

AtkinsRéalis



Foul Drainage Pumping Station, Pump House and Rising Mains

Castlethorn Old Conna ULC

September 2026

0126446DG0026

OLD CONNAUGHT PHASE A1

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1. Introduction

1.1 Background of Report

The proposed residential development site forms the first phase provided for under the Old Connaught Local Area Plan. The site is generally bounded by agricultural lands to the north, the M11 to the east, Old Connaught avenue to the south and Festina Lente equestrian centre to the west. The proposed development is referred to as Old Connaught Phase A1.

The proposed development comprises 271 No. dwellings in a mix of houses, duplex units and apartments, 1no Creche (c.574 Sq.m) and all associated and ancillary site development, landscape and boundary treatment works.

The proposed housing mix comprises :

103no.houses (22 no. 4-bed, 68 no. 3-bed and 13no. 2-bed) ranging from 2 to 3 storeys.

162no. apartments and 6no. duplexes accommodated in a terrace and 4no. apartment blocks, including

Block 1 : 54no. apartments total (19no. 1-bed, 4no. 2-bed (3-person), 25no. 2-bed (4-person)) in 1no. 1 to 5-storey building and 6no. 3-bed duplex units in a 3-storey terrace.

Block 2: 41no. apartments total (9no. 1-bed, 9no. 2-bed (3-person), 23no. 2-bed (4-person)) in 1no. 1 to 5-storey building.

Block 3: 38no. apartments total (13no. 1-bed, 11no. 2-bed (3-person), 14no. 2-bed (4-person)) and the ground floor creche (574 sqm) with associated outdoor play area (c.225.4 sq m), in 1no. 1 to 5-storey building.

Block 4: 35no. apartments total (8no. 1-bed, 11no. 2-bed (3-person), 16no. 2-bed (4-person)) in 1no. 1 to 4-storey building.

Associated and ancillary site development and infrastructure work, include:

On-site attenuation; hard and soft landscaping and boundary treatment works including **public open space (totalling c. 4,519 sq m)** in 2 areas identified as POS1 (1,232 sq m) and POS2 (3,287 sq m) incorporating the existing veteran Oak tree to be retained; **communal open space (totalling c. 1,154 sq m)** in 3 areas identified as COS1 (253 sq m), COS2 (723 sqm) and COS3 (178 sq m); components of the regional attenuation pond to the north east of the site; 5no. ESB substations. Vehicular site access from Old Connaught Avenue, via a proposed new primary North-South street that includes active travel infrastructure and a 7m wide LUAS reservation corridor running parallel to the east of the primary North-South street. A section of the East-West link road, including active travel, will also be provided for along the northern boundary of the site. A total of **289no. car parking** spaces comprising 241no. surface spaces (inclusive of 11no. visitor spaces, 2no. ESB spaces, 2no. Go-Car (shared) spaces, and 9no. disabled spaces) and 48no. undercroft spaces (inclusive of 2no. disabled spaces), 20% of residential car parking spaces equipped with Electric Vehicle charging points. **435no. bicycle parking spaces**, including 351no. resident spaces and 84no. visitor spaces. 12no. motorbike parking spaces, Ancillary stores serving the houses, duplex units and apartments.



The proposed development includes the construction of a new pumping station, associated single storey building and ESB substation, twin rising mains extending c.400m along Old Connaught Avenue to connect to the existing gravity foul network on Old Connaught Avenue c.125m east of the M11 bridge, and associated storage, together with all associated enabling site development and reinstatement works.

This report outlines the design requirements for the proposed Old Connaught Local Area Plan (LAP) Pumping Station



1.2 Site Location and Description

Figure 1-1 below indicates the red line boundary extents for the proposed site, which covers a mix of open agricultural lands and existing developed plots. The site extends across the central and eastern fields of Old Connaught and includes frontage onto Old Connaught Avenue to the south. Refer to OMP Architectural drawings for further information on the red line boundary and land ownership line.

Ferndale road is located to the west, and Ferndale Court Apartments are located c. 156m north-west of the Proposed Site Location. The M11 forms a clear landmark to the east, and Old Connaught Avenue defines the southern edge of the surrounding area. The wider setting comprises a combination of suburban neighbourhoods, community facilities, and open green spaces, reflecting the mixed residential and semi-rural character typical of Old Connaught.

The proposed Pump Station will be located within the existing Dun Laoghaire Rathdown County Council (DLRCC) lands to the Southwest of the Development as indicated below.



Figure 1-1 - Proposed Site Location

2. Local Area Plan requirements

2.1 Pump Station Justification

The wastewater strategy underpinning the Old Connaught LAP was developed by DLRCC in consultation with Uisce Éireann (UÉ) through the Infrastructure Capacity Assessment Study (ICAS). The proposed foul pumping station is therefore consistent with the strategic wastewater servicing framework developed jointly by DLRCC and UÉ.

The Old Connaught LAP identifies the need for delivery of strategic wastewater infrastructure to facilitate the planned residential growth of the Old Connaught Area. The proposed foul pumping station and associated twin rising mains forms part of the essential enabling infrastructure required to service the planned population and housing growth envisaged as set out under the LAP.

The proposed foul pumping station solution comprises a gravity foul drainage network discharging to a new wastewater pumping station, with flows transferred via 2No. rising mains under the N11 and discharging to the existing public foul network along Old Connaught Avenue. The existing foul network discharges to the existing Bray Pump Station and onward to the Shanganagh Wastewater Treatment Plant. The existing foul gravity network on Old Connaught Avenue and via the Bray Sea Gardens Development was recently upgrade by Uisce Éireann (UÉ) as part of the Local Network Reinforcement Project and has the capacity to cater for the flows from the Old Connaught LAP catchment. It is noted that the LAP also confirms that the Shanganagh Wastewater Treatment Plant has available treatment capacity to accommodate future development.

The LAP indicates that preliminary analysis was undertaken regarding the provision of a strategic wastewater pumping station on DLRCC owned lands north of Old Connaught Avenue. A site selection exercise was completed by DLRCC and ARUP consulting engineers which confirmed the preferred location and to which the PS design in this report has been located.



2.2 Uisce Éireann requirements

A number of meetings and correspondence have taken place between Castlethorn, AtkinsRéalis, UÉ and DLRCC which set out the project scope, design requirements and extents of the design required prior to submission of this planning design document. The items outlined below were discussed

To deliver a WwPS, and associated downstream network via the Rising Main and design alignment of the upstream network to cater;

1. Foul Drainage Masterplan Model for the full Old Connaught LAP including;
 - Central Character
 - Southern Character
 - Western Character
 - Northern Character
 - Village Core
2. 4,737 housing units (12,790 P.E) for the Old Connaught LAP with 24hour effective storage of 2,150m³
3. Permanent rising main solution.
4. Workshop _ A - UÉ Workshop 4/5
5. Workshop _ B - HAZOP/ALM
6. WS_C - Pre Planning Submission

A Foul Drainage Masterplan hydraulic model was completed by AtkinsRéalis and provided to UÉ for information in May 2026. The model made allowance for each of the areas as indicated in item 1 above including layouts for each Character area. Where Character areas are at an early stage of development or are currently not being progressed the layout for the LAP was used. It is expected that these will change as each Character area is further developed. Refer to **Figure 2-1** below for LAP Foul Network Layout. UÉ confirmed in August 2026 that the hydraulic model provided for the LAP had been reviewed and accepted.

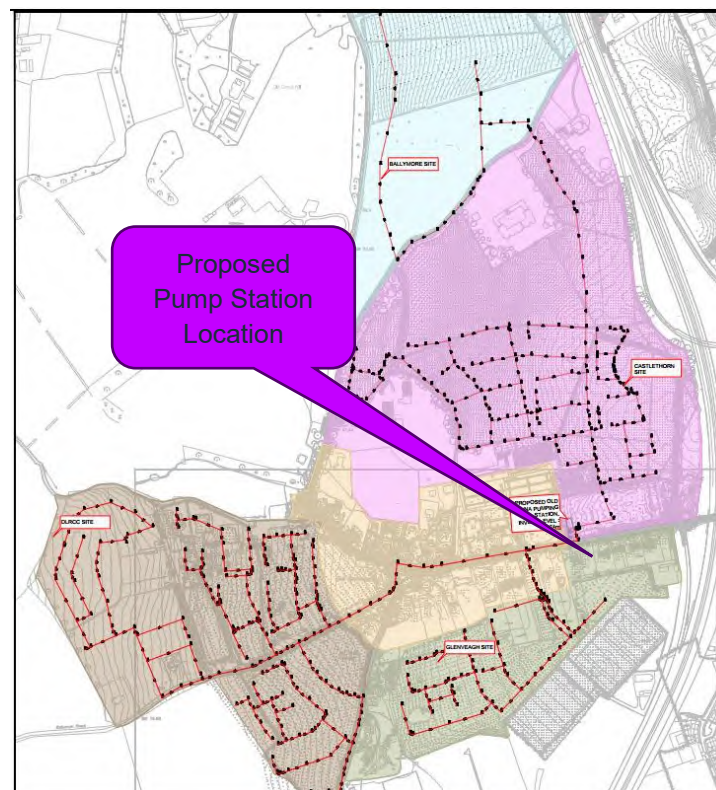


Figure 2-1 – LAP Foul Network Layout

The Foul Pump Station design was progressed as per item 2 above. Refer to section 4 of this report for further details. The final design of the Pump Station caters for 3,569 housing units (9,634 P.E.) with 24-hour effective storage of 1,445m³ as set out in Section 4 and Section 4.6 of this report.

During the Site investigation stage of the Pump Station design, DLRCC had previously explored the option of crossing the existing Old Connaught Avenue / N11 overbridge as an interim solution via an existing spare ducting within the bridge deck. Further investigation works determined that the existing ducting was not available for use and may not be feasible at construction stage install a rising main within the duct. It was determined that the permanent solution of provide twin rising mains of 100mm dia and 200mm dia under the N11 would be the preferred option by all parties including DLRCC and UÉ. This option satisfies item 3 above as required by UÉ.

Due to timeframe requirements for the lodgement of this planning application, Castlethorn had high level discussions with UÉ to confirm level of detail required for this planning submission including outline design and drawings. On that basis a number of workshops have taken place with responses provided to the queries raised as part of the workshops, refer to 4.7Appendix FAppendix F. Castlethorn have committed to continuing theses stages in parallel with this planning application and detail design stage of the project prior to the proposed Pumping Station and Rising mains going to construction.

As requested above in item 6 a number of pre planning meetings have taken place between Castlethorn, AtkinsRéalis, DLRCC and UÉ, these meetings formed part of both statutory pre planning meetings requirements an ongoing fortnightly meeting between DLRCC and UÉ.



3. Site Investigations

3.1 DLRCC Lands

Site Investigations Ltd (SIL) completed a Site Investigation works for a DLRCC proposed residential development adjacent to the proposed Pump Station Location behalf of DLRCC in April 2024. The SI factual report reviewed as part of the design of the proposed Old Connaught Pumping Station. The SI works consisted of:

- 6 No. cable percussive boreholes, to depths ranging between 6.4m to 7.2m bgl;
- 15 No. trial pits, to depths ranging between 2.2m to 3.0m bgl;
- 2 No. soakaway tests;
- 19 No. dynamic probes;
- 2 No. groundwater standpipe installations,
- Geotechnical laboratory testing at soil samples taken at 1m bgl (i.e. water content, Atterberg limits, particle size distribution with hydrometers, pH and sulphate content); and
- Geo-environmental testing of soil samples taken at 1m bgl (i.e. total organic carbon, total sulphur)

Refer to **Figure 3-1** below for Site investigation locations carried out on the DLRCC Lands.



Figure 3-1 – Site Investigation Locations (DLRCC Lands)

The site Investigation works completed to date were carried out prior to the design of the proposed Foul Pump Station and therefore there is limitations on the information available, these include;

Refusal of Boreholes at a maximum depth of 6.4m for most of the site. It is unclear whether the obstruction is an oversized material or the top of bedrock.

3.2 Castlethorn Lands

IGSL Limited completed Site Investigation on behalf of Castlethorn Old Conna UCL in early 2026 with a factual report being published in June 2026. The SI factual report was also reviewed as part of the design of the proposed Old Conna Pumping Station. The SI works consisted of:

3 No. cable percussion boreholes

3 No. rotary cored boreholes at the borehole locations

5 No. mechanically excavated trial pits

2 No. window sample locations

2 No. dynamic probe tests at the window sample locations

7 No. plate bearing tests

7 No. infiltration tests

1 No. inspection (slit) trench

Groundwater monitoring using standpipes

A programme of geotechnical, chemical and environmental laboratory testing was also completed



Refer to **Figure 3-2** below for Site investigation locations carried out on the Castlethorn Lands.



Figure 3-2 – Site Investigation Locations (Castlethorn Lands)

Three rotary cored boreholes (RC01, RC02 and RC03) were completed as part of the site investigation works. The nearest borehole to the proposed pumping station location is RC03, as indicated above in **Figure 3-2**. Bedrock was encountered within the three rotary cored boreholes at depths ranging from approximately 10.0 m to 16.5 m below ground level (bgl), with RC03 recording the deepest rockhead at approximately 16.5 m bgl. Based on the available site investigation data, a circa 12m deep excavation at the proposed pumping station location is not anticipated to encounter bedrock, although local variations in rock levels may occur across the site.

The Site Investigation Report describes the bedrock as weak to moderately weak weathered sedimentary rock. Based on the available information, if bedrock is encountered during construction, it is anticipated that excavation could be undertaken using conventional mechanical methods. Whilst temporary increases in construction noise may arise from localised rock breaking activities, significant vibration impacts are not anticipated.

From a groundwater perspective, while long-term groundwater monitoring is ongoing, groundwater was encountered during drilling at RC03 at approximately 11.4m bgl, with subsequent monitoring indicating a groundwater level of approximately 8.5m bgl. As such, groundwater ingress into deep excavations is anticipated and appropriate groundwater management measures will be incorporated into the construction methodology. Such measures may include temporary dewatering and pumping systems, subject to detailed design and contractor methodology.

Further details regarding potential air quality and noise impacts associated with the proposed development are provided within the Construction Environmental Management Plan (CEMP) prepared by AWN and submitted as part of this planning application. Environmental considerations and associated mitigation measures are detailed within the relevant reports prepared by BSM and submitted as part of this planning application.



As agreed with Uisce Éireann and DLRCC, a parallel site investigation programme is currently being undertaken at the proposed pumping station and associated rising main locations. The findings of these investigations will supplement the information obtained from both the DLRCC and Castlethorn site investigations completed to date and will further inform the detailed design of the proposed infrastructure.



The proposed pumping station will be a reinforced concrete structure with a wet well / dry valve chamber configuration and includes the following plant and equipment:

- Inlet chamber with isolating penstock arrangement.
- Wet Well.
- Dry well containing dry-installed 2No. wastewater pumps, suction pipework, delivery pipework, isolation valves, non-return valves and common discharge manifold.
- Pump house providing weather-protected accommodation for associated plant, MCC room and maintenance activities, WC and canteen room.
- Dry-well with 600mm wide drainage channel and associated sump with dedicated sump pumping arrangement returning incidental drainage to the wet well.
- 2No. rising mains, comprising the proposed interim and ultimate rising-main arrangements (100mmID and 200mmID SDR17 HDPE).
- Emergency wastewater storage with a minimum effective volume of 1,445 m³.
- Emergency Shower.
- Surge vessel equipment, (transient hydraulic assessment to be completed at detail design stage)
- Chemical dosing unit.
- Active odour-control unit.
- MCC, PLC, telemetry and associated control equipment.
- Standby-power connection and generator provision, subject to agreement with Uisce Éireann.
- Lifting and plant-removal facilities within the building.
- Ventilation and hazardous-area control measures.
- Security fencing, controlled access, task lighting and site drainage in accordance with Uisce Éireann requirements.
- Vehicular access and hardstanding.

The Emergency Storage tank has been split into 2 cells to provide ratio of circa 2:1.

The Pump Station will be further developed in accordance with the applicable Uisce Éireann standards, including UÉ-TEC-800-02, IW-CDS-5030-03, IW-CDS-5030-01 and associated mechanical, electrical, instrumentation, control, security, testing and commissioning requirements. As the proposed dry-well arrangement is a site-specific strategic pumping-station solution the final configuration of underground mechanical / electrical requirements will be subject to Uisce Éireann review and acceptance at detailed design stage.

Pump Station planning drawings have been provided as part of this planning application and contained within Appendix D of this report.

A Flood Risk Assessment for the entire development site, including the location of the pumping station has been undertaken and is included within the planning application package (AtkinsRéalis Document Reference 0126446G0010).



The site layout has been designed to facilitate access for a rigid jet-vac tanker vehicle for the operational and maintenance of the proposed foul pumping station. Vehicular access is provided via the proposed access road located to the east of the pumping station site. A Potential interim turning bay on DLRCC land to allow for service vehicle movements from the proposed pump station if considered necessary by DLRCC and UE can be provided as indicated below.

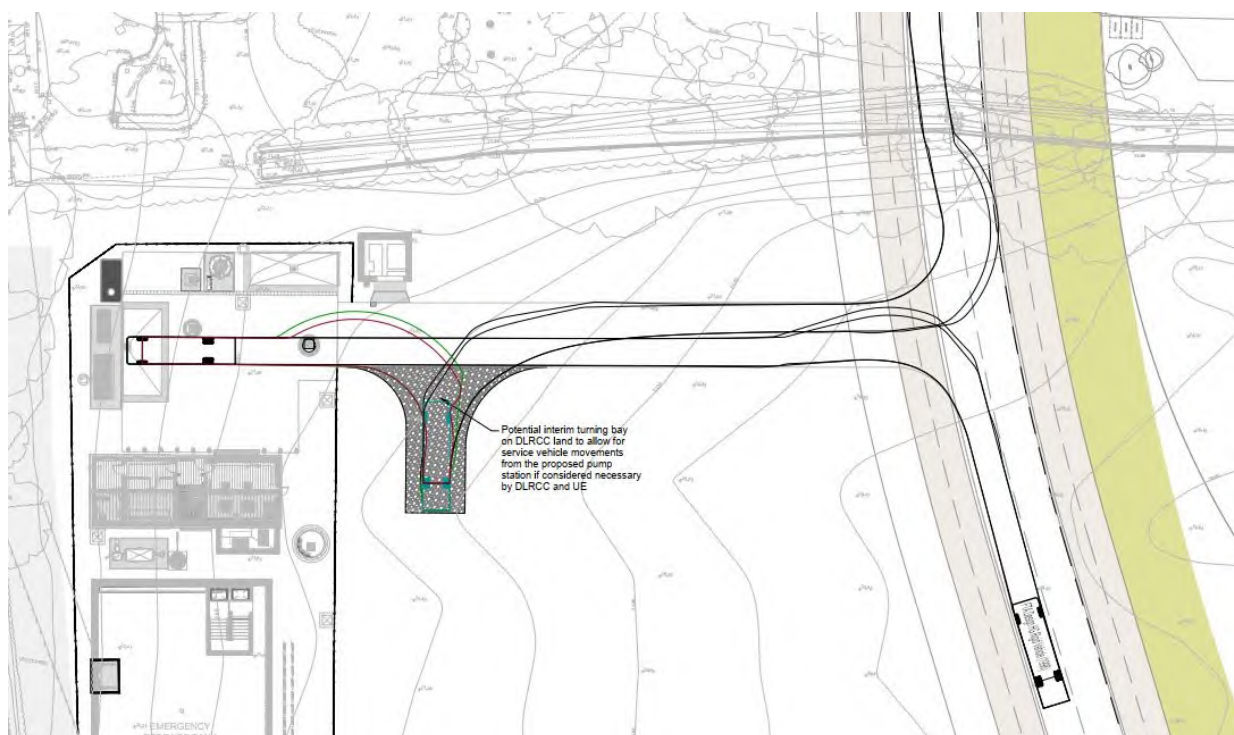


Figure 4-2 – Vehicle Access

4.3 Philosophy

Pump operation will be controlled in response to wastewater levels within the wet well. The operating levels will be monitored by duty level instrumentation, supplemented by independent high-level protection and alarm devices as required by the final Uisce Éireann-approved control philosophy.

The dry-installed pumps will be arranged to provide the required duty / standby capacity for the phased and ultimate development conditions. Automatic duty rotation will be incorporated to balance operating hours and plant wear. Variable-speed drives may be used to regulate pumped flow, maintain appropriate rising-main velocities and control discharge to the downstream network.

The detailed pump-control philosophy, including cut-in and cut-out levels, duty rotation, assist-pump initiation, fixed-flow operation, blockage detection, anti-ragging functions, alarm responses, emergency storage operation and recovery following power or pump failure, will be confirmed during detailed design through hydraulic assessment, pump selection, transient analysis and the Uisce Éireann HAZOP process.

The change over from the 100dia rising main to the 200dia rising main will be determined at detail design stage based on construction phasing of the Old Connaught LAP, number of contributing units and final pump selection. The change over from the 100dia rising main to the 200dia rising main will take place within the proposed valve chamber.

Chemical dosing will be directly into the wet well until such stage that dosing is no longer required when flows meet minimum self-cleansing requirements.

The pumps will be arranged to operate based on the following configuration:

Current Planning Application

- Pump 1 (D): 7.62 l/s
- Pump 2 (S): Standby

LAP Extents

- Pump 1 (D): 55.51l/s
- Pump 2 (S): Standby

Refer to Appendix B for Design Calculations, the above is subject to change at detail design stage and upon final pump selection.



4.4 Design Specification

In accordance with the RAM-SPEC-500-001, Section 5.2 (Two Pump Sewage Pumping Station (SPS)) the pumping station will have seven primary alarm signals namely:

1. Pump trip / fail (auto-changeover);
2. High-high level;
3. Low-low level;
4. Level sensor fault;
5. Emergency stop operated;
6. Motor temperature;
7. Flowmeter fault.

The signals will be logged on a site-based PLC which will alarm and notify both the UE and DLRCC operating systems through approved methods. Interlocks will ensure that forward feed flow is inhibited when a critical alarm is activated.

4.5 Pump Selection

A preliminary pump curve was selected for the specimen design based on the design parameters available at the time. The pumping station is designed, and the pumps selected in accordance with Uisce Éireann specification 'IW-TEC-800-02 – Wastewater Pumping Stations & Rising Mains'. Refer to Appendix C for preliminary pump selection data.



4.6 24 Hour Emergency Storage Tank

As part of the Workshop meetings with Uisce Eireann and DLRCC through the pre planning process, a requirement for an Emergency Storage Tank was requested to cater for 4,737 housing units (12,790 P.E) for the Old Connaught LAP with 24hour effective storage of 2,150m³ as indicated in 2.2 of this report. Due to site constraints an exercise was completed by AtkinsRéalais to determine the exact number required based on the full build out of the Old Connaught LAP. The table below provide details of calculations completed taking into account the maximum yield of residential units within each Character Area of the Old Connaught LAP.

It was determined that based on the Foul drainage modelling exercise in **Figure 2-1** of this report, the Northern Character area would not fully drain to the Old Conna Pumping Station and therefore the maximum yield from that area could be reduced. Atkins Realis are the appointed civil engineering consultant representing Ballymore Properties with respect to their lands at Old Connaught and Rathmichael. We have engaged with Uisce Eireann with respect to these lands and can confirm that the planned Rathmichael Foul Pumping Station has been designed and sited to facilitate gravity drainage of at least the northern two-thirds of the Ballymore lands at Old Connaught within the Northern Character Area, rather than their drainage south to the Old Conna Foul Pumping Station. The Rathmichael Foul Pumping Station is well progressed as a Design and Build by GMC on behalf of UE.

Residential Unit Summary				
Character Area	Corresponding Development	Residential Yield as indicated in LAP	Actual Units Provided	Amended Units for Emergency Storage Calculations
Central Character Area	Castlethorn, Central South (Third Party), Central South - DLRCC, East DLRCC	800-1006	783 Units	1006 Units
Southern Character Area	Glenveagh	454-605	510 Units (including Creche)	605 Units
Western Character Area	Glenveagh, DLRCC and South of Old Conna House (Third Party)	858-1030	973 Units	1030 Units
Northern Character Area	Ballymore	1050	333 Units (Note: 1/3 of Ballymore Land is draining towards the Old Conna Pump station)	333 Units
Total		3162 Units on the Minimum end, 3691 units on the Maximum end	2599 Units	2974 Units
20% Uplift		632 Units on the minimum end, 738 Units on the Maximum end	520 Units	595 Units



Total Number of Units in Total		3794 Units on the minimum end 4429 units on the Maximum end	3119 Units	3569 Units
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Based on the above table the total number of units allowed for as part of the Pump Station design is 3569 residential Units which includes an uplift of 20% for the entire Old Connaught LAP.

The Emergency Storage Tank volume is therefore 1445m³ as set out in the table below

Pump Station Calculation	
Total Number of Units Considered	3569 Units
PE	3569×2.7
	$9636.3 = 9634 \text{ PE (Approx)}$
Emergency Storage Volume Needed	$9634 \times 150 = 1445100 \text{ Litres}$
	1445m^3



4.7 Pump House

The proposed foul drainage pumping station will incorporate an above-ground pump house as agreed with Uisce Éireann due to the strategic nature, depth and population equivalent (PE) served by the pumping station. The Pump House will accommodate the mechanical, electrical, instrumentation and control equipment associated with the operation of the pumping station. The building has been designed to facilitate the safe operation, inspection and maintenance of the pumping station similar to other Pump House facilities agreed with UE whilst minimising the need for personnel entry into confined spaces. The pump house will be constructed above the proposed dry-well structure and will provide a secure weatherproof enclosure for operational equipment and maintenance activities. Refer to AtkinsRéalis drawing ATK-ZZ-ZZ-DR-CE-900574 for the proposed Pump House Layout, Elevations and Section. The proposed pump house has been sized to accommodate the ultimate operational, maintenance and plant replacement requirements of the pumping station throughout its design life

The pump house is proposed has an area of approximately 108m². The building has been designed to provide sufficient internal space for the installation, operation and future replacement of pumps, pipework, valves, electrical equipment and control systems. Dedicated maintenance access routes will be provided to facilitate the removal and replacement of all major plant items via a roller shutter door located to the Northern face of the building within the Pump Hall. The final detailed design will incorporate lifting facilities comprising together with designated maintenance and laydown areas to allow the safe removal and replacement of pumps, motors and associated equipment whilst maintaining standby operational capacity.

The dry well below the Pump Hall has been designed with a graded floor draining to a dedicated sump arrangement and feed back into the Wet well. The final design will include appropriate drainage and flooding protection measures comprising sump pumping facilities, high-level alarms, water detection systems and automated alarm functionality to protect equipment in the event of leakage or pipework failure.

Ventilation and safety provisions will be developed in accordance with the requirements of Uisce Éireann at detailed design stage. A site-specific hazardous area assessment and zoning study will be undertaken for the wet well, dry well and pump house in accordance with the relevant Uisce Éireann standards and health and safety requirements. An Active odour control system has been provided to remove the potential for odour impact on adjoining properties.

External works associated with the pump house will include maintenance vehicle access, operational hardstanding areas, roof drainage, perimeter security measures, lighting and access control systems. Security arrangements will comprise of perimeter fencing, controlled access gates, CCTV provision and external lighting that will be designed in accordance with Uisce Éireann operational requirements. The pump house, access arrangements and all associated infrastructure have been incorporated into the overall planning application and will continue to be developed in consultation with Uisce Éireann during detailed design.





APPENDICES

Appendix A. Site Investigations (DLRCC Lands)



S.I. Ltd Contract No: 6234

Client: Dun Laoghaire Rathdown County Council
Contractor: Site Investigations Ltd

Old Connaught Avenue,
Bray, Co. Dublin
Site Investigation

Prepared by:

.....

Stephen Letch
BEng (Hons) PGeo EurGeol

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Appendices:

1. Cable Percussive Boreholes Logs
 2. Trial Pit Logs and Photographs
 3. Soakaway Test Results and Photographs
 4. Dynamic Probe Logs
 5. Groundwater Monitoring
 6. Geotechnical Laboratory Test Results
 7. Environmental Laboratory Test Results
 8. Waste Classification Report
 9. Survey Data
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1. Introduction

On the instructions of the Client, Dun Laoghaire Rathdown County Council, Site Investigations Ltd (SIL) were appointed to complete a site investigation at Old Connaught Avenue, Bray, Co. Dublin. The investigation was for a residential development and was started in February and completed in April 2024.

This report presents the factual geotechnical data obtained from the field and laboratory testing with interpretation of the ground conditions discussed.

2. Site Location

Old Connaught Avenue is to the north west of Bray town centre, just across the Dublin border, with the N11 carriageway to the east of the site. The map on the left shows the location of Bray to the south east of Dublin and the second map shows the site location in the town.



3. Fieldwork

All fieldwork was carried out in accordance with BS 5930:2015, Engineers Ireland GI Specification and Related Document 2nd Edition 2016 and Eurocode 7: Geotechnical Design. The fieldworks comprised the following:

- 6 No. cable percussive boreholes

- 15 No. trial pits
- 2 No. soakaway test
- 19 No. dynamic probes

3.1. Cable Percussive Boreholes

Cable percussion boring was completed at 6 No. locations using a Dando 150 rig and constructed 200mm diameter boreholes. The boreholes terminated at depths ranging from 6.40mbgl to 7.20mbgl after an hour and a half chiselling was completed and no further progress was made. It was not possible to collect undisturbed samples due to the granular soils encountered so bulk disturbed samples were recovered at regular intervals.

To test the strength of the stratum, Standard Penetration Tests (SPT's) were performed at 1.00m intervals in accordance with BS 1377 (1990). In soils with high gravel and cobble content it is appropriate to use a solid cone (60°) (CPT) instead of the split spoon and this was used throughout the testing. The test is completed over 450mm and the cone is driven 150mm into the stratum to ensure that the test is conducted over an undisturbed zone. The cone is then driven the remaining 300mm and the blows recorded to report the N-Value. The report shows the N-Value with the 75mm incremental blows listed in brackets (e.g., BH01 at 1.00mbgl where N=15-(2,4/5,4,3,3)). Where refusal of 50 blows across the test zone was encountered was achieved during testing, the penetration depth is also reported (e.g., BH01 at 7.00mbgl where N=50-(25 for 95mm/50 for 25mm)).

At BH01 and **BH05**, groundwater standpipes were installed to allow for the equalisation of the water table and long-term monitoring. These included a gravel response zone around the slotted standpipe with bentonite seals at the top of the hole to stop migration of water from the surface.

The cable percussive borehole logs are presented in Appendix 1.

3.2. Trial Pits

15 No. trial pits were excavated using a wheeled excavator. The strata were logged and photographed by SIL geotechnical engineer and groundwater ingresses and pit wall stability was also recorded. Representative disturbed bulk samples were recovered as the pits were excavated, which were returned to the laboratory for geotechnical testing.

The trial pit logs and photographs are presented in Appendix 2.

3.3. Soakaway Tests

Adjacent to TP06 and TP09, soakaway tests were completed and logged by SIL geotechnical engineer. BRE Special Digest 365 stipulates that the pit should be filled three times and that

the final cycle is used to provide the infiltration rate. The time taken for the water level to fall from 75% volume to 25% volume is required to calculate the rate of infiltration. However, if the water level does not fall at a steady rate, then the test is deemed to have failed and the area is unsuitable for storm water drainage.

The soakaway test results and photographs are presented in Appendix 3.

3.4. Dynamic Probes

Adjacent to all the trial pits and at 4 No. independent locations, dynamic probes were completed using a track mounted Competitor 130 machine. The testing complies with the requirements of BS1377: Part 9 (1990) and Eurocode 7: Part 3. The configuration utilised standard DPH (Heavy) probing method comprising a 50kg weight, 500mm drop height and a 50mm diameter (90°) cone. The number of blows required to drive the cone each 100mm increment into the sub soil is recorded in accordance with the standards. The dynamic probe provides no information regarding soil type or groundwater conditions.

The dynamic probe results can be used to analyse the strength of the soil strata encountered by the probe. 'Proceedings of the Trinity College Dublin Symposium of Field and Laboratory Testing of Soils for Foundations and Embankments' presents a paper by Fairbairt that is most relevant to Irish soil conditions and within this paper the following equations were included:

Granular Soils: $DPH N_{100} \times 2.5 = SPT N \text{ value}$

Cohesive Soils: $C_u = 15 \times DPH N_{100} + 30 \text{ kN/m}^2$

These equations present a relationship between the probe N_{100} value and the SPT N value for granular soils and the undrained shear strength of cohesive soils.

The dynamic probe logs are presented in Appendix 4.

3.5. Groundwater Monitoring

Following the completion of the fieldworks, a round of groundwater measurements was scheduled. This was completed using a dip tape with a sensor at the end, which was lowered into the standpipe and set off a buzzer when the groundwater was encountered.

The groundwater readings are presented in Appendix 5.

3.6. Surveying

Following completion of all the fieldworks, a survey of the exploratory hole locations was completed using a GeoMax GPS Rover. The data is supplied on each individual log and along with a site plan in Appendix 8.

4. Laboratory Testing

4.1. Geotechnical Testing

Geotechnical classification testing has been completed on representative soil samples in accordance with BS 1377 (1990). Testing includes:

- 21 No. Moisture contents
- 21 No. Atterberg limits
- 21 No. Particle size gradings with hydrometers
- 10 No. pH and sulphate content

The geotechnical laboratory test results are presented in Appendix 6.

4.2. Environmental Testing

Environmental testing was completed by ALS Environmental Ltd. and consists of the following:

- 15 No. Suite I analysis
- 6 No. Total organic carbon
- 10 No. Total sulphur

The environmental results are presented in Appendix 7 and a Waste Classification Report in Appendix 8.

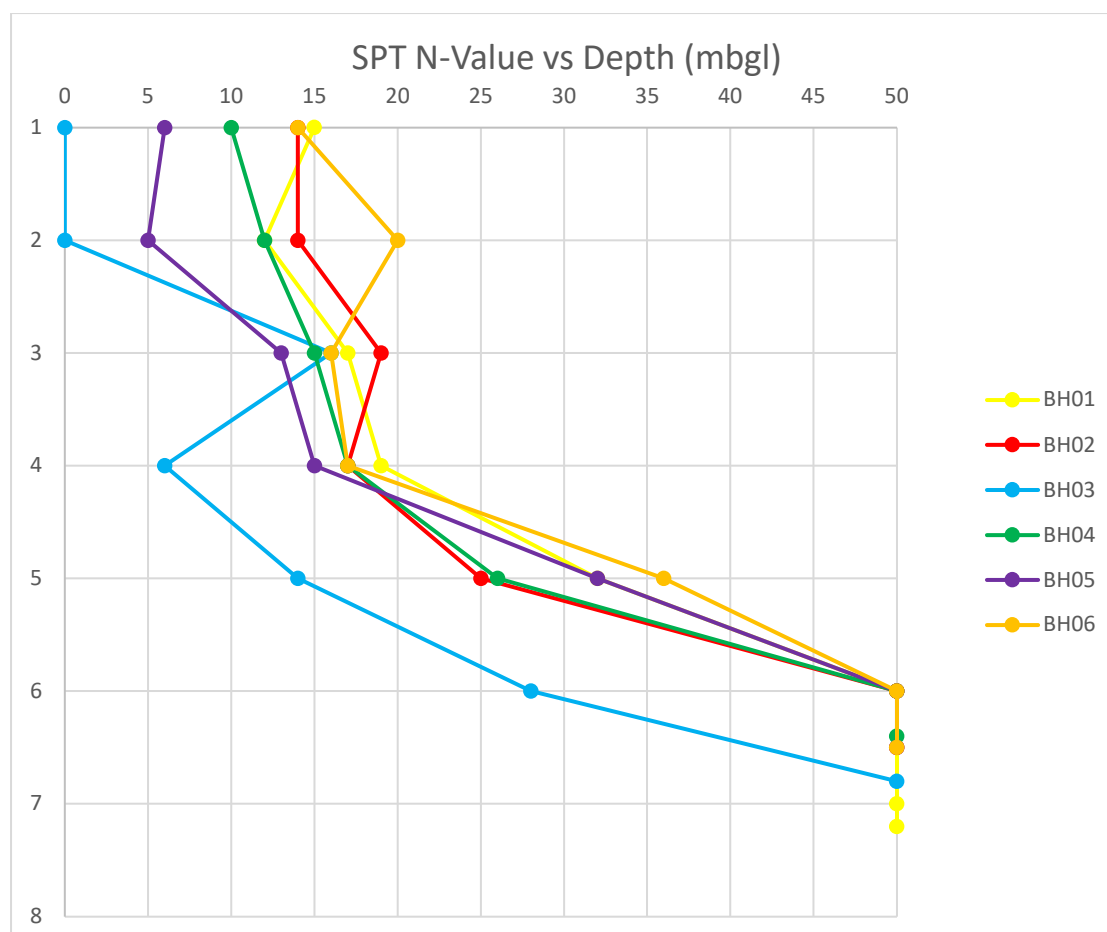
5. Ground Conditions

5.1. Overburden

The natural ground conditions are dominated by cohesive (slightly) sandy (slightly) gravelly silty CLAY with cobbles and boulders. BH01 and BH02 recorded a thin layer of GRAVEL at 4.80mbgl and 4.70mbgl respectively and BH03 also recorded a layer of GRAVEL from 1.20mbgl to 1.80mbgl.

BH03 recorded very low SPT tests with values of 0 recorded at 1.00mbgl and 2.00mbgl before a rise to 16 at 3.00mbgl and then 11 at 4.00mbgl. BH05 also recorded lower SPT N-values of 6 and 5 over the top 2m before increasing. The remaining boreholes recorded high values of 10 to 15 at 1.00mbgl, 12 to 20 at 3.00mbgl and 15 to 19 at 3.00mbgl. The graph overleaf shows the SPT N-values vs depth.

The laboratory tests of the cohesive soils show CLAY soils with low to intermediate plasticity indexes of 10 to 15% recorded. The particle size distribution curves were poorly sorted straight-line curves with 21% to 41% fines content in the cohesive soils.



