5			<5	mg/kg	TM38/PM0	
Chloride #	<0.3	0.4	0.5	0.4	0.7	0.7	0.6	0.3			<0.3	mg/l	TM38/PM0	
Chloride #	<3	4	5	4	7	7	6	3			<3	mg/kg	TM38/PM0	
Dissolved Organic Carbon	8	7	12	5	8	9	6	6			<2	mg/l	TM60/PM0	
Dissolved Organic Carbon	80	70	120	50	80	90	60	60			<20	mg/kg	TM60/PM0	
pH	8.14	8.13	8.15	8.06	8.20	7.60	7.98	7.94			<0.01	pH units	TM73/PM0	
Total Dissolved Solids #	95	92	184	99	138	63	97	91			<35	mg/l	TM20/PM0	
Total Dissolved Solids #	950	920	1841	989	1380	630	970	910			<350	mg/kg	TM20/PM0	

Please see attached notes for all abbreviations and acronyms

**Element Materials Technology**

**Client Name:** Ground Investigations Ireland  
**Reference:** 9376-01-20  
**Location:** Site at Glenamuck Road  
**Contact:** Stephen Kealy  
**EMT Job No:** 20/2972

**Report :** EN12457\_2  
**Solids:** V=60g VOC jar, J=250g glass jar, T=plastic tub

EMT Sample No.	1-3	4-6	7-9	10-12	13-15	16-18	19-21	22-24	25-27	28-30	Inert	Stable Non-reactive	Hazardous	LOD LOR	Units	Method No.
<b>Sample ID</b>	TP1	TP1	TP2	TP2	TP3	TP3	TP3	TP4	TP4	TP4						
<b>Depth</b>	0.50	1.50	0.50	1.50	0.50	1.50	2.50	0.50	1.50	2.50						
<b>COC No / misc</b>																
<b>Containers</b>	V J T	V J T	V J T	V J T	V J T	V J T	V J T	V J T	V J T	V J T						
<b>Sample Date</b>	20/02/2020	20/02/2020	20/02/2020	19/02/2020	19/02/2020	19/02/2020	19/02/2020	19/02/2020	19/02/2020	19/02/2020						
<b>Sample Type</b>	Soil	Soil	Soil	Soil	Soil	Soil	Soil	Soil	Soil	Soil						
<b>Batch Number</b>	1	1	1	1	1	1	1	1	1	1						
<b>Date of Receipt</b>	25/02/2020	25/02/2020	25/02/2020	25/02/2020	25/02/2020	25/02/2020	25/02/2020	25/02/2020	25/02/2020	25/02/2020						
<b>Solid Waste Analysis</b>																
Total Organic Carbon #	1.11	1.72	NDP	0.91	0.85	3.79	0.85	0.65	0.67	0.92	3	5	6	<0.02	%	TM21/PM24
Sum of BTEX	<0.025	<0.025	<0.025 <sup>SV</sup>	<0.025	<0.025	<0.025	<0.025	<0.025	<0.025	<0.025	6	-	-	<0.025	mg/kg	TM31/PM12
Sum of 7 PCBs #	<0.035	<0.035	<0.035	<0.035	<0.035	<0.035	<0.035	<0.035	<0.035	<0.035	1	-	-	<0.035	mg/kg	TM17/PM8
Mineral Oil	<30	<30	41	<30	<30	41	<30	<30	45	<30	500	-	-	<30	mg/kg	TM5/PM8/PM16
PAH Sum of 6 #	18.61	<0.22	2.91	<0.22	0.51	1.87	<0.22	0.32	0.33	<0.22	-	-	-	<0.22	mg/kg	TM4/PM8
PAH Sum of 17	33.09	<0.64	5.39	<0.64	0.84	3.52	<0.64	0.64	<0.64	<0.64	100	-	-	<0.64	mg/kg	TM4/PM8
<b>CEN 10:1 Leachate</b>																
Arsenic #	<0.025	<0.025	<0.025	<0.025	<0.025	<0.025	0.030	<0.025	<0.025	<0.025	0.5	2	25	<0.025	mg/kg	TM30/PM17
Barium #	0.03	0.05	0.05	<0.03	0.11	0.27	0.12	0.08	0.06	0.04	20	100	300	<0.03	mg/kg	TM30/PM17
Cadmium #	<0.005	<0.005	<0.005	<0.005	<0.005	<0.005	<0.005	<0.005	<0.005	<0.005	0.04	1	5	<0.005	mg/kg	TM30/PM17
Chromium #	<0.015	<0.015	<0.015	<0.015	<0.015	<0.015	<0.015	<0.015	<0.015	<0.015	0.5	10	70	<0.015	mg/kg	TM30/PM17
Copper #	<0.07	<0.07	<0.07	<0.07	<0.07	<0.07	<0.07	<0.07	<0.07	<0.07	2	50	100	<0.07	mg/kg	TM30/PM17
Mercury #	<0.0001	<0.0001	0.0002	0.0002	<0.0001	<0.0001	<0.0001	<0.0001	<0.0001	<0.0001	0.01	0.2	2	<0.0001	mg/kg	TM61/PM0
Molybdenum #	0.05	0.03	0.03	0.02	0.04	0.08	0.07	0.03	0.03	0.03	0.5	10	30	<0.02	mg/kg	TM30/PM17
Nickel #	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	0.4	10	40	<0.02	mg/kg	TM30/PM17
Lead #	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	0.5	10	50	<0.05	mg/kg	TM30/PM17
Antimony #	<0.02	<0.02	<0.02	<0.02	0.05	<0.02	0.03	0.04	0.03	<0.02	0.06	0.7	5	<0.02	mg/kg	TM30/PM17
Selenium #	<0.03	<0.03	<0.03	<0.03	<0.03	<0.03	<0.03	<0.03	<0.03	<0.03	0.1	0.5	7	<0.03	mg/kg	TM30/PM17
Zinc #	<0.03	0.07	0.12	0.11	<0.03	0.04	<0.03	<0.03	<0.03	0.04	4	50	200	<0.03	mg/kg	TM30/PM17
Total Dissolved Solids #	790	380	1569	790	<350	1829	2050	740	1040	770	4000	60000	100000	<350	mg/kg	TM20/PM0
Dissolved Organic Carbon	50	120	310	220	40	90	70	70	70	50	500	800	1000	<20	mg/kg	TM60/PM0
Mass of raw test portion	0.1055	0.1278	0.1251	0.1249	0.1071	0.116	0.115	0.104	0.1012	0.1073	-	-	-		kg	NONE/PM17
Dry Matter Content Ratio	85.6	70.6	72.2	71.9	84.2	77.8	78.3	86.9	88.6	83.7	-	-	-	<0.1	%	NONE/PM4
Leachant Volume	0.885	0.862	0.865	0.865	0.883	0.874	0.875	0.887	0.888	0.882	-	-	-		l	NONE/PM17
Eluate Volume	0.85	0.8	0.82	0.85	0.85	0.8	0.78	0.8	0.75	0.8	-	-	-		l	NONE/PM17
pH #	8.33	7.63	7.05	7.07	8.04	7.72	7.60	8.27	8.23	8.18	-	-	-	<0.01	pH units	TM73/PM11
Phenol	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	1	-	-	<0.1	mg/kg	TM26/PM0
Fluoride	4	4	<3	<3	5	4	<3	5	4	4	-	-	-	<3	mg/kg	TM173/PM0
Sulphate as SO4 #	146	36	<5	<5	271	632	361	<5	133	76	1000	20000	50000	<5	mg/kg	TM38/PM0
Chloride #	5	9	21	14	4	5	<3	<3	4	<3	800	15000	25000	<3	mg/kg	TM38/PM0

Please see attached notes for all abbreviations and acronyms

**Element Materials Technology**

**Client Name:** Ground Investigations Ireland  
**Reference:** 9376-01-20  
**Location:** Site at Glenamuck Road  
**Contact:** Stephen Kealy  
**EMT Job No:** 20/2972

**Report :** EN12457\_2  
**Solids:** V=60g VOC jar, J=250g glass jar, T=plastic tub

EMT Sample No.	31-33	34-36	37-39	40-42	43-45	46-48	49-51	52-54							
Sample ID	TP5	TP5	TP6	TP6	TP7	TP8	TP9	TP10							
Depth	0.50	1.50	0.50	1.50	0.50	0.50	0.50	0.50							
COC No / misc															
Containers	V J T	V J T	V J T	V J T	V J T	V J T	V J T	V J T							
Sample Date	19/02/2020	19/02/2020	19/02/2020	19/02/2020	19/02/2020	20/02/2020	20/02/2020	20/02/2020							
Sample Type	Soil	Soil	Soil	Soil	Soil	Soil	Soil	Soil							
Batch Number	1	1	1	1	1	1	1	1							
Date of Receipt	25/02/2020	25/02/2020	25/02/2020	25/02/2020	25/02/2020	25/02/2020	25/02/2020	25/02/2020							
										Inert	Stable Non-reactive	Hazardous	LOD LOR	Units	Method No.
<b>Solid Waste Analysis</b>															
Total Organic Carbon #	0.70	0.89	1.76	0.15	0.82	1.46	2.14	0.75		3	5	6	<0.02	%	TM21/PM24
Sum of BTEX	<0.025	<0.025	<0.025	<0.025	<0.025	<0.025	<0.025	<0.025		6	-	-	<0.025	mg/kg	TM31/PM12
Sum of 7 PCBs #	<0.035	<0.035	<0.035	<0.035	<0.035	<0.035	<0.035	<0.035		1	-	-	<0.035	mg/kg	TM17/PM8
Mineral Oil	354	<30	180	<30	<30	<30	<30	<30		500	-	-	<30	mg/kg	TM5/PM8/PM16
PAH Sum of 6 #	0.45	0.39	4.74	<0.22	<0.22	3.16	10.30	<0.22		-	-	-	<0.22	mg/kg	TM4/PM8
PAH Sum of 17	0.96	0.66	11.99	<0.64	<0.64	5.38	14.33	<0.64		100	-	-	<0.64	mg/kg	TM4/PM8
<b>CEN 10:1 Leachate</b>															
Arsenic #	<0.025	<0.025	0.089	0.100	0.037	<0.025	<0.025	<0.025		0.5	2	25	<0.025	mg/kg	TM30/PM17
Barium #	0.07	0.07	0.11	<0.03	0.04	<0.03	0.06	<0.03		20	100	300	<0.03	mg/kg	TM30/PM17
Cadmium #	<0.005	<0.005	<0.005	<0.005	<0.005	<0.005	<0.005	<0.005		0.04	1	5	<0.005	mg/kg	TM30/PM17
Chromium #	<0.015	<0.015	<0.015	<0.015	<0.015	<0.015	<0.015	<0.015		0.5	10	70	<0.015	mg/kg	TM30/PM17
Copper #	<0.07	<0.07	<0.07	<0.07	<0.07	<0.07	<0.07	<0.07		2	50	100	<0.07	mg/kg	TM30/PM17
Mercury #	<0.0001	<0.0001	0.0001	0.0003	<0.0001	0.0001	0.0001	<0.0001		0.01	0.2	2	<0.0001	mg/kg	TM61/PM0
Molybdenum #	0.03	0.03	0.16	<0.02	0.07	<0.02	<0.02	<0.02		0.5	10	30	<0.02	mg/kg	TM30/PM17
Nickel #	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02		0.4	10	40	<0.02	mg/kg	TM30/PM17
Lead #	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05		0.5	10	50	<0.05	mg/kg	TM30/PM17
Antimony #	0.04	<0.02	0.05	<0.02	0.03	<0.02	<0.02	<0.02		0.06	0.7	5	<0.02	mg/kg	TM30/PM17
Selenium #	<0.03	<0.03	<0.03	<0.03	<0.03	<0.03	<0.03	<0.03		0.1	0.5	7	<0.03	mg/kg	TM30/PM17
Zinc #	0.05	0.04	0.05	0.05	0.04	0.07	0.04	0.05		4	50	200	<0.03	mg/kg	TM30/PM17
Total Dissolved Solids #	950	920	1841	989	1380	630	970	910		4000	60000	100000	<350	mg/kg	TM20/PM0
Dissolved Organic Carbon	80	70	120	50	80	90	60	60		500	800	1000	<20	mg/kg	TM60/PM0
Mass of raw test portion	0.1034	0.1052	0.1062	0.1018	0.1017	0.108	0.1099	0.1091		-	-	-		kg	NONE/PM17
Dry Matter Content Ratio	87.2	85.2	84.7	88.7	88.4	83.0	81.8	82.5		-	-	-	<0.1	%	NONE/PM4
Leachant Volume	0.887	0.884	0.884	0.888	0.888	0.882	0.88	0.881		-	-	-		l	NONE/PM17
Eluate Volume	0.8	0.85	0.8	0.85	0.79	0.8	0.8	0.78		-	-	-		l	NONE/PM17
pH #	8.21	8.02	8.07	8.22	7.99	7.23	7.91	7.93		-	-	-	<0.01	pH units	TM73/PM11
Phenol	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1		1	-	-	<0.1	mg/kg	TM26/PM0
Fluoride	5	5	3	6	<3	<3	<3	<3		-	-	-	<3	mg/kg	TM173/PM0
Sulphate as SO4 #	<5	113	178	37	67	<5	<5	<5		1000	20000	50000	<5	mg/kg	TM38/PM0
Chloride #	<3	4	5	4	7	7	6	3		800	15000	25000	<3	mg/kg	TM38/PM0

