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# Ground Investigations Ireland

# Cornelscourt

# Ground Investigation Report

***DOCUMENT CONTROL SHEET***

| | |
|---|---|
| Project Title | Cornelscourt |
| Engineer | DBFL |
| Project No | 8354-01-19 |
| Document Title | Ground Investigation Report |

| Rev. | Status | Author(s) | Reviewed By | Approved By | Office of Origin | Issue Date |
|---|---|---|---|---|---|---|
| A | Final | T. McIntyre | C Finnerty | C Finnerty | Dublin | 10 April 2019 |

GROUND INVESTIGATIONS IRELAND

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## CONTENTS

GROUND INVESTIGATIONS IRELAND

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# APPENDICES

## 1.0 Preamble

On the instructions of DBFL Consulting Engineers, a site investigation was carried out by Ground Investigations Ireland Ltd., between February and March 2019 at the site of the proposed site in Cornelscourt, Dublin 18.

## 2.0 Overview

### 2.1. Background

It is proposed to construct a new residential development with associated services, access roads and car parking at the proposed site. The site is currently greenfield however a portion in one corner of the site is occupied by a temporary car park. The proposed construction is envisaged to consist of conventional foundations and pavement make up with some local excavations for services and plant. A basement is proposed as part of the proposed scheme which will require excavation of approximately 4m BGL on the Bray Road portion of the site reducing to near ground level closer to the N11 side of the site.

### 2.1. Site Location & Layout

The site, which is the subject of the ground investigation, is located at Cornelscourt, Dublin 18. The site at the time of the investigation was comprised of open grassland. The site is bounded to the to the north and north east by the N11. There is an AIB branch located adjacent to the north west site boundary. The site is bounded by housing on the eastern, southern and south western boundary. There is a filling station located adjacent to the western site boundary. At the time of the Ground investigation there is an area of Japanese Knotweed located on the eastern site boundary. The north western section of the site had been recently covered with a layer of Clay which was soft and not suitable for traffic at the time of the investigation. BH01 was not completed as it was unable to access due to the presence this soft Clay.

The adjacent filling station was located at an elevation higher than the site and was deemed to be upgradient of the site hydraulically.

### 2.2. Site History

GII carried out a review of the on-line database of historical maps held by the (OSI). 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 historic maps indicate that the site was agricultural land prior to development. On the 6-inch map the village of Cornelscourt is indicated but the site is as yet undeveloped. On the 25-inch map the site is almost entirely undeveloped with a small building on the site footprint adjacent to the present day filling station. The building use is unknown.

GII reviewed the aerial photograph record between 1995 and present day (OSI and Google Imagery). The photos from 1995 onwards indicate that the site has been undeveloped since then with the exception of the development of what appears from the photographs to be a temporary car park in the 2016. Based on the aerial photograph approximately 3,000 square meters of the site in the north western corner was stripped of topsoil to allow the construction of a temporary carpark in that area. A berm appears to have been constructed with the stripped material to the east of the carpark.

At the time of the site inspection this berm and the carpark were absent suggesting that the berm had been respreads across the carpark area.

### 2.3. 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 16 No. Trial Pits to a maximum depth of 4.5m BGL
- Carry out 2 No. Foundation Pits to determine existing foundation details
- Cary out 3 No. Infiltration tests to BRE Digest 365 to determine soil infiltration values
- Carry out 13 No. Window Sample Boreholes to recover soil samples
- Carry out 12 No. Dynamic Probes to determine the soil strength/density characteristics
- Carry out 9 No. Cable Percussion boreholes to a maximum depth of 6.0m BGL
- Carry out 10 No. Rotary Core Boreholes to a maximum depth of 17.4m BGL
- Carry out of 4 No. Plate Bearing Tests to determiner CBR/sub grade modulus parameters
- Installation of 4 No. Groundwater monitoring wells & associated monitoring
- Collection and analysis of subsoil & groundwater samples
- 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 JCB 3CX 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. TP15, TP18 and TP19 which were foundation pits to determine foundations for the boundary wall along the south western boundary of the site were not completed due to the absence of the boundary wall at these locations. An additional pit TP21 was completed between these locations to get a soil profile along this portion of the site. Foundations for the pits competed at TP05 and TP14 are included with the associated logs in the 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.

### 3.1. Dynamic Probing

The dynamic probe tests (DPH) were carried out at the locations shown in the location plan in Appendix 1 in accordance with B.S. 1377: Part 9 1990. The test consists of mechanically driving a cone with a 50kg weight in 100mm intervals and monitoring the number of blows required. An equivalent Standard Penetration Test (SPT) 'N' value may be calculated by dividing the total number of blows over a 300mm drive length by 1.5. The dynamic probe logs are provided in Appendix 4 of this Report.

### 3.2. Window Sampling

The window sampling was carried out at the locations shown in the location plan in Appendix 1 using a Geotec 10 percussion drilling rig. The window sampling consists of a 1m long steel tube with a cutting edge and an internal plastic liner which is mechanically driven into the ground utilising a 63.5kg or 50kg weight falling a height of 760mm (DPSH) or 500mm (DPH). Upon completion of the 1m sample, the tube is withdrawn and the plastic liner removed and sealed for logging and sub sampling by a Geotechnical Engineer/Engineering Geologist. The tube is replaced in the borehole and a subsequent 1m sample can be recovered. Occasionally outer casing or a reduced diameter tube is utilised to enable the window sample to progress in difficult drilling conditions. Geotechnical or environmental soil samples can be recovered

from each of the liners following logging. The window sample records are provided in Appendix 5 of this Report.

### 3.3. Cable Percussion Boreholes

The Cable Percussion Boreholes were drilled using a Dando 2000 drilling rig with regular in-situ testing and sampling undertaken to facilitate the production of geotechnical logs and laboratory testing.
The standard method of boring in soil for site investigation is known as the Cable Percussion method. It consists of using a Shell in non cohesive soils and a clay cutter in cohesive soils, both operated on a wire cable. Very hard soils, boulders and other hard obstructions are broken up by chiselling and the fragments removed with the Shell. Where ground conditions made it necessary, the borehole was lined with 200mm diameter steel casing. While the use of the Cable Percussion method of boring gives the maximum data on soil conditions, some mixing of laminated soil is inevitable. For this reason, thin lenses of granular material may not be noticed. Disturbed samples were taken from the boring tools at suitable depths, so that there is a representative sample at the top of each change in stratum and thereafter at regular intervals down the borehole until the next stratum was encountered. The disturbed samples were then sealed and sent to the laboratory where they were visually examined to confirm the description of the relevant strata.
Standard Penetration Tests were carried out in the boreholes. The results of these tests, together with the depths at which the tests were taken are shown on the accompanying borehole records. The test consists of a thick wall sampler tube, 50mm external diameter, being driven into the soil by a monkey weighing 63.5kg and with a free drop of 760mm. For gravels and glacial till the driving shoe was replaced by a solid 60º cone. The Standard Penetration Test number referred to as the 'N' value is the number of blows required to drive the tube 300mm, after an initial penetration of 150mm. The number gives a guide to the consistency of the soil and can also be used to estimate the relative strength/density at the depth of the test and also to estimate the bearing capacity and compressibility of the soil. The cable percussion borehole logs are provided in Appendix 6 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 or alternatively, where noted on the individual borehole log, from the base of the cable percussion borehole where a temporary liner was installed to facilitate follow-on rotary coring.
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. Standard Penetration Tests are carried out where instructed or as outlined in the specification in the boreholes. The results of these tests, together with the depths at which the tests were taken are shown on the accompanying borehole records. The test consists of a thick wall sampler tube, 50mm external diameter, being driven into the soil by a monkey weighing 63.5kg and with a free drop of 760mm. For gravels and glacial till the driving shoe was replaced by a solid 60º cone. The Standard Penetration Test number referred to as the 'N' value is the number of blows required to drive the tube 300mm, after an initial penetration of 150mm. The number gives a guide to the consistency of the soil and can also be used to estimate the relative strength/density at the depth of the test and also to estimate the bearing capacity and compressibility of the soil. The rotary borehole logs are provided in Appendix 6 of this Report.

### 3.5. Insitu Plate Bearing Test

The plate bearing tests were carried out using a 305mm or 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 7 of this Report.

### 3.6. Surveying

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

### 3.7. Groundwater/Gas Monitoring Installations

Groundwater and or Gas Monitoring Installation 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.

### 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 testing, the Rialta Suite including Solid Waste and Leachate Waste Acceptance Criteria (WAC) testing, pH and sulphate testing was carried out by Exova's Laboratory in the UK.
Geotechnical testing consisting of moisture content, Atterberg limits, Particle Size Distribution (PSD) tests were carried out in NMTL's Geotechnical Laboratory in Carlow.
Rock strength testing including Point Load ($Is_{50}$) and Unconfined Compressive Strength (UCS) testing is underway in Trinity College Dublin's Geotechnical Laboratory. The results of the completed laboratory testing are included in Appendix 8 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 and are generally comprised;

- Topsoil/Surfacing
- Made Ground
- Cohesive Deposits
- Granular Deposits
- Bedrock

**TOPSOIL:** Topsoil was encountered in all the exploratory holes and was present to a maximum depth of 0.3m BGL. Tarmac surfacing was present typically to a depth of 0.05m BGL.

**MADE GROUND:** Made Ground deposits were encountered occasionally beneath the Topsoil and was present to depths of between 0.5m and 1.1m BGL. These deposits were described generally as *brown sandy slightly gravelly Clay with frequent cobbles and boulders and contained occasional fragments of concrete, red brick, glass and plastic.*

**COHESIVE DEPOSITS:** Cohesive deposits were encountered beneath the Made Ground and were described typically as *brown or brown mottled grey sandy gravelly CLAY with occasional cobbles* overlying a *stiff brown/orange/grey sandy gravelly CLAY with occasional cobbles and boulders*. In TP20 a *stiff to very stiff black slightly sandy gravelly CLAY with rare cobbles and boulders* was encountered below 2.5m BGL. The secondary sand and gravel constituents varied across the site and with depth, with granular

lenses occasionally present in the glacial till matrix. The strength of the cohesive deposits was soft or soft to firm and typically increased with depth and was firm to stiff or stiff below 1.5m to 2.0m BGL in the majority of the exploratory holes. These deposits had some, occasional or frequent cobble and boulder content where noted on the exploratory hole logs.

**GRANULAR DEPOSITS:** The granular deposits were encountered within the cohesive deposits in TP21 and in BH02 and were typically described as G*rey/brown clayey sandy fine to coarse GRAVEL or gravelly Sand.* The secondary sand/gravel and silt/clay constituents varied across the site and with depth while occasional or frequent cobble and boulder content also present where noted on the exploratory hole logs. The rotary boreholes cored the overburden deposits where the cable percussion boreholes refused on obstructions at shallower depths than the bedrock. The core recovery ranged from 0% to 50% in the sandy gravelly Clay deposits with the fines material often washed away by the water flush used to cool and remove the cuttings from the drilling bit. The overburden material has been described with the drillers notes of the strata encountered and the Engineers assessment of recovery achieved. There is a possibility of granular lenses present within the cohesive deposits where the rotary coring continued from the base of the cable percussion borehole to the top of rock.

**BEDROCK**: The rotary core boreholes recovered Granite Bedrock in each of the boreholes at depths of 2.6m to 12.0m BGL. The depth to rock varies from 2.85m BGL (49.65m OD) in BH10 and is deeper towards the north and north eastern portion of the site to a maximum of 12.0m BGL (36.7m OD) in BH02 and 9.7m BGL (38.62m OD) in BH03. The total core recovery is good in the granite bedrock, 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. The strength of the stratum varies from Extremely weak to strong as noted on the logs with some portions of the core recovered as non-intact. The weathering is noted on the core logs and is typically distinctly weathered to partially weathered with occasional zones of where the granite was unweathered.

### 4.2. Insitu Strength Testing

The correlated DPH blow counts indicate that the overburden deposits are soft or soft to firm to depth of 1.0m to 1.2m BGL typically and become firm or firm to stiff with depth. DP03, DP06, DP07, DP09 had low blow counts indicating locally deeper soft to firm or firm cohesive deposits to a depth of 1.7m to 2.0m BGL.

### 4.3. Groundwater

Groundwater strikes, if encountered during the investigation, 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 BH03, BH07, BH08 and BH11 to allow the equilibrium groundwater level to be determined. The groundwater monitoring is included in Appendix 9 of this Report.

### 4.4. 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 CLAY of low to intermediate and intermediate plasticity. The Particle Size Distribution tests confirm that generally the cohesive deposits are well-graded with percentages of sands and gravels ranging between 10% and 40% generally with fines contents of 11 to 65%.

The rock testing carried out on samples recovered from the boreholes reported Unconfined Compressive Strength (UCS) values ranging between 16.9 and 27.7 MPa while the point load testing gave Is50 values ranging between 0.17 to 4.6 MPa. The $Is_{50}$ results correlate to the UCS values using a factor of approximately 20, giving values of 3.4 MPa and 93.2 MPa. These results correlate to the strength descriptions ranging between of Extremely Weak to Strong and confirming the variability of this stratum and the descriptions on the logs. The average of the UCS testing and associated correlated values from the point loading suggest the rock is typically on the border of weak to medium strong.

The pH and sulphate testing carried out indicate that pH results are near neutral and that the water soluble sulphate results are 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.

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. 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 sperate report by Ground Investigations Ireland.

The full laboratory report, which includes a section highlighting the waste acceptance criteria, is included in Appendix 8.

## 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$^2$ is recommended for conventional strip or pad foundations on the intact Granite stratum where present at a shallow depth. For the proposed multi-storey building with a basement, a portion of the building foundations will be on rock while the north eastern portion towards the N11 will be at the level of the cohesive deposits. Piles are recommended to bring the foundations to the same stratum as the southern portion due to the depth to rock increasing from 2.85m BGL (49.56m OD) in BH10 to 5.8m BGL (44.51m OD) in BH05 and 12m BGL (36.7m OD) in BH02. This would avoid problems with differential settlement should the foundations bear on strata of differing stiffness. The type, size and depth of the pile foundations should be confirmed by a specialist piling contractor based on the loading from the proposed building. The floor slab is recommended be suspended and also supported on the building piles.
In any part of the site, should part of the foundation bear on differing strata consisting of either cohesive, granular or bedrock units, we would recommend that all the foundations of the structure in question be lowered to the competent deeper stratum.

Where the shallow foundations are proposed on the cohesive deposits in the western portion of the site, an allowable bearing capacity of 125 kN/m$^2$ is recommended on the stiff cohesive deposits at a depth of 1.2m BGL, with the exception of the locations of DP03 to DP04 and DP06 to DP10 inclusive where soft or firm cohesive deposits are present to deeper depths. The table below indicates to what depth lean mix trench fill to a is recommended to achieve the recommended allowable bearing capacity. A reduced allowable bearing capacity of 70 kN/m$^2$ is recommended at shallower depths if appropriate for the foundation design to avoid deeper excavations to the stiff cohesive deposits. The trial pit logs should be consulted to ensure the stability of the proposed excavations will facilitate the excavation to the proposed depth, as some of the trial pits experienced side wall instability during excavation.

| Allowable Bearing Capacities (ABC) kN/m2 | | | | | | | |
|---|---|---|---|---|---|---|---|
| Probe No. | ABC kN/m2 | Depth m BGL | Comment | Probe No. | ABC kN/m2 | Depth m BGL | Comment |
| DP01 | 125 | 1.2 | | DP07 | 125 | 1.8 | very soft 1.1m to 1.6m |
| DP02 | 125 | 1.2 | | DP08 | 125 | 2 | 70kN/m2 @ 1.2m |
| DP03 | 125 | 2 | 70kN/m2 @ 1.6m | DP09 | 125 | 2 | Soft to 2.0m |
| DP04 | 125 | 2 | 70kN/m2 @ 1.0m | DP10 | 125 | 1.6 | 70kN/m2 @ 1.0m |
| DP05 | 125 | 1.2 | | DP11 | 125 | 1.2 | |
| DP06 | 125 | 2 | 70kN/m2 @ 1.0m | DP12 | 125 | 1.2 | |
| | | | | | | | |

The possibility for variation in the depth of the firm or stiff cohesive deposits in the vicinity of these foundations should be considered and foundation inspections should be carried out. Any soft spots encountered at the proposed foundation depths should be excavated and replaced with lean mix concrete.

A ground bearing floor slab is recommended to be based on the firm cohesive deposits with an appropriate depth of compacted hardcore specified by the consulting engineer and in accordance with the limits and guidelines in SR21:2014+A1:2016 and/or NRA SRW CL808 Type E granular stone fill.

The pH and sulphate testing completed on samples recovered from the trial pits 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.

### 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 (< 2%) in CBR1 to CBR3 indicate that a capping layer or a sufficient depth of crushed stone fill may be required. The test in CBR4 was undertaken on granular fill present at the test location. 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

Excavations in the Made Ground or soft Cohesive Deposits will require to be appropriately battered or the sides supported due to the low strength of these deposits. Short term temporary excavations in the firm or stiff cohesive 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.

Any excavations which penetrate the granular deposits will require to be appropriately battered or the sides supported and are likely to require dewatering due to the groundwater seepages noted in the exploratory hole logs in the Appendices of this Report.
The groundwater and stability noted on the trial pit logs should be consulted when determining the most appropriate construction methods for excavations. The groundwater monitoring undertake indicates the water level is between 1.0m and 2.27m BGL in the boreholes where the standpipes was installed. Generally, where significant excavations are required in water bearing granular deposits a cut-off wall may be more cost effective than extensive dewatering. The proposed basement excavation will require dewatering during construction, particularly where granular lenses are present or where the fractures in the granite bedrock are closely spaced or was recovered as non-intact. An assessment by a specialist dewatering contractor is recommended to determine the most cost effective approach to the proposed excavation.

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. Based on the fracture spacing, the rock strength descriptions and Pettifer & Fookes (1994) Revised Excavatability Graph, the Granite ranges from hard digging to extremely hard ripping with hydraulic breaking (D9), however the zones recovered as non-intact should be easy to hard digging with a CAT345. The JCB excavator was able to excavate to depth of 0.4m below the top of the weathered rock in TP17 only. Due to the depth at which the stratum was encountered elsewhere, the excavator was unable to progress once the granite was encountered as it became difficult to excavate within the confines of the trial pit on encountering this stratum.

Material excavated from the site, if required to be disposed of off-site should be assessed using the environmental testing completed during the ground investigation. This testing is interpreted using the criteria established by the EPA for the classification as waste and is reported under the cover of a separate Waste Classification Report and dig plan by Ground Investigations Ireland.

### 5.5. Soakaway Design

At the locations of the Infiltration tests IT01, IT02 and IT03 the water level dropped too slowly to allow calculation of ‘f’ the soil infiltration rate. These locations are 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


Site Boundary

Borehole

Dynamic Probe

**Client:**

**Project Code:**
8354-01-19

**Project Title:**
Cornelscourt

**Drawing Title:**
Figure 15 Borehole Locations

GROUND INVESTIGATIONS IRELAND
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0 10 20 30 40 50 60 m

| Drawn By: | Date: |
|---|---|
| BS | 14/02/2019 |


Site Boundary

WS Location

**Client:**

**Project Code:**
8354-01-19

**Project Title:**
Cornelscourt

**Drawing Title:**
Figure 16 Window Sample Locations

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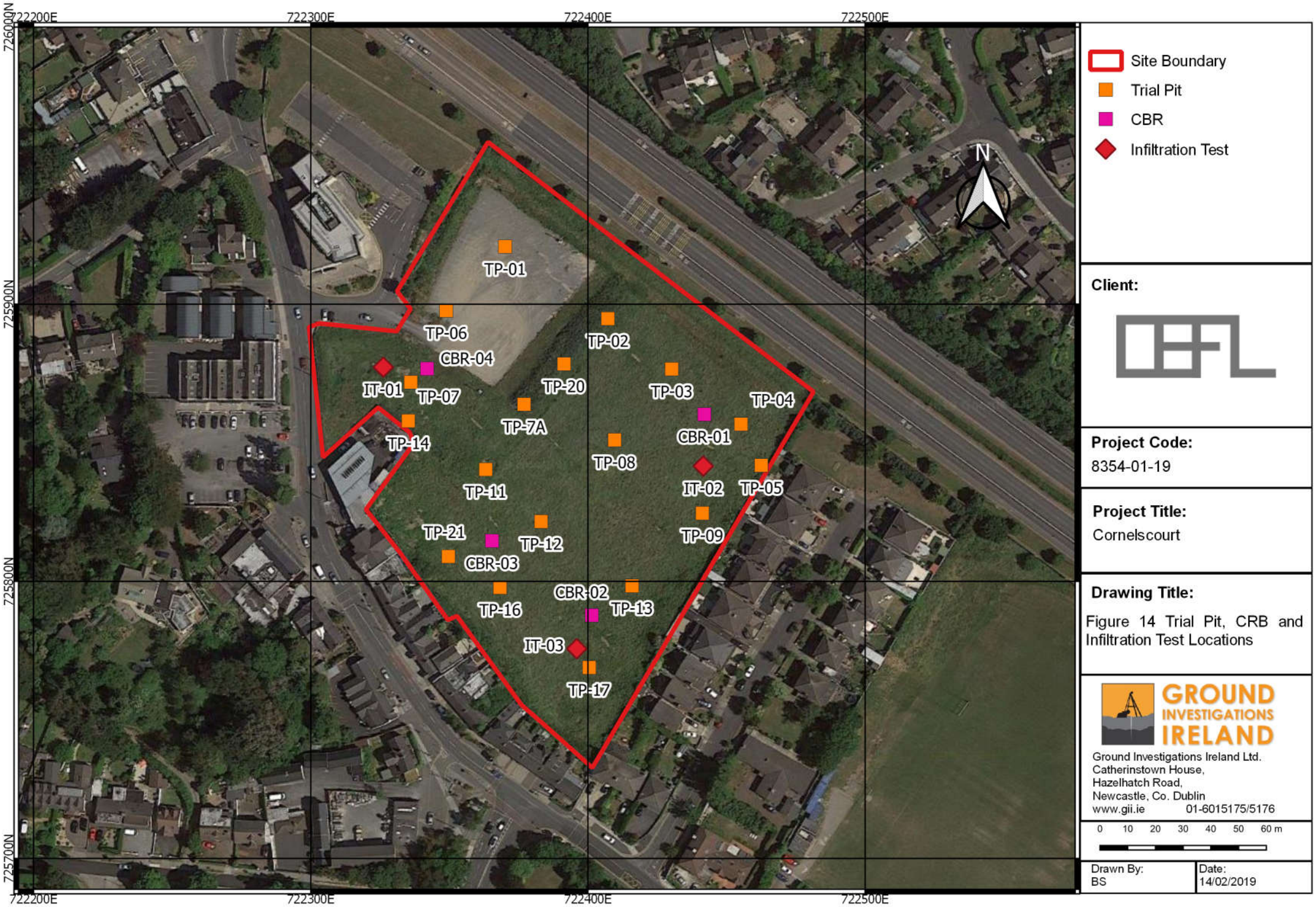
0 10 20 30 m

| Drawn By: | Date: |
|---|---|
| BS | 14/02/2019 |




Site Boundary
Trial Pit
CBR
Infiltration Test

**Client:**

**Project Code:**
8354-01-19

**Project Title:**
Cornelscourt

**Drawing Title:**
Figure 14 Trial Pit, CRB and Infiltration Test Locations

GROUND INVESTIGATIONS IRELAND
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0 10 20 30 40 50 60 m

| Drawn By: | Date: |
|---|---|
| BS | 14/02/2019 |

# **APPENDIX 2** – Trial Pit Records

# Ground Investigations Ireland Ltd
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|---|---|---|---|
| **Site** Cornelscourt | | | **Trial Pit Number** TP01 |
| **Machine :** JCB 3CX<br>**Method :** Trial Pit | **Dimensions** | **Ground Level (mOD)** 50.29 | **Client** | **Job Number** 8354-01-19 |
| | **Location** (Handheld GPS) 722370.1 E 725920.8 N | **Dates** 21/01/2019 | **Engineer** DBFL | **Sheet** 1/1 |

| Depth (m) | Sample / Tests | Water Depth (m) | Field Records | Level (mOD) | Depth (m) (Thickness) | Description | Legend | Water |
|---|---|---|---|---|---|---|---|---|
| | | | | | (0.20) | Brown slightly sandy slightly gravelly TOPSOIL with fragments of conrete and plastic. | | |
| | | | | 50.09 | 0.20 | | | |
| | | | | | (0.15) | MADE GROUND: Blueish grey slightly sandy CLAY with angular to subangular, fine to coarse gravel. | | |
| | | | | 49.94 | 0.35 | | | |
| | | | | | | Firm, brown, slightly sandy slightly gravelly CLAY with rare subangular to subrounded cobbles of granite. | | |
| | | | | | (1.35) | | | |
| | | | | 48.59 | 1.70 | | | |
| | | | | | | Firm, brown, slightly sandy, slightly gravelly CLAY with occasional subangular to subrounded weathered cobbles of granite and limestone. Rare boulders of granite. | | |
| | | | | | (1.10) | | | |
| | | | | 47.49 | 2.80 | | | |
| | | | | | (0.20) | Firm, brown, very sandy, angular to subangular, fine to coarse gravel with rare cobbles of granite and possible weathered rock. | | |
| | | | | 47.29 | 3.00 | Trial pit terminated due to sidewall collapse. | | |
| | | | | | | Complete at 3.00m | | |

**Plan**

**Remarks**

Groundwater encountered at 1.40m (Slight seepage), 2.10m (medium seepage) and 2.80m (medium seepage).
Trial pit sidewall collapsed between 0.70m and 2.80m BGL.
Trial pit terminated at 3.0m BGL due to sidewall collapse.

| Scale (approx) | Logged By | Figure No. |
|---|---|---|
| 1:25 | Tmcl | 8354-01-19.TP01 |

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| Site | Trial Pit Number |
|---|---|
| Cornelscourt | TP02 |

| Machine : JCB<br>Method : | Dimensions | Ground Level (mOD) | Client | Job Number |
|---|---|---|---|---|
| | | 49.26 | | 8354-01-19 |
| | **Location** | **Dates** | **Engineer** | **Sheet** |
| | 722407.2 E 725894.8 N | 21/01/2019 | DBFL | 1/1 |

| Depth (m) | Sample / Tests | Water Depth (m) | Field Records | Level (mOD) | Depth (m) (Thickness) | Description | Legend | Water |
|---|---|---|---|---|---|---|---|---|
| | | | | | (1.10) | MADE GROUND: Brown slightly sandy slightly gravelly CLAY with rare sub-angular cobbles and rare fragments of plastic, ceramic and metal. | | |
| | | | | 48.16 | 1.10 | | | |
| | | | | | (0.60) | Soft to firm light brown slightly sandy gravelly CLAY with occasional sub-rounded cobbles. | | |
| | | | | 47.56 | 1.70 | | | |
| | | | | | (1.90) | Firm to stiff grey mottled brown slightly sandy gravelly CLAY with occasional sub-rounded cobbles of limestone. | | |
| | | | | 45.66 | 3.60 | | | |
| | | | | 45.56 | (0.10)<br>3.70 | Grey sandy very clayey sub-rounded fine to coarse Gravel with rare sub-rounded cobbles.<br>Trial pit terminated due to sidewall collapse. | | |
| | | | | | | Complete at 3.70m | | |

**Plan**

**Remarks**

No Groundwater encountered.
Trial pit stable.
Infiltration test completed in trial pit.
Trial pit backfilled on completion of infiltration test.

| Scale (approx) | Logged By | Figure No. |
|---|---|---|
| 1:25 | Tmcl | 8354-01-19.TP02 |

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| | | | |
|---|---|---|---|
| **Site** Cornelscourt | | | **Trial Pit Number** TP03 |
| **Machine :** JCB<br>**Method :** | **Dimensions** | **Ground Level (mOD)** 48.52 | **Client** | **Job Number** 8354-01-19 |
| | **Location** 722430.2 E 725876.6 N | **Dates** 22/01/2019 | **Engineer** DBFL | **Sheet** 1/1 |

| Depth (m) | Sample / Tests | Water Depth (m) | Field Records | Level (mOD) | Depth (m) (Thickness) | Description | Legend | Water |
|---|---|---|---|---|---|---|---|---|
| | | | | | (0.30) | Brown slightly sandy slightly gravelly TOPSOIL with fragments of plastic and grass rootetls. | | |
| | | | | 48.22 | 0.30 | Firm light brown slightly sandy slightly gravelly CLAY. | | |
| | | | | | (0.60) | | | |
| | | | | 47.62 | 0.90 | Firm to stiff greyish brown slightly sandy gravelly CLAY with occaisonal sub-angular cobbles. | | |
| | | | | | (2.10) | | | |
| | | | | 45.52 | 3.00 | Terminated due to sidewalls collapsing.<br>Complete at 3.00m | | |

**Plan**

**Remarks**

Groundwater encountered at 2.80m BGL (Medium Seepage).
Trial pit sidewall collapsed between 0.90m and 2.30m.
Trial pit backfilled on completion.

| Scale (approx) | Logged By | Figure No. |
|---|---|---|
| 1:25 | Tmcl | 8354-01-19.TP03 |

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| | | | |
|---|---|---|---|
| **Site** Cornelscourt | | | **Trial Pit Number** TP04 |
| **Machine :** JCB<br>**Method :** | **Dimensions** | **Ground Level (mOD)** 47.91 | **Client** | **Job Number** 8354-01-19 |
| | **Location** 722455.2 E 725856.7 N | **Dates** 22/01/2019 | **Engineer** DBFL | **Sheet** 1/1 |

| Depth (m) | Sample / Tests | Water Depth (m) | Field Records | Level (mOD) | Depth (m) (Thickness) | Description | Legend | Water |
|---|---|---|---|---|---|---|---|---|
| | | | | | (0.30) | Brown slightly sandy slightly gravelly TOPSOIL with grass rootetls. | | |
| | | | | 47.61 | 0.30 | Firm light brown slightly sandy slightly gravelly CLAY. | | |
| | | | | | (0.30) | | | |
| | | | | 47.31 | 0.60 | Firm to stiff grey mottled brown slightly sandy gravelly CLAY with rare sub-angular cobbles and rare boulders. | | |
| | | | | | (1.50) | | | |
| | | | | 45.81 | 2.10 | Stiff light orange/brown slightly sandy gravelly CLAY with rare sub-rounded cobbles. | | |
| | | | | | (1.40) | | | |
| | | | | 44.41 | 3.50 | Obstruction: Presumed Rock. | | |
| | | | | | | Complete at 3.50m | | |

**Plan**

**Remarks**

No Groundwater encountered.
Trial pit stable.
Trial pit backfilled on completion.

| Scale (approx) | Logged By | Figure No. |
|---|---|---|
| 1:25 | Tmcl | 8354-01-19.TP04 |

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| | | | |
|---|---|---|---|
| **Site** Cornelscourt | | | **Trial Pit Number** TP05 |
| **Machine :** JCB<br>**Method :** | **Dimensions** | **Ground Level (mOD)** 48.19 | **Client** | **Job Number** 8354-01-19 |
| | **Location** 722462.5 E 725841.8 N | **Dates** 21/01/2019 | **Engineer** DBFL | **Sheet** 1/1 |

| Depth (m) | Sample / Tests | Water Depth (m) | Field Records | Level (mOD) | Depth (m) (Thickness) | Description | Legend | Water |
|---|---|---|---|---|---|---|---|---|
| | | | | | (0.60) | MADE GROUND: Brown slightly sandy slightly gravelly Clay with rare fragments of plastic and metal. | | |
| | | | | 47.59 | 0.60 | | | |
| | | | | | (0.20) | Soft to firm brown slightly sandy slightly gravelly CLAY with rare sub-angular to sub-rounded cobbles. | | |
| | | | | 47.39 | 0.80 | Trial pit terminated. | | |
| | | | | | | Complete at 2.80m | | |

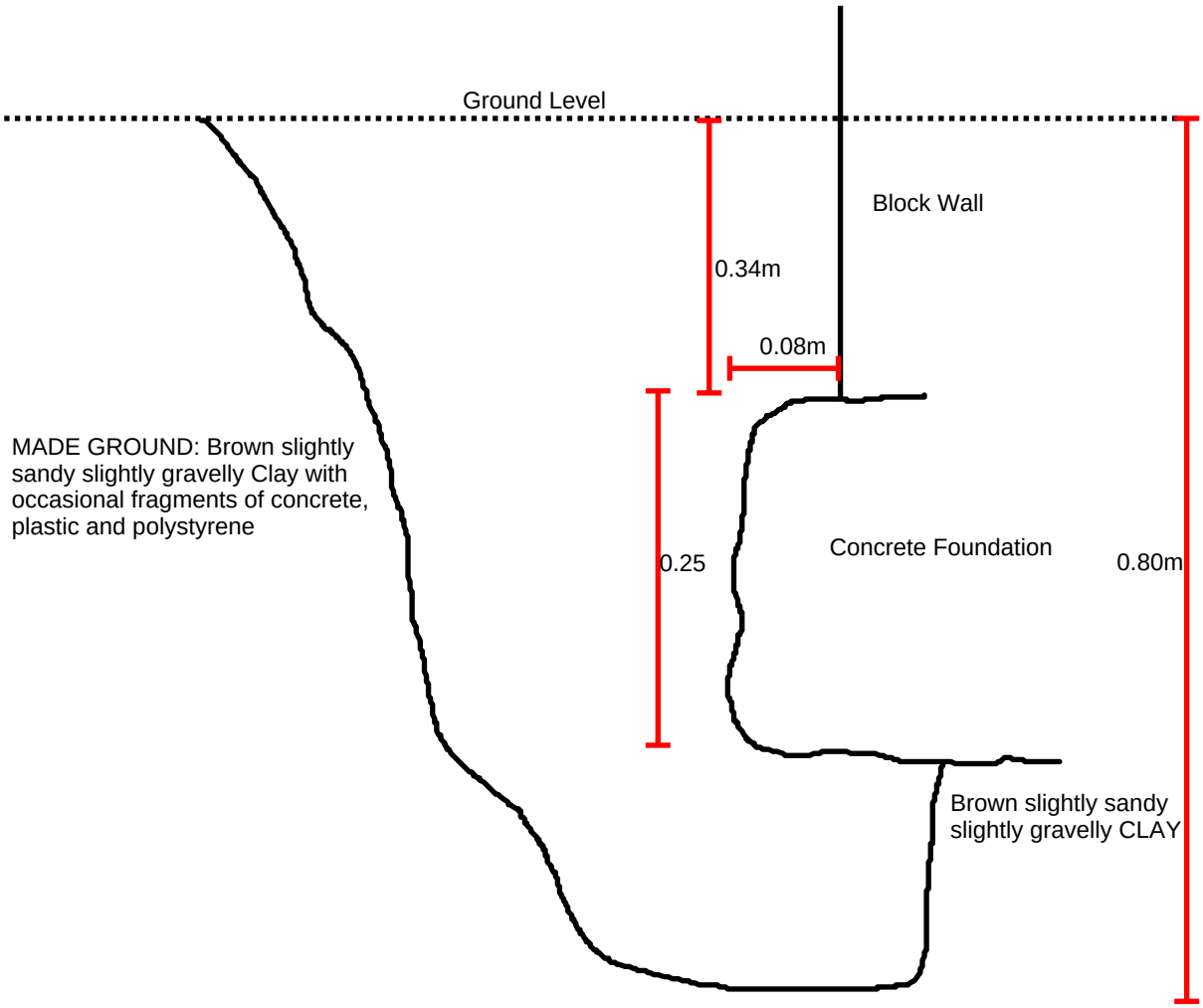
**Plan**

**Remarks**

No Groundwater encountered.
Trial pit stable.
Trial pit completed adjacent to perimeter wall to inspect the walls foundations.
Trial pit backfilled on completion.

| Scale (approx) | Logged By | Figure No. |
|---|---|---|
| 1:25 | TMcl | 8354-01-19.TP05 |

# Foundation Pit




| Ground Conditions | |
|---|---|
| 0.80m | MADE GROUND: Brown slightly sandy slightly gravelly Clay with occasional fragments of plastic, concrete and polystyrene. |

| | | | |
|---|---|---|---|
| Project: | Cornelscourt | TP05 | |
| Client: | DBFL | | |
| Contractor: | Ground Investigations Ireland | Date | 22/01/2019 |

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| Site | Trial Pit Number |
|---|---|
| Cornelscourt | TP06 |

| Machine : JCB<br>Method : | Dimensions | Ground Level (mOD) | Client | Job Number |
|---|---|---|---|---|
| | | 51.66 | | 8354-01-19 |
| | **Location** | **Dates** | **Engineer** | **Sheet** |
| | 722348.9 E 725897.7 N | 21/01/2019 | DBFL | 1/1 |

| Depth (m) | Sample / Tests | Water Depth (m) | Field Records | Level (mOD) | Depth (m) (Thickness) | Description | Legend | Water |
|---|---|---|---|---|---|---|---|---|
| | | | | | (0.20) | Topsoil | | |
| | | | | 51.46 | 0.20 | | | |
| | | | | | (0.10) | MADE GROUND: Blueish grey slightly sandy CLAY with angular to subangular fine to coarse gravel. | | |
| | | | | 51.36 | 0.30 | Firm brown slightly sandy slightly gravelly CLAY with a piece of concrete slab. | | |
| | | | | | (0.80) | | | |
| | | | | 50.56 | 1.10 | Soft brown slightly sandy slightly gravelly CLAY with rare subangular cobbles of limestone and granite. | | |
| | | | | | (1.40) | | | |
| | | | | 49.16 | 2.50 | Stiff dark brown/grey slightly sandy gravelly CLAY with rare subangular cobbles. | | |
| | | | | | (0.40) | | | |
| | | | | 48.76 | 2.90 | Trial pit terminated. | | |
| | | | | | | Complete at 2.90m | | |

**Plan**

**Remarks**

Groundwater encountered at 0.70m (Slight seepage).
Trial pit collapsed from 1.20m to 2.40m BGL.
Trial pit terminated due to sidewall collapse.

| Scale (approx) | Logged By | Figure No. |
|---|---|---|
| 1:25 | TMcI | 8354-01-19.TP06 |

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| Site | Trial Pit Number |
|---|---|
| Cornelscourt | TP07 |

| Machine : JCB<br>Method : | Dimensions | Ground Level (mOD) | Client | Job Number |
|---|---|---|---|---|
| | | 52.62 | | 8354-01-19 |
| | **Location** | **Dates** | **Engineer** | **Sheet** |
| | 722336.1 E 725871.9 N | 21/01/2019 | DBFL | 1/1 |

| Depth (m) | Sample / Tests | Water Depth (m) | Field Records | Level (mOD) | Depth (m) (Thickness) | Description | Legend | Water |
|---|---|---|---|---|---|---|---|---|
| | | | | | (0.20) | Brown slightly sandy slightly gravelly TOPSOIL with grass rootlets. | | |
| | | | | 52.42 | 0.20 | Soft to firm brown slightly sandy slightly gravelly CLAY with rare sub-angular cobbles and gravelly lenses. | | |
| | | | | | (0.55) | | | |
| | | | | 51.87 | 0.75 | Firm greyish brown slightly sandy gravelly CLAY with rare sub-rounded cobbles. | | |
| | | | | | (0.35) | | | |
| | | | | 51.52 | 1.10 | Firm to stiff greyish brown slightly sandy gravelly CLAY with rare sub-rounded cobbles. | | |
| | | | | | (0.90) | | | |
| | | | | 50.62 | 2.00 | Stiff greyish brown slightly sandy gravelly CLAY with rare sub-rounded cobbles. | | |
| | | | Medium Seepage(1) at 2.40m. | | | | | ▽1 |
| | | | | | (1.20) | | | |
| | | | | 49.42 | 3.20 | Stiff light brown slightly sandy gravelly CLAY with occasional sub-angular cobbles of granite. | | |
| | | | | | (0.20) | | | |
| | | | | 49.22 | 3.40 | Obstruction: Boulder or Rock(Granite). | | |
| | | | | | | Complete at 3.40m | | |

**Plan**

**Remarks**

Groundwater encountered at 2.40m BGL - Medium Seepage.
Trial pit sidewall collapsed from 1.10m BGL to 2.60m.
Trial pit backfilled on completion.

| Scale (approx) | Logged By | Figure No. |
|---|---|---|
| 1:25 | TMcI | 8354-01-19.TP07 |

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| Site | Trial Pit Number |
|---|---|
| Cornelscourt | TP07A |

| Machine : JCB<br>Method : | Dimensions | Ground Level (mOD) | Client | Job Number |
|---|---|---|---|---|
| | | 51.27 | | 8354-01-19 |
| | **Location** | **Dates** | **Engineer** | **Sheet** |
| | 722376.9 E 725863.9 N | 21/01/2019 | DBFL | 1/1 |

| Depth (m) | Sample / Tests | Water Depth (m) | Field Records | Level (mOD) | Depth (m) (Thickness) | Description | Legend | Water |
|---|---|---|---|---|---|---|---|---|
| | | | | | (0.60) | MADE GROUND: Brown slightly sandy slightly gravelly Clay with rare fragments of plastic and metal. | | |
| | | | | 50.67 | 0.60 | Firm light brown slightly sandy slightly gravelly CLAY with rare sub-angular cobbles. | | |
| | | | | | (0.65) | | | |
| | | | | 50.02 | 1.25 | Soft to firm greyish brown slightly sandy slightly gravelly CLAY with rare sub-angular to sub-rounded cobbles. | | |
| | | | | | (0.25) | | | |
| | | | | 49.77 | 1.50 | Firm to stiff grey mottled brown slightly sandy gravelly CLAY with rare sub-rounded cobbles. | | |
| | | | | | (0.70) | | | |
| | | | | 49.07 | 2.20 | Stiff grey mottled brown slightly sandy gravelly CLAY with occasional boulders. | | |
| | | | | | (0.60) | | | |
| | | | | 48.47 | 2.80 | Obstruction: Boulder or rock. | | |
| | | | | | | Complete at 3.30m | | |

**Plan**

**Remarks**

Trial pit stable.
No Groundwater encountered.
Trial pit backfilled on completion.

| Scale (approx) | Logged By | Figure No. |
|---|---|---|
| 1:25 | Tmcl | 8354-01-19.TP-14 |

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| Site | Trial Pit Number |
|---|---|
| Cornelscourt | TP08 |

| Machine : JCB<br>Method : | Dimensions | Ground Level (mOD) | Client | Job Number |
|---|---|---|---|---|
| | | 49.97 | | 8354-01-19 |
| | **Location** | **Dates** | **Engineer** | **Sheet** |
| | 722409.6 E 725851 N | 22/01/2019 | DBFL | 1/1 |

| Depth (m) | Sample / Tests | Water Depth (m) | Field Records | Level (mOD) | Depth (m) (Thickness) | Description | Legend | Water |
|---|---|---|---|---|---|---|---|---|
| | | | | | (0.40) | Brown slightly sandy slightly gravelly TOPSOIL with grass rootlets. | | |
| | | | | 49.57 | 0.40 | | | |
| | | | | | (0.40) | Firm light brown slightly sandy slightly gravelly CLAY. | | |
| | | | | 49.17 | 0.80 | | | |
| | | | | | (2.10) | Firm to stiff greyish brown slightly sandy slightly gravelly CLAY with rare sub-angular cobbles and sandy gravel lenses. | | |
| | | | | 47.07 | 2.90 | Trial pit terminated due to sidewall collapse. | | |
| | | | | | | Complete at 2.90m | | |

**Plan**

**Remarks**

Groundwater encountered at 2.00m (slight seepage) and 2.30m BGL(fast seepage).
Trial pit sidewalls collapsed.
Trial pit backfilled on completion.

| Scale (approx) | Logged By | Figure No. |
|---|---|---|
| 1:25 | Tmcl | 8354-01-19.TP08 |

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| Site | Trial Pit Number |
|---|---|
| Cornelscourt | TP09 |

| Machine : JCB<br>Method : | Dimensions | Ground Level (mOD) | Client | Job Number |
|---|---|---|---|---|
| | | 49.07 | | 8354-01-19 |
| | **Location** | **Dates** | **Engineer** | **Sheet** |
| | 722441.3 E 725824.6 N | 22/01/2019 | DBFL | 1/1 |

| Depth (m) | Sample / Tests | Water Depth (m) | Field Records | Level (mOD) | Depth (m) (Thickness) | Description | Legend | Water |
|---|---|---|---|---|---|---|---|---|
| | | | | | (0.40) | MADE GROUND: Brown slightly sandy slightly gravelly CLAY with occasional fragments of concrete and plastic. | | |
| | | | | 48.67 | 0.40 | | | |
| | | | | | (0.40) | Soft to firm light brown slightly sandy slightly gravelly CLAY. | | |
| | | | | 48.27 | 0.80 | | | |
| | | | | | (0.70) | Firm greyish brown slightly sandy gravelly CLAY with rare sub-angular cobbles. | | |
| | | | | 47.57 | 1.50 | | | |
| | | | | | (0.50) | Firm to stiff greyish brown slightly sandy gravelly CLAY with rare sub-rounded boulders of limestone. | | |
| | | | | 47.07 | 2.00 | | | |
| | | | | | (1.50) | Stiff greyish brown slightly sandy gravelly CLAY with rare sub-angular cobbles. | | |
| | | | | 45.57 | 3.50 | Obstruction: Presumed Rock. | | |
| | | | | | | Complete at 3.50m | | |

**Plan**

**Remarks**

Groundwater encountered at 2.60m BGL.
Trial pit sidewalls collapsed between 1.0m and 1.80m BGL.
Trial pit backfilled on completion.

| Scale (approx) | Logged By | Figure No. |
|---|---|---|
| 1:25 | Tmcl | 8354-01-19.TP09 |

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| Site | Trial Pit Number |
|---|---|
| Cornelscourt | TP11 |

| Machine : JCB<br>Method : | Dimensions | Ground Level (mOD) | Client | Job Number |
|---|---|---|---|---|
| | | 52.02 | | 8354-01-19 |
| | **Location** | **Dates** | **Engineer** | **Sheet** |
| | 722363.1 E 725840.4 N | 21/01/2019 | DBFL | 1/1 |

| Depth (m) | Sample / Tests | Water Depth (m) | Field Records | Level (mOD) | Depth (m) (Thickness) | Description | Legend | Water |
|---|---|---|---|---|---|---|---|---|
| | | | | | (0.80) | MADE GROUND: Brown slightly sandy slightly gravelly Clay with frequent fragments of concrete, glass, red brick, cloth and plastic. | | |
| | | | | 51.22 | 0.80 | | | |
| | | | | | (0.20) | Soft light brown slightly sandy slightly gravelly CLAY with rare sub-angular to sub-rounded cobbles. | | |
| | | | | 51.02 | 1.00 | | | |
| | | | | | (1.00) | Firm grey slightly sandy slightly gravelly CLAY with rare sub-angular cobbles and a strong hydrocarbon odour. | | |
| | | | | 50.02 | 2.00 | | | |
| | | | | | (1.00) | Firm to stiff grey slightly sandy slightly gravelly CLAY with rare sub-angular cobbles and a hydrocarbon odour. | | |
| | | | | 49.02 | 3.00 | Obstruction: Boulders or rock. | | |
| | | | | | | Complete at 3.00m | | |

**Plan**

**Remarks**

Trial pit stable.
No Groundwater encountered.
Trial pit sidewall collapsed between 0.80m and 2.25m BGL.
Trial pit backfilled on completion.

| Scale (approx) | Logged By | Figure No. |
|---|---|---|
| 1:25 | Tmcl | 8354-01-19.TP11 |

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| | | | |
|---|---|---|---|
| **Site** Cornelscourt | | | **Trial Pit Number** TP12 |
| **Machine :** JCB<br>**Method :** | **Dimensions** | **Ground Level (mOD)** 51.55 | **Client** | **Job Number** 8354-01-19 |
| | **Location** 722383.1 E 725821.6 N | **Dates** 22/01/2019 | **Engineer** DBFL | **Sheet** 1/1 |

| Depth (m) | Sample / Tests | Water Depth (m) | Field Records | Level (mOD) | Depth (m) (Thickness) | Description | Legend | Water |
|---|---|---|---|---|---|---|---|---|
| | | | | | (0.20) | Brown slightly sandy slightly gravelly TOPSOIL with grass rootlets. | | |
| | | | | 51.35 | 0.20 | Firm light brown slightly sandy slightly gravelly CLAY. | | |
| | | | | | (0.30) | | | |
| | | | | 51.05 | 0.50 | Firm greu mottled brown slightly sandy gravelly CLAY with rare sub-angular cobbles. | | |
| | | | | | (0.20) | | | |
| | | | | 50.85 | 0.70 | Firm to stiff gey mottled brown slightly sandy gravelly CLAY with rare sub-angular cobbles. | | |
| | | | | | (2.20) | | | |
| | | | | 48.65 | 2.90 | Obstruction: Granite Boulder. | | |
| | | | | | | Complete at 2.90m | | |

**Plan**

**Remarks**

Groundwater encountered at 2.50m (Medium seepage).
Trial pit sidewalls collapsed from 0.90m to 2.60m
Trial pit backfilled on completion.

| Scale (approx) | Logged By | Figure No. |
|---|---|---|
| 1:25 | Tmcl | 8354-01-19.TP12 |

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| Site | Trial Pit Number |
|---|---|
| Cornelscourt | TP13 |

| Machine : JCB<br>Method : | Dimensions | Ground Level (mOD) | Client | Job Number |
|---|---|---|---|---|
| | | 50.79 | | 8354-01-19 |
| | **Location** | **Dates** | **Engineer** | **Sheet** |
| | 722415.9 E 725798.4 N | 22/01/2019 | DBFL | 1/1 |

| Depth (m) | Sample / Tests | Water Depth (m) | Field Records | Level (mOD) | Depth (m) (Thickness) | Description | Legend | Water |
|---|---|---|---|---|---|---|---|---|
| | | | | | (0.40) | MADE GROUND: Brown slightly sandy slightly gravelly CLAY with rare fragments of metal, plastic, concrete and grass rootlets. | | |
| | | | | 50.39 | 0.40 | Firm to stiff light brown slightly sandy slightly gravelly CLAY. | | |
| | | | | | (0.50) | | | |
| | | | | 49.89 | 0.90 | Firm to stiff greyish brown slightly sandy gravelly CLAY with rare sub-angular to sub-rounded cobbles. | | |
| | | | | | (1.10) | | | |
| | | | | 48.79 | 2.00 | Stiff grey mottled brown slightly sandy gravelly CLAY with rare sub-angular cobbles. | | |
| | | | | | (1.20) | | | |
| | | | | 47.59 | 3.20 | Complete at 3.20m | | |

**Plan**

**Remarks**

No Groundwater encountered.
Trial pit stable.
Trial pit backfilled on completion.

| Scale (approx) | Logged By | Figure No. |
|---|---|---|
| 1:25 | Tmcl | 8354-01-19.TP13 |

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| Site | Trial Pit Number |
|---|---|
| Cornelscourt | TP-14 |

| Machine : JCB<br>Method : | Dimensions | Ground Level (mOD) | Client | Job Number |
|---|---|---|---|---|
| | | 53.39 | | 8354-01-19 |
| | Location | Dates | Engineer | Sheet |
| | 722335.2 E 725857.9 N | 21/01/2019 | DBFL | 1/1 |

| Depth (m) | Sample / Tests | Water Depth (m) | Field Records | Level (mOD) | Depth (m) (Thickness) | Description | Legend | Water |
|---|---|---|---|---|---|---|---|---|
| | | | | | (0.80) | MADE GROUND: Brown slightly sandy slightly gravelly Clay with frequent fragments of concrete, glass, red brick, cloth and plastic. | | |
| | | | | 52.59 | 0.80 | | | |
| | | | | | (0.20) | Soft light brown slightly sandy slightly gravelly CLAY with rare sub-angular to sub-rounded cobbles. | | |
| | | | | 52.39 | 1.00 | | | |
| | | | | | (1.00) | Firm grey slightly sandy slightly gravelly CLAY with rare sub-angular cobbles and a strong hydrocarbon odour. | | |
| | | | | 51.39 | 2.00 | | | |
| | | | | | (1.30) | Firm to stiff grey slightly sandy slightly gravelly CLAY with rare sub-angular cobbles and a hydrocarbon odour. | | |
| | | | | 50.09 | 3.30 | Obstruction: Boulders or rock. | | |
| | | | | | | Complete at 3.30m | | |

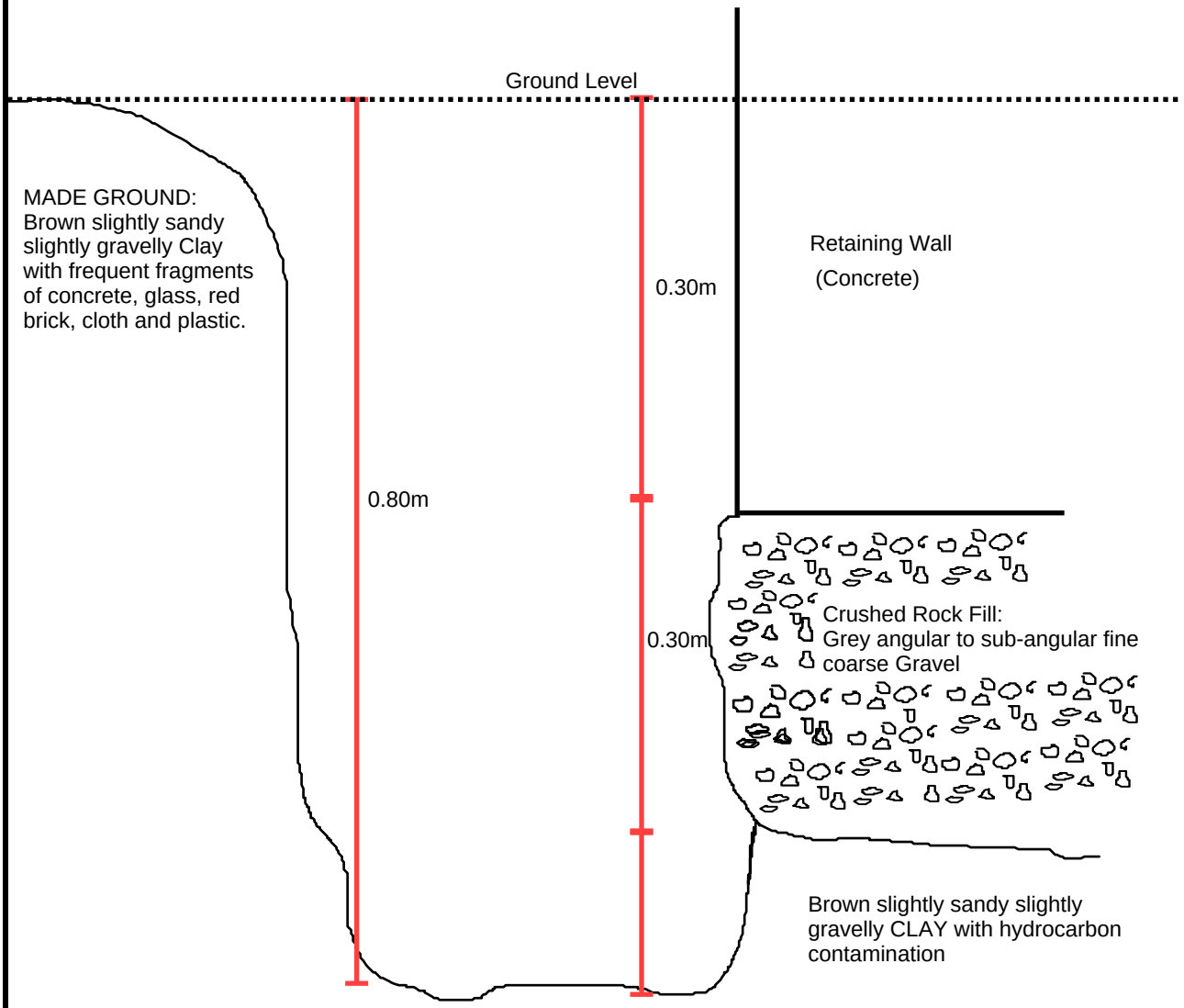
**Plan**

**Remarks**

Trial pit stable.
No Groundwater encountered.
Trial pit backfilled on completion.

| Scale (approx) | Logged By | Figure No. |
|---|---|---|
| 1:25 | Tmcl | 8354-01-19.TP-14 |

# Foundation Pit




| Ground Conditions | |
|---|---|
| 0.80m | MADE GROUND: Brown slightly sandy slightly gravelly Clay with fragments of concrete and plastic |
| 1.0m | Soft light brown slightly sandy slightly gravelly CLAY |

| | | | |
|---|---|---|---|
| Project: | Cornelscourt | TP14 | |
| Client: | DBFL | | |
| Contractor: | Ground Investigations Ireland | Date | 21/01/2019 |

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| | | | |
|---|---|---|---|
| **Site** Cornelscourt | | | **Trial Pit Number** TP16 |
| **Machine :** JCB<br>**Method :** | **Dimensions** | **Ground Level (mOD)** 52.54 | **Client** | **Job Number** 8354-01-19 |
| | **Location** 722368.3 E 725797.8 N | **Dates** 22/01/2019 | **Engineer** DBFL | **Sheet** 1/1 |

| Depth (m) | Sample / Tests | Water Depth (m) | Field Records | Level (mOD) | Depth (m) (Thickness) | Description | Legend | Water |
|---|---|---|---|---|---|---|---|---|
| | | | | | (0.25) | Brown slightly sandy slightly gravelly TOPSOIL with grass rootlets. | | |
| | | | | 52.29 | 0.25 | Soft to firm light brown slightly sandy slightly gravelly CLAY. | | |
| | | | | | (0.55) | | | |
| | | | | 51.74 | 0.80 | Firm greyish brown slightly sandy gravelly CLAY with rare sub-angular cobbles. | | |
| | | | | | (0.50) | | | |
| | | | | 51.24 | 1.30 | Firm to stiff greyish brown slightly sandy gravelly CLAY with rare sub-angular cobbles and sandy gravel lenses. | | |
| | | | | | (1.40) | | | |
| | | | | 49.84 | 2.70 | Obstruction: Presumed Rock(granite). | | |
| | | | | | | Complete at 2.70m | | |

**Plan**

**Remarks**

Groundwater encountered at 2.60m BGL (Medium seepage).
Trial pit stable.
Trial pit backfilled on completion.

| Scale (approx) | Logged By | Figure No. |
|---|---|---|
| 1:25 | Tmcl | 8354-01-19.TP16 |

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| | | | |
|---|---|---|---|
| **Site** Cornelscourt | | | **Trial Pit Number** TP17 |
| **Machine :** JCB<br>**Method :** | **Dimensions** | **Ground Level (mOD)** 51.60 | **Client** | **Job Number** 8354-01-19 |
| | **Location** 722400.4 E 725768.9 N | **Dates** 22/01/2019 | **Engineer** DBFL | **Sheet** 1/1 |

| Depth (m) | Sample / Tests | Water Depth (m) | Field Records | Level (mOD) | Depth (m) (Thickness) | Description | Legend | Water |
|---|---|---|---|---|---|---|---|---|
| | | | | | (0.25) | Brown slightly sandy slightly gravelly TOPSOIL with grass rootlets. | | |
| | | | | 51.35 | 0.25 | Firm light brown slightly sandy slightly gravelly CLAY. | | |
| | | | | | (0.65) | | | |
| | | | | 50.70 | 0.90 | Firm to stiff greyish brown slightly sandy gravelly CLAY with rare sub-rounded cobbles limestone. | | |
| | | | | | (1.90) | | | |
| | | | | 48.80 | 2.80 | Light yellowish grey very sandy slightly clayey sub-angular to sub-rounded fine to coarse GRAVEL of granite(Weathered Rock). | | |
| | | | | | (0.40) | | | |
| | | | | 48.40 | 3.20 | Obstruction: Rock (Granite). | | |
| | | | | | | Complete at 3.20m | | |

**Plan**

**Remarks**

Groundwater encountered at 3.10m BGL (Medium seepage).
Trial pit sidewalls spalling.
Trial pit backfilled on completion.

| Scale (approx) | Logged By | Figure No. |
|---|---|---|
| 1:25 | Tmcl | 8354-01-19.TP16 |

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| Site | Trial Pit Number |
|---|---|
| Cornelscourt | TP20 |

| Machine : JCB<br>Method : | Dimensions | Ground Level (mOD) | Client | Job Number |
|---|---|---|---|---|
| | | 50.27 | | 8354-01-19 |
| | **Location** | **Dates** | **Engineer** | **Sheet** |
| | 722391.4 E 725878.4 N | 21/01/2019 | DBFL | 1/1 |

| Depth (m) | Sample / Tests | Water Depth (m) | Field Records | Level (mOD) | Depth (m) (Thickness) | Description | Legend | Water |
|---|---|---|---|---|---|---|---|---|
| | | | | | (0.50) | MADE GROUND: Brown slightly sandy slightly gravelly Clay with rare fragments of plastic, wire, cloth and glass. | | |
| | | | | 49.77 | 0.50 | | | |
| | | | | | (0.20) | Firm light brown slightly sandy slightly gravelly CLAY. | | |
| | | | | 49.57 | 0.70 | | | |
| | | | | | (0.80) | Stiff grey mottled brown slightly sandy gravelly CLAY with rare sub-angular cobbles. | | |
| | | | | 48.77 | 1.50 | | | |
| | | | | | (1.00) | Firm greyish brown slightly sandy gravelly CLAY with rare sub-angular cobbles. | | |
| | | | | 47.77 | 2.50 | | | |
| | | | | | (0.50) | Stiff to very stiff black slightly sandy gravelly CLAY with rare cobbles and boulders. | | |
| | | | | 47.27 | 3.00 | Obstruction: Boulder or rock. | | |
| | | | | | | Complete at 3.00m | | |

**Plan**

**Remarks**

Groundwater encountered at 2.0m BGL(Medium seepage).
Trial pit sidewalls spalling.
Trial pit backfilled on completion.

| Scale (approx) | Logged By | Figure No. |
|---|---|---|
| 1:25 | Tmcl | 8354-01-19.TP20 |

# Ground Investigations Ireland Ltd
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| Site | Trial Pit Number |
|---|---|
| Cornelscourt | TP21 |

| Machine : JCB<br>Method : | Dimensions | Ground Level (mOD) | Client | Job Number |
|---|---|---|---|---|
| | | 53.18 | | 8354-01-19 |
| | **Location** | **Dates** | **Engineer** | **Sheet** |
| | 722349.6 E 725808.9 N | 22/01/2019 | DBFL | 1/1 |

| Depth (m) | Sample / Tests | Water Depth (m) | Field Records | Level (mOD) | Depth (m) (Thickness) | Description | Legend | Water |
|---|---|---|---|---|---|---|---|---|
| | | | | | (0.25) | Brown slightly sandy slightly gravelly TOPSOIL with grass rootlets. | | |
| | | | | 52.93 | 0.25 | Firm light brown slightly sandy slightly gravelly CLAY. | | |
| | | | | | (0.35) | | | |
| | | | | 52.58 | 0.60 | Firm greyish brown slightly sandy gravelly CLAY with rare sub-angular cobbles and lenses of granite. | | |
| | | | | | (0.35) | | | |
| | | | | 52.23 | 0.95 | Grey very sand slightly clayey subrounded to rounded fine to coarse GRAVEL with rare sub-rounded cobbles. | | |
| | | | | | (0.25) | | | |
| | | | | 51.98 | 1.20 | Firm to stiff grey mottled brown slightly sandy gravelly CLAY with rare sub-angular cobbles. | | |
| | | | | | (1.80) | | | |
| | | | | 50.18 | 3.00 | Obstruction: Rock (Granite). | | |
| | | | | | | Complete at 3.00m | | |

**Plan**

**Remarks**

No Groundwater encountered.
Trial pit stable.
Trial pit backfilled on completion.
Strong hydrocarbon odour upon reaching rock.

| Scale (approx) | Logged By | Figure No. |
|---|---|---|
| 1:25 | Tmcl | 8354-01-19.TP21 |

# Cornelscourt – Trial Pit Photographs

TP01

TP02

TP03

TP04

TP05

TP06

TP07

TP07A

TP08

TP09

TP11

TP12

TP13

TP14

TP16

TP17

TP20

TP21

# **APPENDIX 3** – Soakaway Records

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| Site | Trial Pit Number |
|---|---|
| Cornelscourt | IT01 |

| Machine : JCB<br>Method : | Dimensions | Ground Level (mOD) | Client | Job Number |
|---|---|---|---|---|
| | | 53.25 | | 8354-01-19 |
| | **Location** | **Dates** | **Engineer** | **Sheet** |
| | 722326.2 E 725877.3 N | 21/01/2019 | DBFL | 1/1 |

| Depth (m) | Sample / Tests | Water Depth (m) | Field Records | Level (mOD) | Depth (m) (Thickness) | Description | Legend | Water |
|---|---|---|---|---|---|---|---|---|
| | | | | | (0.20) | Brown slightly sandy slightly gravelly TOPSOIL. | | |
| | | | | 53.05 | 0.20 | MADE GROUND: Brown slightly sandy slightly gravelly CLAY. | | |
| | | | | | (0.30) | | | |
| | | | | 52.75 | 0.50 | Firm brown slightly sandy slightly gravelly CLAY. | | |
| | | | | | (1.40) | | | |
| | | | | 51.35 | 1.90 | Complete at 1.90m | | |

**Plan**

**Remarks**

No Groundwater encountered.
Trial pit stable.
Infiltration test completed in trial pit.
Trial pit backfilled on completion of infiltration test.

| Scale (approx) | Logged By | Figure No. |
|---|---|---|
| 1:25 | Tmcl | 8354-01-19.IT01 |

# Ground Investigations Ireland Ltd
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| Site | Trial Pit Number |
|---|---|
| Cornelscourt | IT02 |

| Machine : JCB<br>Method : | Dimensions | Ground Level (mOD) | Client | Job Number |
|---|---|---|---|---|
| | | 48.87 | | 8354-01-19 |
| | **Location** | **Dates** | **Engineer** | **Sheet** |
| | 722441.6 E 725841.6 N | 21/01/2019 | DBFL | 1/1 |

| Depth (m) | Sample / Tests | Water Depth (m) | Field Records | Level (mOD) | Depth (m) (Thickness) | Description | Legend | Water |
|---|---|---|---|---|---|---|---|---|
| | | | | | (0.30) | Brown slightly sandy slightly gravelly TOPSOIL. | | |
| | | | | 48.57 | 0.30 | Firm to stiff light brown slightly sandy slightly gravelly CLAY. | | |
| | | | | | (1.10) | | | |
| | | | | 47.47 | 1.40 | Stiff grey mottled brown slightly sandy gravelly CLAY with rare sub-angular cobbles. | | |
| | | | | | (0.50) | | | |
| | | | | 46.97 | 1.90 | Complete at 1.90m | | |

**Plan**

**Remarks**

No Groundwater encountered.
Trial pit stable.
Infiltration test completed in trial pit.
Trial pit backfilled on completion of infiltration test.

| Scale (approx) | Logged By | Figure No. |
|---|---|---|
| 1:25 | Tmcl | 8354-01-19.IT02 |

# Ground Investigations Ireland Ltd
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| Site | Trial Pit Number |
|---|---|
| Cornelscourt | IT03 |

| Machine : JCB<br>Method : | Dimensions | Ground Level (mOD) | Client | Job Number |
|---|---|---|---|---|
| | | | | 8354-01-19 |
| | Location | Dates 21/01/2019 | Engineer<br>DBFL | Sheet<br>1/1 |

| Depth (m) | Sample / Tests | Water Depth (m) | Field Records | Level (mOD) | Depth (m) (Thickness) | Description | Legend | Water |
|---|---|---|---|---|---|---|---|---|
| | | | | | (0.25) | Brown slightly sandy slightly gravelly TOPSOIL. | | |
| | | | | | 0.25 | | | |
| | | | | | (0.25) | Firm to stiff light brown slightly sandy slightly gravelly CLAY with rare sub-angular cobbles. | | |
| | | | | | 0.50 | | | |
| | | | | | (0.80) | Firm to stiff brown slightly sandy gravelly CLAY with rare sub-angular cobbles. | | |
| | | | | | 1.30 | | | |
| | | | | | (0.60) | Firm to stiff grey mottled brown slightly sandy gravelly CLAY with rare sub-angular cobbles. | | |
| | | | | | 1.90 | Complete at 1.90m | | |

**Plan**

**Remarks**

No Groundwater encountered.
Trial pit stable.
Infiltration test completed in trial pit.
Trial pit backfilled on completion of infiltration test.

| Scale (approx) | Logged By | Figure No. |
|---|---|---|
| 1:25 | Tmcl | 8354-01-19.IT03 |

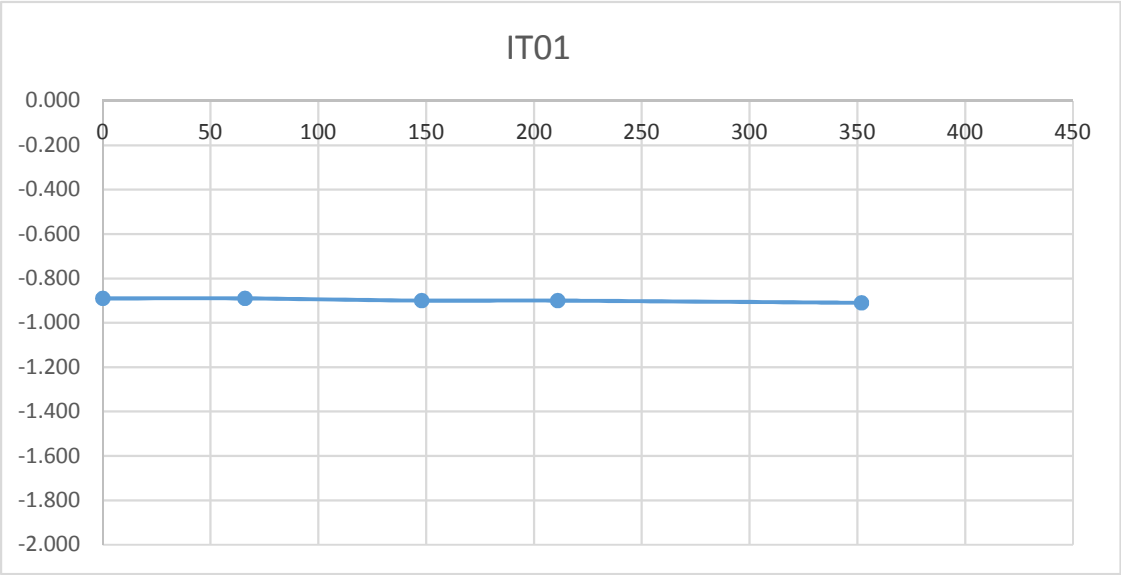
## IT01

**Soakaway Test to BRE Digest 365**
**Trial Pit Dimensions: 1.50m x 0.40m 1.90m (L x W x D)**

| Date | Time | Water level (m bgl) |
|---|---|---|
| 22/01/2019 | 0 | -0.890 |
| 22/01/2019 | 66 | -0.890 |
| 22/01/2019 | 148 | -0.900 |
| 22/01/2019 | 211 | -0.900 |
| 22/01/2019 | 352 | -0.910 |
| | | |
| | | |

***Soakaway failed - Pit backfilled**

| Start depth | Depth of Pit | Diff | 75% full | 25%full |
|---|---|---|---|---|
| 0.89 | 1.900 | 1.010 | 1.1425 | 1.6475 |



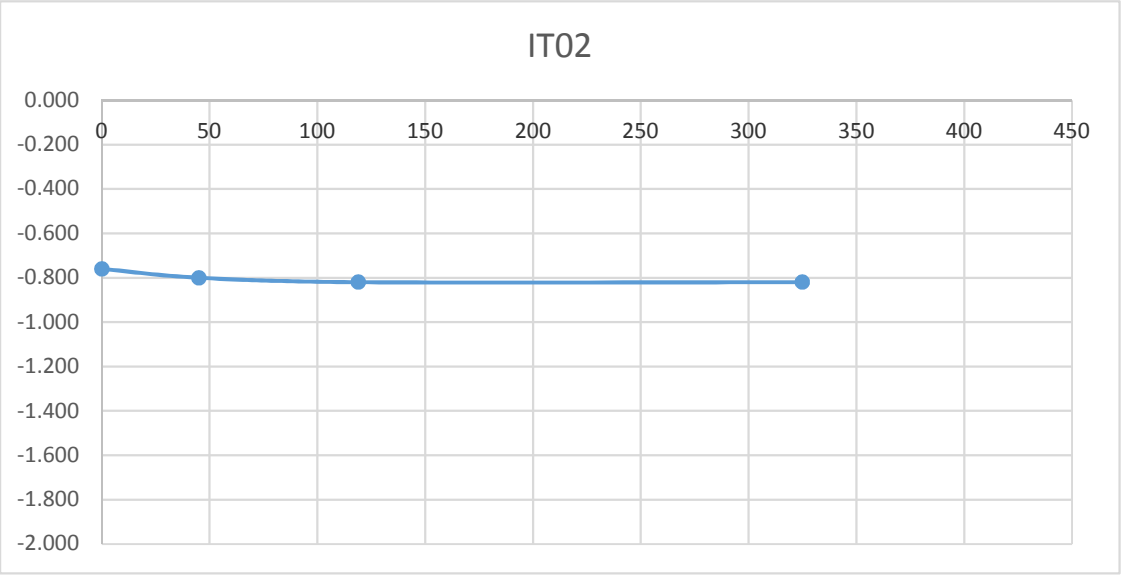
## IT02

**Soakaway Test to BRE Digest 365**
**Trial Pit Dimensions: 1.90m x 0.40m 1.90m (L x W x D)**

| Date | Time | Water level (m bgl) |
|---|---|---|
| 22/01/2019 | 0 | -0.760 |
| 22/01/2019 | 45 | -0.800 |
| 22/01/2019 | 119 | -0.820 |
| 22/01/2019 | 325 | -0.820 |
| | | |
| | | |
| | | |

***Soakaway failed - Pit backfilled**

| Start depth | Depth of Pit | Diff | 75% full | 25%full |
|---|---|---|---|---|
| 0.76 | 1.900 | 1.140 | 1.045 | 1.615 |



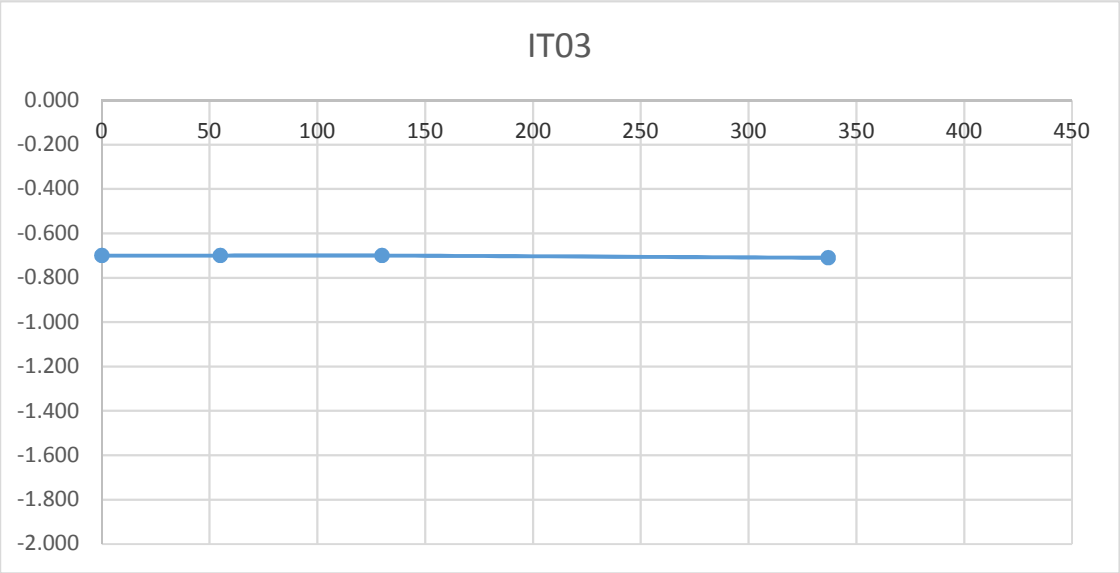
## IT03

**Soakaway Test to BRE Digest 365**
**Trial Pit Dimensions: 1.5m x 0.50m 2.0m (L x W x D)**

| Date | Time | Water level (m bgl) |
|---|---|---|
| 14/09/2016 | 0 | -0.700 |
| 14/09/2016 | 55 | -0.700 |
| 14/09/2016 | 130 | -0.700 |
| 14/09/2016 | 337 | -0.710 |
| | | |
| | | |
| | | |

***Soakaway failed - Pit backfilled**

| Start depth | Depth of Pit | Diff | 75% full | 25%full |
|---|---|---|---|---|
| 0.70 | 1.900 | 1.200 | 1 | 1.6 |