5.2. Groundwater

Groundwater details in the boreholes and trial pits during the fieldworks are noted on the logs in Appendices 1 and 2. Groundwater was recorded in all the boreholes with BH01 identifying a seepage at 2.60mbgl, which was sealed off at 2.80mbgl and then water re-entered the borehole at 4.70mbgl when the GRAVEL was encountered. BH03 also recorded a shallow ingress at 1.50mbgl, rising to 1.10mbgl after 20 minutes and this was sealed off at 4.20mbgl. BH02 recorded a deeper ingress at 4.70mbgl when the GRAVEL strata was recorded, with the level rising to 0.60mbgl after 20 minutes and sealing off when the CLAY was encountered at 5.80mbgl. The remaining boreholes recorded groundwater at 5.50mbgl, 5.60mbgl and 5.70mbgl respectively within the deeper CLAY soils with the levels rising to 5.20mbgl, 3.50mbgl and 4.50mbgl.

Fourteen of the fifteen trial pits recorded water with only TP14 remaining dry during excavations. The strikes varied in depth from 1.10mbgl to 2.80mbgl with a medium ingress rate recorded, except for TP06 which recorded a rapid rate of ingress.

A set of groundwater readings were taken from the standpipes in BH01 and BH05 in May 2024 and these recorded the levels at 1.65mbgl and 2.58mbgl respectively.

6. Recommendations and Conclusions

Please note the following caveats:

The recommendations given, and opinions expressed in this report are based on the findings as detailed in the exploratory hole records. Where an opinion is expressed on the material between the exploratory hole locations or below the final level of excavation, this is for guidance only and no liability can be accepted for its accuracy. No responsibility can be accepted for adjacent unexpected conditions that have not been revealed by the exploratory holes. It is further recommended that all bearing surfaces when excavated should be inspected by a suitably qualified Engineer to verify the information given in this report.

Excavated surfaces in clay strata should be kept dry to avoid softening prior to foundation placement. Foundations should always be taken to a minimum depth of 0.50mBGL to avoid the effects of frost action and possible seasonal shrinkage/swelling.

If it is intended that on-site materials are to be used as fill, then the necessary laboratory testing should be specified by the Client to confirm the suitability. Also, relevant lab testing should be specified where stability of side slopes to excavations is a concern, or where contamination may be an issue.

6.1. Shallow Foundations

Due to the unknown depth of foundation and no longer-term groundwater information, this analysis assumes the groundwater will not influence the construction or performance of these foundations.

For cohesive soils, a correlation proposed by Stroud and Butler between SPT N-values and plasticity indices can be used to calculate the undrained shear strength. Dependent on the plasticity index at each site, the Stroud and Butler correlation is $C_u=4$ to $6N$. With the low plasticity indexes recorded in the laboratory for the soils on this site, the correlation chosen is $C_u=6N$. The C_u value can then be used to calculate the ultimate bearing capacity, which is the total loading that the soil could withstand but then a factor of safety is used to ensure that failure of the soils does not occur. A factor of safety of 3 has been chosen for this site.

The table overleaf shows the SPT N-value, C_u , the ultimate bearing capacity and finally, the allowable bearing capacities at 1.00mbgl, 2.00mbgl and 3.00mbgl. BH03 recorded values of 0 at 1.00mbgl and 2.00mbgl so these values are very low. All values are in kN/m^2 .

Depth	BH01				BH02				BH03			
	SPT	Cu	UBC	ABC	SPT	Cu	UBC	ABC	SPT	Cu	UBC	ABC
1.00	15	90	477	160	14	84	446	150	0	-	-	-
2.00	12	72	403	135	14	84	464	155	0	-	-	-
3.00	17	102	574	190	19	114	635	210	16	96	544	180
Depth	BH04				BH05				BH06			
	SPT	Cu	UBC	ABC	SPT	Cu	UBC	ABC	SPT	Cu	UBC	ABC
1.00	10	60	324	110	6	36	202	67	14	84	446	150
2.00	12	72	403	135	5	30	189	65	20	120	648	215
3.00	15	90	513	170	13	78	452	150	16	96	544	180

For analysis of bearing capacities from the dynamic probes, the N_{100} values are used as follows in cohesive soils. The undrained shear strength (C_u) is calculated using the N_{100} value as per the equation in Section 3.4. This can then be used in calculations to work out the ultimate bearing capacity (ULS) and when a factor of safety of 3 is applied, the allowable bearing capacity (ABC) can be provided.

In granular soils, the N_{100} value is used to correlate the SPT N-value. The SPT N-value can then be used to calculate the allowable bearing capacity, as per Terzaghi and Peck, using the correlation of SPT N-value $\times 10 = ABC$.

The table below shows the allowable bearing capacities for N_{100} values 1 to 10 at 1.00mbgl.

N_{100} Value	Cohesive Soils			Granular Soils	
	C_u	ULS	ABC	SPT N-value	ABC
1	45	248	83	2.5	25
2	60	330	110	5	50
3	75	400	135	7.5	75
4	90	480	160	10	100
5	105	555	185	12.5	125
6	120	630	210	15	150
7	135	705	235	17.5	175
8	150	780	260	20	200
9	165	855	285	22.5	225
10	180	930	310	250	250

All capacities shown are in kN/m^2 .

The probes generally recorded lower values of 1 at 1.00mbgl and this indicates a lower allowable bearing capacity of 83kN/m^2 .

Due to the lower values of the probes and the low SPT N-values in BH03, it would be recommended that all founding strata are examined by a suitably qualified Engineer to ensure that the soils are suitable for the final foundation design.

The following assumptions were made as part of these analyses. If any of these assumptions are not in accordance with detailed design or observations made during construction these recommendations should be re-evaluated.

- Foundations are to be constructed on a level formation of uniform material type (described above).
- If man-made material is encountered then this should be removed prior to construction.
- The bulk unit weight of the material in this stratum has a minimum density of 19kN/m³.
- All bearing capacity calculations allow for a settlement of 25mm.
- Based on groundwater observations this analysis assumes the groundwater will not influence the construction or performance of these foundations.

Nine of the fifteen trial pits recorded major pit wall instability and therefore, it would be recommended that all excavations should be checked immediately and battered back accordingly. Regular inspection of temporary excavations should be completed during construction to ensure that all slopes are stable. Temporary support should be used on any excavation that will be left open for an extended period.

6.2. Groundwater

The caveats below relating to interpretation of groundwater levels should be noted:

There is always considerable uncertainty as to the likely rates of water ingress into excavations in clayey soil sites due to the possibility of localised unforeseen sand and gravel lenses acting as permeable conduits for unknown volumes of water.

Furthermore, water levels noted on the borehole and trial pit logs do not generally give an accurate indication of the actual groundwater conditions as the borehole or trial pit is rarely left open for sufficient time for the water level to reach equilibrium.

Also, during boring procedures, a permeable stratum may have been sealed off by the borehole casing, or water may have been added to aid drilling. Therefore, an extended period of groundwater monitoring using any constructed standpipes is required to provide more accurate information regarding groundwater conditions. Finally, groundwater levels vary with time of year, rainfall and possible nearby construction sites.

Pumping tests would be required to determine likely seepage rates and persistence into excavations taken below the groundwater level. Deep trial pits also aid estimation of seepage rates.

As discussed previously, groundwater was recorded in every borehole at depths ranging from 1.50mbgl to 5.70mbgl and in fourteen of the fifteen trial pits during the fieldworks. Standpipe readings were taken from BH01 and BH05 with the levels at 1.65mbgl and 2.58mbgl respectively.

There is always considerable uncertainty as to the likely rates of water ingress into excavations in cohesive soil sites due to the possibility of localised unforeseen sand and gravel lenses acting as permeable conduits for unknown volumes of water. Based on this information at the exploratory hole locations to date, it is considered likely that any shallow ingress (less than 2.00mbgl) into excavations of the CLAY will be medium. If granular soils are encountered in shallow excavations, then the possibility of water ingressing into an excavation increase.

If groundwater is encountered during excavations then mechanical pumps will be required to remove the groundwater from sumps. Sumps should be carefully located and constructed to ensure that groundwater is efficiently removed from excavations and trenches.

6.3. Soakaway Test

The soakaway test at TP06 failed the specification as water ingressed into the pits showing that the soils are already saturated and therefore, unsuitable for soakaway design.

At TP09, the test also failed the specification as water level did not fall sufficiently enough to complete the test. The BRE Digest stipulates that the pit should half empty within 24hrs, and extrapolation indicates this condition would not be satisfied. The tests were terminated at the end of the first (of a possible three) fill/empty cycle since further testing would give even slower fall rates due to increased soil saturation. The unsuitability of the soils for soakaways is further suggested by the soil descriptions of the materials in this area of the site where the soakaway was completed, i.e., well compacted clay soils.

6.4. Contamination

Environmental testing was carried out on fourteen samples from the investigation and the results are shown in Appendix 7. For material to be removed from site, Suite I testing was carried out to determine if the material is hazardous or non-hazardous and then the leachate results were compared with the published waste acceptance limits of BS EN 12457-2 to determine whether the material on the site could be accepted as 'inert material' by an Irish landfill.

The Waste Classification report created using HazWasteOnline™ software shows that the material tested can be classified as non-hazardous material. Four samples recorded toluene and two samples recorded Total Petroleum Hydrocarbons above the limit of detection but this is not in liquid phase and therefore, HP3 can be discounted.

Following this analysis of the solid test results, the leachate disposal suite results indicate that the soils tested would generally be able to be treated as Inert Waste.

Fourteen samples were tested for analysis but it cannot be discounted that any localised contamination may have been missed. Any MADE GROUND excavated on site should be stockpiled separately to natural soils to avoid any potential cross contamination of the soils. Additional testing of these soils may be requested by the individual landfill before acceptance and a testing regime designed by an environmental engineer would be recommended to satisfy the landfill.

6.5. Aggressive Ground Conditions

The chemical test results in Appendix 6 indicate a general pH value between 8.33 and 8.80, which is close to neutral and below the level of 9, therefore no special precautions are required.

The maximum value obtained for water soluble sulphate was 123mg/l as SO₃. The BRE Special Digest 1:2005 – ‘Concrete in Aggressive Ground’ guidelines require SO₄ values and after conversion ($SO_4 = SO_3 \times 1.2$), the maximum value of 148mg/l shows Class 1 conditions and no special precautions are required.

6.6. Radon Gas

The Environmental Protection Agency (EPA) has recently updated the Radon gas exposure map and this is available to view on the EPA website. This shows the possible exposure to radon gas with the bedrock geology, subsoil geology, soil permeability and aquifer type analysed to produce the map. The map shows that the site falls within the medium level of 1 in 10 homes have a possibility of high radon exposure. Measures should be taken in the form of radon protection barriers to protect from radon exposure in the new structure.



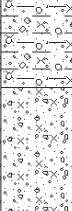
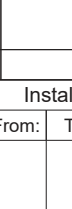
EPA map identifying possible Radon exposure.

<https://gis.epa.ie/EPAMaps/Radon?&lid=EPA:RadonRiskMapofIreland>

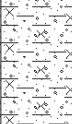
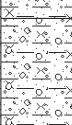
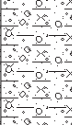
Appendix 1

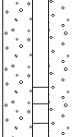
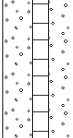
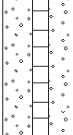
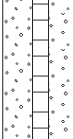
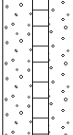
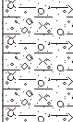
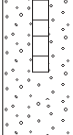
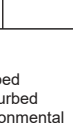
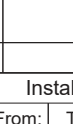
Cable Percussive Borehole Logs

Contract No: 6234		Cable Percussion Borehole Log										Borehole No: BH01								
Contract:		Old Connaught Avenue					Easting:		724993.482		Date Started:		05/03/2024							
Location:		Bray, Co. Dublin					Northing:		719396.264		Date Completed:		05/03/2024							
Client:		Dún Laoghaire Rathdown County Council					Elevation:		22.06		Drilled By:		J. O'Toole							
Engineer:		-					Borehole Diameter:		200mm		Status:		FINAL							
Depth (m)		Stratum Description					Legend	Level (mOD)		Samples and Insitu Tests				Water Strike	Backfill					
Scale	Depth							Scale	Depth	Depth	Type	Result								
0.5		Firm brown sandy slightly gravelly silty CLAY with low cobble content.						21.5	20.76	1.00	B	JOT01 N=15 (2,4/5,4,3,3)								
1.0								21.0		1.00	C									
1.30		Firm brown slightly sandy gravelly silty CLAY with low cobble content.						20.5	20.76	2.00	B	JOT02 N=12 (2,2/2,3,3,4)								
1.5								20.0		2.00	C									
2.0		Stiff brown sandy slightly gravelly silty CLAY with low cobble content.						19.5	19.26	3.00	B	JOT03 N=17 (2,3/3,4,5,5)								
2.5								19.0		3.00	C									
2.80		Stiff brown sandy slightly gravelly silty CLAY with low cobble content.						18.5	19.26	4.00	B	JOT04 N=19 (3,4/4,5,5,5)								
3.0								18.0		4.00	C									
3.5		Dense grey brown silty sandy GRAVEL with low cobble content.						17.5	17.26	5.00	B	JOT05 N=32 (4,5/7,7,9,9)								
4.0								17.0		5.00	C									
4.5		Very stiff brown sandy slightly gravelly silty CLAY with medium cobble content.						16.5	16.36	6.00	B	JOT06 N=50 (5,7/9,11,14,16)								
5.0								16.0		6.00	C									
5.5		Obstruction - possible boulders.						15.5	14.96	7.00	B	JOT07 50 (25 for 95mm/50 for 25mm) 50 (25 for 5mm/50 for 5mm)								
6.0								15.0		7.00	C									
6.5		End of Borehole at 7.20m						14.5	14.86	7.20	C									
7.0								14.0		7.20										
7.10								13.5												
7.20								13.0												
7.5								12.5												
8.0																				
8.5																				
9.0																				
9.5																				
		Chiselling:			Water Strikes:			Water Details:			Installation:			Backfill:			Remarks:		Legend: B: Bulk D: Disturbed U: Undisturbed ES: Environmental W: Water C: Cone SPT S: Split spoon SP	
		From:	To:	Time:	Strike:	Rose:	Depth Sealed	Date:	Hole Depth:	Water Depth:	From:	To:	Pipe:	From:	To:	Type:	Borehole terminated due to obstruction.			
		6.60	6.70	01:00	2.60	0.50	2.80	05/03	7.20	6.50	0.00	1.10	Solid Slotted	0.00	1.00	7.20	Bentonite Gravel			

Contract No: 6234		Cable Percussion Borehole Log										Borehole No: BH02			
Contract:		Old Connaught Avenue					Easting:		725029.726		Date Started:		06/03/2024		
Location:		Bray, Co. Dublin					Northing:		719349.921		Date Completed:		06/03/2024		
Client:		Dún Laoghaire Rathdown County Council					Elevation:		21.36		Drilled By:		J. O'Toole		
Engineer:		-					Borehole Diameter:		200mm		Status:		FINAL		
Depth (m)		Stratum Description					Legend	Level (mOD)		Samples and Insitu Tests				Water Strike	Backfill
Scale	Depth							Scale	Depth	Depth	Type	Result			
0.5		Firm brown sandy slightly gravelly silty CLAY with low cobble content.						21.0							
1.0								20.5		1.00	B	JOT08			
1.40		Firm brown slightly sandy gravelly silty CLAY with low cobble content.						20.0	19.96	1.00	C	N=14 (1,2/3,4,4,3)			
1.5								19.5		2.00	B	JOT09			
2.0								19.0		2.00	C	N=14 (1,2/3,3,4,4)			
2.5								18.5		3.00	B	JOT10			
2.90		Stiff brown sandy slightly gravelly silty CLAY with low cobble content.						18.0	18.46	3.00	C	N=19 (2,3/5,5,4,5)			
3.0								17.5		4.00	B	JOT11			
3.5								17.0		4.00	C	N=17 (2,3/3,4,4,6)			
4.0								16.5		5.00	B	JOT12			
4.5		Medium dense grey brown silty sandy GRAVEL with low cobble content.						16.0	16.66	5.00	C	N=25 (3,5/5,6,7,7)			
5.0								15.5		6.00	B	JOT13			
5.80		Very stiff brown sandy slightly gravelly silty CLAY with medium cobble content.						15.0	15.56	6.00	C	N=50 (4,7/50 for 240mm)			
6.0								14.5		6.50	C	50 (25 for 5mm/50 for 5mm)			
6.40		Obstruction - possible boulders.						14.0	14.96						
6.50								13.5		14.86					
7.0								13.0							
7.5								12.5							
8.0								12.0							
8.5								11.5							
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Contract No: 6234			Cable Percussion Borehole Log										Borehole No: BH03			
Contract:			Old Connaught Avenue					Easting:		725073.100			Date Started:		12/03/2024	
Location:			Bray, Co. Dublin					Northing:		719378.678			Date Completed:		12/03/2024	
Client:			Dún Laoghaire Rathdown County Council					Elevation:		20.38			Drilled By:		J. O'Toole	
Engineer:			-					Borehole Diameter:		200mm			Status:		FINAL	
Depth (m)		Stratum Description					Legend	Level (mOD)		Samples and Insitu Tests					Water Strike	Backfill
Scale	Depth							Scale	Depth	Depth	Type	Result				
0.5	1.20	Very soft brown sandy slightly gravelly silty clay with low cobble content.						20.0	19.18	1.00	1.00	B C	JOT26 N=0 (0,0/0,0,0,0)			
1.0																
1.5																
1.80	1.80	Very soft brown slightly sandy gravelly silty clay with low cobble content.						19.0	18.58	2.00	2.00	B C	JOT27 N=0 (0,0/0,0,0,0)			
2.0																
2.5																
2.80	2.80	Very loose brown sandy gravel.						18.5	17.58	3.00	3.00	B C	JOT28 N=16 (1,3/4,4,4,4)			
3.0																
3.5																
4.20	4.20	Stiff brown slightly sandy gravelly silty clay with low cobble content.						17.5	16.18	4.00	4.00	B C	JOT29 N=11 (1,2/2,3,3,3)			
4.0																
4.5																
5.50	5.50	Firm black slightly sandy gravelly silty clay with low cobble content.						16.0	14.88	5.00	5.00	B C	JOT30 N=14 (2,2/3,3,4,4)			
5.0																
5.5																
6.60	6.60	Stiff brown sandy slightly gravelly silty CLAY with low cobble content.						15.0	13.78	6.00	6.00	B C	JOT31 N=28 (2,4/5,7,7,9)			
6.0																
6.5																
6.80	6.80	Obstruction - possible boulders.						14.0	13.58	6.80	C	50 (25 for 5mm/50 for 5mm)				
7.0																
7.5																
8.0	8.0	End of Borehole at 6.80m						13.5	13.0							
8.5																
9.0																
9.5	9.5							12.5	12.0							
								12.0	11.5							
								11.5	11.0							
								11.0	10.5							
								10.5								

Contract No: 6234		Cable Percussion Borehole Log										Borehole No: BH04				
Contract:		Old Connaught Avenue					Easting:		725129.671		Date Started:		11/03/2024			
Location:		Bray, Co. Dublin					Northing:		719367.930		Date Completed:		11/03/2024			
Client:		Dún Laoghaire Rathdown County Council					Elevation:		20.11		Drilled By:		J. O'Toole			
Engineer:		-					Borehole Diameter:		200mm		Status:		FINAL			
Depth (m)		Stratum Description					Legend	Level (mOD)		Samples and Insitu Tests				Water Strike	Backfill	
Scale	Depth							Scale	Depth	Depth	Type	Result				
0.5		Brown sandy slightly gravelly silty CLAY.						20.0								
1.0								0.90	19.21	1.00	B	JOT20				
1.5		Firm brown sandy slightly gravelly silty CLAY.						19.0	1.00	C	N=10 (1,2/2,2,3,3)					
2.0																
2.5								18.5								
3.0								2.90	18.0	2.00	B	JOT21				
3.5		Firm grey brown sandy slightly gravelly silty CLAY.						17.5								
4.0																
4.5		Stiff grey brown sandy slightly gravelly silty CLAY with low cobble content.						17.0	3.00	B	JOT22					
5.0								3.70	16.5	3.00	C	N=15 (1,2/3,4,4,4)				
5.5								16.0								
6.0																
6.5		Stiff brown sandy slightly gravelly silty CLAY with low cobble content.						16.41	4.00	B	JOT23					
7.0								4.60	16.0	4.00	C	N=17 (1,2/3,4,5,5)				
7.5								15.5								
8.0																
8.5		Obstruction - possible boulders.						15.0	5.00	B	JOT24					
9.0								6.30	14.5	5.00	C	N=26 (2,5/5,7,7,7)				
9.5		End of Borehole at 6.40m						14.0	6.00	B	JOT25					
								6.40	13.81	6.00	C	50 (6,14/50 for 125mm)				
								13.71	6.40	C	50 (25 for 5mm/50 for 5mm)					

Contract No: 6234		Cable Percussion Borehole Log										Borehole No: BH05				
Contract:		Old Connaught Avenue					Easting:		725142.992		Date Started:		08/03/2024			
Location:		Bray, Co. Dublin					Northing:		719402.178		Date Completed:		08/03/2024			
Client:		Dún Laoghaire Rathdown County Council					Elevation:		19.80		Drilled By:		J. O'Toole			
Engineer:		-					Borehole Diameter:		200mm		Status:		FINAL			
Depth (m)		Stratum Description					Legend	Level (mOD)		Samples and Insitu Tests				Water Strike	Backfill	
Scale	Depth							Scale	Depth	Depth	Type	Result				
0.5		Brown sandy slightly gravelly silty CLAY.						19.5		19.00	1.00	B	JOT14 N=6 (0,1/1,1,2,2)			
1.0								19.0								
1.5		Soft brown sandy slightly gravelly silty CLAY.						18.5		2.00	B	JOT15 N=5 (0,0/1,1,1,2)				
2.0								18.0								2.00
2.5		Firm grey brown slightly sandy gravelly silty CLAY.						17.5		3.00	B	JOT16 N=13 (1,2/3,3,3,4)				
3.0								17.0								3.00
3.5		Very stiff brown sandy slightly gravelly silty CLAY with medium cobble content.						16.5		4.00	B	JOT17 N=15 (2,2/3,4,4,4)				
4.0								16.0								5.00
4.5		Obstruction - possible boulders. End of Borehole at 6.50m						15.5		6.00	B	JOT18 N=32 (3,5/7,7,9,9)				
5.0								15.0								6.00
5.5								14.5		6.50	C	50 (6,7/50 for 200mm) 50 (25 for 5mm/50 for 5mm)				
6.0								14.0								13.40
6.5								13.5		6.50	C					
7.0								13.0								
7.5								13.0								
8.0								12.5								
8.5								12.5								
9.0								12.0								
9.5								11.5								
								11.0								
								10.5								
								10.0								
																
																
																

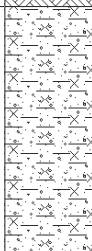
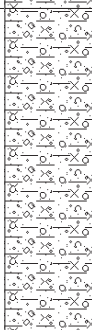
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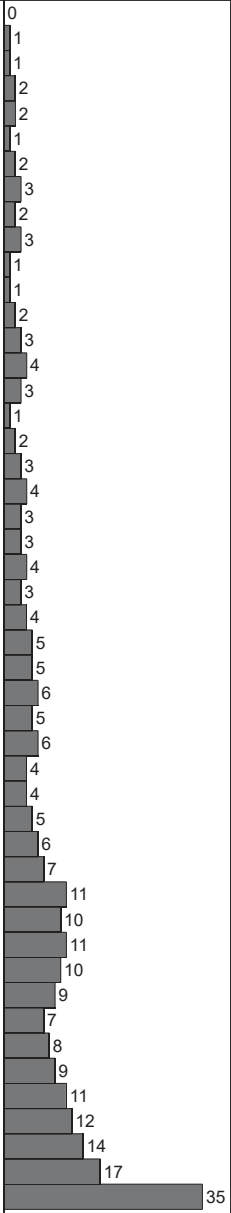
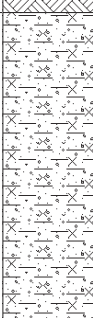
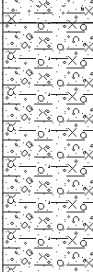
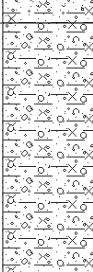
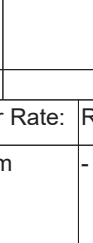
Appendix 2

Trial Pit Logs and Photographs

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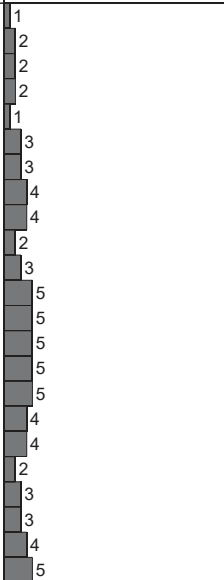
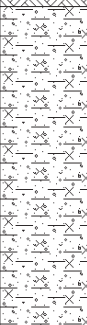
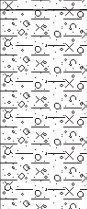
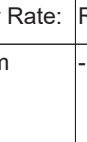
Contract No: 6234		Trial Pit and Dynamic Probe Log							Trial Pit No: TP03				
Contract:		Old Connaught Avenue			Easting:		725093.279		Date:		01/02/2024		
Location:		Bray, Co. Dublin			Northing:		719412.146		Excavator:		JCB 3CX		
Client:		Dún Laoghaire Rathdown County Council			Elevation:		20.22		Logged By:		P. McGonagle		
Engineer:		-			Dimensions (LxWxD) (m):		3.50 x 0.50 x 2.50		Scale:		1:30		
Level (mbgl)		Stratum Description			Legend	Level (mOD)		Samples		Probe		Water Strike	
Scale:	Depth					Scale:	Depth:	Depth	Type				
0.5 1.0 1.5 2.0 2.5 3.0 3.5 4.0 4.5 5.0 5.5	0.20	TOPSOIL.				20.0	20.02	0.50	ES	0 1 2 2 2 3 3 2 2 3		▼	
		1.20	Firm brown sandy slightly gravelly silty CLAY. Sand is fine to coarse. Gravel is fine to coarse, angular to subangular of limestone and granite.				19.5		1.00	B	0 1 3 5 7 4		
			Firm becoming stiff brown sandy slightly gravelly silty CLAY with medium cobble content. Sand is fine to coarse. Gravel is fine to coarse, angular to subangular of limestone and granite. Cobbles are angular to subangular of limestone and granite.				19.0	19.02	2.00	B	0 1 3 5 7 4 1 1 4 5 3 4 5 6 6 7 6 3 3 5 4 6 6 5 7 6 6 5 7		
		2.50	Pit terminated due to pit wall instability. Pit terminated at 2.50m				18.5				1 1 4 5 3 4 5 6 6 7 6 3 3 5 4 6 6 5 7 6 6 5 7		
							18.0				1 1 4 5 3 4 5 6 6 7 6 3 3 5 4 6 6 5 7 6 6 5 7		
							17.72				1 1 4 5 3 4 5 6 6 7 6 3 3 5 4 6 6 5 7 6 6 5 7		
							17.5				1 1 4 5 3 4 5 6 6 7 6 3 3 5 4 6 6 5 7 6 6 5 7		
							17.0				1 1 4 5 3 4 5 6 6 7 6 3 3 5 4 6 6 5 7 6 6 5 7		
							16.5				1 1 4 5 3 4 5 6 6 7 6 3 3 5 4 6 6 5 7 6 6 5 7		
							16.0				1 1 4 5 3 4 5 6 6 7 6 3 3 5 4 6 6 5 7 6 6 5 7		
						15.5				1 1 4 5 3 4 5 6 6 7 6 3 3 5 4 6 6 5 7 6 6 5 7			
						15.0				1 1 4 5 3 4 5 6 6 7 6 3 3 5 4 6 6 5 7 6 6 5 7			
						14.5				1 1 4 5 3 4 5 6 6 7 6 3 3 5 4 6 6 5 7 6 6 5 7			
										1 1 4 5 3 4 5 6 6 7 6 3 3 5 4 6 6 5 7 6 6 5 7			
										1 1 4 5 3 4 5 6 6 7 6 3 3 5 4 6 6 5 7 6 6 5 7			
										1 1 4 5 3 4 5 6 6 7 6 3 3 5 4 6 6 5 7 6 6 5 7			
										1 1 4 5 3 4 5 6 6 7 6 3 3 5 4 6 6 5 7 6 6 5 7			
										1 1 4 5 3 4 5 6 6 7 6 3 3 5 4 6 6 5 7 6 6 5 7			
										1 1 4 5 3 4 5 6 6 7 6 3 3 5 4 6 6 5 7 6 6 5 7			
										1 1 4 5 3 4 5 6 6 7 6 3 3 5 4 6 6 5 7 6 6 5 7			
										1 1 4 5 3 4 5 6 6 7 6 3 3 5 4 6 6 5 7 6 6 5 7			
										1 1 4 5 3 4 5 6 6 7 6 3 3 5 4 6 6 5 7 6 6 5 7			
										1 1 4 5 3 4 5 6 6 7 6 3 3 5 4 6 6 5 7 6 6 5 7			
										1 1 4 5 3 4 5 6 6 7 6 3 3 5 4 6 6 5 7 6 6 5 7			
										1 1 4 5 3 4 5 6 6 7 6 3 3 5 4 6 6 5 7 6 6 5 7			
										1 1 4 5 3 4 5 6 6 7 6 3 3 5 4 6 6 5 7 6 6 5 7			
										1 1 4 5 3 4 5 6 6 7 6 3 3 5 4 6 6 5 7 6 6 5 7			
										1 1 4 5 3 4 5 6 6 7 6 3 3 5 4 6 6 5 7 6 6 5 7			
										1 1 4 5 3 4 5 6 6 7 6 3 3 5 4 6 6 5 7 6 6 5 7			
										1 1 4 5 3 4 5 6 6 7 6 3 3 5 4 6 6 5 7 6 6 5 7			
										1 1 4 5 3 4 5 6 6 7 6 3 3 5 4 6 6 5 7 6 6 5 7			
										1 1 4 5 3 4 5 6 6 7 6 3 3 5 4 6 6 5 7 6 6 5 7			
										1 1 4 5 3 4 5 6 6 7 6 3 3 5 4 6 6 5 7 6 6 5 7			
										1 1 4 5 3 4 5 6 6 7 6 3 3 5 4 6 6 5 7 6 6 5 7			
										1 1 4 5 3 4 5 6 6 7 6 3 3 5 4 6 6 5 7 6 6 5 7			
										1 1 4 5 3 4 5 6 6 7 6 3 3 5 4 6 6 5 7 6 6 5 7			
										1 1 4 5 3 4 5 6 6 7 6 3 3 5 4 6 6 5 7 6 6 5 7			
</													

Contract No: 6234		Trial Pit and Dynamic Probe Log							Trial Pit No: TP04			
Contract:		Old Connaught Avenue			Easting:		725120.840		Date:		01/02/2024	
Location:		Bray, Co. Dublin			Northing:		719416.102		Excavator:		JCB 3CX	
Client:		Dún Laoghaire Rathdown County Council			Elevation:		20.11		Logged By:		P. McGonagle	
Engineer:		-			Dimensions (LxWxD) (m):		3.50 x 0.50 x 2.50		Scale:		1:30	
Level (mbgl)		Stratum Description			Legend	Level (mOD)		Samples		Probe		Water Strike
Scale:	Depth					Scale:	Depth:	Depth	Type			
0.20		TOPSOIL.				20.0	19.91	0.50	ES			
0.5		Firm brown sandy slightly gravelly silty CLAY. Sand is fine to coarse. Gravel is fine to coarse, angular to subangular of limestone and granite.				19.5	19.5					
1.0						19.0	19.0					
1.5						18.61	18.61					
1.50		Firm becoming stiff brown sandy slightly gravelly silty CLAY with medium cobble content. Sand is fine to coarse. Gravel is fine to coarse, angular to subangular of limestone and granite. Cobbles are angular to subangular of limestone and granite.				18.5	18.5	2.00	B			
2.0						18.0	18.0					
2.5						17.61	17.61					
2.50		Pit terminated due to pit wall instability. Pit terminated at 2.50m				17.5	17.5					
3.0						17.0	17.0					
3.5						16.5	16.5					
4.0						16.0	16.0					
4.5						15.5	15.5					
5.0						15.0	15.0					
5.5						14.5	14.5					
		Termination:	Pit Wall Stability:	Groundwater Rate:	Remarks:				Key:			
		Pit wall instability.	Major pit wall collapse forcing completion.	1.50 Medium	-				B = Bulk disturbed D = Small disturbed CBR = Undisturbed CBR ES = Environmental			

[illegible]

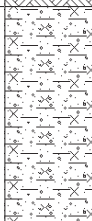
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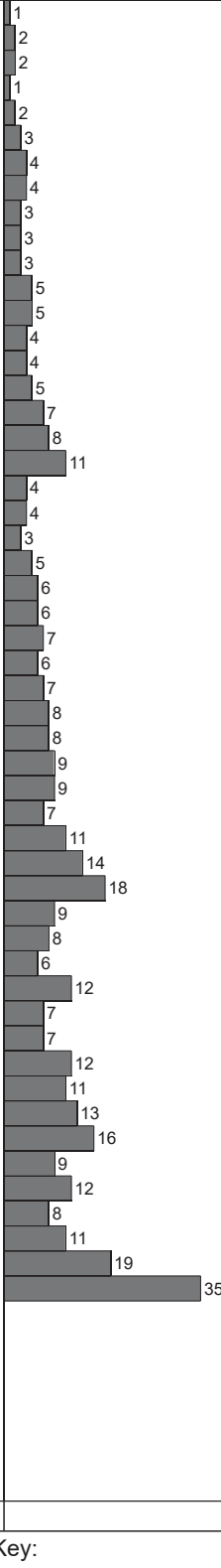
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Contract No: 6234		Trial Pit and Dynamic Probe Log							Trial Pit No: TP08			
Contract:		Old Connaught Avenue			Easting:		725102.220		Date:		01/02/2024	
Location:		Bray, Co. Dublin			Northing:		719381.090		Excavator:		JCB 3CX	
Client:		Dún Laoghaire Rathdown County Council			Elevation:		20.17		Logged By:		P. McGonagle	
Engineer:		-			Dimensions (LxWxD) (m):		3.50 x 0.50 x 2.30		Scale:		1:30	
Level (mbgl)		Stratum Description			Legend	Level (mOD)		Samples		Probe		Water Strike
Scale:	Depth					Scale:	Depth:	Depth	Type			
0.20		TOPSOIL.				20.0	19.97	0.50	ES			
0.5		Firm becoming stiff brown sandy slightly gravelly silty CLAY. Sand is fine to coarse. Gravel is fine to coarse, angular to subangular of limestone and granite.				19.5						
1.0						19.0		1.00	B			
1.5		Stiff brown sandy slightly gravelly silty CLAY with medium cobble content. Sand is fine to coarse. Gravel is fine to coarse, angular to subangular of limestone and granite. Cobbles are angular to subangular of limestone and granite.				18.67						
2.0						18.5		2.00	B			
2.30		Pit terminated due to pit wall instability.				18.0	17.87					
2.5		Pit terminated at 2.30m				17.5						
3.0						17.0						
3.5						16.5						
4.0						16.0						
4.5						15.5						
5.0						15.0						
5.5						14.5						
		Termination:		Pit Wall Stability:		Groundwater Rate:		Remarks:		Key:		
		Pit wall instability.		Major pit wall collapse forcing completion.		1.50 Medium		-		B = Bulk disturbed D = Small disturbed CBR = Undisturbed CBR ES = Environmental		

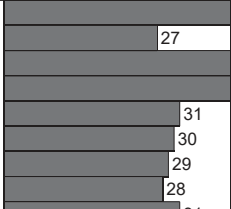
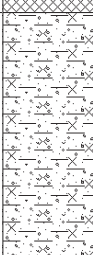
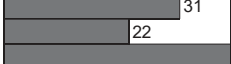
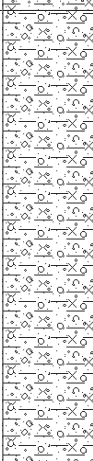
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Contract No: 6234		Trial Pit and Dynamic Probe Log						Trial Pit No: TP11			
Contract:		Old Connaught Avenue		Easting:	725047.019		Date:	02/02/2024			
Location:		Bray, Co. Dublin		Northing:	719353.067		Excavator:	JCB 3CX			
Client:		Dún Laoghaire Rathdown County Council		Elevation:	21.13		Logged By:	P. McGonagle			
Engineer:		-		Dimensions (LxWxD) (m):	3.50 x 0.50 x 2.40		Scale:	1:30			
Level (mbgl)		Stratum Description		Legend	Level (mOD)		Samples		Probe	Water Strike	
Scale:	Depth				Depth	Type					
0.20 0.5 1.0 1.5 2.0 2.5 3.0 3.5 4.0 4.5 5.0 5.5	0.20 0.5 1.0 1.5 2.0 2.5 3.0 3.5 4.0 4.5 5.0 5.5	TOPSOIL.			21.0	20.93			1	0.20 0.5 1.0 1.5 2.0 2.5 3.0 3.5 4.0 4.5 5.0 5.5	0.20 0.5 1.0 1.5 2.0 2.5 3.0 3.5 4.0 4.5 5.0 5.5
		Firm brown sandy slightly gravelly silty CLAY. Sand is fine to coarse. Gravel is fine to coarse, angular to subangular of limestone and granite.					0.50	ES	2		
									1		
									1		
									1		
									0		
									0		
									1		
									2		
									10		
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									14		
									7		
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									10		
									7		
									10		
									35		
		Termination:	Pit Wall Stability:	Groundwater Rate:	Remarks:			Key:			
		Pit wall instability.	Major pit wall collapse forcing completion.	1.10 Medium	-			B = Bulk disturbed D = Small disturbed CBR = Undisturbed CBR ES = Environmental			

Contract No: 6234		Trial Pit and Dynamic Probe Log						Trial Pit No: TP12					
Contract:		Old Connaught Avenue		Easting:		725103.766		Date:		02/02/2024			
Location:		Bray, Co. Dublin		Northing:		719363.682		Excavator:		JCB 3CX			
Client:		Dún Laoghaire Rathdown County Council		Elevation:		20.24		Logged By:		P. McGonagle			
Engineer:		-		Dimensions (LxWxD) (m):		3.50 x 0.50 x 3.00		Scale:		1:30			
Level (mbgl)		Stratum Description		Legend		Level (mOD)		Samples		Probe		Water Strike	
Scale:						Depth:		Depth					
0.20		TOPSOIL. Firm becoming stiff brown slightly sandy gravelly silty CLAY. Sand is fine to coarse. Gravel is fine to coarse, angular to subangular of limestone and granite.				20.0		20.04					
0.5													
1.0													
1.5													
1.80													
2.0													
2.5													
3.0													
3.5													
4.0													
4.5													
5.0													
5.5													
6.0													
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Contract No: 6234		Trial Pit and Dynamic Probe Log							Trial Pit No: TP13			
Contract:		Old Connaught Avenue			Easting:		725149.732		Date:		02/02/2024	
Location:		Bray, Co. Dublin			Northing:		719368.623		Excavator:		JCB 3CX	
Client:		Dún Laoghaire Rathdown County Council			Elevation:		20.05		Logged By:		P. McGonagle	
Engineer:		-			Dimensions (LxWxD) (m):		3.50 x 0.50 x 3.00		Scale:		1:30	
Level (mbgl)		Stratum Description			Legend	Level (mOD)		Samples		Probe		Water Strike
Scale:	Depth					Scale:	Depth:	Depth	Type			
0.20 0.5 1.0 1.5 2.0 2.5 2.80 3.0 3.5 4.0 4.5 5.0 5.5		TOPSOIL. Firm brown slightly sandy gravelly silty CLAY. Sand is fine to coarse. Gravel is fine to coarse, angular to subangular of limestone and granite.										