Please see attached notes for all abbreviations and acronyms





**Client Name:** Ground Investigations Ireland  
**Reference:** 20/01/9376  
**Location:** Site at Glenamuck Road  
**Contact:** Stephen Kealy

**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
20/2972	1	TP1	0.50	2	27/02/2020	General Description (Bulk Analysis)	soil/stones
					27/02/2020	Asbestos Fibres	NAD
					27/02/2020	Asbestos ACM	NAD
					27/02/2020	Asbestos Type	NAD
					27/02/2020	Asbestos Level Screen	NAD
20/2972	1	TP1	1.50	5	27/02/2020	General Description (Bulk Analysis)	soil-stones
					27/02/2020	Asbestos Fibres	NAD
					27/02/2020	Asbestos ACM	NAD
					27/02/2020	Asbestos Type	NAD
					27/02/2020	Asbestos Level Screen	NAD
20/2972	1	TP2	0.50	8	27/02/2020	General Description (Bulk Analysis)	soil.stones
					27/02/2020	Asbestos Fibres	Fibre Bundles
					27/02/2020	Asbestos ACM	NAD
					27/02/2020	Asbestos Type	Chrysotile
					27/02/2020	Asbestos Level Screen	less than 0.1%
20/2972	1	TP2	1.50	11	27/02/2020	General Description (Bulk Analysis)	soil-stones
					27/02/2020	Asbestos Fibres	NAD
					27/02/2020	Asbestos ACM	NAD
					27/02/2020	Asbestos Type	NAD
					27/02/2020	Asbestos Level Screen	NAD
20/2972	1	TP3	0.50	14	27/02/2020	General Description (Bulk Analysis)	soil-stones
					27/02/2020	Asbestos Fibres	NAD
					27/02/2020	Asbestos ACM	NAD
					27/02/2020	Asbestos Type	NAD
					27/02/2020	Asbestos Level Screen	NAD
20/2972	1	TP3	1.50	17	27/02/2020	General Description (Bulk Analysis)	Soil/Stone
					27/02/2020	Asbestos Fibres	NAD
					27/02/2020	Asbestos ACM	NAD
					27/02/2020	Asbestos Type	NAD
					27/02/2020	Asbestos Level Screen	NAD
20/2972	1	TP3	2.50	20	27/02/2020	General Description (Bulk Analysis)	soil.stones
					27/02/2020	Asbestos Fibres	NAD
					27/02/2020	Asbestos ACM	NAD

**Client Name:** Ground Investigations Ireland  
**Reference:** 20/01/9376  
**Location:** Site at Glenamuck Road  
**Contact:** Stephen Kealy

EMT Job No.	Batch	Sample ID	Depth	EMT Sample No.	Date Of Analysis	Analysis	Result
20/2972	1	TP3	2.50	20	27/02/2020	Asbestos Type	NAD
					27/02/2020	Asbestos Level Screen	NAD
20/2972	1	TP4	0.50	23	27/02/2020	General Description (Bulk Analysis)	soil-stones
					27/02/2020	Asbestos Fibres	NAD
					27/02/2020	Asbestos ACM	NAD
					27/02/2020	Asbestos Type	NAD
					27/02/2020	Asbestos Level Screen	NAD
20/2972	1	TP4	1.50	26	27/02/2020	General Description (Bulk Analysis)	soil-stones
					27/02/2020	Asbestos Fibres	NAD
					27/02/2020	Asbestos ACM	NAD
					27/02/2020	Asbestos Type	NAD
					27/02/2020	Asbestos Level Screen	NAD
20/2972	1	TP4	2.50	29	27/02/2020	General Description (Bulk Analysis)	soil/stones
					27/02/2020	Asbestos Fibres	NAD
					27/02/2020	Asbestos ACM	NAD
					27/02/2020	Asbestos Type	NAD
					27/02/2020	Asbestos Level Screen	NAD
20/2972	1	TP5	0.50	32	27/02/2020	General Description (Bulk Analysis)	soil.stones
					27/02/2020	Asbestos Fibres	NAD
					27/02/2020	Asbestos ACM	NAD
					27/02/2020	Asbestos Type	NAD
					27/02/2020	Asbestos Level Screen	NAD
20/2972	1	TP5	1.50	35	27/02/2020	General Description (Bulk Analysis)	soil.stones
					27/02/2020	Asbestos Fibres	NAD
					27/02/2020	Asbestos ACM	NAD
					27/02/2020	Asbestos Type	NAD
					27/02/2020	Asbestos Level Screen	NAD
20/2972	1	TP6	0.50	38	27/02/2020	General Description (Bulk Analysis)	soil-stones
					27/02/2020	Asbestos Fibres	NAD
					27/02/2020	Asbestos ACM	NAD
					27/02/2020	Asbestos Type	NAD
					27/02/2020	Asbestos Level Screen	NAD
20/2972	1	TP6	1.50	41	27/02/2020	General Description (Bulk Analysis)	soil/stones
					27/02/2020	Asbestos Fibres	NAD
					27/02/2020	Asbestos ACM	NAD
					27/02/2020	Asbestos Type	NAD
					27/02/2020	Asbestos Level Screen	NAD
20/2972	1	TP7	0.50	44	27/02/2020	General Description (Bulk Analysis)	soil.stones
					27/02/2020	Asbestos Fibres	NAD
					27/02/2020	Asbestos ACM	NAD
					27/02/2020	Asbestos Type	NAD
					27/02/2020	Asbestos Level Screen	NAD
20/2972	1	TP8	0.50	47	27/02/2020	General Description (Bulk Analysis)	soil-stones
					27/02/2020	Asbestos Fibres	NAD

**Client Name:** Ground Investigations Ireland  
**Reference:** 20/01/9376  
**Location:** Site at Glenamuck Road  
**Contact:** Stephen Kealy

EMT Job No.	Batch	Sample ID	Depth	EMT Sample No.	Date Of Analysis	Analysis	Result
20/2972	1	TP8	0.50	47	27/02/2020	Asbestos ACM	NAD
					27/02/2020	Asbestos Type	NAD
					27/02/2020	Asbestos Level Screen	NAD
20/2972	1	TP9	0.50	50	27/02/2020	General Description (Bulk Analysis)	Soil/Stone
					27/02/2020	Asbestos Fibres	NAD
					27/02/2020	Asbestos ACM	NAD
					27/02/2020	Asbestos Type	NAD
					27/02/2020	Asbestos Level Screen	NAD
20/2972	1	TP10	0.50	53	27/02/2020	General Description (Bulk Analysis)	soil-stones
					27/02/2020	Asbestos Fibres	NAD
					27/02/2020	Asbestos ACM	NAD
					27/02/2020	Asbestos Type	NAD
					27/02/2020	Asbestos Level Screen	NAD







## NOTES TO ACCOMPANY ALL SCHEDULES AND REPORTS

EMT Job No.: 20/2972

### 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 overestimate 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.

Please include all sections of this report if it is reproduced

**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: 20/2972

Test Method No.	Description	Prep Method No. (if appropriate)	Description	ISO 17025 (UKAS/S ANAS)	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: 20/2972

Test Method No.	Description	Prep Method No. (if appropriate)	Description	ISO 17025 (UKAS/S ANAS)	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
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	PM62	Acid digestion of as received solid samples using Aqua Regia refluxed at 112.5 °C.			AR	Yes
TM31	Modified USEPA 8015B. Determination of Methylterbutylether, 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 Methylterbutylether, 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 GC/FID 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 GC/FID 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

EMT Job No: 20/2972

Test Method No.	Description	Prep Method No. (if appropriate)	Description	ISO 17025 (UKAS/S ANAS)	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		AD	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
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	NONE	No Method Code			AR	Yes





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



**Attention :** Stephen Kealy  
**Date :** 19th March, 2020  
**Your reference :** 9376-01-20  
**Our reference :** Test Report 20/2972 Batch 1  
**Location :** Site at Glenamuck Road  
**Date samples received :** 25th February, 2020  
**Status :** Final report  
**Issue :** 2

Eighteen samples were received for analysis on 25th February, 2020 of which eighteen were scheduled for analysis. Please find attached our Test Report which should be read with notes at the end of the report and should include all sections if reproduced. Interpretations and opinions are outside the scope of any accreditation, and all results relate only to samples supplied.  
All analysis is carried out on as received samples and reported on a dry weight basis unless stated otherwise. Results are not surrogate corrected.