# **APPENDIX 4** – Dynamic Probe Records

# Ground Investigations Ireland Ltd
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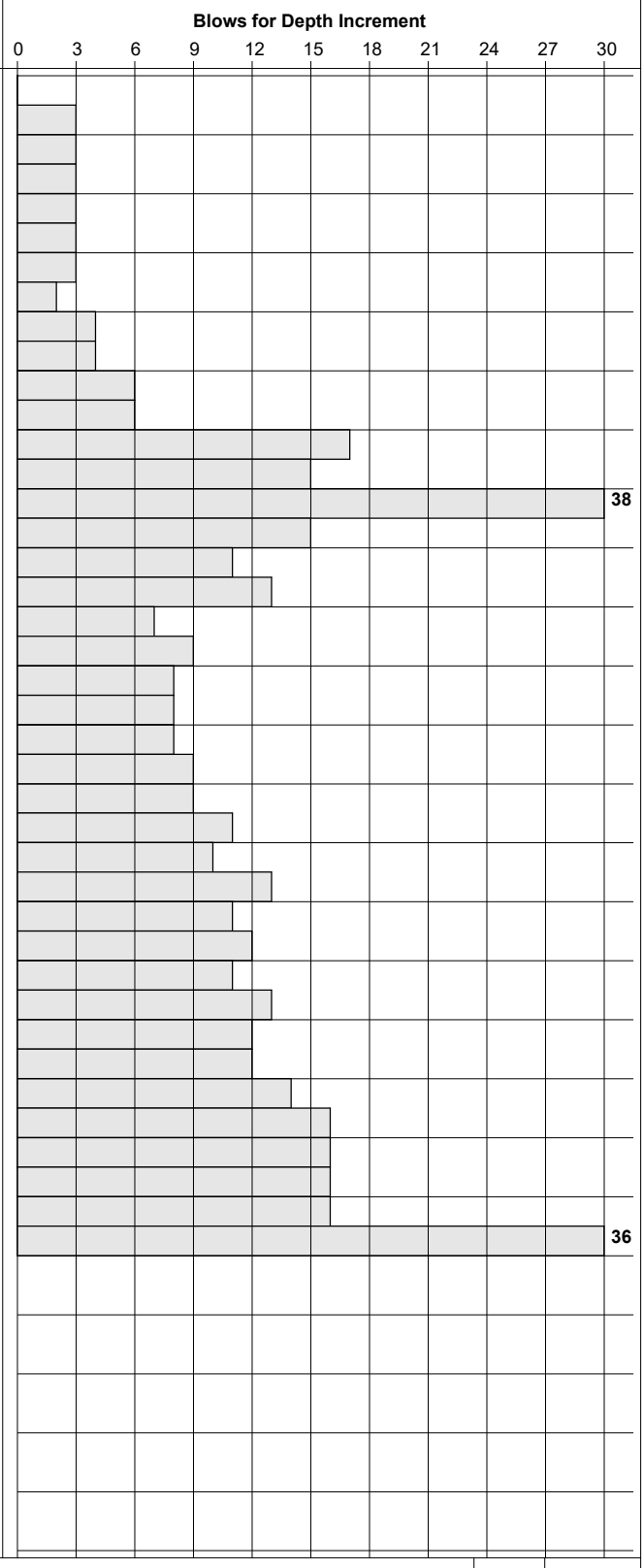
| Site | Probe Number |
|---|---|
| Cornelscourt | DPH01 |

| Method | Cone Dimensions | Ground Level (mOD) | Client | Job Number |
|---|---|---|---|---|
| Dynamic Probe DPH, Fall height 500mm, hammer wt 50Kg. | 43.7mm | | DBFL | 8354-01-19 |

| Location | Dates | Engineer | Sheet |
|---|---|---|---|
| | 01/02/2019 | | 1/1 |

| Depth (m) | Blows for Depth Increment | Field Records | Level (mOD) |
|---|---|---|---|
| 0.00-0.10 | 0 | | |
| 0.10-0.20 | 3 | | |
| 0.20-0.30 | 3 | | |
| 0.30-0.40 | 3 | | |
| 0.40-0.50 | 3 | | |
| 0.50-0.60 | 3 | | |
| 0.60-0.70 | 3 | | |
| 0.70-0.80 | 2 | | |
| 0.80-0.90 | 4 | | |
| 0.90-1.00 | 4 | | |
| 1.00-1.10 | 6 | | |
| 1.10-1.20 | 6 | | |
| 1.20-1.30 | 17 | | |
| 1.30-1.40 | 15 | | |
| 1.40-1.50 | 38 | | |
| 1.50-1.60 | 15 | | |
| 1.60-1.70 | 11 | | |
| 1.70-1.80 | 13 | | |
| 1.80-1.90 | 7 | | |
| 1.90-2.00 | 9 | | |
| 2.00-2.10 | 8 | | |
| 2.10-2.20 | 8 | | |
| 2.20-2.30 | 8 | | |
| 2.30-2.40 | 9 | | |
| 2.40-2.50 | 9 | | |
| 2.50-2.60 | 11 | | |
| 2.60-2.70 | 10 | | |
| 2.70-2.80 | 13 | | |
| 2.80-2.90 | 11 | | |
| 2.90-3.00 | 12 | | |
| 3.00-3.10 | 11 | | |
| 3.10-3.20 | 13 | | |
| 3.20-3.30 | 12 | | |
| 3.30-3.40 | 12 | | |
| 3.40-3.50 | 14 | | |
| 3.50-3.60 | 16 | | |
| 3.60-3.70 | 16 | | |
| 3.70-3.80 | 16 | | |
| 3.80-3.90 | 16 | | |
| 3.90-4.00 | 36 | | |




**Remarks**
Refusal at 4.00m BGL 25 blows for 10mm

| Scale (approx) | Logged By |
|---|---|
| 1:25 | 4.00 |

**Figure No.**
8354-01-19.DPH01

# Ground Investigations Ireland Ltd
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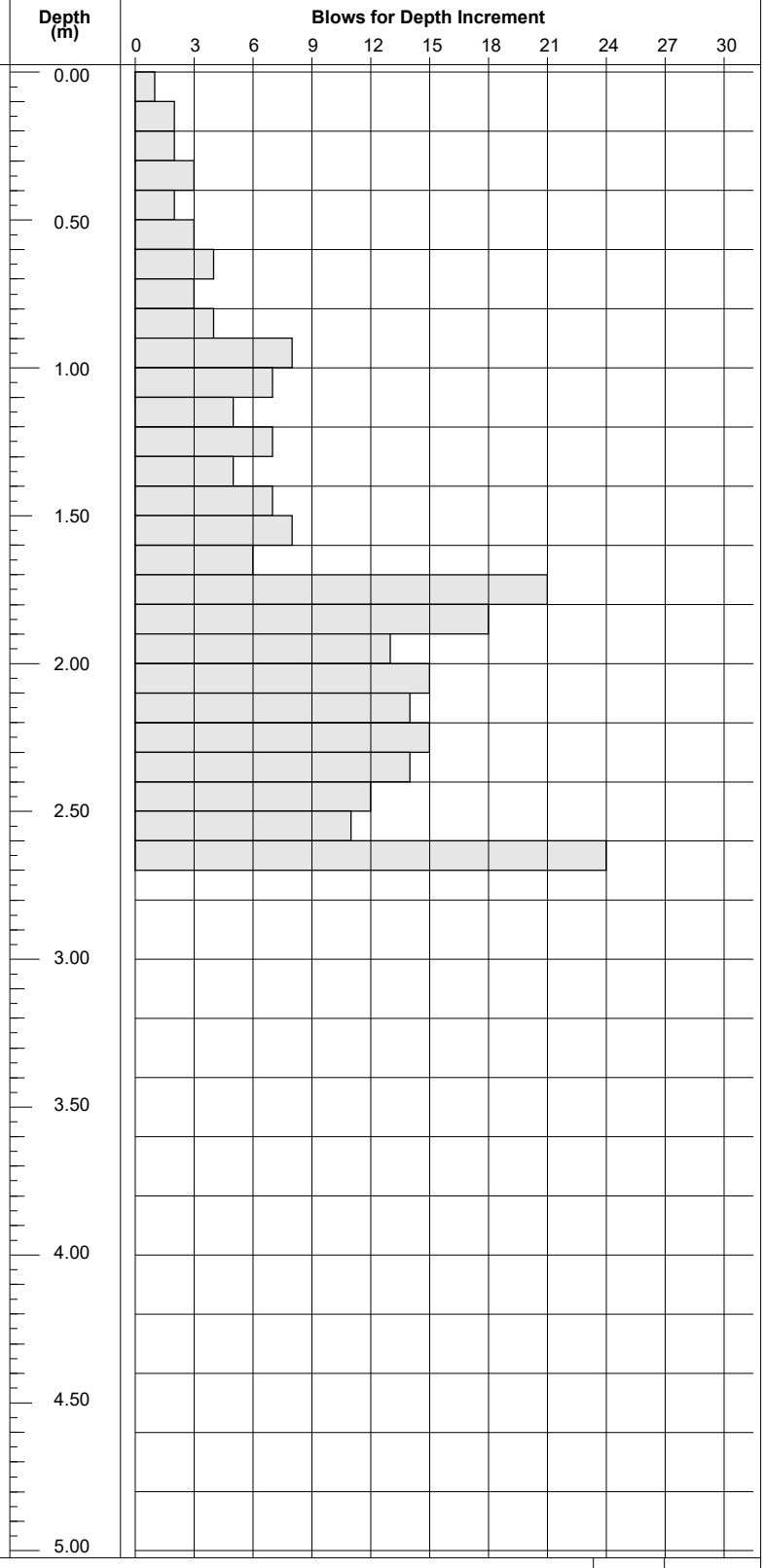
| Site | Probe Number |
|---|---|
| Cornelscourt | DPH02 |

| Method | Cone Dimensions | Ground Level (mOD) | Client | Job Number |
|---|---|---|---|---|
| Dynamic Probe DPH, Fall height 500mm, hammer wt 50Kg. | 43.7mm | | DBFL | 8354-01-19 |

| Location | Dates | Engineer | Sheet |
|---|---|---|---|
| | 01/02/2019 | | 1/1 |

| Depth (m) | Blows for Depth Increment | Field Records | Level (mOD) |
|---|---|---|---|
| 0.00-0.10 | 1 | | |
| 0.10-0.20 | 2 | | |
| 0.20-0.30 | 2 | | |
| 0.30-0.40 | 3 | | |
| 0.40-0.50 | 2 | | |
| 0.50-0.60 | 3 | | |
| 0.60-0.70 | 4 | | |
| 0.70-0.80 | 3 | | |
| 0.80-0.90 | 4 | | |
| 0.90-1.00 | 8 | | |
| 1.00-1.10 | 7 | | |
| 1.10-1.20 | 5 | | |
| 1.20-1.30 | 7 | | |
| 1.30-1.40 | 5 | | |
| 1.40-1.50 | 7 | | |
| 1.50-1.60 | 8 | | |
| 1.60-1.70 | 6 | | |
| 1.70-1.80 | 21 | | |
| 1.80-1.90 | 18 | | |
| 1.90-2.00 | 13 | | |
| 2.00-2.10 | 15 | | |
| 2.10-2.20 | 14 | | |
| 2.20-2.30 | 15 | | |
| 2.30-2.40 | 14 | | |
| 2.40-2.50 | 12 | | |
| 2.50-2.60 | 11 | | |
| 2.60-2.70 | 24 | | |




**Remarks**
Refusal at 2.70m BGL 25 blows for 50mm

| Scale (approx) | Logged By |
|---|---|
| 1:25 | 4.00 |

**Figure No.**
8354-01-19.DPH02

# Ground Investigations Ireland Ltd
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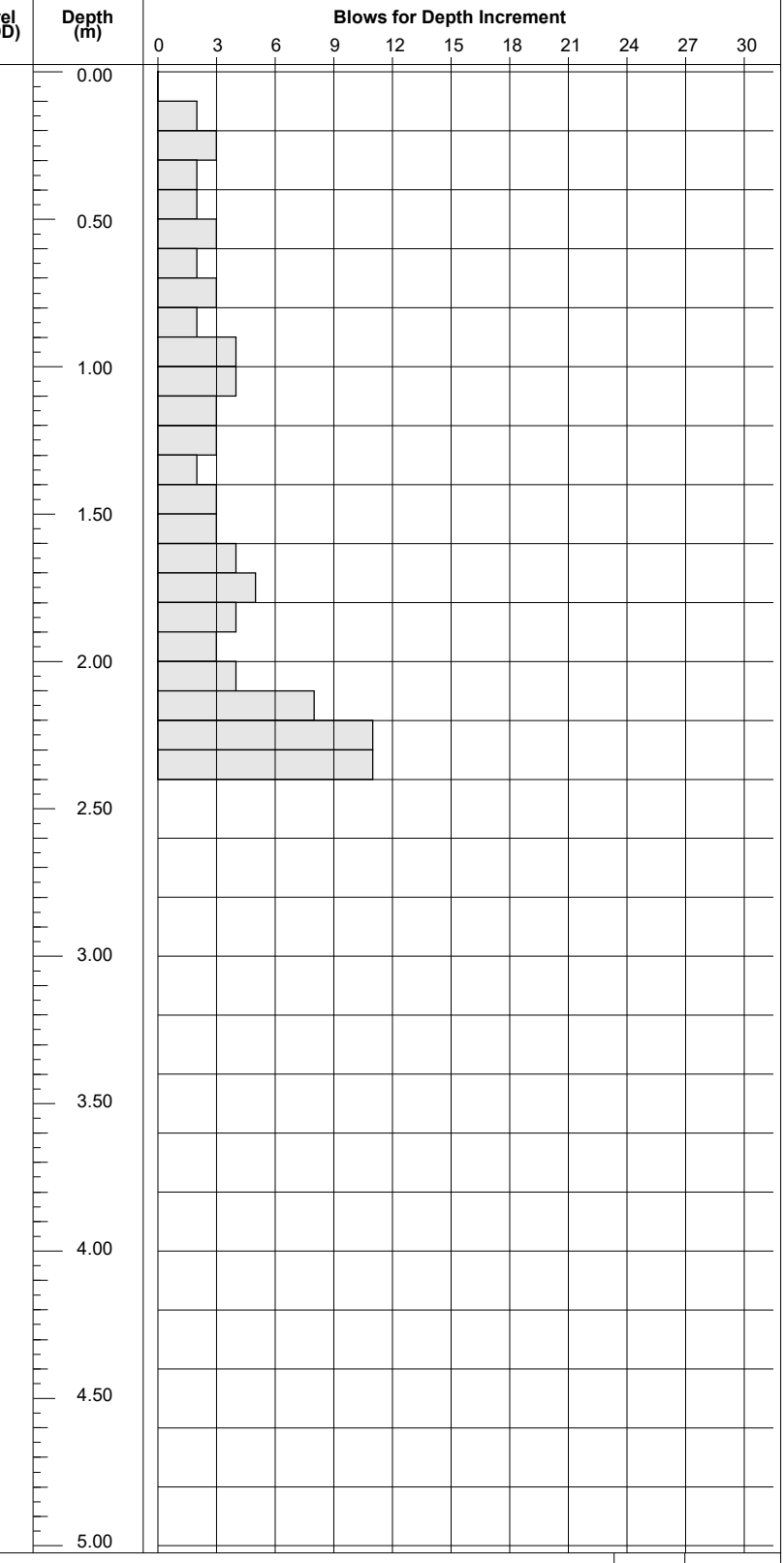
| Site | Probe Number |
|---|---|
| Cornelscourt | DPH03 |

| Method | Cone Dimensions | Ground Level (mOD) | Client | Job Number |
|---|---|---|---|---|
| Dynamic Probe DPH, Fall height 500mm, hammer wt 50Kg. | 43.7mm | | DBFL | 8354-01-19 |
| | **Location** | **Dates** | **Engineer** | **Sheet** |
| | | 01/02/2019 | | 1/1 |

| Depth (m) | Blows for Depth Increment | Field Records | Level (mOD) |
|---|---|---|---|
| 0.00-0.10 | 0 | | |
| 0.10-0.20 | 2 | | |
| 0.20-0.30 | 3 | | |
| 0.30-0.40 | 2 | | |
| 0.40-0.50 | 2 | | |
| 0.50-0.60 | 3 | | |
| 0.60-0.70 | 2 | | |
| 0.70-0.80 | 3 | | |
| 0.80-0.90 | 2 | | |
| 0.90-1.00 | 4 | | |
| 1.00-1.10 | 4 | | |
| 1.10-1.20 | 3 | | |
| 1.20-1.30 | 3 | | |
| 1.30-1.40 | 2 | | |
| 1.40-1.50 | 3 | | |
| 1.50-1.60 | 3 | | |
| 1.60-1.70 | 4 | | |
| 1.70-1.80 | 5 | | |
| 1.80-1.90 | 4 | | |
| 1.90-2.00 | 3 | | |
| 2.00-2.10 | 4 | | |
| 2.10-2.20 | 8 | | |
| 2.20-2.30 | 11 | | |
| 2.30-2.40 | 11 | | |




**Remarks**
Refusal at 2.50m BGL for 25 blows

| Scale (approx) | Logged By |
|---|---|
| 1:25 | 4.00 |

**Figure No.**
8354-01-19.DPH03

# Ground Investigations Ireland Ltd
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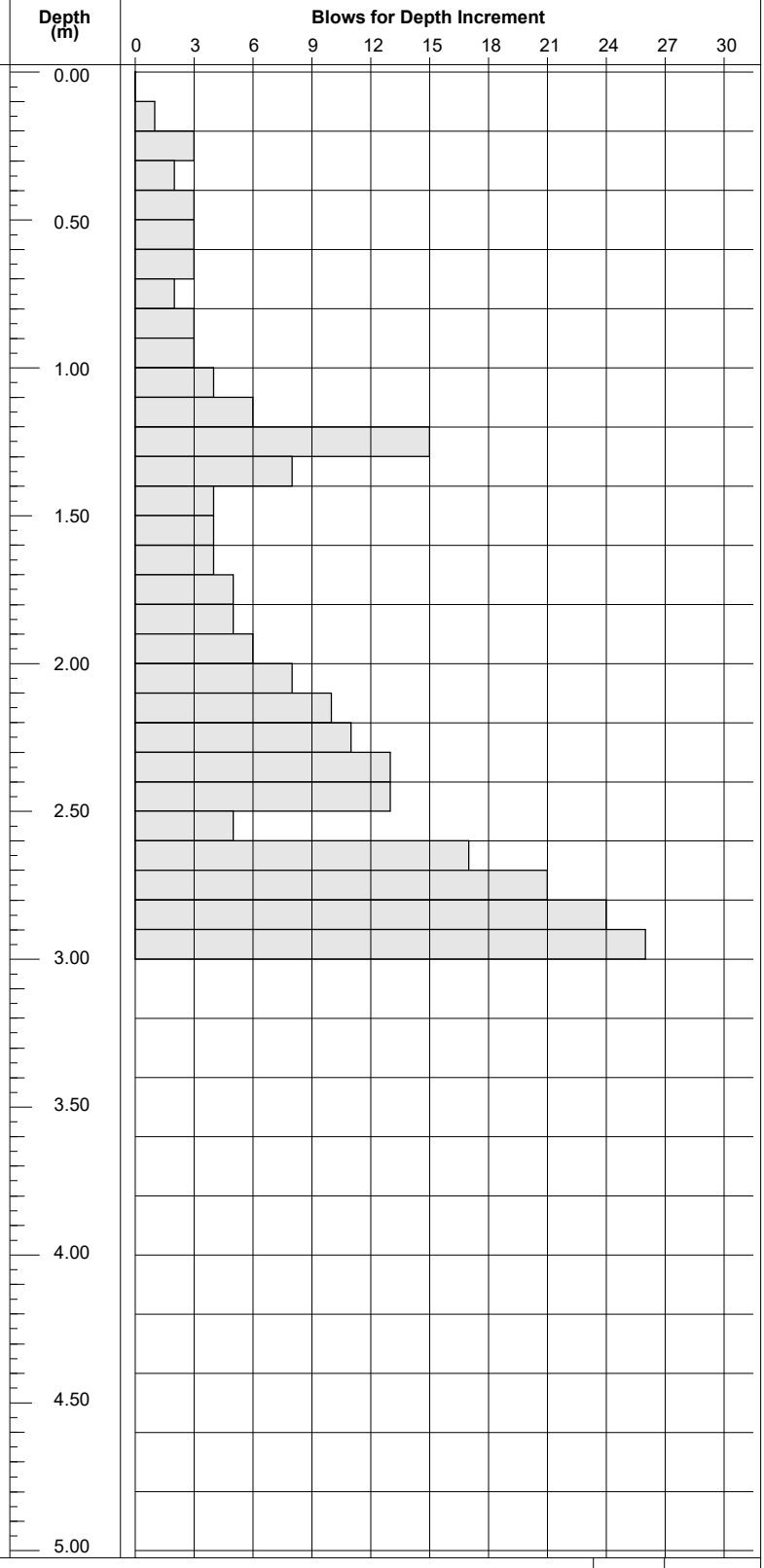
| Site | Probe Number |
|---|---|
| Cornelscourt | DPH04 |

| Method | Cone Dimensions | Ground Level (mOD) | Client | Job Number |
|---|---|---|---|---|
| Dynamic Probe DPH, Fall height 500mm, hammer wt 50Kg. | 43.7mm | | DBFL | 8354-01-19 |

| Location | Dates | Engineer | Sheet |
|---|---|---|---|
| | 01/02/2019 | | 1/1 |

| Depth (m) | Blows for Depth Increment | Field Records | Level (mOD) |
|---|---|---|---|
| 0.00-0.10 | 0 | | |
| 0.10-0.20 | 1 | | |
| 0.20-0.30 | 3 | | |
| 0.30-0.40 | 2 | | |
| 0.40-0.50 | 3 | | |
| 0.50-0.60 | 3 | | |
| 0.60-0.70 | 3 | | |
| 0.70-0.80 | 2 | | |
| 0.80-0.90 | 3 | | |
| 0.90-1.00 | 3 | | |
| 1.00-1.10 | 4 | | |
| 1.10-1.20 | 6 | | |
| 1.20-1.30 | 15 | | |
| 1.30-1.40 | 8 | | |
| 1.40-1.50 | 4 | | |
| 1.50-1.60 | 4 | | |
| 1.60-1.70 | 4 | | |
| 1.70-1.80 | 5 | | |
| 1.80-1.90 | 5 | | |
| 1.90-2.00 | 6 | | |
| 2.00-2.10 | 8 | | |
| 2.10-2.20 | 10 | | |
| 2.20-2.30 | 11 | | |
| 2.30-2.40 | 13 | | |
| 2.40-2.50 | 13 | | |
| 2.50-2.60 | 5 | | |
| 2.60-2.70 | 17 | | |
| 2.70-2.80 | 21 | | |
| 2.80-2.90 | 24 | | |
| 2.90-3.00 | 26 | | |




**Remarks**

| Scale (approx) | Logged By |
|---|---|
| 1:25 | 4.00 |

**Figure No.**
8354-01-19.DPH04

# Ground Investigations Ireland Ltd
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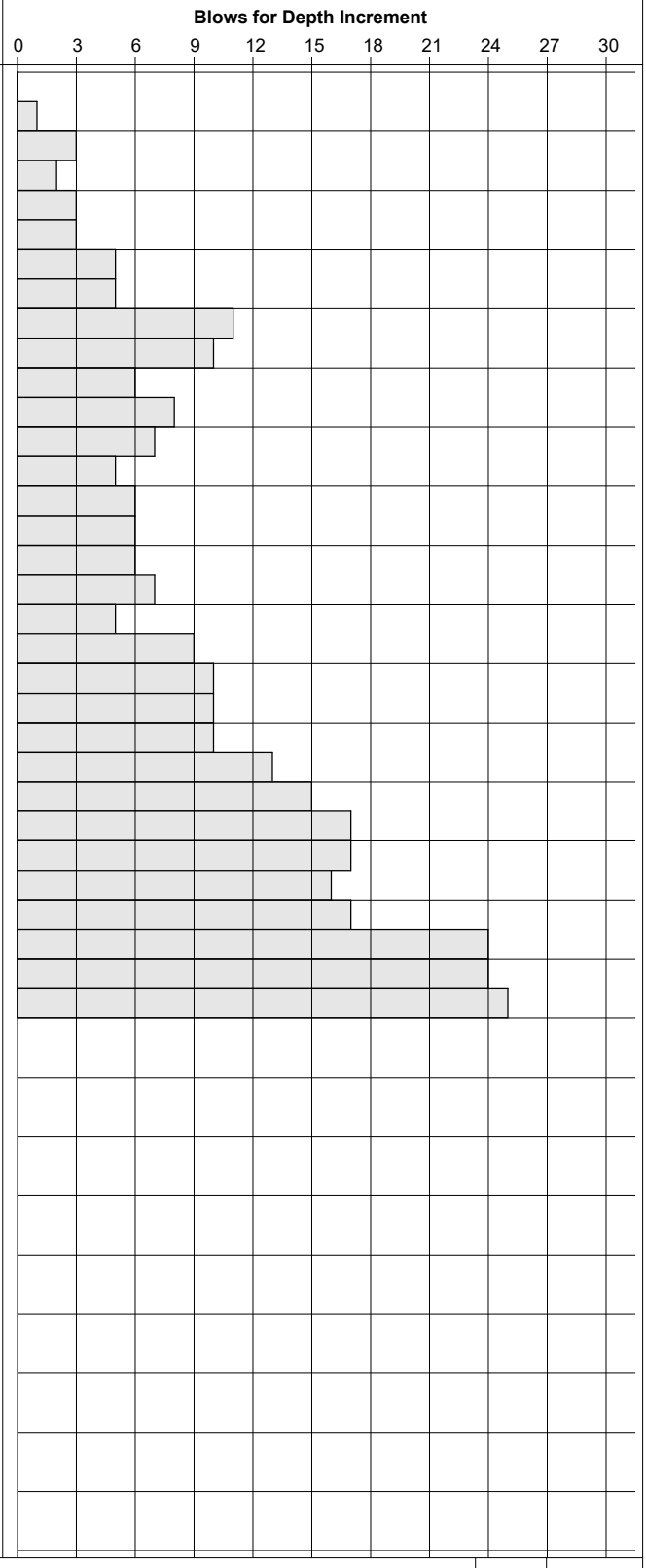
| Site | Probe Number |
|---|---|
| Cornelscourt | DPH05 |

| Method | Cone Dimensions | Ground Level (mOD) | Client | Job Number |
|---|---|---|---|---|
| Dynamic Probe DPH, Fall height 500mm, hammer wt 50Kg. | 43.7mm | | DBFL | 8354-01-19 |

| Location | Dates | Engineer | Sheet |
|---|---|---|---|
| | 01/02/2019 | | 1/1 |

| Depth (m) | Blows for Depth Increment | Field Records | Level (mOD) |
|---|---|---|---|
| 0.00-0.10 | 0 | | |
| 0.10-0.20 | 1 | | |
| 0.20-0.30 | 3 | | |
| 0.30-0.40 | 2 | | |
| 0.40-0.50 | 3 | | |
| 0.50-0.60 | 3 | | |
| 0.60-0.70 | 5 | | |
| 0.70-0.80 | 5 | | |
| 0.80-0.90 | 11 | | |
| 0.90-1.00 | 10 | | |
| 1.00-1.10 | 6 | | |
| 1.10-1.20 | 8 | | |
| 1.20-1.30 | 7 | | |
| 1.30-1.40 | 5 | | |
| 1.40-1.50 | 6 | | |
| 1.50-1.60 | 6 | | |
| 1.60-1.70 | 6 | | |
| 1.70-1.80 | 7 | | |
| 1.80-1.90 | 5 | | |
| 1.90-2.00 | 9 | | |
| 2.00-2.10 | 10 | | |
| 2.10-2.20 | 10 | | |
| 2.20-2.30 | 10 | | |
| 2.30-2.40 | 13 | | |
| 2.40-2.50 | 15 | | |
| 2.50-2.60 | 17 | | |
| 2.60-2.70 | 17 | | |
| 2.70-2.80 | 16 | | |
| 2.80-2.90 | 17 | | |
| 2.90-3.00 | 24 | | |
| 3.00-3.10 | 24 | | |
| 3.10-3.20 | 25 | | |




**Remarks**

| Scale (approx) | Logged By |
|---|---|
| 1:25 | 4.00 |

**Figure No.**
8354-01-19.DPH05

# Ground Investigations Ireland Ltd
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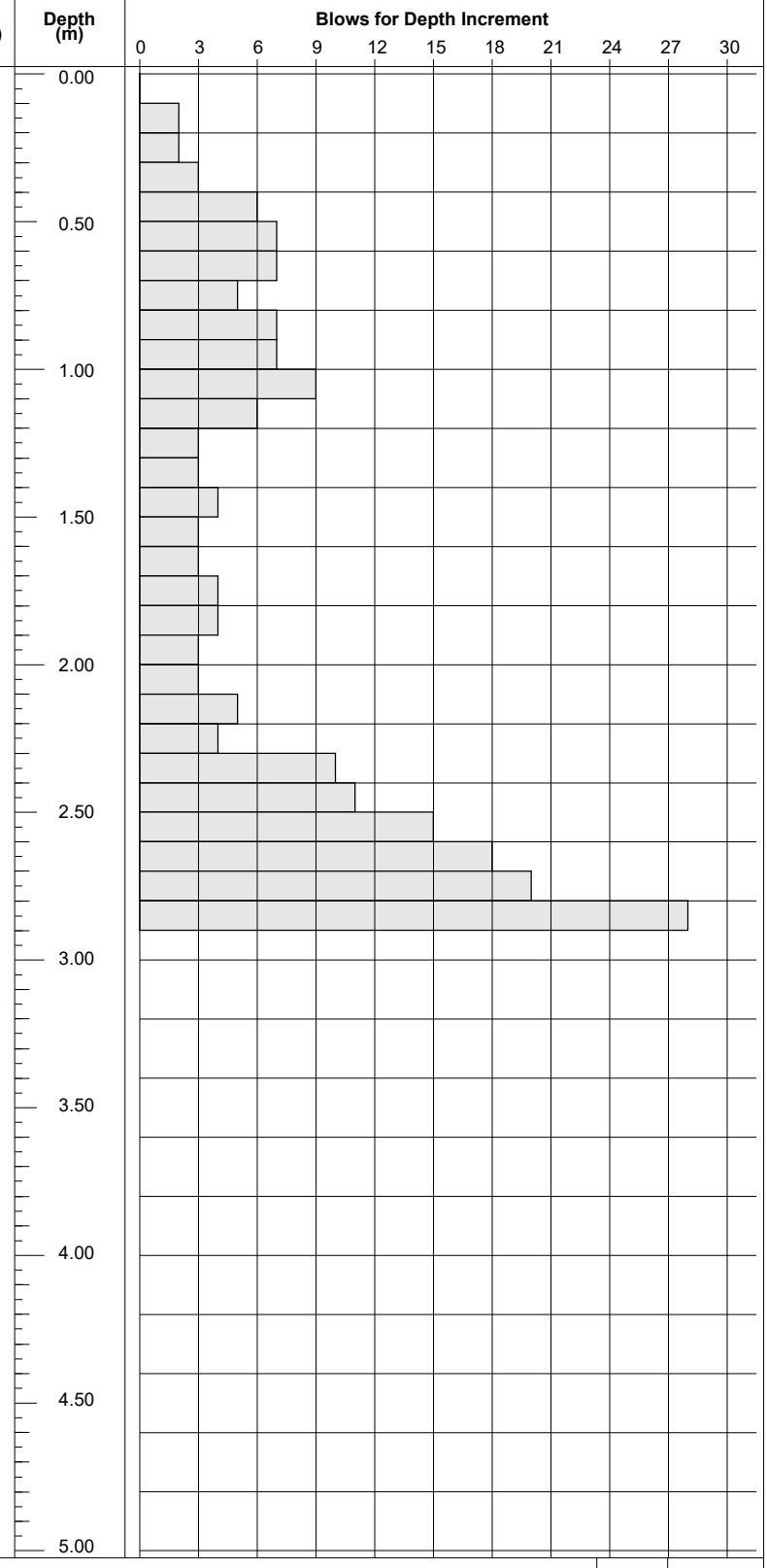
| Site | Probe Number |
|---|---|
| Cornelscourt | DPH06 |

| Method | Cone Dimensions | Ground Level (mOD) | Client | Job Number |
|---|---|---|---|---|
| Dynamic Probe DPH, Fall height 500mm, hammer wt 50Kg. | 43.7mm | | DBFL | 8354-01-19 |

| Location | Dates | Engineer | Sheet |
|---|---|---|---|
| | 01/02/2019 | | 1/1 |

| Depth (m) | Blows for Depth Increment | Field Records | Level (mOD) |
|---|---|---|---|
| 0.00-0.10 | 0 | | |
| 0.10-0.20 | 2 | | |
| 0.20-0.30 | 2 | | |
| 0.30-0.40 | 3 | | |
| 0.40-0.50 | 6 | | |
| 0.50-0.60 | 7 | | |
| 0.60-0.70 | 7 | | |
| 0.70-0.80 | 5 | | |
| 0.80-0.90 | 7 | | |
| 0.90-1.00 | 7 | | |
| 1.00-1.10 | 9 | | |
| 1.10-1.20 | 6 | | |
| 1.20-1.30 | 3 | | |
| 1.30-1.40 | 3 | | |
| 1.40-1.50 | 4 | | |
| 1.50-1.60 | 3 | | |
| 1.60-1.70 | 3 | | |
| 1.70-1.80 | 4 | | |
| 1.80-1.90 | 4 | | |
| 1.90-2.00 | 3 | | |
| 2.00-2.10 | 3 | | |
| 2.10-2.20 | 5 | | |
| 2.20-2.30 | 4 | | |
| 2.30-2.40 | 10 | | |
| 2.40-2.50 | 11 | | |
| 2.50-2.60 | 15 | | |
| 2.60-2.70 | 18 | | |
| 2.70-2.80 | 20 | | |
| 2.80-2.90 | 28 | | |




**Remarks**
Refusal at 2.90m BGL 25 blows for 30mm

| Scale (approx) | Logged By |
|---|---|
| 1:25 | 4.00 |

**Figure No.**
8354-01-19.DPH06

# Ground Investigations Ireland Ltd
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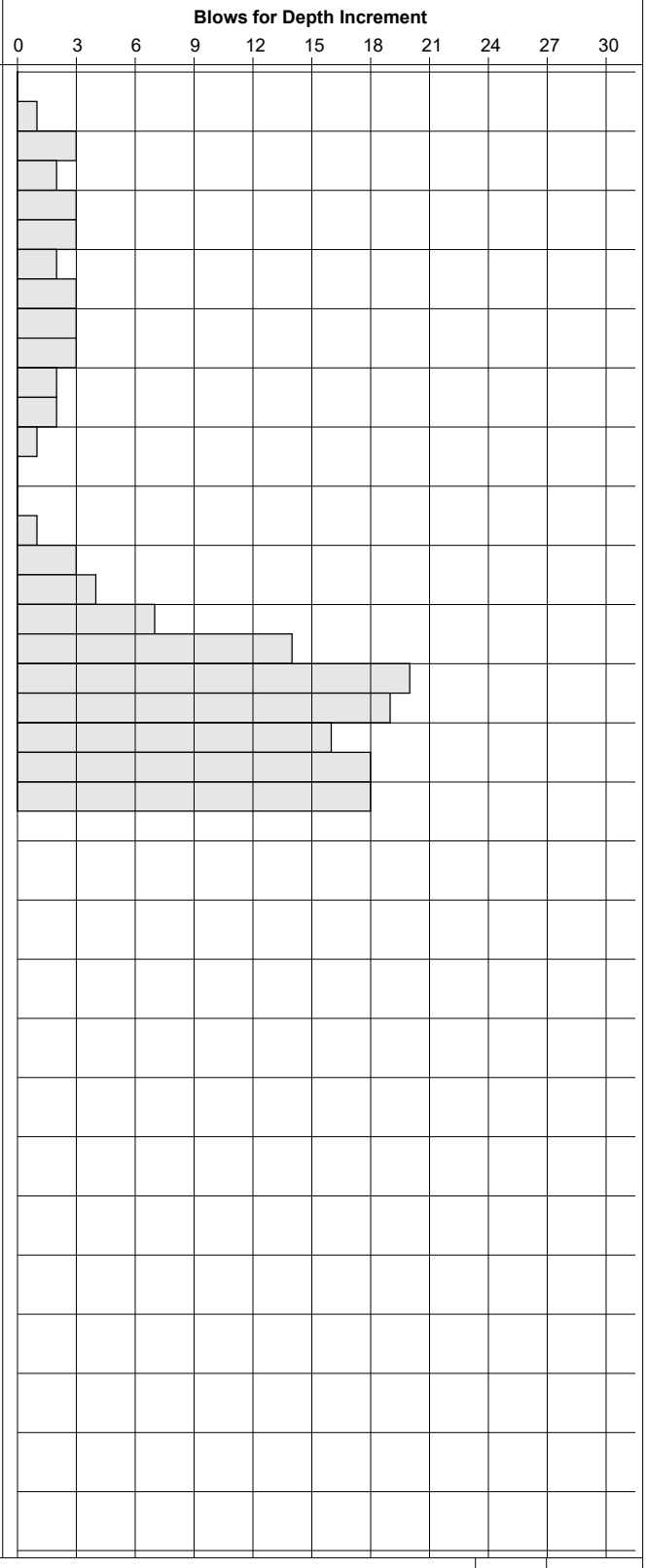
| Site | Probe Number |
|---|---|
| Cornelscourt | DPH07 |

| Method | Cone Dimensions | Ground Level (mOD) | Client | Job Number |
|---|---|---|---|---|
| Dynamic Probe DPH, Fall height 500mm, hammer wt 50Kg. | 43.7mm | | DBFL | 8354-01-19 |

| Location | Dates | Engineer | Sheet |
|---|---|---|---|
| | 01/02/2019 | | 1/1 |

| Depth (m) | Blows for Depth Increment | Field Records | Level (mOD) |
|---|---|---|---|
| 0.00-0.10 | 0 | | |
| 0.10-0.20 | 1 | | |
| 0.20-0.30 | 3 | | |
| 0.30-0.40 | 2 | | |
| 0.40-0.50 | 3 | | |
| 0.50-0.60 | 3 | | |
| 0.60-0.70 | 2 | | |
| 0.70-0.80 | 3 | | |
| 0.80-0.90 | 3 | | |
| 0.90-1.00 | 3 | | |
| 1.00-1.10 | 2 | | |
| 1.10-1.20 | 2 | | |
| 1.20-1.30 | 1 | | |
| 1.30-1.40 | 0 | | |
| 1.40-1.50 | 0 | | |
| 1.50-1.60 | 1 | | |
| 1.60-1.70 | 3 | | |
| 1.70-1.80 | 4 | | |
| 1.80-1.90 | 7 | | |
| 1.90-2.00 | 14 | | |
| 2.00-2.10 | 20 | | |
| 2.10-2.20 | 19 | | |
| 2.20-2.30 | 16 | | |
| 2.30-2.40 | 18 | | |
| 2.40-2.50 | 18 | | |




**Remarks**
Refusal at 2.50m BGL 25 blows for 75mm

| Scale (approx) | Logged By |
|---|---|
| 1:25 | 4.00 |

**Figure No.**
8354-01-19.DPH07

# Ground Investigations Ireland Ltd
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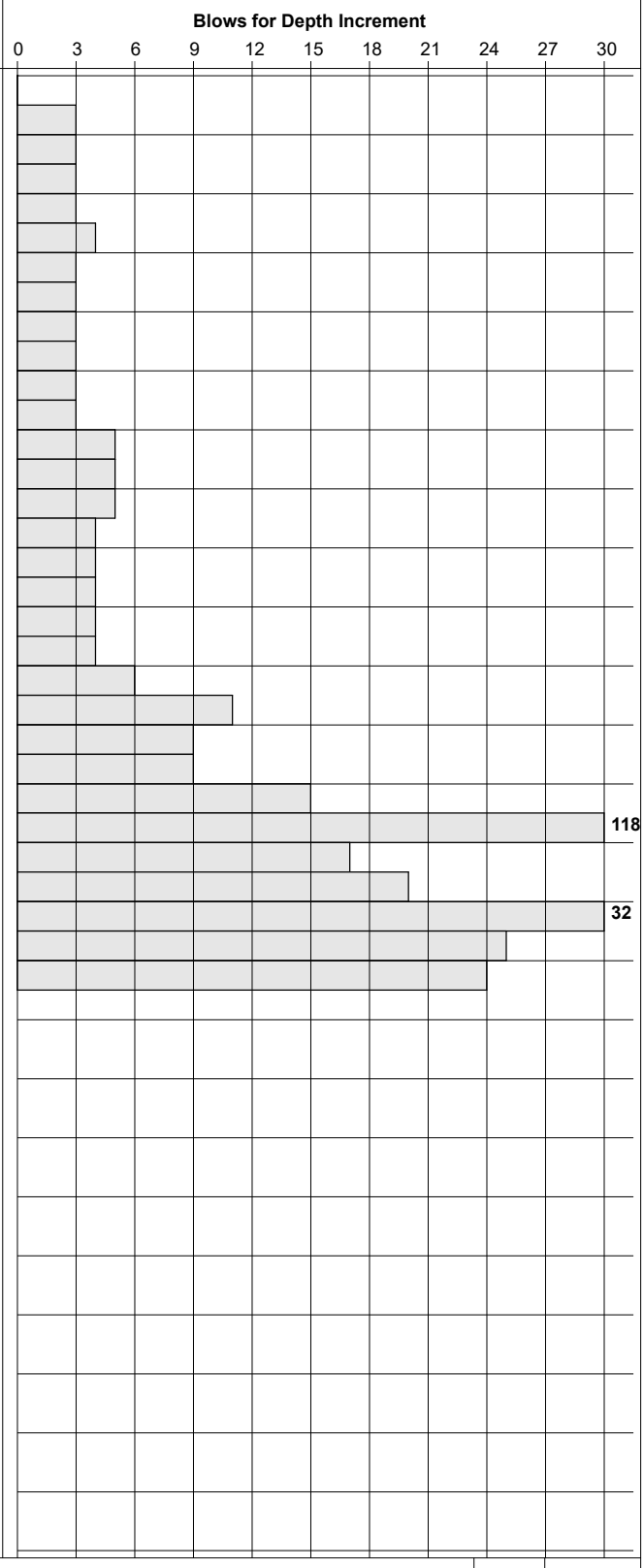
| Site | Probe Number |
|---|---|
| Cornelscourt | DPH08 |

| Method | Cone Dimensions | Ground Level (mOD) | Client | Job Number |
|---|---|---|---|---|
| Dynamic Probe DPH, Fall height 500mm, hammer wt 50Kg. | 43.7mm | | DBFL | 8354-01-19 |

| Location | Dates | Engineer | Sheet |
|---|---|---|---|
| | 01/02/2019 | | 1/1 |

| Depth (m) | Blows for Depth Increment | Field Records | Level (mOD) |
|---|---|---|---|
| 0.00-0.10 | 0 | | |
| 0.10-0.20 | 3 | | |
| 0.20-0.30 | 3 | | |
| 0.30-0.40 | 3 | | |
| 0.40-0.50 | 3 | | |
| 0.50-0.60 | 4 | | |
| 0.60-0.70 | 3 | | |
| 0.70-0.80 | 3 | | |
| 0.80-0.90 | 3 | | |
| 0.90-1.00 | 3 | | |
| 1.00-1.10 | 3 | | |
| 1.10-1.20 | 3 | | |
| 1.20-1.30 | 5 | | |
| 1.30-1.40 | 5 | | |
| 1.40-1.50 | 5 | | |
| 1.50-1.60 | 4 | | |
| 1.60-1.70 | 4 | | |
| 1.70-1.80 | 4 | | |
| 1.80-1.90 | 4 | | |
| 1.90-2.00 | 4 | | |
| 2.00-2.10 | 6 | | |
| 2.10-2.20 | 11 | | |
| 2.20-2.30 | 9 | | |
| 2.30-2.40 | 9 | | |
| 2.40-2.50 | 15 | | |
| 2.50-2.60 | 118 | | |
| 2.60-2.70 | 17 | | |
| 2.70-2.80 | 20 | | |
| 2.80-2.90 | 32 | | |
| 2.90-3.00 | 25 | | |
| 3.00-3.10 | 24 | | |




**Remarks**

| Scale (approx) | Logged By |
|---|---|
| 1:25 | 4.00 |

**Figure No.**
8354-01-19.DPH08

# Ground Investigations Ireland Ltd
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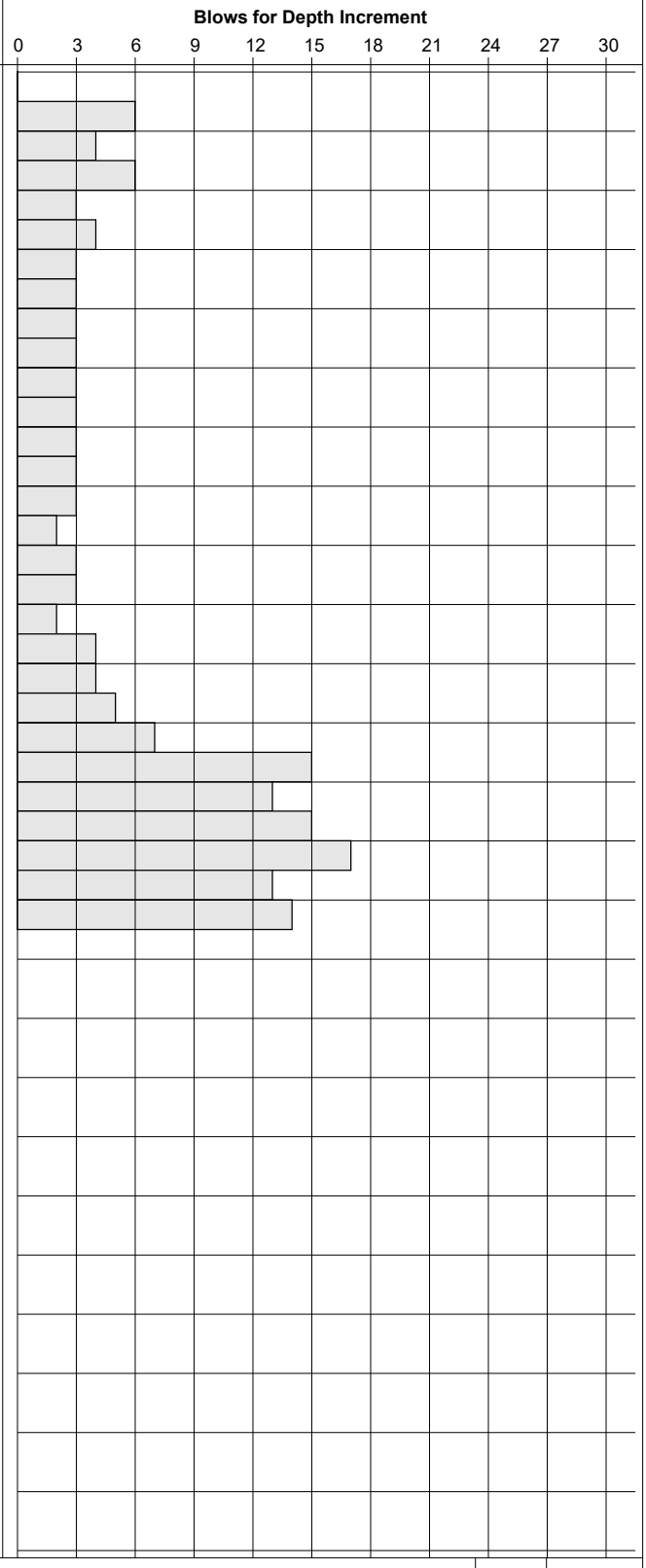
| Site | Probe Number |
|---|---|
| Cornelscourt | DPH09 |

| Method | Cone Dimensions | Ground Level (mOD) | Client | Job Number |
|---|---|---|---|---|
| Dynamic Probe DPH, Fall height 500mm, hammer wt 50Kg. | 43.7mm | | DBFL | 8354-01-19 |

| Location | Dates | Engineer | Sheet |
|---|---|---|---|
| | 01/02/2019 | | 1/1 |

| Depth (m) | Blows for Depth Increment | Field Records | Level (mOD) |
|---|---|---|---|
| 0.00-0.10 | 0 | | |
| 0.10-0.20 | 6 | | |
| 0.20-0.30 | 4 | | |
| 0.30-0.40 | 6 | | |
| 0.40-0.50 | 3 | | |
| 0.50-0.60 | 4 | | |
| 0.60-0.70 | 3 | | |
| 0.70-0.80 | 3 | | |
| 0.80-0.90 | 3 | | |
| 0.90-1.00 | 3 | | |
| 1.00-1.10 | 3 | | |
| 1.10-1.20 | 3 | | |
| 1.20-1.30 | 3 | | |
| 1.30-1.40 | 3 | | |
| 1.40-1.50 | 3 | | |
| 1.50-1.60 | 2 | | |
| 1.60-1.70 | 3 | | |
| 1.70-1.80 | 3 | | |
| 1.80-1.90 | 2 | | |
| 1.90-2.00 | 4 | | |
| 2.00-2.10 | 4 | | |
| 2.10-2.20 | 5 | | |
| 2.20-2.30 | 7 | | |
| 2.30-2.40 | 15 | | |
| 2.40-2.50 | 13 | | |
| 2.50-2.60 | 15 | | |
| 2.60-2.70 | 17 | | |
| 2.70-2.80 | 13 | | |
| 2.80-2.90 | 14 | | |




**Remarks**
Refusal at 2.90m BGL for 25mm

| Scale (approx) | Logged By |
|---|---|
| 1:25 | 4.00 |

**Figure No.**
8354-01-19.DPH09

# Ground Investigations Ireland Ltd
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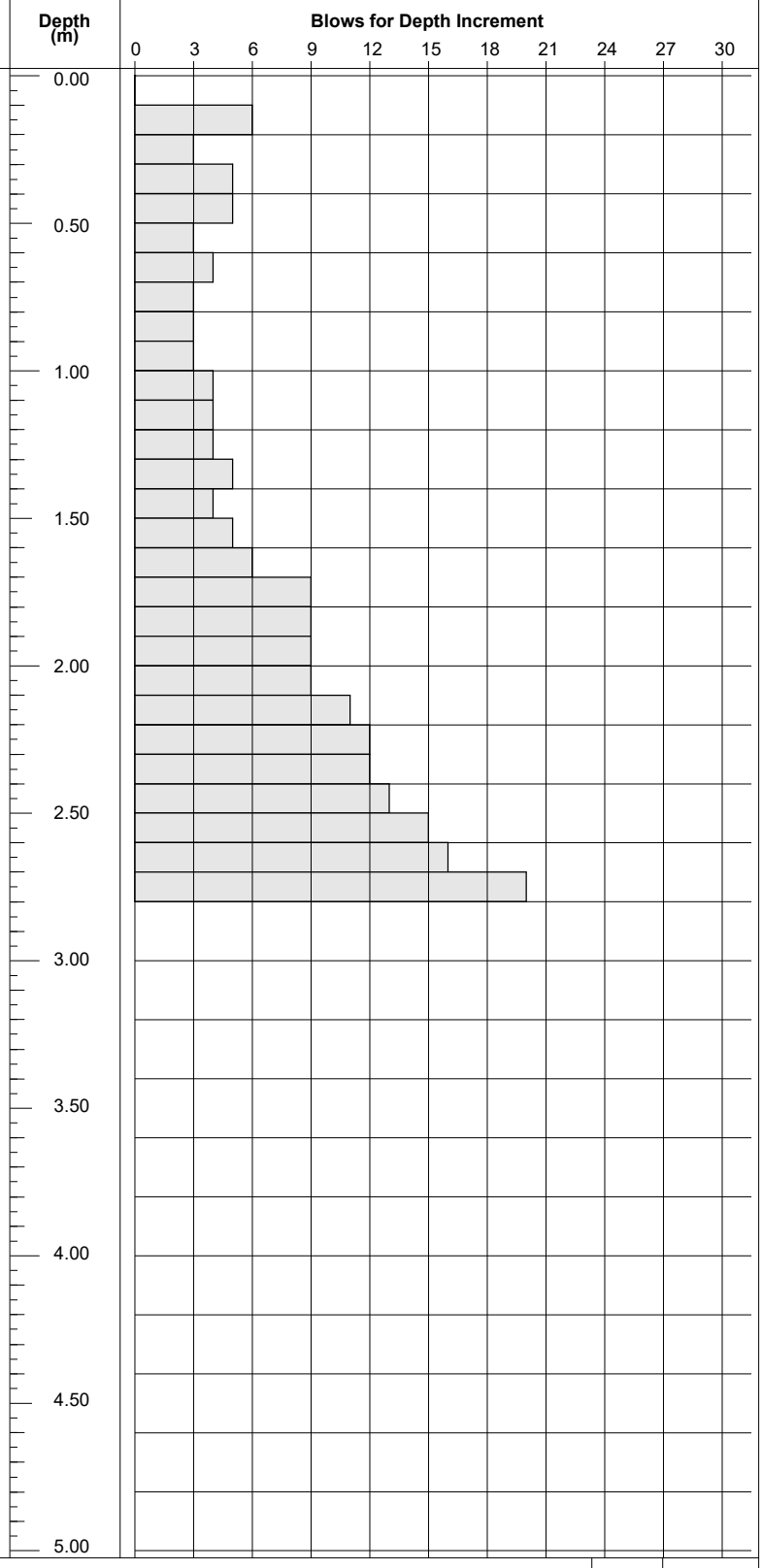
| Site | Probe Number |
|---|---|
| Cornelscourt | DPH10 |

| Method | Cone Dimensions | Ground Level (mOD) | Client | Job Number |
|---|---|---|---|---|
| Dynamic Probe DPH, Fall height 500mm, hammer wt 50Kg. | 43.7mm | | DBFL | 8354-01-19 |

| Location | Dates | Engineer | Sheet |
|---|---|---|---|
| | 01/02/2019 | | 1/1 |

| Depth (m) | Blows for Depth Increment | Field Records | Level (mOD) |
|---|---|---|---|
| 0.00-0.10 | 0 | | |
| 0.10-0.20 | 6 | | |
| 0.20-0.30 | 3 | | |
| 0.30-0.40 | 5 | | |
| 0.40-0.50 | 5 | | |
| 0.50-0.60 | 3 | | |
| 0.60-0.70 | 4 | | |
| 0.70-0.80 | 3 | | |
| 0.80-0.90 | 3 | | |
| 0.90-1.00 | 3 | | |
| 1.00-1.10 | 4 | | |
| 1.10-1.20 | 4 | | |
| 1.20-1.30 | 4 | | |
| 1.30-1.40 | 5 | | |
| 1.40-1.50 | 4 | | |
| 1.50-1.60 | 5 | | |
| 1.60-1.70 | 6 | | |
| 1.70-1.80 | 9 | | |
| 1.80-1.90 | 9 | | |
| 1.90-2.00 | 9 | | |
| 2.00-2.10 | 9 | | |
| 2.10-2.20 | 11 | | |
| 2.20-2.30 | 12 | | |
| 2.30-2.40 | 12 | | |
| 2.40-2.50 | 13 | | |
| 2.50-2.60 | 15 | | |
| 2.60-2.70 | 16 | | |
| 2.70-2.80 | 20 | | |




**Remarks**
Refusal at 2.80m BGL 25 blows for 20mm

| Scale (approx) | Logged By |
|---|---|
| 1:25 | 4.00 |

**Figure No.**
8354-01-19.DPH10

# Ground Investigations Ireland Ltd
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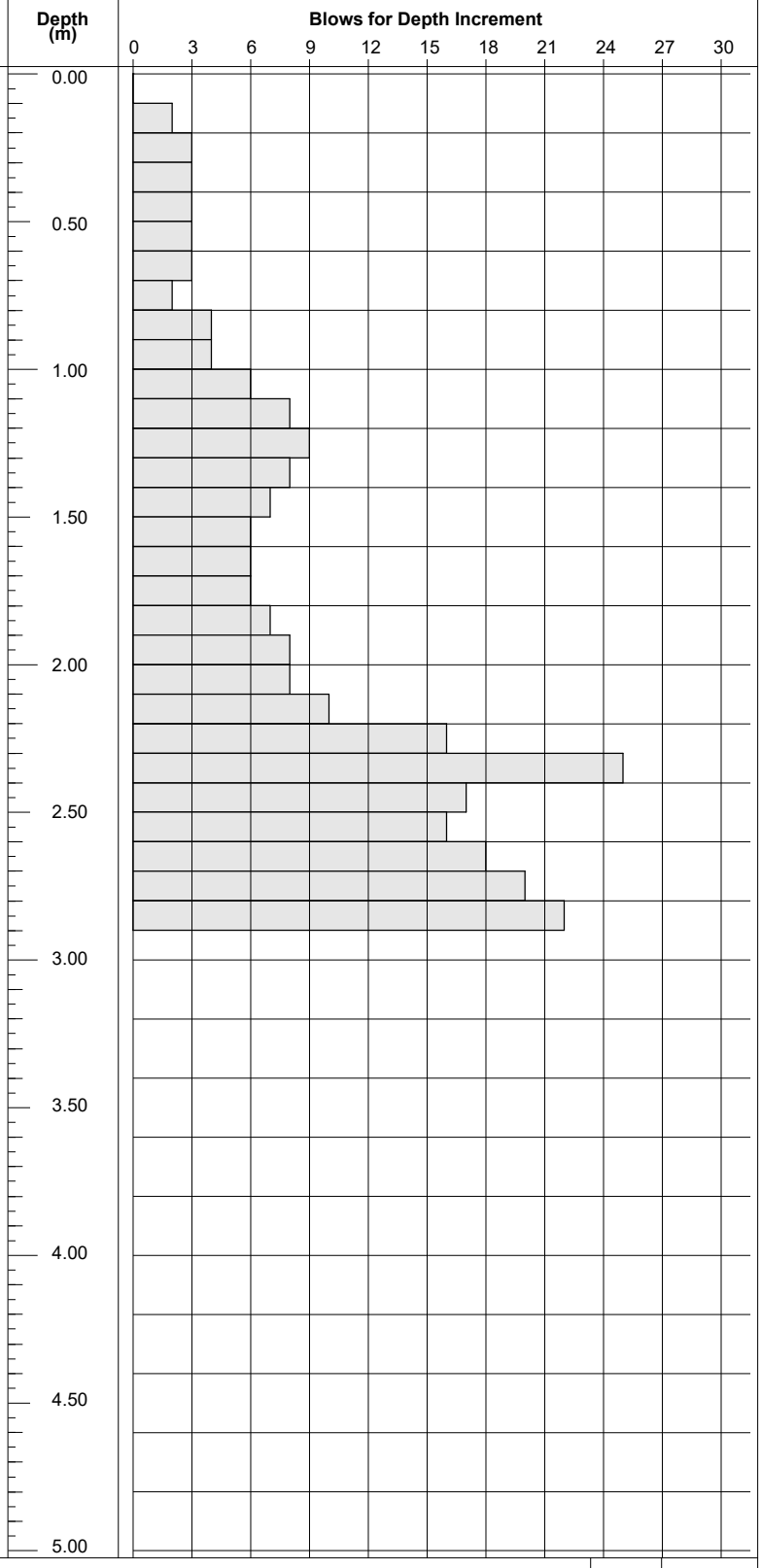
| Site | Probe Number |
|---|---|
| Cornelscourt | DPH11 |

| Method | Cone Dimensions | Ground Level (mOD) | Client | Job Number |
|---|---|---|---|---|
| Dynamic Probe DPH, Fall height 500mm, hammer wt 50Kg. | 43.7mm | | DBFL | 8354-01-19 |
| | **Location** | **Dates** | **Engineer** | **Sheet** |
| | | 01/02/2019 | | 1/1 |

| Depth (m) | Blows for Depth Increment | Field Records | Level (mOD) |
|---|---|---|---|
| 0.00-0.10 | 0 | | |
| 0.10-0.20 | 2 | | |
| 0.20-0.30 | 3 | | |
| 0.30-0.40 | 3 | | |
| 0.40-0.50 | 3 | | |
| 0.50-0.60 | 3 | | |
| 0.60-0.70 | 3 | | |
| 0.70-0.80 | 2 | | |
| 0.80-0.90 | 4 | | |
| 0.90-1.00 | 4 | | |
| 1.00-1.10 | 6 | | |
| 1.10-1.20 | 8 | | |
| 1.20-1.30 | 9 | | |
| 1.30-1.40 | 8 | | |
| 1.40-1.50 | 7 | | |
| 1.50-1.60 | 6 | | |
| 1.60-1.70 | 6 | | |
| 1.70-1.80 | 6 | | |
| 1.80-1.90 | 7 | | |
| 1.90-2.00 | 8 | | |
| 2.00-2.10 | 8 | | |
| 2.10-2.20 | 10 | | |
| 2.20-2.30 | 16 | | |
| 2.30-2.40 | 25 | | |
| 2.40-2.50 | 17 | | |
| 2.50-2.60 | 16 | | |
| 2.60-2.70 | 18 | | |
| 2.70-2.80 | 20 | | |
| 2.80-2.90 | 22 | | |




**Remarks**
Refusal at 2.90m BGL 25 blows for 50mm

| Scale (approx) | Logged By |
|---|---|
| 1:25 | 4.00 |

**Figure No.**
8354-01-19.DPH11

# Ground Investigations Ireland Ltd
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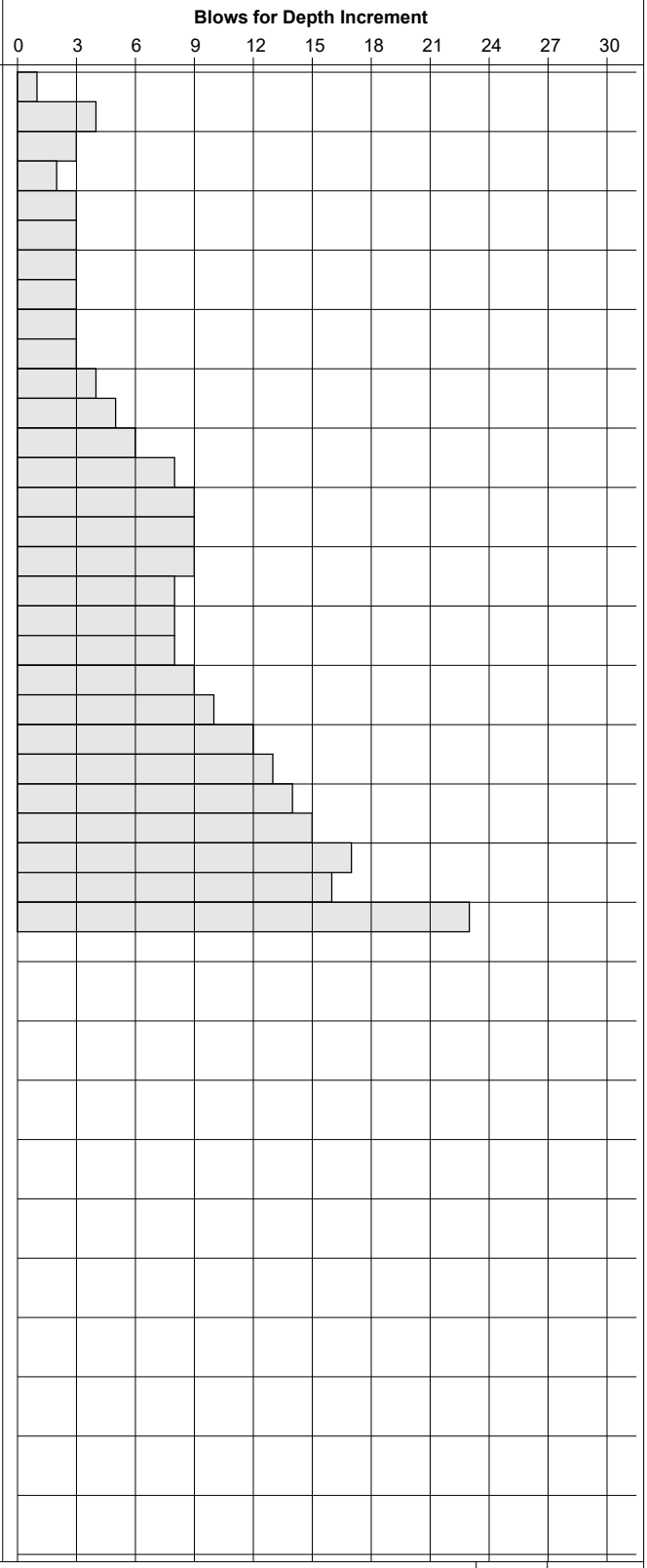
| Site | Probe Number |
|---|---|
| Cornelscourt | DPH12 |

| Method | Cone Dimensions | Ground Level (mOD) | Client | Job Number |
|---|---|---|---|---|
| Dynamic Probe DPH, Fall height 500mm, hammer wt 50Kg. | 43.7mm | | DBFL | 8354-01-19 |

| Location | Dates | Engineer | Sheet |
|---|---|---|---|
| | 01/02/2019 | | 1/1 |

| Depth (m) | Blows for Depth Increment | Field Records | Level (mOD) |
|---|---|---|---|
| 0.00-0.10 | 1 | | |
| 0.10-0.20 | 4 | | |
| 0.20-0.30 | 3 | | |
| 0.30-0.40 | 2 | | |
| 0.40-0.50 | 3 | | |
| 0.50-0.60 | 3 | | |
| 0.60-0.70 | 3 | | |
| 0.70-0.80 | 3 | | |
| 0.80-0.90 | 3 | | |
| 0.90-1.00 | 3 | | |
| 1.00-1.10 | 4 | | |
| 1.10-1.20 | 5 | | |
| 1.20-1.30 | 6 | | |
| 1.30-1.40 | 8 | | |
| 1.40-1.50 | 9 | | |
| 1.50-1.60 | 9 | | |
| 1.60-1.70 | 9 | | |
| 1.70-1.80 | 8 | | |
| 1.80-1.90 | 8 | | |
| 1.90-2.00 | 8 | | |
| 2.00-2.10 | 9 | | |
| 2.10-2.20 | 10 | | |
| 2.20-2.30 | 12 | | |
| 2.30-2.40 | 13 | | |
| 2.40-2.50 | 14 | | |
| 2.50-2.60 | 15 | | |
| 2.60-2.70 | 17 | | |
| 2.70-2.80 | 16 | | |
| 2.80-2.90 | 23 | | |




**Remarks**
Refusal at 2.90m BGL 25 blows for 50mm

| Scale (approx) | Logged By |
|---|---|
| 1:25 | 4.00 |

**Figure No.**
8354-01-19.DPH12

# **APPENDIX 5** – Window Sample Records

# Ground Investigations Ireland Ltd

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| Site | Number |
|---|---|
| Cornelscourt | WS-01 |

| Excavation Method | Dimensions | Ground Level (mOD) | Client | Job Number |
|---|---|---|---|---|
| Drive-in Windowless Sampler | | 52.77 | | 8354-01-19 |
| | **Location** | **Dates** | **Engineer** | **Sheet** |
| | 722343.8 E 725846.6 N | 21/01/2019 | DBFL | 1/1 |

| Depth (m) | Sample / Tests | Water Depth (m) | Field Records | Level (mOD) | Depth (m) (Thickness) | Description | Legend | Water |
|---|---|---|---|---|---|---|---|---|
| 0.00-1.00 | EN | | | | (1.00) | MADE GROUND: Firm, light brown, sandy, slightly gravelly CLAY with occasional granite cobbles. Gravel is medium to coarse and angular to sub-angular. Sand is fine to coarse. Occasional fragments of red brick, coal and wood. Occasional glass and plastic. | | |
| 1.00-2.00 | EN | | | 51.77 | 1.00 | | | |
| | | | | | (0.40) | MADE GROUND: Firm, light brown, sandy, slightly gravelly CLAY. Gravel is fine to coarse and angular to sub-angular. Fine to coarse sand. Occasional fragments of red brick and coal. Rootlets. | | |
| | | | | 51.37 | 1.40 | | | |
| | | | | | (0.60) | Firm, light brown, sandy, slightly gravelly CLAY with occasional cobbles. Sand is fine to coarse. Gravel is fine to coarse and angular to sub-angular. Some sub-rounded to rounded mudstones. | | |
| 2.00-3.00 | EN | | | 50.77 | 2.00 | | | |
| | | | | | (0.80) | Firm, light brown, sandy, slightly gravelly, CLAY with occasional cobbles of boulder clay. Gravel is fine to coarse and angular to sub-angular. | | |
| | | | | 49.97 | 2.80 | | | |
| | | | | | | Complete at 2.80m | | |

**Remarks**
Refusal at 2.80m.

| Scale (approx) | Logged By |
|---|---|
| 1:25 | PM |

**Figure No.**
8354-01-19.WS-01

# Ground Investigations Ireland Ltd
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| Site | Number |
|---|---|
| Cornelscourt | WS-02 |

| Excavation Method | Dimensions | Ground Level (mOD) | Client | Job Number |
|---|---|---|---|---|
| Drive-in Windowless Sampler | | 52.52 | | 8354-01-19 |
| | **Location** | **Dates** | **Engineer** | **Sheet** |
| | 722357.4 E 725828.9 N | 22/01/2019 | DBFL | 1/1 |

| Depth (m) | Sample / Tests | Water Depth (m) | Field Records | Level (mOD) | Depth (m) (Thickness) | Description | Legend | Water |
|---|---|---|---|---|---|---|---|---|
| 0.00-1.00 | EN | | | | (0.25) | TOPSOIL | | |
| | | | | 52.27 | 0.25 | Firm, light brown, slightly sandy, slightly gravelly, CLAY. Gravel is fine to coarse and angular to sub-angular. | | |
| | | | | | (0.35) | | | |
| | | | | 51.92 | 0.60 | No recovery | | |
| | | | | | (0.40) | | | |
| 1.00-2.00 | EN | | | 51.52 | 1.00 | Firm, light brown, slightly sandy, slightly gravelly, CLAY. Gravel is fine to coarse and angular to sub-angular. | | |
| | | | | | (0.60) | | | |
| | | | | 50.92 | 1.60 | No recovery | | |
| | | | | | (0.40) | | | |
| 2.00-3.00 | EN | | | 50.52 | 2.00 | Firm, light brown grading into grey, slightly sandy, slightly gravelly CLAY with occasional cobbles of limestone. Gravel is fine to coarse and angular to sub-angular. Fine to coarse sand. Hydrocarbon odours noted from 2.00m - 2.85m. | | |
| | | | | | (0.85) | | | |
| | | | | 49.67 | 2.85 | Complete at 2.85m | | |

**Remarks**
Hydrocarbon odours at 2.0m - 2.85m.
Refusal at 2.85m.

| Scale (approx) | Logged By |
|---|---|
| 1:25 | PM |

**Figure No.**
8354-01-19.WS-02

# Ground Investigations Ireland Ltd
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| Site | Number |
|---|---|
| Cornelscourt | WS-03 |

| Excavation Method | Dimensions | Ground Level (mOD) | Client | Job Number |
|---|---|---|---|---|
| Drive-in Windowless Sampler | | 52.36 | | 8354-01-19 |
| | **Location** | **Dates** | **Engineer** | **Sheet** |
| | 722365.3 E 725817.2 N | 22/01/2019 | DBFL | 1/1 |

| Depth (m) | Sample / Tests | Water Depth (m) | Field Records | Level (mOD) | Depth (m) (Thickness) | Description | Legend | Water |
|---|---|---|---|---|---|---|---|---|
| 0.00-1.00 | EN | | | | (0.30) | TOPSOIL | | |
| | | | | 52.06 | 0.30 | Firm, light brown, slightly sandy, slightly gravelly CLAY with rare cobbles. Gravel is fine to coarse and of mixed lithologies with angular to sub-angular boulder clay and quartz. Some sub-rounded mudstone. | | |
| | | | | | (0.70) | | | |
| 1.00-2.00 | EN | | | 51.36 | 1.00 | Firm, light brown, slightly sandy, slightly gravelly CLAY with occasional sub-angular cobbles of limestone. Sand is fine to coarse. Gravel is fine to coarse and angular to sub-angular. | | |
| | | | | | (1.00) | | | |
| 2.00-3.00 | EN | | | 50.36 | 2.00 | Firm, light brown, sandy, slightly gravelly, CLAY with occasional sub-angular to subrounded cobbles. Gravel is fine to coarse and angular to sub-angular with fragments of granite. Fine to medium sand. | | |
| | | | | | (0.70) | | | |
| | | | | 49.66 | 2.70 | Complete at 2.70m | | |

**Remarks**
Refusal at 2.70m.

| Scale (approx) | Logged By |
|---|---|
| 1:25 | PM |

**Figure No.**
8354-01-19.WS-03

# Ground Investigations Ireland Ltd
www.gii.ie

| Site | Number |
|---|---|
| Cornelscourt | WS-04 |

| Excavation Method | Dimensions | Ground Level (mOD) | Client | Job Number |
|---|---|---|---|---|
| Drive-in Windowless Sampler | pM to | 53.29 | | 8354-01-19 |
| | **Location** | **Dates** | **Engineer** | **Sheet** |
| | 722337.6 E 725838.9 N | 21/01/2019 | DBFL | 1/1 |

| Depth (m) | Sample / Tests | Water Depth (m) | Field Records | Level (mOD) | Depth (m) (Thickness) | Description | Legend | Water |
|---|---|---|---|---|---|---|---|---|
| 0.00-1.00 | EN | | | | (0.30) | TOPSOIL | | |
| | | | | 52.99 | 0.30 | MADE GROUND: Firm, brown, sandy, slightly gravelly, CLAY with occasional sub-angular cobbles of granite and boulder clay. Gravel is fine to coarse and angular to sub-angular. Fragments of red brick. Occasional plastic and rootlets. | | |
| | | | | | (0.40) | | | |
| | | | | 52.59 | 0.70 | No recovery | | |
| | | | | | (0.30) | | | |
| 1.00-2.00 | EN | | | 52.29 | 1.00 | Firm, light brown, sandy, slightly gravelly CLAY with occasional cobbles. Gravel is fine to coarse and angular to sub-angular. Fine to coarse sand. | | |
| | | | | | (0.70) | | | |
| | | | | 51.59 | 1.70 | Firm, grey, sandy, slightly gravelly CLAY with occasional cobbles. Gravel is fine to coarse and angular to sub-angular. Hydrocarbons noted from 1.70m - 3.20m. | | |
| 2.00-3.00 | EN | | | | (1.00) | | | |
| | | | | 50.59 | 2.70 | Firm, grey, sandy, gravelly CLAY. Fine to coarse, angular to sub-angular gravel. | | |
| | | | | | (0.50) | | | |
| 3.00-4.00 | EN | | | 50.09 | 3.20 | Complete at 3.20m | | |

**Remarks**
Hydrocarbon odours from 1.70m - 3.20m.

| Scale (approx) | Logged By |
|---|---|
| 1:25 | PM |

**Figure No.**
8354-01-19.WS-04

# Ground Investigations Ireland Ltd

www.gii.ie

| Site | Number |
|---|---|
| Cornelscourt | WS-05 |

| Excavation Method | Dimensions | Ground Level (mOD) | Client | Job Number |
|---|---|---|---|---|
| Drive-in Windowless Sampler | | 52.89 | | 8354-01-19 |
| | **Location** | **Dates** | **Engineer** | **Sheet** |
| | 722350.9 E 725825.8 N | 22/01/2019 | DBFL | 1/1 |

| Depth (m) | Sample / Tests | Water Depth (m) | Field Records | Level (mOD) | Depth (m) (Thickness) | Description | Legend | Water |
|---|---|---|---|---|---|---|---|---|
| 0.00-1.00 | EN | | | | (0.30) | TOPSOIL | | |
| | | | | 52.59 | 0.30 | Firm, light brown, slightly sandy, slightly gravelly, CLAY with rare subrounded cobbles. Gravel is fine to coarse and angular to sub-angular | | |
| | | | | | (0.70) | | | |
| 1.00-2.00 | EN | | | 51.89 | 1.00 | Firm, light brown, slightly sandy, sightly gravelly Clay with occasional cobbles of limestone. Gravel is fine to coarse and of mixed lithologies with subangular boulder clay and subrounded to rounded mudstone. | | |
| | | | | | (0.90) | | | |
| 2.00-3.00 | EN | | | 50.99 | 1.90 | Firm, sandy, slightly gravelly CLAY with occasional cobbles. Gravel is fine to coarse and angular to sub-angular. Fine to coarse sand. Hydrocarbon odours noted from 1.90m - 2.50m. | | |
| | | | | | (0.60) | | | |
| | | | | 50.39 | 2.50 | Complete at 2.50m | | |

**Remarks**
Hydrocarbon odours from 1.90m - 2.50m.
Refusal at 2.50m.

| Scale (approx) | Logged By |
|---|---|
| 1:25 | PM |

**Figure No.**
8354-01-19.WS-05

# Ground Investigations Ireland Ltd
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| Site | Number |
|---|---|
| Cornelscourt | WS-06 |

| Excavation Method | Dimensions | Ground Level (mOD) | Client | Job Number |
|---|---|---|---|---|
| Drive-in Windowless Sampler | | 52.59 | | 8354-01-19 |
| | **Location** | **Dates** | **Engineer** | **Sheet** |
| | 722362.4 E 725803.9 N | 22/01/2019 | DBFL | 1/1 |

| Depth (m) | Sample / Tests | Water Depth (m) | Field Records | Level (mOD) | Depth (m) (Thickness) | Description | Legend | Water |
|---|---|---|---|---|---|---|---|---|
| 0.00-1.00 | EN | | | | (0.25) | TOPSOIL | | |
| | | | | 52.34 | 0.25 | Firm, light brown, slightly sandy, slightly gravelly, CLAY with rare sub-rounded cobbles of boulder clay. Gravel is fine to medium and angular to sub-angular | | |
| | | | | | (0.65) | | | |
| | | | | 51.69 | 0.90 | Firm, grey, sandy, gravelly CLAY. Gravel is medium to coarse and angular to sub-angular. Fine to coarse sand. | | |
| 1.00-2.00 | EN | | | | | | | |
| | | | | | (1.10) | | | |
| 2.00-3.00 | EN | | | 50.59 | 2.00 | Firm, sandy, gravelly CLAY. Gravel is medium to coarse and angular to sub-angular. Fine to coarse sand. | | |
| | | | | | (0.40) | | | |
| | | | | 50.19 | 2.40 | Complete at 2.40m | | |

**Remarks**
Refusal at 2.40m.

| Scale (approx) | Logged By |
|---|---|
| 1:25 | PM |

**Figure No.**
8354-01-19.WS-06

# Ground Investigations Ireland Ltd

www.gii.ie

| Site | Number |
|---|---|
| Cornelscourt | WS-07 |

| Excavation Method | Dimensions | Ground Level (mOD) | Client | Job Number |
|---|---|---|---|---|
| Drive-in Windowless Sampler | | 53.95 | | 8354-01-19 |
| | **Location** | **Dates** | **Engineer** | **Sheet** |
| | 722333.1 E 725833.3 N | 21/01/2019 | DBFL | 1/1 |

| Depth (m) | Sample / Tests | Water Depth (m) | Field Records | Level (mOD) | Depth (m) (Thickness) | Description | Legend | Water |
|---|---|---|---|---|---|---|---|---|
| 0.00-1.00 | EN | | | | (0.40) | TOPSOIL | | |
| | | | | 53.55 | 0.40 | MADE GROUND: Firm, light brown, slightly sandy, slightly gravelly, CLAY with rare sub-rounded cobbles of boulder clay. Gravel is fine to medium and angular to sub-angular | | |
| | | | | | (0.50) | | | |
| | | | | 53.05 | 0.90 | No recovery | | |
| | | | | | (0.10) | | | |
| 1.00-2.00 | EN | | | 52.95 | 1.00 | Firm, slightly sandy, slightly gravelly CLAY with occasional sub-angular cobbles. Gravel is fine to coarse and sub-angular. Medium to coarse sand. | | |
| | | | | | (1.00) | | | |
| 2.00-3.00 | EN | | | 51.95 | 2.00 | Firm, grey, sandy, slightly gravelly, CLAY with occasional sub-angular to sub-rounded cobbles. Fine to coarse, sub-angular gravel. Sand is medium to coarse. Hydrocarbon odours noted from 2.0m to 2.90m. | | |
| | | | | | (0.90) | | | |
| | | | | 51.05 | 2.90 | Firm, grey, sandy, slightly gravelly CLAY. | | |
| 3.00-4.00 | EN | | | | (0.30) | | | |
| | | | | 50.75 | 3.20 | Complete at 3.20m | | |