Contract No: 6234		Trial Pit and Dynamic Probe Log							Trial Pit No: TP14							
Contract:		Old Connaught Avenue			Easting:		725216.582		Date:		01/02/2024					
Location:		Bray, Co. Dublin			Northing:		719378.421		Excavator:		JCB 3CX					
Client:		Dún Laoghaire Rathdown County Council			Elevation:		20.96		Logged By:		P. McGonagle					
Engineer:		-			Dimensions (LxWxD) (m):		3.50 x 0.50 x 3.00		Scale:		1:30					
Level (mbgl)		Stratum Description			Legend	Level (mOD)		Samples		Probe		Water Strike				
Scale:	Depth					Scale:	Depth:	Depth	Type							
0.20 0.5 1.0 1.20 1.5 2.0 2.5 3.0 3.00 3.5 4.0 4.5 5.0 5.5		MADE GROUND: grey silty sandy gravel.				20.76	20.5	0.50	ES			46				
		Firm brown sandy slightly gravelly silty CLAY. Sand is fine to coarse. Gravel is fine to coarse, angular to subangular of limestone and granite.								20.0		1.00	B			47
					46											
					31											
					30											
					29											
		Firm becoming stiff brown sandy slightly gravelly silty CLAY with medium cobble content. Sand is fine to coarse. Gravel is fine to coarse, angular to subangular of limestone and granite. Cobbles are angular to subangular of limestone and granite.				19.76		2.00	B			46				
					31											
					28											
					29											
					30											
		Pit terminated at 3.00m				17.96		18.0					41			
47																
50																

Contract No: 6234		Trial Pit and Dynamic Probe Log						Trial Pit No: TP15		
Contract:		Old Connaught Avenue		Easting:	725217.661		Date:	01/02/2024		
Location:		Bray, Co. Dublin		Northing:	719419.930		Excavator:	JCB 3CX		
Client:		Dún Laoghaire Rathdown County Council		Elevation:	19.74		Logged By:	P. McGonagle		
Engineer:		-		Dimensions (LxWxD) (m):	3.50 x 0.50 x 3.00		Scale:	1:30		
Level (mbgl)		Stratum Description		Legend	Level (mOD)		Samples		Probe	Water Strike
Scale:	Depth				Depth	Type				
	0.20	MADE GROUND: grey silty sandy gravel.			19.5	19.54	0.50	ES		
	0.5	Firm becoming stiff brown slightly sandy slightly gravelly silty CLAY. Sand is fine to coarse. Gravel is fine to coarse, angular to subangular of limestone and granite.			19.0					
	1.0				18.5					
	1.5				18.0					
	2.0				17.5					
	2.5				17.0					
	2.60				16.74					
	3.0	Stiff brown sandy slightly gravelly silty CLAY with medium cobble content. Sand is fine to coarse. Gravel is fine to coarse, angular to subangular of limestone and granite. Cobbles are angular to subangular of limestone and granite.			16.5					
	3.00	Pit terminated at 3.00m			16.0					
	3.5				15.5					
	4.0				15.0					
	4.5				14.5					
	5.0				14.0					
	5.5									

TP01 Sidewall



TP01 Spoil



TP02 Sidewall



TP02 Spoil



TP03 Sidewall



TP03 Spoil



TP04 Sidewall



TP04 Spoil



TP05 Sidewall



TP05 Spoil



TP06 Sidewall



TP06 Spoil



TP07 Sidewall



TP07 Spoil



TP08 Sidewall



TP08 Spoil



TP09 Sidewall



TP09 Spoil



TP10 Sidewall



TP10 Spoil



TP11 Sidewall



TP11 Spoil



TP12 Sidewall



TP12 Spoil



TP13 Sidewall



TP13 Spoil



TP14 Sidewall



TP14 Spoil



TP15 Sidewall



TP15 Spoil



Appendix 3

Soakaway Test Results and Photographs

SOAKAWAY TEST



Project Reference:	6234
Contract name:	Old Connaught Avenue
Location:	Bray, Co. Dublin
Test No:	TP06
Date:	01/02/2024

Ground Conditions

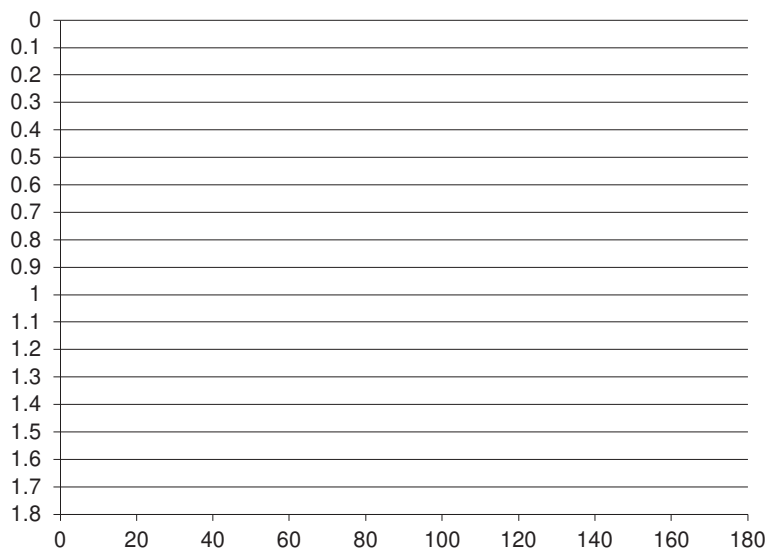
From	To	
0.00	0.20	TOPSOIL.
0.20	1.20	Firm brown slightly sandy slightly gravelly silty CLAY.
1.20	1.80	Firm brown slightly sandy slightly gravelly silty CLAY with medium cobble

Remarks:

Medium water ingress at 1.20mbgl - pit filled with water. Unsuitable for soakaway design.

Elapsed Time (mins)	Fall of Water (m)
0	-
0.5	-
1	-
1.5	-
2	-
2.5	-
3	-
3.5	-
4	-
4.5	-
5	-
6	-
7	-
8	-
9	-
10	-
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20	-
25	-
30	-
40	-
50	-
60	-
75	-
90	-
120	-
150	-
180	-

Pit Dimensions (m)		
Length (m)	3.30	m
Width (m)	0.50	m
Depth	1.80	m
Water		
Start Depth of Water	-	m
Depth of Water	-	m
75% Full	-	m
25% Full	-	m
75%-25%	-	m
Volume of water (75%-25%)	-	m3
Area of Drainage	-	m2
Area of Drainage (75%-25%)	-	m2
Time		
75% Full	-	min
25% Full	-	min
Time 75% to 25%	-	min
Time 75% to 25% (sec)	-	sec



f = Fail or
m/min

Fail
m/s

SOAKAWAY TEST



Project Reference:	6234
Contract name:	Old Connaught Avenue
Location:	Bray, Co. Dublin
Test No:	TP09
Date:	01/02/2024

Ground Conditions

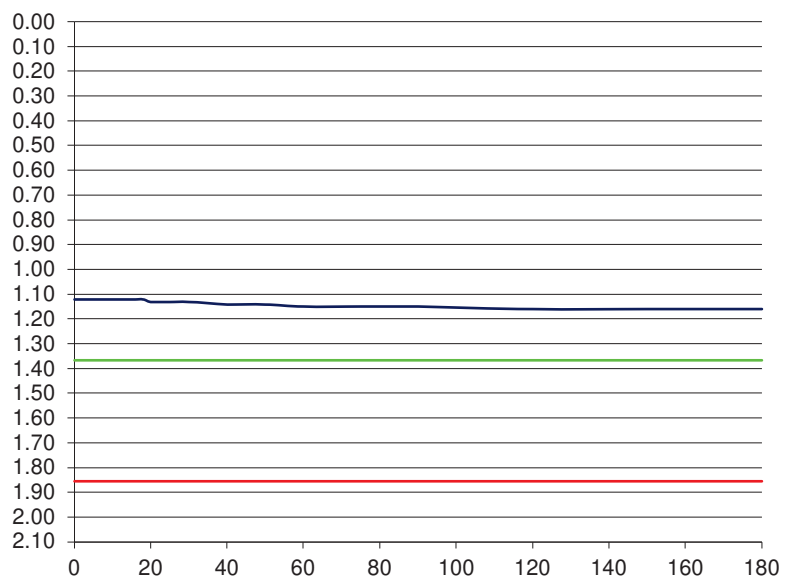
From	To	
0.00	0.20	TOPSOIL.
0.20	2.10	Firm brown slightly sandy slightly gravelly silty CLAY.

Remarks:

-

Elapsed Time (mins)	Fall of Water (m)
0	1.12
0.5	1.12
1	1.12
1.5	1.12
2	1.12
2.5	1.12
3	1.12
3.5	1.12
4	1.12
4.5	1.12
5	1.12
6	1.12
7	1.12
8	1.12
9	1.12
10	1.12
12	1.12
14	1.12
16	1.12
18	1.12
20	1.13
25	1.13
30	1.13
40	1.14
50	1.14
60	1.15
75	1.15
90	1.15
120	1.16
150	1.16
180	1.16

Pit Dimensions (m)		
Length (m)	3.10	m
Width (m)	0.60	m
Depth	2.10	m
Water		
Start Depth of Water	1.12	m
Depth of Water	0.98	m
75% Full	1.37	m
25% Full	1.86	m
75%-25%	0.49	m
Volume of water (75%-25%)	0.91	m3
Area of Drainage	15.54	m2
Area of Drainage (75%-25%)	5.49	m2
Time		
75% Full	N/A	min
25% Full	N/A	min
Time 75% to 25%	N/A	min
Time 75% to 25% (sec)	N/A	sec



f = **Fail** or
m/min

Fail
m/s

TP06 Sidewall



TP06 Spoil



TP09 Sidewall



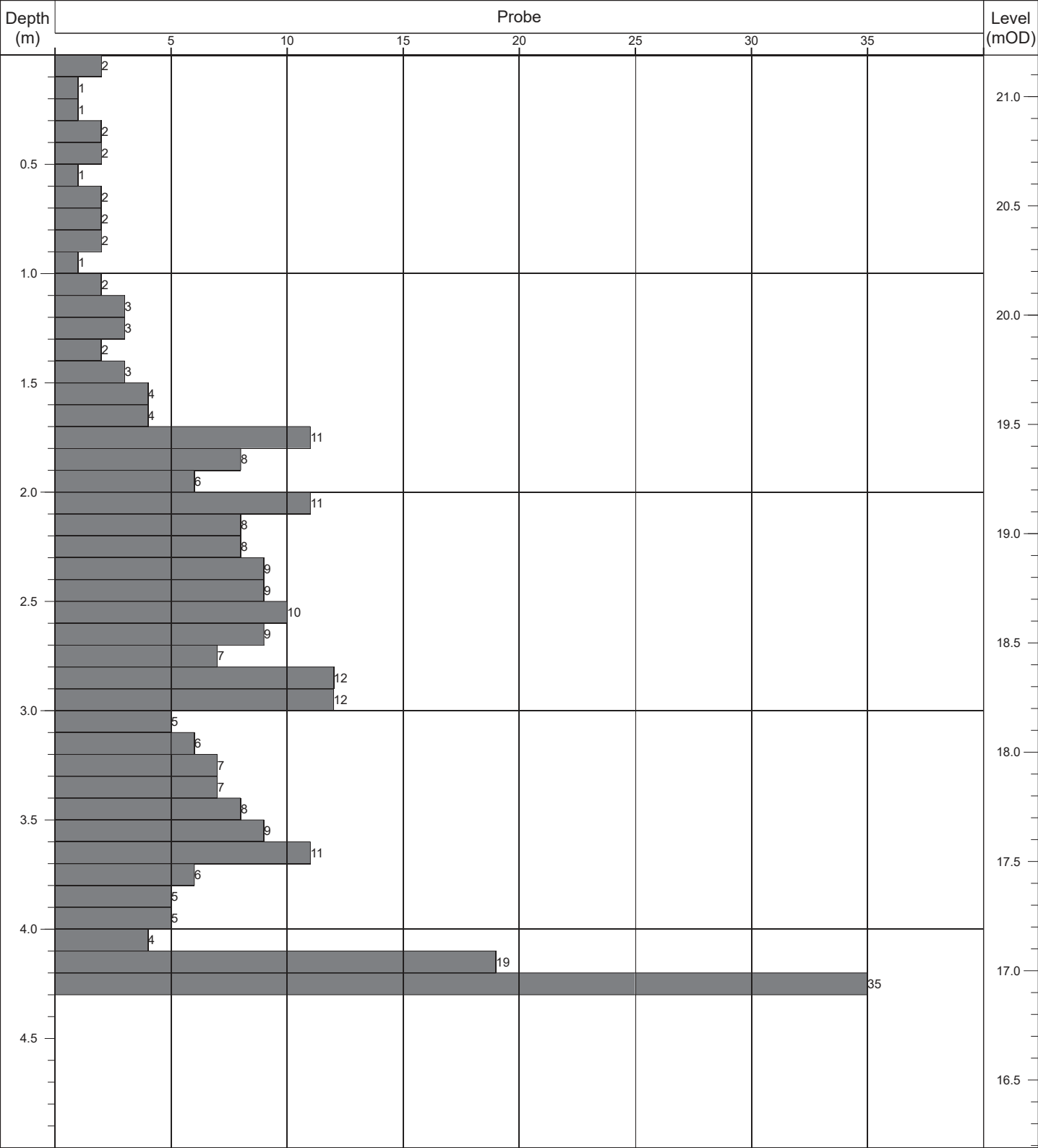
TP09 Spoil



Appendix 4

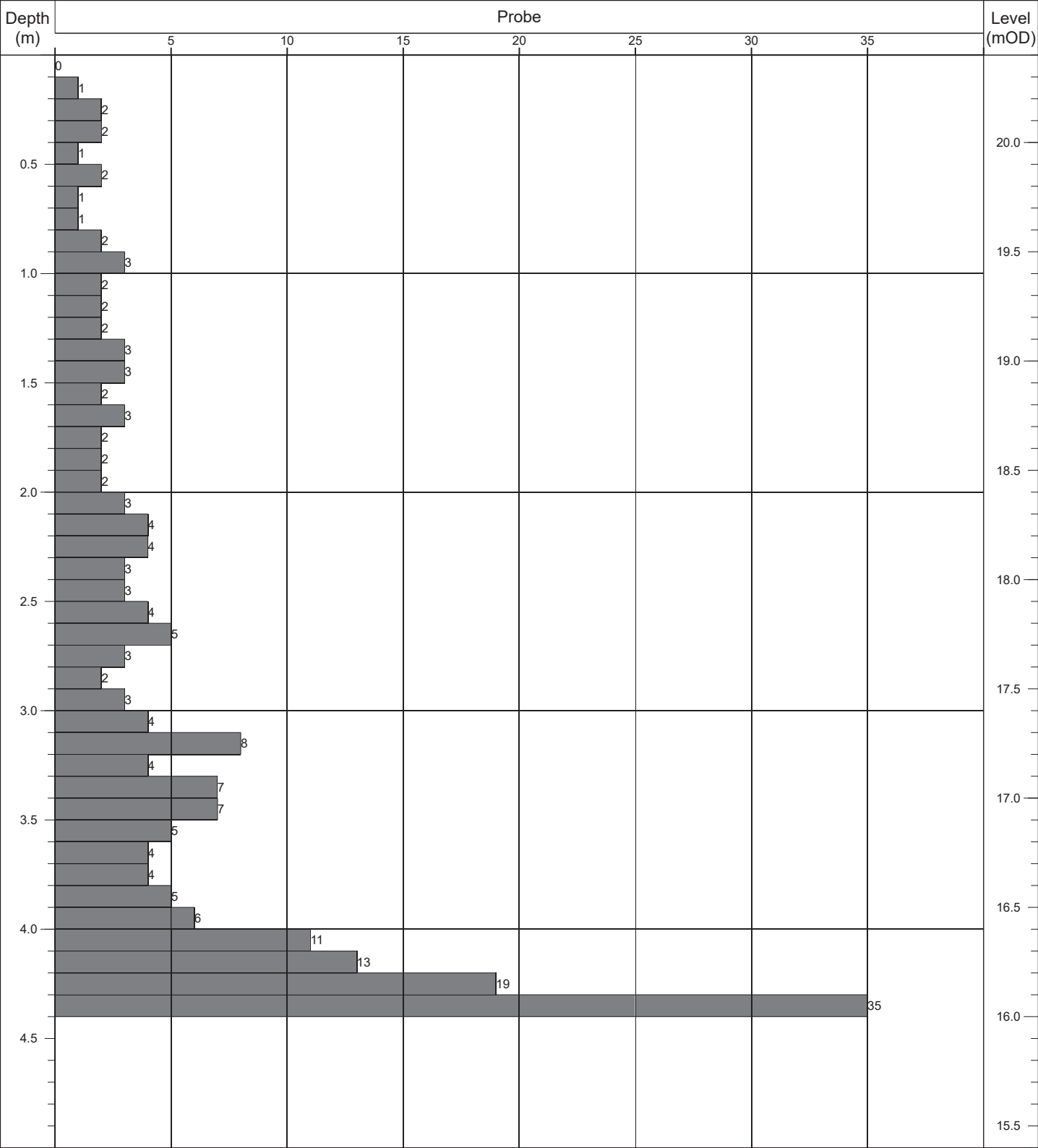
Dynamic Probe Logs

Contract No: 6234	Dynamic Probe Log				Probe No: DP01
Contract:	Old Connaught Avenue	Easting:	725023.812	Date Started:	17/04/2024
Location:	Bray, Co. Dublin	Northing:	719383.798	Logged By:	J. O'Toole
Client:	Dún Laoghaire Rathdown County Council	Elevation:	21.19	Scale:	1:25
Engineer:	-	Rig Type:	Competitor 130	Sheet No:	Sheet 1 of 1



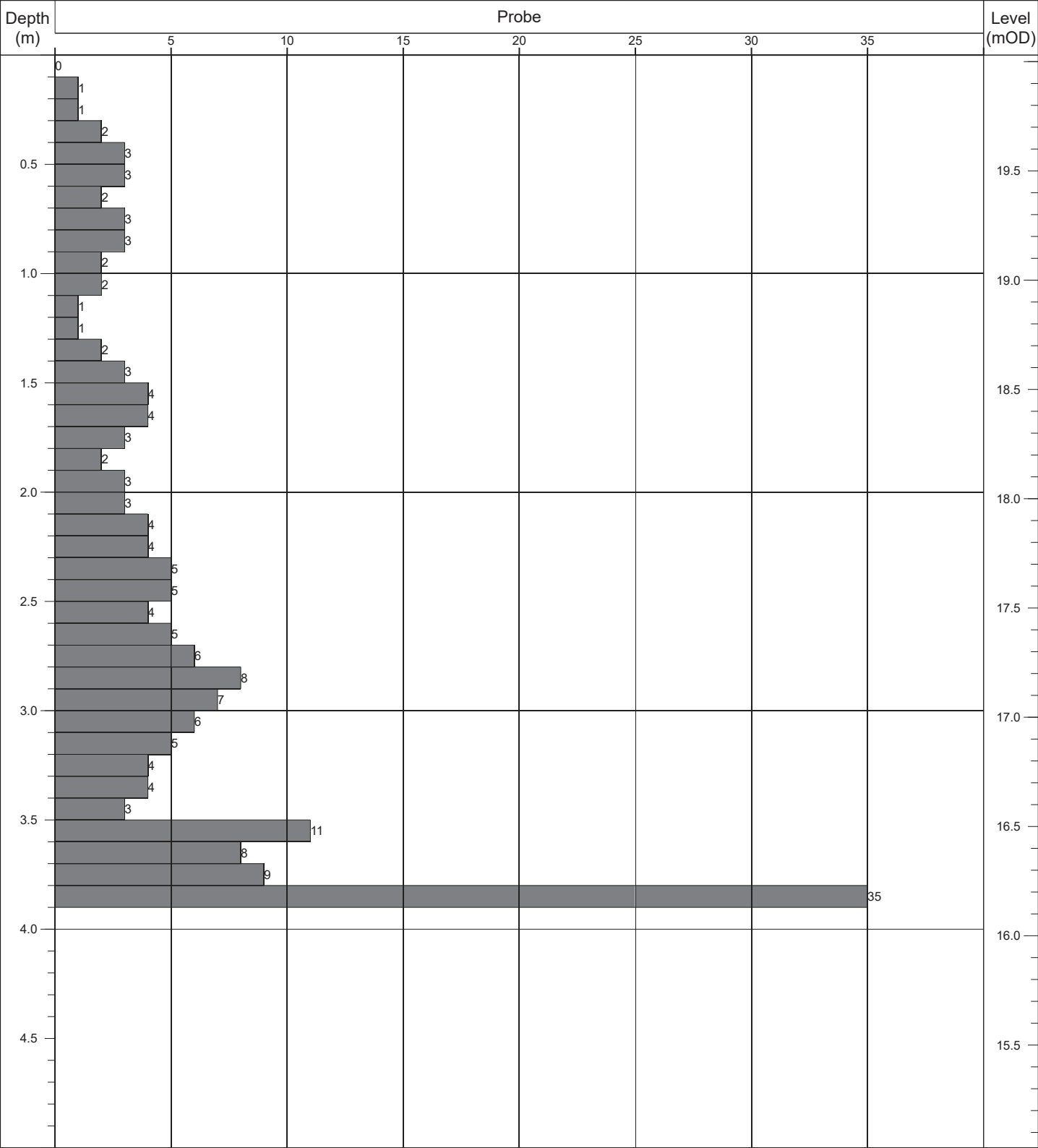
	Termination:		Probe Details:			Remarks:
	Depth:	Reason:	Type:	Mass	Drop:	-
	4.30m	Obstruction.	DPH	50kg	500mm	

Contract No: 6234	Dynamic Probe Log				Probe No: DP02
Contract:	Old Connaught Avenue	Easting:	725069.443	Date Started:	17/04/2024
Location:	Bray, Co. Dublin	Northing:	719395.112	Logged By:	J. O'Toole
Client:	Dún Laoghaire Rathdown County Council	Elevation:	20.40	Scale:	1:25
Engineer:	-	Rig Type:	Competitor 130	Sheet No:	Sheet 1 of 1



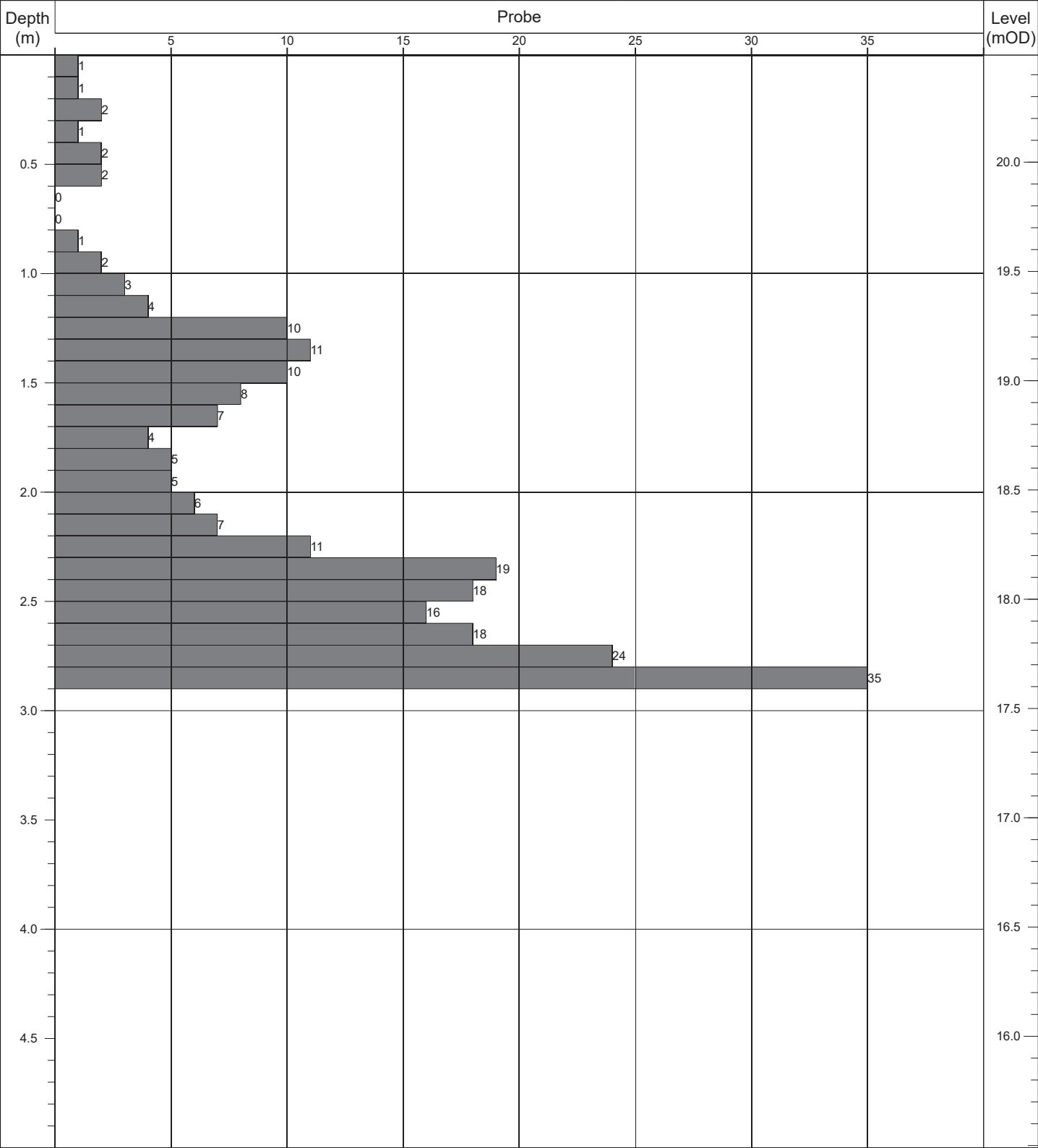
	Termination:		Probe Details:			Remarks:
	Depth:	Reason:	Type:	Mass:	Drop:	-
	4.40m	Obstruction.	DPH	50kg	500mm	

Contract No: 6234	Dynamic Probe Log				Probe No: DP03
Contract:	Old Connaught Avenue	Easting:	725119.672	Date Started:	17/04/2024
Location:	Bray, Co. Dublin	Northing:	719395.741	Logged By:	J. O'Toole
Client:	Dún Laoghaire Rathdown County Council	Elevation:	20.03	Scale:	1:25
Engineer:	-	Rig Type:	Competitor 130	Sheet No:	Sheet 1 of 1



	Termination:		Probe Details:			Remarks:
	Depth:	Reason:	Type:	Mass:	Drop:	-
	3.90m	Obstruction.	DPH	50kg	500mm	

Contract No: 6234	Dynamic Probe Log				Probe No: DP04
Contract:	Old Connaught Avenue	Easting:	725075.994	Date Started:	17/04/2024
Location:	Bray, Co. Dublin	Northing:	719359.098	Logged By:	J. O'Toole
Client:	Dún Laoghaire Rathdown County Council	Elevation:	20.49	Scale:	1:25
Engineer:	-	Rig Type:	Competitor 130	Sheet No:	Sheet 1 of 1



	Termination:		Probe Details:			Remarks:
	Depth:	Reason:	Type:	Mass	Drop:	-
	2.90m	Obstruction.	DPH	50kg	500mm	

Appendix 5

Groundwater Monitoring

Groundwater Readings

BH No:	Depth of standpipe	Depth to water - mbgl	Depth to water - mOD
10/05/2024			
BH01	5.95	1.65	20.41
BH05	5.86	2.58	17.22

Appendix 6

Geotechnical Laboratory Test Results

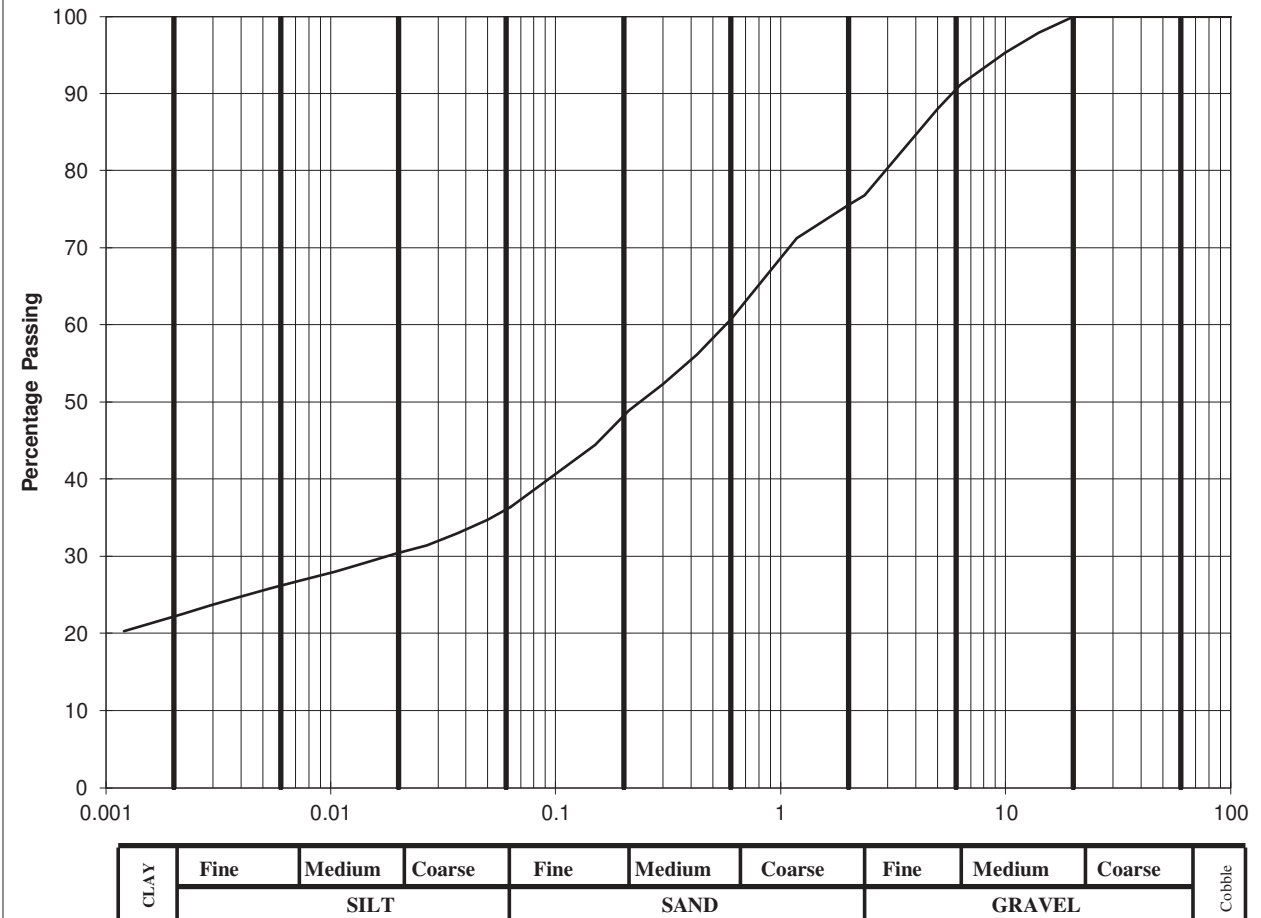
Classification Tests
In accordance with BS 1377: Part 2

Client	Dun Laoghaire Rathdown County Council
Site	Old Connaught Avenue, Bray
S.I. File No	6234 / 23
Test Lab	Site Investigations Ltd., Carhugar The Grange, 12th Lock Rd., Lucan Co. Dublin. Tel (01) 6108768 Email:info@siteinvestigations.ie
Report Date	2nd May 2024

Hole ID	Depth	Sample No	Lab Ref No.	Sample Type	Natural Moisture Content %	Liquid Limit %	Plastic Limit %	Plastic Index %	Max. Density Mg/m ²	Bulk Density Mg/m ³	% passing 425um	Comments	Remarks C=Clay; M=Silt Plasticity: L=Low; I=Intermediate; H=High; V=Very High; E=Extremely High
BH01	1.00	JOT01	24/414	B	20.5	31	20	11			56.1		CL
BH02	1.00	JOT08	24/415	B	16.5	30	20	10			47.4		CL
BH03	1.00	JOT26	24/416	B	25.6	32	20	12			56.0		CL
BH04	1.00	JOT20	24/417	B	24.6	31	19	12			40.7		CL
BH05	1.00	JOT14	24/418	B	20.7	30	20	10			47.8		CL
BH06	1.00	JOT32	24/419	B	16.3	30	20	10			49.3		CL
TP01	1.00	MK02	23/195	B	17.6	30	20	10			45.9		CL
TP02	1.00	MK05	23/196	B	16.7	32	19	13			56.0		CL
TP03	1.00	MK08	23/197	B	18.4	33	20	13			50.1		CL
TP04	1.00	MK11	23/198	B	15.2	34	21	13			58.1		CL
TP05	1.00	MK14	23/199	B	20.7	29	19	10			45.6		CL
TP06	1.00	MK32	23/200	B	15.5	31	18	13			50.9		CL
TP07	1.00	MK29	23/201	B	17.6	36	21	15			61.0		CI
TP08	1.00	MK26	23/202	B	17.1	33	19	14			50.9		CL
TP09	1.00	MK17	23/203	B	13.8	32	18	14			49.9		CL
TP10	1.00	MK35	23/204	B	13.0	29	18	11			36.5		CL
TP11	1.00	MK38	23/205	B	17.2	34	19	15			53.2		CL
TP12	1.00	MK41	23/206	B	13.6	31	18	13			39.0		CL
TP13	1.00	MK44	23/207	B	13.4	33	19	14			47.6		CL
TP14	1.00	MK20	23/208	B	22.2	30	19	11			47.5		CL
TP15	1.00	MK23	23/209	B	15.5	34	20	14			48.9		CL

BS Sieve size, mm	Percent passing	Hydrometer analysis	
		Diameter, mm	% passing
100	100	0.0630	36
90	100	0.0200	31
75	100	0.0060	26
63	100	0.0020	23
50	100		
37.5	100		
28	100		
20	100		
14	97.9		
10	95.3		
6.3	91.1		
5.0	88		
2.36	76.8		
2.00	75.5		
1.18	71.2		
0.600	60.7		
0.425	56.1		
0.300	52.3		
0.212	48.9		
0.150	44.4		
0.063	36		

Cobbles, %	0
Gravel, %	25
Sand, %	40
Silt, %	13
Clay, %	23



Client :	Dun Laoghaire Rathdown County Council
Project :	Old Connaught Avenue, Bray