**Authorised By:**



**Phil Sommerton BSc**  
Senior Project Manager

Please include all sections of this report if it is reproduced

# Element Materials Technology

**Client Name:** Ground Investigations Ireland  
**Reference:** 9376-01-20  
**Location:** Site at Glenamuck Road  
**Contact:** Stephen Kealy  
**EMT Job No:** 20/2972

**Report : Solid**

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

EMT Sample No.	1-3	4-6	7-9	10-12	13-15	16-18	19-21	22-24	25-27	28-30	Please see attached notes for all abbreviations and acronyms		
Sample ID	TP1	TP1	TP2	TP2	TP3	TP3	TP3	TP4	TP4	TP4			
Depth	0.50	1.50	0.50	1.50	0.50	1.50	2.50	0.50	1.50	2.50			
COC No / misc													
Containers	V J T	V J T	V J T	V J T	V J T	V J T	V J T	V J T	V J T	V J T			
Sample Date	20/02/2020	20/02/2020	20/02/2020	19/02/2020	19/02/2020	19/02/2020	19/02/2020	19/02/2020	19/02/2020	19/02/2020			
Sample Type	Soil	Soil	Soil	Soil	Soil	Soil	Soil	Soil	Soil	Soil			
Batch Number	1	1	1	1	1	1	1	1	1	1			
Date of Receipt	25/02/2020	25/02/2020	25/02/2020	25/02/2020	25/02/2020	25/02/2020	25/02/2020	25/02/2020	25/02/2020	25/02/2020	LOD/LOR	Units	Method No.
Antimony	1	1	-	<1	4	3	2	2	2	2	<1	mg/kg	TM30/PM15
Arsenic #	12.1	23.5	-	16.7	17.9	17.2	25.4	20.5	18.5	23.1	<0.5	mg/kg	TM30/PM15
Barium #	69	112	-	26	89	95	55	53	66	74	<1	mg/kg	TM30/PM15
Cadmium #	0.9	2.1	-	0.1	0.2	1.1	0.6	0.2	0.4	1.3	<0.1	mg/kg	TM30/PM15
Chromium #	44.5	50.6	-	42.5	63.9	44.9	37.8	42.2	42.3	53.1	<0.5	mg/kg	TM30/PM15
Copper #	24	29	-	10	30	38	21	21	22	30	<1	mg/kg	TM30/PM15
Lead #	44	130	-	31	220	126	51	160	188	56	<5	mg/kg	TM30/PM15
Mercury #	<0.1	<0.1	-	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	mg/kg	TM30/PM15
Molybdenum #	2.9	2.9	-	3.6	1.7	3.6	3.5	2.5	2.8	3.9	<0.1	mg/kg	TM30/PM15
Nickel #	25.6	27.6	-	10.6	35.7	30.8	19.9	12.9	13.3	37.7	<0.7	mg/kg	TM30/PM15
Selenium #	1	2	-	2	<1	1	1	<1	<1	<1	<1	mg/kg	TM30/PM15
Zinc #	85	149	-	75	135	152	94	94	119	112	<5	mg/kg	TM30/PM15
Antimony	-	-	<1	-	-	-	-	-	-	-	<1	mg/kg	TM30/PM62
Arsenic	-	-	22.6	-	-	-	-	-	-	-	<0.5	mg/kg	TM30/PM62
Barium	-	-	62	-	-	-	-	-	-	-	<1	mg/kg	TM30/PM62
Cadmium	-	-	0.3	-	-	-	-	-	-	-	<0.1	mg/kg	TM30/PM62
Chromium	-	-	19.3	-	-	-	-	-	-	-	<0.5	mg/kg	TM30/PM62
Copper	-	-	22	-	-	-	-	-	-	-	<1	mg/kg	TM30/PM62
Lead	-	-	66	-	-	-	-	-	-	-	<5	mg/kg	TM30/PM62
Mercury	-	-	<0.1	-	-	-	-	-	-	-	<0.1	mg/kg	TM30/PM62
Molybdenum	-	-	2.4	-	-	-	-	-	-	-	<0.1	mg/kg	TM30/PM62
Nickel	-	-	20.2	-	-	-	-	-	-	-	<0.7	mg/kg	TM30/PM62
Selenium	-	-	3	-	-	-	-	-	-	-	<1	mg/kg	TM30/PM62
Zinc	-	-	129	-	-	-	-	-	-	-	<5	mg/kg	TM30/PM62

# Element Materials Technology

**Client Name:** Ground Investigations Ireland  
**Reference:** 9376-01-20  
**Location:** Site at Glenamuck Road  
**Contact:** Stephen Kealy  
**EMT Job No:** 20/2972

**Report : Solid**

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

EMT Sample No.	1-3	4-6	7-9	10-12	13-15	16-18	19-21	22-24	25-27	28-30			
Sample ID	TP1	TP1	TP2	TP2	TP3	TP3	TP3	TP4	TP4	TP4			
Depth	0.50	1.50	0.50	1.50	0.50	1.50	2.50	0.50	1.50	2.50			
COC No / misc													
Containers	V J T	V J T	V J T	V J T	V J T	V J T	V J T	V J T	V J T	V J T			
Sample Date	20/02/2020	20/02/2020	20/02/2020	19/02/2020	19/02/2020	19/02/2020	19/02/2020	19/02/2020	19/02/2020	19/02/2020			
Sample Type	Soil	Soil	Soil	Soil	Soil	Soil	Soil	Soil	Soil	Soil			
Batch Number	1	1	1	1	1	1	1	1	1	1			
Date of Receipt	25/02/2020	25/02/2020	25/02/2020	25/02/2020	25/02/2020	25/02/2020	25/02/2020	25/02/2020	25/02/2020	25/02/2020			
											LOD/LOR	Units	Method No.
PAH MS													
Naphthalene #	0.10	<0.04	<0.04	<0.04	<0.04	<0.04	<0.04	<0.04	<0.04	<0.04	<0.04	mg/kg	TM4/PM8
Acenaphthylene	0.15	<0.03	0.15	<0.03	<0.03	<0.03	<0.03	<0.03	<0.03	<0.03	<0.03	mg/kg	TM4/PM8
Acenaphthene #	0.41	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	mg/kg	TM4/PM8
Fluorene #	0.25	<0.04	<0.04	<0.04	<0.04	<0.04	<0.04	<0.04	<0.04	<0.04	<0.04	mg/kg	TM4/PM8
Phenanthrene #	1.19	<0.03	0.11	<0.03	0.04	0.37	<0.03	0.06	0.06	<0.03	<0.03	mg/kg	TM4/PM8
Anthracene #	0.66	<0.04	0.34	<0.04	<0.04	0.09	<0.04	<0.04	<0.04	<0.04	<0.04	mg/kg	TM4/PM8
Fluoranthene #	6.59	0.04	0.49	<0.03	0.11	0.56	0.05	0.11	0.12	<0.03	<0.03	mg/kg	TM4/PM8
Pyrene #	5.52	0.04	0.47	<0.03	0.12	0.50	0.05	0.13	0.09	<0.03	<0.03	mg/kg	TM4/PM8
Benzo(a)anthracene #	2.95	<0.06	0.57	<0.06	0.08	0.38	<0.06	0.07	0.09	<0.06	<0.06	mg/kg	TM4/PM8
Chrysene #	2.67	0.03	0.58	<0.02	0.09	0.31	<0.02	0.06	0.06	<0.02	<0.02	mg/kg	TM4/PM8
Benzo(bk)fluoranthene #	5.49	<0.07	1.20	<0.07	0.16	0.57	<0.07	0.09	0.11	<0.07	<0.07	mg/kg	TM4/PM8
Benzo(a)pyrene #	2.93	<0.04	0.43	<0.04	0.08	0.31	<0.04	0.06	0.06	<0.04	<0.04	mg/kg	TM4/PM8
Indeno(123cd)pyrene	1.89	<0.04	0.38	<0.04	0.07	0.20	<0.04	<0.04	<0.04	<0.04	<0.04	mg/kg	TM4/PM8
Dibenzo(ah)anthracene #	0.26	<0.04	0.14	<0.04	<0.04	<0.04	<0.04	<0.04	<0.04	<0.04	<0.04	mg/kg	TM4/PM8
Benzo(ghi)perylene #	1.71	<0.04	0.41	<0.04	0.09	0.23	<0.04	0.06	0.04	<0.04	<0.04	mg/kg	TM4/PM8
Coronene	0.32	<0.04	0.12	<0.04	<0.04	<0.04	<0.04	<0.04	<0.04	<0.04	<0.04	mg/kg	TM4/PM8
PAH 6 Total #	18.61	<0.22	2.91	<0.22	0.51	1.87	<0.22	0.32	0.33	<0.22	<0.22	mg/kg	TM4/PM8
PAH 17 Total	33.09	<0.64	5.39	<0.64	0.84	3.52	<0.64	0.64	<0.64	<0.64	<0.64	mg/kg	TM4/PM8
Benzo(b)fluoranthene	3.95	<0.05	0.86	<0.05	0.12	0.41	<0.05	0.06	0.08	<0.05	<0.05	mg/kg	TM4/PM8
Benzo(k)fluoranthene	1.54	<0.02	0.34	<0.02	0.04	0.16	<0.02	0.03	0.03	<0.02	<0.02	mg/kg	TM4/PM8
Benzo(j)fluoranthene	1	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	mg/kg	TM4/PM8
PAH Surrogate % Recovery	96	91	103	94	96	94	92	95	94	97	<0	%	TM4/PM8
Mineral Oil (C10-C40)													
	<30	<30	41	<30	<30	41	<30	<30	45	<30	<30	mg/kg	TM5/PM8/PM16
TPH CWG													
Aliphatics													
>C5-C6 #	<0.1	<0.1	<0.1 <sup>SV</sup>	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	mg/kg	TM36/PM12
>C6-C8 #	<0.1	<0.1	<0.1 <sup>SV</sup>	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	mg/kg	TM36/PM12
>C8-C10	<0.1	<0.1	<0.1 <sup>SV</sup>	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	mg/kg	TM36/PM12
>C10-C12 #	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2	mg/kg	TM5/PM8/PM16
>C12-C16 #	<4	<4	<4	<4	<4	<4	<4	<4	<4	<4	<4	mg/kg	TM5/PM8/PM16
>C16-C21 #	<7	<7	<7	<7	<7	9	<7	<7	<7	<7	<7	mg/kg	TM5/PM8/PM16
>C21-C35 #	<7	<7	41	<7	29	32	<7	<7	45	<7	<7	mg/kg	TM5/PM8/PM16
>C35-C40	<7	<7	<7	<7	<7	<7	<7	<7	<7	<7	<7	mg/kg	TM5/PM8/PM16
Total aliphatics C5-40	<26	<26	41	<26	29	41	<26	<26	45	<26	<26	mg/kg	TM5/PM8/PM16
>C6-C10	<0.1	<0.1	<0.1 <sup>SV</sup>	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	mg/kg	TM36/PM12
>C10-C25	<10	<10	<10	<10	<10	16	<10	<10	<10	<10	<10	mg/kg	TM5/PM8/PM16
>C25-C35	<10	<10	31	<10	25	21	<10	<10	40	<10	<10	mg/kg	TM5/PM8/PM16

Please see attached notes for all abbreviations and acronyms

# Element Materials Technology

**Client Name:** Ground Investigations Ireland  
**Reference:** 9376-01-20  
**Location:** Site at Glenamuck Road  
**Contact:** Stephen Kealy  
**EMT Job No:** 20/2972