**Remarks**
Hydrocarbon odours from 2.0m - 3.20m.
Refusal at 3.20m

| Scale (approx) | Logged By |
|---|---|
| 1:25 | PM |

**Figure No.**
8354-01-19.WS-07

# Ground Investigations Ireland Ltd
www.gii.ie

| Site | Number |
|---|---|
| Cornelscourt | WS-08 |

| Excavation Method | Dimensions | Ground Level (mOD) | Client | Job Number |
|---|---|---|---|---|
| Drive-in Windowless Sampler | | 53.18 | | 8354-01-19 |
| | **Location** | **Dates** | **Engineer** | **Sheet** |
| | 722343.5 E 725821.1 N | 21/01/2019 | DBFL | 1/1 |

| Depth (m) | Sample / Tests | Water Depth (m) | Field Records | Level (mOD) | Depth (m) (Thickness) | Description | Legend | Water |
|---|---|---|---|---|---|---|---|---|
| 0.00-1.00 | EN | | | | (0.40) | TOPSOIL | | |
| | | | | 52.78 | 0.40 | MADE GROUND: Firm, light brown, slightly sandy, slightly gravelly CLAY. Fine to coarse gravel of mixed lithologies, sub-angular quartz and boulder clay with sub-rounded to rounded mudstone. Occasional fragments of red brick. Plastic. Rootlets. | | |
| | | | | | (0.60) | | | |
| 1.00-2.00 | EN | | | 52.18 | 1.00 | Firm, light brown grading into grey at 1.40m, sandy, slightly gravelly CLAY with occasional sub-angular cobbles. Fine to coarse, sub-angular Gravel. Fine to coarse sand. | | |
| | | | | | (0.80) | | | |
| | | | | 51.38 | 1.80 | No recovery | | |
| | | | | | (0.20) | | | |
| 2.00-3.00 | EN | | | 51.18 | 2.00 | Firm, grey, sandy, slightly gravelly, CLAY with occasional sub-angular to sub-rounded cobbles. Fine to coarse, sub-angular gravel. Sand is medium to coarse. Hydrocarbon odours noted from 2.00m to 2.80m. | | |
| | | | | | (0.80) | | | |
| | | | | 50.38 | 2.80 | Complete at 2.80m | | |

**Remarks**
Hydrocarbon odours from 1.80m - 2.80m.
Refusal at 2.80m.

| Scale (approx) | Logged By |
|---|---|
| 1:25 | PM |

**Figure No.**
8354-01-19.WS-08

# Ground Investigations Ireland Ltd
www.gii.ie

| Site | Number |
|---|---|
| Cornelscourt | WS-09 |

| Excavation Method | Dimensions | Ground Level (mOD) | Client | Job Number |
|---|---|---|---|---|
| Drive-in Windowless Sampler | | 53.08 | | 8354-01-19 |
| | **Location** | **Dates** | **Engineer** | **Sheet** |
| | 722351.7 E 725808.8 N | 21/01/2019 | DBFL | 1/1 |

| Depth (m) | Sample / Tests | Water Depth (m) | Field Records | Level (mOD) | Depth (m) (Thickness) | Description | Legend | Water |
|---|---|---|---|---|---|---|---|---|
| 0.00-1.00 | EN | | | | (0.35) | TOPSOIL | | |
| | | | | 52.73 | 0.35 | | | |
| | | | | | (0.35) | Firm, light brown, slightly sandy, slightly gravelly CLAY. Fine to coarse, sub-angular to sub-rounded gravel. | | |
| | | | | 52.38 | 0.70 | | | |
| | | | | | (0.30) | Firm, grey, sandy, gravelly CLAY with occasional sub-rounded cobbles of mudstone. Fine to coarse, sub-angular gravel. Fine to coarse sand. | | |
| 1.00-2.00 | EN | | | 52.08 | 1.00 | | | |
| | | | | | (0.30) | Firm, brown, sandy, gravelly CLAY. Gravel is fine to coarse and angular to sub-angular. | | |
| | | | | 51.78 | 1.30 | | | |
| | | | | | (0.70) | Firm, brown, slightly sandy, slightly gravelly CLAY. Fine to coarse gravel of mixed lithologies, sub-angular boulder clay with sub-angular to sub-rounded quartz and mudstone. | | |
| 2.00-3.00 | EN | | | 51.08 | 2.00 | | | |
| | | | | | (1.00) | Firm, grey, sandy, slightly gravelly CLAY with occasional sub-rounded cobbles of boulder clay. Gravel is fine to coarse and angular to sub angular. | | |
| | | | | 50.08 | 3.00 | | | |
| | | | | | | Complete at 3.00m | | |

**Remarks**
Refusal at 3.00m.

| Scale (approx) | Logged By |
|---|---|
| 1:25 | PM |

**Figure No.**
8354-01-19.WS-09

# Ground Investigations Ireland Ltd

www.gii.ie

| Site | Number |
|---|---|
| Cornelscourt | WS-10 |

| Excavation Method | Dimensions | Ground Level (mOD) | Client | Job Number |
|---|---|---|---|---|
| Drive-in Windowless Sampler | | 54.36 | | 8354-01-19 |
| | **Location** | **Dates** | **Engineer** | **Sheet** |
| | 722327.9 E 725827.8 N | 21/01/2019 | DBFL | 1/1 |

| Depth (m) | Sample / Tests | Water Depth (m) | Field Records | Level (mOD) | Depth (m) (Thickness) | Description | Legend | Water |
|---|---|---|---|---|---|---|---|---|
| 0.00-1.00 | EN | | | | (0.30) | TOPSOIL | | |
| | | | | 54.06 | 0.30 | MADE GROUND: Firm, light brown, slightly sandy, slightly gravelly CLAY with cobbles of subangular granite and subrounded mudstone. Fine to coarse, sub-angular gravel. Occasional fragments of red brick. Occasional plastic. Rootlets. | | |
| | | | | | (0.60) | | | |
| 1.00-2.00 | EN | | | 53.46 | 0.90 | Firm, brown, slightly sandy, slightly gravelly CLAY with occasional sub-rounded cobbles. Fine to coarse, sub-angular gravel. Fine to coarse sand. | | |
| | | | | | (1.00) | | | |
| 2.00-3.00 | EN | | | 52.46 | 1.90 | Firm, brown grading into grey at 2.60m, slightly sandy, slightly gravelly CLAY. Gravel is fine to coarse and angular to sub-angular. | | |
| | | | | | (1.00) | | | |
| | | | | 51.46 | 2.90 | Firm, grey, slightly sandy, slightly gravelly CLAY. Fine to coarse, angular to sub-angular gravel. Hydrocarbon odours noted from 2.90m - 3.20m | | |
| | | | | | (0.30) | | | |
| | | | | 51.16 | 3.20 | Complete at 3.20m | | |

**Remarks**
Hydrocarbon odours noted from 2.90m - 3.20m.
Refusal at 3.20m.

| Scale (approx) | Logged By |
|---|---|
| 1:25 | PM |

**Figure No.**
8354-01-19.WS-10

# Ground Investigations Ireland Ltd
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| Site | Number |
|---|---|
| Cornelscourt | WS-11 |

| Excavation Method | Dimensions | Ground Level (mOD) | Client | Job Number |
|---|---|---|---|---|
| Drive-in Windowless Sampler | | 53.70 | | 8354-01-19 |
| | **Location** | **Dates** | **Engineer** | **Sheet** |
| | 722336.8 E 725816.8 N | 21/01/2019 | DBFL | 1/1 |

| Depth (m) | Sample / Tests | Water Depth (m) | Field Records | Level (mOD) | Depth (m) (Thickness) | Description | Legend | Water |
|---|---|---|---|---|---|---|---|---|
| 0.00-1.00 | EN | | | | (0.40) | TOPSOIL | | |
| | | | | 53.30 | 0.40 | MADE GROUND: Firm, light brown, slightly sandy, slightly gravelly CLAY with occasional cobbles of sub-angular granite. Fine to coarse, sub-angular Gravel. Occasional fragments of red brick. Frequent plastic. Rootlets. | | |
| | | | | | (0.30) | | | |
| | | | | 53.00 | 0.70 | Firm, grey, sandy, slightly gravelly CLAY with occasional sub-angular to sub-rounded cobbles. Fine to coarse, sub-angular Gravel. Fine to coarse sand. Hydrocarbon odours noted from 0.70m to 1.70m. | | |
| 1.00-2.00 | EN | | | | (1.00) | | | |
| | | | | 52.00 | 1.70 | Firm, grey, sandy, gravelly CLAY. Fine to coarse, angular to sub-angular Gravel. Medium to coarse sand. | | |
| 2.00-3.00 | EN | | | | (1.50) | | | |
| | | | | 50.50 | 3.20 | Complete at 3.20m | | |

**Remarks**
Hydrocarbon odours noted from 0.70m - 3.20m.
Refusal at 3.20m.

| Scale (approx) | Logged By |
|---|---|
| 1:25 | PM |

**Figure No.**
8354-01-19.WS-11

# Ground Investigations Ireland Ltd
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| Site | Number |
|---|---|
| Cornelscourt | WS-12 |

| Excavation Method | Dimensions | Ground Level (mOD) | Client | Job Number |
|---|---|---|---|---|
| Drive-in Windowless Sampler | | 53.62 | | 8354-01-19 |
| | **Location** | **Dates** | **Engineer** | **Sheet** |
| | 722350.2 E 725796.3 N | 22/01/2019 | DBFL | 1/1 |

| Depth (m) | Sample / Tests | Water Depth (m) | Field Records | Level (mOD) | Depth (m) (Thickness) | Description | Legend | Water |
|---|---|---|---|---|---|---|---|---|
| 0.00-1.00 | EN | | | | (0.45) | TOPSOIL | | |
| | | | | 53.17 | 0.45 | MADE GROUND: Firm, light brown, slightly sandy, slightly gravelly CLAY with occasional sub-angular to sub-rounded cobbles. Fine to coarse, sub-angular gravel. Frequent fragments of wood and red brick. Frequent plastic and clothing. Rootlets. | | |
| | | | | | (0.55) | | | |
| 1.00-2.00 | EN | | | 52.62 | 1.00 | Firm, grey, slightly sandy, slightly gravelly CLAY with occasional sub-rounded cobbles of boulder clay and mudstone. Fine to coarse, angular to sub-angular gravel. Fine to coarse sand. | | |
| | | | | | (1.00) | | | |
| 2.00-3.00 | EN | | | 51.62 | 2.00 | Firm, grey, slightly sandy, gravelly CLAY with occasional cobbles. Fine to coarse, angular to sub-angular gravel. Medium to coarse sand. | | |
| | | | | | (1.00) | | | |
| | | | | 50.62 | 3.00 | Complete at 3.00m | | |

**Remarks**
Refusal at 3.00m.

| Scale (approx) | Logged By |
|---|---|
| 1:25 | PM |

**Figure No.**
8354-01-19.WS-12

# Ground Investigations Ireland Ltd

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| Site | Number |
|---|---|
| Cornelscourt | WS-13 |

| Excavation Method | Dimensions | Ground Level (mOD) | Client | Job Number |
|---|---|---|---|---|
| Drive-in Windowless Sampler | | 52.50 | | 8354-01-19 |
| | **Location** | **Dates** | **Engineer** | **Sheet** |
| | 722341.8 E 725866.3 N | 22/01/2019 | DBFL | 1/1 |

| Depth (m) | Sample / Tests | Water Depth (m) | Field Records | Level (mOD) | Depth (m) (Thickness) | Description | Legend | Water |
|---|---|---|---|---|---|---|---|---|
| 0.00-1.00 | EN | | | | (0.35) | TOPSOIL | | |
| | | | | 52.15 | 0.35 | MADE GROUND: Firm, light brown, slightly sandy, slightly gravelly CLAY with occasional sub-angular cobbles. Fine to coarse, sub-angular gravel. Fragments of wood, red brick and granite. Frequent plastic and clothing. Rootlets. | | |
| | | | | | (0.65) | | | |
| 1.00-2.00 | EN | | | 51.50 | 1.00 | Firm, grey, sandy, gravelly CLAY with occasional sub-angular to sub-rounded cobbles. Gravel is fine to coarse and angular to sub-angular. Sand is fine to coarse | | |
| | | | | | (1.00) | | | |
| 2.00-3.00 | EN | | | 50.50 | 2.00 | Firm, grey, sandy, gravelly CLAY with occasional sub-angular to sub-rounded cobbles. Fine to coarse, sub-angular gravel. Fine to coarse sand. | | |
| | | | | | (1.00) | | | |
| | | | | 49.50 | 3.00 | Complete at 3.00m | | |

**Remarks**
Refusal at 3.00m

| Scale (approx) | Logged By |
|---|---|
| 1:25 | PM |

**Figure No.**
8354-01-19.WS-13

# **APPENDIX 6** – Cable Percussion and Rotary Borehole Records

# Ground Investigations Ireland Ltd
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| | | | |
|---|---|---|---|
| **Site** Cornelscourt | | | **Borehole Number** BH-02 |
| **Machine :** Dando 2000 + T44<br>**Flush :** In water<br>**Core Dia :** HQ mm<br>**Method :** Rotary Cored | **Casing Diameter** 200mm to 2.05m<br>100mm to 17.40m | **Ground Level (mOD)** | **Client** DBFL | **Job Number** 8354-01-19 |
| | **Location** Cornelscourt | **Dates** 14/02/2019-04/03/2019 | **Engineer** | **Sheet** 1/2 |

| Depth (m) | TCR | SCR | RQD | FI | Field Records | Level (mOD) | Depth (m) (Thickness) | Description | Legend | Water |
|---|---|---|---|---|---|---|---|---|---|---|
| | | | | | | | (0.40) | TOPSOIL | | |
| | | | | | | | 0.40 | MADE GROUND: Light brown slightly sandy slightly gravelly CLAY with rare sub-angular to subrounded cobbles and occasional plastic and ceramics. Fine to coarse sand with fine to coarse sub-angular to subrounded gravel. | | |
| 1.00-1.45 | | | | | 1,0/1,1,0,1<br>SPT(C) N=3 | | (0.60)<br>1.00 | Very soft to soft light brown slightly sandy slightly gravelly CLAY with occasional sub-angular to subrounded cobbles. Fine to coarse sand with fine to coarse sub-angular to subrounded granite. | | |
| | | | | | | | (1.00) | | | ▼1 |
| 2.00 | 50 | | | | 25/50<br>Water strike(1) at 2.00m, rose to 1.60m in 20 mins. | | 2.00 | Driller notes sandy Silt and Gravel. Recovery consists of grey subrounded sandy GRAVEL.<br>Obstruction granite rock | | ▽1 |
| 2.00-2.05<br>2.40<br>2.00-12.00 | 13 | | | | SPT(C) 25*/50<br>50/0<br>CR | | | | | |
| 3.90 | 0 | | | | | | (3.60) | | | |
| 5.40<br>5.40-5.69 | 73 | | | | 6,11/19,31<br>SPT(C) 50/135 | | 5.60 | Driller notes Brown Boulder Clay. Recovery consists of grey brown slightly sandy slightly gravelly CLAY with occasional sub-angular to subrounded cobbles. Fine to coarse sub-angular to subrounded gravel. | | |
| | | | | | | | (1.50) | | | |
| 6.90<br>6.90-7.26 | 30 | | | | 4,9/14,18,18<br>SPT(C) 50/205 | | 7.10 | Driller notes Brown Clay and Gravel. Recovery consists of brown slightly sandy slightly gravelly CLAY with occasional sub-angular to subrounded cobbles. Fine to coarse sub-angular to subrounded gravel. | | |
| 8.40<br>8.40-8.85 | 17 | | | | 4,6/6,9,11,9<br>SPT(C) N=35 | | (2.80) | | | |
| 9.90 | | | | | | | 9.90 | | | |

**Remarks**
Groundwater encountered at 2.0m.
Obstruction granite rock.

| Scale (approx) | Logged By |
|---|---|
| 1:50 | PM |

**Figure No.** 8354-01-19.BH-02

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| | | | |
|---|---|---|---|
| **Site** Cornelscourt | | | **Borehole Number** BH-02 |
| **Machine :** Dando 2000 + T44<br>**Flush :** In water<br>**Core Dia :** HQ mm<br>**Method :** Rotary Cored | **Casing Diameter** 200mm to 2.05m<br>100mm to 17.40m | **Ground Level (mOD)** | **Client** DBFL | **Job Number** 8354-01-19 |
| | **Location** Cornelscourt | **Dates** 14/02/2019-04/03/2019 | **Engineer** | **Sheet** 2/2 |

| Depth (m) | TCR | SCR | RQD | FI | Field Records | Level (mOD) | Depth (m) (Thickness) | Description | Legend | Water |
|---|---|---|---|---|---|---|---|---|---|---|
| 9.90-10.35 | 0 | | | | 3,3/4,3,5,5<br>SPT(C) N=17 | | (1.50) | Driller notes no recovery | | |
| 11.40<br>11.40-11.85 | | | | | 6,8/8,10,10,13<br>SPT(C) N=41 | | 11.40<br>(0.60) | Driller notes Sand and Clay. Recovery consists of sandy CLAY. | | |
| 12.00<br>12.00-15.10 | 93 | 68 | 68 | | CR | | 12.00 | Strong to very strong coarsely crystalline massive orange white GRANITE. Partially weathered with quartz sand on fracture surfaces. | | |
| 12.90 | 100 | 90 | 85 | 6 | | | | | | |
| 14.00<br>14.40 | | | | | | | (5.40) | | | |
| 15.10-17.40 | 100 | 69 | 69 | 7 | CR | | | | | |
| 15.90<br>16.00 | 100 | 94 | 90 | 5 | | | | | | |
| 17.40 | | | | | | | 17.40 | 12.00m to 17.40m Fracture set:1 Close to widely spaced at 0-20 degrees orientation, stepped rough, tight to open, stained brown.<br>Complete at 17.40m | | |

**Remarks**

| Scale (approx) | Logged By |
|---|---|
| 1:50 | PM |

**Figure No.** 8354-01-19.BH-02

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| | | | |
|---|---|---|---|
| **Site** Cornelscourt | | | **Borehole Number** BH-03 |
| **Machine :** Dando 2000 +T44<br>**Flush :** In water<br>**Core Dia:** HQ mm<br>**Method :** | **Casing Diameter** 200mm to 6.00m<br>100mm to 15.90m<br>**Location** 722440.5 E 725871.9 N | **Ground Level (mOD)**<br>**Dates** 14/02/2019-05/03/2019 | **Client** DBFL<br>**Engineer** | **Job Number** 8354-01-19<br>**Sheet** 1/2 |

| Depth (m) | TCR | SCR | RQD | FI | Field Records | Level (mOD) | Depth (m) (Thickness) | Description | Legend | Water | Instr |
|---|---|---|---|---|---|---|---|---|---|---|---|
| | | | | | | | (0.20) 0.20 | Brown slightly sandy slightly gravelly TOPSOIL with frequent rootlets. | | | |
| | | | | | | | (0.90) | MADE GROUND: Light brown slightly sandy slightly gravelly CLAY with concrete slab. Fine to coarse sand with fine to coarse sub-angular to subrounded gravel. | | | |
| 1.00-1.45<br>1.00-2.00 | | | | | 1,1/0,1,1,1<br>SPT(C) N=3<br>B | | 1.10 | Firm brown slightly sandy slightly gravelly CLAY with occasional sub-angular to subrounded cobbles. Fine to coarse sand with fine to coarse sub-angular to subrounded gravel. | | | |
| 2.00-2.45<br>2.00-3.00 | | | | | 3,2/3,2,2,2<br>SPT(C) N=9<br>B | | (1.90) | | | | |
| 3.00-3.45<br>3.00-4.00 | | | | | 4,5/6,6,6,7<br>SPT(C) N=25<br>B | | 3.00 | Stiff brown slightly sandy slightly gravelly CLAY with occasional sub-angular to subrounded cobbles . Sand is fine to coarse with fine to coarse sub-angular to subrounded gravel. | | ▼1 | |
| | | | | | 9,11/12,11,10,12<br>Water strike(1) at 4.00m, rose to 3.00m in 20 mins.<br>SPT(C) N=45<br>B | | (1.70) | | | ▽1 | |
| 4.00-4.45<br>4.00-5.00 | | | | | | | 4.70 | Very stiff brown slightly sandy slightly gravelly laminated CLAY with rare gravel and rare sub - angular to subrounded cobbles. Fine to coarse sand and fine to coarse sub-angular to subrounded gravel. Frequent shell fragments. | | | |
| 5.00-5.33<br>5.00-6.00 | | | | | 14,16/19,20,11<br>SPT(C) 50/180<br>B | | (1.10) | | | | |
| 5.40 | | | | | | | 5.80 | Driller notes brown boulder CLAY to 9.70m. Recovery consists of greyish brown slightly sandy slightly gravelly CLAY with occasional sub-angular to subrounded cobbles. Fine to coarse sand with fine to coarse sub-angular to subrounded gravel. Obstruction at 5.80m onto possible granite. | | | |
| 6.00-6.23 | 100 | | | | 12,30/38,12<br>SPT(C) 50/80 | | (1.40) | | | | |
| 6.90<br>6.90-7.24 | | | | | 8,13/17,21,12<br>SPT(C) 50/185 | | 7.20 | Driller notes brown boulder CLAY. Recovery consists of slightly sandy gravelly CLAY with occasional sub-angular to subrounded gravel. | | | |
| | 73 | | | | | | (1.20) | | | | |
| 8.40<br>8.40-8.85 | | | | | 6,9/9,14,12,13<br>SPT(C) N=48 | | 8.40 | Driller notes brown boulder CLAY. Recovery consists of brown slightly sandy slightly gravelly CLAY with occasional sub-angular to subrounded cobbles. Fine to coarse sand with fine to coarse sub-angular to subrounded gravel. | | | |
| | 42 | | | | | | (1.30) | | | | |
| 9.90 | | | | | | | 9.70 | Extremely weak to medium strong coarsely crystalline massive orange white GRANITE | | | |

**Remarks**
Groundwater encountered at 4.00m.

| Scale (approx) | Logged By |
|---|---|
| 1:50 | PM |

**Figure No.** 8354-01-19.BH-03

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| | | | |
|---|---|---|---|
| **Site** Cornelscourt | | | **Borehole Number** BH-03 |
| **Machine :** Dando 2000 +T44<br>**Flush :** In water<br>**Core Dia:** HQ mm<br>**Method :** | **Casing Diameter** 200mm to 6.00m<br>100mm to 15.90m | **Ground Level (mOD)** | **Client** DBFL | **Job Number** 8354-01-19 |
| | **Location** 722440.5 E 725871.9 N | **Dates** 14/02/2019-05/03/2019 | **Engineer** | **Sheet** 2/2 |

| Depth (m) | TCR | SCR | RQD | FI | Field Records | Level (mOD) | Depth (m) (Thickness) | Description | Legend | Water | Instr |
|---|---|---|---|---|---|---|---|---|---|---|---|
| 9.90-10.09 | 40 | 22 | 19 | | 7,15/25<br>SPT(C) 25/40 | | | distinctly weathered. Distinctly weathered. | | | |
| 11.40<br>11.40-11.84 | 29 | 21 | 19 | 6 | 9,16/50<br>SPT(C) 25*/140<br>N=50 | | | | | | |
| 12.90 | | | | | | | (6.20) | Fracture set 1: 9.90m - 12.45m, Close to medium spaced at 0 - 20 degrees orientation, stepped rough, tight to open, stained brown with quartz sand on fracture surface. | | | |
| 13.50 | 100 | 64 | 57 | 4 | | | | Fracture set 1: From 12.45m - 13.50m, close to medium spaced at 0 - 20 degrees orientation, stepped rough, tight to open, stained brown. | | | |
| 14.40 | 100 | 17 | 17 | | | | | | | | |
| 15.90 | | | | | | | 15.90 | Non intact from 14.4m to 15.90m.<br>Complete at 15.90m | | | |

**Remarks**

| Scale (approx) | Logged By |
|---|---|
| 1:50 | PM |

**Figure No.** 8354-01-19.BH-03

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| | | | |
|---|---|---|---|
| **Site** Cornelscourt | | | **Borehole Number** BH-04 |
| **Machine :** Dando 2000 +T44<br>**Flush :** In water<br>**Core Dia :** HQ mm<br>**Method :** Rotary Cored | **Casing Diameter** 100mm to 13.70m | **Ground Level (mOD)** | **Client** DBFL | **Job Number** 8354-01-19 |
| | **Location** 722352.4 E 725894.8 N | **Dates** 14/02/2019-04/03/2019 | **Engineer** | **Sheet** 1/2 |

| Depth (m) | TCR | SCR | RQD | FI | Field Records | Level (mOD) | Depth (m) (Thickness) | Description | Legend | Water |
|---|---|---|---|---|---|---|---|---|---|---|
| | 8 | | | | | | | Driller notes brown silty CLAY with gravel from 0.0m to 4.80m. Recovery consists of dark brown slightly sandy slightly gravelly CLAY with occasional sub-angular to subrounded cobbles. Fine to coarse sand with fine to coarse sub-angular to subrounded gravel. | | |
| 2.40 | 33 | | | | | | (4.80) | | | |
| 3.90 | 40 | | | 7 | | | | | | |
| | | | | | | | 4.80 | | | |
| 5.40<br>5.40-5.83 | 33 | | | | 4,8/10,14,14,12<br>SPT(C) 50/280 | | | Driller notes black gravelly boulder CLAY. Recovery consists of dark grey slightly sandy slightly gravelly CLAY with occasional sub-angular to subrounded cobbles. Fine to coarse sand with fine to coarse sub-angular to subrounded gravel. | | |
| | | | | | | | (3.60) | | | |
| 6.90<br>6.90-7.28 | 27 | | | | 7,8/11,16,21,2<br>SPT(C) 50/230 | | | | | |
| 8.40<br>8.40-8.85 | | | | 5 | 3,5/5,8,7,10<br>SPT(C) N=30 | | 8.40 | Extremely weak to medium strong coarsely crystalline massive orange white GRANITE. Partially weathered to unweathered. | | |
| 9.10 | 100 | 81 | 62 | | | | | Fracture set 1: From 8.40m - 9.10m, close to medium spaced at 0 - 20 degrees orientation, stepped rough, tight to open, clay smearing on fracture surfaces. | | |
| 9.90 | | | | | | | | Fracture set 1: From 9.10 - 9.90m, close to medium | | |

**Remarks**
No groundwater encountered

| Scale (approx) | Logged By |
|---|---|
| 1:50 | PM |

**Figure No.** 8354-01-19.BH-04

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| | | | |
|---|---|---|---|
| **Site** Cornelscourt | | | **Borehole Number** BH-04 |
| **Machine :** Dando 2000 +T44<br>**Flush :** In water<br>**Core Dia :** HQ mm<br>**Method :** Rotary Cored | **Casing Diameter** 100mm to 13.70m<br>**Location** 722352.4 E 725894.8 N | **Ground Level (mOD)**<br>**Dates** 14/02/2019-04/03/2019 | **Client** DBFL<br>**Engineer** | **Job Number** 8354-01-19<br>**Sheet** 2/2 |

| Depth (m) | TCR | SCR | RQD | FI | Field Records | Level (mOD) | Depth (m) (Thickness) | Description | Legend | Water |
|---|---|---|---|---|---|---|---|---|---|---|
| | | | | 5 | | | | spaced at 10 - 30 degrees orientation, stepped rough, tight to open, stained brown. | | |
| | 100 | 46 | 40 | | | | | | | |
| 10.90 | | | | 6 | | | (5.30) | Fracture set 1: From 9.90m - 10.90m, close to medium spaced at 10 - 30 degrees orientation, stepped rough, tight to open, stained brown. | | |
| 11.40 | | | | | | | | | | |
| 11.75 | 100 | 100 | 89 | 4 | | | | Fracture set 1: From 10.90m - 11.75m, close to medium spaced at 10 - 30 degrees orientation. stepped rough, tight to open, stained brown. | | |
| 12.90 | 100 | 82 | 76 | | | | | Fracture set 1: From 11.75m - 12.90m, close to medium spaced at 30 - 40 degrees orientation, stepped rough, tight to open. | | |
| 13.00 | | | | 5 | | | | | | |
| 13.70 | | | | | | | 13.70 | Fracture set 1: From 12.90m - 13.70m, close to medium spaced at 30 - 40 degrees orientation, stepped rough, tight to open. | | |
| | | | | | | | | Complete at 13.70m | | |

**Remarks**
No groundwater encountered

| Scale (approx) | Logged By |
|---|---|
| 1:50 | PM |

**Figure No.** 8354-01-19.BH-04

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| | | | |
|---|---|---|---|
| **Site** Cornelscourt | | | **Borehole Number** BH-05 |
| **Machine :** Dando 2000 + T44<br>**Flush :** In water<br>**Core Dia :** HQ mm<br>**Method :** Rotary Cored | **Casing Diameter** 200mm to 5.80m<br>100mm to 10.80m<br>**Location** Cornelscourt | **Ground Level (mOD)**<br>**Dates** 14/02/2019-07/03/2019 | **Client** DBFL<br>**Engineer** | **Job Number** 8354-01-19<br>**Sheet** 1/2 |

| Depth (m) | TCR | SCR | RQD | FI | Field Records | Level (mOD) | Depth (m) (Thickness) | Description | Legend | Water |
|---|---|---|---|---|---|---|---|---|---|---|
| | | | | | | | (0.20) 0.20 | Brown slightly sandy slightly gravelly TOPSOIL with grass rootlets. | | |
| | | | | | | | (0.90) | MADE GROUND: Light brown slightly sandy slightly gravelly CLAY with concrete slab. Fine to coarse sand and fine to coarse sub-angular to subrounded gravel. | | |
| 1.00-1.30<br>1.00 | | | | | 1,1/1,2,2,2<br>SPT(C) 7/150<br>B | | 1.10 | Firm brown slightly sandy gravelly CLAY with occasional sub-angular to subrounded cobbles. Fine to coarse sand with fine to coarse sub-angular to subrounded gravel. | | |
| 2.00-2.45<br>2.00 | | | | | 3,2/4,4,3,3<br>SPT(C) N=14<br>B | | (1.90) | | | |
| 3.00-3.45<br>3.00 | | | | | 6,7/9,9,13,11<br>SPT(C) N=42<br>B | | 3.00 | Very stiff brown slightly sandy slightly gravelly CLAY with occasional sub-angular to subrounded cobbles. Sand is fine to coarse and sub-angular to subrounded gravel. | | |
| 4.00-4.32<br>4.00 | | | | | 10,10/14,20,16<br>SPT(C) 50/170<br>B | | (1.70) | | | |
| 5.00-5.33<br>5.00 | | | | | 18,19/24,26<br>SPT(C) 50/180<br>B | | 4.70 | Very stiff brown slightly sandy laminated CLAY with rare gravel and rare sub-angular to subrounded cobbles. Fine to coarse sand and fine to coarse sub-angular to subrounded gravel. Frequent shell fragments. | | |
| | | | | | | | (1.10) | | | ▼1 |
| 5.90<br>5.80 | 100 | 45 | 30 | 8 | Water strike(1) at 5.80m, rose to 5.50m in 20 mins.<br>B | | 5.80 | Medium strong to strong coarsely crystalline orange greyish white Granite. Partially weathered to unweathered . Quartz sand on fracture surface.<br>Obstruction 5.8m onto granite. | | ▽1 |
| | | | | | | | (1.10) | | | |
| 6.90 | 100 | 100 | 96 | 4 | | | 6.90 | Medium strong to strong coarsely crystalline orange greyish white Granite. Partially weathered to unweathered . Quartz sand on fracture surface.<br>One fracture set. Fracture set 1: Close to medium spaced at 30 - 40 degrees orientation, planar rough, tight to open, stained brown. | | |
| | | | | | | | (1.50) | | | |
| 8.40 | 100 | 90 | 90 | 6 | | | 8.40 | Medium strong to strong coarsely crystalline orange greyish white Granite. Partially weathered to unweathered . Quartz sand on fracture surface.<br>One fracture set. Fracture set 1: Close to medium spaced at 30 - 45 degrees orientation, planar rough to smooth, tight to open, stained brown. | | |
| | | | | | | | (1.50) | | | |
| 9.90 | | | | | | | 9.90 | | | |

**Remarks**
Groundwater encountered at 5.80m.

| Scale (approx) | Logged By |
|---|---|
| 1:50 | PM |

**Figure No.** 8354-01-19.BH-05

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| | | | |
|---|---|---|---|
| **Site** Cornelscourt | | | **Borehole Number** BH-05 |
| **Machine :** Dando 2000 + T44<br>**Flush :** In water<br>**Core Dia:** HQ mm<br>**Method :** Rotary Cored | **Casing Diameter** 200mm to 5.80m<br>100mm to 10.80m | **Ground Level (mOD)** | **Client** DBFL | **Job Number** 8354-01-19 |
| | **Location** Cornelscourt | **Dates** 14/02/2019-07/03/2019 | **Engineer** | **Sheet** 2/2 |

| Depth (m) | TCR | SCR | RQD | FI | Field Records | Level (mOD) | Depth (m) (Thickness) | Description | Legend | Water |
|---|---|---|---|---|---|---|---|---|---|---|
| | 100 | 82 | 82 | 5 | | | (0.90) | Medium strong to strong coarsely crystalline orange greyish white Granite. Partially weathered to unweathered . Quartz sand on fracture surface.<br>One fracture set. Fracture set 1: Close to medium spaced at 30 - 40 degrees orientation, planar rough, tight to open, stained brown. | | |
| 10.80 | | | | | | | 10.80 | One fracture set. Fracture set 1: Close to medium spaced at 20 - 30 degrees orientation, planar rough to smooth, tight to open, stained brown.<br>Complete at 10.80m | | |

**Remarks**

| Scale (approx) | Logged By |
|---|---|
| 1:50 | PM |

**Figure No.** 8354-01-19.BH-05

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| Site | Borehole Number |
|---|---|
| Cornelscourt | BH-06 |

| Machine | Casing Diameter | Ground Level (mOD) | Client | Job Number |
|---|---|---|---|---|
| Dando 2000 + T44 | 200mm to 4.60m<br>100mm to 11.10m | | DBFL | 8354-01-19 |
| **Flush** : In water | **Location** | **Dates** | **Engineer** | **Sheet** |
| **Core Dia**: HQ mm | Cornelscourt | 13/02/2019-<br>06/03/2019 | | 1/2 |
| **Method** : Rotary Cored | | | | |

| Depth (m) | TCR | SCR | RQD | FI | Field Records | Level (mOD) | Depth (m) (Thickness) | Description | Legend | Water |
|---|---|---|---|---|---|---|---|---|---|---|
| | | | | | | | (0.20) 0.20 | Brown slightly sandy slightly gravelly TOPSOIL with grass rootlets. | | |
| 1.00-1.30<br>1.00 | | | | | 2,2/2,3,3,1<br>SPT(C) 9/150<br>B | | (1.80) | Firm light brown slightly sandy slightly gravelly CLAY with occasional sub-angular to sub-rounded cobbles. Fine to coarse sand with fine to coarse sub-angular to subrounded gravel. | | |
| 2.00-2.45<br>2.00 | | | | | 2,4/2,3,3,3<br>SPT(C) N=11<br>B | | 2.00<br>(0.80) | Firm light brown slightly sandy slightly gravelly CLAY with occasional sub-angular to sub-rounded cobbles. Fine to coarse sand with fine to coarse sub-angular to subrounded gravel. | | |
| 3.00-3.45<br>3.00 | | | | | 3,4/4,4,5,6<br>SPT(C) N=19<br>B | | 2.80<br>(1.20) | Stiff dark grey slightly sandy slightly gravelly CLAY with occasional sub-angular to subrounded cobbles. Fine to coarse sand and fine to coarse sub-angular to subrounded gravel. | | |
| 4.00-4.44<br>4.00 | | | | | 8,16/14,12,14,10<br>SPT(C) 50/285<br>B | | 4.00<br>(0.60) | Very stiff dark grey slightly sandy slightly gravelly CLAY with occasional sub-angular to subrounded cobbles. Fine to coarse sand and fine to coarse sub-angular to subrounded gravel. | | ▼1<br>▽1 |
| 4.50 | 33 | | | | Water strike(1) at 4.50m, rose to 4.00m in 20 mins. | | 4.60<br>(1.10) | Driller notes Silt Gravel and Clay. Recovery consists of greyish brown slightly sandy slightly gravelly CLAY with occasional angular to sub-angular cobbles.<br>Obstruction 4.6m onto possible granite - no recovery. | | |
| 5.40<br>5.40-5.81 | | | | | 4,4/7,13,21,9<br>SPT(C) 50/255 | | 5.70 | Very weak to weak coarsely crystalline orange white GRANITE partially weathered with quartz bands and quartz sand on fracture surfaces.<br>5.70m - 6.0m non intact. | | |
| 6.00 | 80 | 30 | 30 | 8 | | | (1.20) | | | |
| 6.90 | 80 | 70 | 59 | 9 | | | 6.90<br>(1.50) | Very weak to weak coarsely crystalline orange white GRANITE partially weathered quartz sand on fracture surfaces.<br>Fracture set 1: Close to medium spaced at 30 - 45 degrees, stepped rough, tight to open, stained brown. | | |
| 7.90 | | | | 1 | | | | Fracture set 1: Close to medium spaced at 30 - 45 degrees, stepped rough, tight to open, stained brown. | | |
| 8.40 | 86 | 21 | 16 | 4 | | | 8.40<br>(1.50) | Very weak to weak coarsely crystalline orange white GRANITE partially weathered.<br>Fracture set 1: Close to medium spaced at 30 - 45 degrees, stepped rough, tight to open, stained brown.<br>Non intact. | | |
| 9.00 | | | | 4 | | | | | | |
| 9.90 | | | | | | | 9.90 | | | |

**Remarks**
Groundwater at 4.5m
Obstruction at 4.6m onto possible granite - no recovery.

| Scale (approx) | Logged By |
|---|---|
| 1:50 | PM |

**Figure No.**
8354-01-19.BH-06

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| | | | |
|---|---|---|---|
| **Site** Cornelscourt | | | **Borehole Number** BH-06 |
| **Machine :** Dando 2000 + T44<br>**Flush :** In water<br>**Core Dia :** HQ mm<br>**Method :** Rotary Cored | **Casing Diameter** 200mm to 4.60m<br>100mm to 11.10m<br>**Location** Cornelscourt | **Ground Level (mOD)**<br>**Dates** 13/02/2019-06/03/2019 | **Client** DBFL<br>**Engineer** | **Job Number** 8354-01-19<br>**Sheet** 2/2 |

| Depth (m) | TCR | SCR | RQD | FI | Field Records | Level (mOD) | Depth (m) (Thickness) | Description | Legend | Water |
|---|---|---|---|---|---|---|---|---|---|---|
| | 100 | 53 | 53 | | | | (1.20) | Very weak to weak coarsely crystalline orange white GRANITE partially weathered.<br>Fracture set 1: Close to medium spaced at 30 - 45 degrees, stepped rough, tight to open, stained brown.<br>Fracture set 1: Close to medium spaced at 30 - 45 degrees, stepped rough, tight to open, stained brown. | | |
| 10.60 | | | | | | | | | | |
| 11.10 | | | | | | | 11.10 | Complete at 11.10m | | |

**Remarks**

| Scale (approx) | Logged By |
|---|---|
| 1:50 | PM |

**Figure No.** 8354-01-19.BH-06

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| | | | |
|---|---|---|---|
| **Site** Cornelscourt | | | **Borehole Number** BH-07 |
| **Machine :** Dando 2000 + T44<br>**Flush :** In water<br>**Core Dia :** HQ mm<br>**Method :** Rotary Cored | **Casing Diameter** 200mm to 3.70m<br>100mm to 11.40m<br>= to | **Ground Level (mOD)** | **Client** DBFL | **Job Number** 8354-01-19 |
| | **Location** Cornelscourt | **Dates** 11/02/2019-07/03/2019 | **Engineer** | **Sheet** 1/2 |

| Depth (m) | TCR | SCR | RQD | FI | Field Records | Level (mOD) | Depth (m) (Thickness) | Description | Legend | Water | Instr |
|---|---|---|---|---|---|---|---|---|---|---|---|
| 0.00 | | | | | | | (0.20) 0.20 | Brown slightly sandy slightly gravelly TOPSOIL with grass rootlets. | | | |
| | | | | | | | (0.80) | Soft to firm brown slightly sandy slightly gravelly CLAY with occasional sub-angular to sub-rounded cobbles. Fine to coarse sand with fine to coarse sub-angular to subrounded gravel. | | | |
| 1.00-1.30<br>1.00 | | | | | 1,1/2,1,1,1<br>SPT(C) 5/150<br>B | | 1.00 | Firm to stiff brown slightly sandy slightly gravelly CLAY with occasional sub-angular to sub-rounded cobbles. Fine to coarse sand with fine to coarse sub-angular to subrounded gravel. | | ▼1 | |
| 2.00-2.45<br>2.00 | | | | | 1,1/2,3,3,5<br>SPT(C) N=13<br>B | | (2.00) | | | ▽1 | |
| 3.00-3.24 | | | | | 30/50<br>Water strike(1) at 2.70m, rose to 1.20m in 20 mins.<br>SPT(C) 30*/145<br>50/95<br>B | | 3.00 | Very stiff brown sightly sandy slightly gravelly CLAY with occasional sub-angular to subrounded cobbles. Fine to coarse sand with fine to coarse sub-angular to subrounded gravel. | | | |
| 3.00<br>3.50 | 50 | | | | | | (0.70)<br>3.70 | | | | |
| 3.90 | | | | | | | (0.20)<br>3.90 | Driller notes brown Silty Clay with Gravel. Recovery consists of brown slightly silty slightly sandy slightly gravelly CLAY with occasional sub-angular to subrounded cobbles.<br>Obstruction onto possible granite rock at 3.70m - no recovery. | | | |
| | 20 | | | | | | (1.50) | Driller notes brown Silty Clay with Gravel. Recovery consists of brown slightly silty slightly sandy slightly gravelly CLAY with occasional sub-angular to subrounded cobbles. | | | |
| 5.40<br>5.40-5.85 | | | | | 3,4/4,6,5,8<br>SPT(C) N=23 | | 5.40 | Driller notes brown Silty Clay with Gravel. Recovery consists of brown slightly silty slightly sandy slightly gravelly CLAY with occasional sub-angular to subrounded cobbles. | | | |
| | 56 | 11 | 6 | | | | (0.90) | | | | |
| | | | | | | | 6.30 | Weak to medium strong coarsely crystalline whitish orange GRANITE. Partially weathered to unweathered with quartz sand on fracture surface. | | | |
| 6.90 | | | | | | | (0.60)<br>6.90 | | | | |
| 7.20 | | | | 6 | | | | Weak to medium strong coarsely crystalline whitish orange GRANITE. Partially weathered to unweathered with quartz sand on fracture surface<br>Non intact from 5.40m - 7.20m | | | |
| | 100 | 32 | 24 | | | | (1.50) | | | | |
| 7.90 | | | | N.I. | | | | Fracture set 1: Close to medium spaced at 0 - 20 degrees, stepped rough, tight to open, stained brown. | | | |
| 8.40 | | | | | | | 8.40 | Weak to medium strong coarsely crystalline whitish orange GRANITE. Partially weathered to unweathered with quartz sand on fracture surface<br>Non intact from 7.20m - 8.75m. | | | |
| 8.75 | | | | 6 | | | | | | | |
| | 100 | 44 | 40 | | | | (1.50) | | | | |
| 9.35 | | | | | | | | Fracture set 1: Close to medium spaced at 30 - 45 degrees, stepped rough, tight to open, stained brown. | | | |
| 9.90 | | | | | | | 9.90 | | | | |

**Remarks**
Groundwater at 2.70m.
No recovery

| Scale (approx) | Logged By |
|---|---|
| 1:50 | PM |

**Figure No.** 8354-01-19.BH-07

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| | | | |
|---|---|---|---|
| **Site** Cornelscourt | | | **Borehole Number** BH-07 |
| **Machine :** Dando 2000 + T44<br>**Flush :** In water<br>**Core Dia :** HQ mm<br>**Method :** Rotary Cored | **Casing Diameter** 200mm to 3.70m<br>100mm to 11.40m<br>= to<br>**Location** Cornelscourt | **Ground Level (mOD)**<br>**Dates** 11/02/2019-07/03/2019 | **Client** DBFL<br>**Engineer** | **Job Number** 8354-01-19<br>**Sheet** 2/2 |

| Depth (m) | TCR | SCR | RQD | FI | Field Records | Level (mOD) | Depth (m) (Thickness) | Description | Legend | Water | Instr |
|---|---|---|---|---|---|---|---|---|---|---|---|
| | 100 | 53 | 48 | 11 | | | (1.50) | Weak to medium strong coarsely crystalline whitish orange GRANITE. Partially weathered to unweathered with quartz sand on fracture surface Non intact from 9.35m - 9.90m. | | | |
| 11.40 | | | | | | | 11.40 | Fracture set 1: Close to medium spaced at 30- 40 degrees, stepped rough, tight to open, stained brown. | | | |
| | | | | | | | | Complete at 11.40m | | | |

**Remarks**

| Scale (approx) | Logged By |
|---|---|
| 1:50 | PM |

**Figure No.** 8354-01-19.BH-07

# Ground Investigations Ireland Ltd
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| | | | |
|---|---|---|---|
| **Site** Cornelscourt | | | **Borehole Number** BH-08 |
| **Machine :** Dando 2000 +T44<br>**Flush :** In water<br>**Core Dia:** HQ mm<br>**Method :** Rotary Cored | **Casing Diameter** 200mm to 2.00m<br>100mm to 8.40m | **Ground Level (mOD)** | **Client** DBFL | **Job Number** 8354-01-19 |
| | **Location** Cornelscourt | **Dates** 15/02/2019-28/02/2019 | **Engineer** | **Sheet** 1/1 |

| Depth (m) | TCR | SCR | RQD | FI | Field Records | Level (mOD) | Depth (m) (Thickness) | Description | Legend | Water | Instr |
|---|---|---|---|---|---|---|---|---|---|---|---|
| | | | | | | | (0.20) 0.20 | Brown slightly sandy slightly gravelly TOPSOIL. | | | |
| | | | | | | | (1.10) | Soft brown slightly sandy slightly gravelly CLAY with occasional sub-angular to subrounded cobbles. Fine to coarse sand with fine to coarse sub-angular to subrounded gravel. | | | |
| 1.00-1.30<br>1.00 | | | | | 1,2/1,1,1,1<br>SPT(C) 4/150<br>B | | 1.30 | | | | |
| | | | | | | | (0.70) | Firm to stiff brown slightly sandy slightly gravelly CLAY with occasional sub-angular to subrounded cobbles. Sand is fine to coarse and gravel is fine to coarse and sub-angular to subrounded.. | | | |
| 2.00-2.45 | | | | | 25/50<br>SPT(C) N=50 | | 2.00 | | | | |
| | | | | | | | (1.20) | Very stiff CLAY with occasional sub-angular to subrounded cobbles. Fine to coarse sand and medium to coarse sub-angular to subrounded gravel.<br>Obstruction: Possible granite boulder or rock at 2.0m..<br>No recovery at 2.0m. | | | |
| 3.00 | | | | | | | 3.20 | | | | |
| 3.40 | 88 | 51 | 51 | 5 | | | | Extremely weak to medium strong coarsely crystalline massive orange white GRANITE. Partially weathered to unweathered. | | | |
| 3.90 | 100 | 73 | 64 | 10 | | | | Fracture set 1: From 3.40m - 3.90m, close to medium spaced at 30 - 45 degrees orientation, stepped rough, tight to open, stained brown. | | | |
| 5.40 | 82 | 58 | 53 | 5 | | | (5.20) | Fracture set 1: From 3.90m - 5.40m, close to medium spaced at 50 - 60 degrees orientation, planar rough, tight to open. | | | |
| 6.90 | 86 | 24 | 16 | 7 | | | | Fracture set 1: From 5.40m - 6.90m, medium spaced at 50 - 65 degrees orientation, planar rough, tight to open. | | | |
| 8.40 | | | | | | | 8.40 | Fracture set 1: From 6.90 - 8.40m, close to medium spaced at 70 degrees, planar smooth, tight to open. | | | |
| | | | | | | | | Complete at 8.40m | | | |

**Remarks**
No groundwater encountered.
No recovery at 2.0m
Obstruction onto granite rock.

| Scale (approx) | Logged By |
|---|---|
| 1:50 | PM |

**Figure No.** 8354-01-19.BH-08

# Ground Investigations Ireland Ltd
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| | | | |
|---|---|---|---|
| **Site** Cornelscourt | | | **Borehole Number** BH-09 |
| **Machine :** Dando 2000 + T 44<br>**Flush :** In water<br>**Core Dia :** HQ mm<br>**Method :** Rotary Cored | **Casing Diameter** 200mm to 2.90m<br>100mm to 8.00m<br>**Location** Cornelscourt | **Ground Level (mOD)**<br>**Dates** 12/02/2019-07/03/2019 | **Client** DBFL<br>**Engineer** | **Job Number** 8354-01-19<br>**Sheet** 1/1 |

| Depth (m) | TCR | SCR | RQD | FI | Field Records | Level (mOD) | Depth (m) (Thickness) | Description | Legend | Water |
|---|---|---|---|---|---|---|---|---|---|---|
| | | | | | | | (0.40) | Brown slightly sandy slightly gravelly TOPSOIL. | | |
| | | | | | | | 0.40 | Firm to stiff brown slightly sandy slightly gravelly CLAY with occasional sub-angular to subrounded cobbles and fine to coarse sub-angular to subrounded gravel. | | |
| 1.00-1.30<br>1.00 | | | | | 2,3/3,4,4,3<br>SPT(C) 14/150<br>B | | (1.60) | | | |
| 2.00-2.45<br>2.00 | | | | | 2,4/5,5,4,4<br>SPT(C) N=18<br>B | | 2.00 | Very stiff brown slightly sandy slightly gravelly CLAY with occasional sub-angular to subrounded cobbles. Fine to coarse sand with fine to coarse sub-angular to subrounded gravel. | | |
| | | | | | | | (0.90) | | | |
| 2.90 | 100 | 78 | 72 | 7 | | | 2.90 | Weak to medium strong coarsely crystalline whitish orange GRANITE. Partially weathered from 2.90m - 4.20m.<br>Obstruction at 2.9m onto possible granite rock. No recovery. | | |
| | | | | | | | (1.30) | | | |
| 3.90 | | | | | | | | Fracture set 1: From 2.90m - 3.90m, medium spaced at 30 - 40 degrees orientation, stepped rough, tight to open. | | |
| | 100 | 100 | 100 | 8 | | | 4.20 | Medium strong to strong coarsely crystalline whitish grey GRANITE. Unweathered. | | |
| | | | | | | | (1.90) | | | |
| 5.40 | | | | | | | | | | |
| | 93 | 93 | 93 | | | | 6.10 | Medium strong orange grey coarsely crystalline GRANITE. Partially weathered to unweathered.<br>Fracture set 1: From 3.90m - 6.35m, close to medium spaced at 0 - 20 degrees orientation, stepped rough, tight to open. | | |
| 6.35 | | | | | | | | | | |
| 6.90 | | | | 4 | | | (1.90) | | | |
| | 73 | 73 | 73 | | | | | | | |
| 8.00 | | | | | | | 8.00 | Fracture set 1: From 6.35m - 8.0m, close to medium spaced at 40 - 50 degrees orientation, planar rough to smooth, tight to open, quartz bands. | | |
| | | | | | | | | Complete at 8.00m | | |

**Remarks**
Obstruction at 2.9m possible granite
No recovery at 2.9m

| Scale (approx) | Logged By |
|---|---|
| 1:50 | PM |

**Figure No.** 8354-01-19.BH-09

# Ground Investigations Ireland Ltd
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| | | | |
|---|---|---|---|
| **Site** Cornelscourt | | | **Borehole Number** BH-10 |
| **Machine :** Dando 2000 + T44<br>**Flush :** In water<br>**Core Dia :** HQ mm<br>**Method :** Rotary Cored | **Casing Diameter** 200mm to 2.85m<br>100mm to 6.90m<br>**Location** Cornelscourt | **Ground Level (mOD)**<br>**Dates** 12/02/2019-07/03/2019 | **Client** DBFL<br>**Engineer** | **Job Number** 8354-01-19<br>**Sheet** 1/1 |

| Depth (m) | TCR | SCR | RQD | FI | Field Records | Level (mOD) | Depth (m) (Thickness) | Description | Legend | Water |
|---|---|---|---|---|---|---|---|---|---|---|
| | | | | | | | (0.40) | Brown slightly sandy slightly gravelly TOPSOIL. | | |
| | | | | | | | 0.40 (0.30) 0.70 | Soft to firm light brown slightly sandy slightly gravelly CLAY with rare sub-angular to subrounded cobbles. Fine to coarse sand and fine to coarse sub-angular to subrounded gravel. | | |
| 1.00-1.45<br>1.00 | | | | | 3,2/3,3,3,2<br>Water strike(1) at 0.90m.<br>SPT(C) N=11<br>B | | | Firm brown slightly sandy slightly gravelly CLAY with rare sub angular cobbles. | | ▽1 |
| 2.00-2.45<br>2.00 | | | | | 1,1/2,2,2,1<br>SPT(C) N=7<br>B | | (2.00) | | | |
| 2.60<br>2.70<br>2.90 | 100 | 45 | 45 | 12 | B | | 2.70 (0.15) 2.85 | Obstruction at 2.6m onto possible granite rock.<br>Firm brown slightly sandy slightly gravelly CLAY with occasional sub-angular to subrounded cobbles. Fine to coarse sand with fine to coarse sub-angular to subrounded gravel. | | |
| 3.90 | 100 | 17 | 17 | 11 | | | (4.05) | Weak to medium strong coarsely crystalline orange white GRANITE. Partially weathered to unweathered.<br>Fracture set 1: From 2.85m - 3.90m, Close to medium spaced at 30 - 40 degrees orientation, planar rough, tight to open, stained brown. | | |
| 5.40 | 100 | 41 | 36 | 23 | | | | Fracture set 1: From 3.90m - 5.40m, close to medium spaced at 30 - 40 degrees orientation, planar rough to smooth, tight to open. | | |
| 6.90 | | | | | | | 6.90 | Fracture set 1: From 5.40m to 6.90m, close to medium spaced at 30 - 45 degrees orientation, planar rough to smooth, tight to open.<br>Complete at 6.90m | | |

**Remarks**
Obstruction onto granite rock

| Scale (approx) | Logged By |
|---|---|
| 1:50 | PM |

**Figure No.** 8354-01-19.BH-10

# Ground Investigations Ireland Ltd
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| | | | |
|---|---|---|---|
| **Site** Cornelscourt | | | **Borehole Number** BH-11 |
| **Machine :** Dando 2000 + T 44<br>**Flush :** In water<br>**Core Dia:** HQ mm<br>**Method :** Rotary Cored | **Casing Diameter** 200mm to 3.20m<br>100mm to 8.40m | **Ground Level (mOD)** | **Client** DBFL | **Job Number** 8354-01-19 |
| | **Location** Cornelscourt | **Dates** 12/02/2019-01/03/2019 | **Engineer** | **Sheet** 1/1 |

| Depth (m) | TCR | SCR | RQD | FI | Field Records | Level (mOD) | Depth (m) (Thickness) | Description | Legend | Water | Instr |
|---|---|---|---|---|---|---|---|---|---|---|---|
| 0.00 | | | | | B | | (0.20) 0.20 | Brown slightly sandy slightly gravelly TOPSOIL. | | | |
| | | | | | | | (0.50) | Soft to firm brown slightly sandy slightly gravelly CLAY with occasional sub-angular to subrounded cobbles. Fine to coarse sand with fine to coarse sub-angular to subrounded gravel. | | | |
| 1.00-1.30 | | | | | 1,1/1,1,2,2<br>SPT(C) 6/150 | | 0.70 | Firm brown slightly sandy slightly gravelly CLAY with occasional sub-angular to subrounded cobbles. Fine to coarse sand with fine to coarse sub-angular to subrounded gravel. | | | |
| | | | | | | | (1.30) | | | ▼1 | |
| 2.00-2.45<br>2.00 | | | | | 2,3/3,2,2,2<br>SPT(C) N=9<br>B | | 2.00 | Very stiff grey slightly sandy slightly gravelly CLAY with occasional sub-rounded cobbles. Gravel is fine to coarse and angular to sub angular. | | | |
| | | | | | | | (1.20) | | | ▽1 | |
| 3.00 | | | | | 2,2/50<br>Water strike(1) at 3.00m, rose to 1.50m in 20 mins.<br>SPT(C) 50/115<br>B | | 3.20 (0.20) 3.40 | Greyish brown slightly sandy slightly gravelly CLAY with occasional sub-angular to subrounded cobbles. Fine to coarse sand and fine to coarse sub-angular to subrounded gravel.<br>Obstruction at 3.2m onto possible granite rock. | | | |
| 3.00-3.27<br>3.00<br>3.20<br>3.50<br>3.84<br>3.90 | 100 | 30 | 25 | 5 | B | | | Weak to medium strong coarsely crystalline orange white GRANITE. Partially weathered to unweathered.<br>Non intact from from 3.40m - 3.50m.<br>Fracture set 1: From 3.50m - 3.84m, medium spaced at 30 - 45 degrees orientation, stepped rough, tight to open.<br>Non intact from 3.84m - 3.90m. | | | |
| | 100 | 74 | 53 | 10 | | | (2.40) | | | | |
| 5.40<br>5.80 | 100 | 15 | 15 | 5<br>12 | | | 5.80 (1.10) | Fracture set 1: From 3.90m - 5.40m, close to medium spaced at 60 - 70 degrees orientation, planar rough. tight to open, stained brown.<br>Extremely weak to weak coarsely crystalline pinkish brown GRANITE. Distinctly weathered.<br>Fracture set 1: From 5.40m - 5.80m, close to medium spaced at 40 - 50 degrees orientation, planar smooth, tight to open, stained brown, quartz sand on fracture surfaces. | | | |
| 6.90 | 100 | 26 | 18 | | | | 6.90 (1.50) | Weak to medium strong coarsely crystalline pinkish brown GRANITE. Partially weathered to unweathered.<br>Non intact from 5.80m - 6.90. | | | |
| 8.40 | | | | | | | 8.40 | Fracture set 1: From 6.90m - 8.40m, close to medium spaced at 50 - 60 degrees orientation, planar rough to smooth, tight to open, quartz sand on fracture surfaces.<br>Complete at 8.40m | | | |

**Remarks**
Groundwater encountered a 3.00m.
Obstruction onto granite rock

| Scale (approx) | Logged By |
|---|---|
| 1:50 | PM |

**Figure No.** 8354-01-19.BH-11

# Cornelscourt – Rotary Core Photographs



GROUND
INVESTIGATIONS
IRELAND
Colour Chart #14
Grey Scale #14
Client: DBFL
Site: cornelscourt Dublin
Borehole ref: BH-02
Box No: 3 of 3
Job Ref: 8354-01-19
Date: 04/3/19
Depth: From 15.2 to 17.4
cm 10 20 30 40 50 60 70 80 90 100
15.9m
17.4m


GROUND
INVESTIGATIONS
IRELAND
Client: DBFL
Site: CORNELSCOURT
Borehole ref: BH03
Box No: 1 of 3
Job Ref: 8354-01-19
Date: 05/03/19
Depth: From 5.4 to 9.5
cm 10 20 30 40 50 60 70 80 90 100 110
5.9m
8.4m
9.5m


GROUND
INVESTIGATIONS
IRELAND
Client: DBFL
Site: cornelscourt Dublin
Borehole ref: BH-03
Box No: 2 of 3
Job Ref: 8354-01-19
Date: 05/3/19
Depth: From 9.5 m to 13.5 m
cm 10 20 30 40 50 60 70 80 90 100
9.9m
11.4m
12.9m
13.5m


GROUND
INVESTIGATIONS
IRELAND
Client: DBFL
Site: CORNELSCOURT
Borehole ref: BH03
Box No: 3 of 3
Job Ref: 8354-01-19
Date: 05/03/19
Depth: From 13.5 to 15.9
cm 10 20 30 40 50 60 70 80 90 100 110
14.4m
15.9m


GROUND
INVESTIGATIONS
IRELAND
Client: DBFL
Site: cornelscourt Dublin
Borehole ref: BH-04
Box No: 1 of 3
Job Ref: 8354-01-19
Date: 04/3/19
Depth: From 0.0 to 9.1
cm 10 20 30 40 50 60 70 80 90 100
2.4
3.9
5.4
6.9
8.4
9.1


GROUND
INVESTIGATIONS
IRELAND
Client: DBFL
Site: cornelscourt Dublin
Borehole ref: BH-04
Box No: 2 of 3
Job Ref: 8354-01-19
Date: 04/3/19
Depth: From 9.1 to 11.75
cm 10 20 30 40 50 60 70 80 90 100
9.9
11.4
11.75

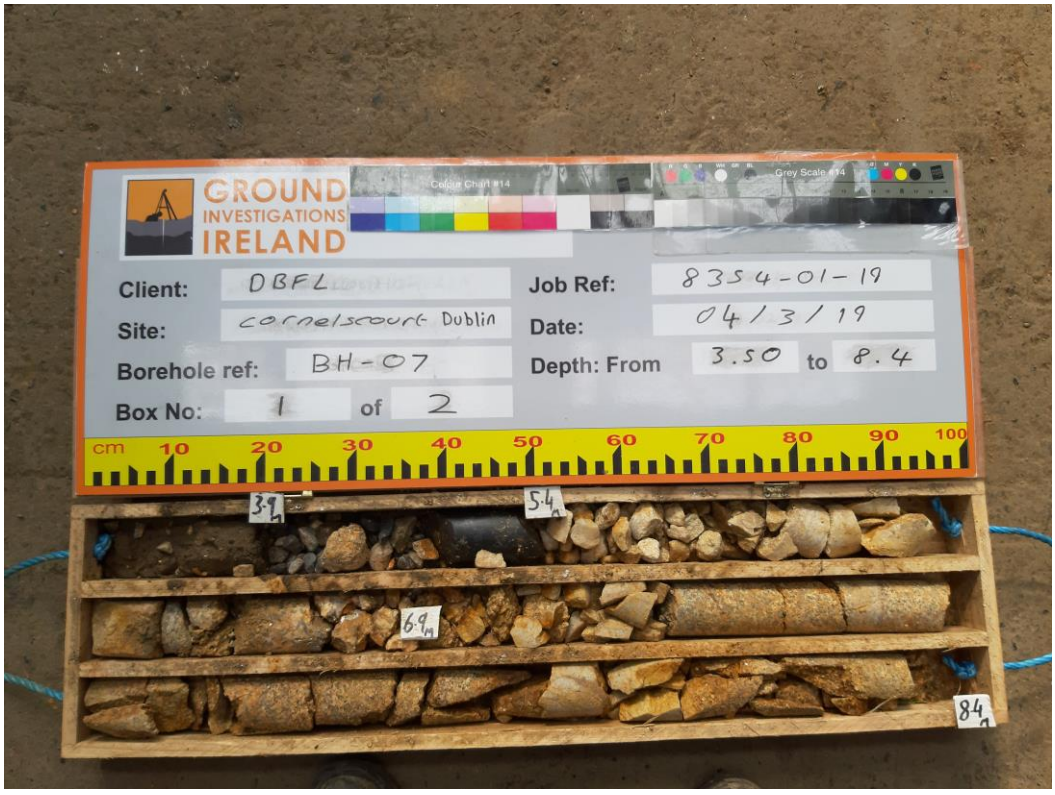

GROUND
INVESTIGATIONS
IRELAND
Colour Chart #14
Grey Scale #14
Client: DBFL
Job Ref: 8354-01-19
Site: cornelscourt Dublin
Date: 04/3/19
Borehole ref: BH-04
Depth: From 11.75 to 13.7
Box No: 3 of 3
cm 10 20 30 40 50 60 70 80 90 100
12.9m
13.7m


GROUND
INVESTIGATIONS
IRELAND
Colour Chart #14
Grey Scale #14
Client: DBFL
Job Ref: 8354-01-19
Site: cornelscourt Dublin
Date: 7/3/19
Borehole ref: BH-05
Depth: From 5.4 to 8.9
Box No: 1 of 2
cm 10 20 30 40 50 60 70 80 90 100
6.9m
8.4m
8.9m


GROUND
INVESTIGATIONS
IRELAND
Colour Chart #14
Grey Scale #14
Client: DBFL
Job Ref: 8354-01-19
Site: cornelscourt Dublin
Date: 7/3/19
Borehole ref: BH-05
Depth: From 8.9 to 10.8
Box No: 2 of 2
cm 10 20 30 40 50 60 70 80 90 100
9.9 m
10.8 m


GROUND
INVESTIGATIONS
IRELAND
Colour Chart #14
Grey Scale #14
Client: DBFL
Job Ref: 8354-01-19
Site: cornelscourt Dublin
Date: 06/3/19
Borehole ref: BH-06
Depth: From 4.5 to 8.4
Box No: 1 of 2
cm 10 20 30 40 50 60 70 80 90 100
5.4 m
6.9m
8.4 m


GROUND INVESTIGATIONS IRELAND
Colour Chart #14
Grey Scale #14
Client: DBFL
Job Ref: 8354-01-19
Site: cornelscourt Dublin
Date: 06/3/19
Borehole ref: BH-06
Depth: From 8.4 to 11.1
Box No: 2 of 2
cm 10 20 30 40 50 60 70 80 90 100
9.9m
11.1m


GROUND INVESTIGATIONS IRELAND
Colour Chart #14
Grey Scale #14
Client: DBFL
Job Ref: 8354-01-19
Site: cornelscourt Dublin
Date: 04/3/19
Borehole ref: BH-07
Depth: From 3.50 to 8.4
Box No: 1 of 2
cm 10 20 30 40 50 60 70 80 90 100
3.9m
5.4m
6.9m
8.4m


GROUND INVESTIGATIONS IRELAND
Client: DBFL
Site: Carnelscourt Dublin
Borehole ref: BH-07
Box No: 2 of 2
Job Ref: 8354-01-19
Date: 04/3/19
Depth: From 8.4 to 11.4
cm 10 20 30 40 50 60 70 80 90 100
9.9m
11.4m


GROUND INVESTIGATIONS IRELAND
Client: DBFL
Site: Carnelscourt Dublin
Borehole ref: BH-08
Box No: 1 of 2
Job Ref: 8354-01-19
Date: 28/2/19
Depth: From 3.00 to 6.1
cm 10 20 30 40 50 60 70 80 90 100
3.9m
5.4m
6.1m


GROUND
INVESTIGATIONS
IRELAND
Client: DBFL
Site: Cornelscourt Dublin
Borehole ref: BH-08
Box No: 2 of 2
Job Ref: 8354-01-19
Date: 28/2/19
Depth: From 6.1 to 8.4
cm 10 20 30 40 50 60 70 80 90 100
6.9m
8.4m


GROUND
INVESTIGATIONS
IRELAND
Client: DBFL
Site: Cornelscourt Dublin
Borehole ref: BH-09
Box No: 1 of 2
Job Ref: 8354-01-19
Date: 6/3/19
Depth: From 2.9 to 5.95
cm 10 20 30 40 50 60 70 80 90 100
3.9m
5.4m
5.95m


GROUND INVESTIGATIONS IRELAND
Client: DBFL
Site: cornelscourt Dublin
Borehole ref: BH-09
Box No: 2 of 2
Job Ref: 8354-01-19
Date: 6/3/19
Depth: From 5.95 to 8.0
cm 10 20 30 40 50 60 70 80 90 100
6.9m
8.0m


GROUND INVESTIGATIONS IRELAND
Client: DBFL
Site: cornelscourt Dublin
Borehole ref: BH-10
Box No: 1 of 2
Job Ref: 8354-01-19
Date: 7/3/19
Depth: From 2.7 to 5.4
cm 10 20 30 40 50 60 70 80 90 100
3.9m
5.4m


GROUND INVESTIGATIONS IRELAND
Client: DBFL
Site: Cornelscourt Dublin
Borehole ref: BH-10
Box No: 2 of 2
Job Ref: 8354-01-19
Date: 7/3/19
Depth: From 5.4 to 6.9
cm 10 20 30 40 50 60 70 80 90 100
6.9m

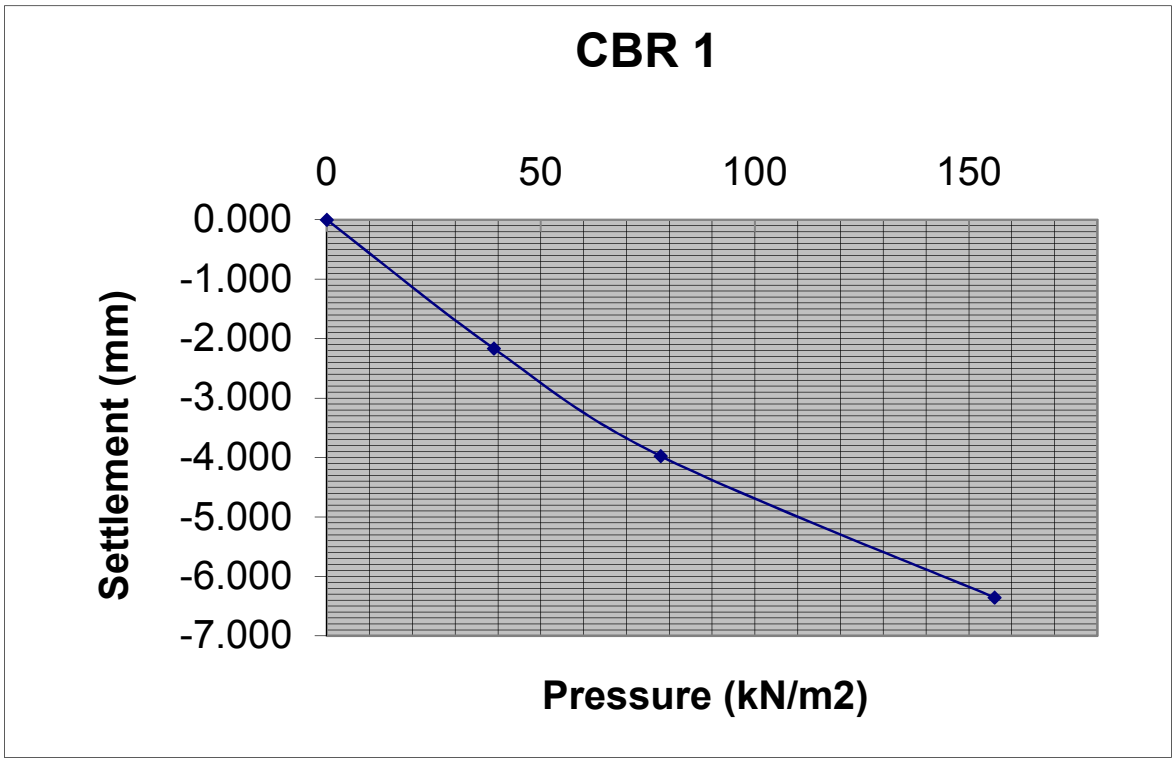

GROUND INVESTIGATIONS IRELAND
Client: DBFL
Site: Cornelscourt Dublin
Borehole ref: BH-11
Box No: 1 of 2
Job Ref: 8354-01-19
Date: 01/3/19
Depth: From 3.0 to 5.8
cm 10 20 30 40 50 60 70 80 90 100
3.9m
5.4m
5.8m


GROUND
INVESTIGATIONS
IRELAND
Client: DBFL
Site: Cornelscourt Dublin
Borehole ref: BH-11
Box No: 2 of 2
Job Ref: 8354-01-19
Date: 01/3/19
Depth: From 5.8 to 8.4
cm 10 20 30 40 50 60 70 80 90 100
6.9m
84

# **APPENDIX 7** – Plate Test Records

| Applied Load | Gauge settlement |
|---|---|
| 0 | **0.000** |
| 39 | -2.165 |
| 78 | -3.975 |
| 156 | -6.355 |
| 0 | |
| 78 | |
| 156 | |
| 0 | |
| | |

| | | | |
|---|---|---|---|
| **LOCATION** | Cornelscourt | **MATERIAL** | |
| **CONTRACT NO.** | 8354-01-19 | | Light brown slightly sandy slightly gravelly CLAY |
| **DATE** | 23/01/2019 | | |
| **CLIENT** | DBFL | **DEPTH** | 0.4 |
| **PLATE DIAMETER** | 457mm | **NOTES** | Plate failed to stop moving up reloading |
| **TEST NO.** | Test 1 | **SAMPLES** | |




Modulus of subgrade reaction, K (Initial) = **11.73 MN/m2/m**

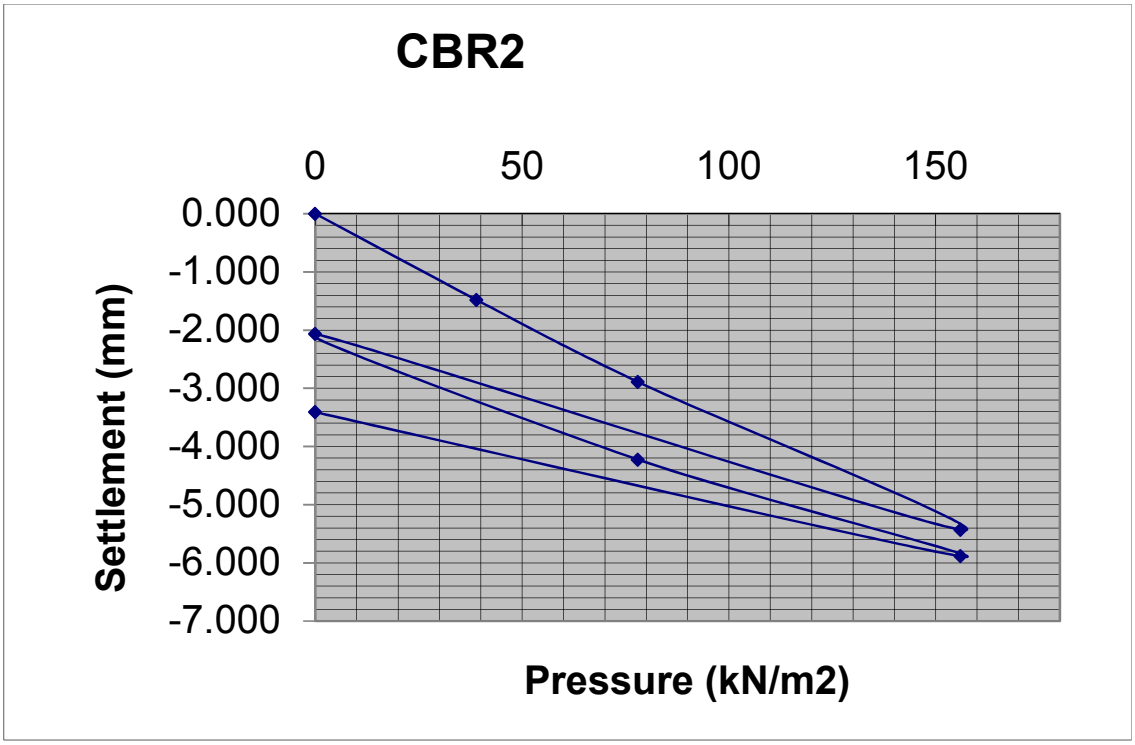
Modulus of subgrade reaction, K (Reload) = **#DIV/0! MN/m2/m**

Equivalent CBR(initial)in accordance with HD25/94 volume7 section2 = **0.69 %**

Equivalent CBR(reload)in accordance with HD25/94 volume7 section2 = **#DIV/0! %**

| Applied Load | Gauge settlement |
|---|---|
| 0 | **0.000** |
| 39 | -1.48 |
| 78 | -2.89 |
| 156 | -5.43 |
| 0 | -2.065 |
| 78 | -4.225 |
| 156 | -5.885 |
| 0 | -3.41 |
| | |

| | | | |
|---|---|---|---|
| **LOCATION** | Cornelscourt | **MATERIAL** | |
| **CONTRACT NO.** | 8354-01-19 | | Light brown slightly sandy slightly gravelly CLAY |
| **DATE** | 23/01/2019 | | |
| **CLIENT** | DBFL | **DEPTH** | 0.5 |
| **PLATE DIAMETER** | 457mm | **NOTES** | |
| **TEST NO.** | Test 2 | **SAMPLES** | |




Modulus of subgrade reaction, K (Initial) = **16.13 MN/m2/m**

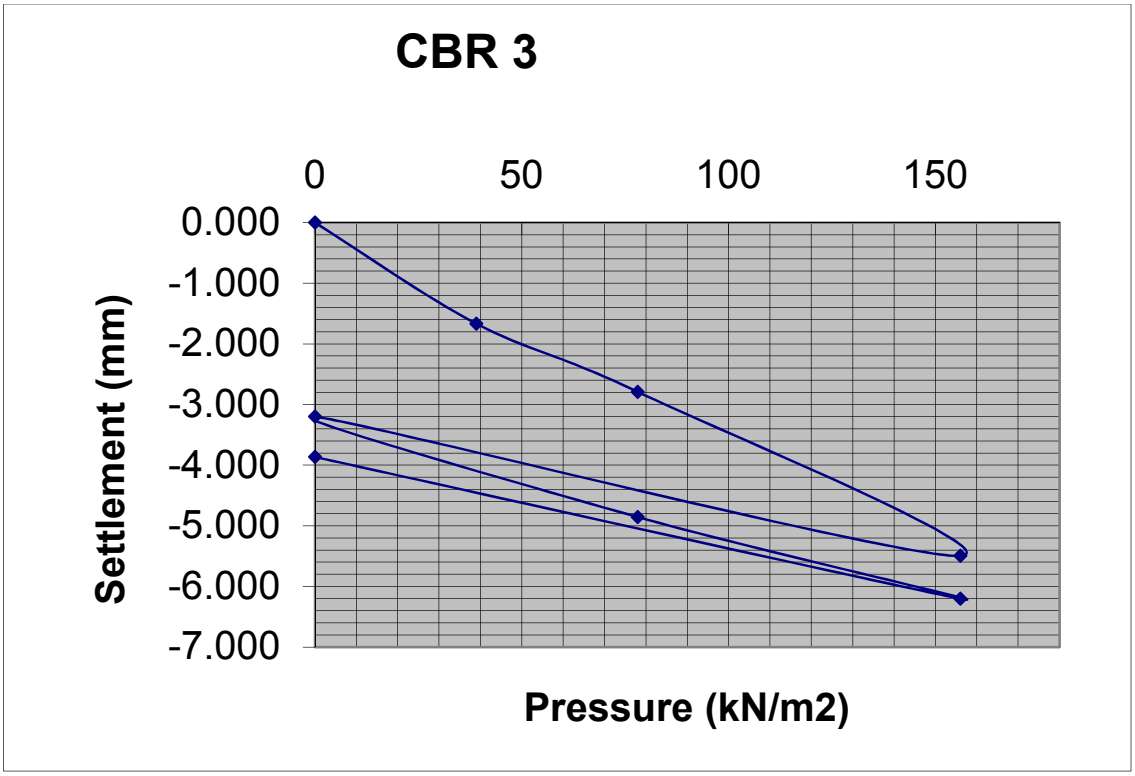
Modulus of subgrade reaction, K (Reload) = **21.58 MN/m2/m**