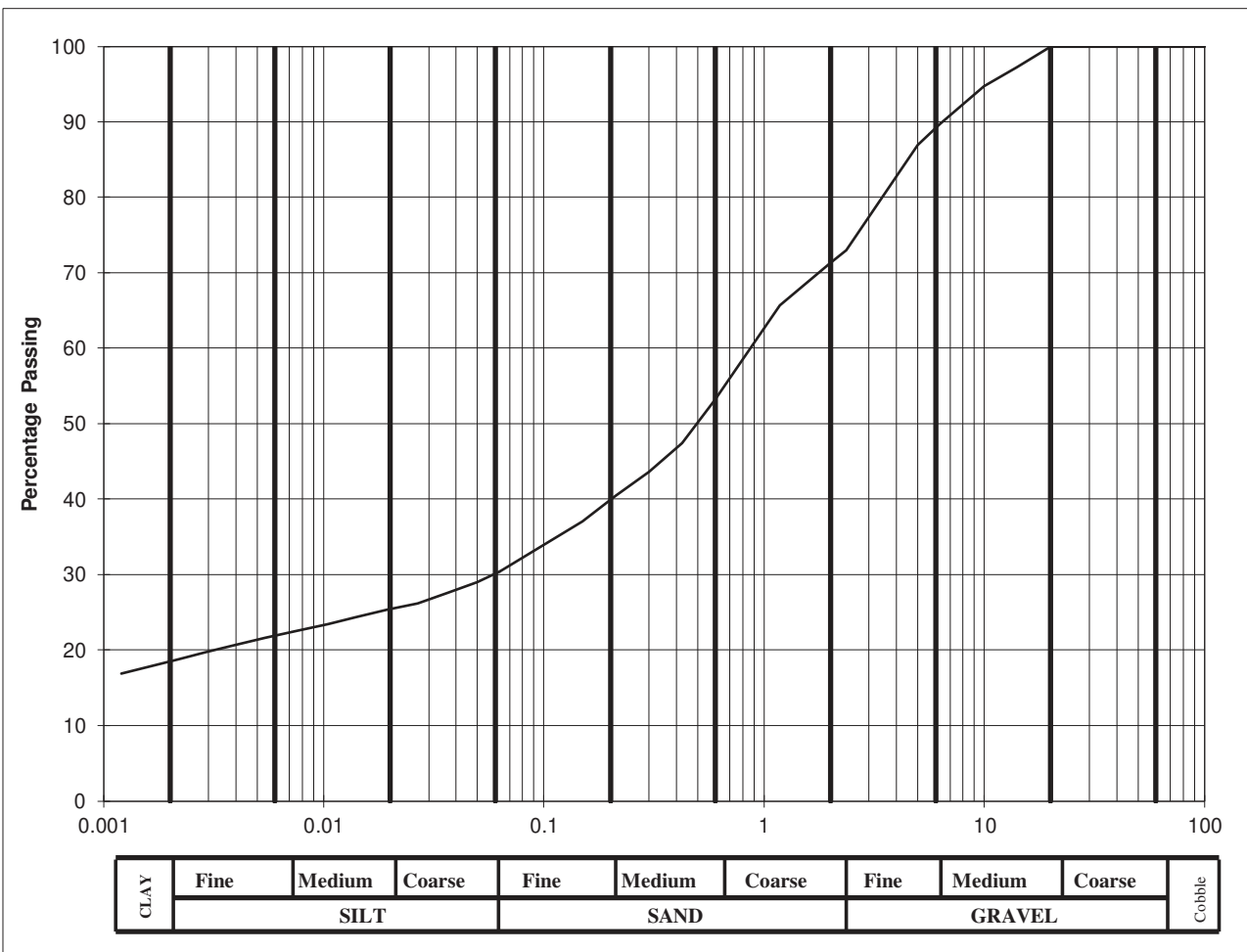
Lab. No :	24/414
Sample No :	JOT01

Hole ID :	BH 01
Depth, m :	1.00

Material description :	sandy slightly gravelly silty CLAY
Remarks :	Soils with clay or silt content between 15% - 35% can be classified as clay or silt depending on the field Engineers assessment of in-situ behaviour. Where material is for re-use and therefore disturbed, only soils with clay or silt >35% are classified as clay or silt

BS Sieve size, mm	Percent passing	Hydrometer analysis	
		Diameter, mm	% passing
100	100	0.0630	30
90	100	0.0200	26
75	100	0.0060	22
63	100	0.0020	18
50	100		
37.5	100		
28	100		
20	100		
14	97.2		
10	94.7		
6.3	89.7		
5.0	86.9		
2.36	73		
2.00	71.3		
1.18	65.7		
0.600	53.2		
0.425	47.4		
0.300	43.6		
0.212	40.4		
0.150	37		
0.063	30		

Cobbles, %	0
Gravel, %	29
Sand, %	41
Silt, %	12
Clay, %	18



Client :	Dun Laoghaire Rathdown County Council
Project :	Old Connaught Avenue, Bray

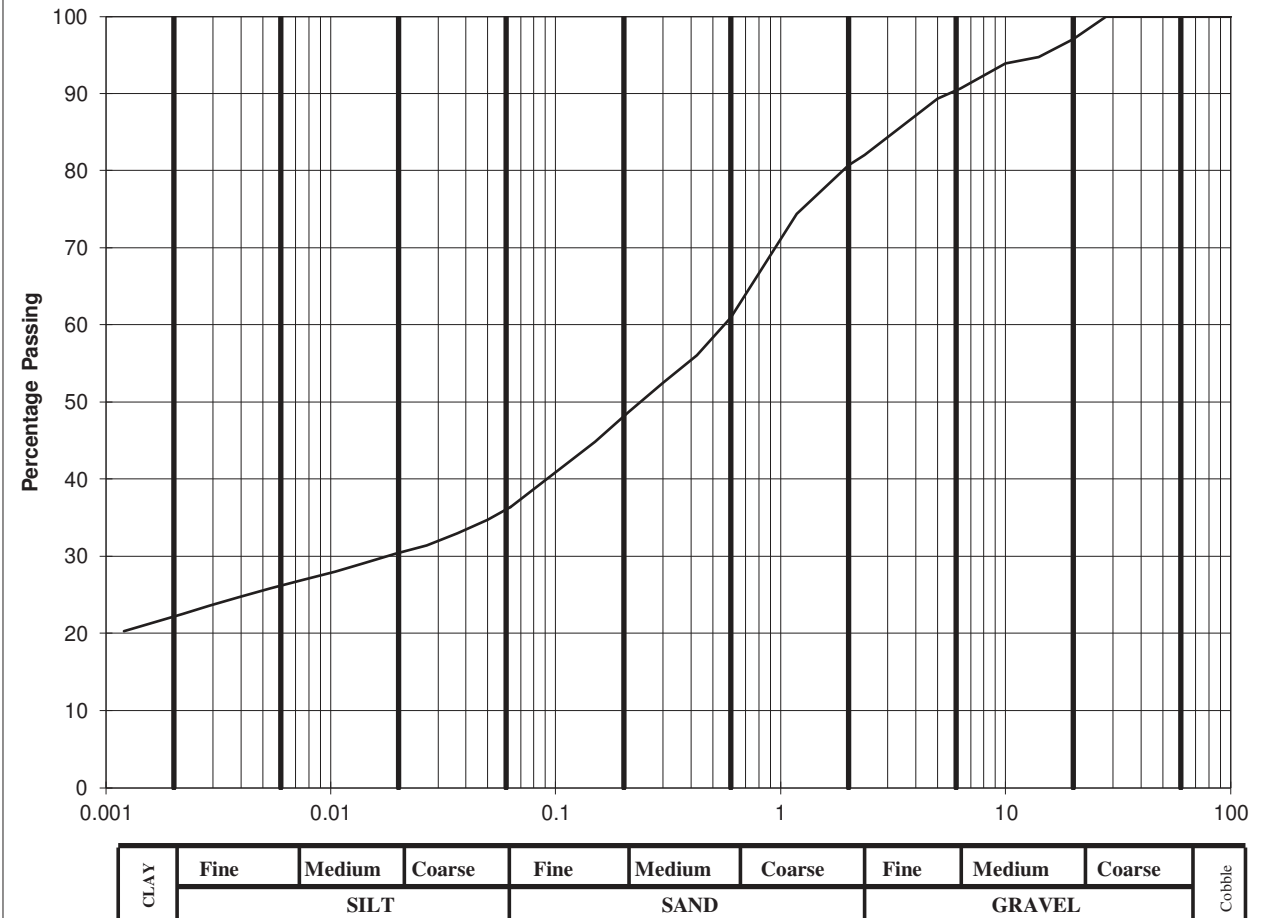
Lab. No :	24/415
Sample No :	JOT08

Hole ID :	BH 02
Depth, m :	1.00

Material description :	sandy slightly gravelly silty CLAY
Remarks :	Soils with clay or silt content between 15% - 35% can be classified as clay or silt depending on the field Engineers assessment of in-situ behaviour. Where material is for re-use and therefore disturbed, only soils with clay or silt >35% are classified as clay or silt

BS Sieve size, mm	Percent passing	Hydrometer analysis	
		Diameter, mm	% passing
100	100	0.0630	36
90	100	0.0200	31
75	100	0.0060	27
63	100	0.0020	22
50	100		
37.5	100		
28	100		
20	97		
14	94.7		
10	93.9		
6.3	90.6		
5.0	89.3		
2.36	82		
2.00	80.7		
1.18	74.4		
0.600	60.9		
0.425	56		
0.300	52.5		
0.212	48.7		
0.150	44.8		
0.063	36		

Cobbles, %	0
Gravel, %	19
Sand, %	45
Silt, %	14
Clay, %	22



Client :	Dun Laoghaire Rathdown County Council
Project :	Old Connaught Avenue, Bray

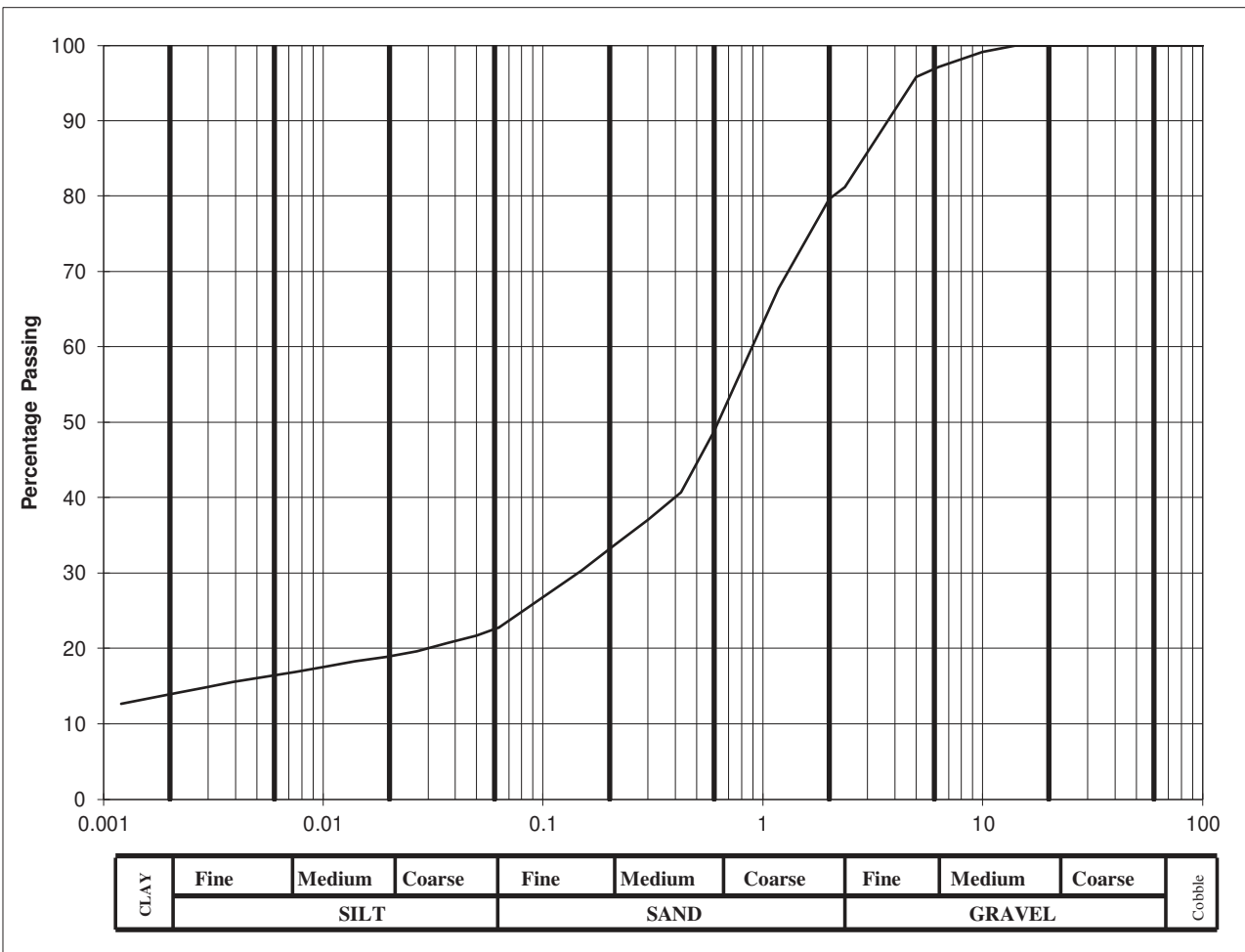
Lab. No :	24/416
Sample No :	JOT26

Hole ID :	BH 03
Depth, m :	1.00

Material description :	sandy slightly gravelly silty CLAY
Remarks :	Soils with clay or silt content between 15% - 35% can be classified as clay or silt depending on the field Engineers assessment of in-situ behaviour. Where material is for re-use and therefore disturbed, only soils with clay or silt >35% are classified as clay or silt

BS Sieve size, mm	Percent passing	Hydrometer analysis	
		Diameter, mm	% passing
100	100	0.0630	23
90	100	0.0200	19
75	100	0.0060	16
63	100	0.0020	14
50	100		
37.5	100		
28	100		
20	100		
14	100		
10	99.1		
6.3	97.1		
5.0	95.8		
2.36	81.2		
2.00	79.6		
1.18	67.7		
0.600	48.8		
0.425	40.7		
0.300	37		
0.212	33.7		
0.150	30.3		
0.063	23		

Cobbles, %	0
Gravel, %	20
Sand, %	57
Silt, %	9
Clay, %	14



Client :	Dun Laoghaire Rathdown County Council
Project :	Old Connaught Avenue, Bray

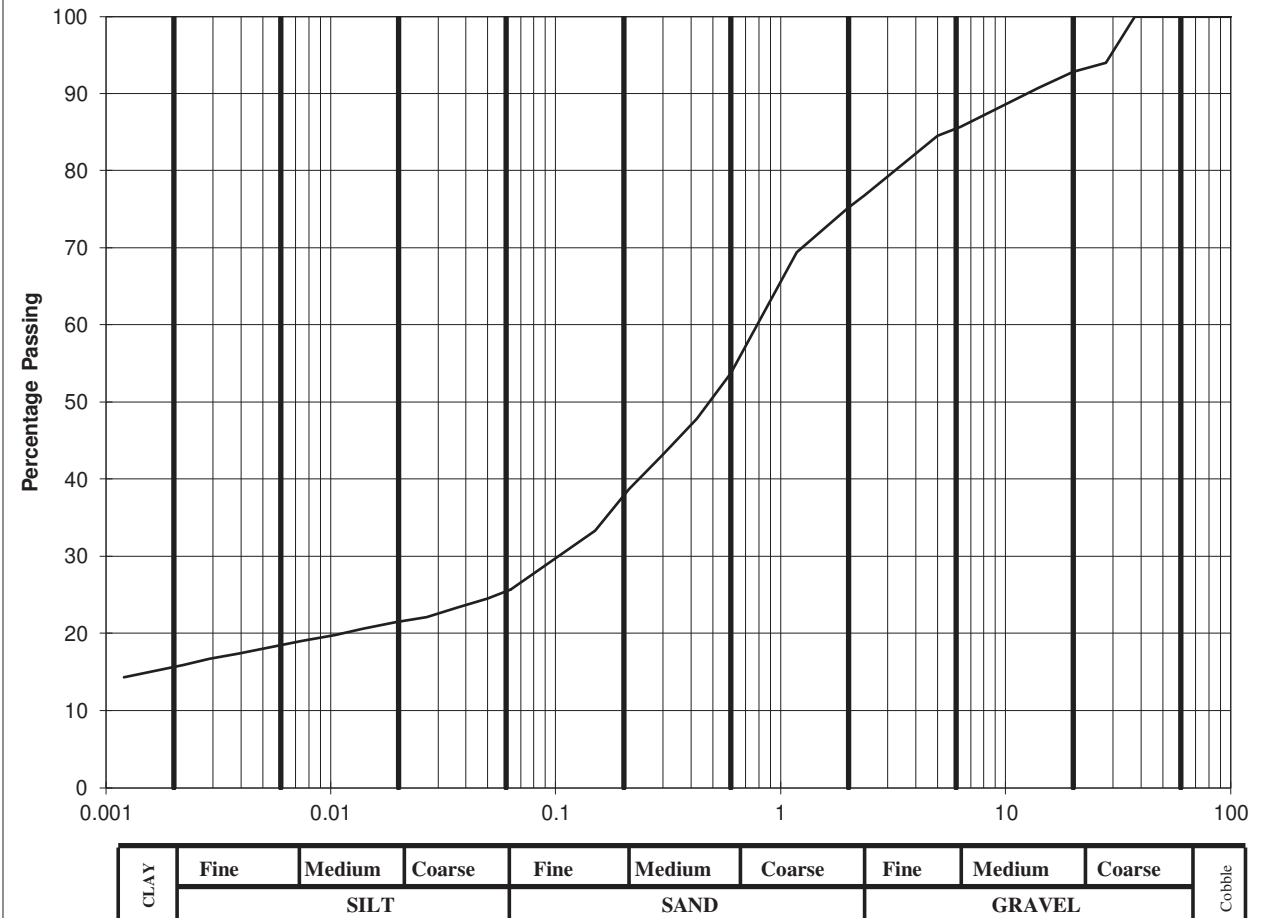
Lab. No :	24/417
Sample No :	JOT20

Hole ID :	BH 04
Depth, m :	1.00

Material description :	sandy slightly gravelly silty CLAY
Remarks :	Soils with clay or silt content between 15% - 35% can be classified as clay or silt depending on the field Engineers assessment of in-situ behaviour. Where material is for re-use and therefore disturbed, only soils with clay or silt >35% are classified as clay or silt

BS Sieve size, mm	Percent passing	Hydrometer analysis	
		Diameter, mm	% passing
100	100	0.0630	26
90	100	0.0200	21
75	100	0.0060	29
63	100	0.0020	16
50	100		
37.5	100		
28	94		
20	92.8		
14	90.7		
10	88.6		
6.3	85.7		
5.0	84.5		
2.36	76.8		
2.00	75.2		
1.18	69.4		
0.600	53.7		
0.425	47.8		
0.300	43.2		
0.212	38.7		
0.150	33.3		
0.063	26		

Cobbles, %	0
Gravel, %	25
Sand, %	49
Silt, %	10
Clay, %	16



Client :	Dun Laoghaire Rathdown County Council
Project :	Old Connaught Avenue, Bray

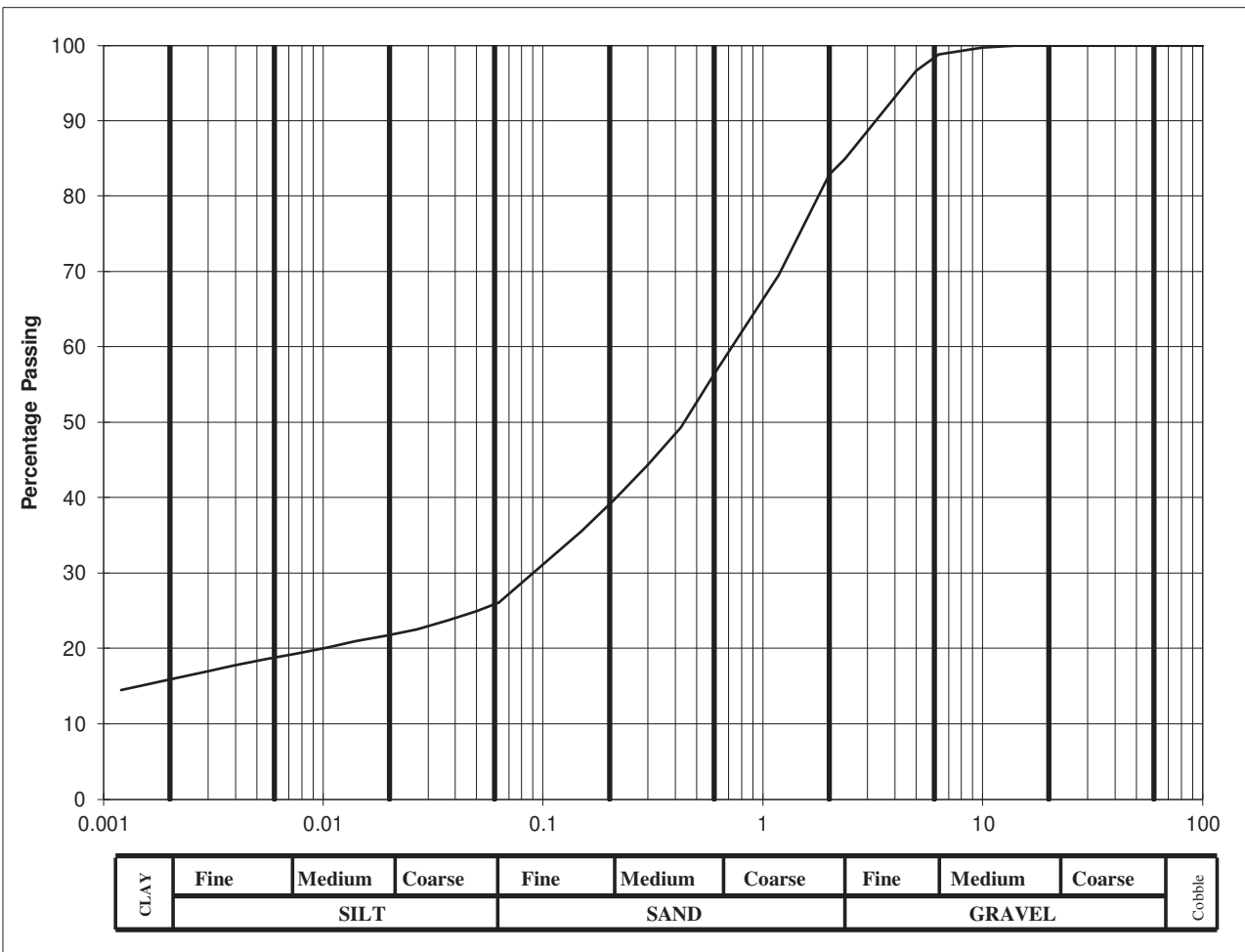
Lab. No :	24/418
Sample No :	JOT14

Hole ID :	BH 05
Depth, m :	1.00

Material description :	sandy slightly gravelly silty CLAY
Remarks :	Soils with clay or silt content between 15% - 35% can be classified as clay or silt depending on the field Engineers assessment of in-situ behaviour. Where material is for re-use and therefore disturbed, only soils with clay or silt >35% are classified as clay or silt

BS Sieve size, mm	Percent passing	Hydrometer analysis	
		Diameter, mm	% passing
100	100	0.0630	26
90	100	0.0200	22
75	100	0.0060	28
63	100	0.0020	16
50	100		
37.5	100		
28	100		
20	100		
14	100		
10	99.7		
6.3	98.8		
5.0	96.6		
2.36	84.9		
2.00	82.8		
1.18	69.5		
0.600	56.4		
0.425	49.3		
0.300	44.3		
0.212	39.8		
0.150	35.5		
0.063	26		

Cobbles, %	0
Gravel, %	17
Sand, %	57
Silt, %	10
Clay, %	16



Client :	Dun Laoghaire Rathdown County Council
Project :	Old Connaught Avenue, Bray

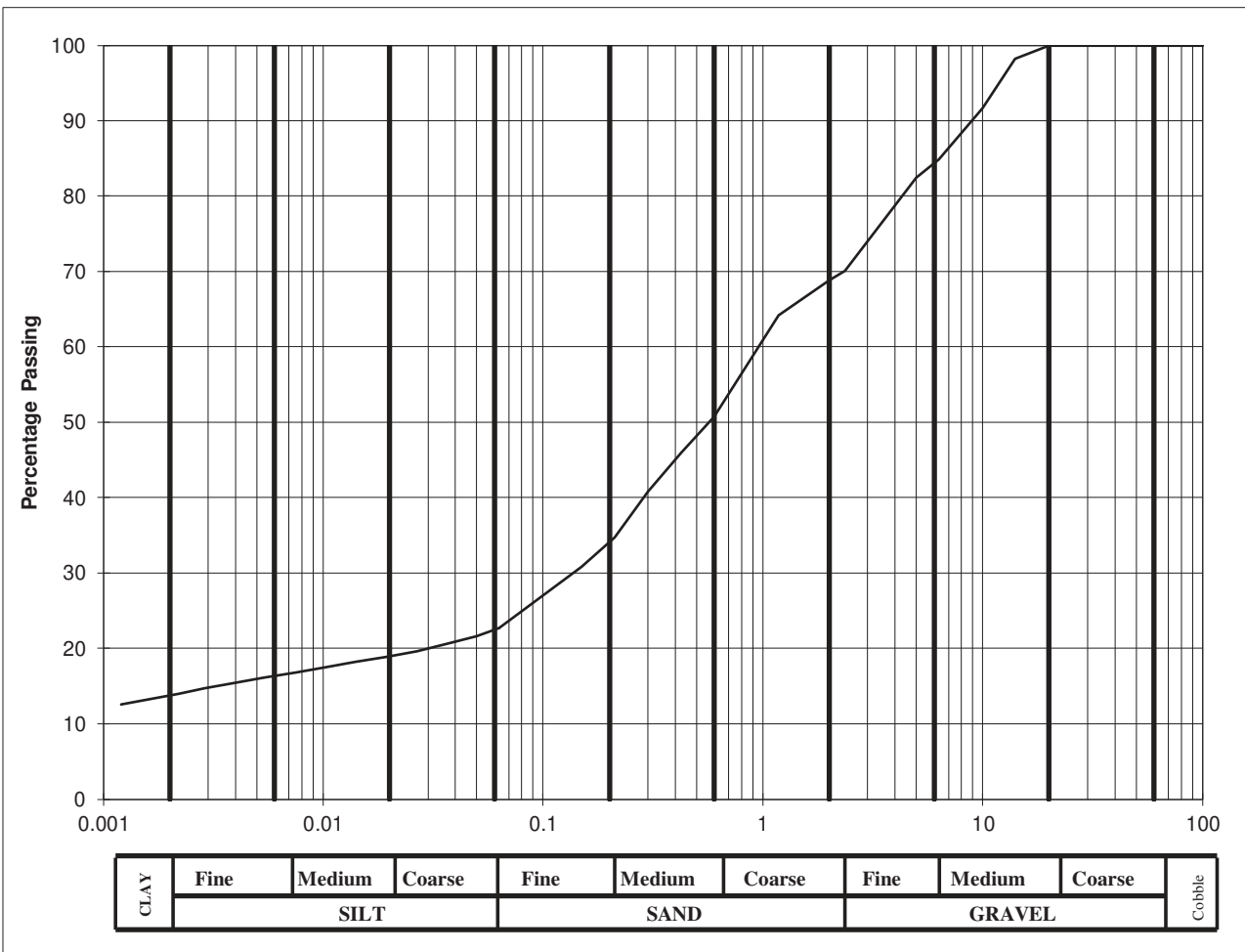
Lab. No :	24/419
Sample No :	JOT32

Hole ID :	BH 06
Depth, m :	1.00

Material description :	sandy slightly gravelly silty CLAY
Remarks :	Soils with clay or silt content between 15% - 35% can be classified as clay or silt depending on the field Engineers assessment of in-situ behaviour. Where material is for re-use and therefore disturbed, only soils with clay or silt >35% are classified as clay or silt

BS Sieve size, mm	Percent passing	Hydrometer analysis	
		Diameter, mm	% passing
100	100	0.0630	23
90	100	0.0200	19
75	100	0.0060	16
63	100	0.0020	14
50	100		
37.5	100		
28	100		
20	100		
14	98.2		
10	91.6		
6.3	84.8		
5.0	82.4		
2.36	70.1		
2.00	68.8		
1.18	64.2		
0.600	50.7		
0.425	45.9		
0.300	40.8		
0.212	34.7		
0.150	30.8		
0.063	23		

Cobbles, %	0
Gravel, %	31
Sand, %	46
Silt, %	9
Clay, %	14



Client :	Dun Laoghaire Rathdown County Council
Project :	Old Connaught Avenue, Bray

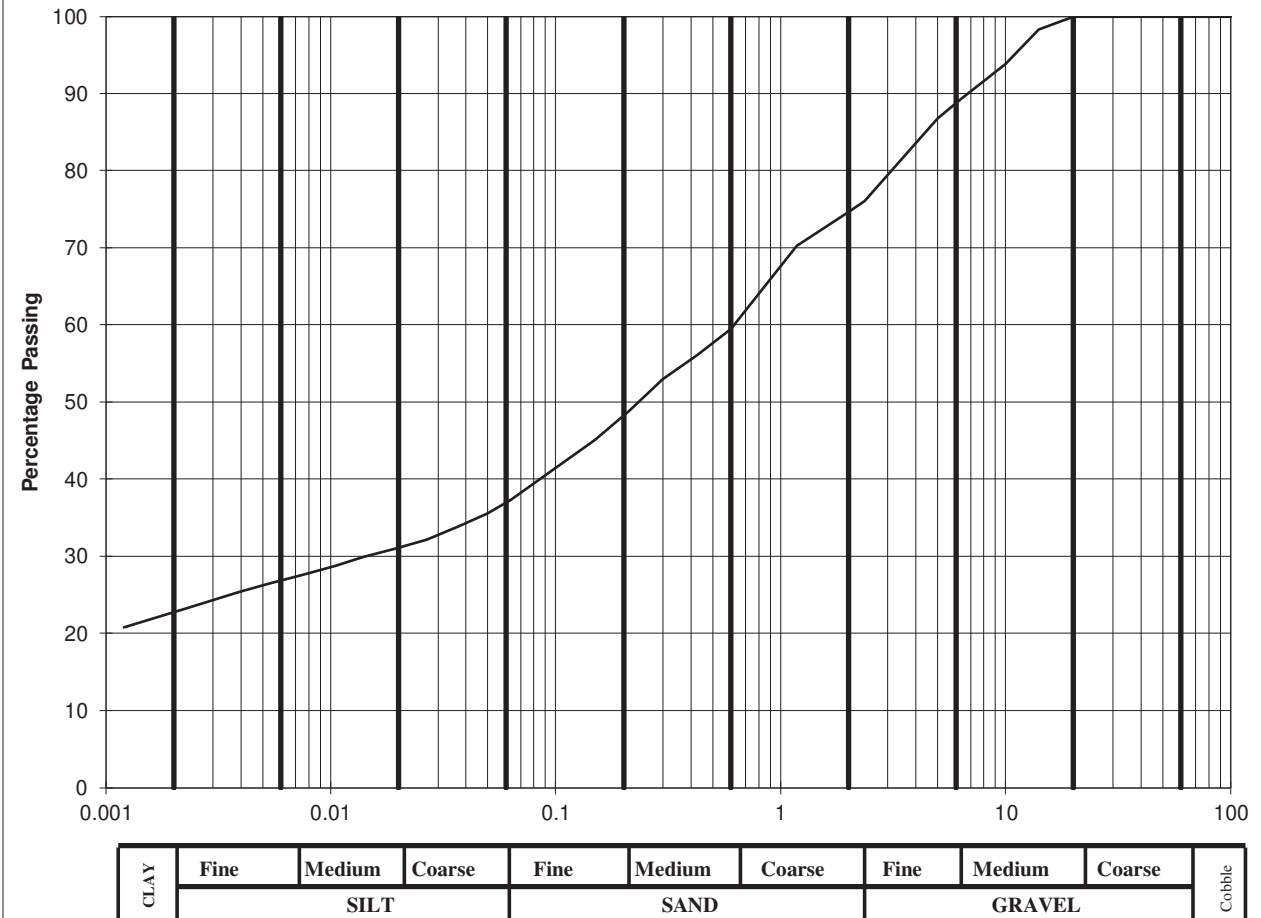
Lab. No :	24/195
Sample No :	MK02

Hole ID :	TP 01
Depth, m :	1.00

Material description :	sandy slightly gravelly silty CLAY
Remarks :	Soils with clay or silt content between 15% - 35% can be classified as clay or silt depending on the field Engineers assessment of in-situ behaviour. Where material is for re-use and therefore disturbed, only soils with clay or silt >35% are classified as clay or silt

BS Sieve size, mm	Percent passing	Hydrometer analysis	
		Diameter, mm	% passing
100	100	0.0630	37
90	100	0.0200	31
75	100	0.0060	26
63	100	0.0020	23
50	100		
37.5	100		
28	100		
20	100		
14	98.3		
10	93.8		
6.3	89.2		
5.0	86.7		
2.36	76		
2.00	74.6		
1.18	70.2		
0.600	59.4		
0.425	56		
0.300	53		
0.212	48.8		
0.150	45.1		
0.063	37		

Cobbles, %	0
Gravel, %	25
Sand, %	38
Silt, %	14
Clay, %	23



Client :	Dun Laoghaire Rathdown County Council
Project :	Old Connaught Avenue, Bray

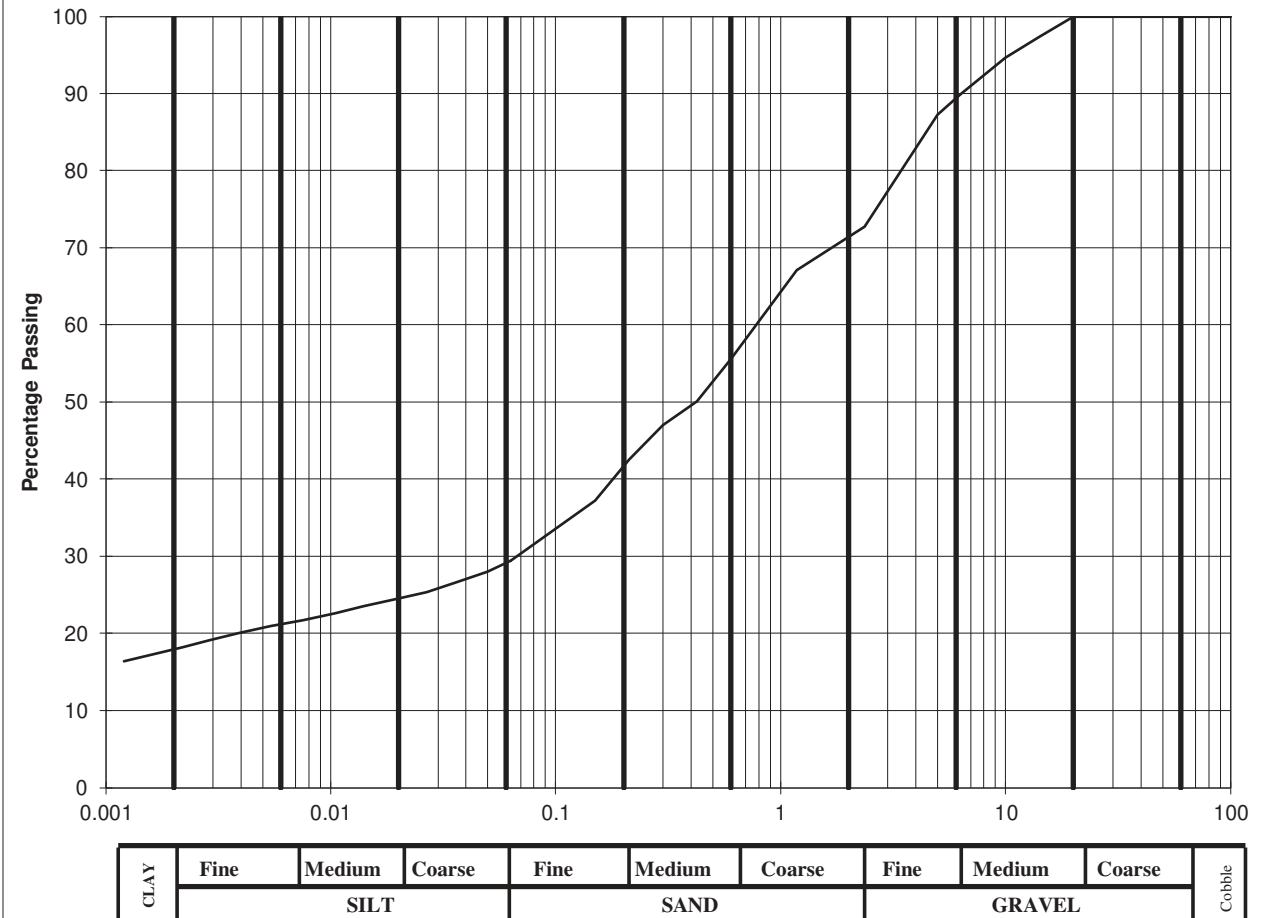
Lab. No :	24/196
Sample No :	MK05

Hole ID :	TP 02
Depth, m :	1.00

Material description :	sandy slightly gravelly silty CLAY
Remarks :	Soils with clay or silt content between 15% - 35% can be classified as clay or silt depending on the field Engineers assessment of in-situ behaviour. Where material is for re-use and therefore disturbed, only soils with clay or silt >35% are classified as clay or silt

BS Sieve size, mm	Percent passing	Hydrometer analysis	
		Diameter, mm	% passing
100	100	0.0630	29
90	100	0.0200	25
75	100	0.0060	21
63	100	0.0020	17
50	100		
37.5	100		
28	100		
20	100		
14	97.3		
10	94.6		
6.3	89.9		
5.0	87.2		
2.36	72.7		
2.00	71.4		
1.18	67.1		
0.600	55.5		
0.425	50.1		
0.300	47		
0.212	42.5		
0.150	37.2		
0.063	29		

Cobbles, %	0
Gravel, %	29
Sand, %	42
Silt, %	12
Clay, %	17



Client :	Dun Laoghaire Rathdown County Council
Project :	Old Connaught Avenue, Bray