**Report : Solid**

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

EMT Sample No.	1-3	4-6	7-9	10-12	13-15	16-18	19-21	22-24	25-27	28-30	Please see attached notes for all abbreviations and acronyms		
Sample ID	TP1	TP1	TP2	TP2	TP3	TP3	TP3	TP4	TP4	TP4	LOD/LOR	Units	Method No.
Depth	0.50	1.50	0.50	1.50	0.50	1.50	2.50	0.50	1.50	2.50			
COC No / misc													
Containers	V J T	V J T	V J T	V J T	V J T	V J T	V J T	V J T	V J T	V J T			
Sample Date	20/02/2020	20/02/2020	20/02/2020	19/02/2020	19/02/2020	19/02/2020	19/02/2020	19/02/2020	19/02/2020	19/02/2020			
Sample Type	Soil	Soil	Soil	Soil	Soil	Soil	Soil	Soil	Soil	Soil			
Batch Number	1	1	1	1	1	1	1	1	1	1			
Date of Receipt	25/02/2020	25/02/2020	25/02/2020	25/02/2020	25/02/2020	25/02/2020	25/02/2020	25/02/2020	25/02/2020	25/02/2020			
TPH CWG													
<b>Aromatics</b>													
>C5-EC7 #	<0.1	<0.1	<0.1 <sup>SV</sup>	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	mg/kg	TM36/PM12
>EC7-EC8 #	<0.1	<0.1	<0.1 <sup>SV</sup>	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	mg/kg	TM36/PM12
>EC8-EC10 #	<0.1	<0.1	<0.1 <sup>SV</sup>	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	mg/kg	TM36/PM12
>EC10-EC12 #	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2	mg/kg	TMS/PM8/PM16
>EC12-EC16 #	<4	<4	<4	<4	<4	<4	<4	<4	<4	<4	<4	mg/kg	TMS/PM8/PM16
>EC16-EC21 #	<7	<7	<7	<7	<7	<7	<7	<7	<7	<7	<7	mg/kg	TMS/PM8/PM16
>EC21-EC35 #	<7	<7	118	<7	<7	79	<7	<7	39	<7	<7	mg/kg	TMS/PM8/PM16
>EC35-EC40	<7	<7	27	<7	<7	22	<7	<7	<7	<7	<7	mg/kg	TMS/PM8/PM16
Total aromatics C5-40	<26	<26	145	<26	<26	101	<26	<26	39	<26	<26	mg/kg	TMS/PM8/PM16/PM12/PM15
Total aliphatics and aromatics(C5-40)	<52	<52	186	<52	<52	142	<52	<52	84	<52	<52	mg/kg	TMS/PM8/PM16/PM12/PM15
>EC6-EC10 #	<0.1	<0.1	<0.1 <sup>SV</sup>	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	mg/kg	TM36/PM12
>EC10-EC25	<10	<10	31	<10	<10	<10	<10	<10	<10	<10	<10	mg/kg	TMS/PM8/PM16
>EC25-EC35	<10	<10	87	<10	<10	68	<10	<10	39	<10	<10	mg/kg	TMS/PM8/PM16
MTBE #	<5	<5	<5 <sup>SV</sup>	<5	<5	<5	<5	<5	<5	<5	<5	ug/kg	TM31/PM12
Benzene #	<5	<5	<5 <sup>SV</sup>	<5	<5	<5	<5	<5	<5	<5	<5	ug/kg	TM31/PM12
Toluene #	<5	<5	<5 <sup>SV</sup>	<5	<5	<5	<5	<5	<5	<5	<5	ug/kg	TM31/PM12
Ethylbenzene #	<5	<5	<5 <sup>SV</sup>	<5	<5	<5	<5	<5	<5	<5	<5	ug/kg	TM31/PM12
m/p-Xylene #	<5	<5	<5 <sup>SV</sup>	<5	<5	<5	<5	<5	<5	<5	<5	ug/kg	TM31/PM12
o-Xylene #	<5	<5	<5 <sup>SV</sup>	<5	<5	<5	<5	<5	<5	<5	<5	ug/kg	TM31/PM12
PCB 28 #	<5	<5	<5	<5	<5	<5	<5	<5	<5	<5	<5	ug/kg	TM17/PM8
PCB 52 #	<5	<5	<5	<5	<5	<5	<5	<5	<5	<5	<5	ug/kg	TM17/PM8
PCB 101 #	<5	<5	<5	<5	<5	<5	<5	<5	<5	<5	<5	ug/kg	TM17/PM8
PCB 118 #	<5	<5	<5	<5	<5	<5	<5	<5	<5	<5	<5	ug/kg	TM17/PM8
PCB 138 #	<5	<5	<5	<5	<5	<5	<5	<5	<5	<5	<5	ug/kg	TM17/PM8
PCB 153 #	<5	<5	<5	<5	<5	<5	<5	<5	<5	<5	<5	ug/kg	TM17/PM8
PCB 180 #	<5	<5	<5	<5	<5	<5	<5	<5	<5	<5	<5	ug/kg	TM17/PM8
Total 7 PCBs #	<35	<35	<35	<35	<35	<35	<35	<35	<35	<35	<35	ug/kg	TM17/PM8
Natural Moisture Content	12.6	36.1	35.3	24.3	11.6	22.1	17.8	14.9	12.0	22.4	<0.1	%	PM4/PM0
Moisture Content (% Wet Weight)	11.2	26.5	26.1	19.5	10.4	18.1	15.1	13.0	10.7	18.3	<0.1	%	PM4/PM0
Hexavalent Chromium #	<0.3	<0.3	<0.3	<0.3	<0.3	<0.3	<0.3	<0.3	<0.3	<0.3	<0.3	mg/kg	TM38/PM20
Sulphate as SO4 (2:1 Ext) #	-	0.0366	-	-	-	-	-	-	-	0.0397	<0.0015	g/l	TM38/PM20
Chromium III	44.5	50.6	-	42.5	63.9	44.9	37.8	42.2	42.3	53.1	<0.5	mg/kg	NONE/NONE
Chromium III	-	-	19.3	-	-	-	-	-	-	-	<0.5	mg/kg	NONE/NONE
Total Organic Carbon #	1.11	1.72	NDP	0.91	0.85	3.79	0.85	0.65	0.67	0.92	<0.02	%	TM21/PM24
pH #	8.33	7.63	7.05	7.07	8.04	7.72	7.60	8.27	8.23	8.18	<0.01	pH units	TM73/PM11





# Element Materials Technology

**Client Name:** Ground Investigations Ireland  
**Reference:** 9376-01-20  
**Location:** Site at Glenamuck Road  
**Contact:** Stephen Kealy  
**EMT Job No:** 20/2972

**Report : Solid**

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

EMT Sample No.	31-33	34-36	37-39	40-42	43-45	46-48	49-51	52-54				
Sample ID	TP5	TP5	TP6	TP6	TP7	TP8	TP9	TP10				
Depth	0.50	1.50	0.50	1.50	0.50	0.50	0.50	0.50				
COC No / misc												
Containers	V J T	V J T	V J T	V J T	V J T	V J T	V J T	V J T				
Sample Date	19/02/2020	19/02/2020	19/02/2020	19/02/2020	19/02/2020	20/02/2020	20/02/2020	20/02/2020				
Sample Type	Soil	Soil	Soil	Soil	Soil	Soil	Soil	Soil				
Batch Number	1	1	1	1	1	1	1	1				
Date of Receipt	25/02/2020	25/02/2020	25/02/2020	25/02/2020	25/02/2020	25/02/2020	25/02/2020	25/02/2020				
										LOD/LOR	Units	Method No.
Antimony	13	2	2	<1	1	<1	2	<1		<1	mg/kg	TM30/PM15
Arsenic #	26.8	14.9	12.1	20.4	26.4	16.5	17.1	12.7		<0.5	mg/kg	TM30/PM15
Barium #	112	53	85	17	63	67	83	29		<1	mg/kg	TM30/PM15
Cadmium #	0.3	0.3	0.5	<0.1	0.2	0.3	0.6	0.2		<0.1	mg/kg	TM30/PM15
Chromium #	47.5	51.1	40.4	35.3	50.0	46.1	49.9	51.2		<0.5	mg/kg	TM30/PM15
Copper #	27	22	23	41	22	19	19	13		<1	mg/kg	TM30/PM15
Lead #	783	104	73	15	25	85	69	30		<5	mg/kg	TM30/PM15
Mercury #	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1		<0.1	mg/kg	TM30/PM15
Molybdenum #	3.2	3.1	2.4	2.1	2.1	3.9	3.1	3.6		<0.1	mg/kg	TM30/PM15
Nickel #	11.0	18.1	21.8	4.7	29.5	13.1	15.5	17.9		<0.7	mg/kg	TM30/PM15
Selenium #	<1	<1	<1	<1	1	1	1	<1		<1	mg/kg	TM30/PM15
Zinc #	351	104	136	40	99	121	121	70		<5	mg/kg	TM30/PM15
Antimony	-	-	-	-	-	-	-	-		<1	mg/kg	TM30/PM62
Arsenic	-	-	-	-	-	-	-	-		<0.5	mg/kg	TM30/PM62
Barium	-	-	-	-	-	-	-	-		<1	mg/kg	TM30/PM62
Cadmium	-	-	-	-	-	-	-	-		<0.1	mg/kg	TM30/PM62
Chromium	-	-	-	-	-	-	-	-		<0.5	mg/kg	TM30/PM62
Copper	-	-	-	-	-	-	-	-		<1	mg/kg	TM30/PM62
Lead	-	-	-	-	-	-	-	-		<5	mg/kg	TM30/PM62
Mercury	-	-	-	-	-	-	-	-		<0.1	mg/kg	TM30/PM62
Molybdenum	-	-	-	-	-	-	-	-		<0.1	mg/kg	TM30/PM62
Nickel	-	-	-	-	-	-	-	-		<0.7	mg/kg	TM30/PM62
Selenium	-	-	-	-	-	-	-	-		<1	mg/kg	TM30/PM62
Zinc	-	-	-	-	-	-	-	-		<5	mg/kg	TM30/PM62

Please see attached notes for all abbreviations and acronyms

# Element Materials Technology

**Client Name:** Ground Investigations Ireland  
**Reference:** 9376-01-20  
**Location:** Site at Glenamuck Road  
**Contact:** Stephen Kealy  
**EMT Job No:** 20/2972