Equivalent CBR(initial)in accordance with HD25/94 volume7 section2 = **1.19 %**

Equivalent CBR(reload)in accordance with HD25/94 volume7 section2 = **1.98 %**

| Applied Load | Gauge settlement |
|---|---|
| 0 | **0.000** |
| 39 | -1.665 |
| 78 | -2.79 |
| 156 | -5.495 |
| 0 | -3.2 |
| 78 | -4.855 |
| 156 | -6.2 |
| 0 | -3.865 |
| | |

| | | | |
|---|---|---|---|
| **LOCATION** | Cornelscourt | **MATERIAL** | |
| **CONTRACT NO.** | 8354-01-19 | | Light brown slightly sandy slightly gravelly CLAY |
| **DATE** | 23/01/2019 | | |
| **CLIENT** | DBFL | **DEPTH** | 0.55 |
| **PLATE DIAMETER** | 457mm | **NOTES** | |
| **TEST NO.** | Test 3 | **SAMPLES** | |




Modulus of subgrade reaction, K (Initial) = **16.71 MN/m2/m**

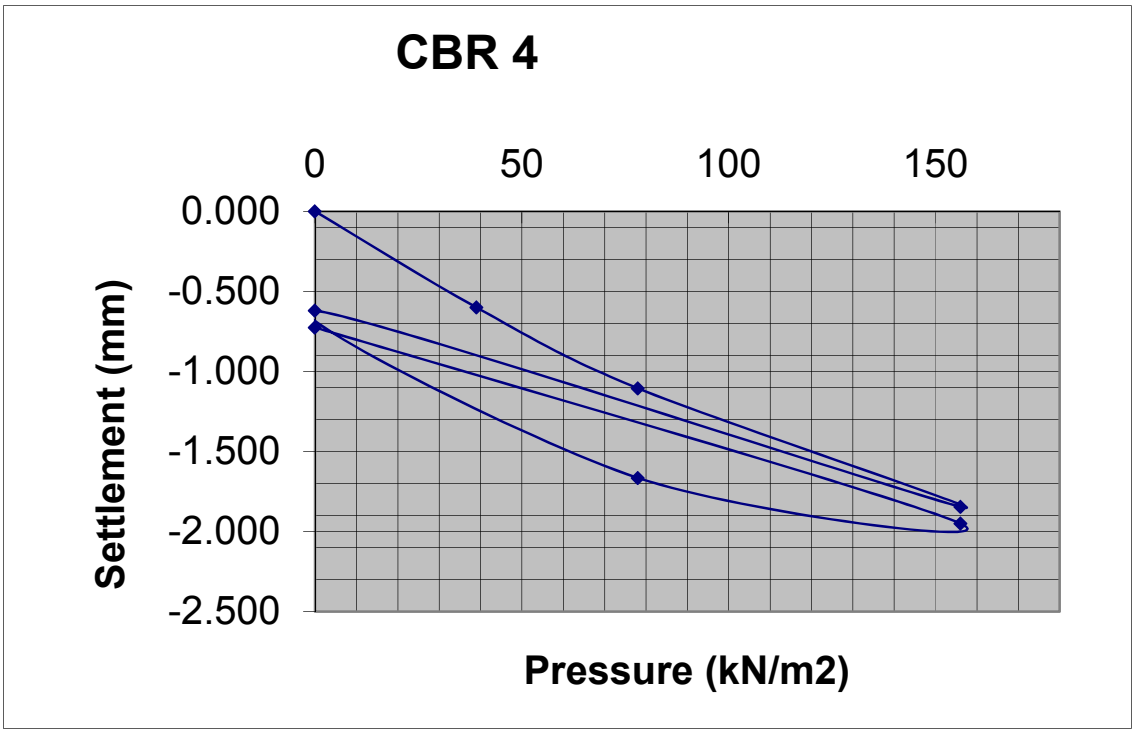
Modulus of subgrade reaction, K (Reload) = **28.17 MN/m2/m**

Equivalent CBR(initial)in accordance with HD25/94 volume7 section2 = **1.27 %**

Equivalent CBR(reload)in accordance with HD25/94 volume7 section2 = **3.14 %**

| Applied Load | Gauge settlement |
|---|---|
| 0 | **0.000** |
| 39 | -0.6 |
| 78 | -1.105 |
| 156 | -1.845 |
| 0 | -0.62 |
| 78 | -1.665 |
| 156 | -1.95 |
| 0 | -0.725 |
| | |

| | | | |
|---|---|---|---|
| **LOCATION** | Cornelscourt | **MATERIAL** | MADE GROUND: Bluish grey sandy slightly clayey angular to sub-angular fine to coarse Gravel |
| **CONTRACT NO.** | 8354-01-19 | | |
| **DATE** | 23/01/2019 | | |
| **CLIENT** | DBFL | **DEPTH** | |
| **PLATE DIAMETER** | 457mm | **NOTES** | |
| **TEST NO.** | Test 4 | **SAMPLES** | |




Modulus of subgrade reaction, K (Initial) = **42.19 MN/m2/m**

Modulus of subgrade reaction, K (Reload) = **44.62 MN/m2/m**

Equivalent CBR(initial)in accordance with HD25/94 volume7 section2 = **6.32 %**

Equivalent CBR(reload)in accordance with HD25/94 volume7 section2 = **6.96 %**

# **APPENDIX 8** – Laboratory Testing Records

# **APPENDIX 8.1** – Geotechnical Laboratory Records

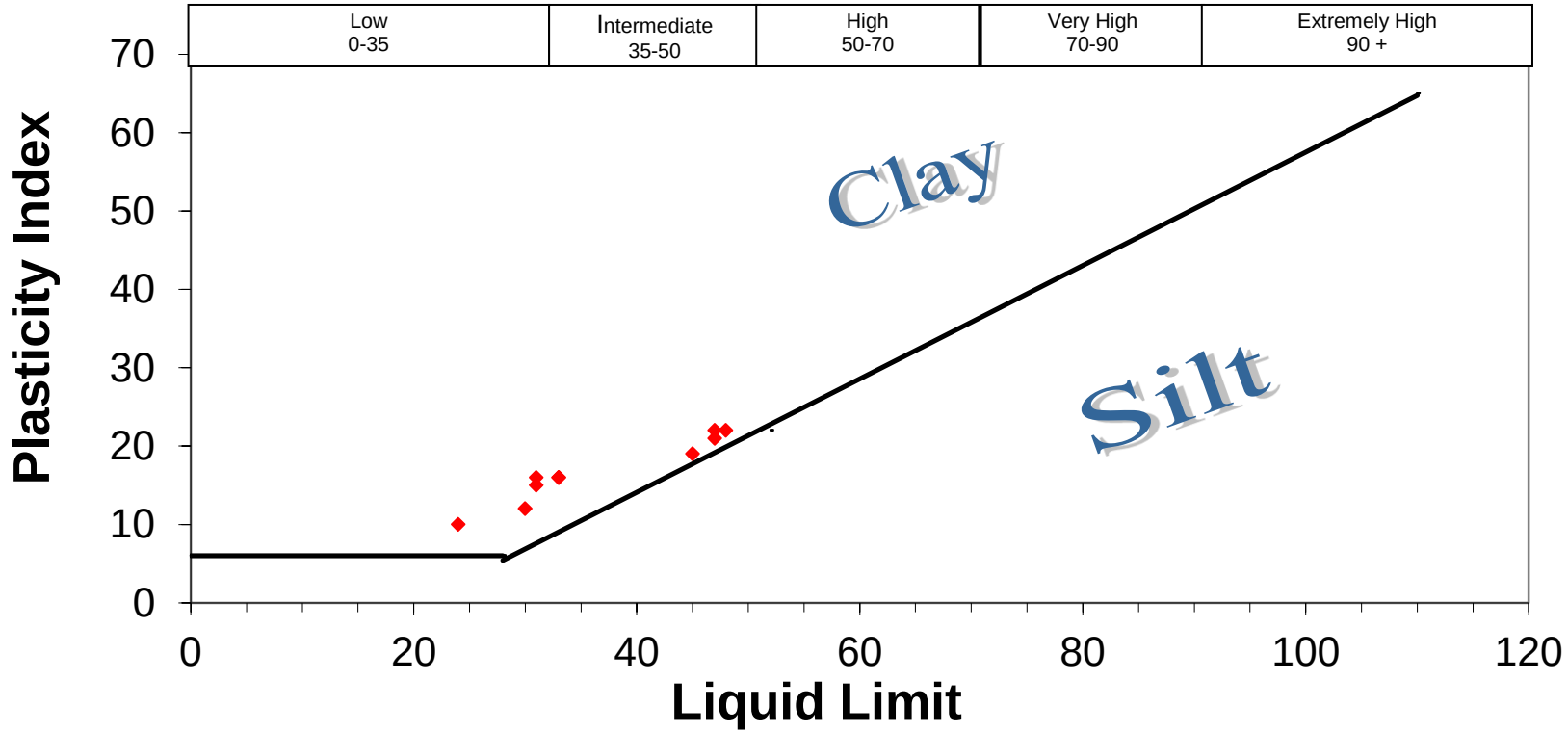
***National Materials Testing Laboratory Ltd.***

## SUMMARY OF TEST RESULTS

| | | | | Particle | | | Index Properties | | Bulk | Cell | Undrained Triaxial Tests | | Lab | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| BH/TP | Depth | sample | Moisture | Density | <425um | LL | PL | PI | Density | Presssure | Compressive | Strain at | Vane | Remarks |
| No | m | No. | % | Mg/m3 | % | % | % | % | Mg/m3 | kPa | Stress kPa | Failure % | kPa | |
| TP02 | 3.7 | B | 10.5 | | 27.3 | 24 | 14 | 10 | | | | | | |
| TP03 | 0.50 | B | 22.4 | | 76.7 | 48 | 26 | 22 | | | | | | |
| TP03 | 2.50 | B | 16.2 | | 66.4 | 31 | 15 | 16 | | | | | | |
| TP06 | 2.90 | B | 13.9 | | 46.9 | 31 | 16 | 15 | | | | | | |
| TP08 | 0.50 | B | 22.6 | | 75.0 | 47 | 25 | 22 | | | | | | |
| TP13 | 0.50 | B | 23.7 | | 77.7 | 47 | 26 | 21 | | | | | | |
| TP13 | 2.50 | B | 14.6 | | 56.5 | 33 | 17 | 16 | | | | | | |
| TP14 | 1.50 | B | 13.4 | | 50.1 | 33 | 17 | 16 | | | | | | |
| TP17 | 0.50 | B | 23.5 | | 78.4 | 45 | 26 | 19 | | | | | | |
| TP21 | 1.00 | B | 14.0 | | 41.4 | 30 | 18 | 12 | | | | | | |

| | | | | | |
|---|---|---|---|---|---|
| NMTL | Notes : | Job ref No. | NMTL 2837 | GII Project ID: | 8354-01-19 |
| | 1. All BS tests carried out using preferred (definitive) method unless otherwise stated. | Location | Cornelscourt | | |

| | |
|---|---|
| **NMTL LTD** | **Contract:** Cornelscourt |
| **Unit 18c, Tullow Industrial Estate** | **Client:** Ground Investigations Ireland Ltd |
| **Tullow** | **Engineer:** N/A |
| **County Carlow** | **GII Project ID** 8354-01-19 |
| **Tel: 00353 59 9180822** | **Date:** 27/02/2019 |
| **Mob: 00353 872575508** | **Tested By:** Tzr **Checked:** Bc |
| billachana@eircom.net | **Job ref No.** NMTL 2837 |



**NMTL Ltd**

# Determination of Particle Size Distribution

**BS 1377 : 1990 : Part 2 : Clauses 9.2 & 9.5**

| Sieve Size mm | % Passing |
|---|---|
| 125.000 | 100.0 |
| 75.000 | 100.0 |
| 63.000 | 94.5 |
| 50.000 | 89.8 |
| 37.500 | 84.9 |
| 28.000 | 77.2 |
| 20.000 | 71.7 |
| 14.000 | 66.2 |
| 10.000 | 63.2 |
| 6.300 | 58.2 |
| 5.000 | 55.8 |
| 3.350 | 52.5 |
| 2.000 | 46.7 |
| 1.180 | 40.3 |
| 0.600 | 31.1 |
| 0.425 | 27.3 |
| 0.300 | 24.0 |
| 0.212 | 20.8 |
| 0.150 | 17.3 |
| 0.063 | 11.6 |


Percentage Particle Size

| Clay | Fine Silt | Medium Silt | Coarse Silt | Fine Sand | Medium Sand | Coarse Sand | Fine Gravel | Medium Gravel | Coarse Gravel | Cobbles | Boulder |
|---|---|---|---|---|---|---|---|---|---|---|---|
| | | 11.6 | | | 35.2 | | | 47.8 | | 5.5 | 0.0 |

Sample Description: Brown clayey/silty very sandy GRAVEL with some cobbles.

Project: Cornelscourt

**GII Project ID: 8354-01-18**

| Operator | Checked | Approved | Date sample tested |
|---|---|---|---|
| Tzr | Nc | Bc | 19/02/2019 |

| | |
|---|---|
| Project No. | NMTL 2837 |
| BH/TP No. | TP02 |
| Sample No. | B |
| Depth | 3.70m |

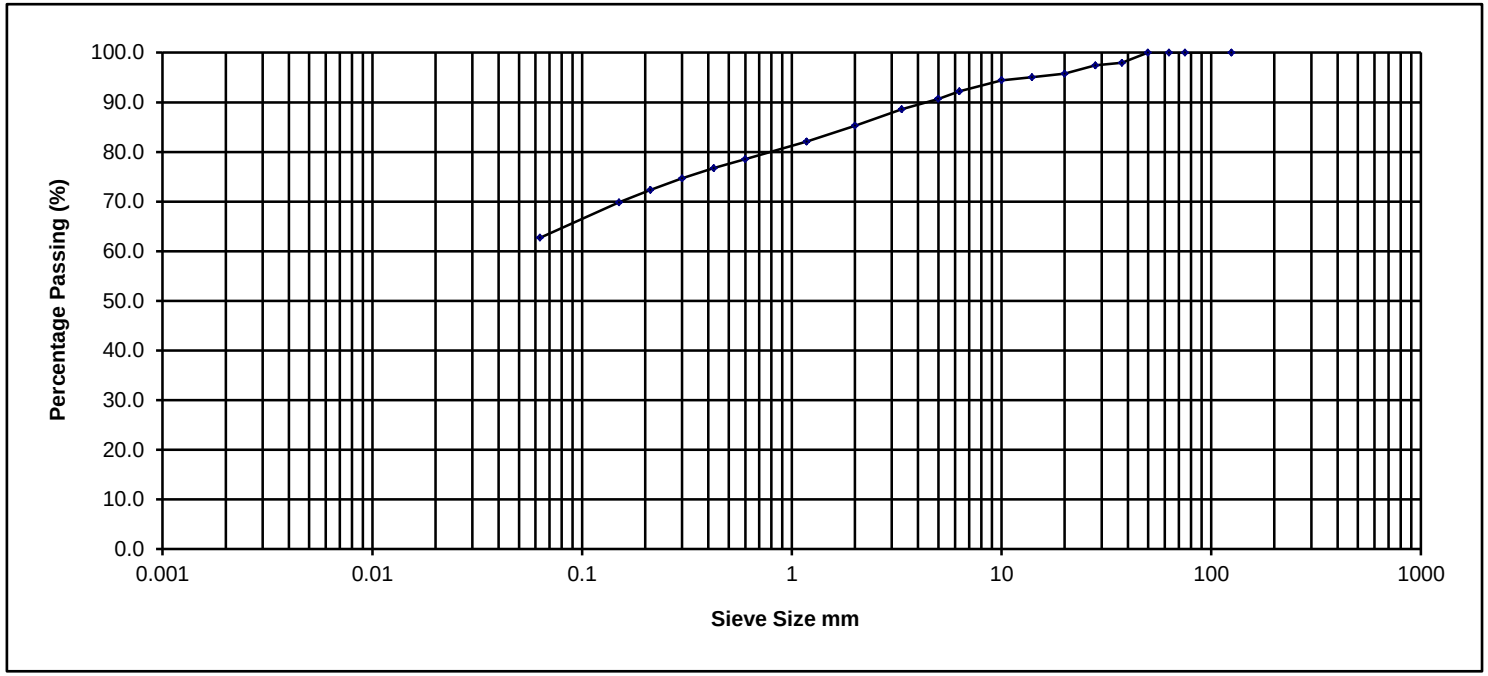
**NMTL Ltd**

**NMTL Ltd**

# Determination of Particle Size Distribution

**BS 1377 : 1990 : Part 2 : Clauses 9.2 & 9.5**

| Sieve Size mm | % Passing |
|---|---|
| 125.000 | 100.0 |
| 75.000 | 100.0 |
| 63.000 | 100.0 |
| 50.000 | 100.0 |
| 37.500 | 97.9 |
| 28.000 | 97.4 |
| 20.000 | 95.8 |
| 14.000 | 95.1 |
| 10.000 | 94.4 |
| 6.300 | 92.2 |
| 5.000 | 90.7 |
| 3.350 | 88.6 |
| 2.000 | 85.3 |
| 1.180 | 82.1 |
| 0.600 | 78.5 |
| 0.425 | 76.7 |
| 0.300 | 74.7 |
| 0.212 | 72.4 |
| 0.150 | 69.8 |
| 0.063 | 62.7 |




Percentage Particle Size

| Clay | Fine | Medium | Coarse | Fine | Medium | Coarse | Fine | Medium | Coarse | Cobbles | Boulder |
|---|---|---|---|---|---|---|---|---|---|---|---|
| | | Silt | | | Sand | | | Gravel | | | |
| | | 62.7 | | | 22.6 | | | 14.7 | | 0.0 | 0.0 |

| | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|
| Sample Description | Brown slightly gravelly slightly sandy silty CLAY. | | | | | | | Project No. | NMTL 2837 |
| | | | | | | | | BH/TP No. | TP03 |
| Project | Cornelscourt | | | | | **GII Project ID:** | **8354-01-18** | Sample No. | B |
| Operator | Tzr | Checked | Nc | Approved | Bc | Date sample tested | 19/02/2019 | Depth | 0.50m |

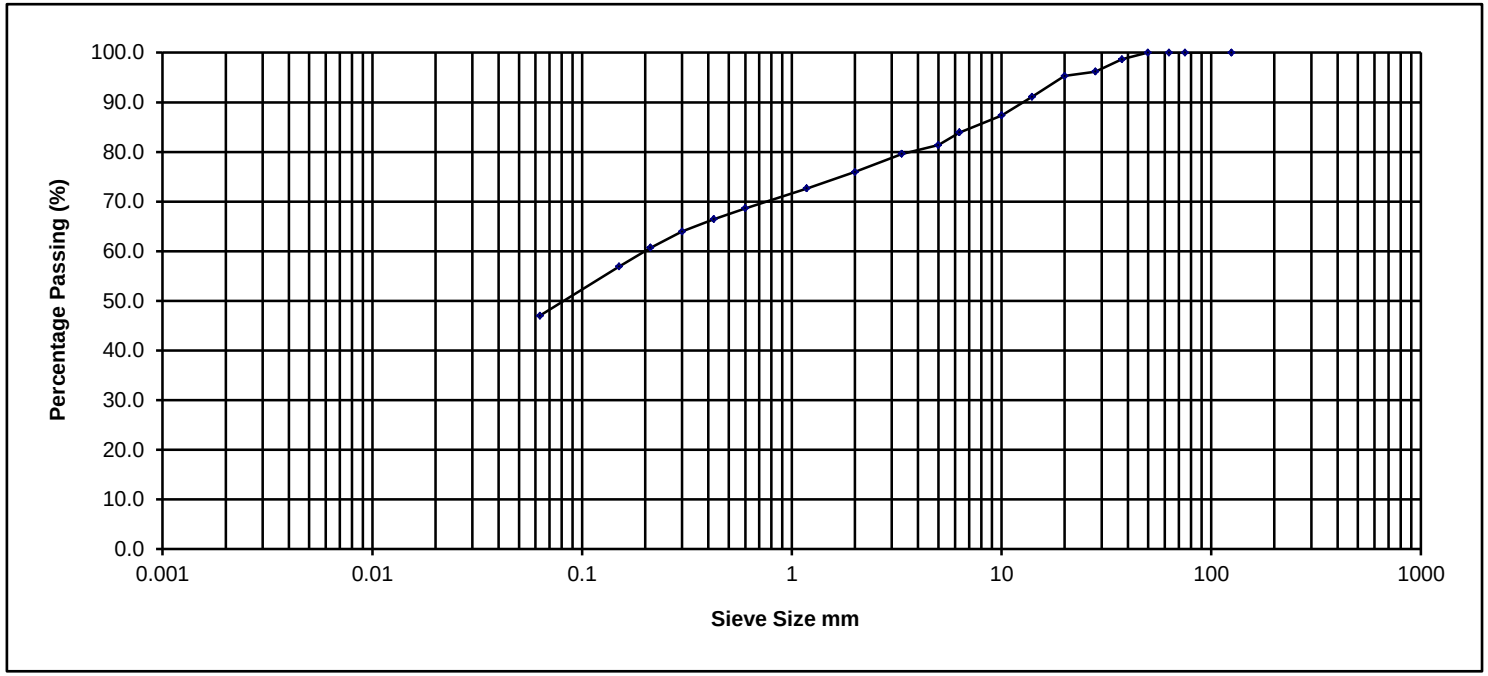
**NMTL Ltd**

**NMTL Ltd**

# Determination of Particle Size Distribution

**BS 1377 : 1990 : Part 2 : Clauses 9.2 & 9.5**

| Sieve Size mm | % Passing |
|---|---|
| 125.000 | 100.0 |
| 75.000 | 100.0 |
| 63.000 | 100.0 |
| 50.000 | 100.0 |
| 37.500 | 98.7 |
| 28.000 | 96.2 |
| 20.000 | 95.3 |
| 14.000 | 91.1 |
| 10.000 | 87.3 |
| 6.300 | 83.9 |
| 5.000 | 81.4 |
| 3.350 | 79.6 |
| 2.000 | 76.0 |
| 1.180 | 72.6 |
| 0.600 | 68.6 |
| 0.425 | 66.4 |
| 0.300 | 64.0 |
| 0.212 | 60.7 |
| 0.150 | 56.9 |
| 0.063 | 47.0 |




Percentage Particle Size

| Clay | Fine | Medium | Coarse | Fine | Medium | Coarse | Fine | Medium | Coarse | Cobbles | Boulder |
|---|---|---|---|---|---|---|---|---|---|---|---|
| | | Silt | | | Sand | | | Gravel | | | |
| | | 47.0 | | | 29.0 | | | 24.0 | | 0.0 | 0.0 |

Sample Description: Brown slightly gravelly slightly sandy silty CLAY.

Project: Cornelscourt

**GII Project ID: 8354-01-18**

| | |
|---|---|
| Project No. | NMTL 2837 |
| BH/TP No. | TP03 |
| Sample No. | B |
| Depth | 2.50m |

| Operator | Tzr | Checked | Nc | Approved | Bc | Date sample tested | 19/02/2019 |
|---|---|---|---|---|---|---|---|

**NM TL Ltd**

**NMTL Ltd**

# Determination of Particle Size Distribution

**BS 1377 : 1990 : Part 2 : Clauses 9.2 & 9.5**

| Sieve Size mm | % Passing |
|---|---|
| 125.000 | 100.0 |
| 75.000 | 100.0 |
| 63.000 | 96.2 |
| 50.000 | 94.4 |
| 37.500 | 90.1 |
| 28.000 | 85.8 |
| 20.000 | 82.8 |
| 14.000 | 79.3 |
| 10.000 | 73.7 |
| 6.300 | 68.2 |
| 5.000 | 65.1 |
| 3.350 | 62.6 |
| 2.000 | 58.2 |
| 1.180 | 53.9 |
| 0.600 | 49.2 |
| 0.425 | 46.9 |
| 0.300 | 44.6 |
| 0.212 | 42.4 |
| 0.150 | 40.1 |
| 0.063 | 34.5 |


Percentage Particle Size

| Clay | Fine | Medium | Coarse | Fine | Medium | Coarse | Fine | Medium | Coarse | Cobbles | Boulder |
|---|---|---|---|---|---|---|---|---|---|---|---|
| | | Silt | | | Sand | | | Gravel | | | |
| | | 34.5 | | | 23.7 | | | 38.0 | | 3.8 | 0.0 |

| | | | | | | | |
|---|---|---|---|---|---|---|---|
| Sample Description | Brown slightly sandy gravelly silty CLAY, with occasional cobbles. | | | | | Project No. | NMTL 2837 |
| | | | | | | BH/TP No. | TP06 |
| Project | Cornelscourt | | | **GII Project ID:** | **8354-01-18** | Sample No. | B |
| Operator Tzr | Checked Nc | Approved Bc | | Date sample tested | 19/02/2019 | Depth | 2.90m |

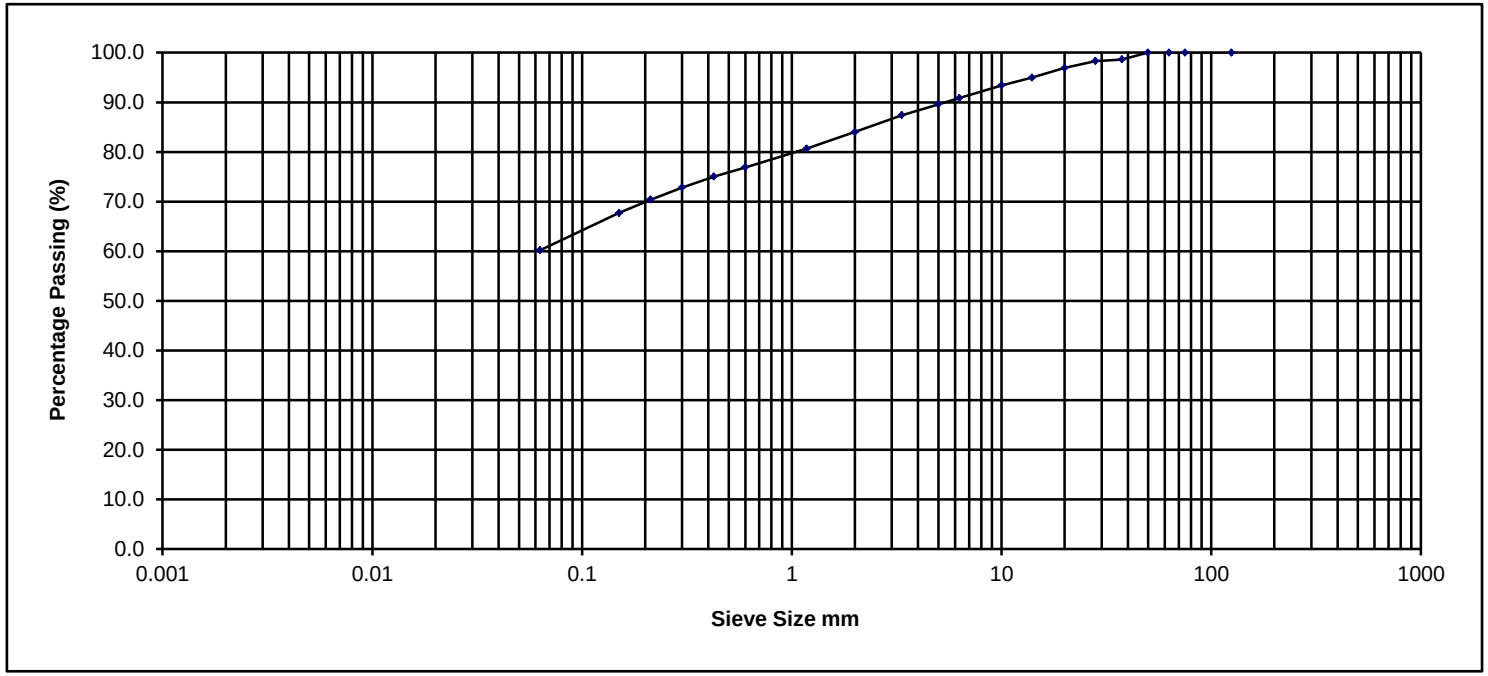
***NM TL Ltd***

**NMTL Ltd**

# Determination of Particle Size Distribution

**BS 1377 : 1990 : Part 2 : Clauses 9.2 & 9.5**

| Sieve Size mm | % Passing |
|---|---|
| 125.000 | 100.0 |
| 75.000 | 100.0 |
| 63.000 | 100.0 |
| 50.000 | 100.0 |
| 37.500 | 98.6 |
| 28.000 | 98.3 |
| 20.000 | 96.9 |
| 14.000 | 95.0 |
| 10.000 | 93.4 |
| 6.300 | 90.9 |
| 5.000 | 89.6 |
| 3.350 | 87.4 |
| 2.000 | 84.0 |
| 1.180 | 80.7 |
| 0.600 | 76.9 |
| 0.425 | 75.0 |
| 0.300 | 72.8 |
| 0.212 | 70.4 |
| 0.150 | 67.7 |
| 0.063 | 60.2 |




Percentage Particle Size

| Clay | Fine | Medium | Coarse | Fine | Medium | Coarse | Fine | Medium | Coarse | Cobbles | Boulder |
|---|---|---|---|---|---|---|---|---|---|---|---|
| | | Silt | | | Sand | | | Gravel | | | |
| | | 60.2 | | | 23.8 | | | 16.0 | | 0.0 | 0.0 |

| | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|
| Sample Description | Brown slightly gravelly slightly sandy silty CLAY. | | | | | | | Project No. | NMTL 2837 |
| | | | | | | | | BH/TP No. | TP08 |
| Project | Cornelscourt | | | | | **GII Project ID:** | **8354-01-18** | Sample No. | B |
| Operator | Tzr | Checked | Nc | Approved | Bc | Date sample tested | 19/02/2019 | Depth | 0.50m |

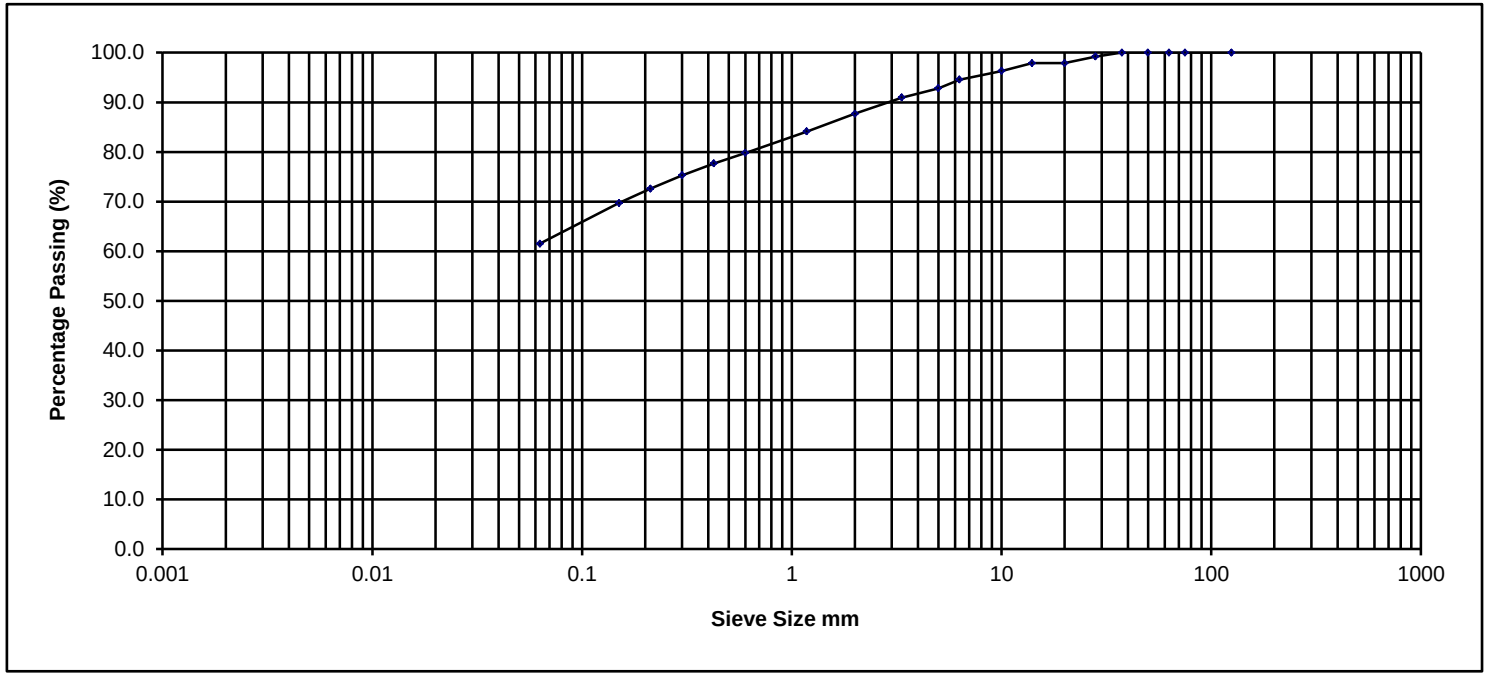
**NMTL Ltd**

**NMTL Ltd**

# Determination of Particle Size Distribution

**BS 1377 : 1990 : Part 2 : Clauses 9.2 & 9.5**

| 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 | 99.2 |
| 20.000 | 97.9 |
| 14.000 | 97.9 |
| 10.000 | 96.3 |
| 6.300 | 94.6 |
| 5.000 | 92.8 |
| 3.350 | 91.0 |
| 2.000 | 87.7 |
| 1.180 | 84.1 |
| 0.600 | 79.8 |
| 0.425 | 77.7 |
| 0.300 | 75.3 |
| 0.212 | 72.6 |
| 0.150 | 69.7 |
| 0.063 | 61.5 |




Percentage Particle Size

| Clay | Fine | Medium | Coarse | Fine | Medium | Coarse | Fine | Medium | Coarse | Cobbles | Boulder |
|---|---|---|---|---|---|---|---|---|---|---|---|
| | | Silt | | | Sand | | | Gravel | | | |
| | | 61.5 | | | 26.2 | | | 12.3 | | 0.0 | 0.0 |

| | | | | | | | |
|---|---|---|---|---|---|---|---|
| Sample Description | Brown slightly gravelly slightly sandy silty CLAY. | | | | | Project No. | NMTL 2837 |
| | | | | | | BH/TP No. | TP13 |
| Project | Cornelscourt | | | **GII Project ID:** | **8354-01-18** | Sample No. | B |
| Operator Tzr | Checked Nc | Approved Bc | | Date sample tested | 19/02/2019 | Depth | 0.50m |

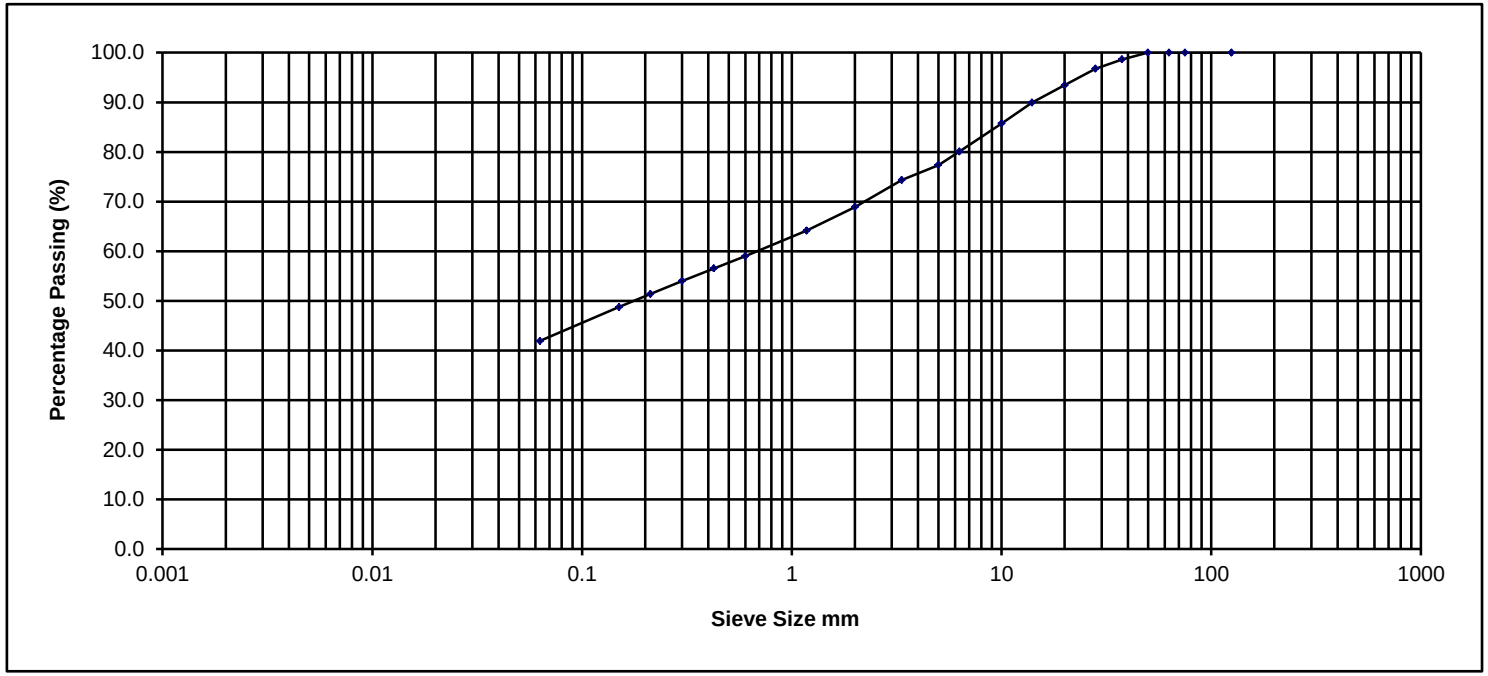
***NM TL Ltd***

**NMTL Ltd**

# Determination of Particle Size Distribution

**BS 1377 : 1990 : Part 2 : Clauses 9.2 & 9.5**

| Sieve Size mm | % Passing |
|---|---|
| 125.000 | 100.0 |
| 75.000 | 100.0 |
| 63.000 | 100.0 |
| 50.000 | 100.0 |
| 37.500 | 98.6 |
| 28.000 | 96.8 |
| 20.000 | 93.4 |
| 14.000 | 90.0 |
| 10.000 | 85.7 |
| 6.300 | 80.1 |
| 5.000 | 77.4 |
| 3.350 | 74.3 |
| 2.000 | 68.9 |
| 1.180 | 64.1 |
| 0.600 | 59.0 |
| 0.425 | 56.5 |
| 0.300 | 54.0 |
| 0.212 | 51.4 |
| 0.150 | 48.7 |
| 0.063 | 41.9 |




Percentage Particle Size

| Clay | Fine | Medium | Coarse | Fine | Medium | Coarse | Fine | Medium | Coarse | Cobbles | Boulder |
|---|---|---|---|---|---|---|---|---|---|---|---|
| | | Silt | | | Sand | | | Gravel | | | |
| | | 41.9 | | | 27.0 | | | 31.1 | | 0.0 | 0.0 |

| | | | | | | | |
|---|---|---|---|---|---|---|---|
| Sample Description | Brown slightly sandy slightly gravelly silty CLAY. | | | | | Project No. | NMTL 2837 |
| | | | | | | BH/TP No. | TP13 |
| Project | Cornelscourt | | | **GII Project ID:** | **8354-01-18** | Sample No. | B |
| Operator Tzr | Checked Nc | Approved Bc | | Date sample tested | 19/02/2019 | Depth | 2.50m |

**NMTL Ltd**

**NMTL Ltd**

# Determination of Particle Size Distribution

**BS 1377 : 1990 : Part 2 : Clauses 9.2 & 9.5**

| Sieve Size mm | % Passing |
|---|---|
| 125.000 | 100.0 |
| 75.000 | 100.0 |
| 63.000 | 100.0 |
| 50.000 | 100.0 |
| 37.500 | 99.5 |
| 28.000 | 98.1 |
| 20.000 | 97.3 |
| 14.000 | 90.1 |
| 10.000 | 81.8 |
| 6.300 | 72.8 |
| 5.000 | 69.6 |
| 3.350 | 65.8 |
| 2.000 | 60.7 |
| 1.180 | 56.7 |
| 0.600 | 52.3 |
| 0.425 | 50.1 |
| 0.300 | 47.9 |
| 0.212 | 45.6 |
| 0.150 | 43.0 |
| 0.063 | 36.7 |


Percentage Particle Size

| Clay | Fine | Medium | Coarse | Fine | Medium | Coarse | Fine | Medium | Coarse | Cobbles | Boulder |
|---|---|---|---|---|---|---|---|---|---|---|---|
| | | Silt | | | Sand | | | Gravel | | | |
| | | 36.7 | | | 24.0 | | | 39.3 | | 0.0 | 0.0 |

| | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|
| Sample Description | Brown slightly sandy gravelly silty CLAY. | | | | | | | Project No. | NMTL 2837 |
| | | | | | | | | BH/TP No. | TP14 |
| Project | Cornelscourt | | | | | **GII Project ID:** | **8354-01-18** | Sample No. | B |
| Operator | Tzr | Checked | Nc | Approved | Bc | Date sample tested | 19/02/2019 | Depth | 1.50m |

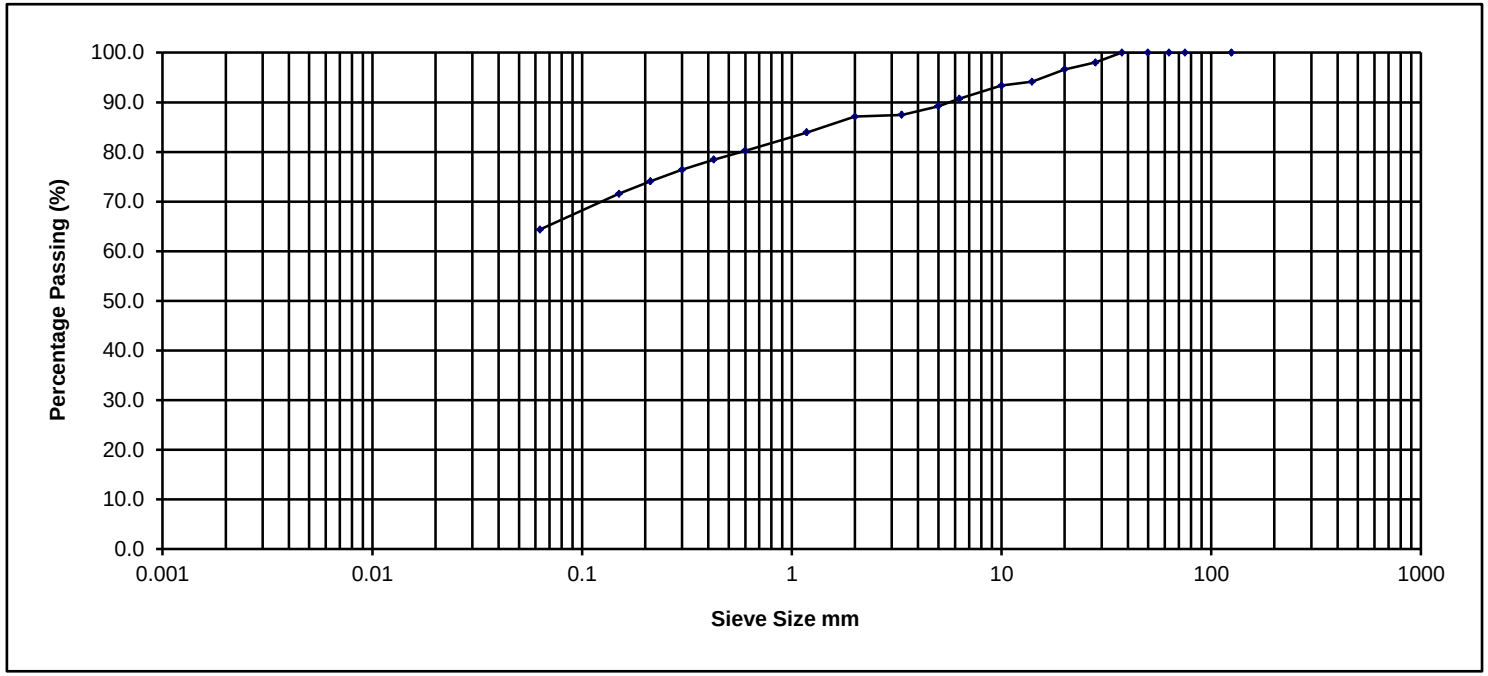
**NM TL Ltd**

**NMTL Ltd**

# Determination of Particle Size Distribution

**BS 1377 : 1990 : Part 2 : Clauses 9.2 & 9.5**

| 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 | 98.0 |
| 20.000 | 96.6 |
| 14.000 | 94.1 |
| 10.000 | 93.4 |
| 6.300 | 90.7 |
| 5.000 | 89.2 |
| 3.350 | 87.5 |
| 2.000 | 87.1 |
| 1.180 | 83.9 |
| 0.600 | 80.3 |
| 0.425 | 78.4 |
| 0.300 | 76.4 |
| 0.212 | 74.1 |
| 0.150 | 71.6 |
| 0.063 | 64.4 |




Percentage Particle Size

| Clay | Fine | Medium | Coarse | Fine | Medium | Coarse | Fine | Medium | Coarse | Cobbles | Boulder |
|---|---|---|---|---|---|---|---|---|---|---|---|
| | | Silt | | | Sand | | | Gravel | | | |
| | | 64.4 | | | 22.8 | | | 12.9 | | 0.0 | 0.0 |

| | | | | | | | |
|---|---|---|---|---|---|---|---|
| Sample Description | Brown slightly gravelly slightly sandy silty CLAY. | | | | | Project No. | NMTL 2837 |
| | | | | | | BH/TP No. | TP17 |
| Project | Cornelscourt | | | **GII Project ID:** | **8354-01-18** | Sample No. | B |
| Operator Tzr | Checked Nc | Approved Bc | | Date sample tested | 19/02/2019 | Depth | 0.50m |

**NMTL Ltd**

**NMTL Ltd**

# Determination of Particle Size Distribution

**BS 1377 : 1990 : Part 2 : Clauses 9.2 & 9.5**

| Sieve Size mm | % Passing |
|---|---|
| 125.000 | 100.0 |
| 75.000 | 100.0 |
| 63.000 | 93.9 |
| 50.000 | 92.7 |
| 37.500 | 87.6 |
| 28.000 | 82.7 |
| 20.000 | 80.2 |
| 14.000 | 77.3 |
| 10.000 | 73.5 |
| 6.300 | 69.2 |
| 5.000 | 65.6 |
| 3.350 | 62.7 |
| 2.000 | 56.0 |
| 1.180 | 50.0 |
| 0.600 | 43.8 |
| 0.425 | 41.4 |
| 0.300 | 39.2 |
| 0.212 | 36.9 |
| 0.150 | 34.5 |
| 0.063 | 28.1 |


Percentage Particle Size

| Clay | Fine | Medium | Coarse | Fine | Medium | Coarse | Fine | Medium | Coarse | Cobbles | Boulder |
|---|---|---|---|---|---|---|---|---|---|---|---|
| | | Silt | | | Sand | | | Gravel | | | |
| | | 28.1 | | | 27.9 | | | 37.9 | | 6.1 | 0.0 |

Sample Description: Brown slightly sandy gravelly silty CLAY, with some cobbles.

Project: Cornelscourt

**GII Project ID: 8354-01-18**

| Operator | Tzr | Checked | Nc | Approved | Bc | Date sample tested | 19/02/2019 |
|---|---|---|---|---|---|---|---|

| | |
|---|---|
| Project No. | NMTL 2837 |
| BH/TP No. | TP21 |
| Sample No. | B |
| Depth | 1.00m |

**NMTL Ltd**

# **APPENDIX 8.2** – Rock Laboratory Records

Trinity College Dublin
Coláiste na Tríonóide, Baile Átha Cliath
The University of Dublin

Geotechnical Laboratory,
Civil, Structural & Environmental Engineering
& Environmental Engineering
Trinity College,
Dublin.2.

+353 1 8961009
edunne@tcd.ie

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

# Unconfined Compression Tests On Rock Cores

**Project:** Cornelscourt

**Project No:** 7354 - 01 - 19

**Delivery Date:** 27.03.2019

**Test Date:** 01.04.2019

| Borehole Number | Depth (m) | Average Diameter (mm) | Height (mm) | Length/Dia. (Ratio) | Unconfined Compressive Strength (Mpa) | Density ($Mg/m^3$) |
|---|---|---|---|---|---|---|
| BH - 02 | 12.40 - 12.90 | 63.4 | 159.2 | 2.51 | 23.6 | 2.51 |
| BH - 06 | 7.30 - 7.50 | 63.4 | 112.5 | 1.77 | 16.9 | 2.46 |
| BH - 08 | 4.10 - 4.40 | 0.0 | 159.1 | 2.51 | 27.8 | 2.52 |
| BH - 09 | 3.00 - 3.20 | 62.8 | 134.5 | 2.14 | 27.5 | 2.55 |
| BH - 10 | 5.40 - 5.70 | 63.3 | 158.9 | 2.51 | 27.7 | 2.54 |
| BH - 11 | 4.90 - 5.40 | 63.2 | 158.7 | 2.51 | 18.8 | 2.50 |

Prof. B. O'Kelly

**Specimens prepared and tested in accordance with suggested method from International Society for Rock Mechanics (ISRM), 1985**

Trinity College Dublin
Coláiste na Tríonóide, Baile Átha Cliath
The University of Dublin

Geotechnical Laboratory,
Civil, Structural & Environmental Engineering
& Environmental Engineering
Trinity College,
Dublin.2.

+353 1 8961009
edunne@tcd.ie

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

## Point Load Index Tests (single diametral determination)

**Project:** Cornelscourt

**Project No:** 8354 - 01 - 19

**Delivery date:** 27.03.2019

**Test Date:** 02.04.2019

**Diametric samples**

| Borehole No. | Depth (m) | Is(50) (Mpa) |
|---|---|---|
| BH - 02 | 12.10 - 12.30 | 0.76 |
| BH - 03 | 13.00 - 13.30 | 0.61 |
| BH - 04 | 8.80 - 9.10 | 1.56 |
| BH - 05 | 6.20 - 6.30 | 0.50 |
| BH - 06 | 6.20 - 6.30 | 0.17 |
| BH - 06 | 10.00 - 10.20 | 0.39 |
| BH - 07 | 7.20 - 7.30 | 0.70 |
| BH - 08 | 3.60 - 3.90 | 1.08 |
| BH - 09 | 4.35 - 4.50 | 4.66 |
| BH - 10 | 3.70 - 3.90 | 0.23 |
| BH - 11 | 3.60 - 3.90 | 0.76 |

Prof. Brendan O'Kelly

**Specimens prepared and tested in accordance with suggested method from International Society for Rock Mechanics (ISRM), 1985**

# **APPENDIX 8.3** – Environmental Laboratory Records

# Exova Jones Environmental

Registered Office: Exova Environmental UK Limited, 10 Lower Grosvenor Place, London, SW1W 0EN. Reg No. 11371415

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

| | |
|---|---|
| **Attention :** | Barry Sexton |
| **Date :** | 11th February, 2019 |
| **Your reference :** | 8354-01-19 |
| **Our reference :** | Test Report 19/1176 Batch 1 |
| **Location :** | Cornelscourt |
| **Date samples received :** | 24th January, 2019 |
| **Status :** | Final report |
| **Issue :** | 1 |

Thirty eight samples were received for analysis on 24th January, 2019 of which twenty four were scheduled for analysis. Please find attached our Test Report which should be read with notes at the end of the report and should include all sections if reproduced. Interpretations and opinions are outside the scope of any accreditation, and all results relate only to samples supplied.
All analysis is carried out on as received samples and reported on a dry weight basis unless stated otherwise. Results are not surrogate corrected.

Where Waste Acceptance Criteria Suite (EC Decision of 19 December 2002 (2003/33/EC)) has been requested, all analyses have been performed using the relevant EN methods where they exist.

**Compiled By:**

**Phil Sommerton BSc**
**Project Manager**

**Client Name:** Ground Investigations Ireland
**Reference:** 8354-01-19
**Location:** Cornelscourt
**Contact:** Barry Sexton
**JE Job No.:** 19/1176

**Report : Solid**

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

| J E Sample No. | 1-3 | 4-6 | 10-12 | 13-15 | 19-21 | 28-30 | 31-33 | 37-39 | 40-42 | 43-45 | LOD/LOR | Units | Method No. |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Sample ID | TP-01 | TP-01 | TP-02 | TP-02 | TP-03 | TP-04 | TP-04 | TP-05 | TP-06 | TP-06 | | | |
| Depth | 0.50 | 1.50 | 0.60 | 1.60 | 0.50 | 1.00 | 2.00 | 0.80 | 0.50 | 1.50 | | | |
| COC No / misc | | | | | | | | | | | | | |
| Containers | V J T | V J T | V J T | V J T | V J T | V J T | V J T | V J T | V J T | V J T | | | |
| Sample Date | 21/01/2019 | 21/01/2019 | 21/01/2019 | 21/01/2019 | 22/01/2019 | 22/01/2019 | 22/01/2019 | 22/01/2019 | 21/01/2019 | 21/01/2019 | | | |
| Sample Type | Soil | Soil | Soil | Soil | Soil | Soil | Soil | Soil | Soil | Soil | | | |
| Batch Number | 1 | 1 | 1 | 1 | 1 | 1 | 1 | 1 | 1 | 1 | | | |
| Date of Receipt | 24/01/2019 | 24/01/2019 | 24/01/2019 | 24/01/2019 | 24/01/2019 | 24/01/2019 | 24/01/2019 | 24/01/2019 | 24/01/2019 | 24/01/2019 | | | |
| Antimony | 2 | - | 2 | - | 3 | 2 | - | 2 | 2 | 2 | <1 | mg/kg | TM30/PM15 |
| Arsenic # | 16.1 | - | 10.9 | - | 16.3 | 10.1 | - | 15.4 | 7.7 | 11.3 | <0.5 | mg/kg | TM30/PM15 |
| Barium # | 143 | - | 73 | - | 165 | 63 | - | 121 | 87 | 81 | <1 | mg/kg | TM30/PM15 |
| Cadmium # | 2.6 | - | 1.9 | - | 2.7 | 1.8 | - | 2.9 | 1.7 | 2.1 | <0.1 | mg/kg | TM30/PM15 |
| Chromium # | 88.9 | - | 42.7 | - | 73.1 | 54.8 | - | 76.8 | 77.4 | 50.0 | <0.5 | mg/kg | TM30/PM15 |
| Copper # | 27 | - | 27 | - | 35 | 27 | - | 33 | 18 | 32 | <1 | mg/kg | TM30/PM15 |
| Lead # | 24 | - | 17 | - | 70 | 18 | - | 142 | 12 | 16 | <5 | mg/kg | TM30/PM15 |
| Mercury # | <0.1 | - | <0.1 | - | <0.1 | <0.1 | - | 0.1 | <0.1 | <0.1 | <0.1 | mg/kg | TM30/PM15 |
| Molybdenum # | 3.6 | - | 3.2 | - | 5.5 | 4.2 | - | 5.7 | 3.3 | 3.5 | <0.1 | mg/kg | TM30/PM15 |
| Nickel # | 48.1 | - | 40.0 | - | 53.5 | 35.7 | - | 51.6 | 31.6 | 44.4 | <0.7 | mg/kg | TM30/PM15 |
| Selenium # | 2 | - | 1 | - | 2 | 1 | - | 2 | <1 | <1 | <1 | mg/kg | TM30/PM15 |
| Zinc # | 107 | - | 88 | - | 138 | 101 | - | 144 | 61 | 96 | <5 | mg/kg | TM30/PM15 |
| | | | | | | | | | | | | | |
| PAH MS | | | | | | | | | | | | | |
| Naphthalene # | <0.04 | - | <0.04 | - | <0.04 | <0.04 | - | <0.04 | <0.04 | <0.04 | <0.04 | mg/kg | TM4/PM8 |
| Acenaphthylene | <0.03 | - | <0.03 | - | <0.03 | <0.03 | - | <0.03 | <0.03 | <0.03 | <0.03 | mg/kg | TM4/PM8 |
| Acenaphthene # | <0.05 | - | <0.05 | - | <0.05 | <0.05 | - | <0.05 | <0.05 | <0.05 | <0.05 | mg/kg | TM4/PM8 |
| Fluorene # | <0.04 | - | <0.04 | - | <0.04 | <0.04 | - | <0.04 | <0.04 | <0.04 | <0.04 | mg/kg | TM4/PM8 |
| Phenanthrene # | <0.03 | - | <0.03 | - | 0.05 | <0.03 | - | 0.05 | <0.03 | <0.03 | <0.03 | mg/kg | TM4/PM8 |
| Anthracene # | <0.04 | - | <0.04 | - | <0.04 | <0.04 | - | <0.04 | <0.04 | <0.04 | <0.04 | mg/kg | TM4/PM8 |
| Fluoranthene # | <0.03 | - | <0.03 | - | 0.10 | <0.03 | - | 0.10 | <0.03 | <0.03 | <0.03 | mg/kg | TM4/PM8 |
| Pyrene # | <0.03 | - | <0.03 | - | 0.10 | <0.03 | - | 0.10 | <0.03 | <0.03 | <0.03 | mg/kg | TM4/PM8 |
| Benzo(a)anthracene # | <0.06 | - | <0.06 | - | 0.10 | <0.06 | - | 0.10 | <0.06 | <0.06 | <0.06 | mg/kg | TM4/PM8 |
| Chrysene # | <0.02 | - | <0.02 | - | 0.06 | <0.02 | - | 0.08 | <0.02 | <0.02 | <0.02 | mg/kg | TM4/PM8 |
| Benzo(bk)fluoranthene # | <0.07 | - | <0.07 | - | 0.11 | <0.07 | - | 0.14 | <0.07 | <0.07 | <0.07 | mg/kg | TM4/PM8 |
| Benzo(a)pyrene # | <0.04 | - | <0.04 | - | 0.06 | <0.04 | - | 0.08 | <0.04 | <0.04 | <0.04 | mg/kg | TM4/PM8 |
| Indeno(123cd)pyrene # | <0.04 | - | <0.04 | - | <0.04 | <0.04 | - | 0.05 | <0.04 | <0.04 | <0.04 | mg/kg | TM4/PM8 |
| Dibenzo(ah)anthracene # | <0.04 | - | <0.04 | - | <0.04 | <0.04 | - | <0.04 | <0.04 | <0.04 | <0.04 | mg/kg | TM4/PM8 |
| Benzo(ghi)perylene # | <0.04 | - | <0.04 | - | <0.04 | <0.04 | - | 0.06 | <0.04 | <0.04 | <0.04 | mg/kg | TM4/PM8 |
| Coronene | <0.04 | - | <0.04 | - | <0.04 | <0.04 | - | <0.04 | <0.04 | <0.04 | <0.04 | mg/kg | TM4/PM8 |
| PAH 6 Total # | <0.22 | - | <0.22 | - | 0.27 | <0.22 | - | 0.43 | <0.22 | <0.22 | <0.22 | mg/kg | TM4/PM8 |
| PAH 17 Total | <0.64 | - | <0.64 | - | <0.64 | <0.64 | - | 0.76 | <0.64 | <0.64 | <0.64 | mg/kg | TM4/PM8 |
| Benzo(b)fluoranthene | <0.05 | - | <0.05 | - | 0.08 | <0.05 | - | 0.10 | <0.05 | <0.05 | <0.05 | mg/kg | TM4/PM8 |
| Benzo(k)fluoranthene | <0.02 | - | <0.02 | - | 0.03 | <0.02 | - | 0.04 | <0.02 | <0.02 | <0.02 | mg/kg | TM4/PM8 |
| Benzo(j)fluoranthene | <1 | - | <1 | - | <1 | <1 | - | <1 | <1 | <1 | <1 | mg/kg | TM4/PM8 |
| PAH Surrogate % Recovery | 98 | - | 97 | - | 99 | 96 | - | 96 | 99 | 91 | <0 | % | TM4/PM8 |
| | | | | | | | | | | | | | |
| Mineral Oil (C10-C40) | <30 | - | <30 | - | <30 | <30 | - | <30 | <30 | <30 | <30 | mg/kg | TM5/PM8/PM16 |

Please see attached notes for all abbreviations and acronyms

**Client Name:** Ground Investigations Ireland
**Reference:** 8354-01-19
**Location:** Cornelscourt
**Contact:** Barry Sexton
**JE Job No.:** 19/1176

**Report : Solid**

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

| J E Sample No. | 1-3 | 4-6 | 10-12 | 13-15 | 19-21 | 28-30 | 31-33 | 37-39 | 40-42 | 43-45 | LOD/LOR | Units | Method No. |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Sample ID | TP-01 | TP-01 | TP-02 | TP-02 | TP-03 | TP-04 | TP-04 | TP-05 | TP-06 | TP-06 | | | |
| Depth | 0.50 | 1.50 | 0.60 | 1.60 | 0.50 | 1.00 | 2.00 | 0.80 | 0.50 | 1.50 | | | |
| COC No / misc | | | | | | | | | | | | | |
| Containers | V J T | V J T | V J T | V J T | V J T | V J T | V J T | V J T | V J T | V J T | | | |
| Sample Date | 21/01/2019 | 21/01/2019 | 21/01/2019 | 21/01/2019 | 22/01/2019 | 22/01/2019 | 22/01/2019 | 22/01/2019 | 21/01/2019 | 21/01/2019 | | | |
| Sample Type | Soil | Soil | Soil | Soil | Soil | Soil | Soil | Soil | Soil | Soil | | | |
| Batch Number | 1 | 1 | 1 | 1 | 1 | 1 | 1 | 1 | 1 | 1 | | | |
| Date of Receipt | 24/01/2019 | 24/01/2019 | 24/01/2019 | 24/01/2019 | 24/01/2019 | 24/01/2019 | 24/01/2019 | 24/01/2019 | 24/01/2019 | 24/01/2019 | | | |
| TPH CWG | | | | | | | | | | | | | |
| **Aliphatics** | | | | | | | | | | | | | |
| >C5-C6 # | <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 | mg/kg | TM36/PM12 |
| >C8-C10 | <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 | mg/kg | TM5/PM8/PM16 |
| >C12-C16 # | <4 | - | <4 | - | <4 | <4 | - | <4 | <4 | <4 | <4 | mg/kg | TM5/PM8/PM16 |
| >C16-C21 # | <7 | - | <7 | - | <7 | <7 | - | <7 | <7 | <7 | <7 | mg/kg | TM5/PM8/PM16 |
| >C21-C35 # | <7 | - | <7 | - | <7 | <7 | - | <7 | <7 | <7 | <7 | mg/kg | TM5/PM8/PM16 |
| >C35-C40 | <7 | - | <7 | - | <7 | <7 | - | <7 | <7 | <7 | <7 | mg/kg | TM5/PM8/PM16 |
| Total aliphatics C5-40 | <26 | - | <26 | - | <26 | <26 | - | <26 | <26 | <26 | <26 | mg/kg | TM5/TM36/PM8/PM12/PM16 |
| >C6-C10 | <0.1 | - | <0.1 | - | <0.1 | <0.1 | - | <0.1 | <0.1 | <0.1 | <0.1 | mg/kg | TM36/PM12 |
| >C10-C25 | <10 | - | <10 | - | <10 | <10 | - | <10 | <10 | <10 | <10 | mg/kg | TM5/PM8/PM16 |
| >C25-C35 | <10 | - | <10 | - | <10 | <10 | - | <10 | <10 | <10 | <10 | mg/kg | TM5/PM8/PM16 |
| **Aromatics** | | | | | | | | | | | | | |
| >C5-EC7 # | <0.1 | - | <0.1 | - | <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 | mg/kg | TM36/PM12 |
| >EC8-EC10 # | <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 | mg/kg | TM5/PM8/PM16 |
| >EC12-EC16 # | <4 | - | <4 | - | <4 | <4 | - | <4 | <4 | <4 | <4 | mg/kg | TM5/PM8/PM16 |
| >EC16-EC21 # | <7 | - | <7 | - | <7 | <7 | - | <7 | <7 | <7 | <7 | mg/kg | TM5/PM8/PM16 |
| >EC21-EC35 # | <7 | - | <7 | - | <7 | <7 | - | <7 | <7 | <7 | <7 | mg/kg | TM5/PM8/PM16 |
| >EC35-EC40 | <7 | - | <7 | - | <7 | <7 | - | <7 | <7 | <7 | <7 | mg/kg | TM5/PM8/PM16 |
| Total aromatics C5-40 | <26 | - | <26 | - | <26 | <26 | - | <26 | <26 | <26 | <26 | mg/kg | TM5/TM36/PM8/PM12/PM16 |
| Total aliphatics and aromatics(C5-40) | <52 | - | <52 | - | <52 | <52 | - | <52 | <52 | <52 | <52 | mg/kg | TM5/TM36/PM8/PM12/PM16 |
| >EC6-EC10 # | <0.1 | - | <0.1 | - | <0.1 | <0.1 | - | <0.1 | <0.1 | <0.1 | <0.1 | mg/kg | TM36/PM12 |
| >EC10-EC25 | <10 | - | <10 | - | <10 | <10 | - | <10 | <10 | <10 | <10 | mg/kg | TM5/PM8/PM16 |
| >EC25-EC35 | <10 | - | <10 | - | <10 | <10 | - | <10 | <10 | <10 | <10 | mg/kg | TM5/PM8/PM16 |
| | | | | | | | | | | | | | |
| MTBE # | <5 | - | <5 | - | <5 | <5 | - | <5 | <5 | <5 | <5 | ug/kg | TM31/PM12 |
| Benzene # | <5 | - | <5 | - | <5 | <5 | - | <5 | <5 | <5 | <5 | ug/kg | TM31/PM12 |
| Toluene # | <5 | - | <5 | - | <5 | <5 | - | <5 | <5 | <5 | <5 | ug/kg | TM31/PM12 |
| Ethylbenzene # | <5 | - | <5 | - | <5 | <5 | - | <5 | <5 | <5 | <5 | ug/kg | TM31/PM12 |
| m/p-Xylene # | <5 | - | <5 | - | <5 | <5 | - | <5 | <5 | <5 | <5 | ug/kg | TM31/PM12 |
| o-Xylene # | <5 | - | <5 | - | <5 | <5 | - | <5 | <5 | <5 | <5 | ug/kg | TM31/PM12 |
| | | | | | | | | | | | | | |
| PCB 28 # | <5 | - | <5 | - | <5 | <5 | - | <5 | <5 | <5 | <5 | ug/kg | TM17/PM8 |
| PCB 52 # | <5 | - | <5 | - | <5 | <5 | - | <5 | <5 | <5 | <5 | ug/kg | TM17/PM8 |
| PCB 101 # | <5 | - | <5 | - | <5 | <5 | - | <5 | <5 | <5 | <5 | ug/kg | TM17/PM8 |
| PCB 118 # | <5 | - | <5 | - | <5 | <5 | - | <5 | <5 | <5 | <5 | ug/kg | TM17/PM8 |
| PCB 138 # | <5 | - | <5 | - | <5 | <5 | - | <5 | <5 | <5 | <5 | ug/kg | TM17/PM8 |
| PCB 153 # | <5 | - | <5 | - | <5 | <5 | - | <5 | <5 | <5 | <5 | ug/kg | TM17/PM8 |
| PCB 180 # | <5 | - | <5 | - | <5 | <5 | - | <5 | <5 | <5 | <5 | ug/kg | TM17/PM8 |
| Total 7 PCBs # | <35 | - | <35 | - | <35 | <35 | - | <35 | <35 | <35 | <35 | ug/kg | TM17/PM8 |

Please see attached notes for all abbreviations and acronyms

**Client Name:** Ground Investigations Ireland
**Reference:** 8354-01-19
**Location:** Cornelscourt
**Contact:** Barry Sexton
**JE Job No.:** 19/1176

**Report : Solid**

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

| J E Sample No. | 1-3 | 4-6 | 10-12 | 13-15 | 19-21 | 28-30 | 31-33 | 37-39 | 40-42 | 43-45 | LOD/LOR | Units | Method No. |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| **Sample ID** | TP-01 | TP-01 | TP-02 | TP-02 | TP-03 | TP-04 | TP-04 | TP-05 | TP-06 | TP-06 | | | |
| **Depth** | 0.50 | 1.50 | 0.60 | 1.60 | 0.50 | 1.00 | 2.00 | 0.80 | 0.50 | 1.50 | | | |
| **COC No / misc** | | | | | | | | | | | | | |
| **Containers** | V J T | V J T | V J T | V J T | V J T | V J T | V J T | V J T | V J T | V J T | | | |
| **Sample Date** | 21/01/2019 | 21/01/2019 | 21/01/2019 | 21/01/2019 | 22/01/2019 | 22/01/2019 | 22/01/2019 | 22/01/2019 | 21/01/2019 | 21/01/2019 | | | |
| **Sample Type** | Soil | Soil | Soil | Soil | Soil | Soil | Soil | Soil | Soil | Soil | | | |
| **Batch Number** | 1 | 1 | 1 | 1 | 1 | 1 | 1 | 1 | 1 | 1 | | | |
| **Date of Receipt** | 24/01/2019 | 24/01/2019 | 24/01/2019 | 24/01/2019 | 24/01/2019 | 24/01/2019 | 24/01/2019 | 24/01/2019 | 24/01/2019 | 24/01/2019 | | | |
| Natural Moisture Content | 17.4 | - | 15.1 | - | 23.2 | 18.0 | - | 26.2 | 16.4 | 14.2 | <0.1 | % | PM4/PM0 |
| Moisture Content (% Wet Weight) | 14.8 | - | 13.1 | - | 18.8 | 15.3 | - | 20.7 | 14.1 | 12.5 | <0.1 | % | PM4/PM0 |
| Hexavalent Chromium # | <0.3 | - | <0.3 | - | <0.3 | <0.3 | - | <0.3 | <0.3 | <0.3 | <0.3 | mg/kg | TM38/PM20 |
| Sulphate as SO4 (2:1 Ext) # | - | | - | | - | - | | - | - | | <0.0015 | g/l | TM38/PM20 |
| Chromium III | 88.9 | - | 42.7 | - | 73.1 | 54.8 | - | 76.8 | 77.4 | 50.0 | <0.5 | mg/kg | NONE/NONE |
| Total Organic Carbon # | 0.70 | - | 0.36 | - | 1.58 | 0.34 | - | 1.66 | 0.28 | 0.34 | <0.02 | % | TM21/PM24 |
| pH # | 8.46 | | 8.76 | | 8.40 | 8.80 | | 8.52 | 8.62 | 8.74 | <0.01 | pH units | TM73/PM11 |
| Mass of raw test portion | 0.1042 | - | 0.1058 | - | 0.1137 | 0.1107 | - | 0.1125 | 0.1046 | 0.1048 | | kg | NONE/PM17 |
| Mass of dried test portion | 0.09 | - | 0.09 | - | 0.09 | 0.09 | - | 0.09 | 0.09 | 0.09 | | kg | NONE/PM17 |

Please see attached notes for all abbreviations and acronyms

**Client Name:** Ground Investigations Ireland
**Reference:** 8354-01-19
**Location:** Cornelscourt
**Contact:** Barry Sexton
**JE Job No.:** 19/1176

**Report : Solid**

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

| J E Sample No. | 52-54 | 55-57 | 58-60 | 64-66 | 67-69 | 73-75 | 76-78 | 81-83 | 84-86 | 94-96 | LOD/LOR | Units | Method No. |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| **Sample ID** | TP-07 | TP-07 | TP-07 | TP-07A | TP-07A | TP-08 | TP-08 | TP-09 | TP-09 | TP-14 | | | |
| **Depth** | 0.50 | 1.50 | 2.50 | 0.50 | 1.50 | 0.50 | 1.50 | 0.50 | 1.50 | 1.00 | | | |
| **COC No / misc** | | | | | | | | | | | | | |
| **Containers** | V J T | V J T | V J T | V J T | V J T | V J T | V J T | V J T | V J T | V J T | | | |
| **Sample Date** | 21/01/2019 | 21/01/2019 | 21/01/2019 | 21/01/2019 | 21/01/2019 | 22/01/2019 | 22/01/2019 | 22/01/2019 | 22/01/2019 | 22/01/2019 | | | |
| **Sample Type** | Soil | Soil | Soil | Soil | Soil | Soil | Soil | Soil | Soil | Soil | | | |
| **Batch Number** | 1 | 1 | 1 | 1 | 1 | 1 | 1 | 1 | 1 | 1 | | | |
| **Date of Receipt** | 24/01/2019 | 24/01/2019 | 24/01/2019 | 24/01/2019 | 24/01/2019 | 24/01/2019 | 24/01/2019 | 24/01/2019 | 24/01/2019 | 24/01/2019 | | | |
| Antimony | 1 | 2 | 1 | 3 | 2 | 3 | 2 | 3 | 2 | 2 | <1 | mg/kg | TM30/PM15 |
| Arsenic # | 7.6 | 7.8 | 7.7 | 15.8 | 12.2 | 17.8 | 14.6 | 18.6 | 10.4 | 11.8 | <0.5 | mg/kg | TM30/PM15 |
| Barium # | 36 | 62 | 65 | 147 | 255 | 139 | 99 | 125 | 69 | 75 | <1 | mg/kg | TM30/PM15 |
| Cadmium # | 1.8 | 1.8 | 1.4 | 3.0 | 3.5 | 3.0 | 2.6 | 2.5 | 1.9 | 2.2 | <0.1 | mg/kg | TM30/PM15 |
| Chromium # | 40.1 | 54.6 | 47.5 | 66.8 | 59.7 | 67.6 | 70.0 | 79.6 | 54.6 | 60.1 | <0.5 | mg/kg | TM30/PM15 |
| Copper # | 26 | 23 | 21 | 31 | 37 | 42 | 40 | 44 | 32 | 41 | <1 | mg/kg | TM30/PM15 |
| Lead # | 11 | 14 | 12 | 26 | 25 | 35 | 26 | 84 | 17 | 157 | <5 | mg/kg | TM30/PM15 |
| Mercury # | <0.1 | <0.1 | <0.1 | <0.1 | <0.1 | 0.3 | <0.1 | 0.2 | <0.1 | <0.1 | <0.1 | mg/kg | TM30/PM15 |
| Molybdenum # | 3.4 | 3.4 | 2.8 | 5.6 | 6.2 | 5.8 | 4.8 | 4.9 | 3.8 | 3.6 | <0.1 | mg/kg | TM30/PM15 |
| Nickel # | 21.2 | 29.7 | 29.2 | 54.4 | 61.0 | 66.7 | 54.4 | 47.3 | 42.4 | 44.0 | <0.7 | mg/kg | TM30/PM15 |
| Selenium # | <1 | 1 | <1 | 2 | 3 | 2 | 1 | 2 | 1 | 1 | <1 | mg/kg | TM30/PM15 |
| Zinc # | 66 | 80 | 67 | 134 | 107 | 143 | 116 | 139 | 91 | 139 | <5 | mg/kg | TM30/PM15 |
| | | | | | | | | | | | | | |
| PAH MS | | | | | | | | | | | | | |
| Naphthalene # | <0.04 | <0.04 | <0.04 | <0.04 | <0.04 | <0.04 | <0.04 | <0.04 | <0.04 | 0.15 | <0.04 | mg/kg | TM4/PM8 |
| Acenaphthylene | <0.03 | <0.03 | <0.03 | <0.03 | <0.03 | <0.03 | <0.03 | <0.03 | <0.03 | 0.15 | <0.03 | mg/kg | TM4/PM8 |
| Acenaphthene # | <0.05 | <0.05 | <0.05 | <0.05 | <0.05 | <0.05 | <0.05 | <0.05 | <0.05 | 0.09 | <0.05 | mg/kg | TM4/PM8 |
| Fluorene # | <0.04 | <0.04 | <0.04 | <0.04 | <0.04 | <0.04 | <0.04 | <0.04 | <0.04 | 0.39 | <0.04 | mg/kg | TM4/PM8 |
| Phenanthrene # | <0.03 | <0.03 | <0.03 | <0.03 | <0.03 | <0.03 | <0.03 | 0.06 | <0.03 | 1.51 | <0.03 | mg/kg | TM4/PM8 |
| Anthracene # | <0.04 | <0.04 | <0.04 | <0.04 | <0.04 | <0.04 | <0.04 | <0.04 | <0.04 | 0.30 | <0.04 | mg/kg | TM4/PM8 |
| Fluoranthene # | <0.03 | <0.03 | <0.03 | <0.03 | <0.03 | <0.03 | <0.03 | 0.09 | <0.03 | 1.06 | <0.03 | mg/kg | TM4/PM8 |
| Pyrene # | <0.03 | <0.03 | <0.03 | <0.03 | <0.03 | <0.03 | <0.03 | 0.10 | <0.03 | 2.80 | <0.03 | mg/kg | TM4/PM8 |
| Benzo(a)anthracene # | <0.06 | <0.06 | <0.06 | <0.06 | <0.06 | <0.06 | <0.06 | 0.10 | <0.06 | 0.59 | <0.06 | mg/kg | TM4/PM8 |
| Chrysene # | <0.02 | <0.02 | <0.02 | <0.02 | <0.02 | <0.02 | <0.02 | 0.08 | <0.02 | 0.37 | <0.02 | mg/kg | TM4/PM8 |
| Benzo(bk)fluoranthene # | <0.07 | <0.07 | <0.07 | <0.07 | <0.07 | <0.07 | <0.07 | 0.14 | <0.07 | 0.69 | <0.07 | mg/kg | TM4/PM8 |
| Benzo(a)pyrene # | <0.04 | <0.04 | <0.04 | <0.04 | <0.04 | <0.04 | <0.04 | 0.08 | <0.04 | 0.60 | <0.04 | mg/kg | TM4/PM8 |
| Indeno(123cd)pyrene # | <0.04 | <0.04 | <0.04 | <0.04 | <0.04 | <0.04 | <0.04 | 0.06 | <0.04 | 0.36 | <0.04 | mg/kg | TM4/PM8 |
| Dibenzo(ah)anthracene # | <0.04 | <0.04 | <0.04 | <0.04 | <0.04 | <0.04 | <0.04 | <0.04 | <0.04 | 0.05 | <0.04 | mg/kg | TM4/PM8 |
| Benzo(ghi)perylene # | <0.04 | <0.04 | <0.04 | <0.04 | <0.04 | <0.04 | <0.04 | 0.05 | <0.04 | 1.64 | <0.04 | mg/kg | TM4/PM8 |
| Coronene | <0.04 | <0.04 | <0.04 | <0.04 | <0.04 | <0.04 | <0.04 | <0.04 | <0.04 | 0.62 | <0.04 | mg/kg | TM4/PM8 |
| PAH 6 Total # | <0.22 | <0.22 | <0.22 | <0.22 | <0.22 | <0.22 | <0.22 | 0.42 | <0.22 | 4.35 | <0.22 | mg/kg | TM4/PM8 |
| PAH 17 Total | <0.64 | <0.64 | <0.64 | <0.64 | <0.64 | <0.64 | <0.64 | 0.76 | <0.64 | 11.37 | <0.64 | mg/kg | TM4/PM8 |
| Benzo(b)fluoranthene | <0.05 | <0.05 | <0.05 | <0.05 | <0.05 | <0.05 | <0.05 | 0.10 | <0.05 | 0.50 | <0.05 | mg/kg | TM4/PM8 |
| Benzo(k)fluoranthene | <0.02 | <0.02 | <0.02 | <0.02 | <0.02 | <0.02 | <0.02 | 0.04 | <0.02 | 0.19 | <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 | 105 | 97 | 99 | 98 | 96 | 105 | 108 | 112 | 99 | 97 | <0 | % | TM4/PM8 |
| | | | | | | | | | | | | | |
| Mineral Oil (C10-C40) | <30 | <30 | <30 | <30 | <30 | <30 | <30 | <30 | <30 | 3329 | <30 | mg/kg | TM5/PM8/PM16 |