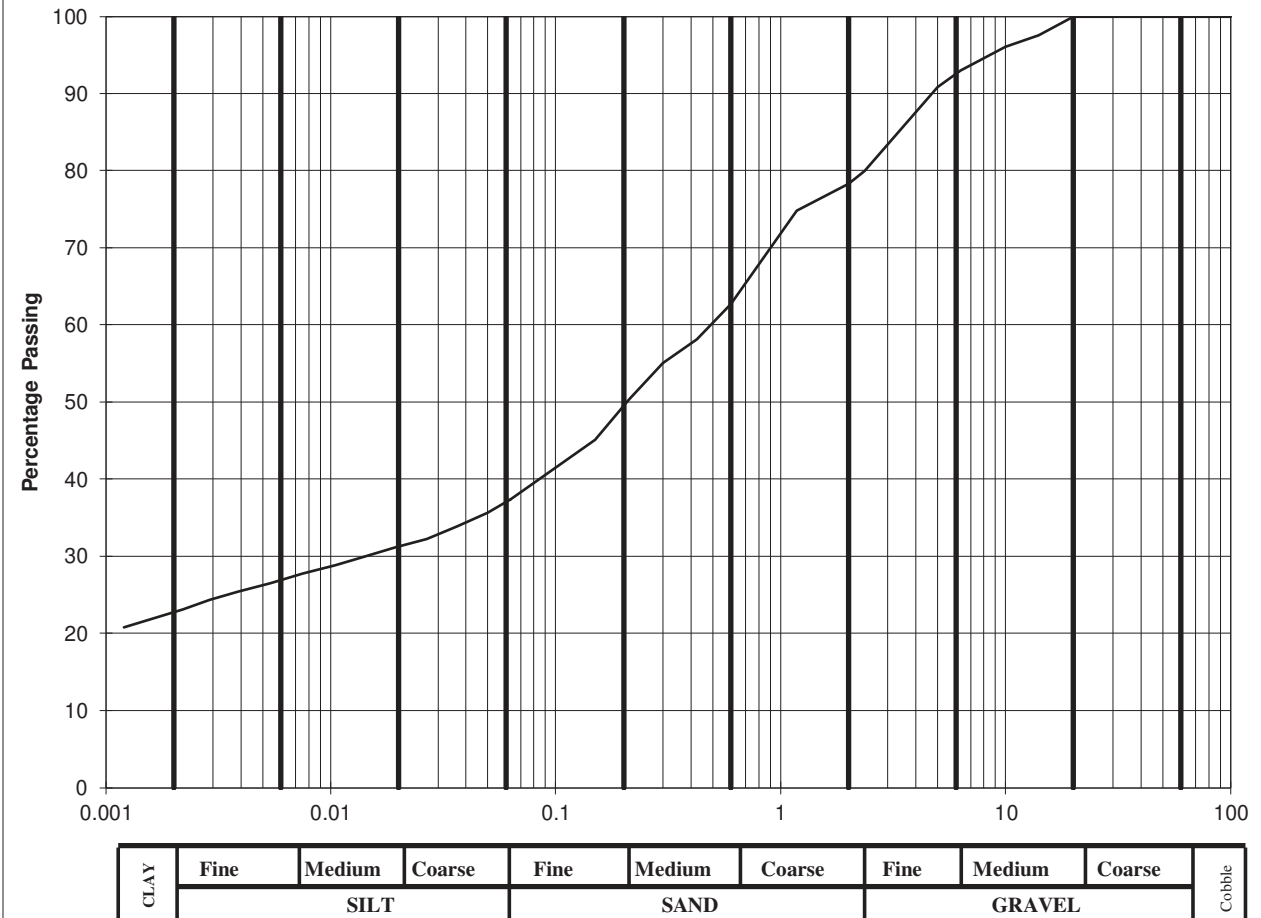
Lab. No :	24/197
Sample No :	MK08

Hole ID :	TP 03
Depth, m :	1.00

Material description :	sandy slightly gravelly silty CLAY
Remarks :	Soils with clay or silt content between 15% - 35% can be classified as clay or silt depending on the field Engineers assessment of in-situ behaviour. Where material is for re-use and therefore disturbed, only soils with clay or silt >35% are classified as clay or silt

BS Sieve size, mm	Percent passing	Hydrometer analysis	
		Diameter, mm	% passing
100	100	0.0630	37
90	100	0.0200	32
75	100	0.0060	27
63	100	0.0020	23
50	100		
37.5	100		
28	100		
20	100		
14	97.5		
10	96		
6.3	93		
5.0	90.8		
2.36	79.9		
2.00	78.3		
1.18	74.8		
0.600	62.7		
0.425	58.1		
0.300	55		
0.212	50.3		
0.150	45.1		
0.063	37		

Cobbles, %	0
Gravel, %	22
Sand, %	41
Silt, %	14
Clay, %	23



Client :	Dun Laoghaire Rathdown County Council
Project :	Old Connaught Avenue, Bray

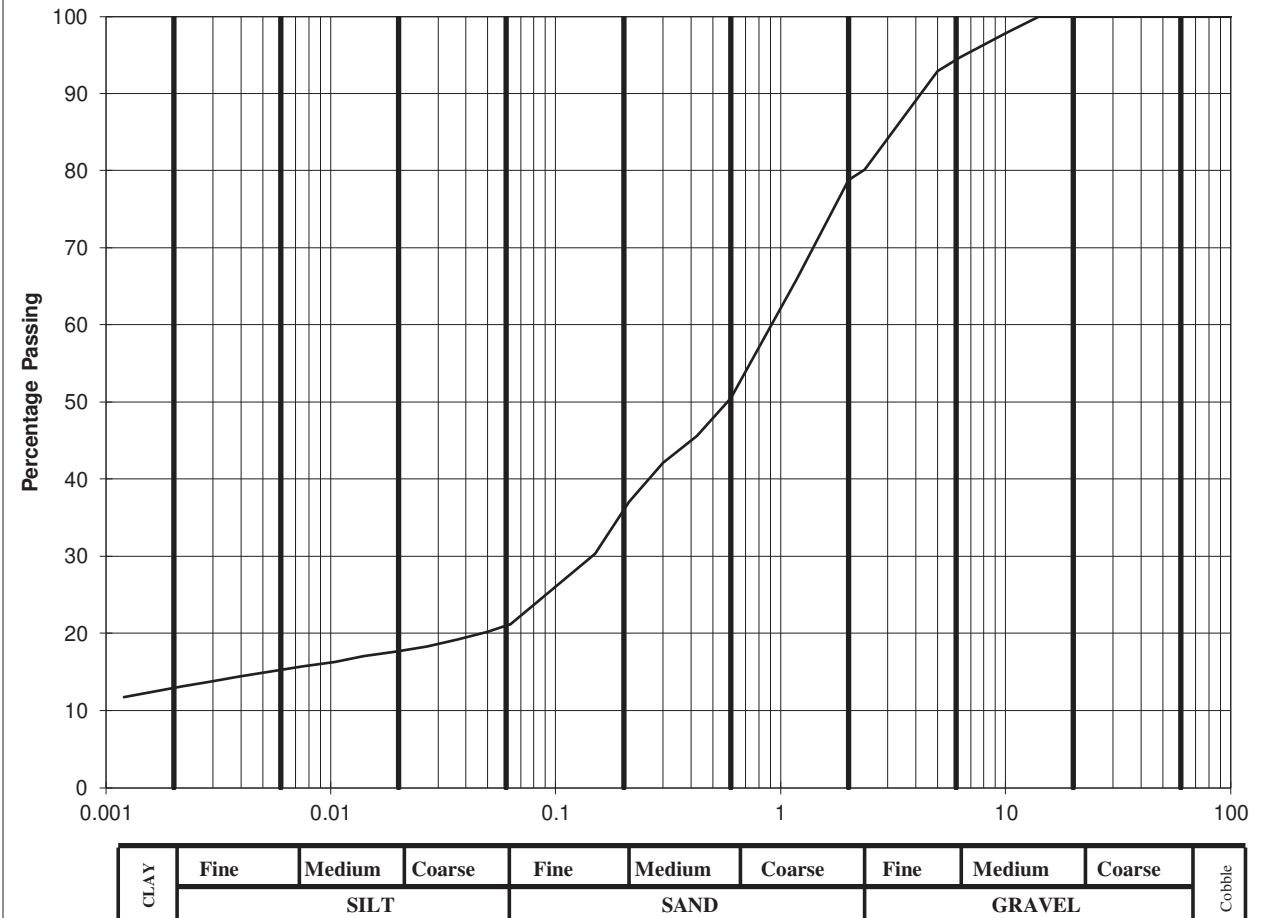
Lab. No :	24/198
Sample No :	MK11

Hole ID :	TP 04
Depth, m :	1.00

Material description :	sandy slightly gravelly silty CLAY
Remarks :	Soils with clay or silt content between 15% - 35% can be classified as clay or silt depending on the field Engineers assessment of in-situ behaviour. Where material is for re-use and therefore disturbed, only soils with clay or silt >35% are classified as clay or silt

BS Sieve size, mm	Percent passing	Hydrometer analysis	
		Diameter, mm	% passing
100	100	0.0630	21
90	100	0.0200	17
75	100	0.0060	16
63	100	0.0020	13
50	100		
37.5	100		
28	100		
20	100		
14	100		
10	97.8		
6.3	94.7		
5.0	92.9		
2.36	80.1		
2.00	78.8		
1.18	65.9		
0.600	50.5		
0.425	45.6		
0.300	42.1		
0.212	37		
0.150	30.3		
0.063	21		

Cobbles, %	0
Gravel, %	21
Sand, %	58
Silt, %	8
Clay, %	13



Client :	Dun Laoghaire Rathdown County Council
Project :	Old Connaught Avenue, Bray

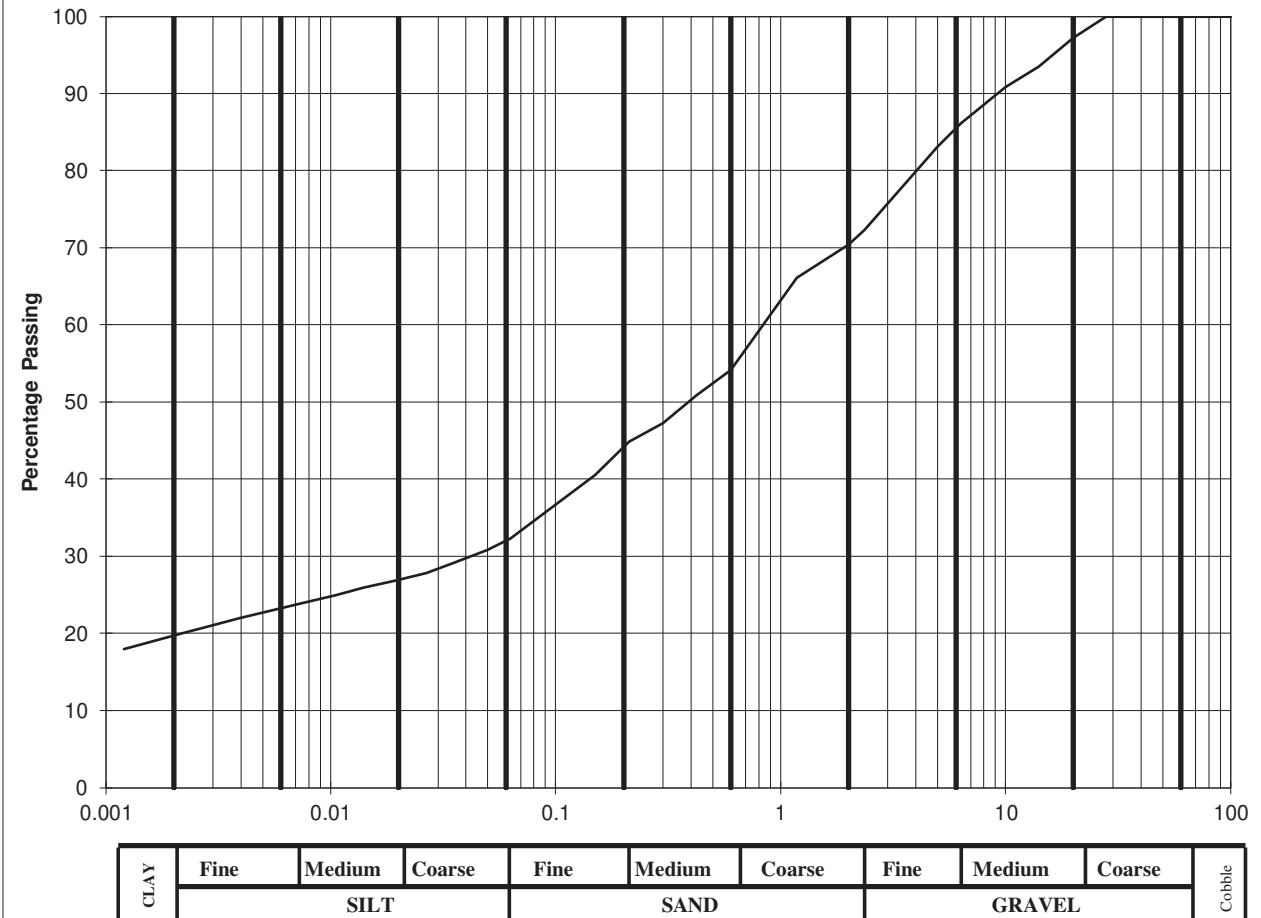
Lab. No :	24/199
Sample No :	MK14

Hole ID :	TP 05
Depth, m :	1.00

Material description :	sandy slightly gravelly silty CLAY
Remarks :	Soils with clay or silt content between 15% - 35% can be classified as clay or silt depending on the field Engineers assessment of in-situ behaviour. Where material is for re-use and therefore disturbed, only soils with clay or silt >35% are classified as clay or silt

BS Sieve size, mm	Percent passing	Hydrometer analysis	
		Diameter, mm	% passing
100	100	0.0630	32
90	100	0.0200	27
75	100	0.0060	23
63	100	0.0020	19
50	100		
37.5	100		
28	100		
20	97.2		
14	93.5		
10	90.8		
6.3	86.1		
5.0	83.1		
2.36	72.3		
2.00	70.4		
1.18	66.1		
0.600	54.1		
0.425	50.9		
0.300	47.2		
0.212	44.8		
0.150	40.5		
0.063	32		

Cobbles, %	0
Gravel, %	30
Sand, %	38
Silt, %	13
Clay, %	19



Client :	Dun Laoghaire Rathdown County Council
Project :	Old Connaught Avenue, Bray

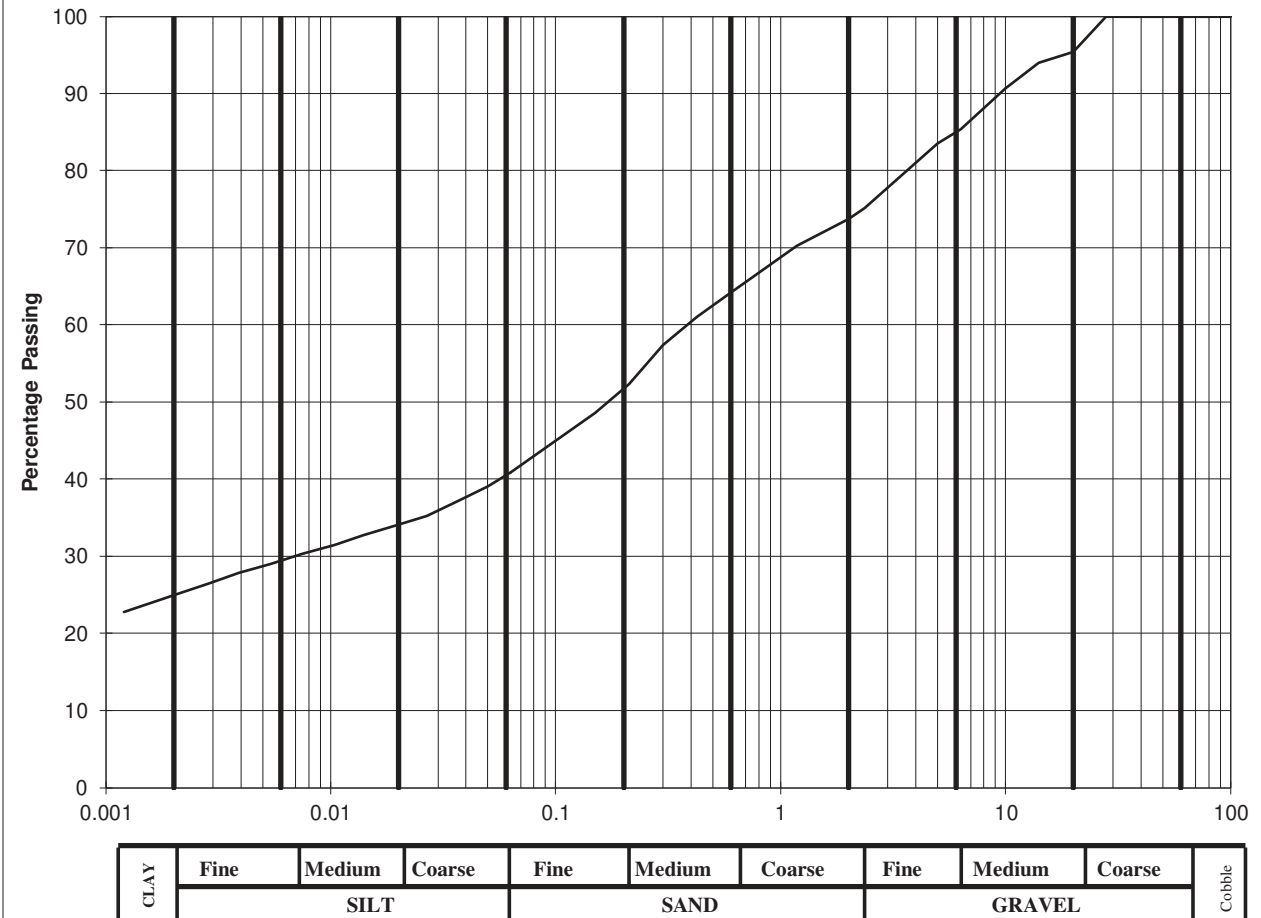
Lab. No :	24/200
Sample No :	MK32

Hole ID :	TP 06
Depth, m :	1.00

Material description :	sandy slightly gravelly silty CLAY
Remarks :	Soils with clay or silt content between 15% - 35% can be classified as clay or silt depending on the field Engineers assessment of in-situ behaviour. Where material is for re-use and therefore disturbed, only soils with clay or silt >35% are classified as clay or silt

BS Sieve size, mm	Percent passing	Hydrometer analysis	
		Diameter, mm	% passing
100	100	0.0630	41
90	100	0.0200	34
75	100	0.0060	29
63	100	0.0020	25
50	100		
37.5	100		
28	100		
20	95.4		
14	94		
10	90.6		
6.3	85.3		
5.0	83.5		
2.36	75.1		
2.00	73.7		
1.18	70.2		
0.600	64.2		
0.425	61		
0.300	57.4		
0.212	52.3		
0.150	48.6		
0.063	41		

Cobbles, %	0
Gravel, %	26
Sand, %	33
Silt, %	16
Clay, %	25



Client :	Dun Laoghaire Rathdown County Council
Project :	Old Connaught Avenue, Bray

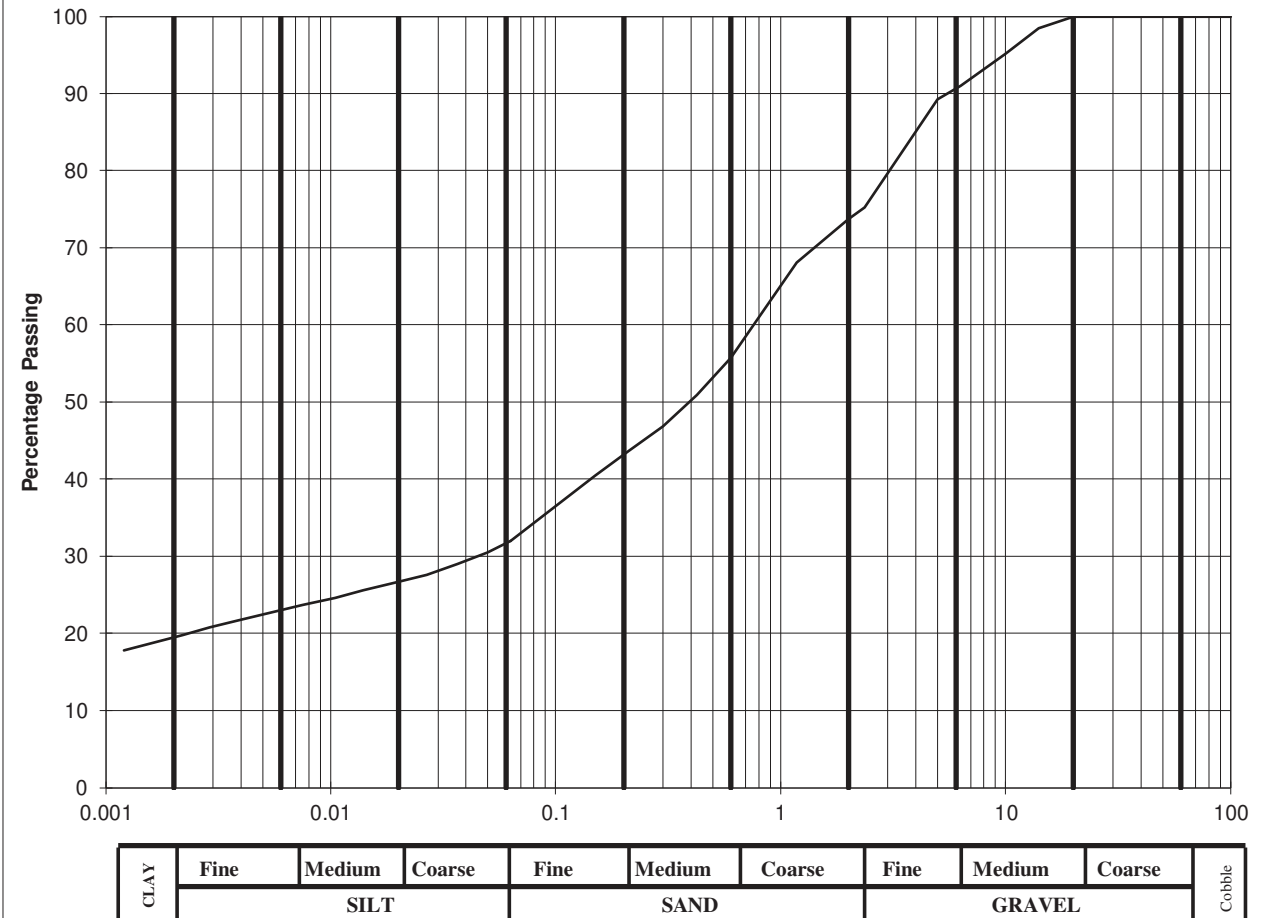
Lab. No :	24/201
Sample No :	MK29

Hole ID :	TP 07
Depth, m :	1.00

Material description :	slightly sandy slightly gravelly silty CLAY
Remarks :	Soils with clay or silt content between 15% - 35% can be classified as clay or silt depending on the field Engineers assessment of in-situ behaviour. Where material is for re-use and therefore disturbed, only soils with clay or silt >35% are classified as clay or silt

BS Sieve size, mm	Percent passing	Hydrometer analysis	
		Diameter, mm	% passing
100	100	0.0630	32
90	100	0.0200	26
75	100	0.0060	23
63	100	0.0020	19
50	100		
37.5	100		
28	100		
20	100		
14	98.4		
10	95.1		
6.3	91		
5.0	89.2		
2.36	75.2		
2.00	73.7		
1.18	68.1		
0.600	55.7		
0.425	50.9		
0.300	46.8		
0.212	43.7		
0.150	40.4		
0.063	32		

Cobbles, %	0
Gravel, %	26
Sand, %	42
Silt, %	13
Clay, %	19



Client :	Dun Laoghaire Rathdown County Council
Project :	Old Connaught Avenue, Bray

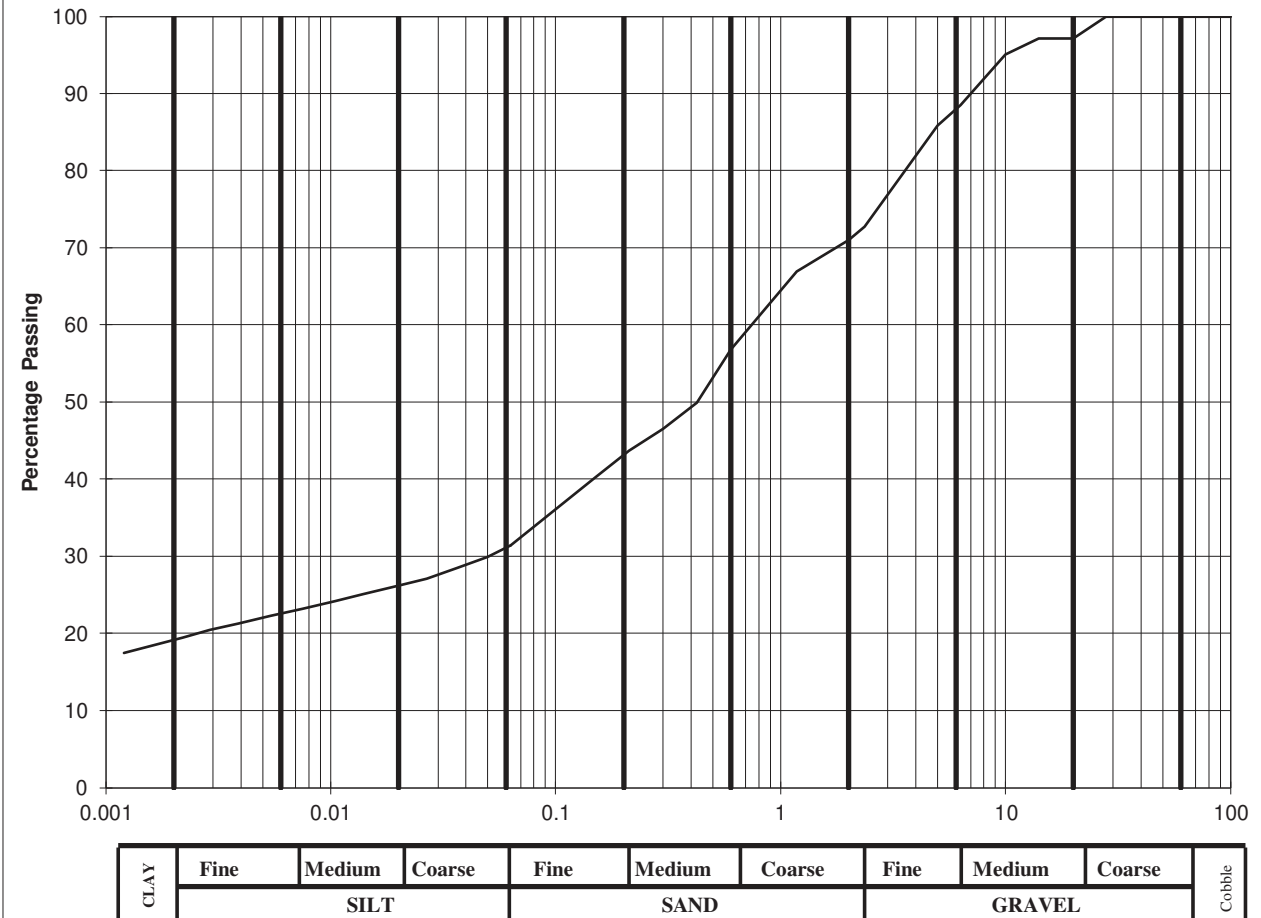
Lab. No :	24/202
Sample No :	MK26

Hole ID :	TP 08
Depth, m :	1.00

Material description :	sandy slightly gravelly silty CLAY
Remarks :	Soils with clay or silt content between 15% - 35% can be classified as clay or silt depending on the field Engineers assessment of in-situ behaviour. Where material is for re-use and therefore disturbed, only soils with clay or silt >35% are classified as clay or silt

BS Sieve size, mm	Percent passing	Hydrometer analysis	
		Diameter, mm	% passing
100	100	0.0630	31
90	100	0.0200	26
75	100	0.0060	23
63	100	0.0020	19
50	100		
37.5	100		
28	100		
20	97.1		
14	97.1		
10	95		
6.3	88.5		
5.0	85.8		
2.36	72.7		
2.00	71		
1.18	66.9		
0.600	56.8		
0.425	49.9		
0.300	46.5		
0.212	43.7		
0.150	40.2		
0.063	31		

Cobbles, %	0
Gravel, %	29
Sand, %	40
Silt, %	12
Clay, %	19



Client :	Dun Laoghaire Rathdown County Council
Project :	Old Connaught Avenue, Bray

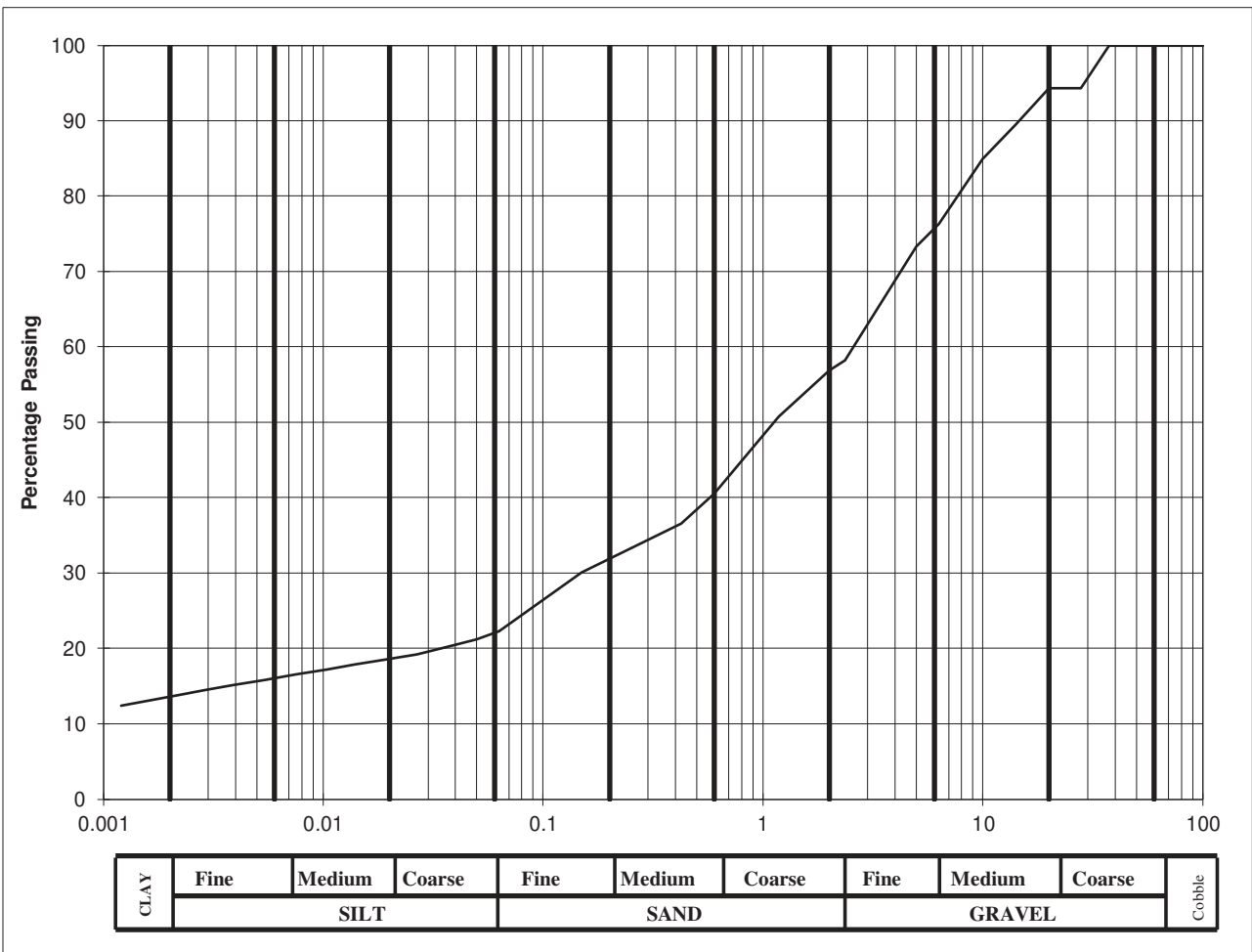
Lab. No :	24/203
Sample No :	MK17

Hole ID :	TP 09
Depth, m :	1.00

Material description :	sandy slightly gravelly silty CLAY
Remarks :	Soils with clay or silt content between 15% - 35% can be classified as clay or silt depending on the field Engineers assessment of in-situ behaviour. Where material is for re-use and therefore disturbed, only soils with clay or silt >35% are classified as clay or silt

BS Sieve size, mm	Percent passing	Hydrometer analysis	
		Diameter, mm	% passing
100	100	0.0630	22
90	100	0.0200	19
75	100	0.0060	16
63	100	0.0020	14
50	100		
37.5	100		
28	94.3		
20	94.3		
14	89.4		
10	84.9		
6.3	76.3		
5.0	73.3		
2.36	58.2		
2.00	56.9		
1.18	50.7		
0.600	40.5		
0.425	36.5		
0.300	34.4		
0.212	32.2		
0.150	30.1		
0.063	22		

Cobbles, %	0
Gravel, %	43
Sand, %	35
Silt, %	8
Clay, %	14



Client :	Dun Laoghaire Rathdown County Council
Project :	Old Connaught Avenue, Bray

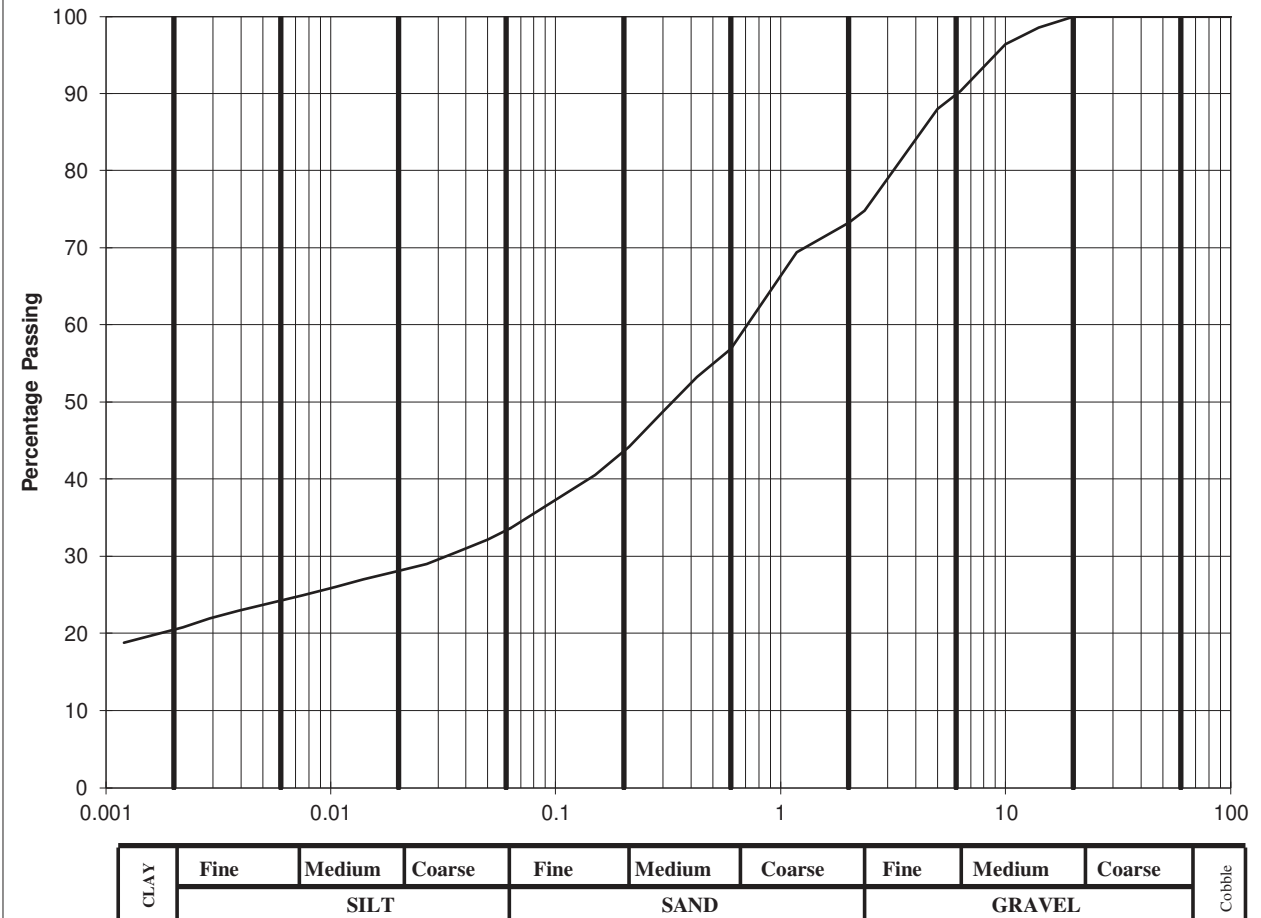
Lab. No :	24/204
Sample No :	MK35

Hole ID :	TP 10
Depth, m :	1.00

Material description :	sandy gravelly silty CLAY
Remarks :	Soils with clay or silt content between 15% - 35% can be classified as clay or silt depending on the field Engineers assessment of in-situ behaviour. Where material is for re-use and therefore disturbed, only soils with clay or silt >35% are classified as clay or silt

BS Sieve size, mm	Percent passing	Hydrometer analysis	
		Diameter, mm	% passing
100	100	0.0630	34
90	100	0.0200	28
75	100	0.0060	24
63	100	0.0020	21
50	100		
37.5	100		
28	100		
20	100		
14	98.5		
10	96.4		
6.3	90.3		
5.0	88		
2.36	74.8		
2.00	73.2		
1.18	69.4		
0.600	56.9		
0.425	53.2		
0.300	48.7		
0.212	44.2		
0.150	40.5		
0.063	34		

Cobbles, %	0
Gravel, %	27
Sand, %	39
Silt, %	13
Clay, %	21



Client :	Dun Laoghaire Rathdown County Council
Project :	Old Connaught Avenue, Bray