**Report : Solid**

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

EMT Sample No.	31-33	34-36	37-39	40-42	43-45	46-48	49-51	52-54					
Sample ID	TP5	TP5	TP6	TP6	TP7	TP8	TP9	TP10					
Depth	0.50	1.50	0.50	1.50	0.50	0.50	0.50	0.50					
COC No / misc													
Containers	V J T	V J T	V J T	V J T	V J T	V J T	V J T	V J T					
Sample Date	19/02/2020	19/02/2020	19/02/2020	19/02/2020	19/02/2020	20/02/2020	20/02/2020	20/02/2020					
Sample Type	Soil	Soil	Soil	Soil	Soil	Soil	Soil	Soil					
Batch Number	1	1	1	1	1	1	1	1					
Date of Receipt	25/02/2020	25/02/2020	25/02/2020	25/02/2020	25/02/2020	25/02/2020	25/02/2020	25/02/2020					
										LOD/LOR	Units	Method No.	
PAH MS													
Naphthalene #	<0.04	<0.04	0.30	<0.04	<0.04	<0.04	0.07	<0.04		<0.04	mg/kg	TM4/PM8	
Acenaphthylene	<0.03	<0.03	0.03	<0.03	<0.03	<0.03	0.28	<0.03		<0.03	mg/kg	TM4/PM8	
Acenaphthene #	<0.05	<0.05	0.43	<0.05	<0.05	<0.05	<0.05	<0.05		<0.05	mg/kg	TM4/PM8	
Fluorene #	<0.04	<0.04	0.32	<0.04	<0.04	<0.04	0.06	<0.04		<0.04	mg/kg	TM4/PM8	
Phenanthrene #	0.10	<0.03	2.39	0.06	<0.03	0.20	0.42	<0.03		<0.03	mg/kg	TM4/PM8	
Anthracene #	<0.04	<0.04	0.36	<0.04	<0.04	0.08	0.19	<0.04		<0.04	mg/kg	TM4/PM8	
Fluoranthene #	0.12	0.09	2.11	0.06	0.05	0.93	0.84	0.06		<0.03	mg/kg	TM4/PM8	
Pyrene #	0.26	0.08	1.86	0.04	0.03	0.79	0.74	0.06		<0.03	mg/kg	TM4/PM8	
Benzo(a)anthracene #	0.08	0.12	0.65	<0.06	<0.06	0.55	0.58	<0.06		<0.06	mg/kg	TM4/PM8	
Chrysene #	0.07	0.07	0.70	<0.02	<0.02	0.46	0.78	<0.02		<0.02	mg/kg	TM4/PM8	
Benzo(bk)fluoranthene #	0.14	0.14	1.18	<0.07	<0.07	1.01	2.95	<0.07		<0.07	mg/kg	TM4/PM8	
Benzo(a)pyrene #	0.07	0.06	0.62	<0.04	<0.04	0.55	2.56	<0.04		<0.04	mg/kg	TM4/PM8	
Indeno(123cd)pyrene	0.06	0.05	0.37	<0.04	<0.04	0.35	2.07	<0.04		<0.04	mg/kg	TM4/PM8	
Dibenzo(ah)anthracene #	<0.04	<0.04	0.12	<0.04	<0.04	0.07	0.48	<0.04		<0.04	mg/kg	TM4/PM8	
Benzo(ghi)perylene #	0.06	0.05	0.46	<0.04	<0.04	0.32	1.88	<0.04		<0.04	mg/kg	TM4/PM8	
Coronene	<0.04	<0.04	0.09	<0.04	<0.04	0.07	0.43	<0.04		<0.04	mg/kg	TM4/PM8	
PAH 6 Total #	0.45	0.39	4.74	<0.22	<0.22	3.16	10.30	<0.22		<0.22	mg/kg	TM4/PM8	
PAH 17 Total	0.96	0.66	11.99	<0.64	<0.64	5.38	14.33	<0.64		<0.64	mg/kg	TM4/PM8	
Benzo(b)fluoranthene	0.10	0.10	0.85	<0.05	<0.05	0.73	2.12	<0.05		<0.05	mg/kg	TM4/PM8	
Benzo(k)fluoranthene	0.04	0.04	0.33	<0.02	<0.02	0.28	0.83	<0.02		<0.02	mg/kg	TM4/PM8	
Benzo(j)fluoranthene	<1	<1	<1	<1	<1	<1	<1	<1		<1	mg/kg	TM4/PM8	
PAH Surrogate % Recovery	92	90	95	93	93	94	92	98		<0	%	TM4/PM8	
Mineral Oil (C10-C40)	354	<30	180	<30	<30	<30	<30	<30		<30	mg/kg	TM5/PM8/PM16	
TPH CWG													
Aliphatics													
>C5-C6 #	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1		<0.1	mg/kg	TM36/PM12	
>C6-C8 #	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1		<0.1	mg/kg	TM36/PM12	
>C8-C10	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1		<0.1	mg/kg	TM36/PM12	
>C10-C12 #	4.1	<0.2	6.3	<0.2	<0.2	<0.2	<0.2	<0.2		<0.2	mg/kg	TM5/PM8/PM16	
>C12-C16 #	71	<4	16	<4	<4	<4	<4	<4		<4	mg/kg	TM5/PM8/PM16	
>C16-C21 #	151	<7	15	<7	<7	<7	<7	<7		<7	mg/kg	TM5/PM8/PM16	
>C21-C35 #	128	27	119	<7	<7	<7	23	<7		<7	mg/kg	TM5/PM8/PM16	
>C35-C40	<7	<7	24	<7	<7	<7	<7	<7		<7	mg/kg	TM5/PM8/PM16	
Total aliphatics C5-40	354	27	180	<26	<26	<26	<26	<26		<26	mg/kg	TM5/PM8/PM16/PM12/PM11	
>C6-C10	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1		<0.1	mg/kg	TM36/PM12	
>C10-C25	311	<10	65	<10	<10	<10	<10	<10		<10	mg/kg	TM5/PM8/PM16	
>C25-C35	54	22	99	<10	<10	<10	23	<10		<10	mg/kg	TM5/PM8/PM16	

Please see attached notes for all abbreviations and acronyms

# Element Materials Technology

**Client Name:** Ground Investigations Ireland  
**Reference:** 9376-01-20  
**Location:** Site at Glenamuck Road  
**Contact:** Stephen Kealy  
**EMT Job No:** 20/2972

**Report : Solid**

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

EMT Sample No.	31-33	34-36	37-39	40-42	43-45	46-48	49-51	52-54					
Sample ID	TP5	TP5	TP6	TP6	TP7	TP8	TP9	TP10					
Depth	0.50	1.50	0.50	1.50	0.50	0.50	0.50	0.50					
COC No / misc													
Containers	V J T	V J T	V J T	V J T	V J T	V J T	V J T	V J T					
Sample Date	19/02/2020	19/02/2020	19/02/2020	19/02/2020	19/02/2020	20/02/2020	20/02/2020	20/02/2020					
Sample Type	Soil	Soil	Soil	Soil	Soil	Soil	Soil	Soil					
Batch Number	1	1	1	1	1	1	1	1					
Date of Receipt	25/02/2020	25/02/2020	25/02/2020	25/02/2020	25/02/2020	25/02/2020	25/02/2020	25/02/2020					
										LOD/LOR	Units	Method No.	
TPH CWG													
<b>Aromatics</b>													
>C5-EC7 #	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	mg/kg	TM36/PM12	
>EC7-EC8 #	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	mg/kg	TM36/PM12	
>EC8-EC10 #	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	mg/kg	TM36/PM12	
>EC10-EC12 #	4.5	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2	mg/kg	TMS/PM8/PM16	
>EC12-EC16 #	56	<4	9	<4	<4	<4	<4	<4	<4	<4	mg/kg	TMS/PM8/PM16	
>EC16-EC21 #	121	<7	20	<7	<7	<7	11	<7	<7	<7	mg/kg	TMS/PM8/PM16	
>EC21-EC35 #	100	<7	165	<7	<7	<7	164	<7	<7	<7	mg/kg	TMS/PM8/PM16	
>EC35-EC40	<7	<7	54	<7	<7	<7	32	<7	<7	<7	mg/kg	TMS/PM8/PM16	
Total aromatics C5-40	282	<26	248	<26	<26	<26	207	<26	<26	<26	mg/kg	TMS/PM8/PM16/PM12/PM15	
Total aliphatics and aromatics(C5-40)	636	<52	428	<52	<52	<52	207	<52	<52	<52	mg/kg	TMS/PM8/PM16/PM12/PM15	
>EC6-EC10 #	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	mg/kg	TM36/PM12	
>EC10-EC25	236	<10	51	<10	<10	<10	33	<10	<10	<10	mg/kg	TMS/PM8/PM16	
>EC25-EC35	49	<10	148	<10	<10	<10	133	<10	<10	<10	mg/kg	TMS/PM8/PM16	
MTBE #	<5	<5	<5	<5	<5	<5	<5	<5	<5	<5	ug/kg	TM31/PM12	
Benzene #	<5	<5	<5	<5	<5	<5	<5	<5	<5	<5	ug/kg	TM31/PM12	
Toluene #	<5	<5	<5	<5	<5	<5	<5	<5	<5	<5	ug/kg	TM31/PM12	
Ethylbenzene #	<5	<5	<5	<5	<5	<5	<5	<5	<5	<5	ug/kg	TM31/PM12	
m/p-Xylene #	<5	<5	<5	<5	<5	<5	<5	<5	<5	<5	ug/kg	TM31/PM12	
o-Xylene #	<5	<5	<5	<5	<5	<5	<5	<5	<5	<5	ug/kg	TM31/PM12	
PCB 28 #	<5	<5	<5	<5	<5	<5	<5	<5	<5	<5	ug/kg	TM17/PM8	
PCB 52 #	<5	<5	<5	<5	<5	<5	<5	<5	<5	<5	ug/kg	TM17/PM8	
PCB 101 #	<5	<5	<5	<5	<5	<5	<5	<5	<5	<5	ug/kg	TM17/PM8	
PCB 118 #	<5	<5	<5	<5	<5	<5	<5	<5	<5	<5	ug/kg	TM17/PM8	
PCB 138 #	<5	<5	<5	<5	<5	<5	<5	<5	<5	<5	ug/kg	TM17/PM8	
PCB 153 #	<5	<5	<5	<5	<5	<5	<5	<5	<5	<5	ug/kg	TM17/PM8	
PCB 180 #	<5	<5	<5	<5	<5	<5	<5	<5	<5	<5	ug/kg	TM17/PM8	
Total 7 PCBs #	<35	<35	<35	<35	<35	<35	<35	<35	<35	<35	ug/kg	TM17/PM8	
Natural Moisture Content	13.4	16.7	15.3	11.2	13.9	17.8	23.5	22.3		<0.1	%	PM4/PM0	
Moisture Content (% Wet Weight)	11.8	14.3	13.3	10.1	12.2	15.1	19.0	18.2		<0.1	%	PM4/PM0	
Hexavalent Chromium #	<0.3	<0.3	<0.3	<0.3	<0.3	<0.3	<0.3	<0.3		<0.3	mg/kg	TM38/PM20	
Sulphate as SO4 (2:1 Ext) #	-	-	0.0391	-	-	-	-	-		<0.0015	g/l	TM38/PM20	
Chromium III	47.5	51.1	40.4	35.3	50.0	46.1	49.9	51.2		<0.5	mg/kg	NONE/NONE	
Chromium III	-	-	-	-	-	-	-	-		<0.5	mg/kg	NONE/NONE	
Total Organic Carbon #	0.70	0.89	1.76	0.15	0.82	1.46	2.14	0.75		<0.02	%	TM21/PM24	
pH #	8.21	8.02	8.07	8.22	7.99	7.23	7.91	7.93		<0.01	pH units	TM73/PM11	

Please see attached notes for all abbreviations and acronyms





# Element Materials Technology

**Client Name:** Ground Investigations Ireland  
**Reference:** 9376-01-20  
**Location:** Site at Glenamuck Road  
**Contact:** Stephen Kealy  
**EMT Job No:** 20/2972