Please see attached notes for all abbreviations and acronyms

**Client Name:** Ground Investigations Ireland
**Reference:** 8354-01-19
**Location:** Cornelscourt
**Contact:** Barry Sexton
**JE Job No.:** 19/1176

**Report : Solid**

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

| J E Sample No. | 52-54 | 55-57 | 58-60 | 64-66 | 67-69 | 73-75 | 76-78 | 81-83 | 84-86 | 94-96 | LOD/LOR | Units | Method No. |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| **Sample ID** | TP-07 | TP-07 | TP-07 | TP-07A | TP-07A | TP-08 | TP-08 | TP-09 | TP-09 | TP-14 | | | |
| **Depth** | 0.50 | 1.50 | 2.50 | 0.50 | 1.50 | 0.50 | 1.50 | 0.50 | 1.50 | 1.00 | | | |
| **COC No / misc** | | | | | | | | | | | | | |
| **Containers** | V J T | V J T | V J T | V J T | V J T | V J T | V J T | V J T | V J T | V J T | | | |
| **Sample Date** | 21/01/2019 | 21/01/2019 | 21/01/2019 | 21/01/2019 | 21/01/2019 | 22/01/2019 | 22/01/2019 | 22/01/2019 | 22/01/2019 | 22/01/2019 | | | |
| **Sample Type** | Soil | Soil | Soil | Soil | Soil | Soil | Soil | Soil | Soil | Soil | | | |
| **Batch Number** | 1 | 1 | 1 | 1 | 1 | 1 | 1 | 1 | 1 | 1 | | | |
| **Date of Receipt** | 24/01/2019 | 24/01/2019 | 24/01/2019 | 24/01/2019 | 24/01/2019 | 24/01/2019 | 24/01/2019 | 24/01/2019 | 24/01/2019 | 24/01/2019 | | | |
| TPH CWG | | | | | | | | | | | | | |
| **Aliphatics** | | | | | | | | | | | | | |
| >C5-C6 # | <0.1 | <0.1 | <0.1 | <0.1 | <0.1 | <0.1 | <0.1 | <0.1 SV | <0.1 | <0.1 SV | <0.1 | mg/kg | TM36/PM12 |
| >C6-C8 # | <0.1 | <0.1 | <0.1 | <0.1 | <0.1 | <0.1 | <0.1 | <0.1 SV | <0.1 | <0.1 SV | <0.1 | mg/kg | TM36/PM12 |
| >C8-C10 | <0.1 | <0.1 | <0.1 | <0.1 | <0.1 | <0.1 | <0.1 | <0.1 SV | <0.1 | 0.2 SV | <0.1 | mg/kg | TM36/PM12 |
| >C10-C12 # | <0.2 | 1.5 | <0.2 | <0.2 | <0.2 | <0.2 | <0.2 | <0.2 | <0.2 | 17.2 | <0.2 | mg/kg | TM5/PM8/PM16 |
| >C12-C16 # | <4 | <4 | <4 | <4 | <4 | <4 | <4 | <4 | <4 | 12 | <4 | mg/kg | TM5/PM8/PM16 |
| >C16-C21 # | <7 | <7 | <7 | <7 | <7 | <7 | <7 | <7 | <7 | 66 | <7 | mg/kg | TM5/PM8/PM16 |
| >C21-C35 # | <7 | <7 | <7 | <7 | <7 | <7 | <7 | <7 | <7 | 2821 | <7 | mg/kg | TM5/PM8/PM16 |
| >C35-C40 | <7 | <7 | <7 | <7 | <7 | <7 | <7 | <7 | <7 | 413 | <7 | mg/kg | TM5/PM8/PM16 |
| Total aliphatics C5-40 | <26 | <26 | <26 | <26 | <26 | <26 | <26 | <26 | <26 | 3329 | <26 | mg/kg | TM5/TM36/PM8/PM12/PM16 |
| >C6-C10 | <0.1 | <0.1 | <0.1 | <0.1 | <0.1 | <0.1 | <0.1 | <0.1 SV | <0.1 | 0.2 SV | <0.1 | mg/kg | TM36/PM12 |
| >C10-C25 | <10 | <10 | <10 | <10 | <10 | <10 | <10 | <10 | <10 | 530 | <10 | mg/kg | TM5/PM8/PM16 |
| >C25-C35 | <10 | <10 | <10 | <10 | <10 | <10 | <10 | <10 | <10 | 2358 | <10 | mg/kg | TM5/PM8/PM16 |
| **Aromatics** | | | | | | | | | | | | | |
| >C5-EC7 # | <0.1 | <0.1 | <0.1 | <0.1 | <0.1 | <0.1 | <0.1 | <0.1 SV | <0.1 | <0.1 SV | <0.1 | mg/kg | TM36/PM12 |
| >EC7-EC8 # | <0.1 | <0.1 | <0.1 | <0.1 | <0.1 | <0.1 | <0.1 | <0.1 SV | <0.1 | <0.1 SV | <0.1 | mg/kg | TM36/PM12 |
| >EC8-EC10 # | <0.1 | <0.1 | <0.1 | <0.1 | <0.1 | <0.1 | <0.1 | <0.1 SV | <0.1 | <0.1 SV | <0.1 | mg/kg | TM36/PM12 |
| >EC10-EC12 # | <0.2 | <0.2 | <0.2 | <0.2 | <0.2 | <0.2 | <0.2 | <0.2 | <0.2 | 31.4 | <0.2 | mg/kg | TM5/PM8/PM16 |
| >EC12-EC16 # | <4 | <4 | <4 | <4 | <4 | <4 | <4 | <4 | <4 | 36 | <4 | mg/kg | TM5/PM8/PM16 |
| >EC16-EC21 # | <7 | <7 | <7 | <7 | <7 | <7 | <7 | <7 | <7 | 129 | <7 | mg/kg | TM5/PM8/PM16 |
| >EC21-EC35 # | <7 | <7 | <7 | <7 | <7 | <7 | <7 | <7 | <7 | 1585 | <7 | mg/kg | TM5/PM8/PM16 |
| >EC35-EC40 | <7 | <7 | <7 | <7 | <7 | <7 | <7 | <7 | <7 | 291 | <7 | mg/kg | TM5/PM8/PM16 |
| Total aromatics C5-40 | <26 | <26 | <26 | <26 | <26 | <26 | <26 | <26 | <26 | 2072 | <26 | mg/kg | TM5/TM36/PM8/PM12/PM16 |
| Total aliphatics and aromatics(C5-40) | <52 | <52 | <52 | <52 | <52 | <52 | <52 | <52 | <52 | 5401 | <52 | mg/kg | TM5/TM36/PM8/PM12/PM16 |
| >EC6-EC10 # | <0.1 | <0.1 | <0.1 | <0.1 | <0.1 | <0.1 | <0.1 | <0.1 SV | <0.1 | <0.1 SV | <0.1 | mg/kg | TM36/PM12 |
| >EC10-EC25 | <10 | <10 | <10 | <10 | <10 | <10 | <10 | <10 | <10 | 463 | <10 | mg/kg | TM5/PM8/PM16 |
| >EC25-EC35 | <10 | <10 | <10 | <10 | <10 | <10 | <10 | <10 | <10 | 1315 | <10 | mg/kg | TM5/PM8/PM16 |
| | | | | | | | | | | | | | |
| MTBE # | <5 | <5 | <5 | <5 | <5 | <5 | <5 | <5 SV | <5 | <5 SV | <5 | ug/kg | TM31/PM12 |
| Benzene # | <5 | <5 | <5 | <5 | <5 | <5 | <5 | <5 SV | <5 | <5 SV | <5 | ug/kg | TM31/PM12 |
| Toluene # | <5 | <5 | <5 | <5 | <5 | <5 | <5 | <5 SV | <5 | <5 SV | <5 | ug/kg | TM31/PM12 |
| Ethylbenzene # | <5 | <5 | <5 | <5 | <5 | <5 | <5 | <5 SV | <5 | 13 SV | <5 | ug/kg | TM31/PM12 |
| m/p-Xylene # | <5 | <5 | <5 | <5 | <5 | <5 | <5 | <5 SV | <5 | 15 SV | <5 | ug/kg | TM31/PM12 |
| o-Xylene # | <5 | <5 | <5 | <5 | <5 | <5 | <5 | <5 SV | <5 | 30 SV | <5 | ug/kg | TM31/PM12 |
| | | | | | | | | | | | | | |
| PCB 28 # | <5 | <5 | <5 | <5 | <5 | <5 | <5 | <5 | <5 | <5 | <5 | ug/kg | TM17/PM8 |
| PCB 52 # | <5 | <5 | <5 | <5 | <5 | <5 | <5 | <5 | <5 | <5 | <5 | ug/kg | TM17/PM8 |
| PCB 101 # | <5 | <5 | <5 | <5 | <5 | <5 | <5 | <5 | <5 | <5 | <5 | ug/kg | TM17/PM8 |
| PCB 118 # | <5 | <5 | <5 | <5 | <5 | <5 | <5 | <5 | <5 | <5 | <5 | ug/kg | TM17/PM8 |
| PCB 138 # | <5 | <5 | <5 | <5 | <5 | <5 | <5 | <5 | <5 | <5 | <5 | ug/kg | TM17/PM8 |
| PCB 153 # | <5 | <5 | <5 | <5 | <5 | <5 | <5 | <5 | <5 | <5 | <5 | ug/kg | TM17/PM8 |
| PCB 180 # | <5 | <5 | <5 | <5 | <5 | <5 | <5 | <5 | <5 | <5 | <5 | ug/kg | TM17/PM8 |
| Total 7 PCBs # | <35 | <35 | <35 | <35 | <35 | <35 | <35 | <35 | <35 | <35 | <35 | ug/kg | TM17/PM8 |

Please see attached notes for all abbreviations and acronyms

**Client Name:** Ground Investigations Ireland
**Reference:** 8354-01-19
**Location:** Cornelscourt
**Contact:** Barry Sexton
**JE Job No.:** 19/1176

**Report : Solid**

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

| J E Sample No. | 52-54 | 55-57 | 58-60 | 64-66 | 67-69 | 73-75 | 76-78 | 81-83 | 84-86 | 94-96 | LOD/LOR | Units | Method No. |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| **Sample ID** | TP-07 | TP-07 | TP-07 | TP-07A | TP-07A | TP-08 | TP-08 | TP-09 | TP-09 | TP-14 | | | |
| **Depth** | 0.50 | 1.50 | 2.50 | 0.50 | 1.50 | 0.50 | 1.50 | 0.50 | 1.50 | 1.00 | | | |
| **COC No / misc** | | | | | | | | | | | | | |
| **Containers** | V J T | V J T | V J T | V J T | V J T | V J T | V J T | V J T | V J T | V J T | | | |
| **Sample Date** | 21/01/2019 | 21/01/2019 | 21/01/2019 | 21/01/2019 | 21/01/2019 | 22/01/2019 | 22/01/2019 | 22/01/2019 | 22/01/2019 | 22/01/2019 | | | |
| **Sample Type** | Soil | Soil | Soil | Soil | Soil | Soil | Soil | Soil | Soil | Soil | | | |
| **Batch Number** | 1 | 1 | 1 | 1 | 1 | 1 | 1 | 1 | 1 | 1 | | | |
| **Date of Receipt** | 24/01/2019 | 24/01/2019 | 24/01/2019 | 24/01/2019 | 24/01/2019 | 24/01/2019 | 24/01/2019 | 24/01/2019 | 24/01/2019 | 24/01/2019 | | | |
| Natural Moisture Content | 13.5 | 14.2 | 14.7 | 23.3 | 17.0 | 23.9 | 18.4 | 29.8 | 11.5 | 17.0 | <0.1 | % | PM4/PM0 |
| Moisture Content (% Wet Weight) | 11.9 | 12.5 | 12.8 | 18.9 | 14.6 | 19.3 | 15.5 | 23.0 | 10.3 | 14.5 | <0.1 | % | PM4/PM0 |
| Hexavalent Chromium # | <0.3 | <0.3 | <0.3 | <0.3 | <0.3 | <0.3 | <0.3 | <0.3 | <0.3 | <0.3 | <0.3 | mg/kg | TM38/PM20 |
| Sulphate as SO4 (2:1 Ext) # | - | - | | - | | - | - | - | | - | <0.0015 | g/l | TM38/PM20 |
| Chromium III | 40.1 | 54.6 | 47.5 | 66.8 | 59.7 | 67.6 | 70.0 | 79.6 | 54.6 | 60.1 | <0.5 | mg/kg | NONE/NONE |
| Total Organic Carbon # | 0.43 | 0.27 | 0.18 | 0.67 | 0.64 | 0.85 | 0.69 | 4.57 | 0.33 | 1.04 | <0.02 | % | TM21/PM24 |
| pH # | 8.94 | 8.78 | 8.91 | 8.18 | 8.57 | 8.33 | 8.46 | 8.35 | 8.86 | 8.46 | <0.01 | pH units | TM73/PM11 |
| Mass of raw test portion | 0.0985 | 0.1004 | 0.1067 | 0.1087 | 0.1013 | 0.111 | 0.1061 | 0.112 | 0.1029 | 0.1026 | | kg | NONE/PM17 |
| Mass of dried test portion | 0.09 | 0.09 | 0.09 | 0.09 | 0.09 | 0.09 | 0.09 | 0.09 | 0.09 | 0.09 | | kg | NONE/PM17 |

Please see attached notes for all abbreviations and acronyms

**Client Name:** Ground Investigations Ireland
**Reference:** 8354-01-19
**Location:** Cornelscourt
**Contact:** Barry Sexton
**JE Job No.:** 19/1176

**Report : Solid**

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

| J E Sample No. | 97-99 | 100-102 | 103-105 | 106-108 | | | | | | | LOD/LOR | Units | Method No. |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Sample ID | TP-14 | TP-14 | TP-20 | TP-20 | | | | | | | | | |
| Depth | 2.00 | 3.00 | 0.50 | 1.50 | | | | | | | | | |
| COC No / misc | | | | | | | | | | | | | |
| Containers | V J T | V J T | V J T | V J T | | | | | | | | | |
| Sample Date | 22/01/2019 | 22/01/2019 | 21/01/2019 | 21/01/2019 | | | | | | | | | |
| Sample Type | Soil | Soil | Soil | Soil | | | | | | | | | |
| Batch Number | 1 | 1 | 1 | 1 | | | | | | | | | |
| Date of Receipt | 24/01/2019 | 24/01/2019 | 24/01/2019 | 24/01/2019 | | | | | | | | | |
| Antimony | 1 | 2 | 3 | 1 | | | | | | | <1 | mg/kg | TM30/PM15 |
| Arsenic # | 7.2 | 9.2 | 17.4 | 8.0 | | | | | | | <0.5 | mg/kg | TM30/PM15 |
| Barium # | 51 | 63 | 139 | 96 | | | | | | | <1 | mg/kg | TM30/PM15 |
| Cadmium # | 1.7 | 1.9 | 5.4 | 1.9 | | | | | | | <0.1 | mg/kg | TM30/PM15 |
| Chromium # | 45.7 | 54.7 | 76.6 | 38.5 | | | | | | | <0.5 | mg/kg | TM30/PM15 |
| Copper # | 26 | 23 | 140 | 26 | | | | | | | <1 | mg/kg | TM30/PM15 |
| Lead # | 65 | 24 | 72 | 15 | | | | | | | <5 | mg/kg | TM30/PM15 |
| Mercury # | <0.1 | <0.1 | 0.2 | <0.1 | | | | | | | <0.1 | mg/kg | TM30/PM15 |
| Molybdenum # | 2.8 | 2.8 | 6.0 | 3.5 | | | | | | | <0.1 | mg/kg | TM30/PM15 |
| Nickel # | 22.7 | 34.2 | 49.9 | 32.9 | | | | | | | <0.7 | mg/kg | TM30/PM15 |
| Selenium # | 1 | <1 | 2 | 1 | | | | | | | <1 | mg/kg | TM30/PM15 |
| Zinc # | 68 | 79 | 181 | 80 | | | | | | | <5 | mg/kg | TM30/PM15 |
| | | | | | | | | | | | | | |
| PAH MS | | | | | | | | | | | | | |
| Naphthalene # | 1.45 | 0.16 | <0.04 | <0.04 | | | | | | | <0.04 | mg/kg | TM4/PM8 |
| Acenaphthylene | 0.28 | 0.14 | <0.03 | <0.03 | | | | | | | <0.03 | mg/kg | TM4/PM8 |
| Acenaphthene # | 0.10 | 0.09 | <0.05 | <0.05 | | | | | | | <0.05 | mg/kg | TM4/PM8 |
| Fluorene # | 0.54 | 0.41 | <0.04 | <0.04 | | | | | | | <0.04 | mg/kg | TM4/PM8 |
| Phenanthrene # | 2.19 | 1.54 | 0.08 | <0.03 | | | | | | | <0.03 | mg/kg | TM4/PM8 |
| Anthracene # | 0.42 | 0.30 | <0.04 | <0.04 | | | | | | | <0.04 | mg/kg | TM4/PM8 |
| Fluoranthene # | 1.15 | 0.80 | 0.14 | <0.03 | | | | | | | <0.03 | mg/kg | TM4/PM8 |
| Pyrene # | 2.86 | 2.41 | 0.14 | <0.03 | | | | | | | <0.03 | mg/kg | TM4/PM8 |
| Benzo(a)anthracene # | 0.59 | 0.47 | 0.13 | <0.06 | | | | | | | <0.06 | mg/kg | TM4/PM8 |
| Chrysene # | 0.36 | 0.27 | 0.10 | <0.02 | | | | | | | <0.02 | mg/kg | TM4/PM8 |
| Benzo(bk)fluoranthene # | 0.46 | 0.33 | 0.20 | <0.07 | | | | | | | <0.07 | mg/kg | TM4/PM8 |
| Benzo(a)pyrene # | 0.43 | 0.35 | 0.11 | <0.04 | | | | | | | <0.04 | mg/kg | TM4/PM8 |
| Indeno(123cd)pyrene # | 0.17 | 0.17 | 0.08 | <0.04 | | | | | | | <0.04 | mg/kg | TM4/PM8 |
| Dibenzo(ah)anthracene # | <0.04 | <0.04 | <0.04 | <0.04 | | | | | | | <0.04 | mg/kg | TM4/PM8 |
| Benzo(ghi)perylene # | 0.82 | 0.67 | 0.08 | <0.04 | | | | | | | <0.04 | mg/kg | TM4/PM8 |
| Coronene | 0.28 | 0.24 | <0.04 | <0.04 | | | | | | | <0.04 | mg/kg | TM4/PM8 |
| PAH 6 Total # | 3.03 | 2.32 | 0.61 | <0.22 | | | | | | | <0.22 | mg/kg | TM4/PM8 |
| PAH 17 Total | 12.10 | 8.35 | 1.06 | <0.64 | | | | | | | <0.64 | mg/kg | TM4/PM8 |
| Benzo(b)fluoranthene | 0.33 | 0.24 | 0.14 | <0.05 | | | | | | | <0.05 | mg/kg | TM4/PM8 |
| Benzo(k)fluoranthene | 0.13 | 0.09 | 0.06 | <0.02 | | | | | | | <0.02 | mg/kg | TM4/PM8 |
| Benzo(j)fluoranthene | <1 | <1 | <1 | <1 | | | | | | | <1 | mg/kg | TM4/PM8 |
| PAH Surrogate % Recovery | 101 | 102 | 107 | 102 | | | | | | | <0 | % | TM4/PM8 |
| | | | | | | | | | | | | | |
| Mineral Oil (C10-C40) | 3848 | 3465 | <30 | <30 | | | | | | | <30 | mg/kg | TM5/PM8/PM16 |

Please see attached notes for all abbreviations and acronyms

**Client Name:** Ground Investigations Ireland
**Reference:** 8354-01-19
**Location:** Cornelscourt
**Contact:** Barry Sexton
**JE Job No.:** 19/1176

**Report : Solid**

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

| J E Sample No. | 97-99 | 100-102 | 103-105 | 106-108 | | | | | | | LOD/LOR | Units | Method No. |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Sample ID | TP-14 | TP-14 | TP-20 | TP-20 | | | | | | | | | |
| Depth | 2.00 | 3.00 | 0.50 | 1.50 | | | | | | | | | |
| COC No / misc | | | | | | | | | | | | | |
| Containers | V J T | V J T | V J T | V J T | | | | | | | | | |
| Sample Date | 22/01/2019 | 22/01/2019 | 21/01/2019 | 21/01/2019 | | | | | | | | | |
| Sample Type | Soil | Soil | Soil | Soil | | | | | | | | | |
| Batch Number | 1 | 1 | 1 | 1 | | | | | | | | | |
| Date of Receipt | 24/01/2019 | 24/01/2019 | 24/01/2019 | 24/01/2019 | | | | | | | | | |
| TPH CWG | | | | | | | | | | | | | |
| **Aliphatics** | | | | | | | | | | | | | |
| >C5-C6 # | <0.1 SV | <0.1 SV | <0.1 | <0.1 | | | | | | | <0.1 | mg/kg | TM36/PM12 |
| >C6-C8 # | 0.3 SV | 0.2 SV | <0.1 | <0.1 | | | | | | | <0.1 | mg/kg | TM36/PM12 |
| >C8-C10 | 1.7 SV | 0.9 SV | <0.1 | <0.1 | | | | | | | <0.1 | mg/kg | TM36/PM12 |
| >C10-C12 # | 16.7 | 8.3 | 1.8 | <0.2 | | | | | | | <0.2 | mg/kg | TM5/PM8/PM16 |
| >C12-C16 # | 12 | <4 | <4 | <4 | | | | | | | <4 | mg/kg | TM5/PM8/PM16 |
| >C16-C21 # | 81 | 66 | <7 | <7 | | | | | | | <7 | mg/kg | TM5/PM8/PM16 |
| >C21-C35 # | 3251 | 2906 | <7 | <7 | | | | | | | <7 | mg/kg | TM5/PM8/PM16 |
| >C35-C40 | 487 | 485 | <7 | <7 | | | | | | | <7 | mg/kg | TM5/PM8/PM16 |
| Total aliphatics C5-40 | 3850 | 3466 | <26 | <26 | | | | | | | <26 | mg/kg | TM5/TM36/PM8/PM12/PM16 |
| >C6-C10 | 2.0 SV | 1.1 SV | <0.1 | <0.1 | | | | | | | <0.1 | mg/kg | TM36/PM12 |
| >C10-C25 | 644 | 567 | <10 | <10 | | | | | | | <10 | mg/kg | TM5/PM8/PM16 |
| >C25-C35 | 2658 | 2444 | <10 | <10 | | | | | | | <10 | mg/kg | TM5/PM8/PM16 |
| **Aromatics** | | | | | | | | | | | | | |
| >C5-EC7 # | <0.1 SV | <0.1 SV | <0.1 | <0.1 | | | | | | | <0.1 | mg/kg | TM36/PM12 |
| >EC7-EC8 # | <0.1 SV | <0.1 SV | <0.1 | <0.1 | | | | | | | <0.1 | mg/kg | TM36/PM12 |
| >EC8-EC10 # | 0.4 SV | <0.1 SV | <0.1 | <0.1 | | | | | | | <0.1 | mg/kg | TM36/PM12 |
| >EC10-EC12 # | 49.6 | 28.5 | <0.2 | <0.2 | | | | | | | <0.2 | mg/kg | TM5/PM8/PM16 |
| >EC12-EC16 # | 57 | 36 | <4 | <4 | | | | | | | <4 | mg/kg | TM5/PM8/PM16 |
| >EC16-EC21 # | 145 | 133 | <7 | <7 | | | | | | | <7 | mg/kg | TM5/PM8/PM16 |
| >EC21-EC35 # | 1426 | 1413 | <7 | <7 | | | | | | | <7 | mg/kg | TM5/PM8/PM16 |
| >EC35-EC40 | 268 | 281 | <7 | <7 | | | | | | | <7 | mg/kg | TM5/PM8/PM16 |
| Total aromatics C5-40 | 1946 | 1892 | <26 | <26 | | | | | | | <26 | mg/kg | TM5/TM36/PM8/PM12/PM16 |
| Total aliphatics and aromatics(C5-40) | 5796 | 5358 | <52 | <52 | | | | | | | <52 | mg/kg | TM5/TM36/PM8/PM12/PM16 |
| >EC6-EC10 # | 0.4 SV | <0.1 SV | <0.1 | <0.1 | | | | | | | <0.1 | mg/kg | TM36/PM12 |
| >EC10-EC25 | 458 | 416 | <10 | <10 | | | | | | | <10 | mg/kg | TM5/PM8/PM16 |
| >EC25-EC35 | 1142 | 1162 | <10 | <10 | | | | | | | <10 | mg/kg | TM5/PM8/PM16 |
| | | | | | | | | | | | | | |
| MTBE # | 21 SV | 18 SV | <5 | <5 | | | | | | | <5 | ug/kg | TM31/PM12 |
| Benzene # | 22 SV | 12 SV | <5 | <5 | | | | | | | <5 | ug/kg | TM31/PM12 |
| Toluene # | 7 SV | <5 SV | <5 | <5 | | | | | | | <5 | ug/kg | TM31/PM12 |
| Ethylbenzene # | 100 SV | 14 SV | <5 | <5 | | | | | | | <5 | ug/kg | TM31/PM12 |
| m/p-Xylene # | 240 SV | 32 SV | <5 | <5 | | | | | | | <5 | ug/kg | TM31/PM12 |
| o-Xylene # | 107 SV | <5 SV | <5 | <5 | | | | | | | <5 | ug/kg | TM31/PM12 |
| | | | | | | | | | | | | | |
| PCB 28 # | <5 | <5 | <5 | <5 | | | | | | | <5 | ug/kg | TM17/PM8 |
| PCB 52 # | <5 | <5 | <5 | <5 | | | | | | | <5 | ug/kg | TM17/PM8 |
| PCB 101 # | <5 | <5 | <5 | <5 | | | | | | | <5 | ug/kg | TM17/PM8 |
| PCB 118 # | <5 | <5 | <5 | <5 | | | | | | | <5 | ug/kg | TM17/PM8 |
| PCB 138 # | <5 | <5 | <5 | <5 | | | | | | | <5 | ug/kg | TM17/PM8 |
| PCB 153 # | <5 | <5 | <5 | <5 | | | | | | | <5 | ug/kg | TM17/PM8 |
| PCB 180 # | <5 | <5 | <5 | <5 | | | | | | | <5 | ug/kg | TM17/PM8 |
| Total 7 PCBs # | <35 | <35 | <35 | <35 | | | | | | | <35 | ug/kg | TM17/PM8 |

Please see attached notes for all abbreviations and acronyms

**Client Name:** Ground Investigations Ireland
**Reference:** 8354-01-19
**Location:** Cornelscourt
**Contact:** Barry Sexton
**JE Job No.:** 19/1176

**Report : Solid**

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

| J E Sample No. | 97-99 | 100-102 | 103-105 | 106-108 | | | | | | | LOD/LOR | Units | Method No. |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| **Sample ID** | TP-14 | TP-14 | TP-20 | TP-20 | | | | | | | | | |
| **Depth** | 2.00 | 3.00 | 0.50 | 1.50 | | | | | | | | | |
| **COC No / misc** | | | | | | | | | | | | | |
| **Containers** | V J T | V J T | V J T | V J T | | | | | | | | | |
| **Sample Date** | 22/01/2019 | 22/01/2019 | 21/01/2019 | 21/01/2019 | | | | | | | | | |
| **Sample Type** | Soil | Soil | Soil | Soil | | | | | | | | | |
| **Batch Number** | 1 | 1 | 1 | 1 | | | | | | | | | |
| **Date of Receipt** | 24/01/2019 | 24/01/2019 | 24/01/2019 | 24/01/2019 | | | | | | | | | |
| Natural Moisture Content | 11.2 | 13.6 | 25.0 | 13.3 | | | | | | | <0.1 | % | PM4/PM0 |
| Moisture Content (% Wet Weight) | 10.1 | 12.0 | 20.0 | 11.8 | | | | | | | <0.1 | % | PM4/PM0 |
| Hexavalent Chromium # | <0.3 | <0.3 | <0.3 | <0.3 | | | | | | | <0.3 | mg/kg | TM38/PM20 |
| Sulphate as SO4 (2:1 Ext) # | - | - | - | - | | | | | | | <0.0015 | g/l | TM38/PM20 |
| Chromium III | 45.7 | 54.7 | 76.6 | 38.5 | | | | | | | <0.5 | mg/kg | NONE/NONE |
| Total Organic Carbon # | 0.72 | 0.63 | 2.44 | 0.24 | | | | | | | <0.02 | % | TM21/PM24 |
| pH # | 8.42 | 8.68 | 8.38 | 8.68 | | | | | | | <0.01 | pH units | TM73/PM11 |
| Mass of raw test portion | 0.1007 | 0.1016 | 0.1054 | 0.103 | | | | | | | | kg | NONE/PM17 |
| Mass of dried test portion | 0.09 | 0.09 | 0.09 | 0.09 | | | | | | | | kg | NONE/PM17 |

Please see attached notes for all abbreviations and acronyms

**Client Name:** Ground Investigations Ireland
**Reference:** 8354-01-19
**Location:** Cornelscourt
**Contact:** Barry Sexton
**JE Job No.:** 19/1176

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

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

| J E Sample No. | 1-3 | 10-12 | 19-21 | 28-30 | 37-39 | 40-42 | 43-45 | 52-54 | 55-57 | 58-60 | LOD/LOR | Units | Method No. |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Sample ID | TP-01 | TP-02 | TP-03 | TP-04 | TP-05 | TP-06 | TP-06 | TP-07 | TP-07 | TP-07 | | | |
| Depth | 0.50 | 0.60 | 0.50 | 1.00 | 0.80 | 0.50 | 1.50 | 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 | 21/01/2019 | 21/01/2019 | 22/01/2019 | 22/01/2019 | 22/01/2019 | 21/01/2019 | 21/01/2019 | 21/01/2019 | 21/01/2019 | 21/01/2019 | | | |
| Sample Type | Soil | Soil | Soil | Soil | Soil | Soil | Soil | Soil | Soil | Soil | | | |
| Batch Number | 1 | 1 | 1 | 1 | 1 | 1 | 1 | 1 | 1 | 1 | | | |
| Date of Receipt | 24/01/2019 | 24/01/2019 | 24/01/2019 | 24/01/2019 | 24/01/2019 | 24/01/2019 | 24/01/2019 | 24/01/2019 | 24/01/2019 | 24/01/2019 | | | |
| Dissolved Antimony # | <0.002 | <0.002 | <0.002 | <0.002 | <0.002 | <0.002 | 0.002 | 0.003 | <0.002 | <0.002 | <0.002 | mg/l | TM30/PM17 |
| Dissolved Antimony (A10) # | <0.02 | <0.02 | <0.02 | <0.02 | <0.02 | <0.02 | <0.02 | 0.03 | <0.02 | <0.02 | <0.02 | mg/kg | TM30/PM17 |
| Dissolved Arsenic # | <0.0025 | <0.0025 | <0.0025 | <0.0025 | 0.0032 | <0.0025 | <0.0025 | <0.0025 | <0.0025 | <0.0025 | <0.0025 | mg/l | TM30/PM17 |
| Dissolved Arsenic (A10) # | <0.025 | <0.025 | <0.025 | <0.025 | 0.032 | <0.025 | <0.025 | <0.025 | <0.025 | <0.025 | <0.025 | mg/kg | TM30/PM17 |
| Dissolved Barium # | <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 Barium (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 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 # | 0.006 | 0.007 | 0.003 | 0.004 | 0.005 | 0.005 | 0.006 | 0.004 | 0.005 | 0.006 | <0.002 | mg/l | TM30/PM17 |
| Dissolved Molybdenum (A10) # | 0.06 | 0.07 | 0.03 | 0.04 | 0.05 | 0.05 | 0.06 | 0.04 | 0.05 | 0.06 | <0.02 | mg/kg | TM30/PM17 |
| Dissolved Nickel # | <0.002 | <0.002 | <0.002 | <0.002 | <0.002 | <0.002 | <0.002 | <0.002 | <0.002 | <0.002 | <0.002 | mg/l | TM30/PM17 |
| Dissolved Nickel (A10) # | <0.02 | <0.02 | <0.02 | <0.02 | <0.02 | <0.02 | <0.02 | <0.02 | <0.02 | <0.02 | <0.02 | mg/kg | TM30/PM17 |
| Dissolved Selenium # | <0.003 | <0.003 | <0.003 | <0.003 | <0.003 | <0.003 | <0.003 | <0.003 | <0.003 | <0.003 | <0.003 | mg/l | TM30/PM17 |
| Dissolved Selenium (A10) # | <0.03 | <0.03 | <0.03 | <0.03 | <0.03 | <0.03 | <0.03 | <0.03 | <0.03 | <0.03 | <0.03 | mg/kg | TM30/PM17 |
| Dissolved Zinc # | <0.003 | <0.003 | <0.003 | <0.003 | <0.003 | <0.003 | <0.003 | <0.003 | <0.003 | <0.003 | <0.003 | mg/l | TM30/PM17 |
| Dissolved Zinc (A10) # | <0.03 | <0.03 | <0.03 | <0.03 | <0.03 | <0.03 | <0.03 | <0.03 | <0.03 | <0.03 | <0.03 | mg/kg | TM30/PM17 |
| Mercury Dissolved by CVAF # | <0.00001 | <0.00001 | <0.00001 | <0.00001 | <0.00001 | <0.00001 | <0.00001 | <0.00001 | <0.00001 | <0.00001 | <0.00001 | mg/l | TM61/PM0 |
| Mercury Dissolved by CVAF # | <0.0001 | <0.0001 | <0.0001 | <0.0001 | <0.0001 | <0.0001 | <0.0001 | <0.0001 | <0.0001 | <0.0001 | <0.0001 | mg/kg | TM61/PM0 |
| Phenol | <0.01 | <0.01 | <0.01 | <0.01 | <0.01 | <0.01 | <0.01 | <0.01 | <0.01 | <0.01 | <0.01 | mg/l | TM26/PM0 |
| Phenol | <0.1 | <0.1 | <0.1 | <0.1 | <0.1 | <0.1 | <0.1 | <0.1 | <0.1 | <0.1 | <0.1 | mg/kg | TM26/PM0 |
| Fluoride | <0.3 | <0.3 | <0.3 | <0.3 | <0.3 | <0.3 | <0.3 | <0.3 | <0.3 | <0.3 | <0.3 | mg/l | TM173/PM0 |
| Fluoride | <3 | <3 | <3 | <3 | <3 | <3 | <3 | <3 | <3 | <3 | <3 | mg/kg | TM173/PM0 |
| Sulphate as SO4 # | 6.4 | 0.6 | <0.5 | <0.5 | <0.5 | 4.8 | 3.6 | 0.7 | 1.1 | 0.8 | <0.5 | mg/l | TM38/PM0 |
| Sulphate as SO4 # | 64 | 6 | <5 | <5 | <5 | 48 | 36 | 7 | 11 | 8 | <5 | mg/kg | TM38/PM0 |
| Chloride # | 0.9 | 0.9 | 0.4 | 0.4 | 0.6 | 0.9 | 0.8 | 0.3 | <0.3 | <0.3 | <0.3 | mg/l | TM38/PM0 |
| Chloride # | 9 | 9 | 4 | 4 | 6 | 9 | 8 | 3 | <3 | <3 | <3 | mg/kg | TM38/PM0 |
| Dissolved Organic Carbon | <2 | <2 | 2 | <2 | 6 | <2 | <2 | <2 | <2 | <2 | <2 | mg/l | TM60/PM0 |
| Dissolved Organic Carbon | <20 | <20 | 20 | <20 | 60 | <20 | <20 | <20 | <20 | <20 | <20 | mg/kg | TM60/PM0 |
| pH | 8.18 | 8.27 | 8.07 | 8.23 | 8.10 | 8.40 | 8.09 | 8.60 | 8.45 | 8.36 | <0.01 | pH units | TM73/PM0 |
| Total Dissolved Solids # | 69 | 113 | 172 | 115 | 74 | 93 | 82 | 60 | 54 | 59 | <35 | mg/l | TM20/PM0 |
| Total Dissolved Solids # | 690 | 1130 | 1720 | 1150 | 740 | 930 | 820 | 600 | 540 | 590 | <350 | mg/kg | TM20/PM0 |

Please see attached notes for all abbreviations and acronyms

**Client Name:** Ground Investigations Ireland
**Reference:** 8354-01-19
**Location:** Cornelscourt
**Contact:** Barry Sexton
**JE Job No.:** 19/1176

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

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

| J E Sample No. | 64-66 | 67-69 | 73-75 | 76-78 | 81-83 | 84-86 | 94-96 | 97-99 | 100-102 | 103-105 | LOD/LOR | Units | Method No. |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Sample ID | TP-07A | TP-07A | TP-08 | TP-08 | TP-09 | TP-09 | TP-14 | TP-14 | TP-14 | TP-20 | | | |
| Depth | 0.50 | 1.50 | 0.50 | 1.50 | 0.50 | 1.50 | 1.00 | 2.00 | 3.00 | 0.50 | | | |
| COC No / misc | | | | | | | | | | | | | |
| Containers | V J T | V J T | V J T | V J T | V J T | V J T | V J T | V J T | V J T | V J T | | | |
| Sample Date | 21/01/2019 | 21/01/2019 | 22/01/2019 | 22/01/2019 | 22/01/2019 | 22/01/2019 | 22/01/2019 | 22/01/2019 | 22/01/2019 | 21/01/2019 | | | |
| Sample Type | Soil | Soil | Soil | Soil | Soil | Soil | Soil | Soil | Soil | Soil | | | |
| Batch Number | 1 | 1 | 1 | 1 | 1 | 1 | 1 | 1 | 1 | 1 | | | |
| Date of Receipt | 24/01/2019 | 24/01/2019 | 24/01/2019 | 24/01/2019 | 24/01/2019 | 24/01/2019 | 24/01/2019 | 24/01/2019 | 24/01/2019 | 24/01/2019 | | | |
| Dissolved Antimony # | <0.002 | <0.002 | <0.002 | <0.002 | <0.002 | <0.002 | <0.002 | 0.003 | 0.004 | <0.002 | <0.002 | mg/l | TM30/PM17 |
| Dissolved Antimony (A10) # | <0.02 | <0.02 | <0.02 | <0.02 | <0.02 | <0.02 | <0.02 | 0.03 | 0.04 | <0.02 | <0.02 | mg/kg | TM30/PM17 |
| Dissolved Arsenic # | <0.0025 | <0.0025 | <0.0025 | <0.0025 | <0.0025 | <0.0025 | <0.0025 | <0.0025 | 0.0027 | <0.0025 | <0.0025 | mg/l | TM30/PM17 |
| Dissolved Arsenic (A10) # | <0.025 | <0.025 | <0.025 | <0.025 | <0.025 | <0.025 | <0.025 | <0.025 | 0.027 | <0.025 | <0.025 | mg/kg | TM30/PM17 |
| Dissolved Barium # | 0.004 | 0.004 | <0.003 | <0.003 | 0.003 | <0.003 | 0.018 | 0.034 | 0.016 | 0.004 | <0.003 | mg/l | TM30/PM17 |
| Dissolved Barium (A10) # | 0.04 | 0.04 | <0.03 | <0.03 | 0.03 | <0.03 | 0.18 | 0.34 | 0.16 | 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 # | 0.002 | 0.005 | 0.003 | 0.005 | 0.003 | 0.005 | 0.009 | 0.009 | 0.016 | 0.003 | <0.002 | mg/l | TM30/PM17 |
| Dissolved Molybdenum (A10) # | 0.02 | 0.05 | 0.03 | 0.05 | 0.03 | 0.05 | 0.09 | 0.09 | 0.16 | 0.03 | <0.02 | mg/kg | TM30/PM17 |
| Dissolved Nickel # | <0.002 | <0.002 | <0.002 | <0.002 | <0.002 | <0.002 | 0.006 | 0.008 | 0.008 | <0.002 | <0.002 | mg/l | TM30/PM17 |
| Dissolved Nickel (A10) # | <0.02 | <0.02 | <0.02 | <0.02 | <0.02 | <0.02 | 0.06 | 0.08 | 0.08 | <0.02 | <0.02 | mg/kg | TM30/PM17 |
| Dissolved Selenium # | <0.003 | <0.003 | <0.003 | <0.003 | <0.003 | <0.003 | <0.003 | <0.003 | <0.003 | <0.003 | <0.003 | mg/l | TM30/PM17 |
| Dissolved Selenium (A10) # | <0.03 | <0.03 | <0.03 | <0.03 | <0.03 | <0.03 | <0.03 | <0.03 | <0.03 | <0.03 | <0.03 | mg/kg | TM30/PM17 |
| Dissolved Zinc # | <0.003 | <0.003 | <0.003 | <0.003 | <0.003 | <0.003 | <0.003 | 0.003 | 0.005 | <0.003 | <0.003 | mg/l | TM30/PM17 |
| Dissolved Zinc (A10) # | <0.03 | <0.03 | <0.03 | <0.03 | <0.03 | <0.03 | <0.03 | 0.03 | 0.05 | <0.03 | <0.03 | mg/kg | TM30/PM17 |
| Mercury Dissolved by CVAF # | <0.00001 | <0.00001 | <0.00001 | <0.00001 | <0.00001 | <0.00001 | <0.00001 | <0.00001 | <0.00001 | <0.00001 | <0.00001 | mg/l | TM61/PM0 |
| Mercury Dissolved by CVAF # | <0.0001 | <0.0001 | <0.0001 | <0.0001 | <0.0001 | <0.0001 | <0.0001 | <0.0001 | <0.0001 | <0.0001 | <0.0001 | mg/kg | TM61/PM0 |
| Phenol | <0.01 | <0.01 | <0.01 | <0.01 | <0.01 | <0.01 | <0.01 | <0.01 | <0.01 | <0.01 | <0.01 | mg/l | TM26/PM0 |
| Phenol | <0.1 | <0.1 | <0.1 | <0.1 | <0.1 | <0.1 | <0.1 | <0.1 | <0.1 | <0.1 | <0.1 | mg/kg | TM26/PM0 |
| Fluoride | <0.3 | <0.3 | <0.3 | <0.3 | <0.3 | <0.3 | <0.3 | <0.3 | <0.3 | <0.3 | <0.3 | mg/l | TM173/PM0 |
| Fluoride | <3 | <3 | <3 | <3 | <3 | <3 | <3 | <3 | <3 | <3 | <3 | mg/kg | TM173/PM0 |
| Sulphate as SO4 # | <0.5 | 1.7 | <0.5 | <0.5 | <0.5 | <0.5 | <0.5 | <0.5 | 0.6 | 0.6 | <0.5 | mg/l | TM38/PM0 |
| Sulphate as SO4 # | <5 | 17 | <5 | <5 | <5 | <5 | <5 | <5 | 6 | 6 | <5 | mg/kg | TM38/PM0 |
| Chloride # | 1.5 | 0.4 | <0.3 | <0.3 | <0.3 | 0.7 | 0.6 | 0.7 | 1.0 | <0.3 | <0.3 | mg/l | TM38/PM0 |
| Chloride # | 15 | 4 | <3 | <3 | <3 | 7 | 6 | 7 | 10 | <3 | <3 | mg/kg | TM38/PM0 |
| Dissolved Organic Carbon | <2 | <2 | <2 | <2 | 4 | <2 | 6 | 3 | 3 | 3 | <2 | mg/l | TM60/PM0 |
| Dissolved Organic Carbon | <20 | <20 | <20 | <20 | 40 | <20 | 60 | 30 | 30 | 30 | <20 | mg/kg | TM60/PM0 |
| pH | 8.13 | 8.24 | 7.90 | 8.22 | 8.10 | 7.91 | 8.29 | 8.27 | 8.01 | 8.07 | <0.01 | pH units | TM73/PM0 |
| Total Dissolved Solids # | 131 | 159 | 41 | <35 | 78 | 142 | 107 | 80 | 65 | <35 | <35 | mg/l | TM20/PM0 |
| Total Dissolved Solids # | 1310 | 1590 | 410 | <350 | 780 | 1420 | 1070 | 800 | 650 | <350 | <350 | mg/kg | TM20/PM0 |

Please see attached notes for all abbreviations and acronyms

**Client Name:** Ground Investigations Ireland
**Reference:** 8354-01-19
**Location:** Cornelscourt
**Contact:** Barry Sexton
**JE Job No.:** 19/1176

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

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

| | | | | | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| **J E Sample No.** | 106-108 | | | | | | | | | | | | |
| **Sample ID** | TP-20 | | | | | | | | | | | | |
| **Depth** | 1.50 | | | | | | | | | | | | |
| **COC No / misc** | | | | | | | | | | | | | |
| **Containers** | V J T | | | | | | | | | | | | |
| **Sample Date** | 21/01/2019 | | | | | | | | | | | | |
| **Sample Type** | Soil | | | | | | | | | | | | |
| **Batch Number** | 1 | | | | | | | | | | | | |
| **Date of Receipt** | 24/01/2019 | | | | | | | | | | | | |

Please see attached notes for all abbreviations and acronyms

| | | | | | | | | | | | LOD/LOR | Units | Method No. |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Dissolved Antimony # | <0.002 | | | | | | | | | | <0.002 | mg/l | TM30/PM17 |
| Dissolved Antimony (A10) # | <0.02 | | | | | | | | | | <0.02 | mg/kg | TM30/PM17 |
| Dissolved Arsenic # | <0.0025 | | | | | | | | | | <0.0025 | mg/l | TM30/PM17 |
| Dissolved Arsenic (A10) # | <0.025 | | | | | | | | | | <0.025 | mg/kg | TM30/PM17 |
| Dissolved Barium # | 0.005 | | | | | | | | | | <0.003 | mg/l | TM30/PM17 |
| Dissolved Barium (A10) # | 0.05 | | | | | | | | | | <0.03 | mg/kg | TM30/PM17 |
| Dissolved Cadmium # | <0.0005 | | | | | | | | | | <0.0005 | mg/l | TM30/PM17 |
| Dissolved Cadmium (A10) # | <0.005 | | | | | | | | | | <0.005 | mg/kg | TM30/PM17 |
| Dissolved Chromium # | <0.0015 | | | | | | | | | | <0.0015 | mg/l | TM30/PM17 |
| Dissolved Chromium (A10) # | <0.015 | | | | | | | | | | <0.015 | mg/kg | TM30/PM17 |
| Dissolved Copper # | <0.007 | | | | | | | | | | <0.007 | mg/l | TM30/PM17 |
| Dissolved Copper (A10) # | <0.07 | | | | | | | | | | <0.07 | mg/kg | TM30/PM17 |
| Dissolved Lead # | <0.005 | | | | | | | | | | <0.005 | mg/l | TM30/PM17 |
| Dissolved Lead (A10) # | <0.05 | | | | | | | | | | <0.05 | mg/kg | TM30/PM17 |
| Dissolved Molybdenum # | 0.005 | | | | | | | | | | <0.002 | mg/l | TM30/PM17 |
| Dissolved Molybdenum (A10) # | 0.05 | | | | | | | | | | <0.02 | mg/kg | TM30/PM17 |
| Dissolved Nickel # | <0.002 | | | | | | | | | | <0.002 | mg/l | TM30/PM17 |
| Dissolved Nickel (A10) # | <0.02 | | | | | | | | | | <0.02 | mg/kg | TM30/PM17 |
| Dissolved Selenium # | <0.003 | | | | | | | | | | <0.003 | mg/l | TM30/PM17 |
| Dissolved Selenium (A10) # | <0.03 | | | | | | | | | | <0.03 | mg/kg | TM30/PM17 |
| Dissolved Zinc # | <0.003 | | | | | | | | | | <0.003 | mg/l | TM30/PM17 |
| Dissolved Zinc (A10) # | <0.03 | | | | | | | | | | <0.03 | mg/kg | TM30/PM17 |
| Mercury Dissolved by CVAF # | <0.00001 | | | | | | | | | | <0.00001 | mg/l | TM61/PM0 |
| Mercury Dissolved by CVAF # | <0.0001 | | | | | | | | | | <0.0001 | mg/kg | TM61/PM0 |
| | | | | | | | | | | | | | |
| Phenol | <0.01 | | | | | | | | | | <0.01 | mg/l | TM26/PM0 |
| Phenol | <0.1 | | | | | | | | | | <0.1 | mg/kg | TM26/PM0 |
| | | | | | | | | | | | | | |
| Fluoride | <0.3 | | | | | | | | | | <0.3 | mg/l | TM173/PM0 |
| Fluoride | <3 | | | | | | | | | | <3 | mg/kg | TM173/PM0 |
| | | | | | | | | | | | | | |
| Sulphate as SO4 # | 1.9 | | | | | | | | | | <0.5 | mg/l | TM38/PM0 |
| Sulphate as SO4 # | 19 | | | | | | | | | | <5 | mg/kg | TM38/PM0 |
| Chloride # | 0.3 | | | | | | | | | | <0.3 | mg/l | TM38/PM0 |
| Chloride # | 3 | | | | | | | | | | <3 | mg/kg | TM38/PM0 |
| | | | | | | | | | | | | | |
| Dissolved Organic Carbon | <2 | | | | | | | | | | <2 | mg/l | TM60/PM0 |
| Dissolved Organic Carbon | <20 | | | | | | | | | | <20 | mg/kg | TM60/PM0 |
| pH | 8.22 | | | | | | | | | | <0.01 | pH units | TM73/PM0 |
| Total Dissolved Solids # | 67 | | | | | | | | | | <35 | mg/l | TM20/PM0 |
| Total Dissolved Solids # | 670 | | | | | | | | | | <350 | mg/kg | TM20/PM0 |

**Client Name:** Ground Investigations Ireland
**Reference:** 8354-01-19
**Location:** Cornelscourt
**Contact:** Barry Sexton
**JE Job No.:** 19/1176

**Report : EN12457_2**

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

Please see attached notes for all abbreviations and acronyms

| J E Sample No. | 1-3 | 10-12 | 19-21 | 28-30 | 37-39 | 40-42 | 43-45 | 52-54 | 55-57 | 58-60 | Inert | Stable Non-reactive | Hazardous | LOD LOR | Units | Method No. |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| **Sample ID** | TP-01 | TP-02 | TP-03 | TP-04 | TP-05 | TP-06 | TP-06 | TP-07 | TP-07 | TP-07 | | | | | | |
| **Depth** | 0.50 | 0.60 | 0.50 | 1.00 | 0.80 | 0.50 | 1.50 | 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** | 21/01/2019 | 21/01/2019 | 22/01/2019 | 22/01/2019 | 22/01/2019 | 21/01/2019 | 21/01/2019 | 21/01/2019 | 21/01/2019 | 21/01/2019 | | | | | | |
| **Sample Type** | Soil | Soil | Soil | Soil | Soil | Soil | Soil | Soil | Soil | Soil | | | | | | |
| **Batch Number** | 1 | 1 | 1 | 1 | 1 | 1 | 1 | 1 | 1 | 1 | | | | | | |
| **Date of Receipt** | 24/01/2019 | 24/01/2019 | 24/01/2019 | 24/01/2019 | 24/01/2019 | 24/01/2019 | 24/01/2019 | 24/01/2019 | 24/01/2019 | 24/01/2019 | | | | | | |
| **Solid Waste Analysis** | | | | | | | | | | | | | | | | |
| Total Organic Carbon # | 0.70 | 0.36 | 1.58 | 0.34 | 1.66 | 0.28 | 0.34 | 0.43 | 0.27 | 0.18 | 3 | 5 | 6 | <0.02 | % | TM21/PM24 |
| Sum of BTEX | <0.025 | <0.025 | <0.025 | <0.025 | <0.025 | <0.025 | <0.025 | <0.025 | <0.025 | <0.025 | 6 | - | - | <0.025 | mg/kg | TM31/PM12 |
| Sum of 7 PCBs # | <0.035 | <0.035 | <0.035 | <0.035 | <0.035 | <0.035 | <0.035 | <0.035 | <0.035 | <0.035 | 1 | - | - | <0.035 | mg/kg | TM17/PM8 |
| Mineral Oil | <30 | <30 | <30 | <30 | <30 | <30 | <30 | <30 | <30 | <30 | 500 | - | - | <30 | mg/kg | TM5/PM8/PM16 |
| PAH Sum of 6 # | <0.22 | <0.22 | 0.27 | <0.22 | 0.43 | <0.22 | <0.22 | <0.22 | <0.22 | <0.22 | - | - | - | <0.22 | mg/kg | TM4/PM8 |
| PAH Sum of 17 | <0.64 | <0.64 | <0.64 | <0.64 | 0.76 | <0.64 | <0.64 | <0.64 | <0.64 | <0.64 | 100 | - | - | <0.64 | mg/kg | TM4/PM8 |
| **CEN 10:1 Leachate** | | | | | | | | | | | | | | | | |
| Arsenic # | <0.025 | <0.025 | <0.025 | <0.025 | 0.032 | <0.025 | <0.025 | <0.025 | <0.025 | <0.025 | 0.5 | 2 | 25 | <0.025 | mg/kg | TM30/PM17 |
| Barium # | <0.03 | <0.03 | <0.03 | <0.03 | <0.03 | <0.03 | <0.03 | <0.03 | <0.03 | <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 | <0.005 | <0.005 | 0.04 | 1 | 5 | <0.005 | mg/kg | TM30/PM17 |
| Chromium # | <0.015 | <0.015 | <0.015 | <0.015 | <0.015 | <0.015 | <0.015 | <0.015 | <0.015 | <0.015 | 0.5 | 10 | 70 | <0.015 | mg/kg | TM30/PM17 |
| Copper # | <0.07 | <0.07 | <0.07 | <0.07 | <0.07 | <0.07 | <0.07 | <0.07 | <0.07 | <0.07 | 2 | 50 | 100 | <0.07 | mg/kg | TM30/PM17 |
| Mercury # | <0.0001 | <0.0001 | <0.0001 | <0.0001 | <0.0001 | <0.0001 | <0.0001 | <0.0001 | <0.0001 | <0.0001 | 0.01 | 0.2 | 2 | <0.0001 | mg/kg | TM61/PM0 |
| Molybdenum # | 0.06 | 0.07 | 0.03 | 0.04 | 0.05 | 0.05 | 0.06 | 0.04 | 0.05 | 0.06 | 0.5 | 10 | 30 | <0.02 | mg/kg | TM30/PM17 |
| Nickel # | <0.02 | <0.02 | <0.02 | <0.02 | <0.02 | <0.02 | <0.02 | <0.02 | <0.02 | <0.02 | 0.4 | 10 | 40 | <0.02 | mg/kg | TM30/PM17 |
| Lead # | <0.05 | <0.05 | <0.05 | <0.05 | <0.05 | <0.05 | <0.05 | <0.05 | <0.05 | <0.05 | 0.5 | 10 | 50 | <0.05 | mg/kg | TM30/PM17 |
| Antimony # | <0.02 | <0.02 | <0.02 | <0.02 | <0.02 | <0.02 | <0.02 | 0.03 | <0.02 | <0.02 | 0.06 | 0.7 | 5 | <0.02 | mg/kg | TM30/PM17 |
| Selenium # | <0.03 | <0.03 | <0.03 | <0.03 | <0.03 | <0.03 | <0.03 | <0.03 | <0.03 | <0.03 | 0.1 | 0.5 | 7 | <0.03 | mg/kg | TM30/PM17 |
| Zinc # | <0.03 | <0.03 | <0.03 | <0.03 | <0.03 | <0.03 | <0.03 | <0.03 | <0.03 | <0.03 | 4 | 50 | 200 | <0.03 | mg/kg | TM30/PM17 |
| Total Dissolved Solids # | 690 | 1130 | 1720 | 1150 | 740 | 930 | 820 | 600 | 540 | 590 | 4000 | 60000 | 100000 | <350 | mg/kg | TM20/PM0 |
| Dissolved Organic Carbon | <20 | <20 | 20 | <20 | 60 | <20 | <20 | <20 | <20 | <20 | 500 | 800 | 1000 | <20 | mg/kg | TM60/PM0 |
| Mass of raw test portion | 0.1042 | 0.1058 | 0.1137 | 0.1107 | 0.1125 | 0.1046 | 0.1048 | 0.0985 | 0.1004 | 0.1067 | - | - | - | | kg | NONE/PM17 |
| Dry Matter Content Ratio | 86.0 | 85.5 | 78.9 | 81.0 | 79.7 | 85.8 | 86.1 | 91.7 | 89.2 | 84.4 | - | - | - | <0.1 | % | NONE/PM4 |
| Leachant Volume | 0.885 | 0.885 | 0.876 | 0.879 | 0.877 | 0.885 | 0.885 | 0.892 | 0.889 | 0.883 | - | - | - | | l | NONE/PM17 |
| Eluate Volume | 0.75 | 0.7 | 0.68 | 0.69 | 0.8 | 0.78 | 0.85 | 0.79 | 0.77 | 0.78 | - | - | - | | l | NONE/PM17 |
| pH # | 8.46 | 8.76 | 8.40 | 8.80 | 8.52 | 8.62 | 8.74 | 8.94 | 8.78 | 8.91 | - | - | - | <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 | <3 | <3 | <3 | <3 | <3 | <3 | <3 | <3 | <3 | <3 | - | - | - | <3 | mg/kg | TM173/PM0 |
| Sulphate as SO4 # | 64 | 6 | <5 | <5 | <5 | 48 | 36 | 7 | 11 | 8 | 1000 | 20000 | 50000 | <5 | mg/kg | TM38/PM0 |
| Chloride # | 9 | 9 | 4 | 4 | 6 | 9 | 8 | 3 | <3 | <3 | 800 | 15000 | 25000 | <3 | mg/kg | TM38/PM0 |

**Client Name:** Ground Investigations Ireland
**Reference:** 8354-01-19
**Location:** Cornelscourt
**Contact:** Barry Sexton
**JE Job No.:** 19/1176

**Report : EN12457_2**

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

Please see attached notes for all abbreviations and acronyms

| J E Sample No. | 64-66 | 67-69 | 73-75 | 76-78 | 81-83 | 84-86 | 94-96 | 97-99 | 100-102 | 103-105 | Inert | Stable Non-reactive | Hazardous | LOD LOR | Units | Method No. |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| **Sample ID** | TP-07A | TP-07A | TP-08 | TP-08 | TP-09 | TP-09 | TP-14 | TP-14 | TP-14 | TP-20 | | | | | | |
| **Depth** | 0.50 | 1.50 | 0.50 | 1.50 | 0.50 | 1.50 | 1.00 | 2.00 | 3.00 | 0.50 | | | | | | |
| **COC No / misc** | | | | | | | | | | | | | | | | |
| **Containers** | V J T | V J T | V J T | V J T | V J T | V J T | V J T | V J T | V J T | V J T | | | | | | |
| **Sample Date** | 21/01/2019 | 21/01/2019 | 22/01/2019 | 22/01/2019 | 22/01/2019 | 22/01/2019 | 22/01/2019 | 22/01/2019 | 22/01/2019 | 21/01/2019 | | | | | | |
| **Sample Type** | Soil | Soil | Soil | Soil | Soil | Soil | Soil | Soil | Soil | Soil | | | | | | |
| **Batch Number** | 1 | 1 | 1 | 1 | 1 | 1 | 1 | 1 | 1 | 1 | | | | | | |
| **Date of Receipt** | 24/01/2019 | 24/01/2019 | 24/01/2019 | 24/01/2019 | 24/01/2019 | 24/01/2019 | 24/01/2019 | 24/01/2019 | 24/01/2019 | 24/01/2019 | | | | | | |
| **Solid Waste Analysis** | | | | | | | | | | | | | | | | |
| Total Organic Carbon # | 0.67 | 0.64 | 0.85 | 0.69 | 4.57 | 0.33 | 1.04 | 0.72 | 0.63 | 2.44 | 3 | 5 | 6 | <0.02 | % | TM21/PM24 |
| Sum of BTEX | <0.025 | <0.025 | <0.025 | <0.025 | <0.025 SV | <0.025 | 0.058 SV | 0.476 SV | 0.058 SV | <0.025 | 6 | - | - | <0.025 | mg/kg | TM31/PM12 |
| Sum of 7 PCBs # | <0.035 | <0.035 | <0.035 | <0.035 | <0.035 | <0.035 | <0.035 | <0.035 | <0.035 | <0.035 | 1 | - | - | <0.035 | mg/kg | TM17/PM8 |
| Mineral Oil | <30 | <30 | <30 | <30 | <30 | <30 | 3329 | 3848 | 3465 | <30 | 500 | - | - | <30 | mg/kg | TM5/PM8/PM16 |
| PAH Sum of 6 # | <0.22 | <0.22 | <0.22 | <0.22 | 0.42 | <0.22 | 4.35 | 3.03 | 2.32 | 0.61 | - | - | - | <0.22 | mg/kg | TM4/PM8 |
| PAH Sum of 17 | <0.64 | <0.64 | <0.64 | <0.64 | 0.76 | <0.64 | 11.37 | 12.10 | 8.35 | 1.06 | 100 | - | - | <0.64 | mg/kg | TM4/PM8 |
| **CEN 10:1 Leachate** | | | | | | | | | | | | | | | | |
| Arsenic # | <0.025 | <0.025 | <0.025 | <0.025 | <0.025 | <0.025 | <0.025 | <0.025 | 0.027 | <0.025 | 0.5 | 2 | 25 | <0.025 | mg/kg | TM30/PM17 |
| Barium # | 0.04 | 0.04 | <0.03 | <0.03 | 0.03 | <0.03 | 0.18 | 0.34 | 0.16 | 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 | <0.0001 | <0.0001 | <0.0001 | <0.0001 | <0.0001 | <0.0001 | <0.0001 | <0.0001 | 0.01 | 0.2 | 2 | <0.0001 | mg/kg | TM61/PM0 |
| Molybdenum # | 0.02 | 0.05 | 0.03 | 0.05 | 0.03 | 0.05 | 0.09 | 0.09 | 0.16 | 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 | 0.06 | 0.08 | 0.08 | <0.02 | 0.4 | 10 | 40 | <0.02 | mg/kg | TM30/PM17 |
| Lead # | <0.05 | <0.05 | <0.05 | <0.05 | <0.05 | <0.05 | <0.05 | <0.05 | <0.05 | <0.05 | 0.5 | 10 | 50 | <0.05 | mg/kg | TM30/PM17 |
| Antimony # | <0.02 | <0.02 | <0.02 | <0.02 | <0.02 | <0.02 | <0.02 | 0.03 | 0.04 | <0.02 | 0.06 | 0.7 | 5 | <0.02 | mg/kg | TM30/PM17 |
| Selenium # | <0.03 | <0.03 | <0.03 | <0.03 | <0.03 | <0.03 | <0.03 | <0.03 | <0.03 | <0.03 | 0.1 | 0.5 | 7 | <0.03 | mg/kg | TM30/PM17 |
| Zinc # | <0.03 | <0.03 | <0.03 | <0.03 | <0.03 | <0.03 | <0.03 | 0.03 | 0.05 | <0.03 | 4 | 50 | 200 | <0.03 | mg/kg | TM30/PM17 |
| Total Dissolved Solids # | 1310 | 1590 | 410 | <350 | 780 | 1420 | 1070 | 800 | 650 | <350 | 4000 | 60000 | 100000 | <350 | mg/kg | TM20/PM0 |
| Dissolved Organic Carbon | <20 | <20 | <20 | <20 | 40 | <20 | 60 | 30 | 30 | 30 | 500 | 800 | 1000 | <20 | mg/kg | TM60/PM0 |
| Mass of raw test portion | 0.1087 | 0.1013 | 0.111 | 0.1061 | 0.112 | 0.1029 | 0.1026 | 0.1007 | 0.1016 | 0.1054 | - | - | - | | kg | NONE/PM17 |
| Dry Matter Content Ratio | 82.5 | 89.1 | 80.8 | 84.7 | 80.0 | 87.5 | 87.6 | 89.7 | 88.7 | 85.1 | - | - | - | <0.1 | % | NONE/PM4 |
| Leachant Volume | 0.881 | 0.889 | 0.879 | 0.884 | 0.878 | 0.887 | 0.887 | 0.89 | 0.889 | 0.884 | - | - | - | | l | NONE/PM17 |
| Eluate Volume | 0.64 | 0.59 | 0.7 | 0.65 | 0.78 | 0.85 | 0.8 | 0.78 | 0.85 | 0.74 | - | - | - | | l | NONE/PM17 |
| pH # | 8.18 | 8.57 | 8.33 | 8.46 | 8.35 | 8.86 | 8.46 | 8.42 | 8.68 | 8.38 | - | - | - | <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 | <3 | <3 | <3 | <3 | <3 | <3 | <3 | <3 | <3 | <3 | - | - | - | <3 | mg/kg | TM173/PM0 |
| Sulphate as SO4 # | <5 | 17 | <5 | <5 | <5 | <5 | <5 | <5 | 6 | 6 | 1000 | 20000 | 50000 | <5 | mg/kg | TM38/PM0 |
| Chloride # | 15 | 4 | <3 | <3 | <3 | 7 | 6 | 7 | 10 | <3 | 800 | 15000 | 25000 | <3 | mg/kg | TM38/PM0 |

**Client Name:** Ground Investigations Ireland
**Reference:** 8354-01-19
**Location:** Cornelscourt
**Contact:** Barry Sexton
**JE Job No.:** 19/1176

**Report : EN12457_2**

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

Please see attached notes for all abbreviations and acronyms

| | | | | | | | | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| **J E Sample No.** | 106-108 | | | | | | | | | | | | | | | |
| **Sample ID** | TP-20 | | | | | | | | | | | | | | | |
| **Depth** | 1.50 | | | | | | | | | | | | | | | |
| **COC No / misc** | | | | | | | | | | | | | | | | |
| **Containers** | V J T | | | | | | | | | | | | | | | |
| **Sample Date** | 21/01/2019 | | | | | | | | | | | | | | | |
| **Sample Type** | Soil | | | | | | | | | | | | | | | |
| **Batch Number** | 1 | | | | | | | | | | | Inert | Stable Non-reactive | Hazardous | LOD LOR | Units | Method No. |
| **Date of Receipt** | 24/01/2019 | | | | | | | | | | | | | | | |
| **Solid Waste Analysis** | | | | | | | | | | | | | | | | | |
| Total Organic Carbon # | 0.24 | | | | | | | | | | | 3 | 5 | 6 | <0.02 | % | TM21/PM24 |
| Sum of BTEX | <0.025 | | | | | | | | | | | 6 | - | - | <0.025 | mg/kg | TM31/PM12 |
| Sum of 7 PCBs # | <0.035 | | | | | | | | | | | 1 | - | - | <0.035 | mg/kg | TM17/PM8 |
| Mineral Oil | <30 | | | | | | | | | | | 500 | - | - | <30 | mg/kg | TM5/PM8/PM16 |
| PAH Sum of 6 # | <0.22 | | | | | | | | | | | - | - | - | <0.22 | mg/kg | TM4/PM8 |
| PAH Sum of 17 | <0.64 | | | | | | | | | | | 100 | - | - | <0.64 | mg/kg | TM4/PM8 |
| **CEN 10:1 Leachate** | | | | | | | | | | | | | | | | | |
| Arsenic # | <0.025 | | | | | | | | | | | 0.5 | 2 | 25 | <0.025 | mg/kg | TM30/PM17 |
| Barium # | 0.05 | | | | | | | | | | | 20 | 100 | 300 | <0.03 | mg/kg | TM30/PM17 |
| Cadmium # | <0.005 | | | | | | | | | | | 0.04 | 1 | 5 | <0.005 | mg/kg | TM30/PM17 |
| Chromium # | <0.015 | | | | | | | | | | | 0.5 | 10 | 70 | <0.015 | mg/kg | TM30/PM17 |
| Copper # | <0.07 | | | | | | | | | | | 2 | 50 | 100 | <0.07 | mg/kg | TM30/PM17 |
| Mercury # | <0.0001 | | | | | | | | | | | 0.01 | 0.2 | 2 | <0.0001 | mg/kg | TM61/PM0 |
| Molybdenum # | 0.05 | | | | | | | | | | | 0.5 | 10 | 30 | <0.02 | mg/kg | TM30/PM17 |
| Nickel # | <0.02 | | | | | | | | | | | 0.4 | 10 | 40 | <0.02 | mg/kg | TM30/PM17 |
| Lead # | <0.05 | | | | | | | | | | | 0.5 | 10 | 50 | <0.05 | mg/kg | TM30/PM17 |
| Antimony # | <0.02 | | | | | | | | | | | 0.06 | 0.7 | 5 | <0.02 | mg/kg | TM30/PM17 |
| Selenium # | <0.03 | | | | | | | | | | | 0.1 | 0.5 | 7 | <0.03 | mg/kg | TM30/PM17 |
| Zinc # | <0.03 | | | | | | | | | | | 4 | 50 | 200 | <0.03 | mg/kg | TM30/PM17 |
| Total Dissolved Solids # | 670 | | | | | | | | | | | 4000 | 60000 | 100000 | <350 | mg/kg | TM20/PM0 |
| Dissolved Organic Carbon | <20 | | | | | | | | | | | 500 | 800 | 1000 | <20 | mg/kg | TM60/PM0 |
| Mass of raw test portion | 0.103 | | | | | | | | | | | - | - | - | | kg | NONE/PM17 |
| Dry Matter Content Ratio | 87.1 | | | | | | | | | | | - | - | - | <0.1 | % | NONE/PM4 |
| Leachant Volume | 0.887 | | | | | | | | | | | - | - | - | | l | NONE/PM17 |
| Eluate Volume | 0.6 | | | | | | | | | | | - | - | - | | l | NONE/PM17 |
| pH # | 8.68 | | | | | | | | | | | - | - | - | <0.01 | pH units | TM73/PM11 |
| Phenol | <0.1 | | | | | | | | | | | 1 | - | - | <0.1 | mg/kg | TM26/PM0 |
| Fluoride | <3 | | | | | | | | | | | - | - | - | <3 | mg/kg | TM173/PM0 |
| Sulphate as SO4 # | 19 | | | | | | | | | | | 1000 | 20000 | 50000 | <5 | mg/kg | TM38/PM0 |
| Chloride # | 3 | | | | | | | | | | | 800 | 15000 | 25000 | <3 | mg/kg | TM38/PM0 |

**Client Name:** Ground Investigations Ireland **Matrix : Solid**
**Reference:** 8354-01-19
**Location:** Cornelscourt
**Contact:** Barry Sexton

| J E Job No. | Batch | Sample ID | Depth | J E Sample No. | EPH Interpretation |
|---|---|---|---|---|---|
| 19/1176 | 1 | TP-01 | 0.50 | 1-3 | No interpretation possible |
| 19/1176 | 1 | TP-02 | 0.60 | 10-12 | No interpretation possible |
| 19/1176 | 1 | TP-03 | 0.50 | 19-21 | No interpretation possible |
| 19/1176 | 1 | TP-04 | 1.00 | 28-30 | No interpretation possible |
| 19/1176 | 1 | TP-05 | 0.80 | 37-39 | No interpretation possible |
| 19/1176 | 1 | TP-06 | 0.50 | 40-42 | No interpretation possible |
| 19/1176 | 1 | TP-06 | 1.50 | 43-45 | No interpretation possible |
| 19/1176 | 1 | TP-07 | 0.50 | 52-54 | No interpretation possible |
| 19/1176 | 1 | TP-07 | 1.50 | 55-57 | No interpretation possible |
| 19/1176 | 1 | TP-07 | 2.50 | 58-60 | No interpretation possible |
| 19/1176 | 1 | TP-07A | 0.50 | 64-66 | No interpretation possible |
| 19/1176 | 1 | TP-07A | 1.50 | 67-69 | No interpretation possible |
| 19/1176 | 1 | TP-08 | 0.50 | 73-75 | No interpretation possible |
| 19/1176 | 1 | TP-08 | 1.50 | 76-78 | No interpretation possible |
| 19/1176 | 1 | TP-09 | 0.50 | 81-83 | No interpretation possible |
| 19/1176 | 1 | TP-09 | 1.50 | 84-86 | No interpretation possible |
| 19/1176 | 1 | TP-14 | 1.00 | 94-96 | Possible PAH's, lubricating oil & Tarmac/bitumen |
| 19/1176 | 1 | TP-14 | 2.00 | 97-99 | Possible PAH's, lubricating oil & Tarmac/bitumen |
| 19/1176 | 1 | TP-14 | 3.00 | 100-102 | Possible PAH's, lubricating oil & Tarmac/bitumen |
| 19/1176 | 1 | TP-20 | 0.50 | 103-105 | No interpretation possible |
| 19/1176 | 1 | TP-20 | 1.50 | 106-108 | No interpretation possible |

**Client Name:** Ground Investigations Ireland
**Reference:** 19/01/8354
**Location:** Cornelscourt
**Contact:** Barry Sexton

**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 Jones Environmental Laboratory consultant, Jones Environmental Laboratory cannot be responsible for inaccurate or unrepresentative sampling.