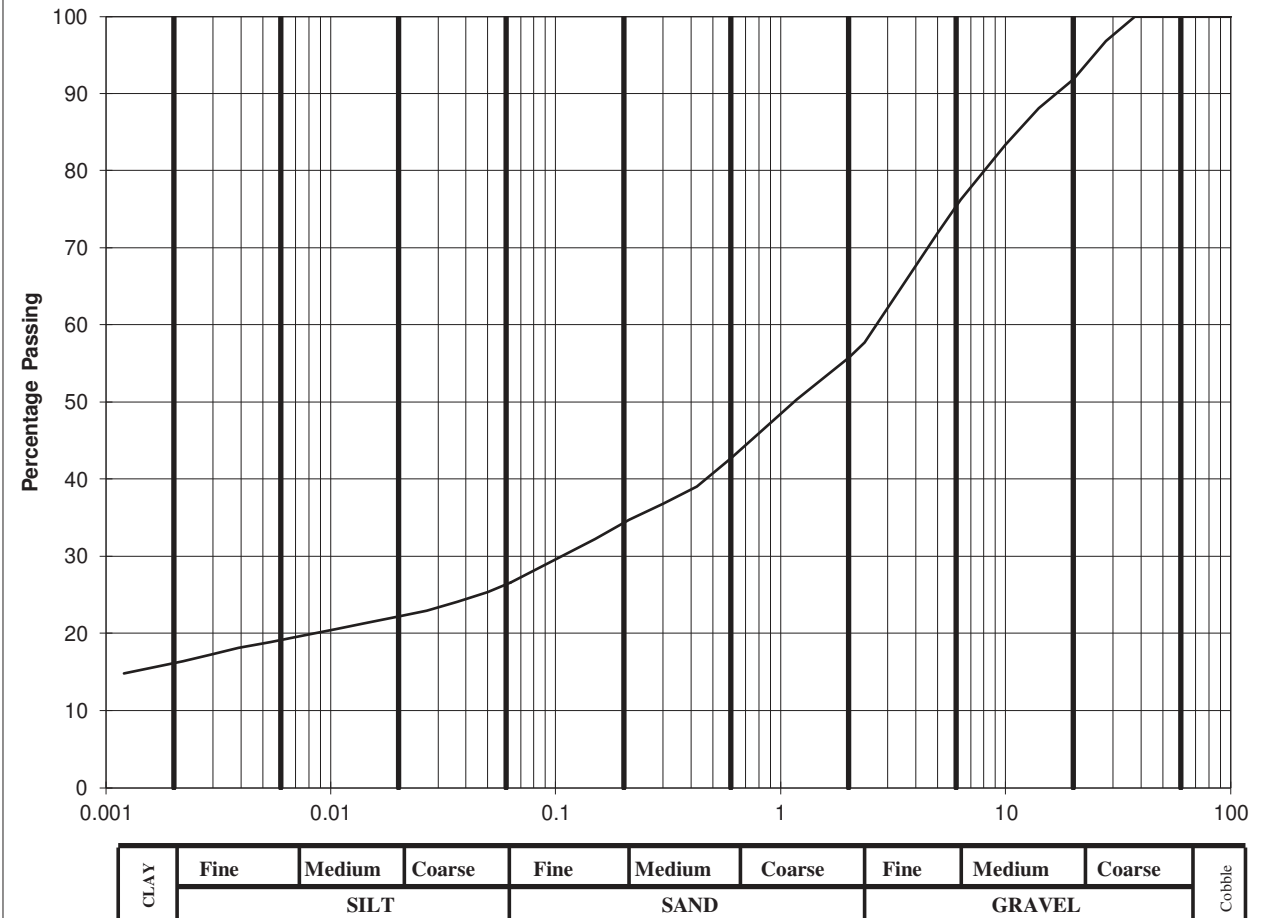
Lab. No :	24/205
Sample No :	MK38

Hole ID :	TP 11
Depth, m :	1.00

Material description :	sandy slightly gravelly silty CLAY
Remarks :	Soils with clay or silt content between 15% - 35% can be classified as clay or silt depending on the field Engineers assessment of in-situ behaviour. Where material is for re-use and therefore disturbed, only soils with clay or silt >35% are classified as clay or silt

BS Sieve size, mm	Percent passing	Hydrometer analysis	
		Diameter, mm	% passing
100	100	0.0630	27
90	100	0.0200	22
75	100	0.0060	19
63	100	0.0020	16
50	100		
37.5	100		
28	96.8		
20	91.8		
14	88.1		
10	83.3		
6.3	76.2		
5.0	71.9		
2.36	57.7		
2.00	55.7		
1.18	50.3		
0.600	42.7		
0.425	39		
0.300	36.8		
0.212	34.7		
0.150	32.2		
0.063	27		

Cobbles, %	0
Gravel, %	44
Sand, %	29
Silt, %	11
Clay, %	16



Client :	Dun Laoghaire Rathdown County Council
Project :	Old Connaught Avenue, Bray

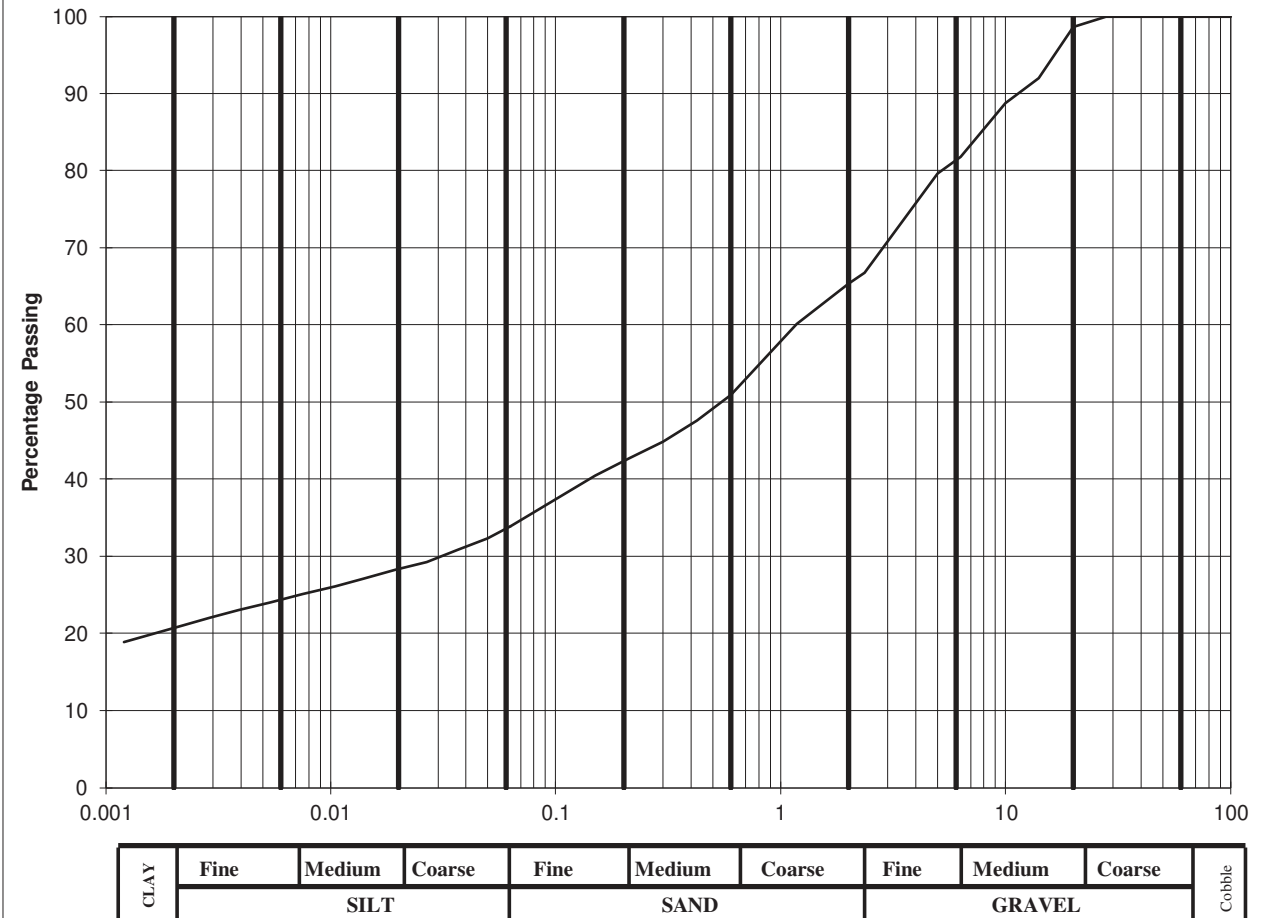
Lab. No :	24/206
Sample No :	MK41

Hole ID :	TP 12
Depth, m :	1.00

Material description :	slightly sandy gravelly silty CLAY
Remarks :	Soils with clay or silt content between 15% - 35% can be classified as clay or silt depending on the field Engineers assessment of in-situ behaviour. Where material is for re-use and therefore disturbed, only soils with clay or silt >35% are classified as clay or silt

BS Sieve size, mm	Percent passing	Hydrometer analysis	
		Diameter, mm	% passing
100	100	0.0630	34
90	100	0.0200	28
75	100	0.0060	24
63	100	0.0020	21
50	100		
37.5	100		
28	100		
20	98.6		
14	92		
10	88.7		
6.3	81.8		
5.0	79.6		
2.36	66.7		
2.00	65.3		
1.18	60.1		
0.600	50.9		
0.425	47.6		
0.300	44.8		
0.212	42.7		
0.150	40.4		
0.063	34		

Cobbles, %	0
Gravel, %	35
Sand, %	31
Silt, %	13
Clay, %	21



Client :	Dun Laoghaire Rathdown County Council
Project :	Old Connaught Avenue, Bray

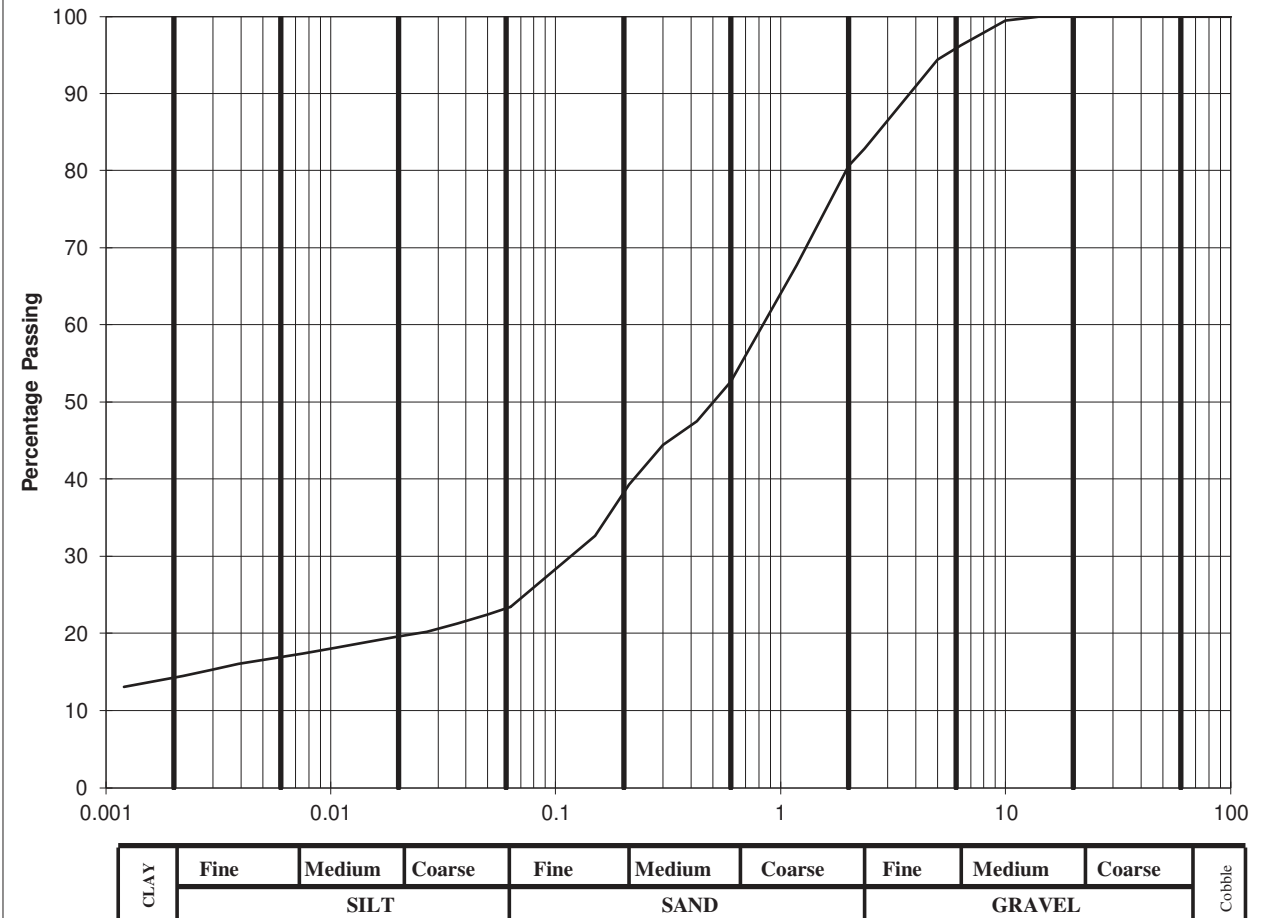
Lab. No :	24/207
Sample No :	MK44

Hole ID :	TP 13
Depth, m :	1.00

Material description :	slightly sandy gravelly silty CLAY
Remarks :	Soils with clay or silt content between 15% - 35% can be classified as clay or silt depending on the field Engineers assessment of in-situ behaviour. Where material is for re-use and therefore disturbed, only soils with clay or silt >35% are classified as clay or silt

BS Sieve size, mm	Percent passing	Hydrometer analysis	
		Diameter, mm	% passing
100	100	0.0630	24
90	100	0.0200	19
75	100	0.0060	17
63	100	0.0020	15
50	100		
37.5	100		
28	100		
20	100		
14	100		
10	99.4		
6.3	96.2		
5.0	94.4		
2.36	82.8		
2.00	80.6		
1.18	67.7		
0.600	52.6		
0.425	47.5		
0.300	44.4		
0.212	39.3		
0.150	32.6		
0.063	24		

Cobbles, %	0
Gravel, %	19
Sand, %	57
Silt, %	9
Clay, %	15



Client :	Dun Laoghaire Rathdown County Council
Project :	Old Connaught Avenue, Bray

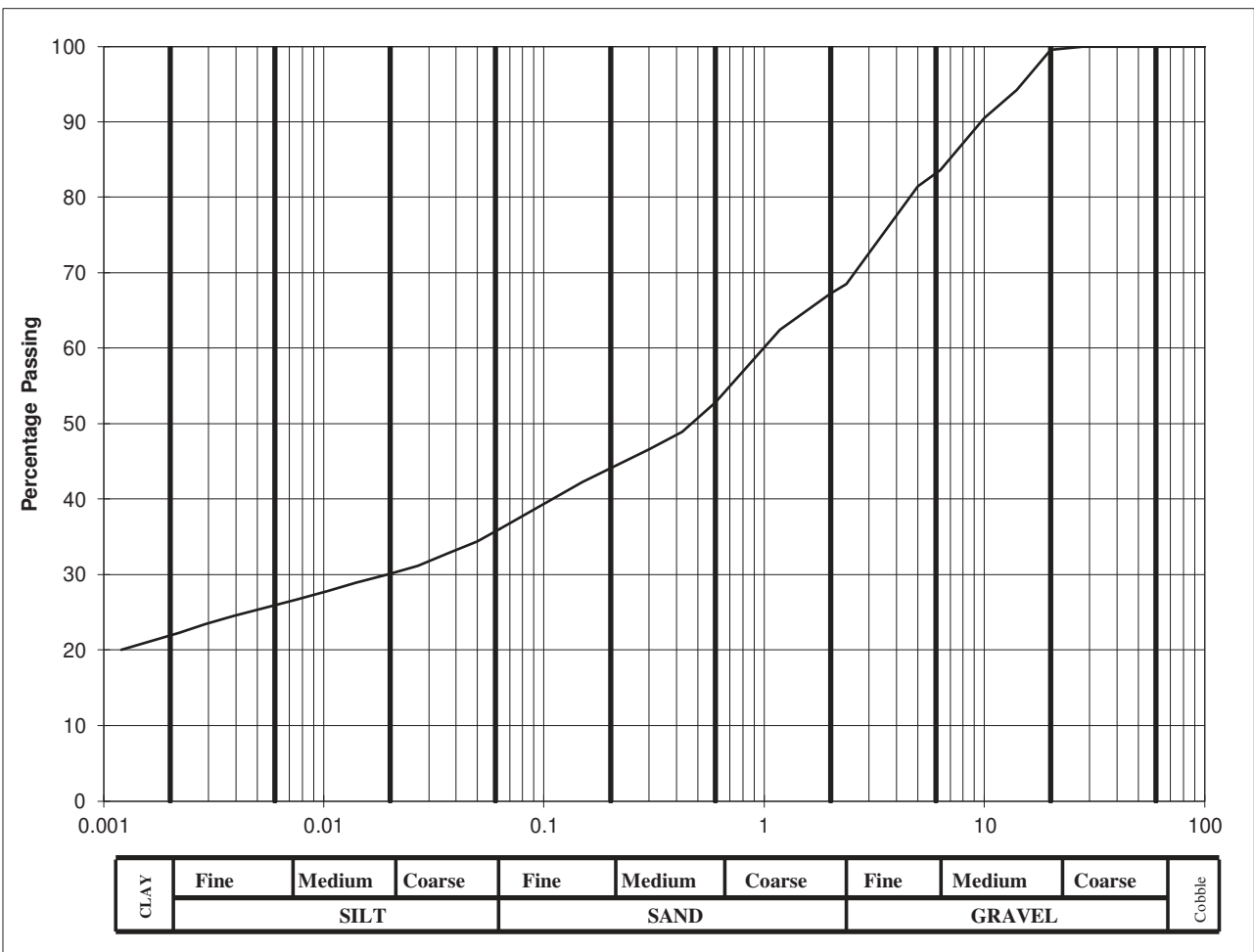
Lab. No :	24/208
Sample No :	MK20

Hole ID :	TP 14
Depth, m :	1.00

Material description :	sandy slightly gravelly silty CLAY
Remarks :	Soils with clay or silt content between 15% - 35% can be classified as clay or silt depending on the field Engineers assessment of in-situ behaviour. Where material is for re-use and therefore disturbed, only soils with clay or silt >35% are classified as clay or silt

BS Sieve size, mm	Percent passing	Hydrometer analysis	
		Diameter, mm	% passing
100	100	0.0630	36
90	100	0.0200	30
75	100	0.0060	26
63	100	0.0020	22
50	100		
37.5	100		
28	100		
20	99.5		
14	94.2		
10	90.5		
6.3	83.6		
5.0	81.4		
2.36	68.5		
2.00	67.2		
1.18	62.4		
0.600	52.8		
0.425	48.9		
0.300	46.6		
0.212	44.4		
0.150	42.3		
0.063	36		

Cobbles, %	0
Gravel, %	33
Sand, %	31
Silt, %	14
Clay, %	22



Client :	Dun Laoghaire Rathdown County Council
Project :	Old Connaught Avenue, Bray

Lab. No :	24/209
Sample No :	MK23

Hole ID :	TP 15
Depth, m :	1.00

Material description :	slightly sandy slightly gravelly silty CLAY
Remarks :	Soils with clay or silt content between 15% - 35% can be classified as clay or silt depending on the field Engineers assessment of in-situ behaviour. Where material is for re-use and therefore disturbed, only soils with clay or silt >35% are classified as clay or silt

Chemical Testing
In accordance with BS 1377: Part 3

Client	Dun Laoghaire Rathdown County Council
Site	Old Connaught Avenue, Bray
S.I. File No	6234 / 23
Test Lab	Site Investigations Ltd., Carhugar The Grange, 12th Lock Rd., Lucan Co. Dublin. Tel (01) 6108768 Email:info@siteinvestigations.ie
Report Date	21st February 2024

Hole Id	Depth (mBGL)	Sample No	Lab Ref	pH Value	Water Soluble Sulphate Content (2:1 Water-soil extract) (SO ₃) g/L	Water Soluble Sulphate Content (2:1 Water-soil extract) (SO ₃) %	Acid Soluble Sulphate Content (2:1 Water-soil extract) (SO ₃) g/L	Acid Soluble Sulphate Content (2:1 Water-soil extract) (SO ₃) %	Chloride ion Content (water:soil ratio 2:1) %	% passing 2mm
TP01	1.00	MK02	23/195	8.48	0.117	0.080				68.8
TP03	1.00	MK08	23/197	8.33	0.120	0.086				71.4
TP05	1.00	MK14	23/199	8.35	0.116	0.091				78.8
TP07	1.00	MK29	23/201	8.59	0.123	0.091				73.3
TP08	1.00	MK26	23/202	8.52	0.122	0.090				73.7
TP09	1.00	MK17	23/203	8.80	0.119	0.085				56.5
TP10	1.00	MK35	23/204	8.68	0.117	0.067				56.9
TP12	1.00	MK41	23/206	8.76	0.123	0.069				55.7
TP14	1.00	MK20	23/208	8.55	0.117	0.095				80.6
TP15	1.00	MK23	23/209	8.72	0.120	0.081				67.2

Appendix 7

Environmental Laboratory Test Results



Unit 7-8 Hawarden Business Park
Manor Road (off Manor Lane)
Hawarden
Deeside
CH5 3US

Tel: (01244) 528777
email: hawardencustomerservices@alsglobal.com
Website: www.alsenvironmental.co.uk

Site Investigations Ltd
The Grange
Carhugar
12th Lock Road
Lucan
Co. Dublin

Attention: Stephen Letch

CERTIFICATE OF ANALYSIS

Date of report Generation:	04 April 2024
Customer:	Site Investigations Ltd
Sample Delivery Group (SDG):	240325-40
Your Reference:	6234
Location:	Bray
Report No:	724702
Order Number:	08/B/24

We received 14 samples on Monday March 25, 2024 and 14 of these samples were scheduled for analysis which was completed on Thursday April 04, 2024. Accredited laboratory tests are defined within the report, but opinions, interpretations and on-site data expressed herein are outside the scope of ISO 17025 accreditation.

Should this report require incorporation into client reports, it must be used in its entirety and not simply with the data sections alone.

Chemical testing (unless subcontracted) performed at ALS Laboratories (UK) Limited Hawarden.

All sample data is provided by the customer. The reported results relate to the sample supplied, and on the basis that this data is correct.

Incorrect sampling dates and/or sample information will affect the validity of results.

The customer is not permitted to reproduce this report except in full without the approval of the laboratory.

Approved By:

Sonia McWhan

Operations Manager





CERTIFICATE OF ANALYSIS

Validated

SDG: 240325-40

Report Number: 724702

Superseded Report:

Client Ref.: 6234

Location: Bray

Received Sample Overview

Lab Sample No(s)	Customer Sample Ref.	AGS Ref.	Depth (m)	Sampled Date
29554972	BH01		1.00 - 1.00	
29554973	BH02		1.00 - 1.00	
29554974	BH03		1.00 - 1.00	
29554975	BH04		1.00 - 1.00	
29554976	BH05		1.00 - 1.00	
29554977	BH06		1.00 - 1.00	
29546413	TP 02		1.00 - 1.00	
29546416	TP 05		1.00 - 1.00	
29546417	TP 06		1.00 - 1.00	
29546418	TP 08		1.00 - 1.00	
29546419	TP 11		1.00 - 1.00	
29546420	TP 13		1.00 - 1.00	
29546421	TP 14		1.00 - 1.00	
29546422	TP 15		1.00 - 1.00	

Only received samples which have had analysis scheduled will be shown on the following pages.



CERTIFICATE OF ANALYSIS

Validated

SDG: 240325-40
Client Ref.: 6234

Report Number: 724702
Location: Bray

Superseded Report:

Results Legend	Lab Sample No(s)		29546413	29554972	29554973	29554974	29554975	29554976	29554977	29554978
	Customer Sample Reference		TP 02	BH01	BH02	BH03	BH04	BH05	BH06	
	AGS Reference									
	Depth (m)		1.00 - 1.00	1.00 - 1.00	1.00 - 1.00	1.00 - 1.00	1.00 - 1.00	1.00 - 1.00	1.00 - 1.00	1.00 - 1.00
	Container		250g Amber Jar (ALE210)	1 kg TUB with Handle (ALE260)	60g VOC (ALE215)	1 kg TUB with Handle (ALE260)	250g Amber Jar (ALE210)	1 kg TUB with Handle (ALE260)	60g VOC (ALE215)	250g Amber Jar (ALE210)
	Sample Type		S	S	S	S	S	S	S	S
Anions by Kone (w)	All	NDPs: 0 Tests: 14	X	X	X	X	X	X	X	X
CEN Readings	All	NDPs: 0 Tests: 14	X	X	X	X	X	X	X	X
Chromium III	All	NDPs: 0 Tests: 14		X	X	X	X	X	X	X
Coronene	All	NDPs: 0 Tests: 14	X	X	X	X	X	X	X	X
Dissolved Metals by ICP-MS	All	NDPs: 0 Tests: 14	X	X	X	X	X	X	X	X
Dissolved Organic/Inorganic Carbon	All	NDPs: 0 Tests: 14	X	X	X	X	X	X	X	X
EPH by GCxGC-FID	All	NDPs: 0 Tests: 14		X	X	X	X	X	X	X
EPH CWG GC (S)	All	NDPs: 0 Tests: 14		X	X	X	X	X	X	X
Fluoride	All	NDPs: 0 Tests: 14	X	X	X	X	X	X	X	X
GRO by GC-FID (S)	All	NDPs: 0 Tests: 14		X	X	X	X	X	X	X
Hexavalent Chromium (s)	All	NDPs: 0 Tests: 14		X	X	X	X	X	X	X
Loss on Ignition in soils	All	NDPs: 0 Tests: 14		X	X	X	X	X	X	X
Mercury Dissolved	All	NDPs: 0 Tests: 14	X	X	X	X	X	X	X	X
Metals in solid samples by OES	All	NDPs: 0 Tests: 14		X	X	X	X	X	X	X
PAH 16 & 17 Calc	All	NDPs: 0 Tests: 14	X	X	X	X	X	X	X	X



CERTIFICATE OF ANALYSIS

Validated

SDG: 240325-40
Client Ref.: 6234

Report Number: 724702
Location: Bray

Superseded Report:

Results Legend

- X** Test
N No Determination Possible

Sample Types -

S - Soil/Solid
UNS - Unspecified Solid
GW - Ground Water
SW - Surface Water
LE - Land Leachate
PL - Prepared Leachate
PR - Process Water
SA - Saline Water
TE - Trade Effluent
TS - Treated Sewage
US - Untreated Sewage
RE - Recreational Water
DW - Drinking Water
Non-regulatory
UNL - Unspecified Liquid
SL - Sludge
G - Gas
OTH - Other

Results Legend	Lab Sample No(s)		Customer Sample Reference		AGS Reference		Depth (m)		Container		Sample Type	
	29546413		TP 02				1.00 - 1.00		250g Amber Jar (ALE210) 1kg TUB with Handle (ALE260)		S	
PAH by GCMS	29554977		BH06				1.00 - 1.00		250g Amber Jar (ALE215) 1kg TUB with Handle (ALE260)		S	
	29554976		BH05				1.00 - 1.00		250g Amber Jar (ALE215) 1kg TUB with Handle (ALE260)		S	
	29554975		BH04				1.00 - 1.00		250g Amber Jar (ALE215) 1kg TUB with Handle (ALE260)		S	
	29554974		BH03				1.00 - 1.00		250g Amber Jar (ALE215) 1kg TUB with Handle (ALE260)		S	
	29554973		BH02				1.00 - 1.00		250g Amber Jar (ALE215) 1kg TUB with Handle (ALE260)		S	
	29554972		BH01				1.00 - 1.00		250g Amber Jar (ALE215) 1kg TUB with Handle (ALE260)		S	
PCBs by GCMS	All		NDPs: 0 Tests: 14									
pH	All		NDPs: 0 Tests: 14									
pH Value of Filtered Water	All		NDPs: 0 Tests: 14									
Phenols by HPLC (W)	All		NDPs: 0 Tests: 14									
Sample description	All		NDPs: 0 Tests: 14									
Total Organic Carbon	All		NDPs: 0 Tests: 14									
TPH CWG GC (S)	All		NDPs: 0 Tests: 14									
VOC MS (S)	All		NDPs: 0 Tests: 14									



CERTIFICATE OF ANALYSIS

Validated

SDG: 240325-40
Client Ref.: 6234

Report Number: 724702
Location: Bray

Superseded Report:

Sample Descriptions

Grain Sizes

very fine	<0.063mm	fine	0.063mm - 0.1mm	medium	0.1mm - 2mm	coarse	2mm - 10mm	very coarse	>10mm
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Lab Sample No(s)	Customer Sample Ref.	Depth (m)	Colour	Description	Inclusions	Inclusions 2
29554972	BH01	1.00 - 1.00	Dark Brown	Sandy Silt Loam	Stones	Vegetation
29554973	BH02	1.00 - 1.00	Dark Brown	Sandy Loam	Stones	Vegetation
29554974	BH03	1.00 - 1.00	Dark Brown	Silty Clay Loam	Stones	Vegetation
29554975	BH04	1.00 - 1.00	Light Brown	Sandy Clay Loam	Stones	Vegetation
29554976	BH05	1.00 - 1.00	Dark Brown	Silty Clay Loam	Stones	Vegetation
29554977	BH06	1.00 - 1.00	Dark Brown	Sandy Loam	Stones	Vegetation
29546413	TP 02	1.00 - 1.00	Light Brown	Sandy Clay Loam	Stones	Vegetation
29546416	TP 05	1.00 - 1.00	Light Brown	Sandy Clay Loam	Stones	Vegetation
29546417	TP 06	1.00 - 1.00	Dark Brown	Silty Clay Loam	Stones	Vegetation
29546418	TP 08	1.00 - 1.00	Dark Brown	Silty Clay Loam	Stones	Vegetation
29546419	TP 11	1.00 - 1.00	Light Brown	Sandy Clay Loam	Stones	Vegetation
29546420	TP 13	1.00 - 1.00	Light Brown	Sandy Clay Loam	Stones	Vegetation
29546421	TP 14	1.00 - 1.00	Dark Brown	Sandy Loam	Stones	Vegetation
29546422	TP 15	1.00 - 1.00	Dark Brown	Sandy Loam	Stones	Vegetation

These descriptions are only intended to act as a cross check if sample identities are questioned, and to provide a log of sample matrices with respect to MCERTS validation. They are not intended as full geological descriptions.

We are accredited to MCERTS for sand, clay and loam/topsoil, or any of these materials - whether these are derived from naturally occurring soil profiles, or from fill/made ground, as long as these materials constitute the major part of the sample.

Other coarse granular materials such as concrete, gravel and brick are not accredited if they comprise the major part of the sample.



CERTIFICATE OF ANALYSIS

Validated

SDG: 240325-40
Client Ref.: 6234

Report Number: 724702
Location: Bray

Superseded Report:

Results Legend			Customer Sample Ref.		BH01	BH02	BH03	BH04	BH05	BH06	
# ISO17025 accredited.	M mCERTS accredited.		Depth (m) Sample Type Date Sampled Sample Time Date Received SDG Ref Lab Sample No.(s) AGS Reference		1.00 - 1.00 Soil/Solid (S)	1.00 - 1.00 Soil/Solid (S)	1.00 - 1.00 Soil/Solid (S)	1.00 - 1.00 Soil/Solid (S)	1.00 - 1.00 Soil/Solid (S)	1.00 - 1.00 Soil/Solid (S)	
aq Aqueous / settled sample.		-			-	-	-	-	-		
diss.filt Dissolved / filtered sample.											
tot.unfilt Total / unfiltered sample.											
* Subcontracted - refer to subcontractor report for accreditation status.											
** % recovery of the surrogate standard to check the efficiency of the method. The results of individual compounds within samples aren't corrected for the recovery			25/03/2024 240325-40 29554972		25/03/2024 240325-40 29554973	25/03/2024 240325-40 29554974	25/03/2024 240325-40 29554975	25/03/2024 240325-40 29554976	25/03/2024 240325-40 29554977		
(F) Trigger breach confirmed											
1-4* Sample deviation (see appendix)											
Component	LOD/Units	Method									
Moisture Content Ratio (% of as received sample)	%	PM024	17		\$	19	\$	22	\$	11	\$
Loss on ignition	<0.7 %	TM018	2.64	\$ M		3.34	\$ M	3.68	\$ M	3.01	\$ M
Organic Carbon, Total	<0.2 %	TM132	0.523	\$ M		0.903	\$ M	0.726	\$ M	0.491	\$ M
pH	1 pH Units	TM133	8.38	\$ M		8.26	\$ M	7.22	\$ M	7.07	\$ M
Chromium, Hexavalent	<0.6 mg/kg	TM151	<0.6	\$ M		<0.6	\$ M	<0.6	\$ M	<0.6	\$ M
PCB congener 28	<3 µg/kg	TM168	<3	\$ M		<3	\$ M	<3	\$ M	<3	\$ M
PCB congener 52	<3 µg/kg	TM168	<3	\$ M		<3	\$ M	<3	\$ M	<3	\$ M
PCB congener 101	<3 µg/kg	TM168	<3	\$ M		<3	\$ M	<3	\$ M	<3	\$ M
PCB congener 118	<3 µg/kg	TM168	<3	\$ M		<3	\$ M	<3	\$ M	<3	\$ M
PCB congener 138	<3 µg/kg	TM168	<3	\$ M		<3	\$ M	<3	\$ M	<3	\$ M
PCB congener 153	<3 µg/kg	TM168	<3	\$ M		<3	\$ M	<3	\$ M	<3	\$ M
PCB congener 180	<3 µg/kg	TM168	<3	\$ M		<3	\$ M	<3	\$ M	<3	\$ M
Sum of detected PCB 7 Congeners	<21 µg/kg	TM168	<21	\$		<21	\$	<21	\$	<21	\$
Chromium, Trivalent	<0.9 mg/kg	TM181	18.3	\$		17.9	\$	24.5	\$	22.8	\$
Antimony	<0.6 mg/kg	TM181	<0.6	\$ #		<0.6	\$ #	<0.6	\$ #	0.713	\$ #
Arsenic	<0.6 mg/kg	TM181	29.4	\$ M		27.4	\$ M	15.7	\$ M	22.7	\$ M
Barium	<0.6 mg/kg	TM181	64.7	\$ #		61.4	\$ #	60.2	\$ #	80.6	\$ #
Cadmium	<0.02 mg/kg	TM181	1.76	\$ M		1.61	\$ M	1.16	\$ M	1.21	\$ M
Chromium	<0.9 mg/kg	TM181	18.3	\$ M		17.9	\$ M	24.5	\$ M	22.8	\$ M
Copper	<1.4 mg/kg	TM181	19.4	\$ M		21.5	\$ M	15.4	\$ M	13.5	\$ M
Lead	<0.7 mg/kg	TM181	23.4	\$ M		26.8	\$ M	24.2	\$ M	22	\$ M
Mercury	<0.1 mg/kg	TM181	<0.1	\$ M		<0.1	\$ M	<0.1	\$ M	<0.1	\$ M
Molybdenum	<0.1 mg/kg	TM181	0.544	\$ #		0.515	\$ #	0.472	\$ #	0.63	\$ #
Nickel	<0.2 mg/kg	TM181	32.1	\$ M		30.4	\$ M	25.9	\$ M	23.9	\$ M
Selenium	<1 mg/kg	TM181	2.03	\$ #		2	\$ #	1.3	\$ #	1.17	\$ #
Zinc	<1.9 mg/kg	TM181	78.8	\$ M		86.1	\$ M	82.1	\$ M	112	\$ M
PAH Total 17 (inc Coronene) Moisture Corrected	<10 mg/kg	TM410	<10	\$		<10	\$	<10	\$	<10	\$
Coronene	<200 µg/kg	TM410	<200	\$		<200	\$	<200	\$	<200	\$
Mineral Oil >C10-C40 (EH_2D_AL)	<5 mg/kg	TM415	<5	\$		<5	\$	<5	\$	<5	\$



CERTIFICATE OF ANALYSIS

Validated

SDG: 240325-40
Client Ref.: 6234

Report Number: 724702
Location: Bray

Superseded Report:

Results Legend			Customer Sample Ref.	TP 02	TP 05	TP 06	TP 08	TP 11	TP 13
# ISO17025 accredited.	M mCERTS accredited.	Depth (m) Sample Type Date Sampled Sample Time Date Received SDG Ref Lab Sample No.(s) AGS Reference		1.00 - 1.00 Soil/Solid (S)	1.00 - 1.00 Soil/Solid (S)	1.00 - 1.00 Soil/Solid (S)	1.00 - 1.00 Soil/Solid (S)	1.00 - 1.00 Soil/Solid (S)	1.00 - 1.00 Soil/Solid (S)
aq Aqueous / settled sample.	diss.filt Dissolved / filtered sample.			-	-	-	-	-	-
tot.unfilt Total / unfiltered sample.	* Subcontracted - refer to subcontractor report for accreditation status.			-	-	-	-	-	-
** % recovery of the surrogate standard to check the efficiency of the method. The results of individual compounds within samples aren't corrected for the recovery	(F) Trigger breach confirmed			25/03/2024 240325-40 29546413	25/03/2024 240325-40 29546416	25/03/2024 240325-40 29546417	25/03/2024 240325-40 29546418	25/03/2024 240325-40 29546419	25/03/2024 240325-40 29546420
1-4* Sample deviation (see appendix)									
Component	LOD/Units	Method							
Moisture Content Ratio (% of as received sample)	%	PM024	18	16	22	18	18	20	
			\$	\$	\$	\$	\$	\$	
Loss on ignition	<0.7 %	TM018	2.47	2.17	3.29	2.56	3	4.01	
			\$ M	\$ M	\$ M	\$ M	\$ M	\$ M	
Organic Carbon, Total	<0.2 %	TM132	0.425	0.458	0.695	0.441	0.549	0.921	
			\$ M	\$ M	\$ M	\$ M	\$ M	\$ M	
pH	1 pH Units	TM133	7.89	8.45	7.26	7.6	7.02	7.06	
			\$ M	\$ M	\$ M	\$ M	\$ M	\$ M	
Chromium, Hexavalent	<0.6 mg/kg	TM151	<0.6	<0.6	<0.6	<0.6	<0.6	<0.6	
			\$ M	\$ M	\$ M	\$ M	\$ M	\$ M	
PCB congener 28	<3 µg/kg	TM168	<3	<3	<3	<3	<3	<3	
			\$ M	\$ M	\$ M	\$ M	\$ M	\$ M	
PCB congener 52	<3 µg/kg	TM168	<3	<3	<3	<3	<3	<3	
			\$ M	\$ M	\$ M	\$ M	\$ M	\$ M	
PCB congener 101	<3 µg/kg	TM168	<3	<3	<3	<3	<3	<3	
			\$ M	\$ M	\$ M	\$ M	\$ M	\$ M	
PCB congener 118	<3 µg/kg	TM168	<3	<3	<3	<3	<3	<3	
			\$ M	\$ M	\$ M	\$ M	\$ M	\$ M	
PCB congener 138	<3 µg/kg	TM168	<3	<3	<3	<3	<3	<3	
			\$ M	\$ M	\$ M	\$ M	\$ M	\$ M	
PCB congener 153	<3 µg/kg	TM168	<3	<3	<3	<3	<3	<3	
			\$ M	\$ M	\$ M	\$ M	\$ M	\$ M	
PCB congener 180	<3 µg/kg	TM168	<3	<3	<3	<3	<3	<3	
			\$ M	\$ M	\$ M	\$ M	\$ M	\$ M	
Sum of detected PCB 7 Congeners	<21 µg/kg	TM168	<21	<21	<21	<21	<21	<21	
			\$	\$	\$	\$	\$	\$	
Chromium, Trivalent	<0.9 mg/kg	TM181	24.2	17.4	26	23.1	18.6	21.6	
			\$	\$	\$	\$	\$	\$	
Antimony	<0.6 mg/kg	TM181	<0.6	<0.6	<0.6	<0.6	<0.6	<0.6	
			\$ #	\$ #	\$ #	\$ #	\$ #	\$ #	
Arsenic	<0.6 mg/kg	TM181	30.3	29.1	17.1	14.6	17.1	18.2	
			\$ M	\$ M	\$ M	\$ M	\$ M	\$ M	
Barium	<0.6 mg/kg	TM181	49.4	49.2	59.5	50	55.7	65.7	
			\$ #	\$ #	\$ #	\$ #	\$ #	\$ #	
Cadmium	<0.02 mg/kg	TM181	1.19	1.11	1.12	0.946	0.806	1.32	
			\$ M	\$ M	\$ M	\$ M	\$ M	\$ M	
Chromium	<0.9 mg/kg	TM181	24.2	17.4	26	23.1	18.6	21.6	
			\$ M	\$ M	\$ M	\$ M	\$ M	\$ M	
Copper	<1.4 mg/kg	TM181	20.1	24.8	15.1	16	10.9	11.5	
			\$ M	\$ M	\$ M	\$ M	\$ M	\$ M	
Lead	<0.7 mg/kg	TM181	21.2	18.7	22.1	20.8	39.4	21	
			\$ M	\$ M	\$ M	\$ M	\$ M	\$ M	
Mercury	<0.1 mg/kg	TM181	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	
			\$ M	\$ M	\$ M	\$ M	\$ M	\$ M	
Molybdenum	<0.1 mg/kg	TM181	0.689	0.709	0.539	0.396	0.472	0.305	
			\$ #	\$ #	\$ #	\$ #	\$ #	\$ #	
Nickel	<0.2 mg/kg	TM181	32.1	28.7	24.1	24.8	21.3	21.7	
			\$ M	\$ M	\$ M	\$ M	\$ M	\$ M	
Selenium	<1 mg/kg	TM181	1.3	1.28	1.1	1.55	<1	1.03	
			\$ #	\$ #	\$ #	\$ #	\$ #	\$ #	
Zinc	<1.9 mg/kg	TM181	76.4	75.9	77.3	67.2	99.6	114	
			\$ M	\$ M	\$ M	\$ M	\$ M	\$ M	
PAH Total 17 (inc Coronene) Moisture Corrected	<10 mg/kg	TM410	<10	<10	<10	<10	<10	<10	
			\$	\$	\$	\$	\$	\$	
Coronene	<200 µg/kg	TM410	<200	<200	<200	<200	<200	<200	
			\$	\$	\$	\$	\$	\$	
Mineral Oil >C10-C40 (EH_2D_AL)	<5 mg/kg	TM415	<5	<5	<5	<5	<5	16.2	
			\$	\$	\$	\$	\$	\$	



CERTIFICATE OF ANALYSIS

Validated

SDG: 240325-40
Client Ref.: 6234

Report Number: 724702
Location: Bray

Superseded Report:

Results Legend			Customer Sample Ref.		TP 14	TP 15				
#	ISO17025 accredited.		Depth (m) Sample Type Date Sampled Sample Time Date Received SDG Ref Lab Sample No.(s) AGS Reference		1.00 - 1.00	1.00 - 1.00				
M	mCERTS accredited.				Soil/Solid (S)	Soil/Solid (S)				
aq	Aqueous / settled sample.				-	-				
diss.filt	Dissolved / filtered sample.				-	-				
tot.unfilt	Total / unfiltered sample.				25/03/2024	25/03/2024				
* Subcontracted - refer to subcontractor report for accreditation status.					240325-40	240325-40				
** % recovery of the surrogate standard to check the efficiency of the method. The results of individual compounds within samples aren't corrected for the recovery					29546421	29546422				
(F) Trigger breach confirmed										
1-4* Sample deviation (see appendix)										
Component	LOD/Units	Method								
Moisture Content Ratio (% of as received sample)	%	PM024	12		12					
			\$		\$					
Loss on ignition	<0.7 %	TM018	2.39		2.85					
			\$ M		\$ M					
Organic Carbon, Total	<0.2 %	TM132	0.474		0.497					
			\$ M		\$ M					
pH	1 pH Units	TM133	8.4		8.33					
			\$ M		\$ M					
Chromium, Hexavalent	<0.6 mg/kg	TM151	<0.6		<0.6					
			\$ M		\$ M					
PCB congener 28	<3 µg/kg	TM168	<3		<3					
			\$ M		\$ M					
PCB congener 52	<3 µg/kg	TM168	<3		<3					
			\$ M		\$ M					
PCB congener 101	<3 µg/kg	TM168	<3		<3					
			\$ M		\$ M					
PCB congener 118	<3 µg/kg	TM168	<3		<3					
			\$ M		\$ M					
PCB congener 138	<3 µg/kg	TM168	<3		<3					
			\$ M		\$ M					
PCB congener 153	<3 µg/kg	TM168	<3		<3					
			\$ M		\$ M					
PCB congener 180	<3 µg/kg	TM168	<3		<3					
			\$ M		\$ M					
Sum of detected PCB 7 Congeners	<21 µg/kg	TM168	<21		<21					
			\$		\$					
Chromium, Trivalent	<0.9 mg/kg	TM181	31.3		15.7					
			\$		\$					
Antimony	<0.6 mg/kg	TM181	<0.6		<0.6					
			\$ #		\$ #					
Arsenic	<0.6 mg/kg	TM181	17.5		14.8					
			\$ M		\$ M					
Barium	<0.6 mg/kg	TM181	56.1		71.6					
			\$ #		\$ #					
Cadmium	<0.02 mg/kg	TM181	2.28		2.67					
			\$ M		\$ M					
Chromium	<0.9 mg/kg	TM181	31.3		15.7					
			\$ M		\$ M					
Copper	<1.4 mg/kg	TM181	33.8		23.6					
			\$ M		\$ M					
Lead	<0.7 mg/kg	TM181	20		20.5					
			\$ M		\$ M					
Mercury	<0.1 mg/kg	TM181	<0.1		<0.1					
			\$ M		\$ M					
Molybdenum	<0.1 mg/kg	TM181	1.98		1.69					
			\$ #		\$ #					
Nickel	<0.2 mg/kg	TM181	40.5		46.2					
			\$ M		\$ M					
Selenium	<1 mg/kg	TM181	3.41		2.34					
			\$ #		\$ #					
Zinc	<1.9 mg/kg	TM181	89.2		100					
			\$ M		\$ M					
PAH Total 17 (inc Coronene) Moisture Corrected	<10 mg/kg	TM410	<10		<10					
			\$		\$					
Coronene	<200 µg/kg	TM410	<200		<200					
			\$		\$					
Mineral Oil >C10-C40 (EH_2D_AL)	<5 mg/kg	TM415	<5		<5					
			\$		\$					



Superseded Report:



CERTIFICATE OF ANALYSIS

Validated

SDG: 240325-40
Client Ref.: 6234

Report Number: 724702
Location: Bray

Superseded Report:

TPH CWG (S)

Results Legend			Customer Sample Ref.		BH01	BH02	BH03	BH04	BH05	BH06
# ISO17025 accredited. M mCERTS accredited. aq Aqueous / settled sample. diss.filt Dissolved / filtered sample. tot.unfilt Total / unfiltered sample. * Subcontracted - refer to subcontractor report for accreditation status. ** % recovery of the surrogate standard to check the efficiency of the method. The results of individual compounds within samples aren't corrected for the recovery (F) Trigger breach confirmed 1-4*§@ Sample deviation (see appendix)			Depth (m) Sample Type Date Sampled Sample Time Date Received SDG Ref Lab Sample No.(s) AGS Reference		1.00 - 1.00 Soil/Solid (S) - - 25/03/2024 240325-40 29554972	1.00 - 1.00 Soil/Solid (S) - - 25/03/2024 240325-40 29554973	1.00 - 1.00 Soil/Solid (S) - - 25/03/2024 240325-40 29554974	1.00 - 1.00 Soil/Solid (S) - - 25/03/2024 240325-40 29554975	1.00 - 1.00 Soil/Solid (S) - - 25/03/2024 240325-40 29554976	1.00 - 1.00 Soil/Solid (S) - - 25/03/2024 240325-40 29554977
Component	LOD/Units	Method								
GRO Surrogate % recovery**	%	TM089			102	103	102	96.7	100	104
Aliphatics >C5-C6 (HS_1D_AL)	<10 µg/kg	TM089			\$	\$	\$	\$	\$	\$
Aliphatics >C6-C8 (HS_1D_AL)	<10 µg/kg	TM089			\$	\$	\$	\$	\$	\$
Aliphatics >C8-C10 (HS_1D_AL)	<10 µg/kg	TM089			\$	\$	\$	\$	\$	\$
Aliphatics >C10-C12 (EH_2D_AL_#1)	<1000 µg/kg	TM414			\$ #	\$ #	\$ #	\$ #	\$ #	\$ #
Aliphatics >C12-C16 (EH_2D_AL_#1)	<1000 µg/kg	TM414			\$ #	\$ #	\$ #	\$ #	\$ #	\$ #
Aliphatics >C16-C21 (EH_2D_AL_#1)	<1000 µg/kg	TM414			\$ #	\$ #	\$ #	\$ #	\$ #	\$ #
Aliphatics >C21-C35 (EH_2D_AL_#1)	<1000 µg/kg	TM414			\$ #	\$ #	\$ #	\$ #	\$ #	\$ #
Aliphatics >C35-C44 (EH_2D_AL_#1)	<1000 µg/kg	TM414			\$	\$	\$	\$	\$	\$
Total Aliphatics >C10-C44 (EH_2D_AR_#1)	<5000 µg/kg	TM414			\$	\$	\$	\$	\$	\$
Total Aliphatics & Aromatics >C10-C44 (EH_2D_Total_#1)	<10000 µg/kg	TM414			\$	\$	\$	\$	\$	\$
Aromatics >EC5-EC7 (HS_1D_AR)	<10 µg/kg	TM089			\$	\$	\$	\$	\$	\$
Aromatics >EC7-EC8 (HS_1D_AR)	<10 µg/kg	TM089			\$	\$	\$	\$	\$	\$
Aromatics >EC8-EC10 (HS_1D_AR)	<10 µg/kg	TM089			\$	\$	\$	\$	\$	\$
Aromatics >EC10-EC12 (EH_2D_AR_#1)	<1000 µg/kg	TM414			\$ #	\$ #	\$ #	\$ #	\$ #	\$ #
Aromatics >EC12-EC16 (EH_2D_AR_#1)	<1000 µg/kg	TM414			\$ #	\$ #	\$ #	\$ #	\$ #	\$ #
Aromatics >EC16-EC21 (EH_2D_AR_#1)	<1000 µg/kg	TM414			\$ #	\$ #	\$ #	\$ #	\$ #	\$ #
Aromatics >EC21-EC35 (EH_2D_AR_#1)	<1000 µg/kg	TM414			\$ #	\$ #	\$ #	\$ #	\$ #	\$ #
Aromatics >EC35-EC44 (EH_2D_AR_#1)	<1000 µg/kg	TM414			\$	\$	\$	\$	\$	\$
Aromatics >EC40-EC44 (EH_2D_AR_#1)	<1000 µg/kg	TM414			\$	\$	\$	\$	\$	\$
Total Aromatics >EC10-EC44 (EH_2D_AR_#1)	<5000 µg/kg	TM414			\$	\$	\$	\$	\$	\$
Total Aliphatics & Aromatics >C5-C44 (EH_2D_Total_#1+HS_1D_Total)	<10000 µg/kg	TM414			\$	\$	\$	\$	\$	\$
GRO >C5-C6 (HS_1D)	<20 µg/kg	TM089			\$	\$	\$	\$	\$	\$
GRO >C6-C7 (HS_1D)	<20 µg/kg	TM089			\$	\$	\$	\$	\$	\$
GRO >C7-C8 (HS_1D)	<20 µg/kg	TM089			\$	\$	\$	\$	\$	\$
GRO >C8-C10 (HS_1D)	<20 µg/kg	TM089			\$	\$	\$	\$	\$	\$
GRO >C10-C12 (HS_1D)	<20 µg/kg	TM089			\$	\$	\$	\$	\$	\$
Total Aliphatics >C5-C10 (HS_1D_AL_TOTAL)	<50 µg/kg	TM089			\$	\$	\$	\$	\$	\$
Total Aromatics >EC5-EC10 (HS_1D_AR_TOTAL)	<50 µg/kg	TM089			\$	\$	\$	\$	\$	\$
GRO >C5-C10 (HS_1D_TOTAL)	<20 µg/kg	TM089			\$	\$	\$	\$	\$	\$



CERTIFICATE OF ANALYSIS

Validated

SDG: 240325-40
Client Ref.: 6234

Report Number: 724702
Location: Bray

Superseded Report:

TPH CWG (S)

Results Legend			Customer Sample Ref.	TP 02	TP 05	TP 06	TP 08	TP 11	TP 13
# ISO17025 accredited. M mCERTS accredited. aq Aqueous / settled sample. diss.filt Dissolved / filtered sample. tot.unfiltTotal / unfiltered sample. * Subcontracted - refer to subcontractor report for accreditation status. ** % recovery of the surrogate standard to check the efficiency of the method. The results of individual compounds within samples aren't corrected for the recovery (F) Trigger breach confirmed 1-4*§@Sample deviation (see appendix)	Depth (m) Sample Type Date Sampled Sample Time Date Received SDG Ref Lab Sample No.(s) AGS Reference		1.00 - 1.00 Soil/Solid (S) - 25/03/2024 240325-40 29546413	1.00 - 1.00 Soil/Solid (S) - 25/03/2024 240325-40 29546416	1.00 - 1.00 Soil/Solid (S) - 25/03/2024 240325-40 29546417	1.00 - 1.00 Soil/Solid (S) - 25/03/2024 240325-40 29546418	1.00 - 1.00 Soil/Solid (S) - 25/03/2024 240325-40 29546419	1.00 - 1.00 Soil/Solid (S) - 25/03/2024 240325-40 29546420	
Component	LOD/Units	Method							
GRO Surrogate % recovery**	%	TM089	111	104	107	105	104	109	
			\$	\$	\$	\$	\$	\$	
Aliphatics >C5-C6 (HS_1D_AL)	<10 µg/kg	TM089	<10	<10	<10	<10	<10	<10	
			\$	\$	\$	\$	\$	\$	
Aliphatics >C6-C8 (HS_1D_AL)	<10 µg/kg	TM089	<10	<10	<10	<10	<10	<10	
			\$	\$	\$	\$	\$	\$	
Aliphatics >C8-C10 (HS_1D_AL)	<10 µg/kg	TM089	<10	<10	<10	<10	<10	<10	
			\$	\$	\$	\$	\$	\$	
Aliphatics >C10-C12 (EH_2D_AL_#1)	<1000 µg/kg	TM414	<1000	<1000	<1000	<1000	<1000	<1000	
			\$ #	\$ #	\$ #	\$ #	\$ #	\$ #	
Aliphatics >C12-C16 (EH_2D_AL_#1)	<1000 µg/kg	TM414	<1000	<1000	<1000	<1000	<1000	<1000	
			\$ #	\$ #	\$ #	\$ #	\$ #	\$ #	
Aliphatics >C16-C21 (EH_2D_AL_#1)	<1000 µg/kg	TM414	<1000	<1000	<1000	<1000	<1000	<1000	
			\$ #	\$ #	\$ #	\$ #	\$ #	\$ #	
Aliphatics >C21-C35 (EH_2D_AL_#1)	<1000 µg/kg	TM414	<1000	<1000	<1000	<1000	<1000	55100	
			\$ #	\$ #	\$ #	\$ #	\$ #	\$ #	
Aliphatics >C35-C44 (EH_2D_AL_#1)	<1000 µg/kg	TM414	<1000	<1000	<1000	<1000	<1000	3800	
			\$	\$	\$	\$	\$	\$	
Total Aliphatics >C10-C44 (EH_2D_AR_#1)	<5000 µg/kg	TM414	<5000	<5000	<5000	<5000	<5000	58900	
			\$	\$	\$	\$	\$	\$	
Total Aliphatics & Aromatics >C10-C44 (EH_2D_Total_#1)	<10000 µg/kg	TM414	<10000	<10000	<10000	<10000	<10000	66800	
			\$	\$	\$	\$	\$	\$	
Aromatics >EC5-EC7 (HS_1D_AR)	<10 µg/kg	TM089	<10	<10	<10	<10	<10	<10	
			\$	\$	\$	\$	\$	\$	
Aromatics >EC7-EC8 (HS_1D_AR)	<10 µg/kg	TM089	<10	<10	<10	<10	<10	<10	
			\$	\$	\$	\$	\$	\$	
Aromatics >EC8-EC10 (HS_1D_AR)	<10 µg/kg	TM089	<10	<10	<10	<10	<10	<10	
			\$	\$	\$	\$	\$	\$	
Aromatics > EC10-EC12 (EH_2D_AR_#1)	<1000 µg/kg	TM414	<1000	<1000	<1000	<1000	<1000	<1000	
			\$ #	\$ #	\$ #	\$ #	\$ #	\$ #	
Aromatics > EC12-EC16 (EH_2D_AR_#1)	<1000 µg/kg	TM414	<1000	<1000	<1000	<1000	<1000	<1000	
			\$ #	\$ #	\$ #	\$ #	\$ #	\$ #	
Aromatics > EC16-EC21 (EH_2D_AR_#1)	<1000 µg/kg	TM414	<1000	<1000	<1000	<1000	<1000	<1000	
			\$ #	\$ #	\$ #	\$ #	\$ #	\$ #	
Aromatics > EC21-EC35 (EH_2D_AR_#1)	<1000 µg/kg	TM414	<1000	<1000	1040	<1000	<1000	6820	
			\$ #	\$ #	\$ #	\$ #	\$ #	\$ #	
Aromatics >EC35-EC44 (EH_2D_AR_#1)	<1000 µg/kg	TM414	<1000	<1000	<1000	<1000	<1000	<1000	
			\$	\$	\$	\$	\$	\$	
Aromatics > EC40-EC44 (EH_2D_AR_#1)	<1000 µg/kg	TM414	<1000	<1000	<1000	<1000	<1000	<1000	
			\$	\$	\$	\$	\$	\$	
Total Aromatics > EC10-EC44 (EH_2D_AR_#1)	<5000 µg/kg	TM414	<5000	<5000	<5000	<5000	<5000	7950	
			\$	\$	\$	\$	\$	\$	
Total Aliphatics & Aromatics >C5-C44 (EH_2D_Total_#1+HS_1D_Total)	<10000 µg/kg	TM414	<10000	<10000	<10000	<10000	<10000	66800	
			\$	\$	\$	\$	\$	\$	
GRO >C5-C6 (HS_1D)	<20 µg/kg	TM089	<20	<20	<20	<20	<20	<20	
			\$	\$	\$	\$	\$	\$	
GRO >C6-C7 (HS_1D)	<20 µg/kg	TM089	<20	<20	<20	<20	<20	<20	
			\$	\$	\$	\$	\$	\$	
GRO >C7-C8 (HS_1D)	<20 µg/kg	TM089	<20	<20	<20	<20	<20	<20	
			\$	\$	\$	\$	\$	\$	
GRO >C8-C10 (HS_1D)	<20 µg/kg	TM089	<20	<20	<20	<20	<20	<20	
			\$	\$	\$	\$	\$	\$	
GRO >C10-C12 (HS_1D)	<20 µg/kg	TM089	<20	<20	<20	<20	<20	<20	
			\$	\$	\$	\$	\$	\$	
Total Aliphatics >C5-C10 (HS_1D_AL_TOTAL)	<50 µg/kg	TM089	<50	<50	<50	<50	<50	<50	
			\$	\$	\$	\$	\$	\$	
Total Aromatics >EC5-EC10 (HS_1D_AR_TOTAL)	<50 µg/kg	TM089	<50	<50	<50	<50	<50	<50	
			\$	\$	\$	\$	\$	\$	
GRO >C5-C10 (HS_1D_TOTAL)	<20 µg/kg	TM089	<20	<20	<20	<20	<20	<20	
			\$	\$	\$	\$	\$	\$	



CERTIFICATE OF ANALYSIS

Validated

SDG: 240325-40
Client Ref.: 6234

Report Number: 724702
Location: Bray

Superseded Report:

TPH CWG (S)

Results Legend			Customer Sample Ref.		TP 14	TP 15			
# ISO17025 accredited. M mCERTS accredited. aq Aqueous / settled sample. diss.filt Dissolved / filtered sample. tot.unfiltTotal / unfiltered sample. * Subcontracted - refer to subcontractor report for accreditation status. ** % recovery of the surrogate standard to check the efficiency of the method. The results of individual compounds within samples aren't corrected for the recovery (F) Trigger breach confirmed 1-4*\$\$@Sample deviation (see appendix)			Depth (m) Sample Type Date Sampled Sample Time Date Received SDG Ref Lab Sample No.(s) AGS Reference		1.00 - 1.00 Soil/Solid (S) - - 25/03/2024 240325-40 29546421	1.00 - 1.00 Soil/Solid (S) - - 25/03/2024 240325-40 29546422			
Component	LOD/Units	Method							
GRO Surrogate % recovery**	%	TM089			106	103			
					\$	\$			
Aliphatics >C5-C6 (HS_1D_AL)	<10 µg/kg	TM089			<10	<10			
					\$	\$			
Aliphatics >C6-C8 (HS_1D_AL)	<10 µg/kg	TM089			<10	<10			
					\$	\$			
Aliphatics >C8-C10 (HS_1D_AL)	<10 µg/kg	TM089			<10	<10			
					\$	\$			
Aliphatics >C10-C12 (EH_2D_AL_#1)	<1000 µg/kg	TM414			<1000	<1000			
					\$ #	\$ #			
Aliphatics >C12-C16 (EH_2D_AL_#1)	<1000 µg/kg	TM414			<1000	<1000			
					\$ #	\$ #			
Aliphatics >C16-C21 (EH_2D_AL_#1)	<1000 µg/kg	TM414			<1000	<1000			
					\$ #	\$ #			
Aliphatics >C21-C35 (EH_2D_AL_#1)	<1000 µg/kg	TM414			3970	<1000			
					\$ #	\$ #			
Aliphatics >C35-C44 (EH_2D_AL_#1)	<1000 µg/kg	TM414			<1000	<1000			
					\$	\$			
Total Aliphatics >C10-C44 (EH_2D_AR_#1)	<5000 µg/kg	TM414			<5000	<5000			
					\$	\$			
Total Aliphatics & Aromatics >C10-C44 (EH_2D_Total_#1)	<10000 µg/kg	TM414			<10000	<10000			
					\$	\$			
Aromatics >EC5-EC7 (HS_1D_AR)	<10 µg/kg	TM089			<10	<10			
					\$	\$			
Aromatics >EC7-EC8 (HS_1D_AR)	<10 µg/kg	TM089			<10	<10			
					\$	\$			
Aromatics >EC8-EC10 (HS_1D_AR)	<10 µg/kg	TM089			<10	<10			
					\$	\$			
Aromatics >EC10-EC12 (EH_2D_AR_#1)	<1000 µg/kg	TM414			<1000	<1000			
					\$ #	\$ #			
Aromatics >EC12-EC16 (EH_2D_AR_#1)	<1000 µg/kg	TM414			<1000	<1000			
					\$ #	\$ #			
Aromatics >EC16-EC21 (EH_2D_AR_#1)	<1000 µg/kg	TM414			<1000	<1000			
					\$ #	\$ #			
Aromatics >EC21-EC35 (EH_2D_AR_#1)	<1000 µg/kg	TM414			<1000	<1000			
					\$ #	\$ #			
Aromatics >EC35-EC44 (EH_2D_AR_#1)	<1000 µg/kg	TM414			<1000	<1000			
					\$	\$			
Aromatics >EC40-EC44 (EH_2D_AR_#1)	<1000 µg/kg	TM414			<1000	<1000			
					\$	\$			
Total Aromatics >EC10-EC44 (EH_2D_AR_#1)	<5000 µg/kg	TM414			<5000	<5000			
					\$	\$			
Total Aliphatics & Aromatics >C5-C44 (EH_2D_Total_#1+HS_1D_Total)	<10000 µg/kg	TM414			<10000	<10000			
					\$	\$			
GRO >C5-C6 (HS_1D)	<20 µg/kg	TM089			<20	<20			
					\$	\$			
GRO >C6-C7 (HS_1D)	<20 µg/kg	TM089			<20	<20			
					\$	\$			
GRO >C7-C8 (HS_1D)	<20 µg/kg	TM089			<20	<20			
					\$	\$			
GRO >C8-C10 (HS_1D)	<20 µg/kg	TM089			<20	<20			
					\$	\$			
GRO >C10-C12 (HS_1D)	<20 µg/kg	TM089			<20	<20			
					\$	\$			
Total Aliphatics >C5-C10 (HS_1D_AL_TOTAL)	<50 µg/kg	TM089			<50	<50			
					\$	\$			
Total Aromatics >EC5-EC10 (HS_1D_AR_TOTAL)	<50 µg/kg	TM089			<50	<50			
					\$	\$			
GRO >C5-C10 (HS_1D_TOTAL)	<20 µg/kg	TM089			<20	<20			
					\$	\$			



CERTIFICATE OF ANALYSIS

Validated

SDG: 240325-40
Client Ref.: 6234Report Number: 724702
Location: Bray

Superseded Report:

CEN 10:1 SINGLE STAGE LEACHATE TEST

WAC ANALYTICAL RESULTS

REF : BS EN 12457/2

Client Reference	
Mass Sample taken (kg)	0.107
Mass of dry sample (kg)	0.090
Particle Size <4mm	>95%

Site Location	Bray
Natural Moisture Content (%)	18.9
Dry Matter Content (%)	84.1

Case	
SDG	240325-40
Lab Sample Number(s)	29546413
Sampled Date	
Customer Sample Ref.	TP 02
Depth (m)	1.00 - 1.00

Landfill Waste Acceptance
Criteria Limits

Inert Waste Landfill	Stable Non-reactive Hazardous Waste in Non- Hazardous Landfill	Hazardous Waste Landfill
3	5	6
-	-	10
-	-	-
1	-	-
500	-	-
100	-	-
-	>6	-
-	-	-
-	-	-

Solid Waste Analysis	Result
Total Organic Carbon (%)	0.425
Loss on Ignition (%)	2.47
Sum of BTEX (mg/kg)	-
Sum of 7 PCBs (mg/kg)	<0.021
Mineral Oil (mg/kg) (EH_2D_AL)	<5
PAH Sum of 17 (mg/kg)	<10
pH (pH Units)	7.89
ANC to pH 6 (mol/kg)	-
ANC to pH 4 (mol/kg)	-

Eluate Analysis	C ₂ Conc ⁿ in 10:1 eluate (mg/l)		A ₂ 10:1 conc ⁿ leached (mg/kg)		Limit values for compliance leaching test using BS EN 12457-3 at L/S 10 l/kg		
	Result	Limit of Detection	Result	Limit of Detection			
Arsenic	0.000507	<0.0005	0.00507	<0.005	0.5	2	25
Barium	0.00168	<0.0002	0.0168	<0.002	20	100	300
Cadmium	<0.00008	<0.00008	<0.0008	<0.0008	0.04	1	5
Chromium	<0.001	<0.001	<0.01	<0.01	0.5	10	70
Copper	0.00163	<0.0003	0.0163	<0.003	2	50	100
Mercury Dissolved (CVAF)	<0.00001	<0.00001	<0.0001	<0.0001	0.01	0.2	2
Molybdenum	<0.003	<0.003	<0.03	<0.03	0.5	10	30
Nickel	0.00101	<0.0004	0.0101	<0.004	0.4	10	40
Lead	<0.0002	<0.0002	<0.002	<0.002	0.5	10	50
Antimony	<0.001	<0.001	<0.01	<0.01	0.06	0.7	5
Selenium	<0.001	<0.001	<0.01	<0.01	0.1	0.5	7
Zinc	0.00172	<0.001	0.0172	<0.01	4	50	200
Chloride	<2	<2	<20	<20	800	15000	25000
Fluoride	<0.5	<0.5	<5	<5	10	150	500
Sulphate (soluble)	<2	<2	<20	<20	1000	20000	50000
Total Dissolved Solids	-	-	-	-	4000	60000	100000
Total Monohydric Phenols (W)	<0.016	<0.016	<0.16	<0.16	1	-	-
Dissolved Organic Carbon	4.26	<3	42.6	<30	500	800	1000

Leach Test Information

Date Prepared	25-Mar-2024
pH (pH Units)	7.97
Conductivity (µS/cm)	49
Volume Leachant (Litres)	0.883

Solid Results are expressed on a dry weight basis, after correction for moisture content where applicable

Leachates prepared in accordance with BS EN 12457 will be carried out at room temperature (20±5°C)

Stated limits are for guidance only and ALS Laboratories (UK) Limited cannot be held responsible for any discrepancies with current legislation

04/04/2024 09:19:17

09:19:08 04/04/2024



CERTIFICATE OF ANALYSIS

Validated

SDG: 240325-40
Client Ref.: 6234Report Number: 724702
Location: Bray

Superseded Report:

CEN 10:1 SINGLE STAGE LEACHATE TEST

WAC ANALYTICAL RESULTS

REF : BS EN 12457/2

Client Reference	
Mass Sample taken (kg)	0.109
Mass of dry sample (kg)	0.090
Particle Size <4mm	>95%

Site Location	Bray
Natural Moisture Content (%)	19.8
Dry Matter Content (%)	83.5

Case	
SDG	240325-40
Lab Sample Number(s)	29546416
Sampled Date	
Customer Sample Ref.	TP 05
Depth (m)	1.00 - 1.00

Landfill Waste Acceptance
Criteria Limits

Inert Waste Landfill	Stable Non-reactive Hazardous Waste in Non- Hazardous Landfill	Hazardous Waste Landfill
3	5	6
-	-	10
-	-	-
1	-	-
500	-	-
100	-	-
-	>6	-
-	-	-
-	-	-

Solid Waste Analysis	Result
Total Organic Carbon (%)	0.458
Loss on Ignition (%)	2.17
Sum of BTEX (mg/kg)	-
Sum of 7 PCBs (mg/kg)	<0.021
Mineral Oil (mg/kg) (EH_2D_AL)	<5
PAH Sum of 17 (mg/kg)	<10
pH (pH Units)	8.45
ANC to pH 6 (mol/kg)	-
ANC to pH 4 (mol/kg)	-

Eluate Analysis	C ₂ Conc ⁿ in 10:1 eluate (mg/l)		A ₂ 10:1 conc ⁿ leached (mg/kg)		Limit values for compliance leaching test using BS EN 12457-3 at L/S 10 l/kg		
	Result	Limit of Detection	Result	Limit of Detection			
Arsenic	0.00095	<0.0005	0.0095	<0.005	0.5	2	25
Barium	0.00346	<0.0002	0.0346	<0.002	20	100	300
Cadmium	<0.00008	<0.00008	<0.0008	<0.0008	0.04	1	5
Chromium	<0.001	<0.001	<0.01	<0.01	0.5	10	70
Copper	0.00134	<0.0003	0.0134	<0.003	2	50	100
Mercury Dissolved (CVAF)	<0.00001	<0.00001	<0.0001	<0.0001	0.01	0.2	2
Molybdenum	0.00334	<0.003	0.0334	<0.03	0.5	10	30
Nickel	0.00104	<0.0004	0.0104	<0.004	0.4	10	40
Lead	<0.0002	<0.0002	<0.002	<0.002	0.5	10	50
Antimony	<0.001	<0.001	<0.01	<0.01	0.06	0.7	5
Selenium	<0.001	<0.001	<0.01	<0.01	0.1	0.5	7
Zinc	<0.001	<0.001	<0.01	<0.01	4	50	200
Chloride	<2	<2	<20	<20	800	15000	25000
Fluoride	<0.5	<0.5	<5	<5	10	150	500
Sulphate (soluble)	<2	<2	<20	<20	1000	20000	50000
Total Dissolved Solids	-	-	-	-	4000	60000	100000
Total Monohydric Phenols (W)	<0.016	<0.016	<0.16	<0.16	1	-	-
Dissolved Organic Carbon	5.29	<3	52.9	<30	500	800	1000

Leach Test Information

Date Prepared	25-Mar-2024
pH (pH Units)	8.50
Conductivity (µS/cm)	138
Volume Leachant (Litres)	0.882

Solid Results are expressed on a dry weight basis, after correction for moisture content where applicable

Leachates prepared in accordance with BS EN 12457 will be carried out at room temperature (20±5°C)

Stated limits are for guidance only and ALS Laboratories (UK) Limited cannot be held responsible for any discrepancies with current legislation

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CERTIFICATE OF ANALYSIS

Validated

SDG: 240325-40
Client Ref.: 6234Report Number: 724702
Location: Bray

Superseded Report:

CEN 10:1 SINGLE STAGE LEACHATE TEST

WAC ANALYTICAL RESULTS

REF : BS EN 12457/2

Client Reference	
Mass Sample taken (kg)	0.107
Mass of dry sample (kg)	0.090
Particle Size <4mm	>95%

Site Location	Bray
Natural Moisture Content (%)	18.9
Dry Matter Content (%)	84.1

Case	
SDG	240325-40
Lab Sample Number(s)	29546417
Sampled Date	
Customer Sample Ref.	TP 06
Depth (m)	1.00 - 1.00

Landfill Waste Acceptance
Criteria Limits

Inert Waste Landfill	Stable Non-reactive Hazardous Waste in Non- Hazardous Landfill	Hazardous Waste Landfill
3	5	6
-	-	10
-	-	-
1	-	-
500	-	-
100	-	-
-	>6	-
-	-	-
-	-	-

Solid Waste Analysis	Result
Total Organic Carbon (%)	0.695
Loss on Ignition (%)	3.29
Sum of BTEX (mg/kg)	-
Sum of 7 PCBs (mg/kg)	<0.021
Mineral Oil (mg/kg) (EH_2D_AL)	<5
PAH Sum of 17 (mg/kg)	<10
pH (pH Units)	7.26
ANC to pH 6 (mol/kg)	-
ANC to pH 4 (mol/kg)	-

Eluate Analysis	C ₂ Conc ⁿ in 10:1 eluate (mg/l)		A ₂ 10:1 conc ⁿ leached (mg/kg)		Limit values for compliance leaching test using BS EN 12457-3 at L/S 10 l/kg		
	Result	Limit of Detection	Result	Limit of Detection			
Arsenic	<0.0005	<0.0005	<0.005	<0.005	0.5	2	25
Barium	0.000548	<0.0002	0.00548	<0.002	20	100	300
Cadmium	<0.00008	<0.00008	<0.0008	<0.0008	0.04	1	5
Chromium	<0.001	<0.001	<0.01	<0.01	0.5	10	70
Copper	0.00117	<0.0003	0.0117	<0.003	2	50	100
Mercury Dissolved (CVAF)	<0.00001	<0.00001	<0.0001	<0.0001	0.01	0.2	2
Molybdenum	<0.003	<0.003	<0.03	<0.03	0.5	10	30
Nickel	<0.0004	<0.0004	<0.004	<0.004	0.4	10	40
Lead	<0.0002	<0.0002	<0.002	<0.002	0.5	10	50
Antimony	<0.001	<0.001	<0.01	<0.01	0.06	0.7	5
Selenium	<0.001	<0.001	<0.01	<0.01	0.1	0.5	7
Zinc	<0.001	<0.001	<0.01	<0.01	4	50	200
Chloride	<2	<2	<20	<20	800	15000	25000
Fluoride	<0.5	<0.5	<5	<5	10	150	500
Sulphate (soluble)	<2	<2	<20	<20	1000	20000	50000
Total Dissolved Solids	-	-	-	-	4000	60000	100000
Total Monohydric Phenols (W)	<0.016	<0.016	<0.16	<0.16	1	-	-
Dissolved Organic Carbon	5.98	<3	59.8	<30	500	800	1000

Leach Test Information

Date Prepared	25-Mar-2024
pH (pH Units)	7.32
Conductivity (µS/cm)	26
Volume Leachant (Litres)	0.883

Solid Results are expressed on a dry weight basis, after correction for moisture content where applicable

Leachates prepared in accordance with BS EN 12457 will be carried out at room temperature (20±5°C)

Stated limits are for guidance only and ALS Laboratories (UK) Limited cannot be held responsible for any discrepancies with current legislation

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CERTIFICATE OF ANALYSIS

Validated

SDG: 240325-40
Client Ref.: 6234Report Number: 724702
Location: Bray

Superseded Report:

CEN 10:1 SINGLE STAGE LEACHATE TEST

WAC ANALYTICAL RESULTS

REF : BS EN 12457/2

Client Reference	
Mass Sample taken (kg)	0.106
Mass of dry sample (kg)	0.090
Particle Size <4mm	>95%

Site Location	Bray
Natural Moisture Content (%)	17.4
Dry Matter Content (%)	85.2

Case	
SDG	240325-40
Lab Sample Number(s)	29546418
Sampled Date	
Customer Sample Ref.	TP 08
Depth (m)	1.00 - 1.00