**Report :** CEN 10:1 1 Batch

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

EMT Sample No.	1-3	4-6	7-9	10-12	13-15	16-18	19-21	22-24	25-27	28-30	Please see attached notes for all abbreviations and acronyms		
Sample ID	TP1	TP1	TP2	TP2	TP3	TP3	TP3	TP4	TP4	TP4			
Depth	0.50	1.50	0.50	1.50	0.50	1.50	2.50	0.50	1.50	2.50			
COC No / misc													
Containers	V J T	V J T	V J T	V J T	V J T	V J T	V J T	V J T	V J T	V J T			
Sample Date	20/02/2020	20/02/2020	20/02/2020	19/02/2020	19/02/2020	19/02/2020	19/02/2020	19/02/2020	19/02/2020	19/02/2020			
Sample Type	Soil	Soil	Soil	Soil	Soil	Soil	Soil	Soil	Soil	Soil			
Batch Number	1	1	1	1	1	1	1	1	1	1			
Date of Receipt	25/02/2020	25/02/2020	25/02/2020	25/02/2020	25/02/2020	25/02/2020	25/02/2020	25/02/2020	25/02/2020	25/02/2020	LOD/LOR	Units	Method No.
Dissolved Antimony #	<0.002	<0.002	<0.002	<0.002	0.005	0.002	0.003	0.004	0.003	<0.002	<0.002	mg/l	TM30/PM17
Dissolved Antimony (A10) #	<0.02	<0.02	<0.02	<0.02	0.05	<0.02	0.03	0.04	0.03	<0.02	<0.02	mg/kg	TM30/PM17
Dissolved Arsenic #	<0.0025	<0.0025	<0.0025	<0.0025	<0.0025	<0.0025	0.0030	<0.0025	<0.0025	<0.0025	<0.0025	mg/l	TM30/PM17
Dissolved Arsenic (A10) #	<0.025	<0.025	<0.025	<0.025	<0.025	<0.025	0.030	<0.025	<0.025	<0.025	<0.025	mg/kg	TM30/PM17
Dissolved Barium #	0.003	0.005	0.005	<0.003	0.011	0.027	0.012	0.008	0.006	0.004	<0.003	mg/l	TM30/PM17
Dissolved Barium (A10) #	0.03	0.05	0.05	<0.03	0.11	0.27	0.12	0.08	0.06	0.04	<0.03	mg/kg	TM30/PM17
Dissolved Cadmium #	<0.0005	<0.0005	<0.0005	<0.0005	<0.0005	<0.0005	<0.0005	<0.0005	<0.0005	<0.0005	<0.0005	mg/l	TM30/PM17
Dissolved Cadmium (A10) #	<0.005	<0.005	<0.005	<0.005	<0.005	<0.005	<0.005	<0.005	<0.005	<0.005	<0.005	mg/kg	TM30/PM17
Dissolved Chromium #	<0.0015	<0.0015	<0.0015	<0.0015	<0.0015	<0.0015	<0.0015	<0.0015	<0.0015	<0.0015	<0.0015	mg/l	TM30/PM17
Dissolved Chromium (A10) #	<0.015	<0.015	<0.015	<0.015	<0.015	<0.015	<0.015	<0.015	<0.015	<0.015	<0.015	mg/kg	TM30/PM17
Dissolved Copper #	<0.007	<0.007	<0.007	<0.007	<0.007	<0.007	<0.007	<0.007	<0.007	<0.007	<0.007	mg/l	TM30/PM17
Dissolved Copper (A10) #	<0.07	<0.07	<0.07	<0.07	<0.07	<0.07	<0.07	<0.07	<0.07	<0.07	<0.07	mg/kg	TM30/PM17
Dissolved Lead #	<0.005	<0.005	<0.005	<0.005	<0.005	<0.005	<0.005	<0.005	<0.005	<0.005	<0.005	mg/l	TM30/PM17
Dissolved Lead (A10) #	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	mg/kg	TM30/PM17
Dissolved Molybdenum #	0.005	0.003	0.003	0.002	0.004	0.008	0.007	0.003	0.003	0.003	<0.002	mg/l	TM30/PM17
Dissolved Molybdenum (A10) #	0.05	0.03	0.03	0.02	0.04	0.08	0.07	0.03	0.03	0.03	<0.02	mg/kg	TM30/PM17
Dissolved Nickel #	<0.002	<0.002	<0.002	<0.002	<0.002	<0.002	<0.002	<0.002	<0.002	<0.002	<0.002	mg/l	TM30/PM17
Dissolved Nickel (A10) #	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	mg/kg	TM30/PM17
Dissolved Selenium #	<0.003	<0.003	<0.003	<0.003	<0.003	<0.003	<0.003	<0.003	<0.003	<0.003	<0.003	mg/l	TM30/PM17
Dissolved Selenium (A10) #	<0.03	<0.03	<0.03	<0.03	<0.03	<0.03	<0.03	<0.03	<0.03	<0.03	<0.03	mg/kg	TM30/PM17
Dissolved Zinc #	<0.003	0.007	0.012	0.011	<0.003	0.004	<0.003	<0.003	<0.003	0.004	<0.003	mg/l	TM30/PM17
Dissolved Zinc (A10) #	<0.03	0.07	0.12	0.11	<0.03	0.04	<0.03	<0.03	<0.03	0.04	<0.03	mg/kg	TM30/PM17
Mercury Dissolved by CVAF #	<0.00001	<0.00001	0.00002	0.00002	<0.00001	<0.00001	<0.00001	<0.00001	<0.00001	<0.00001	<0.00001	mg/l	TM61/PM0
Mercury Dissolved by CVAF #	<0.0001	<0.0001	0.0002	0.0002	<0.0001	<0.0001	<0.0001	<0.0001	<0.0001	<0.0001	<0.0001	mg/kg	TM61/PM0
Phenol	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	mg/l	TM26/PM0
Phenol	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	mg/kg	TM26/PM0
Fluoride	0.4	0.4	<0.3	<0.3	0.5	0.4	0.3	0.5	0.4	0.4	<0.3	mg/l	TM173/PM0
Fluoride	4	4	<3	<3	5	4	<3	5	4	4	<3	mg/kg	TM173/PM0
Sulphate as SO4 #	14.6	3.6	<0.5	<0.5	27.1	63.2	36.1	<0.5	13.3	7.6	<0.5	mg/l	TM38/PM0
Sulphate as SO4 #	146	36	<5	<5	271	632	361	<5	133	76	<5	mg/kg	TM38/PM0
Chloride #	0.5	0.9	2.1	1.4	0.4	0.5	<0.3	<0.3	0.4	<0.3	<0.3	mg/l	TM38/PM0
Chloride #	5	9	21	14	4	5	<3	<3	4	<3	<3	mg/kg	TM38/PM0
Dissolved Organic Carbon	5	12	31	22	4	9	7	7	7	5	<2	mg/l	TM60/PM0
Dissolved Organic Carbon	50	120	310	220	40	90	70	70	70	50	<20	mg/kg	TM60/PM0
pH	8.07	7.70	7.63	7.35	8.13	8.14	8.23	8.98	8.22	8.22	<0.01	pH units	TM73/PM0
Total Dissolved Solids #	79	38	157	79	35	183	205	74	104	77	<35	mg/l	TM20/PM0
Total Dissolved Solids #	790	380	1569	790	<350	1829	2050	740	1040	770	<350	mg/kg	TM20/PM0

# Element Materials Technology

**Client Name:** Ground Investigations Ireland  
**Reference:** 9376-01-20  
**Location:** Site at Glenamuck Road  
**Contact:** Stephen Kealy  
**EMT Job No:** 20/2972

**Report :** CEN 10:1 1 Batch

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

EMT Sample No.	31-33	34-36	37-39	40-42	43-45	46-48	49-51	52-54					
Sample ID	TP5	TP5	TP6	TP6	TP7	TP8	TP9	TP10					
Depth	0.50	1.50	0.50	1.50	0.50	0.50	0.50	0.50					
COC No / misc													
Containers	V J T	V J T	V J T	V J T	V J T	V J T	V J T	V J T					
Sample Date	19/02/2020	19/02/2020	19/02/2020	19/02/2020	19/02/2020	20/02/2020	20/02/2020	20/02/2020					
Sample Type	Soil	Soil	Soil	Soil	Soil	Soil	Soil	Soil					
Batch Number	1	1	1	1	1	1	1	1					
Date of Receipt	25/02/2020	25/02/2020	25/02/2020	25/02/2020	25/02/2020	25/02/2020	25/02/2020	25/02/2020					
										LOD/LOR	Units	Method No.	
Dissolved Antimony #	0.004	<0.002	0.005	0.002	0.003	<0.002	<0.002	<0.002		<0.002	mg/l	TM30/PM17	
Dissolved Antimony (A10) #	0.04	<0.02	0.05	<0.02	0.03	<0.02	<0.02	<0.02		<0.02	mg/kg	TM30/PM17	
Dissolved Arsenic #	<0.0025	<0.0025	0.0089	0.0100	0.0037	<0.0025	<0.0025	<0.0025		<0.0025	mg/l	TM30/PM17	
Dissolved Arsenic (A10) #	<0.025	<0.025	0.089	0.100	0.037	<0.025	<0.025	<0.025		<0.025	mg/kg	TM30/PM17	
Dissolved Barium #	0.007	0.007	0.011	<0.003	0.004	<0.003	0.006	<0.003		<0.003	mg/l	TM30/PM17	
Dissolved Barium (A10) #	0.07	0.07	0.11	<0.03	0.04	<0.03	0.06	<0.03		<0.03	mg/kg	TM30/PM17	
Dissolved Cadmium #	<0.0005	<0.0005	<0.0005	<0.0005	<0.0005	<0.0005	<0.0005	<0.0005		<0.0005	mg/l	TM30/PM17	
Dissolved Cadmium (A10) #	<0.005	<0.005	<0.005	<0.005	<0.005	<0.005	<0.005	<0.005		<0.005	mg/kg	TM30/PM17	
Dissolved Chromium #	<0.0015	<0.0015	<0.0015	<0.0015	<0.0015	<0.0015	<0.0015	<0.0015		<0.0015	mg/l	TM30/PM17	
Dissolved Chromium (A10) #	<0.015	<0.015	<0.015	<0.015	<0.015	<0.015	<0.015	<0.015		<0.015	mg/kg	TM30/PM17	
Dissolved Copper #	<0.007	<0.007	<0.007	<0.007	<0.007	<0.007	<0.007	<0.007		<0.007	mg/l	TM30/PM17	
Dissolved Copper (A10) #	<0.07	<0.07	<0.07	<0.07	<0.07	<0.07	<0.07	<0.07		<0.07	mg/kg	TM30/PM17	
Dissolved Lead #	<0.005	<0.005	<0.005	<0.005	<0.005	<0.005	<0.005	<0.005		<0.005	mg/l	TM30/PM17	
Dissolved Lead (A10) #	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05		<0.05	mg/kg	TM30/PM17	
Dissolved Molybdenum #	0.003	0.003	0.016	0.002	0.007	<0.002	<0.002	<0.002		<0.002	mg/l	TM30/PM17	
Dissolved Molybdenum (A10) #	0.03	0.03	0.16	<0.02	0.07	<0.02	<0.02	<0.02		<0.02	mg/kg	TM30/PM17	
Dissolved Nickel #	<0.002	<0.002	<0.002	<0.002	<0.002	<0.002	<0.002	<0.002		<0.002	mg/l	TM30/PM17	
Dissolved Nickel (A10) #	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02		<0.02	mg/kg	TM30/PM17	
Dissolved Selenium #	<0.003	<0.003	<0.003	<0.003	<0.003	<0.003	<0.003	<0.003		<0.003	mg/l	TM30/PM17	
Dissolved Selenium (A10) #	<0.03	<0.03	<0.03	<0.03	<0.03	<0.03	<0.03	<0.03		<0.03	mg/kg	TM30/PM17	
Dissolved Zinc #	0.005	0.004	0.005	0.005	0.004	0.007	0.004	0.005		<0.003	mg/l	TM30/PM17	
Dissolved Zinc (A10) #	0.05	0.04	0.05	0.05	0.04	0.07	0.04	0.05		<0.03	mg/kg	TM30/PM17	
Mercury Dissolved by CVA#	<0.00001	<0.00001	0.00001	0.00003	<0.00001	0.00001	0.00001	<0.00001		<0.00001	mg/l	TM61/PM0	
Mercury Dissolved by CVA#	<0.0001	<0.0001	0.0001	0.0003	<0.0001	0.0001	0.0001	<0.0001		<0.0001	mg/kg	TM61/PM0	
Phenol	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01		<0.01	mg/l	TM26/PM0	
Phenol	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1		<0.1	mg/kg	TM26/PM0	
Fluoride	0.5	0.5	0.3	0.6	<0.3	<0.3	<0.3	<0.3		<0.3	mg/l	TM173/PM0	
Fluoride	5	5	3	6	<3	<3	<3	<3		<3	mg/kg	TM173/PM0	
Sulphate as SO4 #	<0.5	11.3	17.8	3.7	6.7	<0.5	<0.5	<0.5		<0.5	mg/l	TM38/PM0	
Sulphate as SO4 #	<5	113	178	37	67	<5	<5	<5		<5	mg/kg	TM38/PM0	
Chloride #	<0.3	0.4	0.5	0.4	0.7	0.7	0.6	0.3		<0.3	mg/l	TM38/PM0	
Chloride #	<3	4	5	4	7	7	6	3		<3	mg/kg	TM38/PM0	
Dissolved Organic Carbon	8	7	12	5	8	9	6	6		<2	mg/l	TM60/PM0	
Dissolved Organic Carbon	80	70	120	50	80	90	60	60		<20	mg/kg	TM60/PM0	
pH	8.14	8.13	8.15	8.06	8.20	7.60	7.98	7.94		<0.01	pH units	TM73/PM0	
Total Dissolved Solids #	95	92	184	99	138	63	97	91		<35	mg/l	TM20/PM0	
Total Dissolved Solids #	950	920	1841	989	1380	630	970	910		<350	mg/kg	TM20/PM0	