Signed on behalf of Jones Environmental Laboratory:

Ryan Butterworth
Asbestos Team Leader

| J E Job No. | Batch | Sample ID | Depth | J E Sample No. | Date Of Analysis | Analysis | Result |
|---|---|---|---|---|---|---|---|
| 19/1176 | 1 | TP-01 | 0.50 | 2 | 02/02/2019 | **General Description (Bulk Analysis)** | Soil/Stone |
| | | | | | 02/02/2019 | **Asbestos Fibres** | NAD |
| | | | | | 02/02/2019 | **Asbestos ACM** | NAD |
| | | | | | 02/02/2019 | **Asbestos Type** | NAD |
| | | | | | 02/02/2019 | **Asbestos Level Screen** | NAD |
| 19/1176 | 1 | TP-02 | 0.60 | 11 | 02/02/2019 | **General Description (Bulk Analysis)** | Soil/Stone |
| | | | | | 02/02/2019 | **Asbestos Fibres** | NAD |
| | | | | | 02/02/2019 | **Asbestos ACM** | NAD |
| | | | | | 02/02/2019 | **Asbestos Type** | NAD |
| | | | | | 02/02/2019 | **Asbestos Level Screen** | NAD |
| 19/1176 | 1 | TP-03 | 0.50 | 20 | 02/02/2019 | **General Description (Bulk Analysis)** | Soil/Stone |
| | | | | | 02/02/2019 | **Asbestos Fibres** | NAD |
| | | | | | 02/02/2019 | **Asbestos ACM** | NAD |
| | | | | | 02/02/2019 | **Asbestos Type** | NAD |
| | | | | | 02/02/2019 | **Asbestos Level Screen** | NAD |
| 19/1176 | 1 | TP-04 | 1.00 | 29 | 04/02/2019 | **General Description (Bulk Analysis)** | Soil/Stones |
| | | | | | 04/02/2019 | **Asbestos Fibres** | NAD |
| | | | | | 04/02/2019 | **Asbestos ACM** | NAD |
| | | | | | 04/02/2019 | **Asbestos Type** | NAD |
| | | | | | 04/02/2019 | **Asbestos Level Screen** | NAD |
| 19/1176 | 1 | TP-05 | 0.80 | 38 | 04/02/2019 | **General Description (Bulk Analysis)** | Soil/Stones |
| | | | | | 04/02/2019 | **Asbestos Fibres** | NAD |
| | | | | | 04/02/2019 | **Asbestos ACM** | NAD |
| | | | | | 04/02/2019 | **Asbestos Type** | NAD |
| | | | | | 04/02/2019 | **Asbestos Level Screen** | NAD |
| 19/1176 | 1 | TP-06 | 0.50 | 41 | 02/02/2019 | **General Description (Bulk Analysis)** | Soil/Stone |
| | | | | | 02/02/2019 | **Asbestos Fibres** | NAD |
| | | | | | 02/02/2019 | **Asbestos ACM** | NAD |
| | | | | | 02/02/2019 | **Asbestos Type** | NAD |
| | | | | | 02/02/2019 | **Asbestos Level Screen** | NAD |
| 19/1176 | 1 | TP-06 | 1.50 | 44 | 02/02/2019 | **General Description (Bulk Analysis)** | Soil/Stone |
| | | | | | 02/02/2019 | **Asbestos Fibres** | NAD |
| | | | | | 02/02/2019 | **Asbestos ACM** | NAD |

**Client Name:** Ground Investigations Ireland
**Reference:** 19/01/8354
**Location:** Cornelscourt
**Contact:** Barry Sexton

| J E Job No. | Batch | Sample ID | Depth | J E Sample No. | Date Of Analysis | Analysis | Result |
|---|---|---|---|---|---|---|---|
| 19/1176 | 1 | TP-06 | 1.50 | 44 | 02/02/2019 | **Asbestos Type** | NAD |
| | | | | | 02/02/2019 | **Asbestos Level Screen** | NAD |
| 19/1176 | 1 | TP-07 | 0.50 | 53 | 02/02/2019 | **General Description (Bulk Analysis)** | Soil/Stone |
| | | | | | 02/02/2019 | **Asbestos Fibres** | NAD |
| | | | | | 02/02/2019 | **Asbestos ACM** | NAD |
| | | | | | 02/02/2019 | **Asbestos Type** | NAD |
| | | | | | 02/02/2019 | **Asbestos Level Screen** | NAD |
| 19/1176 | 1 | TP-07 | 1.50 | 56 | 04/02/2019 | **General Description (Bulk Analysis)** | Soil/Stones |
| | | | | | 04/02/2019 | **Asbestos Fibres** | NAD |
| | | | | | 04/02/2019 | **Asbestos ACM** | NAD |
| | | | | | 04/02/2019 | **Asbestos Type** | NAD |
| | | | | | 04/02/2019 | **Asbestos Level Screen** | NAD |
| 19/1176 | 1 | TP-07 | 2.50 | 59 | 04/02/2019 | **General Description (Bulk Analysis)** | Soil/Stones |
| | | | | | 04/02/2019 | **Asbestos Fibres** | NAD |
| | | | | | 04/02/2019 | **Asbestos ACM** | NAD |
| | | | | | 04/02/2019 | **Asbestos Type** | NAD |
| | | | | | 04/02/2019 | **Asbestos Level Screen** | NAD |
| 19/1176 | 1 | TP-07A | 0.50 | 65 | 04/02/2019 | **General Description (Bulk Analysis)** | Soil/Stones |
| | | | | | 04/02/2019 | **Asbestos Fibres** | NAD |
| | | | | | 04/02/2019 | **Asbestos ACM** | NAD |
| | | | | | 04/02/2019 | **Asbestos Type** | NAD |
| | | | | | 04/02/2019 | **Asbestos Level Screen** | NAD |
| 19/1176 | 1 | TP-07A | 1.50 | 68 | 02/02/2019 | **General Description (Bulk Analysis)** | Soil/Stone |
| | | | | | 02/02/2019 | **Asbestos Fibres** | NAD |
| | | | | | 02/02/2019 | **Asbestos ACM** | NAD |
| | | | | | 02/02/2019 | **Asbestos Type** | NAD |
| | | | | | 02/02/2019 | **Asbestos Level Screen** | NAD |
| 19/1176 | 1 | TP-08 | 0.50 | 74 | 02/02/2019 | **General Description (Bulk Analysis)** | Soil/Stone |
| | | | | | 02/02/2019 | **Asbestos Fibres** | NAD |
| | | | | | 02/02/2019 | **Asbestos ACM** | NAD |
| | | | | | 02/02/2019 | **Asbestos Type** | NAD |
| | | | | | 02/02/2019 | **Asbestos Level Screen** | NAD |
| 19/1176 | 1 | TP-08 | 1.50 | 77 | 02/02/2019 | **General Description (Bulk Analysis)** | Soil/Stone |
| | | | | | 02/02/2019 | **Asbestos Fibres** | NAD |
| | | | | | 02/02/2019 | **Asbestos ACM** | NAD |
| | | | | | 02/02/2019 | **Asbestos Type** | NAD |
| | | | | | 02/02/2019 | **Asbestos Level Screen** | NAD |
| 19/1176 | 1 | TP-09 | 0.50 | 82 | 02/02/2019 | **General Description (Bulk Analysis)** | Soil/Stone |
| | | | | | 02/02/2019 | **Asbestos Fibres** | NAD |
| | | | | | 02/02/2019 | **Asbestos ACM** | NAD |
| | | | | | 02/02/2019 | **Asbestos Type** | NAD |
| | | | | | 02/02/2019 | **Asbestos Level Screen** | NAD |
| 19/1176 | 1 | TP-09 | 1.50 | 85 | 02/02/2019 | **General Description (Bulk Analysis)** | Soil/Stone |
| | | | | | 02/02/2019 | **Asbestos Fibres** | NAD |

**Client Name:** Ground Investigations Ireland
**Reference:** 19/01/8354
**Location:** Cornelscourt
**Contact:** Barry Sexton

| J E Job No. | Batch | Sample ID | Depth | J E Sample No. | Date Of Analysis | Analysis | Result |
|---|---|---|---|---|---|---|---|
| 19/1176 | 1 | TP-09 | 1.50 | 85 | 02/02/2019 | **Asbestos ACM** | NAD |
| | | | | | 02/02/2019 | **Asbestos Type** | NAD |
| | | | | | 02/02/2019 | **Asbestos Level Screen** | NAD |
| 19/1176 | 1 | TP-14 | 1.00 | 95 | 02/02/2019 | **General Description (Bulk Analysis)** | Soil/Stone |
| | | | | | 02/02/2019 | **Asbestos Fibres** | NAD |
| | | | | | 02/02/2019 | **Asbestos ACM** | NAD |
| | | | | | 02/02/2019 | **Asbestos Type** | NAD |
| | | | | | 02/02/2019 | **Asbestos Level Screen** | NAD |
| 19/1176 | 1 | TP-14 | 2.00 | 98 | 02/02/2019 | **General Description (Bulk Analysis)** | Soil/Stone |
| | | | | | 02/02/2019 | **Asbestos Fibres** | NAD |
| | | | | | 02/02/2019 | **Asbestos ACM** | NAD |
| | | | | | 02/02/2019 | **Asbestos Type** | NAD |
| | | | | | 02/02/2019 | **Asbestos Level Screen** | NAD |
| 19/1176 | 1 | TP-14 | 3.00 | 101 | 02/02/2019 | **General Description (Bulk Analysis)** | Soil/sTONE |
| | | | | | 02/02/2019 | **Asbestos Fibres** | NAD |
| | | | | | 02/02/2019 | **Asbestos ACM** | NAD |
| | | | | | 02/02/2019 | **Asbestos Type** | NAD |
| | | | | | 02/02/2019 | **Asbestos Level Screen** | NAD |
| 19/1176 | 1 | TP-20 | 0.50 | 104 | 02/02/2019 | **General Description (Bulk Analysis)** | Soil/Stone |
| | | | | | 02/02/2019 | **Asbestos Fibres** | NAD |
| | | | | | 02/02/2019 | **Asbestos ACM** | NAD |
| | | | | | 02/02/2019 | **Asbestos Type** | NAD |
| | | | | | 02/02/2019 | **Asbestos Level Screen** | NAD |
| 19/1176 | 1 | TP-20 | 1.50 | 107 | 02/02/2019 | **General Description (Bulk Analysis)** | Soil/Stone |
| | | | | | 02/02/2019 | **Asbestos Fibres** | NAD |
| | | | | | 02/02/2019 | **Asbestos ACM** | NAD |
| | | | | | 02/02/2019 | **Asbestos Type** | NAD |
| | | | | | 02/02/2019 | **Asbestos Level Screen** | NAD |

**Client Name:** Ground Investigations Ireland
**Reference:** 8354-01-19
**Location:** Cornelscourt
**Contact:** Barry Sexton

| J E Job No. | Batch | Sample ID | Depth | J E Sample No. | Analysis | Reason |
|---|---|---|---|---|---|---|
| No deviating sample report results for job 19/1176 | | | | | | |

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

# NOTES TO ACCOMPANY ALL SCHEDULES AND REPORTS

***JE Job No.:*** 19/1176

**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. 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.

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

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

**WATERS**

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

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

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

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

**DEVIATING SAMPLES**

Samples must be received in a condition appropriate to the requested analyses. All samples should be submitted to the laboratory in suitable containers with sufficient ice packs to sustain an appropriate temperature for the requested analysis. If this is not the case you will be informed and any test results that may be compromised highlighted on your deviating samples report.

**SURROGATES**

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

**DILUTIONS**

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

**BLANKS**

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

**NOTE**

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

**REPORTS FROM THE SOUTH AFRICA LABORATORY**

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

**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. |
| ++ | Result outside calibration range, results should be considered as indicative only and are not accredited. |
| * | Analysis subcontracted to an Exova Jones Environmental 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 |

## Appendix - Methods used for WAC (2003/33/EC)

***JE Job No.:*** 19/1176

| | |
|---|---|
| **Leachate tests** | |
| 10l/kg; 4mm | I.S. EN 12457-2:2002 Specified particle size; water added to L/S ratio; capped; agitated for 24 ± 0.5 hours; eluate settled and filtered over 0.45 µm membrane filter. |
| **Eluate analysis** | |
| As | I.S. EN 12506 : EN ISO 11885 (ICP-OES) |
| Ba | I.S. EN 12506 : EN ISO 11885 (ICP-OES) |
| Cd | I.S. EN 12506 : EN ISO 11885 (ICP-OES) |
| Cr total | I.S. EN 12506 : EN ISO 11885 (ICP-OES) |
| Cu | I.S. EN 12506 : EN ISO 11885 (ICP-OES) |
| Hg | I.S. EN 13370 rec. EN 1483 (CVAAS) |
| Mo | I.S. EN 12506 : EN ISO 11885 (ICP-OES) |
| Ni | I.S. EN 12506 : EN ISO 11885 (ICP-OES) |
| Pb | I.S. EN 12506 : EN ISO 11885 (ICP-OES) |
| Sb | I.S. EN 12506 : EN ISO 11885 (ICP-OES) |
| Se | I.S. EN 12506 : EN ISO 11885 (ICP-OES) |
| Zn | I.S. EN 12506 : EN ISO 11885 (ICP-OES) |
| Chloride | I.S. EN 12506 rec. EN ISO 10304-part 1 (liquid chromatography of ions) |
| Fluoride | I.S. EN 12506 rec. EN ISO 10304-part 1 (liquid chromatography of ions) |
| Sulphate | I.S. EN 12506 rec. EN ISO 10304-part 1 (liquid chromatography of ions) |
| Phenol index | I.S. EN 13370 rec. ISO 6439 (4-Aminoantipyrine spectrometic methods after distillation)* ( BY HPLC - Jones Env) |
| DOC | I.S. EN 1484 |
| TDS | I.S. EN 15216 |
| **Compositional analysis** | |
| TOC | I.S. EN 13137 Method B: carbonates removed with acid; TOC by combustion. |
| BTEX | GC-FID |
| PCB7** | I.S. EN 15308 analysis by GC-ECD. |
| Mineral oil | I.S. EN 14039 C10 to C40 analysis by GC-FID. |
| PAH17*** | I.S. EN 15527 PAH17 analysis by GC-MS |
| Metals | I.S. EN 13657 - Aqua regia digestion: EN ISO 11885 ( ICP-OES) |
| | |
| **Other** | |
| Dry matter | I.S. EN 14346 sample is dried to a constant mass in an oven at 105 ± 3 °C; Method B Water content by direct Karl-Fischer-titration and either volumetric or coulometric detection. |
| LOI | I.S. EN 15169 Difference in mass after heating in a furnace up to 550 ± 25 °C. |
| ANC | CEN/TS 15364 Determined by amouns of acid or base needed to cover the pH range |

**Notes:**

*If not suitable due to LOD, precision, etc., any other suitable method can be used, e.g. AFS, ICP-MS
**PCB-28, PCB-52, PCB-101, PCB-118, PCB-138, PCB-153 and PCB-180

***Naphthalene, Acenaphthylene, Acenaphthene, Anthracene, Benzo(a)anthracene, Benzo(b)fluoranthene, Benzo(k)fluoranthene, Benzo(g,h,i)perylene, Benzo(a)pyrene, Chrysene, Coronene, Dibenzo(a,h)anthracene, Fluorene, Fluoranthene, Indeno(1,2,3-c,d)pyrene, Phenanthrene and Pyrene.

**JE Job No:** 19/1176

| Test Method No. | Description | Prep Method No. (if appropriate) | Description | ISO 17025 (UKAS/SANAS) | MCERTS (UK soils only) | Analysis done on As Received (AR) or Dried (AD) | Reported on dry weight basis |
|---|---|---|---|---|---|---|---|
| PM4 | Gravimetric measurement of Natural Moisture Content and % Moisture Content at either 35°C or 105°C. Calculation based on ISO 11465 and BS1377. | PM0 | No preparation is required. | | | AR | |
| TM4 | Modified USEPA 8270 method for the solvent extraction and determination of 16 PAHs by GC-MS. | PM8 | End over end extraction of solid samples for organic analysis. The solvent mix varies depending on analysis required. | | | AR | Yes |
| TM4 | Modified USEPA 8270 method for the solvent extraction and determination of 16 PAHs by GC-MS. | PM8 | End over end extraction of solid samples for organic analysis. The solvent mix varies depending on analysis required. | Yes | | AR | Yes |
| TM5 | Modified USEPA 8015B method for the determination of solvent Extractable Petroleum Hydrocarbons (EPH) with carbon banding within the range C8-C40 GC-FID. | PM16 | Fractionation into aliphatic and aromatic fractions using a Rapid Trace SPE. | | | AR | |
| TM5 | Modified USEPA 8015B method for the determination of solvent Extractable Petroleum Hydrocarbons (EPH) with carbon banding within the range C8-C40 GC-FID. | 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 USEPA 8015B method for the determination of solvent Extractable Petroleum Hydrocarbons (EPH) with carbon banding within the range C8-C40 GC-FID. | 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 |

**JE Job No:** 19/1176

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

**JE Job No:** 19/1176

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

**JE Job No:** 19/1176

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

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Ground Investigations Ireland
Catherinestown House
Hazelhatch Road
Newcastle
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Ireland

| | |
|---|---|
| **Attention :** | Barry Sexton |
| **Date :** | 11th February, 2019 |
| **Your reference :** | 8354-01-19 |
| **Our reference :** | Test Report 19/1176 Batch 2 |
| **Location :** | Cornelscourt |
| **Date samples received :** | 24th January, 2019 |
| **Status :** | Final report |
| **Issue :** | 1 |

Forty two samples were received for analysis on 24th January, 2019 of which forty two 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.

Where Waste Acceptance Criteria Suite (EC Decision of 19 December 2002 (2003/33/EC)) has been requested, all analyses have been performed using the relevant EN methods where they exist.

**Compiled By:**

**Phil Sommerton BSc**
**Project Manager**

**Client Name:** Ground Investigations Ireland
**Reference:** 8354-01-19
**Location:** Cornelscourt
**Contact:** Barry Sexton
**JE Job No.:** 19/1176

**Report : Solid**

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

| J E Sample No. | 115-117 | 118-120 | 121-123 | 124-126 | 127-129 | 130-132 | 133-135 | 136-138 | 139-141 | 142-144 | LOD/LOR | Units | Method No. |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| **Sample ID** | WS01 | WS01 | WS01 | WS02 | WS02 | WS02 | WS03 | WS03 | WS03 | WS04 | | | |
| **Depth** | 0.00-1.00 | 1.00-2.00 | 2.00-3.00 | 0.00-1.00 | 1.00-2.00 | 2.00-3.00 | 0.00-1.00 | 1.00-2.00 | 2.00-3.00 | 0.00-1.00 | | | |
| **COC No / misc** | | | | | | | | | | | | | |
| **Containers** | V J T | V J T | V J T | V J T | V J T | V J T | V J T | V J T | V J T | V J T | | | |
| **Sample Date** | 21/01/2019 | 21/01/2019 | 21/01/2019 | 21/01/2019 | 21/01/2019 | 21/01/2019 | 21/01/2019 | 21/01/2019 | 21/01/2019 | 21/01/2019 | | | |
| **Sample Type** | Soil | Soil | Soil | Soil | Soil | Soil | Soil | Soil | Soil | Soil | | | |
| **Batch Number** | 2 | 2 | 2 | 2 | 2 | 2 | 2 | 2 | 2 | 2 | | | |
| **Date of Receipt** | 24/01/2019 | 24/01/2019 | 24/01/2019 | 24/01/2019 | 24/01/2019 | 24/01/2019 | 24/01/2019 | 24/01/2019 | 24/01/2019 | 24/01/2019 | | | |
| Antimony | - | - | - | - | - | - | - | - | - | - | <1 | mg/kg | TM30/PM15 |
| Arsenic # | - | - | - | - | - | - | - | - | - | - | <0.5 | mg/kg | TM30/PM15 |
| Barium # | - | - | - | - | - | - | - | - | - | - | <1 | mg/kg | TM30/PM15 |
| Cadmium # | - | - | - | - | - | - | - | - | - | - | <0.1 | mg/kg | TM30/PM15 |
| Chromium # | - | - | - | - | - | - | - | - | - | - | <0.5 | mg/kg | TM30/PM15 |
| Copper # | - | - | - | - | - | - | - | - | - | - | <1 | mg/kg | TM30/PM15 |
| Lead # | - | - | - | - | - | - | - | - | - | - | <5 | mg/kg | TM30/PM15 |
| Mercury # | - | - | - | - | - | - | - | - | - | - | <0.1 | mg/kg | TM30/PM15 |
| Molybdenum # | - | - | - | - | - | - | - | - | - | - | <0.1 | mg/kg | TM30/PM15 |
| Nickel # | - | - | - | - | - | - | - | - | - | - | <0.7 | mg/kg | TM30/PM15 |
| Selenium # | - | - | - | - | - | - | - | - | - | - | <1 | mg/kg | TM30/PM15 |
| Zinc # | - | - | - | - | - | - | - | - | - | - | <5 | mg/kg | TM30/PM15 |
| | | | | | | | | | | | | | |
| PAH MS | | | | | | | | | | | | | |
| Naphthalene # | - | - | - | - | - | - | - | - | - | - | <0.04 | mg/kg | TM4/PM8 |
| Acenaphthylene | - | - | - | - | - | - | - | - | - | - | <0.03 | mg/kg | TM4/PM8 |
| Acenaphthene # | - | - | - | - | - | - | - | - | - | - | <0.05 | mg/kg | TM4/PM8 |
| Fluorene # | - | - | - | - | - | - | - | - | - | - | <0.04 | mg/kg | TM4/PM8 |
| Phenanthrene # | - | - | - | - | - | - | - | - | - | - | <0.03 | mg/kg | TM4/PM8 |
| Anthracene # | - | - | - | - | - | - | - | - | - | - | <0.04 | mg/kg | TM4/PM8 |
| Fluoranthene # | - | - | - | - | - | - | - | - | - | - | <0.03 | mg/kg | TM4/PM8 |
| Pyrene # | - | - | - | - | - | - | - | - | - | - | <0.03 | mg/kg | TM4/PM8 |
| Benzo(a)anthracene # | - | - | - | - | - | - | - | - | - | - | <0.06 | mg/kg | TM4/PM8 |
| Chrysene # | - | - | - | - | - | - | - | - | - | - | <0.02 | mg/kg | TM4/PM8 |
| Benzo(bk)fluoranthene # | - | - | - | - | - | - | - | - | - | - | <0.07 | mg/kg | TM4/PM8 |
| Benzo(a)pyrene # | - | - | - | - | - | - | - | - | - | - | <0.04 | mg/kg | TM4/PM8 |
| Indeno(123cd)pyrene # | - | - | - | - | - | - | - | - | - | - | <0.04 | mg/kg | TM4/PM8 |
| Dibenzo(ah)anthracene # | - | - | - | - | - | - | - | - | - | - | <0.04 | mg/kg | TM4/PM8 |
| Benzo(ghi)perylene # | - | - | - | - | - | - | - | - | - | - | <0.04 | mg/kg | TM4/PM8 |
| Coronene | - | - | - | - | - | - | - | - | - | - | <0.04 | mg/kg | TM4/PM8 |
| PAH 6 Total # | - | - | - | - | - | - | - | - | - | - | <0.22 | mg/kg | TM4/PM8 |
| PAH 17 Total | - | - | - | - | - | - | - | - | - | - | <0.64 | mg/kg | TM4/PM8 |
| Benzo(b)fluoranthene | - | - | - | - | - | - | - | - | - | - | <0.05 | mg/kg | TM4/PM8 |
| Benzo(k)fluoranthene | - | - | - | - | - | - | - | - | - | - | <0.02 | mg/kg | TM4/PM8 |
| Benzo(j)fluoranthene | - | - | - | - | - | - | - | - | - | - | <1 | mg/kg | TM4/PM8 |
| PAH Surrogate % Recovery | - | - | - | - | - | - | - | - | - | - | <0 | % | TM4/PM8 |
| | | | | | | | | | | | | | |
| Mineral Oil (C10-C40) | - | - | - | - | - | - | - | - | - | - | <30 | mg/kg | TM5/PM8/PM16 |

Please see attached notes for all abbreviations and acronyms

**Client Name:** Ground Investigations Ireland
**Reference:** 8354-01-19
**Location:** Cornelscourt
**Contact:** Barry Sexton
**JE Job No.:** 19/1176

**Report : Solid**

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

| J E Sample No. | 115-117 | 118-120 | 121-123 | 124-126 | 127-129 | 130-132 | 133-135 | 136-138 | 139-141 | 142-144 | LOD/LOR | Units | Method No. |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Sample ID | WS01 | WS01 | WS01 | WS02 | WS02 | WS02 | WS03 | WS03 | WS03 | WS04 | | | |
| Depth | 0.00-1.00 | 1.00-2.00 | 2.00-3.00 | 0.00-1.00 | 1.00-2.00 | 2.00-3.00 | 0.00-1.00 | 1.00-2.00 | 2.00-3.00 | 0.00-1.00 | | | |
| COC No / misc | | | | | | | | | | | | | |
| Containers | V J T | V J T | V J T | V J T | V J T | V J T | V J T | V J T | V J T | V J T | | | |
| Sample Date | 21/01/2019 | 21/01/2019 | 21/01/2019 | 21/01/2019 | 21/01/2019 | 21/01/2019 | 21/01/2019 | 21/01/2019 | 21/01/2019 | 21/01/2019 | | | |
| Sample Type | Soil | Soil | Soil | Soil | Soil | Soil | Soil | Soil | Soil | Soil | | | |
| Batch Number | 2 | 2 | 2 | 2 | 2 | 2 | 2 | 2 | 2 | 2 | | | |
| Date of Receipt | 24/01/2019 | 24/01/2019 | 24/01/2019 | 24/01/2019 | 24/01/2019 | 24/01/2019 | 24/01/2019 | 24/01/2019 | 24/01/2019 | 24/01/2019 | | | |
| TPH CWG | | | | | | | | | | | | | |
| **Aliphatics** | | | | | | | | | | | | | |
| >C5-C6 # | <0.1 | <0.1 | <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 | <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 | <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 | 21 | <4 | <4 | <4 | <4 | <4 | <4 | <4 | mg/kg | TM5/PM8/PM16 |
| >C16-C21 # | <7 | <7 | <7 | 60 | <7 | <7 | <7 | <7 | <7 | <7 | <7 | mg/kg | TM5/PM8/PM16 |
| >C21-C35 # | <7 | <7 | <7 | 419 | <7 | <7 | <7 | <7 | <7 | <7 | <7 | mg/kg | TM5/PM8/PM16 |
| >C35-C40 | <7 | <7 | <7 | 127 | <7 | <7 | <7 | <7 | <7 | <7 | <7 | mg/kg | TM5/PM8/PM16 |
| Total aliphatics C5-40 | <26 | <26 | <26 | 627 | <26 | <26 | <26 | <26 | <26 | <26 | <26 | mg/kg | TM5/TM36/PM8/PM12/PM16 |
| >C6-C10 | <0.1 | <0.1 | <0.1 | <0.1 | <0.1 | <0.1 | <0.1 | <0.1 | <0.1 | <0.1 | <0.1 | mg/kg | TM36/PM12 |
| >C10-C25 | <10 | <10 | <10 | 172 | <10 | <10 | <10 | <10 | <10 | <10 | <10 | mg/kg | TM5/PM8/PM16 |
| >C25-C35 | <10 | <10 | <10 | 334 | <10 | <10 | <10 | <10 | <10 | <10 | <10 | mg/kg | TM5/PM8/PM16 |
| **Aromatics** | | | | | | | | | | | | | |
| >C5-EC7 # | <0.1 | <0.1 | <0.1 | <0.1 | <0.1 | <0.1 | <0.1 | <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 | <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 | <0.1 | mg/kg | TM36/PM12 |
| >EC10-EC12 # | <0.2 | <0.2 | <0.2 | <0.2 | <0.2 | <0.2 | <0.2 | <0.2 | <0.2 | <0.2 | <0.2 | mg/kg | TM5/PM8/PM16 |
| >EC12-EC16 # | <4 | <4 | <4 | <4 | <4 | <4 | <4 | <4 | <4 | <4 | <4 | mg/kg | TM5/PM8/PM16 |
| >EC16-EC21 # | <7 | <7 | <7 | <7 | <7 | <7 | <7 | <7 | <7 | <7 | <7 | mg/kg | TM5/PM8/PM16 |
| >EC21-EC35 # | <7 | <7 | <7 | <7 | <7 | <7 | <7 | <7 | <7 | <7 | <7 | mg/kg | TM5/PM8/PM16 |
| >EC35-EC40 | <7 | <7 | <7 | <7 | <7 | <7 | <7 | <7 | <7 | <7 | <7 | mg/kg | TM5/PM8/PM16 |
| Total aromatics C5-40 | <26 | <26 | <26 | <26 | <26 | <26 | <26 | <26 | <26 | <26 | <26 | mg/kg | TM5/TM36/PM8/PM12/PM16 |
| Total aliphatics and aromatics(C5-40) | <52 | <52 | <52 | 627 | <52 | <52 | <52 | <52 | <52 | <52 | <52 | mg/kg | TM5/TM36/PM8/PM12/PM16 |
| >EC6-EC10 # | <0.1 | <0.1 | <0.1 | <0.1 | <0.1 | <0.1 | <0.1 | <0.1 | <0.1 | <0.1 | <0.1 | mg/kg | TM36/PM12 |
| >EC10-EC25 | <10 | <10 | <10 | <10 | <10 | <10 | <10 | <10 | <10 | <10 | <10 | mg/kg | TM5/PM8/PM16 |
| >EC25-EC35 | <10 | <10 | <10 | <10 | <10 | <10 | <10 | <10 | <10 | <10 | <10 | mg/kg | TM5/PM8/PM16 |
| | | | | | | | | | | | | | |
| MTBE # | <5 | <5 | <5 | <5 | <5 | <5 | <5 | <5 | <5 | <5 | <5 | ug/kg | TM31/PM12 |
| Benzene # | <5 | <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 | <5 | ug/kg | TM31/PM12 |
| Ethylbenzene # | <5 | <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 | <5 | ug/kg | TM31/PM12 |
| o-Xylene # | <5 | <5 | <5 | <5 | <5 | <5 | <5 | <5 | <5 | <5 | <5 | ug/kg | TM31/PM12 |
| | | | | | | | | | | | | | |
| PCB 28 # | - | - | - | - | - | - | - | - | - | - | <5 | ug/kg | TM17/PM8 |
| PCB 52 # | - | - | - | - | - | - | - | - | - | - | <5 | ug/kg | TM17/PM8 |
| PCB 101 # | - | - | - | - | - | - | - | - | - | - | <5 | ug/kg | TM17/PM8 |
| PCB 118 # | - | - | - | - | - | - | - | - | - | - | <5 | ug/kg | TM17/PM8 |
| PCB 138 # | - | - | - | - | - | - | - | - | - | - | <5 | ug/kg | TM17/PM8 |
| PCB 153 # | - | - | - | - | - | - | - | - | - | - | <5 | ug/kg | TM17/PM8 |
| PCB 180 # | - | - | - | - | - | - | - | - | - | - | <5 | ug/kg | TM17/PM8 |
| Total 7 PCBs # | - | - | - | - | - | - | - | - | - | - | <35 | ug/kg | TM17/PM8 |

Please see attached notes for all abbreviations and acronyms

**Client Name:** Ground Investigations Ireland
**Reference:** 8354-01-19
**Location:** Cornelscourt
**Contact:** Barry Sexton
**JE Job No.:** 19/1176

**Report : Solid**

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

| J E Sample No. | 115-117 | 118-120 | 121-123 | 124-126 | 127-129 | 130-132 | 133-135 | 136-138 | 139-141 | 142-144 | LOD/LOR | Units | Method No. |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| **Sample ID** | WS01 | WS01 | WS01 | WS02 | WS02 | WS02 | WS03 | WS03 | WS03 | WS04 | | | |
| **Depth** | 0.00-1.00 | 1.00-2.00 | 2.00-3.00 | 0.00-1.00 | 1.00-2.00 | 2.00-3.00 | 0.00-1.00 | 1.00-2.00 | 2.00-3.00 | 0.00-1.00 | | | |
| **COC No / misc** | | | | | | | | | | | | | |
| **Containers** | V J T | V J T | V J T | V J T | V J T | V J T | V J T | V J T | V J T | V J T | | | |
| **Sample Date** | 21/01/2019 | 21/01/2019 | 21/01/2019 | 21/01/2019 | 21/01/2019 | 21/01/2019 | 21/01/2019 | 21/01/2019 | 21/01/2019 | 21/01/2019 | | | |
| **Sample Type** | Soil | Soil | Soil | Soil | Soil | Soil | Soil | Soil | Soil | Soil | | | |
| **Batch Number** | 2 | 2 | 2 | 2 | 2 | 2 | 2 | 2 | 2 | 2 | | | |
| **Date of Receipt** | 24/01/2019 | 24/01/2019 | 24/01/2019 | 24/01/2019 | 24/01/2019 | 24/01/2019 | 24/01/2019 | 24/01/2019 | 24/01/2019 | 24/01/2019 | | | |
| Natural Moisture Content | 13.1 | 13.4 | 15.9 | 51.1 | 13.7 | 13.5 | 17.0 | 15.6 | 15.1 | 22.7 | <0.1 | % | PM4/PM0 |
| Moisture Content (% Wet Weight) | - | - | - | - | - | - | - | - | - | - | <0.1 | % | PM4/PM0 |
| Hexavalent Chromium # | - | - | - | - | - | - | - | - | - | - | <0.3 | mg/kg | TM38/PM20 |
| Chromium III | - | - | - | - | - | - | - | - | - | - | <0.5 | mg/kg | NONE/NONE |
| Total Organic Carbon # | - | - | - | - | - | - | - | - | - | - | <0.02 | % | TM21/PM24 |
| pH # | - | - | - | - | - | - | - | - | - | - | <0.01 | pH units | TM73/PM11 |
| Mass of raw test portion | - | - | - | - | - | - | - | - | - | - | | kg | NONE/PM17 |
| Mass of dried test portion | - | - | - | - | - | - | - | - | - | - | | kg | NONE/PM17 |

Please see attached notes for all abbreviations and acronyms

**Client Name:** Ground Investigations Ireland
**Reference:** 8354-01-19
**Location:** Cornelscourt
**Contact:** Barry Sexton
**JE Job No.:** 19/1176

**Report : Solid**

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

| J E Sample No. | 145-147 | 148-150 | 151-153 | 154-156 | 157-159 | 160-162 | 163-165 | 166-168 | 169-171 | 172-174 | LOD/LOR | Units | Method No. |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Sample ID | WS04 | WS04 | WS04 | WS05 | WS05 | WS05 | WS06 | WS06 | WS06 | WS07 | | | |
| Depth | 1.00-2.00 | 2.00-3.00 | 3.00-4.00 | 0.00-1.00 | 1.00-2.00 | 2.00-3.00 | 0.00-1.00 | 1.00-2.00 | 2.00-3.00 | 0.00-1.00 | | | |
| COC No / misc | | | | | | | | | | | | | |
| Containers | V J T | V J T | V J T | V J T | V J T | V J T | V J T | V J T | V J T | V J T | | | |
| Sample Date | 21/01/2019 | 21/01/2019 | 21/01/2019 | 22/01/2019 | 22/01/2019 | 22/01/2019 | 22/01/2019 | 22/01/2019 | 22/01/2019 | 22/01/2019 | | | |
| Sample Type | Soil | Soil | Soil | Soil | Soil | Soil | Soil | Soil | Soil | Soil | | | |
| Batch Number | 2 | 2 | 2 | 2 | 2 | 2 | 2 | 2 | 2 | 2 | | | |
| Date of Receipt | 24/01/2019 | 24/01/2019 | 24/01/2019 | 24/01/2019 | 24/01/2019 | 24/01/2019 | 24/01/2019 | 24/01/2019 | 24/01/2019 | 24/01/2019 | | | |
| Antimony | 2 | 2 | <1 | - | - | - | - | - | - | - | <1 | mg/kg | TM30/PM15 |
| Arsenic # | 9.8 | 12.1 | 3.8 | - | - | - | - | - | - | - | <0.5 | mg/kg | TM30/PM15 |
| Barium # | 74 | 74 | 34 | - | - | - | - | - | - | - | <1 | mg/kg | TM30/PM15 |
| Cadmium # | 1.6 | 1.7 | 0.1 | - | - | - | - | - | - | - | <0.1 | mg/kg | TM30/PM15 |
| Chromium # | 64.5 | 44.3 | 72.0 | - | - | - | - | - | - | - | <0.5 | mg/kg | TM30/PM15 |
| Copper # | 29 | 29 | 6 | - | - | - | - | - | - | - | <1 | mg/kg | TM30/PM15 |
| Lead # | 16 | 20 | 6 | - | - | - | - | - | - | - | <5 | mg/kg | TM30/PM15 |
| Mercury # | <0.1 | <0.1 | <0.1 | - | - | - | - | - | - | - | <0.1 | mg/kg | TM30/PM15 |
| Molybdenum # | 3.7 | 3.6 | 4.1 | - | - | - | - | - | - | - | <0.1 | mg/kg | TM30/PM15 |
| Nickel # | 36.0 | 36.4 | 7.2 | - | - | - | - | - | - | - | <0.7 | mg/kg | TM30/PM15 |
| Selenium # | <1 | 1 | <1 | - | - | - | - | - | - | - | <1 | mg/kg | TM30/PM15 |
| Zinc # | 77 | 103 | 37 | - | - | - | - | - | - | - | <5 | mg/kg | TM30/PM15 |
| | | | | | | | | | | | | | |
| PAH MS | | | | | | | | | | | | | |
| Naphthalene # | <0.04 | <0.04 | <0.04 | - | - | - | - | - | - | - | <0.04 | mg/kg | TM4/PM8 |
| Acenaphthylene | <0.03 | <0.03 | <0.03 | - | - | - | - | - | - | - | <0.03 | mg/kg | TM4/PM8 |
| Acenaphthene # | <0.05 | <0.05 | <0.05 | - | - | - | - | - | - | - | <0.05 | mg/kg | TM4/PM8 |
| Fluorene # | 0.18 | <0.04 | <0.04 | - | - | - | - | - | - | - | <0.04 | mg/kg | TM4/PM8 |
| Phenanthrene # | 0.31 | <0.03 | <0.03 | - | - | - | - | - | - | - | <0.03 | mg/kg | TM4/PM8 |
| Anthracene # | <0.04 | <0.04 | <0.04 | - | - | - | - | - | - | - | <0.04 | mg/kg | TM4/PM8 |
| Fluoranthene # | <0.03 | <0.03 | <0.03 | - | - | - | - | - | - | - | <0.03 | mg/kg | TM4/PM8 |
| Pyrene # | 0.05 | <0.03 | <0.03 | - | - | - | - | - | - | - | <0.03 | mg/kg | TM4/PM8 |
| Benzo(a)anthracene # | <0.06 | <0.06 | <0.06 | - | - | - | - | - | - | - | <0.06 | mg/kg | TM4/PM8 |
| Chrysene # | <0.02 | <0.02 | <0.02 | - | - | - | - | - | - | - | <0.02 | mg/kg | TM4/PM8 |
| Benzo(bk)fluoranthene # | <0.07 | <0.07 | <0.07 | - | - | - | - | - | - | - | <0.07 | mg/kg | TM4/PM8 |
| Benzo(a)pyrene # | <0.04 | <0.04 | <0.04 | - | - | - | - | - | - | - | <0.04 | mg/kg | TM4/PM8 |
| Indeno(123cd)pyrene # | <0.04 | <0.04 | <0.04 | - | - | - | - | - | - | - | <0.04 | mg/kg | TM4/PM8 |
| Dibenzo(ah)anthracene # | <0.04 | <0.04 | <0.04 | - | - | - | - | - | - | - | <0.04 | mg/kg | TM4/PM8 |
| Benzo(ghi)perylene # | <0.04 | <0.04 | <0.04 | - | - | - | - | - | - | - | <0.04 | mg/kg | TM4/PM8 |
| Coronene | <0.04 | <0.04 | <0.04 | - | - | - | - | - | - | - | <0.04 | mg/kg | TM4/PM8 |
| PAH 6 Total # | <0.22 | <0.22 | <0.22 | - | - | - | - | - | - | - | <0.22 | mg/kg | TM4/PM8 |
| PAH 17 Total | <0.64 | <0.64 | <0.64 | - | - | - | - | - | - | - | <0.64 | mg/kg | TM4/PM8 |
| Benzo(b)fluoranthene | <0.05 | <0.05 | <0.05 | - | - | - | - | - | - | - | <0.05 | mg/kg | TM4/PM8 |
| Benzo(k)fluoranthene | <0.02 | <0.02 | <0.02 | - | - | - | - | - | - | - | <0.02 | mg/kg | TM4/PM8 |
| Benzo(j)fluoranthene | <1 | <1 | <1 | - | - | - | - | - | - | - | <1 | mg/kg | TM4/PM8 |
| PAH Surrogate % Recovery | 97 | 87 | 100 | - | - | - | - | - | - | - | <0 | % | TM4/PM8 |
| | | | | | | | | | | | | | |
| Mineral Oil (C10-C40) | 673 | <30 | <30 | - | - | - | - | - | - | - | <30 | mg/kg | TM5/PM8/PM16 |

Please see attached notes for all abbreviations and acronyms

**Client Name:** Ground Investigations Ireland
**Reference:** 8354-01-19
**Location:** Cornelscourt
**Contact:** Barry Sexton
**JE Job No.:** 19/1176

**Report : Solid**

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

| J E Sample No. | 145-147 | 148-150 | 151-153 | 154-156 | 157-159 | 160-162 | 163-165 | 166-168 | 169-171 | 172-174 | LOD/LOR | Units | Method No. |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Sample ID | WS04 | WS04 | WS04 | WS05 | WS05 | WS05 | WS06 | WS06 | WS06 | WS07 | | | |
| Depth | 1.00-2.00 | 2.00-3.00 | 3.00-4.00 | 0.00-1.00 | 1.00-2.00 | 2.00-3.00 | 0.00-1.00 | 1.00-2.00 | 2.00-3.00 | 0.00-1.00 | | | |
| COC No / misc | | | | | | | | | | | | | |
| Containers | V J T | V J T | V J T | V J T | V J T | V J T | V J T | V J T | V J T | V J T | | | |
| Sample Date | 21/01/2019 | 21/01/2019 | 21/01/2019 | 22/01/2019 | 22/01/2019 | 22/01/2019 | 22/01/2019 | 22/01/2019 | 22/01/2019 | 22/01/2019 | | | |
| Sample Type | Soil | Soil | Soil | Soil | Soil | Soil | Soil | Soil | Soil | Soil | | | |
| Batch Number | 2 | 2 | 2 | 2 | 2 | 2 | 2 | 2 | 2 | 2 | | | |
| Date of Receipt | 24/01/2019 | 24/01/2019 | 24/01/2019 | 24/01/2019 | 24/01/2019 | 24/01/2019 | 24/01/2019 | 24/01/2019 | 24/01/2019 | 24/01/2019 | | | |
| TPH CWG | | | | | | | | | | | | | |
| **Aliphatics** | | | | | | | | | | | | | |
| >C5-C6 # | <0.1 | <0.1 | <0.1 | <0.1 | <0.1 | <0.1 | <0.1 | <0.1 | <0.1 | <0.1 SV | <0.1 | mg/kg | TM36/PM12 |
| >C6-C8 # | <0.1 | <0.1 | 0.8 | <0.1 | <0.1 | <0.1 | <0.1 | <0.1 | <0.1 | <0.1 SV | <0.1 | mg/kg | TM36/PM12 |
| >C8-C10 | <0.1 | <0.1 | 0.2 | <0.1 | <0.1 | <0.1 | <0.1 | <0.1 | <0.1 | <0.1 SV | <0.1 | mg/kg | TM36/PM12 |
| >C10-C12 # | 73.2 | <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 # | 221 | <4 | 12 | <4 | <4 | <4 | <4 | <4 | <4 | <4 | <4 | mg/kg | TM5/PM8/PM16 |
| >C16-C21 # | 265 | <7 | 10 | <7 | <7 | <7 | <7 | <7 | <7 | <7 | <7 | mg/kg | TM5/PM8/PM16 |
| >C21-C35 # | 114 | <7 | <7 | <7 | <7 | <7 | <7 | <7 | 109 | 60 | <7 | mg/kg | TM5/PM8/PM16 |
| >C35-C40 | <7 | <7 | <7 | <7 | <7 | <7 | <7 | <7 | 13 | <7 | <7 | mg/kg | TM5/PM8/PM16 |
| Total aliphatics C5-40 | 673 | <26 | <26 | <26 | <26 | <26 | <26 | <26 | 122 | 60 | <26 | mg/kg | TM5/TM36/PM8/PM12/PM16 |
| >C6-C10 | <0.1 | <0.1 | 1.0 | <0.1 | <0.1 | <0.1 | <0.1 | <0.1 | <0.1 | <0.1 SV | <0.1 | mg/kg | TM36/PM12 |
| >C10-C25 | 673 | <10 | 25 | <10 | <10 | <10 | <10 | <10 | 29 | <10 | <10 | mg/kg | TM5/PM8/PM16 |
| >C25-C35 | 16 | <10 | <10 | <10 | <10 | <10 | <10 | <10 | 86 | 54 | <10 | mg/kg | TM5/PM8/PM16 |
| **Aromatics** | | | | | | | | | | | | | |
| >C5-EC7 # | <0.1 | <0.1 | <0.1 | <0.1 | <0.1 | <0.1 | <0.1 | <0.1 | <0.1 | <0.1 SV | <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 SV | <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 SV | <0.1 | mg/kg | TM36/PM12 |
| >EC10-EC12 # | 8.2 | <0.2 | <0.2 | <0.2 | <0.2 | <0.2 | <0.2 | <0.2 | <0.2 | <0.2 | <0.2 | mg/kg | TM5/PM8/PM16 |
| >EC12-EC16 # | 92 | <4 | <4 | <4 | <4 | <4 | <4 | <4 | <4 | <4 | <4 | mg/kg | TM5/PM8/PM16 |
| >EC16-EC21 # | 164 | <7 | <7 | <7 | <7 | <7 | <7 | <7 | <7 | <7 | <7 | mg/kg | TM5/PM8/PM16 |
| >EC21-EC35 # | 74 | <7 | <7 | <7 | <7 | <7 | <7 | <7 | <7 | 78 | <7 | mg/kg | TM5/PM8/PM16 |
| >EC35-EC40 | <7 | <7 | <7 | <7 | <7 | <7 | <7 | <7 | <7 | 16 | <7 | mg/kg | TM5/PM8/PM16 |
| Total aromatics C5-40 | 338 | <26 | <26 | <26 | <26 | <26 | <26 | <26 | <26 | 94 | <26 | mg/kg | TM5/TM36/PM8/PM12/PM16 |
| Total aliphatics and aromatics(C5-40) | 1011 | <52 | <52 | <52 | <52 | <52 | <52 | <52 | 122 | 154 | <52 | mg/kg | TM5/TM36/PM8/PM12/PM16 |
| >EC6-EC10 # | <0.1 | <0.1 | <0.1 | <0.1 | <0.1 | <0.1 | <0.1 | <0.1 | <0.1 | <0.1 SV | <0.1 | mg/kg | TM36/PM12 |
| >EC10-EC25 | 343 | <10 | <10 | <10 | <10 | <10 | <10 | <10 | <10 | <10 | <10 | mg/kg | TM5/PM8/PM16 |
| >EC25-EC35 | <10 | <10 | <10 | <10 | <10 | <10 | <10 | <10 | <10 | 71 | <10 | mg/kg | TM5/PM8/PM16 |
| | | | | | | | | | | | | | |
| MTBE # | <5 | 15 | 79 | <5 | <5 | <5 | <5 | <5 | <5 | <5 SV | <5 | ug/kg | TM31/PM12 |
| Benzene # | <5 | <5 | <5 | <5 | <5 | <5 | <5 | <5 | <5 | <5 SV | <5 | ug/kg | TM31/PM12 |
| Toluene # | <5 | <5 | <5 | <5 | <5 | <5 | <5 | <5 | <5 | <5 SV | <5 | ug/kg | TM31/PM12 |
| Ethylbenzene # | <5 | <5 | 17 | <5 | <5 | <5 | <5 | <5 | <5 | <5 SV | <5 | ug/kg | TM31/PM12 |
| m/p-Xylene # | <5 | <5 | 17 | <5 | <5 | <5 | <5 | <5 | <5 | <5 SV | <5 | ug/kg | TM31/PM12 |
| o-Xylene # | <5 | <5 | <5 | <5 | <5 | <5 | <5 | <5 | <5 | <5 SV | <5 | ug/kg | TM31/PM12 |
| | | | | | | | | | | | | | |
| PCB 28 # | <5 | <5 | <5 | - | - | - | - | - | - | - | <5 | ug/kg | TM17/PM8 |
| PCB 52 # | <5 | <5 | <5 | - | - | - | - | - | - | - | <5 | ug/kg | TM17/PM8 |
| PCB 101 # | <5 | <5 | <5 | - | - | - | - | - | - | - | <5 | ug/kg | TM17/PM8 |
| PCB 118 # | <5 | <5 | <5 | - | - | - | - | - | - | - | <5 | ug/kg | TM17/PM8 |
| PCB 138 # | <5 | <5 | <5 | - | - | - | - | - | - | - | <5 | ug/kg | TM17/PM8 |
| PCB 153 # | <5 | <5 | <5 | - | - | - | - | - | - | - | <5 | ug/kg | TM17/PM8 |
| PCB 180 # | <5 | <5 | <5 | - | - | - | - | - | - | - | <5 | ug/kg | TM17/PM8 |
| Total 7 PCBs # | <35 | <35 | <35 | - | - | - | - | - | - | - | <35 | ug/kg | TM17/PM8 |

Please see attached notes for all abbreviations and acronyms

**Client Name:** Ground Investigations Ireland
**Reference:** 8354-01-19
**Location:** Cornelscourt
**Contact:** Barry Sexton
**JE Job No.:** 19/1176

**Report : Solid**

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

| J E Sample No. | 145-147 | 148-150 | 151-153 | 154-156 | 157-159 | 160-162 | 163-165 | 166-168 | 169-171 | 172-174 | LOD/LOR | Units | Method No. |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| **Sample ID** | WS04 | WS04 | WS04 | WS05 | WS05 | WS05 | WS06 | WS06 | WS06 | WS07 | | | |
| **Depth** | 1.00-2.00 | 2.00-3.00 | 3.00-4.00 | 0.00-1.00 | 1.00-2.00 | 2.00-3.00 | 0.00-1.00 | 1.00-2.00 | 2.00-3.00 | 0.00-1.00 | | | |
| **COC No / misc** | | | | | | | | | | | | | |
| **Containers** | V J T | V J T | V J T | V J T | V J T | V J T | V J T | V J T | V J T | V J T | | | |
| **Sample Date** | 21/01/2019 | 21/01/2019 | 21/01/2019 | 22/01/2019 | 22/01/2019 | 22/01/2019 | 22/01/2019 | 22/01/2019 | 22/01/2019 | 22/01/2019 | | | |
| **Sample Type** | Soil | Soil | Soil | Soil | Soil | Soil | Soil | Soil | Soil | Soil | | | |
| **Batch Number** | 2 | 2 | 2 | 2 | 2 | 2 | 2 | 2 | 2 | 2 | | | |
| **Date of Receipt** | 24/01/2019 | 24/01/2019 | 24/01/2019 | 24/01/2019 | 24/01/2019 | 24/01/2019 | 24/01/2019 | 24/01/2019 | 24/01/2019 | 24/01/2019 | | | |
| Natural Moisture Content | 13.8 | 13.3 | 8.2 | 19.8 | 14.4 | 14.6 | 15.4 | 18.9 | 15.0 | 23.1 | <0.1 | % | PM4/PM0 |
| Moisture Content (% Wet Weight) | 12.1 | 11.8 | 7.6 | - | - | - | - | - | - | - | <0.1 | % | PM4/PM0 |
| Hexavalent Chromium # | <0.3 | <0.3 | <0.3 | - | - | - | - | - | - | - | <0.3 | mg/kg | TM38/PM20 |
| Chromium III | 64.5 | 44.3 | 72.0 | - | - | - | - | - | - | - | <0.5 | mg/kg | NONE/NONE |
| Total Organic Carbon # | 0.34 | 0.26 | 0.14 | - | - | - | - | - | - | - | <0.02 | % | TM21/PM24 |
| pH # | 8.57 | 8.61 | 9.20 | - | - | - | - | - | - | - | <0.01 | pH units | TM73/PM11 |
| Mass of raw test portion | 0.1029 | 0.1046 | 0.097 | - | - | - | - | - | - | - | | kg | NONE/PM17 |
| Mass of dried test portion | 0.09 | 0.09 | 0.09 | - | - | - | - | - | - | - | | kg | NONE/PM17 |

Please see attached notes for all abbreviations and acronyms

**Client Name:** Ground Investigations Ireland
**Reference:** 8354-01-19
**Location:** Cornelscourt
**Contact:** Barry Sexton
**JE Job No.:** 19/1176

**Report : Solid**

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

| J E Sample No. | 175-177 | 178-180 | 181-183 | 184-186 | 187-189 | 190-192 | 193-195 | 196-198 | 199-201 | 202-204 | LOD/LOR | Units | Method No. |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Sample ID | WS07 | WS07 | WS07 | WS08 | WS08 | WS08 | WS09 | WS09 | WS09 | WS10 | | | |
| Depth | 1.00-2.00 | 2.00-3.00 | 3.00-4.00 | 0.00-1.00 | 1.00-2.00 | 2.00-3.00 | 0.00-1.00 | 1.00-2.00 | 2.00-3.00 | 0.00-1.00 | | | |
| 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 | 22/01/2019 | 22/01/2019 | 22/01/2019 | 22/01/2019 | 22/01/2019 | 22/01/2019 | 22/01/2019 | 22/01/2019 | 22/01/2019 | 21/01/2019 | | | |
| Sample Type | Soil | Soil | Soil | Soil | Soil | Soil | Soil | Soil | Soil | Soil | | | |
| Batch Number | 2 | 2 | 2 | 2 | 2 | 2 | 2 | 2 | 2 | 2 | | | |
| Date of Receipt | 24/01/2019 | 24/01/2019 | 24/01/2019 | 24/01/2019 | 24/01/2019 | 24/01/2019 | 24/01/2019 | 24/01/2019 | 24/01/2019 | 24/01/2019 | | | |
| Antimony | 2 | 2 | 1 | - | 2 | 2 | - | - | - | - | <1 | mg/kg | TM30/PM15 |
| Arsenic # | 11.3 | 8.4 | 7.8 | - | 10.0 | 9.8 | - | - | - | - | <0.5 | mg/kg | TM30/PM15 |
| Barium # | 67 | 61 | 48 | - | 51 | 70 | - | - | - | - | <1 | mg/kg | TM30/PM15 |
| Cadmium # | 2.1 | 1.7 | 1.3 | - | 1.8 | 1.6 | - | - | - | - | <0.1 | mg/kg | TM30/PM15 |
| Chromium # | 48.0 | 54.9 | 67.5 | - | 52.9 | 59.8 | - | - | - | - | <0.5 | mg/kg | TM30/PM15 |
| Copper # | 35 | 28 | 17 | - | 21 | 27 | - | - | - | - | <1 | mg/kg | TM30/PM15 |
| Lead # | 18 | 16 | 12 | - | 14 | 18 | - | - | - | - | <5 | mg/kg | TM30/PM15 |
| Mercury # | <0.1 | <0.1 | <0.1 | - | <0.1 | <0.1 | - | - | - | - | <0.1 | mg/kg | TM30/PM15 |
| Molybdenum # | 4.0 | 3.2 | 3.1 | - | 3.3 | 3.6 | - | - | - | - | <0.1 | mg/kg | TM30/PM15 |
| Nickel # | 43.2 | 34.8 | 27.6 | - | 26.4 | 33.4 | - | - | - | - | <0.7 | mg/kg | TM30/PM15 |
| Selenium # | 2 | <1 | <1 | - | <1 | <1 | - | - | - | - | <1 | mg/kg | TM30/PM15 |
| Zinc # | 106 | 76 | 66 | - | 76 | 80 | - | - | - | - | <5 | mg/kg | TM30/PM15 |
| | | | | | | | | | | | | | |
| PAH MS | | | | | | | | | | | | | |
| Naphthalene # | <0.04 | <0.04 | <0.04 | - | <0.04 | <0.04 | - | - | - | - | <0.04 | mg/kg | TM4/PM8 |
| Acenaphthylene | <0.03 | <0.03 | <0.03 | - | <0.03 | 0.08 | - | - | - | - | <0.03 | mg/kg | TM4/PM8 |
| Acenaphthene # | <0.05 | <0.05 | <0.05 | - | <0.05 | <0.05 | - | - | - | - | <0.05 | mg/kg | TM4/PM8 |
| Fluorene # | <0.04 | <0.04 | <0.04 | - | <0.04 | 0.14 | - | - | - | - | <0.04 | mg/kg | TM4/PM8 |
| Phenanthrene # | <0.03 | <0.03 | <0.03 | - | <0.03 | 0.27 | - | - | - | - | <0.03 | mg/kg | TM4/PM8 |
| Anthracene # | <0.04 | <0.04 | <0.04 | - | <0.04 | <0.04 | - | - | - | - | <0.04 | mg/kg | TM4/PM8 |
| Fluoranthene # | <0.03 | <0.03 | <0.03 | - | <0.03 | <0.03 | - | - | - | - | <0.03 | mg/kg | TM4/PM8 |
| Pyrene # | <0.03 | <0.03 | <0.03 | - | <0.03 | <0.03 | - | - | - | - | <0.03 | mg/kg | TM4/PM8 |
| Benzo(a)anthracene # | <0.06 | <0.06 | <0.06 | - | <0.06 | <0.06 | - | - | - | - | <0.06 | mg/kg | TM4/PM8 |
| Chrysene # | <0.02 | <0.02 | <0.02 | - | <0.02 | <0.02 | - | - | - | - | <0.02 | mg/kg | TM4/PM8 |
| Benzo(bk)fluoranthene # | <0.07 | <0.07 | <0.07 | - | <0.07 | <0.07 | - | - | - | - | <0.07 | mg/kg | TM4/PM8 |
| Benzo(a)pyrene # | <0.04 | <0.04 | <0.04 | - | <0.04 | <0.04 | - | - | - | - | <0.04 | mg/kg | TM4/PM8 |
| Indeno(123cd)pyrene # | <0.04 | <0.04 | <0.04 | - | <0.04 | <0.04 | - | - | - | - | <0.04 | mg/kg | TM4/PM8 |
| Dibenzo(ah)anthracene # | <0.04 | <0.04 | <0.04 | - | <0.04 | <0.04 | - | - | - | - | <0.04 | mg/kg | TM4/PM8 |
| Benzo(ghi)perylene # | <0.04 | <0.04 | <0.04 | - | <0.04 | <0.04 | - | - | - | - | <0.04 | mg/kg | TM4/PM8 |
| Coronene | <0.04 | <0.04 | <0.04 | - | <0.04 | <0.04 | - | - | - | - | <0.04 | mg/kg | TM4/PM8 |
| PAH 6 Total # | <0.22 | <0.22 | <0.22 | - | <0.22 | <0.22 | - | - | - | - | <0.22 | mg/kg | TM4/PM8 |
| PAH 17 Total | <0.64 | <0.64 | <0.64 | - | <0.64 | <0.64 | - | - | - | - | <0.64 | mg/kg | TM4/PM8 |
| Benzo(b)fluoranthene | <0.05 | <0.05 | <0.05 | - | <0.05 | <0.05 | - | - | - | - | <0.05 | mg/kg | TM4/PM8 |
| Benzo(k)fluoranthene | <0.02 | <0.02 | <0.02 | - | <0.02 | <0.02 | - | - | - | - | <0.02 | mg/kg | TM4/PM8 |
| Benzo(j)fluoranthene | <1 | <1 | <1 | - | <1 | <1 | - | - | - | - | <1 | mg/kg | TM4/PM8 |
| PAH Surrogate % Recovery | 98 | 91 | 99 | - | 95 | 98 | - | - | - | - | <0 | % | TM4/PM8 |
| | | | | | | | | | | | | | |
| Mineral Oil (C10-C40) | <30 | 143 | <30 | - | <30 | 447 | - | - | - | - | <30 | mg/kg | TM5/PM8/PM16 |

Please see attached notes for all abbreviations and acronyms

**Client Name:** Ground Investigations Ireland
**Reference:** 8354-01-19
**Location:** Cornelscourt
**Contact:** Barry Sexton
**JE Job No.:** 19/1176

**Report : Solid**

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

| J E Sample No. | 175-177 | 178-180 | 181-183 | 184-186 | 187-189 | 190-192 | 193-195 | 196-198 | 199-201 | 202-204 | LOD/LOR | Units | Method No. |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Sample ID | WS07 | WS07 | WS07 | WS08 | WS08 | WS08 | WS09 | WS09 | WS09 | WS10 | | | |
| Depth | 1.00-2.00 | 2.00-3.00 | 3.00-4.00 | 0.00-1.00 | 1.00-2.00 | 2.00-3.00 | 0.00-1.00 | 1.00-2.00 | 2.00-3.00 | 0.00-1.00 | | | |
| 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 | 22/01/2019 | 22/01/2019 | 22/01/2019 | 22/01/2019 | 22/01/2019 | 22/01/2019 | 22/01/2019 | 22/01/2019 | 22/01/2019 | 21/01/2019 | | | |
| Sample Type | Soil | Soil | Soil | Soil | Soil | Soil | Soil | Soil | Soil | Soil | | | |
| Batch Number | 2 | 2 | 2 | 2 | 2 | 2 | 2 | 2 | 2 | 2 | | | |
| Date of Receipt | 24/01/2019 | 24/01/2019 | 24/01/2019 | 24/01/2019 | 24/01/2019 | 24/01/2019 | 24/01/2019 | 24/01/2019 | 24/01/2019 | 24/01/2019 | | | |
| TPH CWG | | | | | | | | | | | | | |
| **Aliphatics** | | | | | | | | | | | | | |
| >C5-C6 # | <0.1 | 0.6 | 1.7 | <0.1 | <0.1 | 1.3 | <0.1 | <0.1 | <0.1 | <0.1 | <0.1 | mg/kg | TM36/PM12 |
| >C6-C8 # | <0.1 | 2.1 | 4.1 | 0.5 | <0.1 | 6.5 | <0.1 | <0.1 | <0.1 | <0.1 | <0.1 | mg/kg | TM36/PM12 |
| >C8-C10 | <0.1 | 2.4 | 2.9 | 0.4 | <0.1 | 8.9 | <0.1 | <0.1 | <0.1 | <0.1 | <0.1 | mg/kg | TM36/PM12 |
| >C10-C12 # | <0.2 | 35.9 | <0.2 | <0.2 | <0.2 | 89.0 | <0.2 | <0.2 | <0.2 | <0.2 | <0.2 | mg/kg | TM5/PM8/PM16 |
| >C12-C16 # | <4 | 49 | <4 | <4 | <4 | 160 | <4 | <4 | <4 | <4 | <4 | mg/kg | TM5/PM8/PM16 |
| >C16-C21 # | <7 | 48 | <7 | <7 | <7 | 152 | <7 | <7 | <7 | <7 | <7 | mg/kg | TM5/PM8/PM16 |
| >C21-C35 # | <7 | 10 | <7 | <7 | <7 | 46 | <7 | <7 | <7 | <7 | <7 | mg/kg | TM5/PM8/PM16 |
| >C35-C40 | <7 | <7 | <7 | <7 | <7 | <7 | <7 | <7 | <7 | <7 | <7 | mg/kg | TM5/PM8/PM16 |
| Total aliphatics C5-40 | <26 | 148 | <26 | <26 | <26 | 464 | <26 | <26 | <26 | <26 | <26 | mg/kg | TM5/TM36/PM8/PM12/PM16 |
| >C6-C10 | <0.1 | 4.5 | 7.0 | 0.9 | <0.1 | 15.4 | <0.1 | <0.1 | <0.1 | <0.1 | <0.1 | mg/kg | TM36/PM12 |
| >C10-C25 | <10 | 160 | <10 | <10 | <10 | 447 | <10 | <10 | <10 | <10 | <10 | mg/kg | TM5/PM8/PM16 |
| >C25-C35 | <10 | <10 | <10 | <10 | <10 | <10 | <10 | <10 | <10 | <10 | <10 | mg/kg | TM5/PM8/PM16 |
| **Aromatics** | | | | | | | | | | | | | |
| >C5-EC7 # | <0.1 | <0.1 | <0.1 | <0.1 | <0.1 | <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 | <0.1 | mg/kg | TM36/PM12 |
| >EC8-EC10 # | <0.1 | 0.6 | 0.3 | <0.1 | <0.1 | 0.2 | <0.1 | <0.1 | <0.1 | <0.1 | <0.1 | mg/kg | TM36/PM12 |
| >EC10-EC12 # | <0.2 | 17.0 | <0.2 | <0.2 | <0.2 | 61.8 | <0.2 | <0.2 | <0.2 | <0.2 | <0.2 | mg/kg | TM5/PM8/PM16 |
| >EC12-EC16 # | <4 | 23 | <4 | <4 | <4 | 98 | <4 | <4 | <4 | <4 | <4 | mg/kg | TM5/PM8/PM16 |
| >EC16-EC21 # | <7 | 22 | <7 | <7 | <7 | 106 | <7 | <7 | <7 | <7 | <7 | mg/kg | TM5/PM8/PM16 |
| >EC21-EC35 # | <7 | <7 | <7 | <7 | <7 | 31 | <7 | <7 | <7 | <7 | <7 | mg/kg | TM5/PM8/PM16 |
| >EC35-EC40 | <7 | <7 | <7 | <7 | <7 | <7 | <7 | <7 | <7 | <7 | <7 | mg/kg | TM5/PM8/PM16 |
| Total aromatics C5-40 | <26 | 63 | <26 | <26 | <26 | 297 | <26 | <26 | <26 | <26 | <26 | mg/kg | TM5/TM36/PM8/PM12/PM16 |
| Total aliphatics and aromatics(C5-40) | <52 | 211 | <52 | <52 | <52 | 761 | <52 | <52 | <52 | <52 | <52 | mg/kg | TM5/TM36/PM8/PM12/PM16 |
| >EC6-EC10 # | <0.1 | 0.6 | 0.3 | <0.1 | <0.1 | 0.2 | <0.1 | <0.1 | <0.1 | <0.1 | <0.1 | mg/kg | TM36/PM12 |
| >EC10-EC25 | <10 | 68 | <10 | <10 | <10 | 280 | <10 | <10 | <10 | <10 | <10 | mg/kg | TM5/PM8/PM16 |
| >EC25-EC35 | <10 | <10 | <10 | <10 | <10 | <10 | <10 | <10 | <10 | <10 | <10 | mg/kg | TM5/PM8/PM16 |
| | | | | | | | | | | | | | |
| MTBE # | <5 | 261 | 798 | 41 | <5 | 755 | <5 | <5 | <5 | <5 | <5 | ug/kg | TM31/PM12 |
| Benzene # | <5 | <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 | <5 | ug/kg | TM31/PM12 |
| Ethylbenzene # | <5 | 100 | 80 | 10 | <5 | 49 | <5 | <5 | <5 | <5 | <5 | ug/kg | TM31/PM12 |
| m/p-Xylene # | <5 | 441 | 257 | 21 | 8 | 209 | <5 | <5 | <5 | <5 | <5 | ug/kg | TM31/PM12 |
| o-Xylene # | <5 | <5 | <5 | <5 | <5 | <5 | <5 | <5 | <5 | <5 | <5 | ug/kg | TM31/PM12 |
| | | | | | | | | | | | | | |
| PCB 28 # | <5 | <5 | <5 | - | <5 | <5 | - | - | - | - | <5 | ug/kg | TM17/PM8 |
| PCB 52 # | <5 | <5 | <5 | - | <5 | <5 | - | - | - | - | <5 | ug/kg | TM17/PM8 |
| PCB 101 # | <5 | <5 | <5 | - | <5 | <5 | - | - | - | - | <5 | ug/kg | TM17/PM8 |
| PCB 118 # | <5 | <5 | <5 | - | <5 | <5 | - | - | - | - | <5 | ug/kg | TM17/PM8 |
| PCB 138 # | <5 | <5 | <5 | - | <5 | <5 | - | - | - | - | <5 | ug/kg | TM17/PM8 |
| PCB 153 # | <5 | <5 | <5 | - | <5 | <5 | - | - | - | - | <5 | ug/kg | TM17/PM8 |
| PCB 180 # | <5 | <5 | <5 | - | <5 | <5 | - | - | - | - | <5 | ug/kg | TM17/PM8 |
| Total 7 PCBs # | <35 | <35 | <35 | - | <35 | <35 | - | - | - | - | <35 | ug/kg | TM17/PM8 |

Please see attached notes for all abbreviations and acronyms

**Client Name:** Ground Investigations Ireland
**Reference:** 8354-01-19
**Location:** Cornelscourt
**Contact:** Barry Sexton
**JE Job No.:** 19/1176

**Report : Solid**

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

| J E Sample No. | 175-177 | 178-180 | 181-183 | 184-186 | 187-189 | 190-192 | 193-195 | 196-198 | 199-201 | 202-204 | LOD/LOR | Units | Method No. |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| **Sample ID** | WS07 | WS07 | WS07 | WS08 | WS08 | WS08 | WS09 | WS09 | WS09 | WS10 | | | |
| **Depth** | 1.00-2.00 | 2.00-3.00 | 3.00-4.00 | 0.00-1.00 | 1.00-2.00 | 2.00-3.00 | 0.00-1.00 | 1.00-2.00 | 2.00-3.00 | 0.00-1.00 | | | |
| **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** | 22/01/2019 | 22/01/2019 | 22/01/2019 | 22/01/2019 | 22/01/2019 | 22/01/2019 | 22/01/2019 | 22/01/2019 | 22/01/2019 | 21/01/2019 | | | |
| **Sample Type** | Soil | Soil | Soil | Soil | Soil | Soil | Soil | Soil | Soil | Soil | | | |
| **Batch Number** | 2 | 2 | 2 | 2 | 2 | 2 | 2 | 2 | 2 | 2 | | | |
| **Date of Receipt** | 24/01/2019 | 24/01/2019 | 24/01/2019 | 24/01/2019 | 24/01/2019 | 24/01/2019 | 24/01/2019 | 24/01/2019 | 24/01/2019 | 24/01/2019 | | | |
| Natural Moisture Content | 18.3 | 14.6 | 10.7 | 19.3 | 17.4 | 14.4 | 13.7 | 14.2 | 14.0 | 23.7 | <0.1 | % | PM4/PM0 |
| Moisture Content (% Wet Weight) | 15.4 | 12.7 | 9.7 | - | 14.8 | 12.6 | - | - | - | - | <0.1 | % | PM4/PM0 |
| Hexavalent Chromium # | <0.3 | <0.3 | <0.3 | - | <0.3 | <0.3 | - | - | - | - | <0.3 | mg/kg | TM38/PM20 |
| Chromium III | 48.0 | 54.9 | 67.5 | - | 52.9 | 59.8 | - | - | - | - | <0.5 | mg/kg | NONE/NONE |
| Total Organic Carbon # | 0.38 | 0.26 | 0.19 | - | 0.25 | 0.29 | - | - | - | - | <0.02 | % | TM21/PM24 |
| pH # | 8.69 | 7.69 | 8.44 | - | 8.66 | 8.23 | - | - | - | - | <0.01 | pH units | TM73/PM11 |
| Mass of raw test portion | 0.1046 | 0.1027 | 0.0988 | - | 0.1008 | 0.102 | - | - | - | - | | kg | NONE/PM17 |
| Mass of dried test portion | 0.09 | 0.09 | 0.09 | - | 0.09 | 0.09 | - | - | - | - | | kg | NONE/PM17 |

Please see attached notes for all abbreviations and acronyms

**Client Name:** Ground Investigations Ireland
**Reference:** 8354-01-19
**Location:** Cornelscourt
**Contact:** Barry Sexton
**JE Job No.:** 19/1176

**Report : Solid**

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

| J E Sample No. | 205-207 | 208-210 | 211-213 | 214-216 | 217-219 | 220-222 | 223-225 | 226-228 | 229-231 | 232-234 | LOD/LOR | Units | Method No. |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Sample ID | WS10 | WS10 | WS10 | WS11 | WS11 | WS11 | WS12 | WS12 | WS12 | WS13 | | | |
| Depth | 1.00-2.00 | 2.00-3.00 | 3.00-4.00 | 0.00-1.00 | 1.00-2.00 | 2.00-3.00 | 0.00-1.00 | 1.00-2.00 | 2.00-3.00 | 0.00-1.00 | | | |
| COC No / misc | | | | | | | | | | | | | |
| Containers | V J T | V J T | V J T | V J T | V J T | V J T | V J T | V J T | V J T | V J T | | | |
| Sample Date | 21/01/2019 | 21/01/2019 | 21/01/2019 | 21/01/2019 | 21/01/2019 | 21/01/2019 | 22/01/2019 | 22/01/2019 | 22/01/2019 | 22/01/2019 | | | |
| Sample Type | Soil | Soil | Soil | Soil | Soil | Soil | Soil | Soil | Soil | Soil | | | |
| Batch Number | 2 | 2 | 2 | 2 | 2 | 2 | 2 | 2 | 2 | 2 | | | |
| Date of Receipt | 24/01/2019 | 24/01/2019 | 24/01/2019 | 24/01/2019 | 24/01/2019 | 24/01/2019 | 24/01/2019 | 24/01/2019 | 24/01/2019 | 24/01/2019 | | | |
| Antimony | - | 2 | 2 | - | - | - | - | - | - | - | <1 | mg/kg | TM30/PM15 |
| Arsenic # | - | 12.1 | 10.1 | - | - | - | - | - | - | - | <0.5 | mg/kg | TM30/PM15 |
| Barium # | - | 74 | 66 | - | - | - | - | - | - | - | <1 | mg/kg | TM30/PM15 |
| Cadmium # | - | 2.1 | 1.9 | - | - | - | - | - | - | - | <0.1 | mg/kg | TM30/PM15 |
| Chromium # | - | 50.8 | 51.2 | - | - | - | - | - | - | - | <0.5 | mg/kg | TM30/PM15 |
| Copper # | - | 37 | 29 | - | - | - | - | - | - | - | <1 | mg/kg | TM30/PM15 |
| Lead # | - | 21 | 21 | - | - | - | - | - | - | - | <5 | mg/kg | TM30/PM15 |
| Mercury # | - | <0.1 | <0.1 | - | - | - | - | - | - | - | <0.1 | mg/kg | TM30/PM15 |
| Molybdenum # | - | 4.8 | 4.2 | - | - | - | - | - | - | - | <0.1 | mg/kg | TM30/PM15 |
| Nickel # | - | 47.8 | 37.7 | - | - | - | - | - | - | - | <0.7 | mg/kg | TM30/PM15 |
| Selenium # | - | 1 | 1 | - | - | - | - | - | - | - | <1 | mg/kg | TM30/PM15 |
| Zinc # | - | 104 | 83 | - | - | - | - | - | - | - | <5 | mg/kg | TM30/PM15 |
| | | | | | | | | | | | | | |
| PAH MS | | | | | | | | | | | | | |
| Naphthalene # | - | <0.04 | <0.04 | - | - | - | - | - | - | - | <0.04 | mg/kg | TM4/PM8 |
| Acenaphthylene | - | <0.03 | <0.03 | - | - | - | - | - | - | - | <0.03 | mg/kg | TM4/PM8 |
| Acenaphthene # | - | <0.05 | <0.05 | - | - | - | - | - | - | - | <0.05 | mg/kg | TM4/PM8 |
| Fluorene # | - | <0.04 | <0.04 | - | - | - | - | - | - | - | <0.04 | mg/kg | TM4/PM8 |
| Phenanthrene # | - | <0.03 | <0.03 | - | - | - | - | - | - | - | <0.03 | mg/kg | TM4/PM8 |
| Anthracene # | - | <0.04 | <0.04 | - | - | - | - | - | - | - | <0.04 | mg/kg | TM4/PM8 |
| Fluoranthene # | - | <0.03 | <0.03 | - | - | - | - | - | - | - | <0.03 | mg/kg | TM4/PM8 |
| Pyrene # | - | <0.03 | <0.03 | - | - | - | - | - | - | - | <0.03 | mg/kg | TM4/PM8 |
| Benzo(a)anthracene # | - | <0.06 | <0.06 | - | - | - | - | - | - | - | <0.06 | mg/kg | TM4/PM8 |
| Chrysene # | - | <0.02 | <0.02 | - | - | - | - | - | - | - | <0.02 | mg/kg | TM4/PM8 |
| Benzo(bk)fluoranthene # | - | <0.07 | <0.07 | - | - | - | - | - | - | - | <0.07 | mg/kg | TM4/PM8 |
| Benzo(a)pyrene # | - | <0.04 | <0.04 | - | - | - | - | - | - | - | <0.04 | mg/kg | TM4/PM8 |
| Indeno(123cd)pyrene # | - | <0.04 | <0.04 | - | - | - | - | - | - | - | <0.04 | mg/kg | TM4/PM8 |
| Dibenzo(ah)anthracene # | - | <0.04 | <0.04 | - | - | - | - | - | - | - | <0.04 | mg/kg | TM4/PM8 |
| Benzo(ghi)perylene # | - | <0.04 | <0.04 | - | - | - | - | - | - | - | <0.04 | mg/kg | TM4/PM8 |
| Coronene | - | <0.04 | <0.04 | - | - | - | - | - | - | - | <0.04 | mg/kg | TM4/PM8 |
| PAH 6 Total # | - | <0.22 | <0.22 | - | - | - | - | - | - | - | <0.22 | mg/kg | TM4/PM8 |
| PAH 17 Total | - | <0.64 | <0.64 | - | - | - | - | - | - | - | <0.64 | mg/kg | TM4/PM8 |
| Benzo(b)fluoranthene | - | <0.05 | <0.05 | - | - | - | - | - | - | - | <0.05 | mg/kg | TM4/PM8 |
| Benzo(k)fluoranthene | - | <0.02 | <0.02 | - | - | - | - | - | - | - | <0.02 | mg/kg | TM4/PM8 |
| Benzo(j)fluoranthene | - | <1 | <1 | - | - | - | - | - | - | - | <1 | mg/kg | TM4/PM8 |
| PAH Surrogate % Recovery | - | 95 | 93 | - | - | - | - | - | - | - | <0 | % | TM4/PM8 |
| | | | | | | | | | | | | | |
| Mineral Oil (C10-C40) | - | <30 | 100 | - | - | - | - | - | - | - | <30 | mg/kg | TM5/PM8/PM16 |

Please see attached notes for all abbreviations and acronyms

**Client Name:** Ground Investigations Ireland
**Reference:** 8354-01-19
**Location:** Cornelscourt
**Contact:** Barry Sexton
**JE Job No.:** 19/1176