Please see attached notes for all abbreviations and acronyms

**Element Materials Technology**

**Client Name:** Ground Investigations Ireland  
**Reference:** 9376-01-20  
**Location:** Site at Glenamuck Road  
**Contact:** Stephen Kealy  
**EMT Job No:** 20/2972

**Report :** EN12457\_2  
**Solids:** V=60g VOC jar, J=250g glass jar, T=plastic tub

EMT Sample No.	1-3	4-6	7-9	10-12	13-15	16-18	19-21	22-24	25-27	28-30	Inert	Stable Non-reactive	Hazardous	LOD LOR	Units	Method No.
<b>Sample ID</b>	TP1	TP1	TP2	TP2	TP3	TP3	TP3	TP4	TP4	TP4						
<b>Depth</b>	0.50	1.50	0.50	1.50	0.50	1.50	2.50	0.50	1.50	2.50						
<b>COC No / misc</b>																
<b>Containers</b>	V J T	V J T	V J T	V J T	V J T	V J T	V J T	V J T	V J T	V J T						
<b>Sample Date</b>	20/02/2020	20/02/2020	20/02/2020	19/02/2020	19/02/2020	19/02/2020	19/02/2020	19/02/2020	19/02/2020	19/02/2020						
<b>Sample Type</b>	Soil	Soil	Soil	Soil	Soil	Soil	Soil	Soil	Soil	Soil						
<b>Batch Number</b>	1	1	1	1	1	1	1	1	1	1						
<b>Date of Receipt</b>	25/02/2020	25/02/2020	25/02/2020	25/02/2020	25/02/2020	25/02/2020	25/02/2020	25/02/2020	25/02/2020	25/02/2020						
<b>Solid Waste Analysis</b>																
Total Organic Carbon #	1.11	1.72	NDP	0.91	0.85	3.79	0.85	0.65	0.67	0.92	3	5	6	<0.02	%	TM21/PM24
Sum of BTEX	<0.025	<0.025	<0.025 <sup>SV</sup>	<0.025	<0.025	<0.025	<0.025	<0.025	<0.025	<0.025	6	-	-	<0.025	mg/kg	TM31/PM12
Sum of 7 PCBs #	<0.035	<0.035	<0.035	<0.035	<0.035	<0.035	<0.035	<0.035	<0.035	<0.035	1	-	-	<0.035	mg/kg	TM17/PM8
Mineral Oil	<30	<30	41	<30	<30	41	<30	<30	45	<30	500	-	-	<30	mg/kg	TM5/PM8/PM16
PAH Sum of 6 #	18.61	<0.22	2.91	<0.22	0.51	1.87	<0.22	0.32	0.33	<0.22	-	-	-	<0.22	mg/kg	TM4/PM8
PAH Sum of 17	33.09	<0.64	5.39	<0.64	0.84	3.52	<0.64	0.64	<0.64	<0.64	100	-	-	<0.64	mg/kg	TM4/PM8
<b>CEN 10:1 Leachate</b>																
Arsenic #	<0.025	<0.025	<0.025	<0.025	<0.025	<0.025	0.030	<0.025	<0.025	<0.025	0.5	2	25	<0.025	mg/kg	TM30/PM17
Barium #	0.03	0.05	0.05	<0.03	0.11	0.27	0.12	0.08	0.06	0.04	20	100	300	<0.03	mg/kg	TM30/PM17
Cadmium #	<0.005	<0.005	<0.005	<0.005	<0.005	<0.005	<0.005	<0.005	<0.005	<0.005	0.04	1	5	<0.005	mg/kg	TM30/PM17
Chromium #	<0.015	<0.015	<0.015	<0.015	<0.015	<0.015	<0.015	<0.015	<0.015	<0.015	0.5	10	70	<0.015	mg/kg	TM30/PM17
Copper #	<0.07	<0.07	<0.07	<0.07	<0.07	<0.07	<0.07	<0.07	<0.07	<0.07	2	50	100	<0.07	mg/kg	TM30/PM17
Mercury #	<0.0001	<0.0001	0.0002	0.0002	<0.0001	<0.0001	<0.0001	<0.0001	<0.0001	<0.0001	0.01	0.2	2	<0.0001	mg/kg	TM61/PM0
Molybdenum #	0.05	0.03	0.03	0.02	0.04	0.08	0.07	0.03	0.03	0.03	0.5	10	30	<0.02	mg/kg	TM30/PM17
Nickel #	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	0.4	10	40	<0.02	mg/kg	TM30/PM17
Lead #	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	0.5	10	50	<0.05	mg/kg	TM30/PM17
Antimony #	<0.02	<0.02	<0.02	<0.02	0.05	<0.02	0.03	0.04	0.03	<0.02	0.06	0.7	5	<0.02	mg/kg	TM30/PM17
Selenium #	<0.03	<0.03	<0.03	<0.03	<0.03	<0.03	<0.03	<0.03	<0.03	<0.03	0.1	0.5	7	<0.03	mg/kg	TM30/PM17
Zinc #	<0.03	0.07	0.12	0.11	<0.03	0.04	<0.03	<0.03	<0.03	0.04	4	50	200	<0.03	mg/kg	TM30/PM17
Total Dissolved Solids #	790	380	1569	790	<350	1829	2050	740	1040	770	4000	60000	100000	<350	mg/kg	TM20/PM0
Dissolved Organic Carbon	50	120	310	220	40	90	70	70	70	50	500	800	1000	<20	mg/kg	TM60/PM0
Mass of raw test portion	0.1055	0.1278	0.1251	0.1249	0.1071	0.116	0.115	0.104	0.1012	0.1073	-	-	-		kg	NONE/PM17
Dry Matter Content Ratio	85.6	70.6	72.2	71.9	84.2	77.8	78.3	86.9	88.6	83.7	-	-	-	<0.1	%	NONE/PM4
Leachant Volume	0.885	0.862	0.865	0.865	0.883	0.874	0.875	0.887	0.888	0.882	-	-	-		l	NONE/PM17
Eluate Volume	0.85	0.8	0.82	0.85	0.85	0.8	0.78	0.8	0.75	0.8	-	-	-		l	NONE/PM17
pH #	8.33	7.63	7.05	7.07	8.04	7.72	7.60	8.27	8.23	8.18	-	-	-	<0.01	pH units	TM73/PM11
Phenol	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	1	-	-	<0.1	mg/kg	TM26/PM0
Fluoride	4	4	<3	<3	5	4	<3	5	4	4	-	-	-	<3	mg/kg	TM173/PM0
Sulphate as SO4 #	146	36	<5	<5	271	632	361	<5	133	76	1000	20000	50000	<5	mg/kg	TM38/PM0
Chloride #	5	9	21	14	4	5	<3	<3	4	<3	800	15000	25000	<3	mg/kg	TM38/PM0

Please see attached notes for all abbreviations and acronyms

# Element Materials Technology

**Client Name:** Ground Investigations Ireland  
**Reference:** 9376-01-20  
**Location:** Site at Glenamuck Road  
**Contact:** Stephen Kealy  
**EMT Job No:** 20/2972

**Report :** EN12457\_2  
**Solids:** V=60g VOC jar, J=250g glass jar, T=plastic tub

EMT Sample No.	31-33	34-36	37-39	40-42	43-45	46-48	49-51	52-54							
Sample ID	TP5	TP5	TP6	TP6	TP7	TP8	TP9	TP10							
Depth	0.50	1.50	0.50	1.50	0.50	0.50	0.50	0.50							
COC No / misc															
Containers	V J T	V J T	V J T	V J T	V J T	V J T	V J T	V J T							
Sample Date	19/02/2020	19/02/2020	19/02/2020	19/02/2020	19/02/2020	20/02/2020	20/02/2020	20/02/2020							
Sample Type	Soil	Soil	Soil	Soil	Soil	Soil	Soil	Soil							
Batch Number	1	1	1	1	1	1	1	1							
Date of Receipt	25/02/2020	25/02/2020	25/02/2020	25/02/2020	25/02/2020	25/02/2020	25/02/2020	25/02/2020							
										Inert	Stable Non-reactive	Hazardous	LOD LOR	Units	Method No.
<b>Solid Waste Analysis</b>															
Total Organic Carbon #	0.70	0.89	1.76	0.15	0.82	1.46	2.14	0.75		3	5	6	<0.02	%	TM21/PM24
Sum of BTEX	<0.025	<0.025	<0.025	<0.025	<0.025	<0.025	<0.025	<0.025		6	-	-	<0.025	mg/kg	TM31/PM12
Sum of 7 PCBs #	<0.035	<0.035	<0.035	<0.035	<0.035	<0.035	<0.035	<0.035		1	-	-	<0.035	mg/kg	TM17/PM8
Mineral Oil	354	<30	180	<30	<30	<30	<30	<30		500	-	-	<30	mg/kg	TM5/PM8/PM16
PAH Sum of 6 #	0.45	0.39	4.74	<0.22	<0.22	3.16	10.30	<0.22		-	-	-	<0.22	mg/kg	TM4/PM8
PAH Sum of 17	0.96	0.66	11.99	<0.64	<0.64	5.38	14.33	<0.64		100	-	-	<0.64	mg/kg	TM4/PM8
<b>CEN 10:1 Leachate</b>															
Arsenic #	<0.025	<0.025	0.089	0.100	0.037	<0.025	<0.025	<0.025		0.5	2	25	<0.025	mg/kg	TM30/PM17
Barium #	0.07	0.07	0.11	<0.03	0.04	<0.03	0.06	<0.03		20	100	300	<0.03	mg/kg	TM30/PM17
Cadmium #	<0.005	<0.005	<0.005	<0.005	<0.005	<0.005	<0.005	<0.005		0.04	1	5	<0.005	mg/kg	TM30/PM17
Chromium #	<0.015	<0.015	<0.015	<0.015	<0.015	<0.015	<0.015	<0.015		0.5	10	70	<0.015	mg/kg	TM30/PM17
Copper #	<0.07	<0.07	<0.07	<0.07	<0.07	<0.07	<0.07	<0.07		2	50	100	<0.07	mg/kg	TM30/PM17
Mercury #	<0.0001	<0.0001	0.0001	0.0003	<0.0001	0.0001	0.0001	<0.0001		0.01	0.2	2	<0.0001	mg/kg	TM61/PM0
Molybdenum #	0.03	0.03	0.16	<0.02	0.07	<0.02	<0.02	<0.02		0.5	10	30	<0.02	mg/kg	TM30/PM17
Nickel #	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02		0.4	10	40	<0.02	mg/kg	TM30/PM17
Lead #	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05		0.5	10	50	<0.05	mg/kg	TM30/PM17
Antimony #	0.04	<0.02	0.05	<0.02	0.03	<0.02	<0.02	<0.02		0.06	0.7	5	<0.02	mg/kg	TM30/PM17
Selenium #	<0.03	<0.03	<0.03	<0.03	<0.03	<0.03	<0.03	<0.03		0.1	0.5	7	<0.03	mg/kg	TM30/PM17
Zinc #	0.05	0.04	0.05	0.05	0.04	0.07	0.04	0.05		4	50	200	<0.03	mg/kg	TM30/PM17
Total Dissolved Solids #	950	920	1841	989	1380	630	970	910		4000	60000	100000	<350	mg/kg	TM20/PM0
Dissolved Organic Carbon	80	70	120	50	80	90	60	60		500	800	1000	<20	mg/kg	TM60/PM0
Mass of raw test portion	0.1034	0.1052	0.1062	0.1018	0.1017	0.108	0.1099	0.1091		-	-	-		kg	NONE/PM17
Dry Matter Content Ratio	87.2	85.2	84.7	88.7	88.4	83.0	81.8	82.5		-	-	-	<0.1	%	NONE/PM4
Leachant Volume	0.887	0.884	0.884	0.888	0.888	0.882	0.88	0.881		-	-	-		l	NONE/PM17
Eluate Volume	0.8	0.85	0.8	0.85	0.79	0.8	0.8	0.78		-	-	-		l	NONE/PM17
pH #	8.21	8.02	8.07	8.22	7.99	7.23	7.91	7.93		-	-	-	<0.01	pH units	TM73/PM11
Phenol	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1		1	-	-	<0.1	mg/kg	TM26/PM0
Fluoride	5	5	3	6	<3	<3	<3	<3		-	-	-	<3	mg/kg	TM173/PM0
Sulphate as SO4 #	<5	113	178	37	67	<5	<5	<5		1000	20000	50000	<5	mg/kg	TM38/PM0
Chloride #	<3	4	5	4	7	7	6	3		800	15000	25000	<3	mg/kg	TM38/PM0

Please see attached notes for all abbreviations and acronyms





**Client Name:** Ground Investigations Ireland  
**Reference:** 20/01/9376  
**Location:** Site at Glenamuck Road  
**Contact:** Stephen Kealy

**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
20/2972	1	TP1	0.50	2	27/02/2020	General Description (Bulk Analysis)	soil/stones
					27/02/2020	Asbestos Fibres	NAD
					27/02/2020	Asbestos ACM	NAD
					27/02/2020	Asbestos Type	NAD
					27/02/2020	Asbestos Level Screen	NAD
20/2972	1	TP1	1.50	5	27/02/2020	General Description (Bulk Analysis)	soil-stones
					27/02/2020	Asbestos Fibres	NAD
					27/02/2020	Asbestos ACM	NAD
					27/02/2020	Asbestos Type	NAD
					27/02/2020	Asbestos Level Screen	NAD
20/2972	1	TP2	0.50	8	27/02/2020	General Description (Bulk Analysis)	soil.stones
					27/02/2020	Asbestos Fibres	Fibre Bundles
					27/02/2020	Asbestos ACM	NAD
					27/02/2020	Asbestos Type	Chrysotile
					27/02/2020	Asbestos Level Screen	less than 0.1%
					12/03/2020	Total ACM Gravimetric Quantification (% Asb)	<0.001 (mass %)
					12/03/2020	Total Detailed Gravimetric Quantification (% Asb)	<0.001 (mass %)
					12/03/2020	Total Gravimetric Quantification (ACM + Detailed) (% Asb)	<0.001 (mass %)
20/2972	1	TP2	1.50	11	27/02/2020	General Description (Bulk Analysis)	soil-stones
					27/02/2020	Asbestos Fibres	NAD
					27/02/2020	Asbestos ACM	NAD
					27/02/2020	Asbestos Type	NAD
					27/02/2020	Asbestos Level Screen	NAD
20/2972	1	TP3	0.50	14	27/02/2020	General Description (Bulk Analysis)	soil-stones
					27/02/2020	Asbestos Fibres	NAD
					27/02/2020	Asbestos ACM	NAD
					27/02/2020	Asbestos Type	NAD
					27/02/2020	Asbestos Level Screen	NAD
20/2972	1	TP3	1.50	17	27/02/2020	General Description (Bulk Analysis)	Soil/Stone
					27/02/2020	Asbestos Fibres	NAD
					27/02/2020	Asbestos ACM	NAD
					27/02/2020	Asbestos Type	NAD
					27/02/2020	Asbestos Level Screen	NAD

**Client Name:** Ground Investigations Ireland  
**Reference:** 20/01/9376  
**Location:** Site at Glenamuck Road  
**Contact:** Stephen Kealy

EMT Job No.	Batch	Sample ID	Depth	EMT Sample No.	Date Of Analysis	Analysis	Result
20/2972	1	TP3	2.50	20	27/02/2020	General Description (Bulk Analysis)	soil.stones
					27/02/2020	Asbestos Fibres	NAD
					27/02/2020	Asbestos ACM	NAD
					27/02/2020	Asbestos Type	NAD
					27/02/2020	Asbestos Level Screen	NAD
20/2972	1	TP4	0.50	23	27/02/2020	General Description (Bulk Analysis)	soil.stones
					27/02/2020	Asbestos Fibres	NAD
					27/02/2020	Asbestos ACM	NAD
					27/02/2020	Asbestos Type	NAD
					27/02/2020	Asbestos Level Screen	NAD
20/2972	1	TP4	1.50	26	27/02/2020	General Description (Bulk Analysis)	soil.stones
					27/02/2020	Asbestos Fibres	NAD
					27/02/2020	Asbestos ACM	NAD
					27/02/2020	Asbestos Type	NAD
					27/02/2020	Asbestos Level Screen	NAD
20/2972	1	TP4	2.50	29	27/02/2020	General Description (Bulk Analysis)	soil/stones
					27/02/2020	Asbestos Fibres	NAD
					27/02/2020	Asbestos ACM	NAD
					27/02/2020	Asbestos Type	NAD
					27/02/2020	Asbestos Level Screen	NAD
20/2972	1	TP5	0.50	32	27/02/2020	General Description (Bulk Analysis)	soil.stones
					27/02/2020	Asbestos Fibres	NAD
					27/02/2020	Asbestos ACM	NAD
					27/02/2020	Asbestos Type	NAD
					27/02/2020	Asbestos Level Screen	NAD
20/2972	1	TP5	1.50	35	27/02/2020	General Description (Bulk Analysis)	soil.stones
					27/02/2020	Asbestos Fibres	NAD
					27/02/2020	Asbestos ACM	NAD
					27/02/2020	Asbestos Type	NAD
					27/02/2020	Asbestos Level Screen	NAD
20/2972	1	TP6	0.50	38	27/02/2020	General Description (Bulk Analysis)	soil-stones
					27/02/2020	Asbestos Fibres	NAD
					27/02/2020	Asbestos ACM	NAD
					27/02/2020	Asbestos Type	NAD
					27/02/2020	Asbestos Level Screen	NAD
20/2972	1	TP6	1.50	41	27/02/2020	General Description (Bulk Analysis)	soil/stones
					27/02/2020	Asbestos Fibres	NAD
					27/02/2020	Asbestos ACM	NAD
					27/02/2020	Asbestos Type	NAD
					27/02/2020	Asbestos Level Screen	NAD
20/2972	1	TP7	0.50	44	27/02/2020	General Description (Bulk Analysis)	soil.stones
					27/02/2020	Asbestos Fibres	NAD
					27/02/2020	Asbestos ACM	NAD
					27/02/2020	Asbestos Type	NAD
					27/02/2020	Asbestos Level Screen	NAD

**Client Name:** Ground Investigations Ireland  
**Reference:** 20/01/9376  
**Location:** Site at Glenamuck Road  
**Contact:** Stephen Kealy

EMT Job No.	Batch	Sample ID	Depth	EMT Sample No.	Date Of Analysis	Analysis	Result
20/2972	1	TP8	0.50	47	27/02/2020	General Description (Bulk Analysis)	soil-stones
					27/02/2020	Asbestos Fibres	NAD
					27/02/2020	Asbestos ACM	NAD
					27/02/2020	Asbestos Type	NAD
					27/02/2020	Asbestos Level Screen	NAD
20/2972	1	TP9	0.50	50	27/02/2020	General Description (Bulk Analysis)	Soil/Stone
					27/02/2020	Asbestos Fibres	NAD
					27/02/2020	Asbestos ACM	NAD
					27/02/2020	Asbestos Type	NAD
					27/02/2020	Asbestos Level Screen	NAD
20/2972	1	TP10	0.50	53	27/02/2020	General Description (Bulk Analysis)	soil-stones
					27/02/2020	Asbestos Fibres	NAD
					27/02/2020	Asbestos ACM	NAD
					27/02/2020	Asbestos Type	NAD
					27/02/2020	Asbestos Level Screen	NAD







## NOTES TO ACCOMPANY ALL SCHEDULES AND REPORTS

EMT Job No.: 20/2972

### 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 overestimate 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.

Please include all sections of this report if it is reproduced

**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: 20/2972

Test Method No.	Description	Prep Method No. (if appropriate)	Description	ISO 17025 (UKAS/S ANAS)	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: 20/2972

Test Method No.	Description	Prep Method No. (if appropriate)	Description	ISO 17025 (UKAS/S ANAS)	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
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	PM62	Acid digestion of as received solid samples using Aqua Regia refluxed at 112.5 °C.			AR	Yes
TM31	Modified USEPA 8015B. Determination of Methylterbutylether, 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 Methylterbutylether, 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 GC/FID 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 GC/FID 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

EMT Job No: 20/2972

Test Method No.	Description	Prep Method No. (if appropriate)	Description	ISO 17025 (UKAS/S ANAS)	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		AD	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
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
TM131	Quantification of Asbestos Fibres and ACM, based on HSG248 and SCA method.	PM42	Solid samples undergo a thorough visual inspection for asbestos fibres prior to asbestos identification using TM065.	Yes		AR	Yes
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



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Test Method No.	Description	Prep Method No. (if appropriate)	Description	ISO 17025 (UKAS/S ANAS)	MCERTS (UK soils only)	Analysis done on As Received (AR) or Dried (AD)	Reported on dry weight basis
NONE	No Method Code	NONE	No Method Code			AR	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	

# APPENDIX 7 – Groundwater Monitoring