**Report : Solid**

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

| J E Sample No. | 205-207 | 208-210 | 211-213 | 214-216 | 217-219 | 220-222 | 223-225 | 226-228 | 229-231 | 232-234 | LOD/LOR | Units | Method No. |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| **Sample ID** | WS10 | WS10 | WS10 | WS11 | WS11 | WS11 | WS12 | WS12 | WS12 | WS13 | | | |
| **Depth** | 1.00-2.00 | 2.00-3.00 | 3.00-4.00 | 0.00-1.00 | 1.00-2.00 | 2.00-3.00 | 0.00-1.00 | 1.00-2.00 | 2.00-3.00 | 0.00-1.00 | | | |
| **COC No / misc** | | | | | | | | | | | | | |
| **Containers** | V J T | V J T | V J T | V J T | V J T | V J T | V J T | V J T | V J T | V J T | | | |
| **Sample Date** | 21/01/2019 | 21/01/2019 | 21/01/2019 | 21/01/2019 | 21/01/2019 | 21/01/2019 | 22/01/2019 | 22/01/2019 | 22/01/2019 | 22/01/2019 | | | |
| **Sample Type** | Soil | Soil | Soil | Soil | Soil | Soil | Soil | Soil | Soil | Soil | | | |
| **Batch Number** | 2 | 2 | 2 | 2 | 2 | 2 | 2 | 2 | 2 | 2 | | | |
| **Date of Receipt** | 24/01/2019 | 24/01/2019 | 24/01/2019 | 24/01/2019 | 24/01/2019 | 24/01/2019 | 24/01/2019 | 24/01/2019 | 24/01/2019 | 24/01/2019 | | | |
| TPH CWG | | | | | | | | | | | | | |
| **Aliphatics** | | | | | | | | | | | | | |
| >C5-C6 # | <0.1 | <0.1 | <0.1 | <0.1 | 10.4 | 13.9 | <0.1 | <0.1 | <0.1 | <0.1 | <0.1 | mg/kg | TM36/PM12 |
| >C6-C8 # | <0.1 | <0.1 | 0.1 | <0.1 | 33.4 | 63.5++ | <0.1 | <0.1 | <0.1 | <0.1 | <0.1 | mg/kg | TM36/PM12 |
| >C8-C10 | <0.1 | 0.5 | <0.1 | <0.1 | 34.1++ | 59.8++ | <0.1 | <0.1 | <0.1 | <0.1 | <0.1 | mg/kg | TM36/PM12 |
| >C10-C12 # | <0.2 | <0.2 | 15.2 | <0.2 | 203.9 | 349.0 | <0.2 | <0.2 | <0.2 | <0.2 | <0.2 | mg/kg | TM5/PM8/PM16 |
| >C12-C16 # | <4 | <4 | 45 | <4 | 365 | 613 | <4 | <4 | <4 | <4 | <4 | mg/kg | TM5/PM8/PM16 |
| >C16-C21 # | <7 | <7 | 40 | <7 | 364 | 642 | <7 | <7 | <7 | <7 | <7 | mg/kg | TM5/PM8/PM16 |
| >C21-C35 # | <7 | <7 | <7 | <7 | 115 | 220 | <7 | <7 | <7 | <7 | <7 | mg/kg | TM5/PM8/PM16 |
| >C35-C40 | <7 | <7 | <7 | <7 | <7 | <7 | <7 | <7 | <7 | <7 | <7 | mg/kg | TM5/PM8/PM16 |
| Total aliphatics C5-40 | <26 | <26 | 100 | <26 | 1126 | 1961 | <26 | <26 | <26 | <26 | <26 | mg/kg | TM5/TM36/PM8/PM12/PM16 |
| >C6-C10 | <0.1 | 0.5 | 0.1 | <0.1 | 67.5 | 123.3 | <0.1 | <0.1 | <0.1 | <0.1 | <0.1 | mg/kg | TM36/PM12 |
| >C10-C25 | <10 | <10 | 104 | <10 | 1027 | 1758 | <10 | <10 | <10 | <10 | <10 | mg/kg | TM5/PM8/PM16 |
| >C25-C35 | <10 | <10 | <10 | <10 | <10 | 21 | <10 | <10 | <10 | <10 | <10 | mg/kg | TM5/PM8/PM16 |
| **Aromatics** | | | | | | | | | | | | | |
| >C5-EC7 # | <0.1 | <0.1 | <0.1 | <0.1 | 0.2 | 0.3 | <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 | <0.1 | mg/kg | TM36/PM12 |
| >EC8-EC10 # | <0.1 | <0.1 | <0.1 | <0.1 | 13.7++ | 30.1++ | <0.1 | <0.1 | <0.1 | <0.1 | <0.1 | mg/kg | TM36/PM12 |
| >EC10-EC12 # | <0.2 | <0.2 | 4.2 | <0.2 | 132.2 | 231.2 | <0.2 | <0.2 | <0.2 | <0.2 | <0.2 | mg/kg | TM5/PM8/PM16 |
| >EC12-EC16 # | <4 | <4 | 26 | <4 | 190 | 325 | <4 | <4 | <4 | <4 | <4 | mg/kg | TM5/PM8/PM16 |
| >EC16-EC21 # | <7 | <7 | 39 | <7 | 229 | 384 | <7 | <7 | <7 | <7 | <7 | mg/kg | TM5/PM8/PM16 |
| >EC21-EC35 # | <7 | <7 | 11 | <7 | 92 | 132 | <7 | <7 | <7 | <7 | <7 | mg/kg | TM5/PM8/PM16 |
| >EC35-EC40 | <7 | <7 | <7 | <7 | <7 | <7 | <7 | <7 | <7 | <7 | <7 | mg/kg | TM5/PM8/PM16 |
| Total aromatics C5-40 | <26 | <26 | 80 | <26 | 657 | 1103 | <26 | <26 | <26 | <26 | <26 | mg/kg | TM5/TM36/PM8/PM12/PM16 |
| Total aliphatics and aromatics(C5-40) | <52 | <52 | 180 | <52 | 1783 | 3064 | <52 | <52 | <52 | <52 | <52 | mg/kg | TM5/TM36/PM8/PM12/PM16 |
| >EC6-EC10 # | <0.1 | <0.1 | <0.1 | <0.1 | 13.9 | 30.4 | <0.1 | <0.1 | <0.1 | <0.1 | <0.1 | mg/kg | TM36/PM12 |
| >EC10-EC25 | <10 | <10 | 70 | <10 | 630 | 1068 | <10 | <10 | <10 | <10 | <10 | mg/kg | TM5/PM8/PM16 |
| >EC25-EC35 | <10 | <10 | <10 | <10 | 13 | 16 | <10 | <10 | <10 | <10 | <10 | mg/kg | TM5/PM8/PM16 |
| | | | | | | | | | | | | | |
| MTBE # | <5 | <5 | <5 | <5 | 2907 | 5007 | <5 | <5 | <5 | <5 | <5 | ug/kg | TM31/PM12 |
| Benzene # | <5 | <5 | <5 | <5 | 282 | 395 | <5 | <5 | <5 | <5 | <5 | ug/kg | TM31/PM12 |
| Toluene # | <5 | <5 | <5 | <5 | <5 | <5 | <5 | <5 | <5 | <5 | <5 | ug/kg | TM31/PM12 |
| Ethylbenzene # | <5 | <5 | <5 | <5 | 3397 | 8582 | <5 | <5 | <5 | 7 | <5 | ug/kg | TM31/PM12 |
| m/p-Xylene # | <5 | <5 | 7 | <5 | 10263 | 21432 | 11 | 11 | <5 | 13 | <5 | ug/kg | TM31/PM12 |
| o-Xylene # | <5 | <5 | <5 | <5 | <5 | <5 | <5 | <5 | <5 | <5 | <5 | ug/kg | TM31/PM12 |
| | | | | | | | | | | | | | |
| PCB 28 # | - | <5 | <5 | - | - | - | - | - | - | - | <5 | ug/kg | TM17/PM8 |
| PCB 52 # | - | <5 | <5 | - | - | - | - | - | - | - | <5 | ug/kg | TM17/PM8 |
| PCB 101 # | - | <5 | <5 | - | - | - | - | - | - | - | <5 | ug/kg | TM17/PM8 |
| PCB 118 # | - | <5 | <5 | - | - | - | - | - | - | - | <5 | ug/kg | TM17/PM8 |
| PCB 138 # | - | <5 | <5 | - | - | - | - | - | - | - | <5 | ug/kg | TM17/PM8 |
| PCB 153 # | - | <5 | <5 | - | - | - | - | - | - | - | <5 | ug/kg | TM17/PM8 |
| PCB 180 # | - | <5 | <5 | - | - | - | - | - | - | - | <5 | ug/kg | TM17/PM8 |
| Total 7 PCBs # | - | <35 | <35 | - | - | - | - | - | - | - | <35 | ug/kg | TM17/PM8 |

Please see attached notes for all abbreviations and acronyms

**Client Name:** Ground Investigations Ireland
**Reference:** 8354-01-19
**Location:** Cornelscourt
**Contact:** Barry Sexton
**JE Job No.:** 19/1176

**Report : Solid**

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

| J E Sample No. | 205-207 | 208-210 | 211-213 | 214-216 | 217-219 | 220-222 | 223-225 | 226-228 | 229-231 | 232-234 | LOD/LOR | Units | Method No. |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| **Sample ID** | WS10 | WS10 | WS10 | WS11 | WS11 | WS11 | WS12 | WS12 | WS12 | WS13 | | | |
| **Depth** | 1.00-2.00 | 2.00-3.00 | 3.00-4.00 | 0.00-1.00 | 1.00-2.00 | 2.00-3.00 | 0.00-1.00 | 1.00-2.00 | 2.00-3.00 | 0.00-1.00 | | | |
| **COC No / misc** | | | | | | | | | | | | | |
| **Containers** | V J T | V J T | V J T | V J T | V J T | V J T | V J T | V J T | V J T | V J T | | | |
| **Sample Date** | 21/01/2019 | 21/01/2019 | 21/01/2019 | 21/01/2019 | 21/01/2019 | 21/01/2019 | 22/01/2019 | 22/01/2019 | 22/01/2019 | 22/01/2019 | | | |
| **Sample Type** | Soil | Soil | Soil | Soil | Soil | Soil | Soil | Soil | Soil | Soil | | | |
| **Batch Number** | 2 | 2 | 2 | 2 | 2 | 2 | 2 | 2 | 2 | 2 | | | |
| **Date of Receipt** | 24/01/2019 | 24/01/2019 | 24/01/2019 | 24/01/2019 | 24/01/2019 | 24/01/2019 | 24/01/2019 | 24/01/2019 | 24/01/2019 | 24/01/2019 | | | |
| Natural Moisture Content | 14.5 | 15.3 | 13.4 | 20.9 | 14.0 | 15.6 | 20.6 | 12.8 | 14.1 | 10.9 | <0.1 | % | PM4/PM0 |
| Moisture Content (% Wet Weight) | - | 13.3 | 11.8 | - | - | - | - | - | - | - | <0.1 | % | PM4/PM0 |
| Hexavalent Chromium # | - | <0.3 | <0.3 | - | - | - | - | - | - | - | <0.3 | mg/kg | TM38/PM20 |
| Chromium III | - | 50.8 | 51.2 | - | - | - | - | - | - | - | <0.5 | mg/kg | NONE/NONE |
| Total Organic Carbon # | - | 0.34 | 0.26 | - | - | - | - | - | - | - | <0.02 | % | TM21/PM24 |
| pH # | - | 8.18 | 8.19 | - | - | - | - | - | - | - | <0.01 | pH units | TM73/PM11 |
| Mass of raw test portion | - | 0.1062 | 0.1024 | - | - | - | - | - | - | - | | kg | NONE/PM17 |
| Mass of dried test portion | - | 0.09 | 0.09 | - | - | - | - | - | - | - | | kg | NONE/PM17 |

Please see attached notes for all abbreviations and acronyms

**Client Name:** Ground Investigations Ireland
**Reference:** 8354-01-19
**Location:** Cornelscourt
**Contact:** Barry Sexton
**JE Job No.:** 19/1176

**Report : Solid**

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

| J E Sample No. | 235-237 | 238-240 | | | | | | | | | LOD/LOR | Units | Method No. |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| **Sample ID** | WS13 | WS13 | | | | | | | | | | | |
| **Depth** | 1.00-2.00 | 2.00-3.00 | | | | | | | | | | | |
| **COC No / misc** | | | | | | | | | | | | | |
| **Containers** | V J T | V J T | | | | | | | | | | | |
| **Sample Date** | 22/01/2019 | 22/01/2019 | | | | | | | | | | | |
| **Sample Type** | Soil | Soil | | | | | | | | | | | |
| **Batch Number** | 2 | 2 | | | | | | | | | | | |
| **Date of Receipt** | 24/01/2019 | 24/01/2019 | | | | | | | | | | | |
| Antimony | - | - | | | | | | | | | <1 | mg/kg | TM30/PM15 |
| Arsenic # | - | - | | | | | | | | | <0.5 | mg/kg | TM30/PM15 |
| Barium # | - | - | | | | | | | | | <1 | mg/kg | TM30/PM15 |
| Cadmium # | - | - | | | | | | | | | <0.1 | mg/kg | TM30/PM15 |
| Chromium # | - | - | | | | | | | | | <0.5 | mg/kg | TM30/PM15 |
| Copper # | - | - | | | | | | | | | <1 | mg/kg | TM30/PM15 |
| Lead # | - | - | | | | | | | | | <5 | mg/kg | TM30/PM15 |
| Mercury # | - | - | | | | | | | | | <0.1 | mg/kg | TM30/PM15 |
| Molybdenum # | - | - | | | | | | | | | <0.1 | mg/kg | TM30/PM15 |
| Nickel # | - | - | | | | | | | | | <0.7 | mg/kg | TM30/PM15 |
| Selenium # | - | - | | | | | | | | | <1 | mg/kg | TM30/PM15 |
| Zinc # | - | - | | | | | | | | | <5 | mg/kg | TM30/PM15 |
| | | | | | | | | | | | | | |
| PAH MS | | | | | | | | | | | | | |
| Naphthalene # | - | - | | | | | | | | | <0.04 | mg/kg | TM4/PM8 |
| Acenaphthylene | - | - | | | | | | | | | <0.03 | mg/kg | TM4/PM8 |
| Acenaphthene # | - | - | | | | | | | | | <0.05 | mg/kg | TM4/PM8 |
| Fluorene # | - | - | | | | | | | | | <0.04 | mg/kg | TM4/PM8 |
| Phenanthrene # | - | - | | | | | | | | | <0.03 | mg/kg | TM4/PM8 |
| Anthracene # | - | - | | | | | | | | | <0.04 | mg/kg | TM4/PM8 |
| Fluoranthene # | - | - | | | | | | | | | <0.03 | mg/kg | TM4/PM8 |
| Pyrene # | - | - | | | | | | | | | <0.03 | mg/kg | TM4/PM8 |
| Benzo(a)anthracene # | - | - | | | | | | | | | <0.06 | mg/kg | TM4/PM8 |
| Chrysene # | - | - | | | | | | | | | <0.02 | mg/kg | TM4/PM8 |
| Benzo(bk)fluoranthene # | - | - | | | | | | | | | <0.07 | mg/kg | TM4/PM8 |
| Benzo(a)pyrene # | - | - | | | | | | | | | <0.04 | mg/kg | TM4/PM8 |
| Indeno(123cd)pyrene # | - | - | | | | | | | | | <0.04 | mg/kg | TM4/PM8 |
| Dibenzo(ah)anthracene # | - | - | | | | | | | | | <0.04 | mg/kg | TM4/PM8 |
| Benzo(ghi)perylene # | - | - | | | | | | | | | <0.04 | mg/kg | TM4/PM8 |
| Coronene | - | - | | | | | | | | | <0.04 | mg/kg | TM4/PM8 |
| PAH 6 Total # | - | - | | | | | | | | | <0.22 | mg/kg | TM4/PM8 |
| PAH 17 Total | - | - | | | | | | | | | <0.64 | mg/kg | TM4/PM8 |
| Benzo(b)fluoranthene | - | - | | | | | | | | | <0.05 | mg/kg | TM4/PM8 |
| Benzo(k)fluoranthene | - | - | | | | | | | | | <0.02 | mg/kg | TM4/PM8 |
| Benzo(j)fluoranthene | - | - | | | | | | | | | <1 | mg/kg | TM4/PM8 |
| PAH Surrogate % Recovery | - | - | | | | | | | | | <0 | % | TM4/PM8 |
| | | | | | | | | | | | | | |
| Mineral Oil (C10-C40) | - | - | | | | | | | | | <30 | mg/kg | TM5/PM8/PM16 |

Please see attached notes for all abbreviations and acronyms

**Client Name:** Ground Investigations Ireland
**Reference:** 8354-01-19
**Location:** Cornelscourt
**Contact:** Barry Sexton
**JE Job No.:** 19/1176

**Report : Solid**

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

| J E Sample No. | 235-237 | 238-240 | | | | | | | | | LOD/LOR | Units | Method No. |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Sample ID | WS13 | WS13 | | | | | | | | | | | |
| Depth | 1.00-2.00 | 2.00-3.00 | | | | | | | | | | | |
| COC No / misc | | | | | | | | | | | | | |
| Containers | V J T | V J T | | | | | | | | | | | |
| Sample Date | 22/01/2019 | 22/01/2019 | | | | | | | | | | | |
| Sample Type | Soil | Soil | | | | | | | | | | | |
| Batch Number | 2 | 2 | | | | | | | | | | | |
| Date of Receipt | 24/01/2019 | 24/01/2019 | | | | | | | | | | | |
| TPH CWG | | | | | | | | | | | | | |
| **Aliphatics** | | | | | | | | | | | | | |
| >C5-C6 # | <0.1 | <0.1 | | | | | | | | | <0.1 | mg/kg | TM36/PM12 |
| >C6-C8 # | <0.1 | <0.1 | | | | | | | | | <0.1 | mg/kg | TM36/PM12 |
| >C8-C10 | <0.1 | <0.1 | | | | | | | | | <0.1 | mg/kg | TM36/PM12 |
| >C10-C12 # | <0.2 | <0.2 | | | | | | | | | <0.2 | mg/kg | TM5/PM8/PM16 |
| >C12-C16 # | <4 | <4 | | | | | | | | | <4 | mg/kg | TM5/PM8/PM16 |
| >C16-C21 # | <7 | <7 | | | | | | | | | <7 | mg/kg | TM5/PM8/PM16 |
| >C21-C35 # | <7 | <7 | | | | | | | | | <7 | mg/kg | TM5/PM8/PM16 |
| >C35-C40 | <7 | <7 | | | | | | | | | <7 | mg/kg | TM5/PM8/PM16 |
| Total aliphatics C5-40 | <26 | <26 | | | | | | | | | <26 | mg/kg | TM5/TM36/PM8/PM12/PM16 |
| >C6-C10 | <0.1 | <0.1 | | | | | | | | | <0.1 | mg/kg | TM36/PM12 |
| >C10-C25 | <10 | <10 | | | | | | | | | <10 | mg/kg | TM5/PM8/PM16 |
| >C25-C35 | <10 | <10 | | | | | | | | | <10 | mg/kg | TM5/PM8/PM16 |
| **Aromatics** | | | | | | | | | | | | | |
| >C5-EC7 # | <0.1 | <0.1 | | | | | | | | | <0.1 | mg/kg | TM36/PM12 |
| >EC7-EC8 # | <0.1 | <0.1 | | | | | | | | | <0.1 | mg/kg | TM36/PM12 |
| >EC8-EC10 # | <0.1 | <0.1 | | | | | | | | | <0.1 | mg/kg | TM36/PM12 |
| >EC10-EC12 # | <0.2 | <0.2 | | | | | | | | | <0.2 | mg/kg | TM5/PM8/PM16 |
| >EC12-EC16 # | <4 | <4 | | | | | | | | | <4 | mg/kg | TM5/PM8/PM16 |
| >EC16-EC21 # | <7 | <7 | | | | | | | | | <7 | mg/kg | TM5/PM8/PM16 |
| >EC21-EC35 # | <7 | <7 | | | | | | | | | <7 | mg/kg | TM5/PM8/PM16 |
| >EC35-EC40 | <7 | <7 | | | | | | | | | <7 | mg/kg | TM5/PM8/PM16 |
| Total aromatics C5-40 | <26 | <26 | | | | | | | | | <26 | mg/kg | TM5/TM36/PM8/PM12/PM16 |
| Total aliphatics and aromatics(C5-40) | <52 | <52 | | | | | | | | | <52 | mg/kg | TM5/TM36/PM8/PM12/PM16 |
| >EC6-EC10 # | <0.1 | <0.1 | | | | | | | | | <0.1 | mg/kg | TM36/PM12 |
| >EC10-EC25 | <10 | <10 | | | | | | | | | <10 | mg/kg | TM5/PM8/PM16 |
| >EC25-EC35 | <10 | <10 | | | | | | | | | <10 | mg/kg | TM5/PM8/PM16 |
| | | | | | | | | | | | | | |
| MTBE # | <5 | <5 | | | | | | | | | <5 | ug/kg | TM31/PM12 |
| Benzene # | <5 | <5 | | | | | | | | | <5 | ug/kg | TM31/PM12 |
| Toluene # | <5 | <5 | | | | | | | | | <5 | ug/kg | TM31/PM12 |
| Ethylbenzene # | <5 | <5 | | | | | | | | | <5 | ug/kg | TM31/PM12 |
| m/p-Xylene # | <5 | <5 | | | | | | | | | <5 | ug/kg | TM31/PM12 |
| o-Xylene # | <5 | <5 | | | | | | | | | <5 | ug/kg | TM31/PM12 |
| | | | | | | | | | | | | | |
| PCB 28 # | - | - | | | | | | | | | <5 | ug/kg | TM17/PM8 |
| PCB 52 # | - | - | | | | | | | | | <5 | ug/kg | TM17/PM8 |
| PCB 101 # | - | - | | | | | | | | | <5 | ug/kg | TM17/PM8 |
| PCB 118 # | - | - | | | | | | | | | <5 | ug/kg | TM17/PM8 |
| PCB 138 # | - | - | | | | | | | | | <5 | ug/kg | TM17/PM8 |
| PCB 153 # | - | - | | | | | | | | | <5 | ug/kg | TM17/PM8 |
| PCB 180 # | - | - | | | | | | | | | <5 | ug/kg | TM17/PM8 |
| Total 7 PCBs # | - | - | | | | | | | | | <35 | ug/kg | TM17/PM8 |

Please see attached notes for all abbreviations and acronyms

**Client Name:** Ground Investigations Ireland
**Reference:** 8354-01-19
**Location:** Cornelscourt
**Contact:** Barry Sexton
**JE Job No.:** 19/1176

**Report : Solid**

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

| J E Sample No. | 235-237 | 238-240 | | | | | | | | | LOD/LOR | Units | Method No. |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| **Sample ID** | WS13 | WS13 | | | | | | | | | | | |
| **Depth** | 1.00-2.00 | 2.00-3.00 | | | | | | | | | | | |
| **COC No / misc** | | | | | | | | | | | | | |
| **Containers** | V J T | V J T | | | | | | | | | | | |
| **Sample Date** | 22/01/2019 | 22/01/2019 | | | | | | | | | | | |
| **Sample Type** | Soil | Soil | | | | | | | | | | | |
| **Batch Number** | 2 | 2 | | | | | | | | | | | |
| **Date of Receipt** | 24/01/2019 | 24/01/2019 | | | | | | | | | | | |
| Natural Moisture Content | 13.2 | 13.9 | | | | | | | | | <0.1 | % | PM4/PM0 |
| Moisture Content (% Wet Weight) | - | - | | | | | | | | | <0.1 | % | PM4/PM0 |
| Hexavalent Chromium # | - | - | | | | | | | | | <0.3 | mg/kg | TM38/PM20 |
| Chromium III | - | - | | | | | | | | | <0.5 | mg/kg | NONE/NONE |
| Total Organic Carbon # | - | - | | | | | | | | | <0.02 | % | TM21/PM24 |
| pH # | - | - | | | | | | | | | <0.01 | pH units | TM73/PM11 |
| Mass of raw test portion | - | - | | | | | | | | | | kg | NONE/PM17 |
| Mass of dried test portion | - | - | | | | | | | | | | kg | NONE/PM17 |

Please see attached notes for all abbreviations and acronyms

**Client Name:** Ground Investigations Ireland
**Reference:** 8354-01-19
**Location:** Cornelscourt
**Contact:** Barry Sexton
**JE Job No.:** 19/1176

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

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

| J E Sample No. | 145-147 | 148-150 | 151-153 | 175-177 | 178-180 | 181-183 | 187-189 | 190-192 | 208-210 | 211-213 | LOD/LOR | Units | Method No. |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Sample ID | WS04 | WS04 | WS04 | WS07 | WS07 | WS07 | WS08 | WS08 | WS10 | WS10 | | | |
| Depth | 1.00-2.00 | 2.00-3.00 | 3.00-4.00 | 1.00-2.00 | 2.00-3.00 | 3.00-4.00 | 1.00-2.00 | 2.00-3.00 | 2.00-3.00 | 3.00-4.00 | | | |
| COC No / misc | | | | | | | | | | | | | |
| Containers | V J T | V J T | V J T | V J T | V J T | V J T | V J T | V J T | V J T | V J T | | | |
| Sample Date | 21/01/2019 | 21/01/2019 | 21/01/2019 | 22/01/2019 | 22/01/2019 | 22/01/2019 | 22/01/2019 | 22/01/2019 | 21/01/2019 | 21/01/2019 | | | |
| Sample Type | Soil | Soil | Soil | Soil | Soil | Soil | Soil | Soil | Soil | Soil | | | |
| Batch Number | 2 | 2 | 2 | 2 | 2 | 2 | 2 | 2 | 2 | 2 | | | |
| Date of Receipt | 24/01/2019 | 24/01/2019 | 24/01/2019 | 24/01/2019 | 24/01/2019 | 24/01/2019 | 24/01/2019 | 24/01/2019 | 24/01/2019 | 24/01/2019 | | | |
| Dissolved Antimony # | <0.002 | <0.002 | <0.002 | <0.002 | <0.002 | <0.002 | <0.002 | <0.002 | <0.002 | 0.004 | <0.002 | mg/l | TM30/PM17 |
| Dissolved Antimony (A10) # | <0.02 | <0.02 | <0.02 | <0.02 | <0.02 | <0.02 | <0.02 | <0.02 | <0.02 | 0.04 | <0.02 | mg/kg | TM30/PM17 |
| Dissolved Arsenic # | <0.0025 | <0.0025 | 0.0042 | <0.0025 | 0.0029 | <0.0025 | <0.0025 | <0.0025 | <0.0025 | <0.0025 | <0.0025 | mg/l | TM30/PM17 |
| Dissolved Arsenic (A10) # | <0.025 | <0.025 | 0.042 | <0.025 | 0.029 | <0.025 | <0.025 | <0.025 | <0.025 | <0.025 | <0.025 | mg/kg | TM30/PM17 |
| Dissolved Barium # | 0.012 | 0.033 | <0.003 | 0.004 | 0.046 | 0.011 | <0.003 | 0.027 | 0.041 | 0.046 | <0.003 | mg/l | TM30/PM17 |
| Dissolved Barium (A10) # | 0.12 | 0.33 | <0.03 | 0.04 | 0.46 | 0.11 | <0.03 | 0.27 | 0.41 | 0.46 | <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 # | 0.008 | 0.012 | 0.002 | 0.008 | 0.013 | 0.011 | 0.008 | 0.017 | 0.013 | 0.013 | <0.002 | mg/l | TM30/PM17 |
| Dissolved Molybdenum (A10) # | 0.08 | 0.12 | <0.02 | 0.08 | 0.13 | 0.11 | 0.08 | 0.17 | 0.13 | 0.13 | <0.02 | mg/kg | TM30/PM17 |
| Dissolved Nickel # | 0.003 | <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) # | 0.03 | <0.02 | <0.02 | <0.02 | <0.02 | 0.02 | <0.02 | <0.02 | <0.02 | <0.02 | <0.02 | mg/kg | TM30/PM17 |
| Dissolved Selenium # | <0.003 | <0.003 | <0.003 | <0.003 | <0.003 | <0.003 | <0.003 | <0.003 | <0.003 | <0.003 | <0.003 | mg/l | TM30/PM17 |
| Dissolved Selenium (A10) # | <0.03 | <0.03 | <0.03 | <0.03 | <0.03 | <0.03 | <0.03 | <0.03 | <0.03 | <0.03 | <0.03 | mg/kg | TM30/PM17 |
| Dissolved Zinc # | <0.003 | <0.003 | <0.003 | <0.003 | <0.003 | <0.003 | <0.003 | <0.003 | <0.003 | <0.003 | <0.003 | mg/l | TM30/PM17 |
| Dissolved Zinc (A10) # | <0.03 | <0.03 | <0.03 | <0.03 | <0.03 | <0.03 | <0.03 | <0.03 | <0.03 | <0.03 | <0.03 | mg/kg | TM30/PM17 |
| Mercury Dissolved by CVAF # | <0.00001 | <0.00001 | <0.00001 | <0.00001 | <0.00001 | <0.00001 | <0.00001 | <0.00001 | <0.00001 | <0.00001 | <0.00001 | mg/l | TM61/PM0 |
| Mercury Dissolved by CVAF # | <0.0001 | <0.0001 | <0.0001 | <0.0001 | <0.0001 | <0.0001 | <0.0001 | <0.0001 | <0.0001 | <0.0001 | <0.0001 | mg/kg | TM61/PM0 |
| Phenol | <0.01 | <0.01 | <0.01 | <0.01 | <0.01 | <0.01 | <0.01 | <0.01 | <0.01 | <0.01 | <0.01 | mg/l | TM26/PM0 |
| Phenol | <0.1 | <0.1 | <0.1 | <0.1 | <0.1 | <0.1 | <0.1 | <0.1 | <0.1 | <0.1 | <0.1 | mg/kg | TM26/PM0 |
| Fluoride | <0.3 | <0.3 | <0.3 | <0.3 | <0.3 | <0.3 | <0.3 | <0.3 | <0.3 | <0.3 | <0.3 | mg/l | TM173/PM0 |
| Fluoride | <3 | <3 | <3 | <3 | <3 | <3 | <3 | <3 | <3 | <3 | <3 | mg/kg | TM173/PM0 |
| Sulphate as SO4 # | 1.3 | <0.5 | <0.5 | 1.8 | 1.0 | 1.0 | <0.5 | 3.7 | 7.8 | 4.1 | <0.5 | mg/l | TM38/PM0 |
| Sulphate as SO4 # | 13 | <5 | <5 | 18 | 10 | 10 | <5 | 37 | 78 | 41 | <5 | mg/kg | TM38/PM0 |
| Chloride # | 0.8 | 0.9 | 0.5 | <0.3 | 2.2 | 0.8 | <0.3 | 4.6 | 3.9 | 2.9 | <0.3 | mg/l | TM38/PM0 |
| Chloride # | 8 | 9 | 5 | <3 | 22 | 8 | <3 | 46 | 39 | 29 | <3 | mg/kg | TM38/PM0 |
| Dissolved Organic Carbon | 2 | <2 | <2 | <2 | 3 | <2 | <2 | <2 | <2 | <2 | <2 | mg/l | TM60/PM0 |
| Dissolved Organic Carbon | 20 | <20 | <20 | <20 | 30 | <20 | <20 | <20 | <20 | <20 | <20 | mg/kg | TM60/PM0 |
| pH | 8.04 | 8.28 | 8.32 | 8.05 | 8.23 | 8.23 | 7.96 | 8.22 | 8.24 | 8.23 | <0.01 | pH units | TM73/PM0 |
| Total Dissolved Solids # | 123 | 221 | 148 | 183 | 155 | 153 | 92 | 106 | 107 | 222 | <35 | mg/l | TM20/PM0 |
| Total Dissolved Solids # | 1230 | 2209 | 1479 | 1830 | 1550 | 1530 | 920 | 1060 | 1070 | 2221 | <350 | mg/kg | TM20/PM0 |

Please see attached notes for all abbreviations and acronyms

**Client Name:** Ground Investigations Ireland
**Reference:** 8354-01-19
**Location:** Cornelscourt
**Contact:** Barry Sexton
**JE Job No.:** 19/1176

**Report : EN12457_2**

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

Please see attached notes for all abbreviations and acronyms

| J E Sample No. | 145-147 | 148-150 | 151-153 | 175-177 | 178-180 | 181-183 | 187-189 | 190-192 | 208-210 | 211-213 | Inert | Stable Non-reactive | Hazardous | LOD LOR | Units | Method No. |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| **Sample ID** | WS04 | WS04 | WS04 | WS07 | WS07 | WS07 | WS08 | WS08 | WS10 | WS10 | | | | | | |
| **Depth** | 1.00-2.00 | 2.00-3.00 | 3.00-4.00 | 1.00-2.00 | 2.00-3.00 | 3.00-4.00 | 1.00-2.00 | 2.00-3.00 | 2.00-3.00 | 3.00-4.00 | | | | | | |
| **COC No / misc** | | | | | | | | | | | | | | | | |
| **Containers** | V J T | V J T | V J T | V J T | V J T | V J T | V J T | V J T | V J T | V J T | | | | | | |
| **Sample Date** | 21/01/2019 | 21/01/2019 | 21/01/2019 | 22/01/2019 | 22/01/2019 | 22/01/2019 | 22/01/2019 | 22/01/2019 | 21/01/2019 | 21/01/2019 | | | | | | |
| **Sample Type** | Soil | Soil | Soil | Soil | Soil | Soil | Soil | Soil | Soil | Soil | | | | | | |
| **Batch Number** | 2 | 2 | 2 | 2 | 2 | 2 | 2 | 2 | 2 | 2 | | | | | | |
| **Date of Receipt** | 24/01/2019 | 24/01/2019 | 24/01/2019 | 24/01/2019 | 24/01/2019 | 24/01/2019 | 24/01/2019 | 24/01/2019 | 24/01/2019 | 24/01/2019 | | | | | | |
| **Solid Waste Analysis** | | | | | | | | | | | | | | | | |
| Total Organic Carbon # | 0.34 | 0.26 | 0.14 | 0.38 | 0.26 | 0.19 | 0.25 | 0.29 | 0.34 | 0.26 | 3 | 5 | 6 | <0.02 | % | TM21/PM24 |
| Sum of BTEX | <0.025 | <0.025 | 0.034 | <0.025 | 0.541 | 0.337 | <0.025 | 0.258 | <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 | 673 | <30 | <30 | <30 | 143 | <30 | <30 | 447 | <30 | 100 | 500 | - | - | <30 | mg/kg | TM5/PM8/PM16 |
| PAH Sum of 6 # | <0.22 | <0.22 | <0.22 | <0.22 | <0.22 | <0.22 | <0.22 | <0.22 | <0.22 | <0.22 | - | - | - | <0.22 | mg/kg | TM4/PM8 |
| PAH Sum of 17 | <0.64 | <0.64 | <0.64 | <0.64 | <0.64 | <0.64 | <0.64 | <0.64 | <0.64 | <0.64 | 100 | - | - | <0.64 | mg/kg | TM4/PM8 |
| **CEN 10:1 Leachate** | | | | | | | | | | | | | | | | |
| Arsenic # | <0.025 | <0.025 | 0.042 | <0.025 | 0.029 | <0.025 | <0.025 | <0.025 | <0.025 | <0.025 | 0.5 | 2 | 25 | <0.025 | mg/kg | TM30/PM17 |
| Barium # | 0.12 | 0.33 | <0.03 | 0.04 | 0.46 | 0.11 | <0.03 | 0.27 | 0.41 | 0.46 | 20 | 100 | 300 | <0.03 | mg/kg | TM30/PM17 |
| Cadmium # | <0.005 | <0.005 | <0.005 | <0.005 | <0.005 | <0.005 | <0.005 | <0.005 | <0.005 | <0.005 | 0.04 | 1 | 5 | <0.005 | mg/kg | TM30/PM17 |
| Chromium # | <0.015 | <0.015 | <0.015 | <0.015 | <0.015 | <0.015 | <0.015 | <0.015 | <0.015 | <0.015 | 0.5 | 10 | 70 | <0.015 | mg/kg | TM30/PM17 |
| Copper # | <0.07 | <0.07 | <0.07 | <0.07 | <0.07 | <0.07 | <0.07 | <0.07 | <0.07 | <0.07 | 2 | 50 | 100 | <0.07 | mg/kg | TM30/PM17 |
| Mercury # | <0.0001 | <0.0001 | <0.0001 | <0.0001 | <0.0001 | <0.0001 | <0.0001 | <0.0001 | <0.0001 | <0.0001 | 0.01 | 0.2 | 2 | <0.0001 | mg/kg | TM61/PM0 |
| Molybdenum # | 0.08 | 0.12 | <0.02 | 0.08 | 0.13 | 0.11 | 0.08 | 0.17 | 0.13 | 0.13 | 0.5 | 10 | 30 | <0.02 | mg/kg | TM30/PM17 |
| Nickel # | 0.03 | <0.02 | <0.02 | <0.02 | <0.02 | 0.02 | <0.02 | <0.02 | <0.02 | <0.02 | 0.4 | 10 | 40 | <0.02 | mg/kg | TM30/PM17 |
| Lead # | <0.05 | <0.05 | <0.05 | <0.05 | <0.05 | <0.05 | <0.05 | <0.05 | <0.05 | <0.05 | 0.5 | 10 | 50 | <0.05 | mg/kg | TM30/PM17 |
| Antimony # | <0.02 | <0.02 | <0.02 | <0.02 | <0.02 | <0.02 | <0.02 | <0.02 | <0.02 | 0.04 | 0.06 | 0.7 | 5 | <0.02 | mg/kg | TM30/PM17 |
| Selenium # | <0.03 | <0.03 | <0.03 | <0.03 | <0.03 | <0.03 | <0.03 | <0.03 | <0.03 | <0.03 | 0.1 | 0.5 | 7 | <0.03 | mg/kg | TM30/PM17 |
| Zinc # | <0.03 | <0.03 | <0.03 | <0.03 | <0.03 | <0.03 | <0.03 | <0.03 | <0.03 | <0.03 | 4 | 50 | 200 | <0.03 | mg/kg | TM30/PM17 |
| Total Dissolved Solids # | 1230 | 2209 | 1479 | 1830 | 1550 | 1530 | 920 | 1060 | 1070 | 2221 | 4000 | 60000 | 100000 | <350 | mg/kg | TM20/PM0 |
| Dissolved Organic Carbon | 20 | <20 | <20 | <20 | 30 | <20 | <20 | <20 | <20 | <20 | 500 | 800 | 1000 | <20 | mg/kg | TM60/PM0 |
| Mass of raw test portion | 0.1029 | 0.1046 | 0.097 | 0.1046 | 0.1027 | 0.0988 | 0.1008 | 0.102 | 0.1062 | 0.1024 | - | - | - | | kg | NONE/PM17 |
| Dry Matter Content Ratio | 87.2 | 86.0 | 92.3 | 85.9 | 87.3 | 90.8 | 88.9 | 88.1 | 84.4 | 87.9 | - | - | - | <0.1 | % | NONE/PM4 |
| Leachant Volume | 0.887 | 0.885 | 0.892 | 0.885 | 0.887 | 0.891 | 0.889 | 0.888 | 0.883 | 0.888 | - | - | - | | l | NONE/PM17 |
| Eluate Volume | 0.6 | 0.63 | 0.8 | 0.62 | 0.61 | 0.75 | 0.81 | 0.65 | 0.59 | 0.58 | - | - | - | | l | NONE/PM17 |
| pH # | 8.57 | 8.61 | 9.20 | 8.69 | 7.69 | 8.44 | 8.66 | 8.23 | 8.18 | 8.19 | - | - | - | <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 | <3 | <3 | <3 | <3 | <3 | <3 | <3 | <3 | <3 | <3 | - | - | - | <3 | mg/kg | TM173/PM0 |
| Sulphate as SO4 # | 13 | <5 | <5 | 18 | 10 | 10 | <5 | 37 | 78 | 41 | 1000 | 20000 | 50000 | <5 | mg/kg | TM38/PM0 |
| Chloride # | 8 | 9 | 5 | <3 | 22 | 8 | <3 | 46 | 39 | 29 | 800 | 15000 | 25000 | <3 | mg/kg | TM38/PM0 |

**Client Name:** Ground Investigations Ireland **Matrix : Solid**
**Reference:** 8354-01-19
**Location:** Cornelscourt
**Contact:** Barry Sexton

| J E Job No. | Batch | Sample ID | Depth | J E Sample No. | EPH Interpretation |
|---|---|---|---|---|---|
| 19/1176 | 2 | WS01 | 0.00-1.00 | 115-117 | No interpretation possible |
| 19/1176 | 2 | WS01 | 1.00-2.00 | 118-120 | No interpretation possible |
| 19/1176 | 2 | WS01 | 2.00-3.00 | 121-123 | No interpretation possible |
| 19/1176 | 2 | WS02 | 0.00-1.00 | 124-126 | PAH's & Tarmac/Bitumen |
| 19/1176 | 2 | WS02 | 1.00-2.00 | 127-129 | No interpretation possible |
| 19/1176 | 2 | WS02 | 2.00-3.00 | 130-132 | No interpretation possible |
| 19/1176 | 2 | WS03 | 0.00-1.00 | 133-135 | No interpretation possible |
| 19/1176 | 2 | WS03 | 1.00-2.00 | 136-138 | No interpretation possible |
| 19/1176 | 2 | WS03 | 2.00-3.00 | 139-141 | No interpretation possible |
| 19/1176 | 2 | WS04 | 0.00-1.00 | 142-144 | No interpretation possible |
| 19/1176 | 2 | WS04 | 1.00-2.00 | 145-147 | Degraded diesel |
| 19/1176 | 2 | WS04 | 2.00-3.00 | 148-150 | No interpretation possible |
| 19/1176 | 2 | WS04 | 3.00-4.00 | 151-153 | No interpretation possible |
| 19/1176 | 2 | WS05 | 0.00-1.00 | 154-156 | No interpretation possible |
| 19/1176 | 2 | WS05 | 1.00-2.00 | 157-159 | No interpretation possible |
| 19/1176 | 2 | WS05 | 2.00-3.00 | 160-162 | No interpretation possible |
| 19/1176 | 2 | WS06 | 0.00-1.00 | 163-165 | No interpretation possible |
| 19/1176 | 2 | WS06 | 1.00-2.00 | 166-168 | No interpretation possible |
| 19/1176 | 2 | WS06 | 2.00-3.00 | 169-171 | Possible PAH's & Trace lubricating Oil |
| 19/1176 | 2 | WS07 | 0.00-1.00 | 172-174 | Possible PAH's & lubricating Oil |
| 19/1176 | 2 | WS07 | 1.00-2.00 | 175-177 | No interpretation possible |
| 19/1176 | 2 | WS07 | 2.00-3.00 | 178-180 | Possible Degraded diesel |
| 19/1176 | 2 | WS07 | 3.00-4.00 | 181-183 | No interpretation possible |
| 19/1176 | 2 | WS08 | 0.00-1.00 | 184-186 | No interpretation possible |
| 19/1176 | 2 | WS08 | 1.00-2.00 | 187-189 | No interpretation possible |
| 19/1176 | 2 | WS08 | 2.00-3.00 | 190-192 | Gasoline residues & Degraded diesel |
| 19/1176 | 2 | WS09 | 0.00-1.00 | 193-195 | No interpretation possible |
| 19/1176 | 2 | WS09 | 1.00-2.00 | 196-198 | No interpretation possible |
| 19/1176 | 2 | WS09 | 2.00-3.00 | 199-201 | No interpretation possible |
| 19/1176 | 2 | WS10 | 0.00-1.00 | 202-204 | No interpretation possible |
| 19/1176 | 2 | WS10 | 1.00-2.00 | 205-207 | No interpretation possible |
| 19/1176 | 2 | WS10 | 2.00-3.00 | 208-210 | No interpretation possible |

**Client Name:** Ground Investigations Ireland
**Reference:** 8354-01-19
**Location:** Cornelscourt
**Contact:** Barry Sexton

**Matrix : Solid**

| J E Job No. | Batch | Sample ID | Depth | J E Sample No. | EPH Interpretation |
|---|---|---|---|---|---|
| 19/1176 | 2 | WS10 | 3.00-4.00 | 211-213 | Possible Degraded diesel |
| 19/1176 | 2 | WS11 | 0.00-1.00 | 214-216 | No interpretation possible |
| 19/1176 | 2 | WS11 | 1.00-2.00 | 217-219 | Gasoline residues, PAH's & Degraded diesel |
| 19/1176 | 2 | WS11 | 2.00-3.00 | 220-222 | Gasoline residues, Possible PAH's & Degraded diesel |
| 19/1176 | 2 | WS12 | 0.00-1.00 | 223-225 | No interpretation possible |
| 19/1176 | 2 | WS12 | 1.00-2.00 | 226-228 | No interpretation possible |
| 19/1176 | 2 | WS12 | 2.00-3.00 | 229-231 | No interpretation possible |
| 19/1176 | 2 | WS13 | 0.00-1.00 | 232-234 | No interpretation possible |
| 19/1176 | 2 | WS13 | 1.00-2.00 | 235-237 | No interpretation possible |
| 19/1176 | 2 | WS13 | 2.00-3.00 | 238-240 | No interpretation possible |

**Client Name:** Ground Investigations Ireland
**Reference:** 19/01/8354
**Location:** Cornelscourt
**Contact:** Barry Sexton

**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 Jones Environmental Laboratory consultant, Jones Environmental Laboratory cannot be responsible for inaccurate or unrepresentative sampling.

Signed on behalf of Jones Environmental Laboratory:

Ryan Butterworth
Asbestos Team Leader

| J E Job No. | Batch | Sample ID | Depth | J E Sample No. | Date Of Analysis | Analysis | Result |
|---|---|---|---|---|---|---|---|
| 19/1176 | 2 | WS04 | 1.00-2.00 | 146 | 04/02/2019 | **General Description (Bulk Analysis)** | Soil/Stones |
| | | | | | 04/02/2019 | **Asbestos Fibres** | NAD |
| | | | | | 04/02/2019 | **Asbestos ACM** | NAD |
| | | | | | 04/02/2019 | **Asbestos Type** | NAD |
| | | | | | 04/02/2019 | **Asbestos Level Screen** | NAD |
| 19/1176 | 2 | WS04 | 2.00-3.00 | 149 | 04/02/2019 | **General Description (Bulk Analysis)** | Soil/Stones |
| | | | | | 04/02/2019 | **Asbestos Fibres** | NAD |
| | | | | | 04/02/2019 | **Asbestos ACM** | NAD |
| | | | | | 04/02/2019 | **Asbestos Type** | NAD |
| | | | | | 04/02/2019 | **Asbestos Level Screen** | NAD |
| 19/1176 | 2 | WS04 | 3.00-4.00 | 152 | 04/02/2019 | **General Description (Bulk Analysis)** | Soil/Stones |
| | | | | | 04/02/2019 | **Asbestos Fibres** | NAD |
| | | | | | 04/02/2019 | **Asbestos ACM** | NAD |
| | | | | | 04/02/2019 | **Asbestos Type** | NAD |
| | | | | | 04/02/2019 | **Asbestos Level Screen** | NAD |
| 19/1176 | 2 | WS07 | 1.00-2.00 | 176 | 04/02/2019 | **General Description (Bulk Analysis)** | soil.stones |
| | | | | | 04/02/2019 | **Asbestos Fibres** | NAD |
| | | | | | 04/02/2019 | **Asbestos ACM** | NAD |
| | | | | | 04/02/2019 | **Asbestos Type** | NAD |
| | | | | | 04/02/2019 | **Asbestos Level Screen** | NAD |
| 19/1176 | 2 | WS07 | 2.00-3.00 | 179 | 04/02/2019 | **General Description (Bulk Analysis)** | soil.stones |
| | | | | | 04/02/2019 | **Asbestos Fibres** | NAD |
| | | | | | 04/02/2019 | **Asbestos ACM** | NAD |
| | | | | | 04/02/2019 | **Asbestos Type** | NAD |
| | | | | | 04/02/2019 | **Asbestos Level Screen** | NAD |
| 19/1176 | 2 | WS07 | 3.00-4.00 | 182 | 04/02/2019 | **General Description (Bulk Analysis)** | soil.stones |
| | | | | | 04/02/2019 | **Asbestos Fibres** | NAD |
| | | | | | 04/02/2019 | **Asbestos ACM** | NAD |
| | | | | | 04/02/2019 | **Asbestos Type** | NAD |
| | | | | | 04/02/2019 | **Asbestos Level Screen** | NAD |
| 19/1176 | 2 | WS08 | 1.00-2.00 | 188 | 04/02/2019 | **General Description (Bulk Analysis)** | Soil/Stones |
| | | | | | 04/02/2019 | **Asbestos Fibres** | NAD |
| | | | | | 04/02/2019 | **Asbestos ACM** | NAD |

**Client Name:** Ground Investigations Ireland
**Reference:** 19/01/8354
**Location:** Cornelscourt
**Contact:** Barry Sexton

| J E Job No. | Batch | Sample ID | Depth | J E Sample No. | Date Of Analysis | Analysis | Result |
|---|---|---|---|---|---|---|---|
| 19/1176 | 2 | WS08 | 1.00-2.00 | 188 | 04/02/2019 | **Asbestos Type** | NAD |
| | | | | | 04/02/2019 | **Asbestos Level Screen** | NAD |
| 19/1176 | 2 | WS08 | 2.00-3.00 | 191 | 04/02/2019 | **General Description (Bulk Analysis)** | Soil/Stones |
| | | | | | 04/02/2019 | **Asbestos Fibres** | NAD |
| | | | | | 04/02/2019 | **Asbestos ACM** | NAD |
| | | | | | 04/02/2019 | **Asbestos Type** | NAD |
| | | | | | 04/02/2019 | **Asbestos Level Screen** | NAD |
| 19/1176 | 2 | WS10 | 2.00-3.00 | 209 | 04/02/2019 | **General Description (Bulk Analysis)** | Soil/Stones |
| | | | | | 04/02/2019 | **Asbestos Fibres** | NAD |
| | | | | | 04/02/2019 | **Asbestos ACM** | NAD |
| | | | | | 04/02/2019 | **Asbestos Type** | NAD |
| | | | | | 04/02/2019 | **Asbestos Level Screen** | NAD |
| 19/1176 | 2 | WS10 | 3.00-4.00 | 212 | 04/02/2019 | **General Description (Bulk Analysis)** | Soil/Stones |
| | | | | | 04/02/2019 | **Asbestos Fibres** | NAD |
| | | | | | 04/02/2019 | **Asbestos ACM** | NAD |
| | | | | | 04/02/2019 | **Asbestos Type** | NAD |
| | | | | | 04/02/2019 | **Asbestos Level Screen** | NAD |

**Client Name:** Ground Investigations Ireland
**Reference:** 8354-01-19
**Location:** Cornelscourt
**Contact:** Barry Sexton

| J E Job No. | Batch | Sample ID | Depth | J E Sample No. | Analysis | Reason |
|---|---|---|---|---|---|---|
| No deviating sample report results for job 19/1176 | | | | | | |

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

# NOTES TO ACCOMPANY ALL SCHEDULES AND REPORTS

***JE Job No.:*** 19/1176

**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. 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.

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

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

**WATERS**

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

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

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

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

**DEVIATING SAMPLES**

Samples must be received in a condition appropriate to the requested analyses. All samples should be submitted to the laboratory in suitable containers with sufficient ice packs to sustain an appropriate temperature for the requested analysis. If this is not the case you will be informed and any test results that may be compromised highlighted on your deviating samples report.

**SURROGATES**

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

**DILUTIONS**

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

**BLANKS**

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

**NOTE**

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

**REPORTS FROM THE SOUTH AFRICA LABORATORY**

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

**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. |
| ++ | Result outside calibration range, results should be considered as indicative only and are not accredited. |
| * | Analysis subcontracted to an Exova Jones Environmental 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 |

## Appendix - Methods used for WAC (2003/33/EC)

***JE Job No.:*** 19/1176

| | |
|---|---|
| **Leachate tests** | |
| 10l/kg; 4mm | I.S. EN 12457-2:2002 Specified particle size; water added to L/S ratio; capped; agitated for 24 ± 0.5 hours; eluate settled and filtered over 0.45 µm membrane filter. |
| **Eluate analysis** | |
| As | I.S. EN 12506 : EN ISO 11885 (ICP-OES) |
| Ba | I.S. EN 12506 : EN ISO 11885 (ICP-OES) |
| Cd | I.S. EN 12506 : EN ISO 11885 (ICP-OES) |
| Cr total | I.S. EN 12506 : EN ISO 11885 (ICP-OES) |
| Cu | I.S. EN 12506 : EN ISO 11885 (ICP-OES) |
| Hg | I.S. EN 13370 rec. EN 1483 (CVAAS) |
| Mo | I.S. EN 12506 : EN ISO 11885 (ICP-OES) |
| Ni | I.S. EN 12506 : EN ISO 11885 (ICP-OES) |
| Pb | I.S. EN 12506 : EN ISO 11885 (ICP-OES) |
| Sb | I.S. EN 12506 : EN ISO 11885 (ICP-OES) |
| Se | I.S. EN 12506 : EN ISO 11885 (ICP-OES) |
| Zn | I.S. EN 12506 : EN ISO 11885 (ICP-OES) |
| Chloride | I.S. EN 12506 rec. EN ISO 10304-part 1 (liquid chromatography of ions) |
| Fluoride | I.S. EN 12506 rec. EN ISO 10304-part 1 (liquid chromatography of ions) |
| Sulphate | I.S. EN 12506 rec. EN ISO 10304-part 1 (liquid chromatography of ions) |
| Phenol index | I.S. EN 13370 rec. ISO 6439 (4-Aminoantipyrine spectrometic methods after distillation)* ( BY HPLC - Jones Env) |
| DOC | I.S. EN 1484 |
| TDS | I.S. EN 15216 |
| **Compositional analysis** | |
| TOC | I.S. EN 13137 Method B: carbonates removed with acid; TOC by combustion. |
| BTEX | GC-FID |
| PCB7** | I.S. EN 15308 analysis by GC-ECD. |
| Mineral oil | I.S. EN 14039 C10 to C40 analysis by GC-FID. |
| PAH17*** | I.S. EN 15527 PAH17 analysis by GC-MS |
| Metals | I.S. EN 13657 - Aqua regia digestion: EN ISO 11885 ( ICP-OES) |
| | |
| **Other** | |
| Dry matter | I.S. EN 14346 sample is dried to a constant mass in an oven at 105 ± 3 °C; Method B Water content by direct Karl-Fischer-titration and either volumetric or coulometric detection. |
| LOI | I.S. EN 15169 Difference in mass after heating in a furnace up to 550 ± 25 °C. |
| ANC | CEN/TS 15364 Determined by amouns of acid or base needed to cover the pH range |

**Notes:**

*If not suitable due to LOD, precision, etc., any other suitable method can be used, e.g. AFS, ICP-MS
**PCB-28, PCB-52, PCB-101, PCB-118, PCB-138, PCB-153 and PCB-180

***Naphthalene, Acenaphthylene, Acenaphthene, Anthracene, Benzo(a)anthracene, Benzo(b)fluoranthene, Benzo(k)fluoranthene, Benzo(g,h,i)perylene, Benzo(a)pyrene, Chrysene, Coronene, Dibenzo(a,h)anthracene, Fluorene, Fluoranthene, Indeno(1,2,3-c,d)pyrene, Phenanthrene and Pyrene.

**JE Job No:** 19/1176

| Test Method No. | Description | Prep Method No. (if appropriate) | Description | ISO 17025 (UKAS/SANAS) | MCERTS (UK soils only) | Analysis done on As Received (AR) or Dried (AD) | Reported on dry weight basis |
|---|---|---|---|---|---|---|---|
| PM4 | Gravimetric measurement of Natural Moisture Content and % Moisture Content at either 35°C or 105°C. Calculation based on ISO 11465 and BS1377. | PM0 | No preparation is required. | | | AR | |
| TM4 | Modified USEPA 8270 method for the solvent extraction and determination of 16 PAHs by GC-MS. | PM8 | End over end extraction of solid samples for organic analysis. The solvent mix varies depending on analysis required. | | | AR | Yes |
| TM4 | Modified USEPA 8270 method for the solvent extraction and determination of 16 PAHs by GC-MS. | PM8 | End over end extraction of solid samples for organic analysis. The solvent mix varies depending on analysis required. | Yes | | AR | Yes |
| TM5 | Modified USEPA 8015B method for the determination of solvent Extractable Petroleum Hydrocarbons (EPH) with carbon banding within the range C8-C40 GC-FID. | PM16 | Fractionation into aliphatic and aromatic fractions using a Rapid Trace SPE. | | | AR | |
| TM5 | Modified USEPA 8015B method for the determination of solvent Extractable Petroleum Hydrocarbons (EPH) with carbon banding within the range C8-C40 GC-FID. | 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 USEPA 8015B method for the determination of solvent Extractable Petroleum Hydrocarbons (EPH) with carbon banding within the range C8-C40 GC-FID. | 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 |

**JE Job No:** 19/1176

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

**JE Job No:** 19/1176

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

# Exova Jones Environmental

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

| | |
|---|---|
| **Attention :** | Barry Sexton |
| **Date :** | 26th March, 2019 |
| **Your reference :** | 8354-01-19 |
| **Our reference :** | Test Report 19/4257 Batch 1 |
| **Location :** | Cornelscourt |
| **Date samples received :** | 14th March, 2019 |
| **Status :** | Final report |
| **Issue :** | 1 |

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

**Compiled By:**

**Lucas Halliwell**
**Project Co-ordinator**

**Client Name:** Ground Investigations Ireland
**Reference:** 8354-01-19
**Location:** Cornelscourt
**Contact:** Barry Sexton
**JE Job No.:** 19/4257

**Report : Liquid**

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

| J E Sample No. | 1-7 | 8-14 | 15-21 | 22-28 | | | | | | | LOD/LOR | Units | Method No. |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Sample ID | BH03 | BH07 | BH08 | BH11 | | | | | | | | | |
| Depth | 7.94 | 2.28 | 4.13 | 5.49 | | | | | | | | | |
| COC No / misc | | | | | | | | | | | | | |
| Containers | V H HN HCL P G | V H HN HCL P G | V H HN HCL P G | V H HN HCL P G | | | | | | | | | |
| Sample Date | 13/03/2019 | 13/03/2019 | 13/03/2019 | 13/03/2019 | | | | | | | | | |
| Sample Type | Ground Water | Ground Water | Ground Water | Ground Water | | | | | | | | | |
| Batch Number | 1 | 1 | 1 | 1 | | | | | | | | | |
| Date of Receipt | 14/03/2019 | 14/03/2019 | 14/03/2019 | 14/03/2019 | | | | | | | | | |
| Dissolved Arsenic # | 4.9 | 2.9 | 4.0 | 23.5 | | | | | | | <2.5 | ug/l | TM30/PM14 |
| Dissolved Boron | 32 | 38 | 49 | 38 | | | | | | | <12 | ug/l | TM30/PM14 |
| Dissolved Cadmium # | <0.5 | <0.5 | <0.5 | <0.5 | | | | | | | <0.5 | ug/l | TM30/PM14 |
| Total Dissolved Chromium # | <1.5 | <1.5 | <1.5 | <1.5 | | | | | | | <1.5 | ug/l | TM30/PM14 |
| Dissolved Copper # | <7 | 13 | <7 | <7 | | | | | | | <7 | ug/l | TM30/PM14 |
| Dissolved Lead # | <5 | <5 | <5 | <5 | | | | | | | <5 | ug/l | TM30/PM14 |
| Dissolved Manganese # | 571 | 480 | 194 | 599 | | | | | | | <2 | ug/l | TM30/PM14 |
| Dissolved Mercury # | <1 | <1 | <1 | <1 | | | | | | | <1 | ug/l | TM30/PM14 |
| Dissolved Nickel # | 3 | 59 | 16 | 8 | | | | | | | <2 | ug/l | TM30/PM14 |
| Dissolved Phosphorus # | 11 | <5 | <5 | <5 | | | | | | | <5 | ug/l | TM30/PM14 |
| Dissolved Potassium # | 5.6 | 7.5 | 11.6 | 8.8 | | | | | | | <0.1 | mg/l | TM30/PM14 |
| Dissolved Selenium # | <3 | <3 | <3 | <3 | | | | | | | <3 | ug/l | TM30/PM14 |
| Dissolved Zinc # | <3 | 3 | <3 | <3 | | | | | | | <3 | ug/l | TM30/PM14 |
| | | | | | | | | | | | | | |
| PAH MS | | | | | | | | | | | | | |
| Naphthalene # | <0.1 | <0.1 | <0.1 | <0.1 | | | | | | | <0.1 | ug/l | TM4/PM30 |
| Acenaphthylene # | <0.013 | <0.013 | <0.013 | <0.013 | | | | | | | <0.013 | ug/l | TM4/PM30 |
| Acenaphthene # | <0.013 | <0.013 | <0.013 | <0.013 | | | | | | | <0.013 | ug/l | TM4/PM30 |
| Fluorene # | <0.014 | <0.014 | <0.014 | <0.014 | | | | | | | <0.014 | ug/l | TM4/PM30 |
| Phenanthrene # | <0.011 | <0.011 | <0.011 | <0.011 | | | | | | | <0.011 | ug/l | TM4/PM30 |
| Anthracene # | <0.013 | <0.013 | <0.013 | <0.013 | | | | | | | <0.013 | ug/l | TM4/PM30 |
| Fluoranthene # | <0.012 | <0.012 | <0.012 | <0.012 | | | | | | | <0.012 | ug/l | TM4/PM30 |
| Pyrene # | <0.013 | <0.013 | <0.013 | <0.013 | | | | | | | <0.013 | ug/l | TM4/PM30 |
| Benzo(a)anthracene # | <0.015 | <0.015 | <0.015 | <0.015 | | | | | | | <0.015 | ug/l | TM4/PM30 |
| Chrysene # | <0.011 | <0.011 | <0.011 | <0.011 | | | | | | | <0.011 | ug/l | TM4/PM30 |
| Benzo(bk)fluoranthene # | <0.018 | <0.018 | <0.018 | <0.018 | | | | | | | <0.018 | ug/l | TM4/PM30 |
| Benzo(a)pyrene # | <0.016 | <0.016 | <0.016 | <0.016 | | | | | | | <0.016 | ug/l | TM4/PM30 |
| Indeno(123cd)pyrene # | <0.011 | <0.011 | <0.011 | <0.011 | | | | | | | <0.011 | ug/l | TM4/PM30 |
| Dibenzo(ah)anthracene # | <0.01 | <0.01 | <0.01 | <0.01 | | | | | | | <0.01 | ug/l | TM4/PM30 |
| Benzo(ghi)perylene # | <0.011 | <0.011 | <0.011 | <0.011 | | | | | | | <0.011 | ug/l | TM4/PM30 |
| PAH 16 Total # | <0.195 | <0.195 | <0.195 | <0.195 | | | | | | | <0.195 | ug/l | TM4/PM30 |
| Benzo(b)fluoranthene | <0.01 | <0.01 | <0.01 | <0.01 | | | | | | | <0.01 | ug/l | TM4/PM30 |
| Benzo(k)fluoranthene | <0.01 | <0.01 | <0.01 | <0.01 | | | | | | | <0.01 | ug/l | TM4/PM30 |
| PAH Surrogate % Recovery | 79 | 73 | 78 | 71 | | | | | | | <0 | % | TM4/PM30 |

Please see attached notes for all abbreviations and acronyms

**Client Name:** Ground Investigations Ireland
**Reference:** 8354-01-19
**Location:** Cornelscourt
**Contact:** Barry Sexton
**JE Job No.:** 19/4257

**Report : Liquid**

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

| J E Sample No. | 1-7 | 8-14 | 15-21 | 22-28 | | | | | | | LOD/LOR | Units | Method No. |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Sample ID | BH03 | BH07 | BH08 | BH11 | | | | | | | | | |
| Depth | 7.94 | 2.28 | 4.13 | 5.49 | | | | | | | | | |
| COC No / misc | | | | | | | | | | | | | |
| Containers | V H HN HCL P G | V H HN HCL P G | V H HN HCL P G | V H HN HCL P G | | | | | | | | | |
| Sample Date | 13/03/2019 | 13/03/2019 | 13/03/2019 | 13/03/2019 | | | | | | | | | |
| Sample Type | Ground Water | Ground Water | Ground Water | Ground Water | | | | | | | | | |
| Batch Number | 1 | 1 | 1 | 1 | | | | | | | | | |
| Date of Receipt | 14/03/2019 | 14/03/2019 | 14/03/2019 | 14/03/2019 | | | | | | | | | |
| TPH CWG | | | | | | | | | | | | | |
| **Aliphatics** | | | | | | | | | | | | | |
| >C5-C6 # | <10 | <10 | <10 | 35 | | | | | | | <10 | ug/l | TM36/PM12 |
| >C6-C8 # | <10 | <10 | <10 | 63 | | | | | | | <10 | ug/l | TM36/PM12 |
| >C8-C10 # | <10 | <10 | <10 | 16 | | | | | | | <10 | ug/l | TM36/PM12 |
| >C10-C12 # | <5 | <5 | <5 | <5 | | | | | | | <5 | ug/l | TM5/PM16/PM30 |
| >C12-C16 # | <10 | <10 | <10 | <10 | | | | | | | <10 | ug/l | TM5/PM16/PM30 |
| >C16-C21 # | <10 | <10 | <10 | <10 | | | | | | | <10 | ug/l | TM5/PM16/PM30 |
| >C21-C35 # | <10 | <10 | <10 | <10 | | | | | | | <10 | ug/l | TM5/PM16/PM30 |
| Total aliphatics C5-35 # | <10 | <10 | <10 | 114 | | | | | | | <10 | ug/l | TM5/TM36/PM12/PM16/PM30 |
| **Aromatics** | | | | | | | | | | | | | |
| >C5-EC7 # | <10 | <10 | <10 | <10 | | | | | | | <10 | ug/l | TM36/PM12 |
| >EC7-EC8 # | <10 | <10 | <10 | <10 | | | | | | | <10 | ug/l | TM36/PM12 |
| >EC8-EC10 # | <10 | <10 | <10 | <10 | | | | | | | <10 | ug/l | TM36/PM12 |
| >EC10-EC12 # | <5 | <5 | <5 | <5 | | | | | | | <5 | ug/l | TM5/PM16/PM30 |
| >EC12-EC16 # | <10 | <10 | <10 | <10 | | | | | | | <10 | ug/l | TM5/PM16/PM30 |
| >EC16-EC21 # | <10 | <10 | <10 | <10 | | | | | | | <10 | ug/l | TM5/PM16/PM30 |
| >EC21-EC35 # | <10 | <10 | <10 | <10 | | | | | | | <10 | ug/l | TM5/PM16/PM30 |
| Total aromatics C5-35 # | <10 | <10 | <10 | <10 | | | | | | | <10 | ug/l | TM5/TM36/PM12/PM16/PM30 |
| Total aliphatics and aromatics(C5-35) # | <10 | <10 | <10 | 114 | | | | | | | <10 | ug/l | TM5/TM36/PM12/PM16/PM30 |
| MTBE # | <5 | <5 | <5 | 25 | | | | | | | <5 | ug/l | TM31/PM12 |
| Benzene # | <5 | <5 | <5 | <5 | | | | | | | <5 | ug/l | TM31/PM12 |
| Toluene # | <5 | <5 | <5 | <5 | | | | | | | <5 | ug/l | TM31/PM12 |
| Ethylbenzene # | <5 | <5 | <5 | <5 | | | | | | | <5 | ug/l | TM31/PM12 |
| m/p-Xylene # | <5 | <5 | <5 | <5 | | | | | | | <5 | ug/l | TM31/PM12 |
| o-Xylene # | <5 | <5 | <5 | <5 | | | | | | | <5 | ug/l | TM31/PM12 |
| Phenol # | <0.01 | <0.01 | <0.01 | <0.01 | | | | | | | <0.01 | mg/l | TM26/PM0 |
| Sulphate as SO4 # | 24.9 | 38.1 | 14.3 | 17.2 | | | | | | | <0.5 | mg/l | TM38/PM0 |
| Chloride # | 20.0 | 37.2 | 23.7 | 17.9 | | | | | | | <0.3 | mg/l | TM38/PM0 |
| Nitrate as NO3 # | <0.2 | 5.4 | 5.6 | 2.2 | | | | | | | <0.2 | mg/l | TM38/PM0 |
| Nitrite as NO2 # | 0.15 | 1.03 | <0.02 | 0.08 | | | | | | | <0.02 | mg/l | TM38/PM0 |
| Total Cyanide # | <0.01 | <0.01 | <0.01 | <0.01 | | | | | | | <0.01 | mg/l | TM89/PM0 |
| Ammoniacal Nitrogen as NH3 # | 0.37 | 0.42 | 0.06 | 0.11 | | | | | | | <0.03 | mg/l | TM38/PM0 |
| Hexavalent Chromium | <0.006 | <0.006 | <0.006 | <0.006 | | | | | | | <0.006 | mg/l | TM38/PM0 |
| Electrical Conductivity @25C # | 292 | 694 | 641 | 399 | | | | | | | <2 | uS/cm | TM76/PM0 |
| pH # | 8.44 | 7.54 | 7.59 | 7.85 | | | | | | | <0.01 | pH units | TM73/PM0 |

Please see attached notes for all abbreviations and acronyms

**Client Name:** Ground Investigations Ireland
**Reference:** 8354-01-19
**Location:** Cornelscourt
**Contact:** Barry Sexton

| J E Job No. | Batch | Sample ID | Depth | J E Sample No. | Analysis | Reason |
|---|---|---|---|---|---|---|
| No deviating sample report results for job 19/4257 | | | | | | |

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

# NOTES TO ACCOMPANY ALL SCHEDULES AND REPORTS

***JE Job No.:*** 19/4257

**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. 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.

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

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

**WATERS**

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

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

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

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

**DEVIATING SAMPLES**

Samples must be received in a condition appropriate to the requested analyses. All samples should be submitted to the laboratory in suitable containers with sufficient ice packs to sustain an appropriate temperature for the requested analysis. If this is not the case you will be informed and any test results that may be compromised highlighted on your deviating samples report.

**SURROGATES**

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

**DILUTIONS**

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

**BLANKS**

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

**NOTE**

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

**REPORTS FROM THE SOUTH AFRICA LABORATORY**

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

**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. |
| ++ | Result outside calibration range, results should be considered as indicative only and are not accredited. |
| * | Analysis subcontracted to an Exova Jones Environmental 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 |

**JE Job No:** 19/4257

| Test Method No. | Description | Prep Method No. (if appropriate) | Description | ISO 17025 (UKAS/SANAS) | MCERTS (UK soils only) | Analysis done on As Received (AR) or Dried (AD) | Reported on dry weight basis |
|---|---|---|---|---|---|---|---|
| TM4 | Modified USEPA 8270 method for the solvent extraction and determination of 16 PAHs by GC-MS. | PM30 | Water samples are extracted with solvent using a magnetic stirrer to create a vortex. | | | | |
| TM4 | Modified USEPA 8270 method for the solvent extraction and determination of 16 PAHs by GC-MS. | PM30 | Water samples are extracted with solvent using a magnetic stirrer to create a vortex. | Yes | | | |
| TM5 | Modified USEPA 8015B method for the determination of solvent Extractable Petroleum Hydrocarbons (EPH) with carbon banding within the range C8-C40 GC-FID. | PM16/PM30 | Fractionation into aliphatic and aromatic fractions using a Rapid Trace SPE/Water samples are extracted with solvent using a magnetic stirrer to create a vortex. | Yes | | | |
| TM5/TM36 | please refer to TM5 and TM36 for method details | PM12/PM16/PM30 | please refer to PM16/PM30 and PM12 for method details | Yes | | | |
| TM26 | Determination of phenols by Reversed Phased High Performance Liquid Chromatography and Electro-Chemical Detection. | PM0 | No preparation is required. | 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 | PM14 | Analysis of waters and leachates for metals by ICP OES/ICP MS. Samples are filtered for dissolved metals and acidified if required. | | | | |
| 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 | PM14 | Analysis of waters and leachates for metals by ICP OES/ICP MS. Samples are filtered for dissolved metals and acidified if required. | Yes | | | |
| TM31 | Modified USEPA 8015B. Determination of Methyltertbutylether, Benzene, Toluene, Ethylbenzene and Xylene by headspace GC-FID. | PM12 | Modified US EPA method 5021. Preparation of solid and liquid samples for GC headspace analysis. | Yes | | | |
| 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 | | | |
| 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. | | | | |

**JE Job No:** 19/4257

| Test Method No. | Description | Prep Method No. (if appropriate) | Description | ISO 17025 (UKAS/SANAS) | MCERTS (UK soils only) | Analysis done on As Received (AR) or Dried (AD) | Reported on dry weight basis |
|---|---|---|---|---|---|---|---|
| TM38 | Soluble Ion analysis using Discrete Analyser. Modified US EPA methods 325.2 (Chloride), 375.4 (Sulphate), 365.2 (o-Phosphate), 353.1 (TON), 354.1 (Nitrite), 350.1 (NH4+) comparable to BS ISO 15923-1, 7196A (Hex Cr) | PM0 | No preparation is required. | Yes | | | |
| 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. | Yes | | | |
| TM76 | Modified US EPA method 120.1. Determination of Specific Conductance by Metrohm automated probe analyser. | PM0 | No preparation is required. | Yes | | | |
| TM89 | Modified USEPA method OIA-1667. Determination of cyanide by Flow Injection Analyser. Where WAD cyanides are required a Ligand displacement step is carried out before analysis. | PM0 | No preparation is required. | Yes | | | |
| | | | | | | | |
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# Exova Jones Environmental

Registered Office: Exova Environmental UK Limited, 10 Lower Grosvenor Place, London, SW1W 0EN. Reg No. 11371415

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

| | |
|---|---|
| **Attention :** | Barry Sexton |
| **Date :** | 15th February, 2019 |
| **Your reference :** | 8354-01-19 |
| **Our reference :** | Test Report 19/1246 Batch 1 |
| **Location :** | Cornelscourt |
| **Date samples received :** | 25th January, 2019 |
| **Status :** | Final report |
| **Issue :** | 1 |

Eighteen samples were received for analysis on 25th January, 2019 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.

Where Waste Acceptance Criteria Suite (EC Decision of 19 December 2002 (2003/33/EC)) has been requested, all analyses have been performed using the relevant EN methods where they exist.

**Compiled By:**

**Lucas Halliwell**
**Project Co-ordinator**

**Client Name:** Ground Investigations Ireland
**Reference:** 8354-01-19
**Location:** Cornelscourt
**Contact:** Barry Sexton
**JE Job No.:** 19/1246

**Report : Solid**

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

| J E Sample No. | 1-3 | 4-6 | 7-9 | 10-12 | 13-15 | 16-18 | 19-21 | 22-24 | 25-27 | 28-30 | LOD/LOR | Units | Method No. |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Sample ID | TP - 11 | TP - 11 | TP - 11 | TP - 12 | TP - 12 | TP - 12 | TP - 13 | TP - 13 | TP - 13 | TP - 16 | | | |
| Depth | 1.00 | 2.00 | 3.00 | 0.50 | 1.50 | 2.50 | 0.50 | 1.50 | 2.50 | 0.50 | | | |
| COC No / misc | | | | | | | | | | | | | |
| Containers | V J T | V J T | V J T | V J T | V J T | V J T | V J T | V J T | V J T | V J T | | | |
| Sample Date | 23/01/2019 | 23/01/2019 | 23/01/2019 | 23/01/2019 | 23/01/2019 | 23/01/2019 | 23/01/2019 | 23/01/2019 | 23/01/2019 | 23/01/2019 | | | |
| Sample Type | Soil | Soil | Soil | Soil | Soil | Soil | Soil | Soil | Soil | Soil | | | |
| Batch Number | 1 | 1 | 1 | 1 | 1 | 1 | 1 | 1 | 1 | 1 | | | |
| Date of Receipt | 25/01/2019 | 25/01/2019 | 25/01/2019 | 25/01/2019 | 25/01/2019 | 25/01/2019 | 25/01/2019 | 25/01/2019 | 25/01/2019 | 25/01/2019 | | | |
| Antimony | <1 | 2 | 1 | 2 | 2 | 2 | 2 | 3 | 2 | 1 | <1 | mg/kg | TM30/PM15 |
| Arsenic # | 8.0 | 9.8 | 8.8 | 13.2 | 10.1 | 10.8 | 8.6 | 20.8 | 10.7 | 7.3 | <0.5 | mg/kg | TM30/PM15 |
| Barium # | 52 | 73 | 60 | 91 | 69 | 61 | 154 | 63 | 92 | 132 | <1 | mg/kg | TM30/PM15 |
| Cadmium # | 2.1 | 2.0 | 1.6 | 2.2 | 1.8 | 1.2 | 2.1 | 3.0 | 2.3 | 1.1 | <0.1 | mg/kg | TM30/PM15 |
| Chromium # | 40.4 | 37.1 | 47.8 | 69.0 | 41.8 | 65.3 | 66.2 | 45.3 | 46.8 | 88.6 | <0.5 | mg/kg | TM30/PM15 |
| Copper # | 18 | 33 | 28 | 34 | 28 | 14 | 40 | 38 | 33 | 31 | <1 | mg/kg | TM30/PM15 |
| Lead # | 12 | 16 | 15 | 31 | 16 | 15 | 28 | 20 | 21 | 18 | <5 | mg/kg | TM30/PM15 |
| Mercury # | <0.1 | <0.1 | <0.1 | <0.1 | <0.1 | <0.1 | <0.1 | <0.1 | <0.1 | <0.1 | <0.1 | mg/kg | TM30/PM15 |
| Molybdenum # | 3.6 | 3.9 | 4.1 | 5.4 | 3.8 | 3.7 | 3.2 | 4.3 | 4.5 | 2.3 | <0.1 | mg/kg | TM30/PM15 |
| Nickel # | 25.0 | 40.5 | 34.4 | 45.0 | 33.8 | 46.8 | 49.6 | 50.4 | 41.9 | 25.6 | <0.7 | mg/kg | TM30/PM15 |
| Selenium # | <1 | 1 | 1 | 1 | 1 | 1 | 1 | 2 | 2 | <1 | <1 | mg/kg | TM30/PM15 |
| Zinc # | 77 | 92 | 76 | 110 | 83 | 75 | 107 | 190 | 100 | 67 | <5 | mg/kg | TM30/PM15 |
| | | | | | | | | | | | | | |
| PAH MS | | | | | | | | | | | | | |
| Naphthalene # | <0.04 | <0.04 | <0.04 | <0.04 | <0.04 | <0.04 | <0.04 | <0.04 | <0.04 | <0.04 | <0.04 | mg/kg | TM4/PM8 |
| Acenaphthylene | <0.03 | <0.03 | <0.03 | <0.03 | <0.03 | <0.03 | <0.03 | <0.03 | <0.03 | <0.03 | <0.03 | mg/kg | TM4/PM8 |
| Acenaphthene # | <0.05 | <0.05 | <0.05 | <0.05 | <0.05 | <0.05 | <0.05 | <0.05 | <0.05 | <0.05 | <0.05 | mg/kg | TM4/PM8 |
| Fluorene # | <0.04 | <0.04 | <0.04 | <0.04 | <0.04 | <0.04 | <0.04 | <0.04 | <0.04 | <0.04 | <0.04 | mg/kg | TM4/PM8 |
| Phenanthrene # | <0.03 | <0.03 | <0.03 | <0.03 | <0.03 | <0.03 | <0.03 | <0.03 | <0.03 | <0.03 | <0.03 | mg/kg | TM4/PM8 |
| Anthracene # | <0.04 | <0.04 | <0.04 | <0.04 | <0.04 | <0.04 | <0.04 | <0.04 | <0.04 | <0.04 | <0.04 | mg/kg | TM4/PM8 |
| Fluoranthene # | <0.03 | <0.03 | <0.03 | <0.03 | <0.03 | <0.03 | <0.03 | <0.03 | <0.03 | <0.03 | <0.03 | mg/kg | TM4/PM8 |
| Pyrene # | <0.03 | <0.03 | <0.03 | <0.03 | <0.03 | <0.03 | <0.03 | <0.03 | <0.03 | <0.03 | <0.03 | mg/kg | TM4/PM8 |
| Benzo(a)anthracene # | <0.06 | <0.06 | <0.06 | <0.06 | <0.06 | <0.06 | <0.06 | <0.06 | <0.06 | <0.06 | <0.06 | mg/kg | TM4/PM8 |
| Chrysene # | <0.02 | <0.02 | <0.02 | <0.02 | <0.02 | <0.02 | <0.02 | <0.02 | <0.02 | <0.02 | <0.02 | mg/kg | TM4/PM8 |
| Benzo(bk)fluoranthene # | <0.07 | <0.07 | <0.07 | <0.07 | <0.07 | <0.07 | <0.07 | <0.07 | <0.07 | <0.07 | <0.07 | mg/kg | TM4/PM8 |
| Benzo(a)pyrene # | <0.04 | <0.04 | <0.04 | <0.04 | <0.04 | <0.04 | <0.04 | <0.04 | <0.04 | <0.04 | <0.04 | mg/kg | TM4/PM8 |
| Indeno(123cd)pyrene # | <0.04 | <0.04 | <0.04 | <0.04 | <0.04 | <0.04 | <0.04 | <0.04 | <0.04 | <0.04 | <0.04 | mg/kg | TM4/PM8 |
| Dibenzo(ah)anthracene # | <0.04 | <0.04 | <0.04 | <0.04 | <0.04 | <0.04 | <0.04 | <0.04 | <0.04 | <0.04 | <0.04 | mg/kg | TM4/PM8 |
| Benzo(ghi)perylene # | <0.04 | <0.04 | <0.04 | <0.04 | <0.04 | <0.04 | <0.04 | <0.04 | <0.04 | <0.04 | <0.04 | mg/kg | TM4/PM8 |
| Coronene | <0.04 | <0.04 | <0.04 | <0.04 | <0.04 | <0.04 | <0.04 | <0.04 | <0.04 | <0.04 | <0.04 | mg/kg | TM4/PM8 |
| PAH 6 Total # | <0.22 | <0.22 | <0.22 | <0.22 | <0.22 | <0.22 | <0.22 | <0.22 | <0.22 | <0.22 | <0.22 | mg/kg | TM4/PM8 |
| PAH 17 Total | <0.64 | <0.64 | <0.64 | <0.64 | <0.64 | <0.64 | <0.64 | <0.64 | <0.64 | <0.64 | <0.64 | mg/kg | TM4/PM8 |
| Benzo(b)fluoranthene | <0.05 | <0.05 | <0.05 | <0.05 | <0.05 | <0.05 | <0.05 | <0.05 | <0.05 | <0.05 | <0.05 | mg/kg | TM4/PM8 |
| Benzo(k)fluoranthene | <0.02 | <0.02 | <0.02 | <0.02 | <0.02 | <0.02 | <0.02 | <0.02 | <0.02 | <0.02 | <0.02 | mg/kg | TM4/PM8 |
| Benzo(j)fluoranthene | <1 | <1 | <1 | <1 | <1 | <1 | <1 | <1 | <1 | <1 | <1 | mg/kg | TM4/PM8 |
| PAH Surrogate % Recovery | 99 | 83 | 90 | 95 | 85 | 89 | 107 | 90 | 95 | 101 | <0 | % | TM4/PM8 |
| | | | | | | | | | | | | | |
| Mineral Oil (C10-C40) | <30 | <30 | <30 | <30 | <30 | <30 | <30 | <30 | <30 | <30 | <30 | mg/kg | TM5/PM8/PM16 |

Please see attached notes for all abbreviations and acronyms

**Client Name:** Ground Investigations Ireland
**Reference:** 8354-01-19
**Location:** Cornelscourt
**Contact:** Barry Sexton
**JE Job No.:** 19/1246

**Report : Solid**

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

| J E Sample No. | 1-3 | 4-6 | 7-9 | 10-12 | 13-15 | 16-18 | 19-21 | 22-24 | 25-27 | 28-30 | LOD/LOR | Units | Method No. |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Sample ID | TP - 11 | TP - 11 | TP - 11 | TP - 12 | TP - 12 | TP - 12 | TP - 13 | TP - 13 | TP - 13 | TP - 16 | | | |
| Depth | 1.00 | 2.00 | 3.00 | 0.50 | 1.50 | 2.50 | 0.50 | 1.50 | 2.50 | 0.50 | | | |
| COC No / misc | | | | | | | | | | | | | |
| Containers | V J T | V J T | V J T | V J T | V J T | V J T | V J T | V J T | V J T | V J T | | | |
| Sample Date | 23/01/2019 | 23/01/2019 | 23/01/2019 | 23/01/2019 | 23/01/2019 | 23/01/2019 | 23/01/2019 | 23/01/2019 | 23/01/2019 | 23/01/2019 | | | |
| Sample Type | Soil | Soil | Soil | Soil | Soil | Soil | Soil | Soil | Soil | Soil | | | |
| Batch Number | 1 | 1 | 1 | 1 | 1 | 1 | 1 | 1 | 1 | 1 | | | |
| Date of Receipt | 25/01/2019 | 25/01/2019 | 25/01/2019 | 25/01/2019 | 25/01/2019 | 25/01/2019 | 25/01/2019 | 25/01/2019 | 25/01/2019 | 25/01/2019 | | | |
| TPH CWG | | | | | | | | | | | | | |
| **Aliphatics** | | | | | | | | | | | | | |
| >C5-C6 # | <0.1 | <0.1 | <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 | <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 | <0.1 | <0.1 | mg/kg | TM36/PM12 |
| >C10-C12 # | <0.2 | <0.2 | <0.2 | <0.2 | <0.2 | <0.2 | <0.2 | <0.2 | <0.2 | <0.2 | <0.2 | mg/kg | TM5/PM8/PM16 |
| >C12-C16 # | <4 | <4 | <4 | <4 | <4 | <4 | <4 | <4 | <4 | <4 | <4 | mg/kg | TM5/PM8/PM16 |
| >C16-C21 # | <7 | <7 | <7 | <7 | <7 | <7 | <7 | <7 | <7 | <7 | <7 | mg/kg | TM5/PM8/PM16 |
| >C21-C35 # | <7 | <7 | <7 | <7 | <7 | <7 | <7 | <7 | <7 | <7 | <7 | mg/kg | TM5/PM8/PM16 |
| >C35-C40 | <7 | <7 | <7 | <7 | <7 | <7 | <7 | <7 | <7 | <7 | <7 | mg/kg | TM5/PM8/PM16 |
| Total aliphatics C5-40 | <26 | <26 | <26 | <26 | <26 | <26 | <26 | <26 | <26 | <26 | <26 | mg/kg | TM5/TM36/PM8/PM12/PM16 |
| >C6-C10 | <0.1 | <0.1 | <0.1 | <0.1 | <0.1 | <0.1 | <0.1 | <0.1 | <0.1 | <0.1 | <0.1 | mg/kg | TM36/PM12 |
| >C10-C25 | <10 | <10 | <10 | <10 | <10 | <10 | <10 | <10 | <10 | <10 | <10 | mg/kg | TM5/PM8/PM16 |
| >C25-C35 | <10 | <10 | <10 | <10 | <10 | <10 | <10 | <10 | <10 | <10 | <10 | mg/kg | TM5/PM8/PM16 |
| **Aromatics** | | | | | | | | | | | | | |
| >C5-EC7 # | <0.1 | <0.1 | <0.1 | <0.1 | <0.1 | <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 | <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 | <0.1 | mg/kg | TM36/PM12 |
| >EC10-EC12 # | <0.2 | <0.2 | <0.2 | <0.2 | <0.2 | <0.2 | <0.2 | <0.2 | <0.2 | <0.2 | <0.2 | mg/kg | TM5/PM8/PM16 |
| >EC12-EC16 # | <4 | <4 | <4 | <4 | <4 | <4 | <4 | <4 | <4 | <4 | <4 | mg/kg | TM5/PM8/PM16 |
| >EC16-EC21 # | <7 | <7 | <7 | <7 | <7 | <7 | <7 | <7 | <7 | <7 | <7 | mg/kg | TM5/PM8/PM16 |
| >EC21-EC35 # | <7 | <7 | <7 | <7 | <7 | <7 | <7 | <7 | <7 | <7 | <7 | mg/kg | TM5/PM8/PM16 |
| >EC35-EC40 | <7 | <7 | <7 | <7 | <7 | <7 | <7 | <7 | <7 | <7 | <7 | mg/kg | TM5/PM8/PM16 |
| Total aromatics C5-40 | <26 | <26 | <26 | <26 | <26 | <26 | <26 | <26 | <26 | <26 | <26 | mg/kg | TM5/TM36/PM8/PM12/PM16 |
| Total aliphatics and aromatics(C5-40) | <52 | <52 | <52 | <52 | <52 | <52 | <52 | <52 | <52 | <52 | <52 | mg/kg | TM5/TM36/PM8/PM12/PM16 |
| >EC6-EC10 # | <0.1 | <0.1 | <0.1 | <0.1 | <0.1 | <0.1 | <0.1 | <0.1 | <0.1 | <0.1 | <0.1 | mg/kg | TM36/PM12 |
| >EC10-EC25 | <10 | <10 | <10 | <10 | <10 | <10 | <10 | <10 | <10 | <10 | <10 | mg/kg | TM5/PM8/PM16 |
| >EC25-EC35 | <10 | <10 | <10 | <10 | <10 | <10 | <10 | <10 | <10 | <10 | <10 | mg/kg | TM5/PM8/PM16 |
| | | | | | | | | | | | | | |
| MTBE # | <5 | <5 | <5 | <5 | <5 | <5 | <5 | <5 | <5 | <5 | <5 | ug/kg | TM31/PM12 |
| Benzene # | <5 | <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 | <5 | ug/kg | TM31/PM12 |
| Ethylbenzene # | <5 | <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 | <5 | ug/kg | TM31/PM12 |
| o-Xylene # | <5 | <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 | <5 | ug/kg | TM17/PM8 |
| PCB 52 # | <5 | <5 | <5 | <5 | <5 | <5 | <5 | <5 | <5 | <5 | <5 | ug/kg | TM17/PM8 |
| PCB 101 # | <5 | <5 | <5 | <5 | <5 | <5 | <5 | <5 | <5 | <5 | <5 | ug/kg | TM17/PM8 |
| PCB 118 # | <5 | <5 | <5 | <5 | <5 | <5 | <5 | <5 | <5 | <5 | <5 | ug/kg | TM17/PM8 |
| PCB 138 # | <5 | <5 | <5 | <5 | <5 | <5 | <5 | <5 | <5 | <5 | <5 | ug/kg | TM17/PM8 |
| PCB 153 # | <5 | <5 | <5 | <5 | <5 | <5 | <5 | <5 | <5 | <5 | <5 | ug/kg | TM17/PM8 |
| PCB 180 # | <5 | <5 | <5 | <5 | <5 | <5 | <5 | <5 | <5 | <5 | <5 | ug/kg | TM17/PM8 |
| Total 7 PCBs # | <35 | <35 | <35 | <35 | <35 | <35 | <35 | <35 | <35 | <35 | <35 | ug/kg | TM17/PM8 |

Please see attached notes for all abbreviations and acronyms

**Client Name:** Ground Investigations Ireland
**Reference:** 8354-01-19
**Location:** Cornelscourt
**Contact:** Barry Sexton
**JE Job No.:** 19/1246

**Report : Solid**

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

| J E Sample No. | 1-3 | 4-6 | 7-9 | 10-12 | 13-15 | 16-18 | 19-21 | 22-24 | 25-27 | 28-30 | LOD/LOR | Units | Method No. |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| **Sample ID** | TP - 11 | TP - 11 | TP - 11 | TP - 12 | TP - 12 | TP - 12 | TP - 13 | TP - 13 | TP - 13 | TP - 16 | | | |
| **Depth** | 1.00 | 2.00 | 3.00 | 0.50 | 1.50 | 2.50 | 0.50 | 1.50 | 2.50 | 0.50 | | | |
| **COC No / misc** | | | | | | | | | | | | | |
| **Containers** | V J T | V J T | V J T | V J T | V J T | V J T | V J T | V J T | V J T | V J T | | | |
| **Sample Date** | 23/01/2019 | 23/01/2019 | 23/01/2019 | 23/01/2019 | 23/01/2019 | 23/01/2019 | 23/01/2019 | 23/01/2019 | 23/01/2019 | 23/01/2019 | | | |
| **Sample Type** | Soil | Soil | Soil | Soil | Soil | Soil | Soil | Soil | Soil | Soil | | | |
| **Batch Number** | 1 | 1 | 1 | 1 | 1 | 1 | 1 | 1 | 1 | 1 | | | |
| **Date of Receipt** | 25/01/2019 | 25/01/2019 | 25/01/2019 | 25/01/2019 | 25/01/2019 | 25/01/2019 | 25/01/2019 | 25/01/2019 | 25/01/2019 | 25/01/2019 | | | |
| Natural Moisture Content | 15.5 | 10.7 | 13.4 | 23.0 | 13.6 | 12.1 | 24.9 | 15.1 | 14.0 | 22.3 | <0.1 | % | PM4/PM0 |
| Moisture Content (% Wet Weight) | 13.4 | 9.7 | 11.8 | 18.7 | 12.0 | 10.8 | 20.0 | 13.1 | 12.3 | 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 | <0.3 | mg/kg | TM38/PM20 |
| Sulphate as SO4 (2:1 Ext) # | - | - | - | - | 0.0075 | - | - | - | 0.0099 | - | <0.0015 | g/l | TM38/PM20 |
| Chromium III | 40.4 | 37.1 | 47.8 | 69.0 | 41.8 | 65.3 | 66.2 | 45.3 | 46.8 | 88.6 | <0.5 | mg/kg | NONE/NONE |
| Total Organic Carbon # | 0.22 | 0.35 | 0.27 | 1.01 | 0.29 | 0.15 | 1.18 | 0.34 | 0.49 | 0.95 | <0.02 | % | TM21/PM24 |
| pH # | 8.64 | 8.57 | 8.71 | 8.35 | 8.73 | 8.69 | 8.24 | 8.53 | 8.61 | 8.22 | <0.01 | pH units | TM73/PM11 |
| Mass of raw test portion | 0.1027 | 0.1047 | 0.1033 | 0.1094 | 0.1042 | 0.1026 | 0.1135 | 0.1036 | 0.1005 | 0.1098 | | kg | NONE/PM17 |
| Mass of dried test portion | 0.09 | 0.09 | 0.09 | 0.09 | 0.09 | 0.09 | 0.09 | 0.09 | 0.09 | 0.09 | | kg | NONE/PM17 |

Please see attached notes for all abbreviations and acronyms

**Client Name:** Ground Investigations Ireland
**Reference:** 8354-01-19
**Location:** Cornelscourt
**Contact:** Barry Sexton
**JE Job No.:** 19/1246

**Report : Solid**

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

| J E Sample No. | 31-33 | 34-36 | 37-39 | 40-42 | 43-45 | 46-48 | 49-51 | 52-54 | | | LOD/LOR | Units | Method No. |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Sample ID | TP - 16 | TP - 16 | TP - 17 | TP - 17 | TP - 17 | TP - 21 | TP - 21 | TP - 21 | | | | | |
| Depth | 1.50 | 2.50 | 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 | | | | | |
| Sample Date | 23/01/2019 | 23/01/2019 | 23/01/2019 | 23/01/2019 | 23/01/2019 | 23/01/2019 | 23/01/2019 | 23/01/2019 | | | | | |
| Sample Type | Soil | Soil | Soil | Soil | Soil | Soil | Soil | Soil | | | | | |
| Batch Number | 1 | 1 | 1 | 1 | 1 | 1 | 1 | 1 | | | | | |
| Date of Receipt | 25/01/2019 | 25/01/2019 | 25/01/2019 | 25/01/2019 | 25/01/2019 | 25/01/2019 | 25/01/2019 | 25/01/2019 | | | | | |
| Antimony | 2 | 2 | 3 | 2 | <1 | 2 | 2 | 2 | | | <1 | mg/kg | TM30/PM15 |
| Arsenic # | 9.7 | 10.0 | 16.2 | 12.1 | 5.6 | 8.5 | 10.7 | 11.4 | | | <0.5 | mg/kg | TM30/PM15 |
| Barium # | 70 | 72 | 96 | 70 | 65 | 129 | 86 | 92 | | | <1 | mg/kg | TM30/PM15 |
| Cadmium # | 1.9 | 2.3 | 3.1 | 2.1 | 1.1 | 1.3 | 2.0 | 2.3 | | | <0.1 | mg/kg | TM30/PM15 |
| Chromium # | 55.1 | 56.2 | 68.0 | 44.3 | 43.8 | 104.6 | 55.3 | 53.7 | | | <0.5 | mg/kg | TM30/PM15 |
| Copper # | 31 | 29 | 44 | 32 | 26 | 41 | 34 | 34 | | | <1 | mg/kg | TM30/PM15 |
| Lead # | 16 | 17 | 36 | 19 | 17 | 22 | 18 | 22 | | | <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 # | 3.5 | 3.8 | 6.7 | 4.9 | 2.5 | 2.9 | 4.4 | 4.5 | | | <0.1 | mg/kg | TM30/PM15 |
| Nickel # | 35.5 | 36.8 | 65.3 | 44.7 | 38.8 | 29.6 | 44.0 | 42.8 | | | <0.7 | mg/kg | TM30/PM15 |
| Selenium # | 1 | 1 | 2 | 1 | <1 | <1 | 1 | 2 | | | <1 | mg/kg | TM30/PM15 |
| Zinc # | 88 | 85 | 136 | 106 | 82 | 77 | 95 | 103 | | | <5 | mg/kg | TM30/PM15 |
| | | | | | | | | | | | | | |
| PAH MS | | | | | | | | | | | | | |
| Naphthalene # | <0.04 | <0.04 | <0.04 | <0.04 | <0.04 | <0.04 | <0.04 | <0.04 | | | <0.04 | mg/kg | TM4/PM8 |
| Acenaphthylene | <0.03 | <0.03 | <0.03 | <0.03 | <0.03 | <0.03 | <0.03 | <0.03 | | | <0.03 | mg/kg | TM4/PM8 |
| Acenaphthene # | <0.05 | <0.05 | <0.05 | <0.05 | <0.05 | <0.05 | <0.05 | <0.05 | | | <0.05 | mg/kg | TM4/PM8 |
| Fluorene # | <0.04 | <0.04 | <0.04 | <0.04 | <0.04 | <0.04 | <0.04 | <0.04 | | | <0.04 | mg/kg | TM4/PM8 |
| Phenanthrene # | <0.03 | <0.03 | <0.03 | <0.03 | <0.03 | <0.03 | <0.03 | <0.03 | | | <0.03 | mg/kg | TM4/PM8 |
| Anthracene # | <0.04 | <0.04 | <0.04 | <0.04 | <0.04 | <0.04 | <0.04 | <0.04 | | | <0.04 | mg/kg | TM4/PM8 |
| Fluoranthene # | <0.03 | <0.03 | <0.03 | <0.03 | <0.03 | 0.05 | <0.03 | <0.03 | | | <0.03 | mg/kg | TM4/PM8 |
| Pyrene # | <0.03 | <0.03 | <0.03 | <0.03 | <0.03 | 0.05 | <0.03 | <0.03 | | | <0.03 | mg/kg | TM4/PM8 |
| Benzo(a)anthracene # | <0.06 | <0.06 | <0.06 | <0.06 | <0.06 | <0.06 | <0.06 | <0.06 | | | <0.06 | mg/kg | TM4/PM8 |
| Chrysene # | <0.02 | <0.02 | <0.02 | <0.02 | <0.02 | 0.05 | <0.02 | <0.02 | | | <0.02 | mg/kg | TM4/PM8 |
| Benzo(bk)fluoranthene # | <0.07 | <0.07 | <0.07 | <0.07 | <0.07 | <0.07 | <0.07 | <0.07 | | | <0.07 | mg/kg | TM4/PM8 |
| Benzo(a)pyrene # | <0.04 | <0.04 | <0.04 | <0.04 | <0.04 | <0.04 | <0.04 | <0.04 | | | <0.04 | mg/kg | TM4/PM8 |
| Indeno(123cd)pyrene # | <0.04 | <0.04 | <0.04 | <0.04 | <0.04 | <0.04 | <0.04 | <0.04 | | | <0.04 | mg/kg | TM4/PM8 |
| Dibenzo(ah)anthracene # | <0.04 | <0.04 | <0.04 | <0.04 | <0.04 | <0.04 | <0.04 | <0.04 | | | <0.04 | mg/kg | TM4/PM8 |
| Benzo(ghi)perylene # | <0.04 | <0.04 | <0.04 | <0.04 | <0.04 | <0.04 | <0.04 | <0.04 | | | <0.04 | mg/kg | TM4/PM8 |
| Coronene | <0.04 | <0.04 | <0.04 | <0.04 | <0.04 | <0.04 | <0.04 | <0.04 | | | <0.04 | mg/kg | TM4/PM8 |
| PAH 6 Total # | <0.22 | <0.22 | <0.22 | <0.22 | <0.22 | <0.22 | <0.22 | <0.22 | | | <0.22 | mg/kg | TM4/PM8 |
| PAH 17 Total | <0.64 | <0.64 | <0.64 | <0.64 | <0.64 | <0.64 | <0.64 | <0.64 | | | <0.64 | mg/kg | TM4/PM8 |
| Benzo(b)fluoranthene | <0.05 | <0.05 | <0.05 | <0.05 | <0.05 | <0.05 | <0.05 | <0.05 | | | <0.05 | mg/kg | TM4/PM8 |
| Benzo(k)fluoranthene | <0.02 | <0.02 | <0.02 | <0.02 | <0.02 | <0.02 | <0.02 | <0.02 | | | <0.02 | mg/kg | TM4/PM8 |
| Benzo(j)fluoranthene | <1 | <1 | <1 | <1 | <1 | <1 | <1 | <1 | | | <1 | mg/kg | TM4/PM8 |
| PAH Surrogate % Recovery | 97 | 85 | 98 | 103 | 101 | 99 | 95 | 98 | | | <0 | % | TM4/PM8 |
| | | | | | | | | | | | | | |
| Mineral Oil (C10-C40) | <30 | <30 | <30 | <30 | <30 | <30 | <30 | <30 | | | <30 | mg/kg | TM5/PM8/PM16 |

Please see attached notes for all abbreviations and acronyms

**Client Name:** Ground Investigations Ireland
**Reference:** 8354-01-19
**Location:** Cornelscourt
**Contact:** Barry Sexton
**JE Job No.:** 19/1246

**Report : Solid**

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

| J E Sample No. | 31-33 | 34-36 | 37-39 | 40-42 | 43-45 | 46-48 | 49-51 | 52-54 | | | LOD/LOR | Units | Method No. |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| **Sample ID** | TP - 16 | TP - 16 | TP - 17 | TP - 17 | TP - 17 | TP - 21 | TP - 21 | TP - 21 | | | | | |
| **Depth** | 1.50 | 2.50 | 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 | | | | | |
| **Sample Date** | 23/01/2019 | 23/01/2019 | 23/01/2019 | 23/01/2019 | 23/01/2019 | 23/01/2019 | 23/01/2019 | 23/01/2019 | | | | | |
| **Sample Type** | Soil | Soil | Soil | Soil | Soil | Soil | Soil | Soil | | | | | |
| **Batch Number** | 1 | 1 | 1 | 1 | 1 | 1 | 1 | 1 | | | | | |
| **Date of Receipt** | 25/01/2019 | 25/01/2019 | 25/01/2019 | 25/01/2019 | 25/01/2019 | 25/01/2019 | 25/01/2019 | 25/01/2019 | | | | | |
| 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 # | <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 | mg/kg | TM5/PM8/PM16 |
| >C16-C21 # | <7 | <7 | <7 | <7 | <7 | <7 | <7 | <7 | | | <7 | mg/kg | TM5/PM8/PM16 |
| >C21-C35 # | <7 | <7 | <7 | <7 | <7 | <7 | <7 | <7 | | | <7 | mg/kg | TM5/PM8/PM16 |
| >C35-C40 | <7 | <7 | <7 | <7 | <7 | <7 | <7 | <7 | | | <7 | mg/kg | TM5/PM8/PM16 |
| Total aliphatics C5-40 | <26 | <26 | <26 | <26 | <26 | <26 | <26 | <26 | | | <26 | mg/kg | TM5/TM36/PM8/PM12/PM16 |
| >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 | <10 | <10 | <10 | <10 | <10 | <10 | <10 | <10 | | | <10 | mg/kg | TM5/PM8/PM16 |
| >C25-C35 | <10 | <10 | <10 | <10 | <10 | <10 | <10 | <10 | | | <10 | mg/kg | TM5/PM8/PM16 |
| **Aromatics** | | | | | | | | | | | | | |
| >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 # | <0.2 | <0.2 | <0.2 | <0.2 | <0.2 | <0.2 | <0.2 | <0.2 | | | <0.2 | mg/kg | TM5/PM8/PM16 |
| >EC12-EC16 # | <4 | <4 | <4 | <4 | <4 | <4 | <4 | <4 | | | <4 | mg/kg | TM5/PM8/PM16 |
| >EC16-EC21 # | <7 | <7 | <7 | <7 | <7 | <7 | <7 | <7 | | | <7 | mg/kg | TM5/PM8/PM16 |
| >EC21-EC35 # | <7 | <7 | <7 | <7 | <7 | <7 | <7 | <7 | | | <7 | mg/kg | TM5/PM8/PM16 |
| >EC35-EC40 | <7 | <7 | <7 | <7 | <7 | <7 | <7 | <7 | | | <7 | mg/kg | TM5/PM8/PM16 |
| Total aromatics C5-40 | <26 | <26 | <26 | <26 | <26 | <26 | <26 | <26 | | | <26 | mg/kg | TM5/TM36/PM8/PM12/PM16 |
| Total aliphatics and aromatics(C5-40) | <52 | <52 | <52 | <52 | <52 | <52 | <52 | <52 | | | <52 | mg/kg | TM5/TM36/PM8/PM12/PM16 |
| >EC6-EC10 # | <0.1 | <0.1 | <0.1 | <0.1 | <0.1 | <0.1 | <0.1 | <0.1 | | | <0.1 | mg/kg | TM36/PM12 |
| >EC10-EC25 | <10 | <10 | <10 | <10 | <10 | <10 | <10 | <10 | | | <10 | mg/kg | TM5/PM8/PM16 |
| >EC25-EC35 | <10 | <10 | <10 | <10 | <10 | <10 | <10 | <10 | | | <10 | mg/kg | TM5/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 |

Please see attached notes for all abbreviations and acronyms

**Client Name:** Ground Investigations Ireland
**Reference:** 8354-01-19
**Location:** Cornelscourt
**Contact:** Barry Sexton
**JE Job No.:** 19/1246

**Report : Solid**

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

| J E Sample No. | 31-33 | 34-36 | 37-39 | 40-42 | 43-45 | 46-48 | 49-51 | 52-54 | | | LOD/LOR | Units | Method No. |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| **Sample ID** | TP - 16 | TP - 16 | TP - 17 | TP - 17 | TP - 17 | TP - 21 | TP - 21 | TP - 21 | | | | | |
| **Depth** | 1.50 | 2.50 | 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 | | | | | |
| **Sample Date** | 23/01/2019 | 23/01/2019 | 23/01/2019 | 23/01/2019 | 23/01/2019 | 23/01/2019 | 23/01/2019 | 23/01/2019 | | | | | |
| **Sample Type** | Soil | Soil | Soil | Soil | Soil | Soil | Soil | Soil | | | | | |
| **Batch Number** | 1 | 1 | 1 | 1 | 1 | 1 | 1 | 1 | | | | | |
| **Date of Receipt** | 25/01/2019 | 25/01/2019 | 25/01/2019 | 25/01/2019 | 25/01/2019 | 25/01/2019 | 25/01/2019 | 25/01/2019 | | | | | |
| Natural Moisture Content | 14.9 | 14.2 | 24.6 | 12.2 | 12.8 | 23.1 | 12.8 | 14.9 | | | <0.1 | % | PM4/PM0 |
| Moisture Content (% Wet Weight) | 13.0 | 12.4 | 19.8 | 10.9 | 11.4 | 18.8 | 11.4 | 13.0 | | | <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) # | - | 0.0131 | - | - | 0.0071 | - | - | - | | | <0.0015 | g/l | TM38/PM20 |
| Chromium III | 55.1 | 56.2 | 68.0 | 44.3 | 43.8 | 104.6 | 55.3 | 53.7 | | | <0.5 | mg/kg | NONE/NONE |
| Total Organic Carbon # | 0.29 | 0.28 | 1.00 | 0.30 | 0.33 | 1.40 | 0.36 | 0.36 | | | <0.02 | % | TM21/PM24 |
| pH # | 8.58 | 8.63 | 8.26 | 8.62 | 8.76 | 8.21 | 8.57 | 8.67 | | | <0.01 | pH units | TM73/PM11 |
| Mass of raw test portion | 0.1007 | 0.1066 | 0.1115 | 0.1029 | 0.1008 | 0.1115 | 0.1049 | 0.1036 | | | | kg | NONE/PM17 |
| Mass of dried test portion | 0.09 | 0.09 | 0.09 | 0.09 | 0.09 | 0.09 | 0.09 | 0.09 | | | | kg | NONE/PM17 |

Please see attached notes for all abbreviations and acronyms

**Client Name:** Ground Investigations Ireland
**Reference:** 8354-01-19
**Location:** Cornelscourt
**Contact:** Barry Sexton
**JE Job No.:** 19/1246

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

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

| J E Sample No. | 1-3 | 4-6 | 7-9 | 10-12 | 13-15 | 16-18 | 19-21 | 22-24 | 25-27 | 28-30 | LOD/LOR | Units | Method No. |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Sample ID | TP - 11 | TP - 11 | TP - 11 | TP - 12 | TP - 12 | TP - 12 | TP - 13 | TP - 13 | TP - 13 | TP - 16 | | | |
| Depth | 1.00 | 2.00 | 3.00 | 0.50 | 1.50 | 2.50 | 0.50 | 1.50 | 2.50 | 0.50 | | | |
| COC No / misc | | | | | | | | | | | | | |
| Containers | V J T | V J T | V J T | V J T | V J T | V J T | V J T | V J T | V J T | V J T | | | |
| Sample Date | 23/01/2019 | 23/01/2019 | 23/01/2019 | 23/01/2019 | 23/01/2019 | 23/01/2019 | 23/01/2019 | 23/01/2019 | 23/01/2019 | 23/01/2019 | | | |
| Sample Type | Soil | Soil | Soil | Soil | Soil | Soil | Soil | Soil | Soil | Soil | | | |
| Batch Number | 1 | 1 | 1 | 1 | 1 | 1 | 1 | 1 | 1 | 1 | | | |
| Date of Receipt | 25/01/2019 | 25/01/2019 | 25/01/2019 | 25/01/2019 | 25/01/2019 | 25/01/2019 | 25/01/2019 | 25/01/2019 | 25/01/2019 | 25/01/2019 | | | |
| Dissolved Antimony # | <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 Antimony (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 Arsenic # | <0.0025 | <0.0025 | <0.0025 | <0.0025 | <0.0025 | <0.0025 | <0.0025 | <0.0025 | <0.0025 | <0.0025 | <0.0025 | mg/l | TM30/PM17 |
| Dissolved Arsenic (A10) # | <0.025 | <0.025 | <0.025 | <0.025 | <0.025 | <0.025 | <0.025 | <0.025 | <0.025 | <0.025 | <0.025 | mg/kg | TM30/PM17 |
| Dissolved Barium # | <0.003 | 0.005 | <0.003 | <0.003 | 0.003 | 0.004 | <0.003 | <0.003 | <0.003 | <0.003 | <0.003 | mg/l | TM30/PM17 |
| Dissolved Barium (A10) # | <0.03 | 0.05 | <0.03 | <0.03 | <0.03 | 0.04 | <0.03 | <0.03 | <0.03 | <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 | <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 # | 0.007 | 0.017 | 0.005 | 0.004 | 0.007 | 0.007 | 0.003 | 0.004 | 0.007 | <0.002 | <0.002 | mg/l | TM30/PM17 |
| Dissolved Molybdenum (A10) # | 0.07 | 0.17 | 0.05 | 0.04 | 0.07 | 0.07 | 0.03 | 0.04 | 0.07 | <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 | <0.002 | <0.002 | mg/l | TM30/PM17 |
| Dissolved Nickel (A10) # | <0.02 | <0.02 | <0.02 | <0.02 | <0.02 | <0.02 | <0.02 | <0.02 | <0.02 | <0.02 | <0.02 | mg/kg | TM30/PM17 |
| Dissolved Selenium # | <0.003 | <0.003 | <0.003 | <0.003 | <0.003 | <0.003 | <0.003 | <0.003 | <0.003 | <0.003 | <0.003 | mg/l | TM30/PM17 |
| Dissolved Selenium (A10) # | <0.03 | <0.03 | <0.03 | <0.03 | <0.03 | <0.03 | <0.03 | <0.03 | <0.03 | <0.03 | <0.03 | mg/kg | TM30/PM17 |
| Dissolved Zinc # | <0.003 | <0.003 | <0.003 | <0.003 | <0.003 | <0.003 | <0.003 | <0.003 | <0.003 | <0.003 | <0.003 | mg/l | TM30/PM17 |
| Dissolved Zinc (A10) # | <0.03 | <0.03 | <0.03 | <0.03 | <0.03 | <0.03 | <0.03 | <0.03 | <0.03 | <0.03 | <0.03 | mg/kg | TM30/PM17 |
| Mercury Dissolved by CVAF # | <0.00001 | <0.00001 | <0.00001 | <0.00001 | <0.00001 | <0.00001 | <0.00001 | <0.00001 | <0.00001 | <0.00001 | <0.00001 | mg/l | TM61/PM0 |
| Mercury Dissolved by CVAF # | <0.0001 | <0.0001 | <0.0001 | <0.0001 | <0.0001 | <0.0001 | <0.0001 | <0.0001 | <0.0001 | <0.0001 | <0.0001 | mg/kg | TM61/PM0 |
| Phenol | <0.01 | <0.01 | <0.01 | <0.01 | <0.01 | <0.01 | <0.01 | <0.01 | <0.01 | <0.01 | <0.01 | mg/l | TM26/PM0 |
| Phenol | <0.1 | <0.1 | <0.1 | <0.1 | <0.1 | <0.1 | <0.1 | <0.1 | <0.1 | <0.1 | <0.1 | mg/kg | TM26/PM0 |
| Fluoride | <0.3 | <0.3 | <0.3 | <0.3 | <0.3 | <0.3 | <0.3 | <0.3 | <0.3 | <0.3 | <0.3 | mg/l | TM173/PM0 |
| Fluoride | <3 | <3 | <3 | <3 | <3 | <3 | <3 | <3 | <3 | <3 | <3 | mg/kg | TM173/PM0 |
| Sulphate as SO4 # | <0.5 | <0.5 | <0.5 | <0.5 | <0.5 | 0.6 | <0.5 | <0.5 | <0.5 | <0.5 | <0.5 | mg/l | TM38/PM0 |
| Sulphate as SO4 # | <5 | <5 | <5 | <5 | <5 | 6 | <5 | <5 | <5 | <5 | <5 | mg/kg | TM38/PM0 |
| Chloride # | 0.4 | <0.3 | <0.3 | <0.3 | <0.3 | <0.3 | <0.3 | 0.3 | <0.3 | 0.3 | <0.3 | mg/l | TM38/PM0 |
| Chloride # | 4 | <3 | <3 | <3 | <3 | <3 | <3 | <3 | <3 | 3 | <3 | mg/kg | TM38/PM0 |
| Dissolved Organic Carbon | <2 | <2 | <2 | <2 | <2 | <2 | <2 | <2 | <2 | 2 | <2 | mg/l | TM60/PM0 |
| Dissolved Organic Carbon | <20 | <20 | <20 | <20 | <20 | <20 | <20 | <20 | <20 | 20 | <20 | mg/kg | TM60/PM0 |
| pH | 8.07 | 8.30 | 8.02 | 8.14 | 8.14 | 8.01 | 8.10 | 8.20 | 8.14 | 7.96 | <0.01 | pH units | TM73/PM0 |
| Total Dissolved Solids # | 165 | 189 | 130 | 283 | 115 | 102 | 184 | 160 | 94 | 78 | <35 | mg/l | TM20/PM0 |
| Total Dissolved Solids # | 1649 | 1889 | 1300 | 2829 | 1150 | 1020 | 1840 | 1599 | 940 | 780 | <350 | mg/kg | TM20/PM0 |

Please see attached notes for all abbreviations and acronyms

**Client Name:** Ground Investigations Ireland
**Reference:** 8354-01-19
**Location:** Cornelscourt
**Contact:** Barry Sexton
**JE Job No.:** 19/1246

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

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

| J E Sample No. | 31-33 | 34-36 | 37-39 | 40-42 | 43-45 | 46-48 | 49-51 | 52-54 | | | LOD/LOR | Units | Method No. |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Sample ID | TP - 16 | TP - 16 | TP - 17 | TP - 17 | TP - 17 | TP - 21 | TP - 21 | TP - 21 | | | | | |
| Depth | 1.50 | 2.50 | 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 | | | | | |
| Sample Date | 23/01/2019 | 23/01/2019 | 23/01/2019 | 23/01/2019 | 23/01/2019 | 23/01/2019 | 23/01/2019 | 23/01/2019 | | | | | |
| Sample Type | Soil | Soil | Soil | Soil | Soil | Soil | Soil | Soil | | | | | |
| Batch Number | 1 | 1 | 1 | 1 | 1 | 1 | 1 | 1 | | | | | |
| Date of Receipt | 25/01/2019 | 25/01/2019 | 25/01/2019 | 25/01/2019 | 25/01/2019 | 25/01/2019 | 25/01/2019 | 25/01/2019 | | | | | |
| Dissolved Antimony # | <0.002 | <0.002 | <0.002 | <0.002 | <0.002 | <0.002 | <0.002 | <0.002 | | | <0.002 | mg/l | TM30/PM17 |
| Dissolved Antimony (A10) # | <0.02 | <0.02 | <0.02 | <0.02 | <0.02 | <0.02 | <0.02 | <0.02 | | | <0.02 | mg/kg | TM30/PM17 |
| Dissolved Arsenic # | <0.0025 | <0.0025 | <0.0025 | <0.0025 | <0.0025 | <0.0025 | <0.0025 | <0.0025 | | | <0.0025 | mg/l | TM30/PM17 |
| Dissolved Arsenic (A10) # | <0.025 | <0.025 | <0.025 | <0.025 | <0.025 | <0.025 | <0.025 | <0.025 | | | <0.025 | mg/kg | TM30/PM17 |
| Dissolved Barium # | <0.003 | <0.003 | <0.003 | <0.003 | <0.003 | <0.003 | 0.004 | <0.003 | | | <0.003 | mg/l | TM30/PM17 |
| Dissolved Barium (A10) # | <0.03 | <0.03 | <0.03 | <0.03 | <0.03 | <0.03 | 0.04 | <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 # | 0.005 | 0.007 | 0.002 | 0.008 | 0.014 | <0.002 | 0.006 | 0.007 | | | <0.002 | mg/l | TM30/PM17 |
| Dissolved Molybdenum (A10) # | 0.05 | 0.07 | 0.02 | 0.08 | 0.14 | <0.02 | 0.06 | 0.07 | | | <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 # | <0.003 | <0.003 | <0.003 | <0.003 | <0.003 | <0.003 | <0.003 | <0.003 | | | <0.003 | mg/l | TM30/PM17 |
| Dissolved Zinc (A10) # | <0.03 | <0.03 | <0.03 | <0.03 | <0.03 | <0.03 | <0.03 | <0.03 | | | <0.03 | mg/kg | TM30/PM17 |
| Mercury Dissolved by CVAF # | <0.00001 | <0.00001 | <0.00001 | <0.00001 | <0.00001 | <0.00001 | <0.00001 | <0.00001 | | | <0.00001 | mg/l | TM61/PM0 |
| Mercury Dissolved by CVAF # | <0.0001 | <0.0001 | <0.0001 | <0.0001 | <0.0001 | <0.0001 | <0.0001 | <0.0001 | | | <0.0001 | 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 | <0.3 | <0.3 | <0.3 | <0.3 | <0.3 | <0.3 | <0.3 | <0.3 | | | <0.3 | mg/l | TM173/PM0 |
| Fluoride | <3 | <3 | <3 | <3 | <3 | <3 | <3 | <3 | | | <3 | mg/kg | TM173/PM0 |
| Sulphate as SO4 # | <0.5 | 0.6 | 1.3 | 1.3 | 1.3 | 1.3 | 1.4 | 2.1 | | | <0.5 | mg/l | TM38/PM0 |
| Sulphate as SO4 # | <5 | 6 | 13 | 13 | 13 | 13 | 14 | 21 | | | <5 | mg/kg | TM38/PM0 |
| Chloride # | 0.4 | 0.7 | 0.9 | 0.8 | 6.9 | 0.9 | 0.9 | 0.8 | | | <0.3 | mg/l | TM38/PM0 |
| Chloride # | 4 | 7 | 9 | 8 | 69 | 9 | 9 | 8 | | | <3 | mg/kg | TM38/PM0 |
| Dissolved Organic Carbon | <2 | <2 | <2 | <2 | <2 | 2 | <2 | <2 | | | <2 | mg/l | TM60/PM0 |
| Dissolved Organic Carbon | <20 | <20 | <20 | <20 | <20 | 20 | <20 | <20 | | | <20 | mg/kg | TM60/PM0 |
| pH | 7.67 | 7.01 | 7.68 | 8.28 | 8.46 | 8.13 | 8.28 | 8.47 | | | <0.01 | pH units | TM73/PM0 |
| Total Dissolved Solids # | 168 | <35 | <35 | <35 | 77 | 174 | 65 | 35 | | | <35 | mg/l | TM20/PM0 |
| Total Dissolved Solids # | 1680 | <350 | <350 | <350 | 770 | 1740 | 650 | <350 | | | <350 | mg/kg | TM20/PM0 |

Please see attached notes for all abbreviations and acronyms

**Client Name:** Ground Investigations Ireland
**Reference:** 8354-01-19
**Location:** Cornelscourt
**Contact:** Barry Sexton
**JE Job No.:** 19/1246

**Report : EN12457_2**

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

Please see attached notes for all abbreviations and acronyms

| J E Sample No. | 1-3 | 4-6 | 7-9 | 10-12 | 13-15 | 16-18 | 19-21 | 22-24 | 25-27 | 28-30 | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| **Sample ID** | TP - 11 | TP - 11 | TP - 11 | TP - 12 | TP - 12 | TP - 12 | TP - 13 | TP - 13 | TP - 13 | TP - 16 | | | | | | |
| **Depth** | 1.00 | 2.00 | 3.00 | 0.50 | 1.50 | 2.50 | 0.50 | 1.50 | 2.50 | 0.50 | | | | | | |
| **COC No / misc** | | | | | | | | | | | | | | | | |
| **Containers** | V J T | V J T | V J T | V J T | V J T | V J T | V J T | V J T | V J T | V J T | | | | | | |
| **Sample Date** | 23/01/2019 | 23/01/2019 | 23/01/2019 | 23/01/2019 | 23/01/2019 | 23/01/2019 | 23/01/2019 | 23/01/2019 | 23/01/2019 | 23/01/2019 | | | | | | |
| **Sample Type** | Soil | Soil | Soil | Soil | Soil | Soil | Soil | Soil | Soil | Soil | | | | | | |
| **Batch Number** | 1 | 1 | 1 | 1 | 1 | 1 | 1 | 1 | 1 | 1 | Inert | Stable Non-reactive | Hazardous | LOD LOR | Units | Method No. |
| **Date of Receipt** | 25/01/2019 | 25/01/2019 | 25/01/2019 | 25/01/2019 | 25/01/2019 | 25/01/2019 | 25/01/2019 | 25/01/2019 | 25/01/2019 | 25/01/2019 | | | | | | |
| **Solid Waste Analysis** | | | | | | | | | | | | | | | | |
| Total Organic Carbon # | 0.22 | 0.35 | 0.27 | 1.01 | 0.29 | 0.15 | 1.18 | 0.34 | 0.49 | 0.95 | 3 | 5 | 6 | <0.02 | % | TM21/PM24 |
| Sum of BTEX | <0.025 | <0.025 | <0.025 | <0.025 | <0.025 | <0.025 | <0.025 | <0.025 | <0.025 | <0.025 | 6 | - | - | <0.025 | mg/kg | TM31/PM12 |
| Sum of 7 PCBs # | <0.035 | <0.035 | <0.035 | <0.035 | <0.035 | <0.035 | <0.035 | <0.035 | <0.035 | <0.035 | 1 | - | - | <0.035 | mg/kg | TM17/PM8 |
| Mineral Oil | <30 | <30 | <30 | <30 | <30 | <30 | <30 | <30 | <30 | <30 | 500 | - | - | <30 | mg/kg | TM5/PM8/PM16 |
| PAH Sum of 6 # | <0.22 | <0.22 | <0.22 | <0.22 | <0.22 | <0.22 | <0.22 | <0.22 | <0.22 | <0.22 | - | - | - | <0.22 | mg/kg | TM4/PM8 |
| PAH Sum of 17 | <0.64 | <0.64 | <0.64 | <0.64 | <0.64 | <0.64 | <0.64 | <0.64 | <0.64 | <0.64 | 100 | - | - | <0.64 | mg/kg | TM4/PM8 |
| **CEN 10:1 Leachate** | | | | | | | | | | | | | | | | |
| Arsenic # | <0.025 | <0.025 | <0.025 | <0.025 | <0.025 | <0.025 | <0.025 | <0.025 | <0.025 | <0.025 | 0.5 | 2 | 25 | <0.025 | mg/kg | TM30/PM17 |
| Barium # | <0.03 | 0.05 | <0.03 | <0.03 | <0.03 | 0.04 | <0.03 | <0.03 | <0.03 | <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 | <0.005 | <0.005 | 0.04 | 1 | 5 | <0.005 | mg/kg | TM30/PM17 |
| Chromium # | <0.015 | <0.015 | <0.015 | <0.015 | <0.015 | <0.015 | <0.015 | <0.015 | <0.015 | <0.015 | 0.5 | 10 | 70 | <0.015 | mg/kg | TM30/PM17 |
| Copper # | <0.07 | <0.07 | <0.07 | <0.07 | <0.07 | <0.07 | <0.07 | <0.07 | <0.07 | <0.07 | 2 | 50 | 100 | <0.07 | mg/kg | TM30/PM17 |
| Mercury # | <0.0001 | <0.0001 | <0.0001 | <0.0001 | <0.0001 | <0.0001 | <0.0001 | <0.0001 | <0.0001 | <0.0001 | 0.01 | 0.2 | 2 | <0.0001 | mg/kg | TM61/PM0 |
| Molybdenum # | 0.07 | 0.17 | 0.05 | 0.04 | 0.07 | 0.07 | 0.03 | 0.04 | 0.07 | <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 | <0.02 | <0.02 | 0.4 | 10 | 40 | <0.02 | mg/kg | TM30/PM17 |
| Lead # | <0.05 | <0.05 | <0.05 | <0.05 | <0.05 | <0.05 | <0.05 | <0.05 | <0.05 | <0.05 | 0.5 | 10 | 50 | <0.05 | mg/kg | TM30/PM17 |
| Antimony # | <0.02 | <0.02 | <0.02 | <0.02 | <0.02 | <0.02 | <0.02 | <0.02 | <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 | <0.03 | <0.03 | 0.1 | 0.5 | 7 | <0.03 | mg/kg | TM30/PM17 |
| Zinc # | <0.03 | <0.03 | <0.03 | <0.03 | <0.03 | <0.03 | <0.03 | <0.03 | <0.03 | <0.03 | 4 | 50 | 200 | <0.03 | mg/kg | TM30/PM17 |
| Total Dissolved Solids # | 1649 | 1889 | 1300 | 2829 | 1150 | 1020 | 1840 | 1599 | 940 | 780 | 4000 | 60000 | 100000 | <350 | mg/kg | TM20/PM0 |
| Dissolved Organic Carbon | <20 | <20 | <20 | <20 | <20 | <20 | <20 | <20 | <20 | 20 | 500 | 800 | 1000 | <20 | mg/kg | TM60/PM0 |
| Mass of raw test portion | 0.1027 | 0.1047 | 0.1033 | 0.1094 | 0.1042 | 0.1026 | 0.1135 | 0.1036 | 0.1005 | 0.1098 | - | - | - | | kg | NONE/PM17 |
| Dry Matter Content Ratio | 87.8 | 85.9 | 87.5 | 82.0 | 86.6 | 87.6 | 79.0 | 86.8 | 89.4 | 81.6 | - | - | - | <0.1 | % | NONE/PM4 |
| Leachant Volume | 0.887 | 0.885 | 0.887 | 0.88 | 0.886 | 0.887 | 0.876 | 0.886 | 0.889 | 0.88 | - | - | - | | l | NONE/PM17 |
| Eluate Volume | 0.82 | 0.65 | 0.7 | 0.75 | 0.7 | 0.85 | 0.71 | 0.61 | 0.68 | 0.7 | - | - | - | | l | NONE/PM17 |
| pH # | 8.64 | 8.57 | 8.71 | 8.35 | 8.73 | 8.69 | 8.24 | 8.53 | 8.61 | 8.22 | - | - | - | <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 | <3 | <3 | <3 | <3 | <3 | <3 | <3 | <3 | <3 | <3 | - | - | - | <3 | mg/kg | TM173/PM0 |
| Sulphate as SO4 # | <5 | <5 | <5 | <5 | <5 | 6 | <5 | <5 | <5 | <5 | 1000 | 20000 | 50000 | <5 | mg/kg | TM38/PM0 |
| Chloride # | 4 | <3 | <3 | <3 | <3 | <3 | <3 | <3 | <3 | 3 | 800 | 15000 | 25000 | <3 | mg/kg | TM38/PM0 |

**Client Name:** Ground Investigations Ireland
**Reference:** 8354-01-19
**Location:** Cornelscourt
**Contact:** Barry Sexton
**JE Job No.:** 19/1246

**Report : EN12457_2**

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

Please see attached notes for all abbreviations and acronyms

| J E Sample No. | 31-33 | 34-36 | 37-39 | 40-42 | 43-45 | 46-48 | 49-51 | 52-54 | | | Inert | Stable Non-reactive | Hazardous | LOD LOR | Units | Method No. |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| **Sample ID** | TP - 16 | TP - 16 | TP - 17 | TP - 17 | TP - 17 | TP - 21 | TP - 21 | TP - 21 | | | | | | | | |
| **Depth** | 1.50 | 2.50 | 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 | | | | | | | | |
| **Sample Date** | 23/01/2019 | 23/01/2019 | 23/01/2019 | 23/01/2019 | 23/01/2019 | 23/01/2019 | 23/01/2019 | 23/01/2019 | | | | | | | | |
| **Sample Type** | Soil | Soil | Soil | Soil | Soil | Soil | Soil | Soil | | | | | | | | |
| **Batch Number** | 1 | 1 | 1 | 1 | 1 | 1 | 1 | 1 | | | | | | | | |
| **Date of Receipt** | 25/01/2019 | 25/01/2019 | 25/01/2019 | 25/01/2019 | 25/01/2019 | 25/01/2019 | 25/01/2019 | 25/01/2019 | | | | | | | | |
| **Solid Waste Analysis** | | | | | | | | | | | | | | | | |
| Total Organic Carbon # | 0.29 | 0.28 | 1.00 | 0.30 | 0.33 | 1.40 | 0.36 | 0.36 | | | 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 | <30 | <30 | <30 | <30 | <30 | <30 | <30 | <30 | | | 500 | - | - | <30 | mg/kg | TM5/PM8/PM16 |
| PAH Sum of 6 # | <0.22 | <0.22 | <0.22 | <0.22 | <0.22 | <0.22 | <0.22 | <0.22 | | | - | - | - | <0.22 | mg/kg | TM4/PM8 |
| PAH Sum of 17 | <0.64 | <0.64 | <0.64 | <0.64 | <0.64 | <0.64 | <0.64 | <0.64 | | | 100 | - | - | <0.64 | mg/kg | TM4/PM8 |
| **CEN 10:1 Leachate** | | | | | | | | | | | | | | | | |
| Arsenic # | <0.025 | <0.025 | <0.025 | <0.025 | <0.025 | <0.025 | <0.025 | <0.025 | | | 0.5 | 2 | 25 | <0.025 | mg/kg | TM30/PM17 |
| Barium # | <0.03 | <0.03 | <0.03 | <0.03 | <0.03 | <0.03 | 0.04 | <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 | <0.0001 | <0.0001 | <0.0001 | <0.0001 | <0.0001 | | | 0.01 | 0.2 | 2 | <0.0001 | mg/kg | TM61/PM0 |
| Molybdenum # | 0.05 | 0.07 | 0.02 | 0.08 | 0.14 | <0.02 | 0.06 | 0.07 | | | 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 # | <0.02 | <0.02 | <0.02 | <0.02 | <0.02 | <0.02 | <0.02 | <0.02 | | | 0.06 | 0.7 | 5 | <0.02 | mg/kg | TM30/PM17 |
| Selenium # | <0.03 | <0.03 | <0.03 | <0.03 | <0.03 | <0.03 | <0.03 | <0.03 | | | 0.1 | 0.5 | 7 | <0.03 | mg/kg | TM30/PM17 |
| Zinc # | <0.03 | <0.03 | <0.03 | <0.03 | <0.03 | <0.03 | <0.03 | <0.03 | | | 4 | 50 | 200 | <0.03 | mg/kg | TM30/PM17 |
| Total Dissolved Solids # | 1680 | <350 | <350 | <350 | 770 | 1740 | 650 | <350 | | | 4000 | 60000 | 100000 | <350 | mg/kg | TM20/PM0 |
| Dissolved Organic Carbon | <20 | <20 | <20 | <20 | <20 | 20 | <20 | <20 | | | 500 | 800 | 1000 | <20 | mg/kg | TM60/PM0 |
| Mass of raw test portion | 0.1007 | 0.1066 | 0.1115 | 0.1029 | 0.1008 | 0.1115 | 0.1049 | 0.1036 | | | - | - | - | | kg | NONE/PM17 |
| Dry Matter Content Ratio | 88.9 | 84.4 | 80.8 | 87.0 | 89.0 | 81.0 | 85.8 | 86.6 | | | - | - | - | <0.1 | % | NONE/PM4 |
| Leachant Volume | 0.889 | 0.883 | 0.879 | 0.887 | 0.889 | 0.879 | 0.885 | 0.886 | | | - | - | - | | l | NONE/PM17 |
| Eluate Volume | 0.62 | 0.7 | 0.65 | 0.7 | 0.71 | 0.8 | 0.75 | 0.7 | | | - | - | - | | l | NONE/PM17 |
| pH # | 8.58 | 8.63 | 8.26 | 8.62 | 8.76 | 8.21 | 8.57 | 8.67 | | | - | - | - | <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 | <3 | <3 | <3 | <3 | <3 | <3 | <3 | <3 | | | - | - | - | <3 | mg/kg | TM173/PM0 |
| Sulphate as SO4 # | <5 | 6 | 13 | 13 | 13 | 13 | 14 | 21 | | | 1000 | 20000 | 50000 | <5 | mg/kg | TM38/PM0 |
| Chloride # | 4 | 7 | 9 | 8 | 69 | 9 | 9 | 8 | | | 800 | 15000 | 25000 | <3 | mg/kg | TM38/PM0 |

**Client Name:** Ground Investigations Ireland
**Reference:** 8354-01-19
**Location:** Cornelscourt
**Contact:** Barry Sexton

**Matrix : Solid**

| J E Job No. | Batch | Sample ID | Depth | J E Sample No. | EPH Interpretation |
|---|---|---|---|---|---|
| 19/1246 | 1 | TP - 11 | 1.00 | 1-3 | No interpretation possible |
| 19/1246 | 1 | TP - 11 | 2.00 | 4-6 | No interpretation possible |
| 19/1246 | 1 | TP - 11 | 3.00 | 7-9 | No interpretation possible |
| 19/1246 | 1 | TP - 12 | 0.50 | 10-12 | No interpretation possible |
| 19/1246 | 1 | TP - 12 | 1.50 | 13-15 | No interpretation possible |
| 19/1246 | 1 | TP - 12 | 2.50 | 16-18 | No interpretation possible |
| 19/1246 | 1 | TP - 13 | 0.50 | 19-21 | No interpretation possible |
| 19/1246 | 1 | TP - 13 | 1.50 | 22-24 | No interpretation possible |
| 19/1246 | 1 | TP - 13 | 2.50 | 25-27 | No interpretation possible |
| 19/1246 | 1 | TP - 16 | 0.50 | 28-30 | No interpretation possible |
| 19/1246 | 1 | TP - 16 | 1.50 | 31-33 | No interpretation possible |
| 19/1246 | 1 | TP - 16 | 2.50 | 34-36 | No interpretation possible |
| 19/1246 | 1 | TP - 17 | 0.50 | 37-39 | No interpretation possible |
| 19/1246 | 1 | TP - 17 | 1.50 | 40-42 | No interpretation possible |
| 19/1246 | 1 | TP - 17 | 2.50 | 43-45 | No interpretation possible |
| 19/1246 | 1 | TP - 21 | 0.50 | 46-48 | No interpretation possible |
| 19/1246 | 1 | TP - 21 | 1.50 | 49-51 | No interpretation possible |
| 19/1246 | 1 | TP - 21 | 2.50 | 52-54 | No interpretation possible |

**Client Name:** Ground Investigations Ireland
**Reference:** 19/01/8354
**Location:** Cornelscourt
**Contact:** Barry Sexton

**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 Jones Environmental Laboratory consultant, Jones Environmental Laboratory cannot be responsible for inaccurate or unrepresentative sampling.

Signed on behalf of Jones Environmental Laboratory:

Ryan Butterworth
Asbestos Team Leader

| J E Job No. | Batch | Sample ID | Depth | J E Sample No. | Date Of Analysis | Analysis | Result |
|---|---|---|---|---|---|---|---|
| 19/1246 | 1 | TP - 11 | 1.00 | 2 | 01/02/2019 | **General Description (Bulk Analysis)** | Soil/Stone |
| | | | | | 01/02/2019 | **Asbestos Fibres** | NAD |
| | | | | | 01/02/2019 | **Asbestos ACM** | NAD |
| | | | | | 01/02/2019 | **Asbestos Type** | NAD |
| | | | | | 01/02/2019 | **Asbestos Level Screen** | NAD |
| 19/1246 | 1 | TP - 11 | 2.00 | 5 | 01/02/2019 | **General Description (Bulk Analysis)** | Soil/Stone |
| | | | | | 01/02/2019 | **Asbestos Fibres** | NAD |
| | | | | | 01/02/2019 | **Asbestos ACM** | NAD |
| | | | | | 01/02/2019 | **Asbestos Type** | NAD |
| | | | | | 01/02/2019 | **Asbestos Level Screen** | NAD |
| 19/1246 | 1 | TP - 11 | 3.00 | 8 | 01/02/2019 | **General Description (Bulk Analysis)** | Soil/Stone |
| | | | | | 01/02/2019 | **Asbestos Fibres** | NAD |
| | | | | | 01/02/2019 | **Asbestos ACM** | NAD |
| | | | | | 01/02/2019 | **Asbestos Type** | NAD |
| | | | | | 01/02/2019 | **Asbestos Level Screen** | NAD |
| 19/1246 | 1 | TP - 12 | 0.50 | 11 | 01/02/2019 | **General Description (Bulk Analysis)** | Soil/Stone |
| | | | | | 01/02/2019 | **Asbestos Fibres** | NAD |
| | | | | | 01/02/2019 | **Asbestos ACM** | NAD |
| | | | | | 01/02/2019 | **Asbestos Type** | NAD |
| | | | | | 01/02/2019 | **Asbestos Level Screen** | NAD |
| 19/1246 | 1 | TP - 12 | 1.50 | 14 | 01/02/2019 | **General Description (Bulk Analysis)** | Soil/Stone |
| | | | | | 01/02/2019 | **Asbestos Fibres** | NAD |
| | | | | | 01/02/2019 | **Asbestos ACM** | NAD |
| | | | | | 01/02/2019 | **Asbestos Type** | NAD |
| | | | | | 01/02/2019 | **Asbestos Level Screen** | NAD |
| 19/1246 | 1 | TP - 12 | 2.50 | 17 | 01/02/2019 | **General Description (Bulk Analysis)** | Soil/Stone |
| | | | | | 01/02/2019 | **Asbestos Fibres** | NAD |
| | | | | | 01/02/2019 | **Asbestos ACM** | NAD |
| | | | | | 01/02/2019 | **Asbestos Type** | NAD |
| | | | | | 01/02/2019 | **Asbestos Level Screen** | NAD |
| 19/1246 | 1 | TP - 13 | 0.50 | 20 | 01/02/2019 | **General Description (Bulk Analysis)** | soil-stones |
| | | | | | 01/02/2019 | **Asbestos Fibres** | NAD |
| | | | | | 01/02/2019 | **Asbestos ACM** | NAD |

**Client Name:** Ground Investigations Ireland
**Reference:** 19/01/8354
**Location:** Cornelscourt
**Contact:** Barry Sexton

| J E Job No. | Batch | Sample ID | Depth | J E Sample No. | Date Of Analysis | Analysis | Result |
|---|---|---|---|---|---|---|---|
| 19/1246 | 1 | TP - 13 | 0.50 | 20 | 01/02/2019 | **Asbestos Type** | NAD |
| | | | | | 01/02/2019 | **Asbestos Level Screen** | NAD |
| 19/1246 | 1 | TP - 13 | 1.50 | 23 | 01/02/2019 | **General Description (Bulk Analysis)** | soil-stones |
| | | | | | 01/02/2019 | **Asbestos Fibres** | NAD |
| | | | | | 01/02/2019 | **Asbestos ACM** | NAD |
| | | | | | 01/02/2019 | **Asbestos Type** | NAD |
| | | | | | 01/02/2019 | **Asbestos Level Screen** | NAD |
| 19/1246 | 1 | TP - 13 | 2.50 | 26 | 01/02/2019 | **General Description (Bulk Analysis)** | soil-stones |
| | | | | | 01/02/2019 | **Asbestos Fibres** | NAD |
| | | | | | 01/02/2019 | **Asbestos ACM** | NAD |
| | | | | | 01/02/2019 | **Asbestos Type** | NAD |
| | | | | | 01/02/2019 | **Asbestos Level Screen** | NAD |
| 19/1246 | 1 | TP - 16 | 0.50 | 29 | 01/02/2019 | **General Description (Bulk Analysis)** | Soil/Stones |
| | | | | | 01/02/2019 | **Asbestos Fibres** | NAD |
| | | | | | 01/02/2019 | **Asbestos ACM** | NAD |
| | | | | | 01/02/2019 | **Asbestos Type** | NAD |
| | | | | | 01/02/2019 | **Asbestos Level Screen** | NAD |
| 19/1246 | 1 | TP - 16 | 1.50 | 32 | 01/02/2019 | **General Description (Bulk Analysis)** | Soil/Stones |
| | | | | | 01/02/2019 | **Asbestos Fibres** | NAD |
| | | | | | 01/02/2019 | **Asbestos ACM** | NAD |
| | | | | | 01/02/2019 | **Asbestos Type** | NAD |
| | | | | | 01/02/2019 | **Asbestos Level Screen** | NAD |
| 19/1246 | 1 | TP - 16 | 2.50 | 35 | 01/02/2019 | **General Description (Bulk Analysis)** | Soil/Stones |
| | | | | | 01/02/2019 | **Asbestos Fibres** | NAD |
| | | | | | 01/02/2019 | **Asbestos ACM** | NAD |
| | | | | | 01/02/2019 | **Asbestos Type** | NAD |
| | | | | | 01/02/2019 | **Asbestos Level Screen** | NAD |
| 19/1246 | 1 | TP - 17 | 0.50 | 38 | 01/02/2019 | **General Description (Bulk Analysis)** | soil-stones |
| | | | | | 01/02/2019 | **Asbestos Fibres** | NAD |
| | | | | | 01/02/2019 | **Asbestos ACM** | NAD |
| | | | | | 01/02/2019 | **Asbestos Type** | NAD |
| | | | | | 01/02/2019 | **Asbestos Level Screen** | NAD |
| 19/1246 | 1 | TP - 17 | 1.50 | 41 | 01/02/2019 | **General Description (Bulk Analysis)** | soil-stones |
| | | | | | 01/02/2019 | **Asbestos Fibres** | NAD |
| | | | | | 01/02/2019 | **Asbestos ACM** | NAD |
| | | | | | 01/02/2019 | **Asbestos Type** | NAD |
| | | | | | 01/02/2019 | **Asbestos Level Screen** | NAD |
| 19/1246 | 1 | TP - 17 | 2.50 | 44 | 01/02/2019 | **General Description (Bulk Analysis)** | Soil/Stones |
| | | | | | 01/02/2019 | **Asbestos Fibres** | NAD |
| | | | | | 01/02/2019 | **Asbestos ACM** | NAD |
| | | | | | 01/02/2019 | **Asbestos Type** | NAD |
| | | | | | 01/02/2019 | **Asbestos Level Screen** | NAD |
| 19/1246 | 1 | TP - 21 | 0.50 | 47 | 01/02/2019 | **General Description (Bulk Analysis)** | soil.stones |
| | | | | | 01/02/2019 | **Asbestos Fibres** | NAD |

**Client Name:** Ground Investigations Ireland
**Reference:** 19/01/8354
**Location:** Cornelscourt
**Contact:** Barry Sexton

| J E Job No. | Batch | Sample ID | Depth | J E Sample No. | Date Of Analysis | Analysis | Result |
|---|---|---|---|---|---|---|---|
| 19/1246 | 1 | TP - 21 | 0.50 | 47 | 01/02/2019 | **Asbestos ACM** | NAD |
| | | | | | 01/02/2019 | **Asbestos Type** | NAD |
| | | | | | 01/02/2019 | **Asbestos Level Screen** | NAD |
| 19/1246 | 1 | TP - 21 | 1.50 | 50 | 01/02/2019 | **General Description (Bulk Analysis)** | soil.stones |
| | | | | | 01/02/2019 | **Asbestos Fibres** | NAD |
| | | | | | 01/02/2019 | **Asbestos ACM** | NAD |
| | | | | | 01/02/2019 | **Asbestos Type** | NAD |
| | | | | | 01/02/2019 | **Asbestos Level Screen** | NAD |
| 19/1246 | 1 | TP - 21 | 2.50 | 53 | 01/02/2019 | **General Description (Bulk Analysis)** | soil.stones |
| | | | | | 01/02/2019 | **Asbestos Fibres** | NAD |
| | | | | | 01/02/2019 | **Asbestos ACM** | NAD |
| | | | | | 01/02/2019 | **Asbestos Type** | NAD |
| | | | | | 01/02/2019 | **Asbestos Level Screen** | NAD |

**Client Name:** Ground Investigations Ireland
**Reference:** 8354-01-19
**Location:** Cornelscourt
**Contact:** Barry Sexton

| J E Job No. | Batch | Sample ID | Depth | J E Sample No. | Analysis | Reason |
|---|---|---|---|---|---|---|
| No deviating sample report results for job 19/1246 | | | | | | |

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

# NOTES TO ACCOMPANY ALL SCHEDULES AND REPORTS

***JE Job No.:*** 19/1246

**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. 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.

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

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

**WATERS**

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

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

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

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

**DEVIATING SAMPLES**

Samples must be received in a condition appropriate to the requested analyses. All samples should be submitted to the laboratory in suitable containers with sufficient ice packs to sustain an appropriate temperature for the requested analysis. If this is not the case you will be informed and any test results that may be compromised highlighted on your deviating samples report.

**SURROGATES**

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

**DILUTIONS**

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

**BLANKS**

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

**NOTE**

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

**REPORTS FROM THE SOUTH AFRICA LABORATORY**

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

**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. |
| ++ | Result outside calibration range, results should be considered as indicative only and are not accredited. |
| * | Analysis subcontracted to an Exova Jones Environmental 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 |

## Appendix - Methods used for WAC (2003/33/EC)

***JE Job No.:*** 19/1246

| | |
|---|---|
| **Leachate tests** | |
| 10l/kg; 4mm | I.S. EN 12457-2:2002 Specified particle size; water added to L/S ratio; capped; agitated for 24 ± 0.5 hours; eluate settled and filtered over 0.45 µm membrane filter. |
| **Eluate analysis** | |
| As | I.S. EN 12506 : EN ISO 11885 (ICP-OES) |
| Ba | I.S. EN 12506 : EN ISO 11885 (ICP-OES) |
| Cd | I.S. EN 12506 : EN ISO 11885 (ICP-OES) |
| Cr total | I.S. EN 12506 : EN ISO 11885 (ICP-OES) |
| Cu | I.S. EN 12506 : EN ISO 11885 (ICP-OES) |
| Hg | I.S. EN 13370 rec. EN 1483 (CVAAS) |
| Mo | I.S. EN 12506 : EN ISO 11885 (ICP-OES) |
| Ni | I.S. EN 12506 : EN ISO 11885 (ICP-OES) |
| Pb | I.S. EN 12506 : EN ISO 11885 (ICP-OES) |
| Sb | I.S. EN 12506 : EN ISO 11885 (ICP-OES) |
| Se | I.S. EN 12506 : EN ISO 11885 (ICP-OES) |
| Zn | I.S. EN 12506 : EN ISO 11885 (ICP-OES) |
| Chloride | I.S. EN 12506 rec. EN ISO 10304-part 1 (liquid chromatography of ions) |
| Fluoride | I.S. EN 12506 rec. EN ISO 10304-part 1 (liquid chromatography of ions) |
| Sulphate | I.S. EN 12506 rec. EN ISO 10304-part 1 (liquid chromatography of ions) |
| Phenol index | I.S. EN 13370 rec. ISO 6439 (4-Aminoantipyrine spectrometic methods after distillation)* ( BY HPLC - Jones Env) |
| DOC | I.S. EN 1484 |
| TDS | I.S. EN 15216 |
| **Compositional analysis** | |
| TOC | I.S. EN 13137 Method B: carbonates removed with acid; TOC by combustion. |
| BTEX | GC-FID |
| PCB7** | I.S. EN 15308 analysis by GC-ECD. |
| Mineral oil | I.S. EN 14039 C10 to C40 analysis by GC-FID. |
| PAH17*** | I.S. EN 15527 PAH17 analysis by GC-MS |
| Metals | I.S. EN 13657 - Aqua regia digestion: EN ISO 11885 ( ICP-OES) |
| | |
| **Other** | |
| Dry matter | I.S. EN 14346 sample is dried to a constant mass in an oven at 105 ± 3 °C; Method B Water content by direct Karl-Fischer-titration and either volumetric or coulometric detection. |
| LOI | I.S. EN 15169 Difference in mass after heating in a furnace up to 550 ± 25 °C. |
| ANC | CEN/TS 15364 Determined by amouns of acid or base needed to cover the pH range |

**Notes:**

*If not suitable due to LOD, precision, etc., any other suitable method can be used, e.g. AFS, ICP-MS
**PCB-28, PCB-52, PCB-101, PCB-118, PCB-138, PCB-153 and PCB-180

***Naphthalene, Acenaphthylene, Acenaphthene, Anthracene, Benzo(a)anthracene, Benzo(b)fluoranthene, Benzo(k)fluoranthene, Benzo(g,h,i)perylene, Benzo(a)pyrene, Chrysene, Coronene, Dibenzo(a,h)anthracene, Fluorene, Fluoranthene, Indeno(1,2,3-c,d)pyrene, Phenanthrene and Pyrene.

**JE Job No:** 19/1246

| Test Method No. | Description | Prep Method No. (if appropriate) | Description | ISO 17025 (UKAS/SANAS) | MCERTS (UK soils only) | Analysis done on As Received (AR) or Dried (AD) | Reported on dry weight basis |
|---|---|---|---|---|---|---|---|
| PM4 | Gravimetric measurement of Natural Moisture Content and % Moisture Content at either 35°C or 105°C. Calculation based on ISO 11465 and BS1377. | PM0 | No preparation is required. | | | AR | |
| TM4 | Modified USEPA 8270 method for the solvent extraction and determination of 16 PAHs by GC-MS. | PM8 | End over end extraction of solid samples for organic analysis. The solvent mix varies depending on analysis required. | | | AR | Yes |
| TM4 | Modified USEPA 8270 method for the solvent extraction and determination of 16 PAHs by GC-MS. | PM8 | End over end extraction of solid samples for organic analysis. The solvent mix varies depending on analysis required. | Yes | | AR | Yes |
| TM5 | Modified USEPA 8015B method for the determination of solvent Extractable Petroleum Hydrocarbons (EPH) with carbon banding within the range C8-C40 GC-FID. | PM16 | Fractionation into aliphatic and aromatic fractions using a Rapid Trace SPE. | | | AR | |
| TM5 | Modified USEPA 8015B method for the determination of solvent Extractable Petroleum Hydrocarbons (EPH) with carbon banding within the range C8-C40 GC-FID. | 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 USEPA 8015B method for the determination of solvent Extractable Petroleum Hydrocarbons (EPH) with carbon banding within the range C8-C40 GC-FID. | 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 |

**JE Job No:** 19/1246

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

**JE Job No:** 19/1246

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

**JE Job No:** 19/1246

| Test Method No. | Description | Prep Method No. (if appropriate) | Description | ISO 17025 (UKAS/SANAS) | MCERTS (UK soils only) | Analysis done on As Received (AR) or Dried (AD) | Reported on dry weight basis |
|---|---|---|---|---|---|---|---|
| NONE | No Method Code | PM4 | Gravimetric measurement of Natural Moisture Content and % Moisture Content at either 35°C or 105°C. Calculation based on ISO 11465 and BS1377. | | | AR | |
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# **APPENDIX 9** – Groundwater Monitoring Records

**Ground Investigations Ireland**
**Groundwater Monitoring Field Sheet**

**(V1 August 2018)**

| | | | |
|---|---|---|---|
| Project Number | 8354-01-2019 | Sample Date | 13-03-2019 |
| Client | DBFL Consulting Engineers | Well I.D. | BH-03 |
| Site Name | Cornelscourt | Weather | Dry |
| Sampler I.D. | PM | Weather Previous 24hrs | Wet |

**Well Data**

| | | | |
|---|---|---|---|
| Casing Diameter (mm) | 100mm | Total Well Depth (m) | 9.59 |
| Standpipe Diam. (mm) | 50mm | Water Level (mBGL) | 2.27 |
| Stick Up (mm) | 0.424mm | VOC Screen in casing (y/n) | N |
| Standpipe Type pvc, HDPE etc. | PVC | VOC Data (ppm) | ppm |

**Purge Data**

| | | | |
|---|---|---|---|
| Time Purging Start | 9.55am | **Sampling Method/Equipment (Tick)** | |
| Timer Purging End | 10.27am | Submersible Pump | |
| Purge Volume (litres) | 38 litres. | Bailer | √ |
| Colour | Brown | Tube with foot valve | |
| Recovery | Good | Low Flow Pumping | |

| Time | Litres Purged | Ph | EC (mS) | Temp | ORP | DO (mg/l) | Odour |
|---|---|---|---|---|---|---|---|
| 10.27 | 38 litres | | | | | | |
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**Additional Comments/Observations:**

**Ground Investigations Ireland**
**Groundwater Monitoring Field Sheet**

**(V1 August 2018)**

| | | | |
|---|---|---|---|
| Project Number | 8354-01-2019 | Sample Date | 13-03-2019 |
| Client | DBFL Consulting Engineers | Well I.D. | BH-07 |
| Site Name | Cornelscourt | Weather | Dry |
| Sampler I.D. | PM | Weather Previous 24hrs | Wet |
| **Well Data** | | | |
| Casing Diameter (mm) | 100mm | Total Well Depth (m) | 11.55 |
| Standpipe Diam. (mm) | 50mm | Water Level (mBGL) | 1.02 |
| Stick Up (mm) | 0.424mm | VOC Screen in casing (y/n) | N |
| Standpipe Type pvc, HDPE etc. | PVC | VOC Data (ppm) | ppm |
| **Purge Data** | | | |
| Time Purging Start | 11.40am | **Sampling Method/Equipment (Tick)** | |
| Timer Purging End | 12.10am | Submersible Pump | |
| Purge Volume (litres) | 55 litres | Bailer | √ |
| Colour | Brown | Tube with foot valve | |
| Recovery | Good | Low Flow Pumping | |

| Time | Litres Purged | Ph | EC (mS) | Temp | ORP | DO (mg/l) | Odour |
|---|---|---|---|---|---|---|---|
| 12.10 | 55 litres | | | | | | Hydrocarbon odour noted |
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**Additional Comments/Observations:**

**Ground Investigations Ireland**
**Groundwater Monitoring Field Sheet**

**(V1 August 2018)**

| | | | |
|---|---|---|---|
| Project Number | 8354-01-2019 | Sample Date | 13-03-2019 |
| Client | DBFL Consulting Engineers | Well I.D. | BH-08 |
| Site Name | Cornelscourt | Weather | Dry |
| Sampler I.D. | PM | Weather Previous 24hrs | Wet |
| **Well Data** | | | |
| Casing Diameter (mm) | 100mm | Total Well Depth (m) | 7.95 |
| Standpipe Diam. (mm) | 50mm | Water Level (mBGL) | 0.96 |
| Stick Up (mm) | 0.424mm | VOC Screen in casing (y/n) | N |
| Standpipe Type pvc, HDPE etc. | PVC | VOC Data (ppm) | ppm |
| **Purge Data** | | | |
| Time Purging Start | 9.15am | **Sampling Method/Equipment (Tick)** | |
| Timer Purging End | 9.40am | Submersible Pump | |
| Purge Volume (litres) | 41 litres | Bailer | √ |
| Colour | Brown | Tube with foot valve | |
| Recovery | Good | Low Flow Pumping | |

| Time | Litres Purged | Ph | EC (mS) | Temp | ORP | DO (mg/l) | Odour |
|---|---|---|---|---|---|---|---|
| 09.40 | 41 | | | | | | None |
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**Additional Comments/Observations:**

**Ground Investigations Ireland**
**Groundwater Monitoring Field Sheet**

**(V1 August 2018)**

| | | | |
|---|---|---|---|
| Project Number | 8354-01-2019 | Sample Date | 13-03-2019 |
| Client | DBFL Consulting Engineers | Well I.D. | BH-11 |
| Site Name | Cornelscourt | Weather | Dry |
| Sampler I.D. | PM | Weather Previous 24hrs | Wet |
| **Well Data** | | | |
| Casing Diameter (mm) | 100mm | Total Well Depth (m) | 8.48 |
| Standpipe Diam. (mm) | 50mm | Water Level (mBGL) | 1.0 |
| Stick Up (mm) | 0.424mm | VOC Screen in casing (y/n) | N |
| Standpipe Type pvc, HDPE etc. | PVC | VOC Data (ppm) | ppm |
| **Purge Data** | | | |
| Time Purging Start | 11.00am | **Sampling Method/Equipment (Tick)** | |
| Timer Purging End | 11.30am | Submersible Pump | |
| Purge Volume (litres) | 40 litres | Bailer | √ |
| Colour | Brown | Tube with foot valve | |
| Recovery | Good | Low Flow Pumping | |

| Time | Litres Purged | Ph | EC (mS) | Temp | ORP | DO (mg/l) | Odour |
|---|---|---|---|---|---|---|---|
| 11.30 | 40 litres | | | | | | Hydrocarbon odour noted |
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**Additional Comments/Observations:**