Landfill Waste Acceptance
Criteria Limits

Inert Waste Landfill	Stable Non-reactive Hazardous Waste in Non- Hazardous Landfill	Hazardous Waste Landfill
3	5	6
-	-	10
-	-	-
1	-	-
500	-	-
100	-	-
-	>6	-
-	-	-
-	-	-

Solid Waste Analysis	Result
Total Organic Carbon (%)	0.441
Loss on Ignition (%)	2.56
Sum of BTEX (mg/kg)	-
Sum of 7 PCBs (mg/kg)	<0.021
Mineral Oil (mg/kg) (EH_2D_AL)	<5
PAH Sum of 17 (mg/kg)	<10
pH (pH Units)	7.6
ANC to pH 6 (mol/kg)	-
ANC to pH 4 (mol/kg)	-

Eluate Analysis	C ₂ Conc ⁿ in 10:1 eluate (mg/l)		A ₂ 10:1 conc ⁿ leached (mg/kg)		Limit values for compliance leaching test using BS EN 12457-3 at L/S 10 l/kg		
	Result	Limit of Detection	Result	Limit of Detection			
Arsenic	<0.0005	<0.0005	<0.005	<0.005	0.5	2	25
Barium	0.000565	<0.0002	0.00565	<0.002	20	100	300
Cadmium	<0.00008	<0.00008	<0.0008	<0.0008	0.04	1	5
Chromium	<0.001	<0.001	<0.01	<0.01	0.5	10	70
Copper	0.00109	<0.0003	0.0109	<0.003	2	50	100
Mercury Dissolved (CVAF)	<0.00001	<0.00001	<0.0001	<0.0001	0.01	0.2	2
Molybdenum	<0.003	<0.003	<0.03	<0.03	0.5	10	30
Nickel	<0.0004	<0.0004	<0.004	<0.004	0.4	10	40
Lead	<0.0002	<0.0002	<0.002	<0.002	0.5	10	50
Antimony	<0.001	<0.001	<0.01	<0.01	0.06	0.7	5
Selenium	<0.001	<0.001	<0.01	<0.01	0.1	0.5	7
Zinc	<0.001	<0.001	<0.01	<0.01	4	50	200
Chloride	<2	<2	<20	<20	800	15000	25000
Fluoride	<0.5	<0.5	<5	<5	10	150	500
Sulphate (soluble)	<2	<2	<20	<20	1000	20000	50000
Total Dissolved Solids	-	-	-	-	4000	60000	100000
Total Monohydric Phenols (W)	<0.016	<0.016	<0.16	<0.16	1	-	-
Dissolved Organic Carbon	<3	<3	<30	<30	500	800	1000

Leach Test Information

Date Prepared	25-Mar-2024
pH (pH Units)	7.39
Conductivity (µS/cm)	18
Volume Leachant (Litres)	0.884

Solid Results are expressed on a dry weight basis, after correction for moisture content where applicable

Leachates prepared in accordance with BS EN 12457 will be carried out at room temperature (20±5°C)

Stated limits are for guidance only and ALS Laboratories (UK) Limited cannot be held responsible for any discrepancies with current legislation

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09:19:08 04/04/2024



CERTIFICATE OF ANALYSIS

Validated

SDG: 240325-40
Client Ref.: 6234Report Number: 724702
Location: Bray

Superseded Report:

CEN 10:1 SINGLE STAGE LEACHATE TEST

WAC ANALYTICAL RESULTS

REF : BS EN 12457/2

Client Reference

Mass Sample taken (kg) 0.107

Mass of dry sample (kg) 0.090

Particle Size <4mm >95%

Site Location

Bray

Natural Moisture Content (%) 18.9

Dry Matter Content (%) 84.1

Case

SDG 240325-40

Lab Sample Number(s) 29546419

Sampled Date

Customer Sample Ref. TP 11

Depth (m) 1.00 - 1.00

Landfill Waste Acceptance
Criteria Limits

Inert Waste Landfill	Stable Non-reactive Hazardous Waste in Non- Hazardous Landfill	Hazardous Waste Landfill
3	5	6
-	-	10
-	-	-
1	-	-
500	-	-
100	-	-
-	>6	-
-	-	-
-	-	-

Solid Waste Analysis

Result

Total Organic Carbon (%) 0.549

Loss on Ignition (%) 3

Sum of BTEX (mg/kg) -

Sum of 7 PCBs (mg/kg) <0.021

Mineral Oil (mg/kg) (EH_2D_AL) <5

PAH Sum of 17 (mg/kg) <10

pH (pH Units) 7.02

ANC to pH 6 (mol/kg) -

ANC to pH 4 (mol/kg) -

Eluate Analysis

C₂ Concⁿ in 10:1 eluate (mg/l)A₂ 10:1 concⁿ leached (mg/kg)Limit values for compliance leaching test
using BS EN 12457-3 at L/S 10 l/kg

	Result	Limit of Detection	Result	Limit of Detection			
Arsenic	<0.0005	<0.0005	<0.005	<0.005	0.5	2	25
Barium	0.0267	<0.0002	0.267	<0.002	20	100	300
Cadmium	<0.00008	<0.00008	<0.0008	<0.0008	0.04	1	5
Chromium	<0.001	<0.001	<0.01	<0.01	0.5	10	70
Copper	0.001	<0.0003	0.01	<0.003	2	50	100
Mercury Dissolved (CVAF)	<0.00001	<0.00001	<0.0001	<0.0001	0.01	0.2	2
Molybdenum	<0.003	<0.003	<0.03	<0.03	0.5	10	30
Nickel	0.000633	<0.0004	0.00633	<0.004	0.4	10	40
Lead	0.00038	<0.0002	0.0038	<0.002	0.5	10	50
Antimony	<0.001	<0.001	<0.01	<0.01	0.06	0.7	5
Selenium	<0.001	<0.001	<0.01	<0.01	0.1	0.5	7
Zinc	0.0144	<0.001	0.144	<0.01	4	50	200
Chloride	<2	<2	<20	<20	800	15000	25000
Fluoride	<0.5	<0.5	<5	<5	10	150	500
Sulphate (soluble)	<2	<2	<20	<20	1000	20000	50000
Total Dissolved Solids	-	-	-	-	4000	60000	100000
Total Monohydric Phenols (W)	<0.016	<0.016	<0.16	<0.16	1	-	-
Dissolved Organic Carbon	7.23	<3	72.3	<30	500	800	1000

Leach Test Information

Date Prepared 25-Mar-2024

pH (pH Units) 7.01

Conductivity (µS/cm) 24

Volume Leachant (Litres) 0.883

Solid Results are expressed on a dry weight basis, after correction for moisture content where applicable

Leachates prepared in accordance with BS EN 12457 will be carried out at room temperature (20±5°C)

Stated limits are for guidance only and ALS Laboratories (UK) Limited cannot be held responsible for any discrepancies with current legislation

04/04/2024 09:19:17

09:19:08 04/04/2024



CERTIFICATE OF ANALYSIS

Validated

SDG: 240325-40
Client Ref.: 6234Report Number: 724702
Location: Bray

Superseded Report:

CEN 10:1 SINGLE STAGE LEACHATE TEST

WAC ANALYTICAL RESULTS

REF : BS EN 12457/2

Client Reference	
Mass Sample taken (kg)	0.103
Mass of dry sample (kg)	0.090
Particle Size <4mm	>95%

Site Location	Bray
Natural Moisture Content (%)	13.9
Dry Matter Content (%)	87.8

Case	
SDG	240325-40
Lab Sample Number(s)	29546420
Sampled Date	
Customer Sample Ref.	TP 13
Depth (m)	1.00 - 1.00

Landfill Waste Acceptance
Criteria Limits

Inert Waste Landfill	Stable Non-reactive Hazardous Waste in Non- Hazardous Landfill	Hazardous Waste Landfill
3	5	6
-	-	10
-	-	-
1	-	-
500	-	-
100	-	-
-	>6	-
-	-	-
-	-	-

Solid Waste Analysis	Result
Total Organic Carbon (%)	0.921
Loss on Ignition (%)	4.01
Sum of BTEX (mg/kg)	-
Sum of 7 PCBs (mg/kg)	<0.021
Mineral Oil (mg/kg) (EH_2D_AL)	16.2
PAH Sum of 17 (mg/kg)	<10
pH (pH Units)	7.06
ANC to pH 6 (mol/kg)	-
ANC to pH 4 (mol/kg)	-

Eluate Analysis	C ₂ Conc ⁿ in 10:1 eluate (mg/l)		A ₂ 10:1 conc ⁿ leached (mg/kg)		Limit values for compliance leaching test using BS EN 12457-3 at L/S 10 l/kg		
	Result	Limit of Detection	Result	Limit of Detection			
Arsenic	0.001	<0.0005	0.01	<0.005	0.5	2	25
Barium	0.00807	<0.0002	0.0807	<0.002	20	100	300
Cadmium	<0.00008	<0.00008	<0.0008	<0.0008	0.04	1	5
Chromium	0.00122	<0.001	0.0122	<0.01	0.5	10	70
Copper	0.000889	<0.0003	0.00889	<0.003	2	50	100
Mercury Dissolved (CVAF)	<0.00001	<0.00001	<0.0001	<0.0001	0.01	0.2	2
Molybdenum	<0.003	<0.003	<0.03	<0.03	0.5	10	30
Nickel	0.000711	<0.0004	0.00711	<0.004	0.4	10	40
Lead	0.000421	<0.0002	0.00421	<0.002	0.5	10	50
Antimony	<0.001	<0.001	<0.01	<0.01	0.06	0.7	5
Selenium	<0.001	<0.001	<0.01	<0.01	0.1	0.5	7
Zinc	0.0106	<0.001	0.106	<0.01	4	50	200
Chloride	<2	<2	<20	<20	800	15000	25000
Fluoride	<0.5	<0.5	<5	<5	10	150	500
Sulphate (soluble)	<2	<2	<20	<20	1000	20000	50000
Total Dissolved Solids	-	-	-	-	4000	60000	100000
Total Monohydric Phenols (W)	<0.016	<0.016	<0.16	<0.16	1	-	-
Dissolved Organic Carbon	5.9	<3	59	<30	500	800	1000

Leach Test Information

Date Prepared	25-Mar-2024
pH (pH Units)	7.03
Conductivity (µS/cm)	20
Volume Leachant (Litres)	0.888

Solid Results are expressed on a dry weight basis, after correction for moisture content where applicable

Leachates prepared in accordance with BS EN 12457 will be carried out at room temperature (20±5°C)

Stated limits are for guidance only and ALS Laboratories (UK) Limited cannot be held responsible for any discrepancies with current legislation

04/04/2024 09:19:17

09:19:08 04/04/2024



CERTIFICATE OF ANALYSIS

Validated

SDG: 240325-40
Client Ref.: 6234Report Number: 724702
Location: Bray

Superseded Report:

CEN 10:1 SINGLE STAGE LEACHATE TEST

WAC ANALYTICAL RESULTS

REF : BS EN 12457/2

Client Reference

Mass Sample taken (kg) 0.103

Mass of dry sample (kg) 0.090

Particle Size <4mm >95%

Site Location

Bray

Natural Moisture Content (%) 14.9

Dry Matter Content (%) 87

Case

SDG 240325-40

Lab Sample Number(s) 29546421

Sampled Date

Customer Sample Ref. TP 14

Depth (m) 1.00 - 1.00

Landfill Waste Acceptance
Criteria Limits

Inert Waste Landfill	Stable Non-reactive Hazardous Waste in Non- Hazardous Landfill	Hazardous Waste Landfill
3	5	6
-	-	10
-	-	-
1	-	-
500	-	-
100	-	-
-	>6	-
-	-	-
-	-	-

Solid Waste Analysis

Result

Total Organic Carbon (%) 0.474

Loss on Ignition (%) 2.39

Sum of BTEX (mg/kg) -

Sum of 7 PCBs (mg/kg) <0.021

Mineral Oil (mg/kg) (EH_2D_AL) <5

PAH Sum of 17 (mg/kg) <10

pH (pH Units) 8.4

ANC to pH 6 (mol/kg) -

ANC to pH 4 (mol/kg) -

Eluate Analysis

C₂ Concⁿ in 10:1 eluate (mg/l)A₂ 10:1 concⁿ leached (mg/kg)Limit values for compliance leaching test
using BS EN 12457-3 at L/S 10 l/kg

	Result	Limit of Detection	Result	Limit of Detection			
Arsenic	<0.0005	<0.0005	<0.005	<0.005	0.5	2	25
Barium	0.00255	<0.0002	0.0255	<0.002	20	100	300
Cadmium	<0.00008	<0.00008	<0.0008	<0.0008	0.04	1	5
Chromium	<0.001	<0.001	<0.01	<0.01	0.5	10	70
Copper	0.000633	<0.0003	0.00633	<0.003	2	50	100
Mercury Dissolved (CVAF)	<0.00001	<0.00001	<0.0001	<0.0001	0.01	0.2	2
Molybdenum	<0.003	<0.003	<0.03	<0.03	0.5	10	30
Nickel	<0.0004	<0.0004	<0.004	<0.004	0.4	10	40
Lead	<0.0002	<0.0002	<0.002	<0.002	0.5	10	50
Antimony	<0.001	<0.001	<0.01	<0.01	0.06	0.7	5
Selenium	<0.001	<0.001	<0.01	<0.01	0.1	0.5	7
Zinc	<0.001	<0.001	<0.01	<0.01	4	50	200
Chloride	<2	<2	<20	<20	800	15000	25000
Fluoride	<0.5	<0.5	<5	<5	10	150	500
Sulphate (soluble)	17.1	<2	171	<20	1000	20000	50000
Total Dissolved Solids	-	-	-	-	4000	60000	100000
Total Monohydric Phenols (W)	<0.016	<0.016	<0.16	<0.16	1	-	-
Dissolved Organic Carbon	3.15	<3	31.5	<30	500	800	1000

Leach Test Information

Date Prepared 25-Mar-2024

pH (pH Units) 8.62

Conductivity (µS/cm) 118

Volume Leachant (Litres) 0.887

Solid Results are expressed on a dry weight basis, after correction for moisture content where applicable

Leachates prepared in accordance with BS EN 12457 will be carried out at room temperature (20±5°C)

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04/04/2024 09:19:17

09:19:08 04/04/2024



CERTIFICATE OF ANALYSIS

Validated

SDG: 240325-40
Client Ref.: 6234Report Number: 724702
Location: Bray

Superseded Report:

CEN 10:1 SINGLE STAGE LEACHATE TEST

WAC ANALYTICAL RESULTS

REF : BS EN 12457/2

Client Reference	
Mass Sample taken (kg)	0.103
Mass of dry sample (kg)	0.090
Particle Size <4mm	>95%

Site Location	Bray
Natural Moisture Content (%)	15.4
Dry Matter Content (%)	86.6

Case	
SDG	240325-40
Lab Sample Number(s)	29546422
Sampled Date	
Customer Sample Ref.	TP 15
Depth (m)	1.00 - 1.00

Landfill Waste Acceptance
Criteria Limits

Inert Waste Landfill	Stable Non-reactive Hazardous Waste in Non- Hazardous Landfill	Hazardous Waste Landfill
3	5	6
-	-	10
-	-	-
1	-	-
500	-	-
100	-	-
-	>6	-
-	-	-
-	-	-

Solid Waste Analysis	Result
Total Organic Carbon (%)	0.497
Loss on Ignition (%)	2.85
Sum of BTEX (mg/kg)	-
Sum of 7 PCBs (mg/kg)	<0.021
Mineral Oil (mg/kg) (EH_2D_AL)	<5
PAH Sum of 17 (mg/kg)	<10
pH (pH Units)	8.33
ANC to pH 6 (mol/kg)	-
ANC to pH 4 (mol/kg)	-

Eluate Analysis	C ₂ Conc ⁿ in 10:1 eluate (mg/l)		A ₂ 10:1 conc ⁿ leached (mg/kg)		Limit values for compliance leaching test using BS EN 12457-3 at L/S 10 l/kg		
	Result	Limit of Detection	Result	Limit of Detection			
Arsenic	<0.0005	<0.0005	<0.005	<0.005	0.5	2	25
Barium	0.00245	<0.0002	0.0245	<0.002	20	100	300
Cadmium	<0.00008	<0.00008	<0.0008	<0.0008	0.04	1	5
Chromium	<0.001	<0.001	<0.01	<0.01	0.5	10	70
Copper	0.00076	<0.0003	0.0076	<0.003	2	50	100
Mercury Dissolved (CVAF)	<0.00001	<0.00001	<0.0001	<0.0001	0.01	0.2	2
Molybdenum	<0.003	<0.003	<0.03	<0.03	0.5	10	30
Nickel	<0.0004	<0.0004	<0.004	<0.004	0.4	10	40
Lead	<0.0002	<0.0002	<0.002	<0.002	0.5	10	50
Antimony	<0.001	<0.001	<0.01	<0.01	0.06	0.7	5
Selenium	<0.001	<0.001	<0.01	<0.01	0.1	0.5	7
Zinc	<0.001	<0.001	<0.01	<0.01	4	50	200
Chloride	<2	<2	<20	<20	800	15000	25000
Fluoride	<0.5	<0.5	<5	<5	10	150	500
Sulphate (soluble)	22	<2	220	<20	1000	20000	50000
Total Dissolved Solids	-	-	-	-	4000	60000	100000
Total Monohydric Phenols (W)	<0.016	<0.016	<0.16	<0.16	1	-	-
Dissolved Organic Carbon	4.02	<3	40.2	<30	500	800	1000

Leach Test Information

Date Prepared	25-Mar-2024
pH (pH Units)	8.48
Conductivity (µS/cm)	141
Volume Leachant (Litres)	0.887

Solid Results are expressed on a dry weight basis, after correction for moisture content where applicable

Leachates prepared in accordance with BS EN 12457 will be carried out at room temperature (20±5°C)

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09:19:08 04/04/2024



CERTIFICATE OF ANALYSIS

Validated

SDG: 240325-40
Client Ref.: 6234Report Number: 724702
Location: Bray

Superseded Report:

CEN 10:1 SINGLE STAGE LEACHATE TEST

WAC ANALYTICAL RESULTS

REF : BS EN 12457/2

Client Reference	
Mass Sample taken (kg)	0.107
Mass of dry sample (kg)	0.090
Particle Size <4mm	>95%

Site Location	Bray
Natural Moisture Content (%)	19.4
Dry Matter Content (%)	83.8

Case	
SDG	240325-40
Lab Sample Number(s)	29554972
Sampled Date	
Customer Sample Ref.	BH01
Depth (m)	1.00 - 1.00

Landfill Waste Acceptance
Criteria Limits

Inert Waste Landfill	Stable Non-reactive Hazardous Waste in Non- Hazardous Landfill	Hazardous Waste Landfill
3	5	6
-	-	10
-	-	-
1	-	-
500	-	-
100	-	-
-	>6	-
-	-	-
-	-	-

Solid Waste Analysis	Result
Total Organic Carbon (%)	0.523
Loss on Ignition (%)	2.64
Sum of BTEX (mg/kg)	-
Sum of 7 PCBs (mg/kg)	<0.021
Mineral Oil (mg/kg) (EH_2D_AL)	<5
PAH Sum of 17 (mg/kg)	<10
pH (pH Units)	8.38
ANC to pH 6 (mol/kg)	-
ANC to pH 4 (mol/kg)	-

Eluate Analysis	C ₂ Conc ⁿ in 10:1 eluate (mg/l)		A ₂ 10:1 conc ⁿ leached (mg/kg)		Limit values for compliance leaching test using BS EN 12457-3 at L/S 10 l/kg		
	Result	Limit of Detection	Result	Limit of Detection			
Arsenic	0.00054	<0.0005	0.0054	<0.005	0.5	2	25
Barium	0.00193	<0.0002	0.0193	<0.002	20	100	300
Cadmium	<0.00008	<0.00008	<0.0008	<0.0008	0.04	1	5
Chromium	<0.001	<0.001	<0.01	<0.01	0.5	10	70
Copper	0.00113	<0.0003	0.0113	<0.003	2	50	100
Mercury Dissolved (CVAF)	<0.00001	<0.00001	<0.0001	<0.0001	0.01	0.2	2
Molybdenum	<0.003	<0.003	<0.03	<0.03	0.5	10	30
Nickel	0.00092	<0.0004	0.0092	<0.004	0.4	10	40
Lead	<0.0002	<0.0002	<0.002	<0.002	0.5	10	50
Antimony	<0.001	<0.001	<0.01	<0.01	0.06	0.7	5
Selenium	<0.001	<0.001	<0.01	<0.01	0.1	0.5	7
Zinc	<0.001	<0.001	<0.01	<0.01	4	50	200
Chloride	<2	<2	<20	<20	800	15000	25000
Fluoride	<0.5	<0.5	<5	<5	10	150	500
Sulphate (soluble)	<2	<2	<20	<20	1000	20000	50000
Total Dissolved Solids	-	-	-	-	4000	60000	100000
Total Monohydric Phenols (W)	<0.016	<0.016	<0.16	<0.16	1	-	-
Dissolved Organic Carbon	6.13	<3	61.3	<30	500	800	1000

Leach Test Information

Date Prepared	27-Mar-2024
pH (pH Units)	8.39
Conductivity (µS/cm)	98
Volume Leachant (Litres)	0.883

Solid Results are expressed on a dry weight basis, after correction for moisture content where applicable

Leachates prepared in accordance with BS EN 12457 will be carried out at room temperature (20±5°C)

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CERTIFICATE OF ANALYSIS

Validated

SDG: 240325-40
Client Ref.: 6234Report Number: 724702
Location: Bray

Superseded Report:

CEN 10:1 SINGLE STAGE LEACHATE TEST

WAC ANALYTICAL RESULTS

REF : BS EN 12457/2

Client Reference	
Mass Sample taken (kg)	0.109
Mass of dry sample (kg)	0.090
Particle Size <4mm	>95%

Site Location	Bray
Natural Moisture Content (%)	21.9
Dry Matter Content (%)	82

Case	
SDG	240325-40
Lab Sample Number(s)	29554973
Sampled Date	
Customer Sample Ref.	BH02
Depth (m)	1.00 - 1.00

Landfill Waste Acceptance
Criteria Limits

Inert Waste Landfill	Stable Non-reactive Hazardous Waste in Non- Hazardous Landfill	Hazardous Waste Landfill
3	5	6
-	-	10
-	-	-
1	-	-
500	-	-
100	-	-
-	>6	-
-	-	-
-	-	-

Solid Waste Analysis	Result
Total Organic Carbon (%)	0.903
Loss on Ignition (%)	3.34
Sum of BTEX (mg/kg)	-
Sum of 7 PCBs (mg/kg)	<0.021
Mineral Oil (mg/kg) (EH_2D_AL)	<5
PAH Sum of 17 (mg/kg)	<10
pH (pH Units)	8.26
ANC to pH 6 (mol/kg)	-
ANC to pH 4 (mol/kg)	-

Eluate Analysis	C ₂ Conc ⁿ in 10:1 eluate (mg/l)		A ₂ 10:1 conc ⁿ leached (mg/kg)		Limit values for compliance leaching test using BS EN 12457-3 at L/S 10 l/kg		
	Result	Limit of Detection	Result	Limit of Detection			
Arsenic	0.000571	<0.0005	0.00571	<0.005	0.5	2	25
Barium	0.00272	<0.0002	0.0272	<0.002	20	100	300
Cadmium	<0.00008	<0.00008	<0.0008	<0.0008	0.04	1	5
Chromium	<0.001	<0.001	<0.01	<0.01	0.5	10	70
Copper	0.00224	<0.0003	0.0224	<0.003	2	50	100
Mercury Dissolved (CVAF)	<0.00001	<0.00001	<0.0001	<0.0001	0.01	0.2	2
Molybdenum	<0.003	<0.003	<0.03	<0.03	0.5	10	30
Nickel	0.00117	<0.0004	0.0117	<0.004	0.4	10	40
Lead	<0.0002	<0.0002	<0.002	<0.002	0.5	10	50
Antimony	<0.001	<0.001	<0.01	<0.01	0.06	0.7	5
Selenium	<0.001	<0.001	<0.01	<0.01	0.1	0.5	7
Zinc	0.00109	<0.001	0.0109	<0.01	4	50	200
Chloride	<2	<2	<20	<20	800	15000	25000
Fluoride	<0.5	<0.5	<5	<5	10	150	500
Sulphate (soluble)	<2	<2	<20	<20	1000	20000	50000
Total Dissolved Solids	-	-	-	-	4000	60000	100000
Total Monohydric Phenols (W)	<0.016	<0.016	<0.16	<0.16	1	-	-
Dissolved Organic Carbon	4.9	<3	49	<30	500	800	1000

Leach Test Information

Date Prepared	27-Mar-2024
pH (pH Units)	8.40
Conductivity (µS/cm)	120
Volume Leachant (Litres)	0.880

Solid Results are expressed on a dry weight basis, after correction for moisture content where applicable

Leachates prepared in accordance with BS EN 12457 will be carried out at room temperature (20±5°C)

Stated limits are for guidance only and ALS Laboratories (UK) Limited cannot be held responsible for any discrepancies with current legislation

04/04/2024 09:19:17

09:19:08 04/04/2024



CERTIFICATE OF ANALYSIS

Validated

SDG: 240325-40
Client Ref.: 6234Report Number: 724702
Location: Bray

Superseded Report:

CEN 10:1 SINGLE STAGE LEACHATE TEST

WAC ANALYTICAL RESULTS

REF : BS EN 12457/2

Client Reference	
Mass Sample taken (kg)	0.115
Mass of dry sample (kg)	0.090
Particle Size <4mm	>95%

Site Location	Bray
Natural Moisture Content (%)	27.6
Dry Matter Content (%)	78.4

Case	
SDG	240325-40
Lab Sample Number(s)	29554974
Sampled Date	
Customer Sample Ref.	BH03
Depth (m)	1.00 - 1.00

Landfill Waste Acceptance
Criteria Limits

Inert Waste Landfill	Stable Non-reactive Hazardous Waste in Non- Hazardous Landfill	Hazardous Waste Landfill
3	5	6
-	-	10
-	-	-
1	-	-
500	-	-
100	-	-
-	>6	-
-	-	-
-	-	-

Solid Waste Analysis	Result
Total Organic Carbon (%)	0.726
Loss on Ignition (%)	3.68
Sum of BTEX (mg/kg)	-
Sum of 7 PCBs (mg/kg)	<0.021
Mineral Oil (mg/kg) (EH_2D_AL)	<5
PAH Sum of 17 (mg/kg)	<10
pH (pH Units)	7.22
ANC to pH 6 (mol/kg)	-
ANC to pH 4 (mol/kg)	-

Eluate Analysis	C ₂ Conc ⁿ in 10:1 eluate (mg/l)		A ₂ 10:1 conc ⁿ leached (mg/kg)		Limit values for compliance leaching test using BS EN 12457-3 at L/S 10 l/kg		
	Result	Limit of Detection	Result	Limit of Detection			
Arsenic	0.000618	<0.0005	0.00618	<0.005	0.5	2	25
Barium	0.000843	<0.0002	0.00843	<0.002	20	100	300
Cadmium	<0.00008	<0.00008	<0.0008	<0.0008	0.04	1	5
Chromium	<0.001	<0.001	<0.01	<0.01	0.5	10	70
Copper	0.00143	<0.0003	0.0143	<0.003	2	50	100
Mercury Dissolved (CVAF)	<0.00001	<0.00001	<0.0001	<0.0001	0.01	0.2	2
Molybdenum	<0.003	<0.003	<0.03	<0.03	0.5	10	30
Nickel	0.000902	<0.0004	0.00902	<0.004	0.4	10	40
Lead	0.000407	<0.0002	0.00407	<0.002	0.5	10	50
Antimony	<0.001	<0.001	<0.01	<0.01	0.06	0.7	5
Selenium	<0.001	<0.001	<0.01	<0.01	0.1	0.5	7
Zinc	0.00202	<0.001	0.0202	<0.01	4	50	200
Chloride	<2	<2	<20	<20	800	15000	25000
Fluoride	<0.5	<0.5	<5	<5	10	150	500
Sulphate (soluble)	<2	<2	<20	<20	1000	20000	50000
Total Dissolved Solids	-	-	-	-	4000	60000	100000
Total Monohydric Phenols (W)	<0.016	<0.016	<0.16	<0.16	1	-	-
Dissolved Organic Carbon	4.55	<3	45.5	<30	500	800	1000

Leach Test Information

Date Prepared	27-Mar-2024
pH (pH Units)	7.50
Conductivity (µS/cm)	29
Volume Leachant (Litres)	0.875

Solid Results are expressed on a dry weight basis, after correction for moisture content where applicable

Leachates prepared in accordance with BS EN 12457 will be carried out at room temperature (20±5°C)

Stated limits are for guidance only and ALS Laboratories (UK) Limited cannot be held responsible for any discrepancies with current legislation

04/04/2024 09:19:17

09:19:08 04/04/2024



CERTIFICATE OF ANALYSIS

Validated

SDG: 240325-40
Client Ref.: 6234Report Number: 724702
Location: Bray

Superseded Report:

CEN 10:1 SINGLE STAGE LEACHATE TEST

WAC ANALYTICAL RESULTS

REF : BS EN 12457/2

Client Reference	
Mass Sample taken (kg)	0.113
Mass of dry sample (kg)	0.090
Particle Size <4mm	>95%

Site Location	Bray
Natural Moisture Content (%)	24.5
Dry Matter Content (%)	80.3

Case	
SDG	240325-40
Lab Sample Number(s)	29554975
Sampled Date	
Customer Sample Ref.	BH04
Depth (m)	1.00 - 1.00

Landfill Waste Acceptance
Criteria Limits

Inert Waste Landfill	Stable Non-reactive Hazardous Waste in Non- Hazardous Landfill	Hazardous Waste Landfill
3	5	6
-	-	10
-	-	-
1	-	-
500	-	-
100	-	-
-	>6	-
-	-	-
-	-	-

Solid Waste Analysis	Result
Total Organic Carbon (%)	1.1
Loss on Ignition (%)	4.35
Sum of BTEX (mg/kg)	-
Sum of 7 PCBs (mg/kg)	<0.021
Mineral Oil (mg/kg) (EH_2D_AL)	<5
PAH Sum of 17 (mg/kg)	<10
pH (pH Units)	7.18
ANC to pH 6 (mol/kg)	-
ANC to pH 4 (mol/kg)	-

Eluate Analysis	C ₂ Conc ⁿ in 10:1 eluate (mg/l)		A ₂ 10:1 conc ⁿ leached (mg/kg)		Limit values for compliance leaching test using BS EN 12457-3 at L/S 10 l/kg		
	Result	Limit of Detection	Result	Limit of Detection			
Arsenic	0.000793	<0.0005	0.00793	<0.005	0.5	2	25
Barium	0.0433	<0.0002	0.433	<0.002	20	100	300
Cadmium	<0.00008	<0.00008	<0.0008	<0.0008	0.04	1	5
Chromium	<0.001	<0.001	<0.01	<0.01	0.5	10	70
Copper	0.00104	<0.0003	0.0104	<0.003	2	50	100
Mercury Dissolved (CVAF)	<0.00001	<0.00001	<0.0001	<0.0001	0.01	0.2	2
Molybdenum	<0.003	<0.003	<0.03	<0.03	0.5	10	30
Nickel	0.000543	<0.0004	0.00543	<0.004	0.4	10	40
Lead	0.000333	<0.0002	0.00333	<0.002	0.5	10	50
Antimony	<0.001	<0.001	<0.01	<0.01	0.06	0.7	5
Selenium	<0.001	<0.001	<0.01	<0.01	0.1	0.5	7
Zinc	0.00724	<0.001	0.0724	<0.01	4	50	200
Chloride	<2	<2	<20	<20	800	15000	25000
Fluoride	<0.5	<0.5	<5	<5	10	150	500
Sulphate (soluble)	<2	<2	<20	<20	1000	20000	50000
Total Dissolved Solids	-	-	-	-	4000	60000	100000
Total Monohydric Phenols (W)	<0.016	<0.016	<0.16	<0.16	1	-	-
Dissolved Organic Carbon	4.72	<3	47.2	<30	500	800	1000

Leach Test Information

Date Prepared	27-Mar-2024
pH (pH Units)	7.49
Conductivity (µS/cm)	28
Volume Leachant (Litres)	0.878

Solid Results are expressed on a dry weight basis, after correction for moisture content where applicable

Leachates prepared in accordance with BS EN 12457 will be carried out at room temperature (20±5°C)

Stated limits are for guidance only and ALS Laboratories (UK) Limited cannot be held responsible for any discrepancies with current legislation

04/04/2024 09:19:17

09:19:08 04/04/2024



CERTIFICATE OF ANALYSIS

Validated

SDG: 240325-40
Client Ref.: 6234Report Number: 724702
Location: Bray

Superseded Report:

CEN 10:1 SINGLE STAGE LEACHATE TEST

WAC ANALYTICAL RESULTS

REF : BS EN 12457/2

Client Reference	
Mass Sample taken (kg)	0.111
Mass of dry sample (kg)	0.090
Particle Size <4mm	>95%

Site Location	Bray
Natural Moisture Content (%)	23.7
Dry Matter Content (%)	80.9

Case	
SDG	240325-40
Lab Sample Number(s)	29554976
Sampled Date	
Customer Sample Ref.	BH05
Depth (m)	1.00 - 1.00

Landfill Waste Acceptance
Criteria Limits

Inert Waste Landfill	Stable Non-reactive Hazardous Waste in Non- Hazardous Landfill	Hazardous Waste Landfill
3	5	6
-	-	10
-	-	-
1	-	-
500	-	-
100	-	-
-	>6	-
-	-	-
-	-	-

Solid Waste Analysis	Result
Total Organic Carbon (%)	0.491
Loss on Ignition (%)	3.01
Sum of BTEX (mg/kg)	-
Sum of 7 PCBs (mg/kg)	<0.021
Mineral Oil (mg/kg) (EH_2D_AL)	<5
PAH Sum of 17 (mg/kg)	<10
pH (pH Units)	7.07
ANC to pH 6 (mol/kg)	-
ANC to pH 4 (mol/kg)	-

Eluate Analysis	C ₂ Conc ⁿ in 10:1 eluate (mg/l)		A ₂ 10:1 conc ⁿ leached (mg/kg)		Limit values for compliance leaching test using BS EN 12457-3 at L/S 10 l/kg		
	Result	Limit of Detection	Result	Limit of Detection			
Arsenic	0.00119	<0.0005	0.0119	<0.005	0.5	2	25
Barium	0.0106	<0.0002	0.106	<0.002	20	100	300
Cadmium	<0.00008	<0.00008	<0.0008	<0.0008	0.04	1	5
Chromium	0.00128	<0.001	0.0128	<0.01	0.5	10	70
Copper	0.00157	<0.0003	0.0157	<0.003	2	50	100
Mercury Dissolved (CVAF)	<0.00001	<0.00001	<0.0001	<0.0001	0.01	0.2	2
Molybdenum	<0.003	<0.003	<0.03	<0.03	0.5	10	30
Nickel	0.000813	<0.0004	0.00813	<0.004	0.4	10	40
Lead	0.000572	<0.0002	0.00572	<0.002	0.5	10	50
Antimony	<0.001	<0.001	<0.01	<0.01	0.06	0.7	5
Selenium	<0.001	<0.001	<0.01	<0.01	0.1	0.5	7
Zinc	0.0184	<0.001	0.184	<0.01	4	50	200
Chloride	<2	<2	<20	<20	800	15000	25000
Fluoride	<0.5	<0.5	<5	<5	10	150	500
Sulphate (soluble)	<2	<2	<20	<20	1000	20000	50000
Total Dissolved Solids	-	-	-	-	4000	60000	100000
Total Monohydric Phenols (W)	<0.016	<0.016	<0.16	<0.16	1	-	-
Dissolved Organic Carbon	4.94	<3	49.4	<30	500	800	1000

Leach Test Information

Date Prepared	27-Mar-2024
pH (pH Units)	7.16
Conductivity (µS/cm)	23
Volume Leachant (Litres)	0.879

Solid Results are expressed on a dry weight basis, after correction for moisture content where applicable

Leachates prepared in accordance with BS EN 12457 will be carried out at room temperature (20±5°C)

Stated limits are for guidance only and ALS Laboratories (UK) Limited cannot be held responsible for any discrepancies with current legislation

04/04/2024 09:19:17

09:19:08 04/04/2024



CERTIFICATE OF ANALYSIS

Validated

SDG: 240325-40
Client Ref.: 6234Report Number: 724702
Location: Bray

Superseded Report:

CEN 10:1 SINGLE STAGE LEACHATE TEST

WAC ANALYTICAL RESULTS

REF : BS EN 12457/2

Client Reference	
Mass Sample taken (kg)	0.105
Mass of dry sample (kg)	0.090
Particle Size <4mm	>95%

Site Location	Bray
Natural Moisture Content (%)	16.1
Dry Matter Content (%)	86.1

Case	
SDG	240325-40
Lab Sample Number(s)	29554977
Sampled Date	
Customer Sample Ref.	BH06
Depth (m)	1.00 - 1.00

Landfill Waste Acceptance
Criteria Limits

Inert Waste Landfill	Stable Non-reactive Hazardous Waste in Non- Hazardous Landfill	Hazardous Waste Landfill
3	5	6
-	-	10
-	-	-
1	-	-
500	-	-
100	-	-
-	>6	-
-	-	-
-	-	-

Solid Waste Analysis	Result
Total Organic Carbon (%)	0.473
Loss on Ignition (%)	2.36
Sum of BTEX (mg/kg)	-
Sum of 7 PCBs (mg/kg)	<0.021
Mineral Oil (mg/kg) (EH_2D_AL)	<5
PAH Sum of 17 (mg/kg)	<10
pH (pH Units)	8.49
ANC to pH 6 (mol/kg)	-
ANC to pH 4 (mol/kg)	-

Eluate Analysis	C ₂ Conc ⁿ in 10:1 eluate (mg/l)		A ₂ 10:1 conc ⁿ leached (mg/kg)		Limit values for compliance leaching test using BS EN 12457-3 at L/S 10 l/kg		
	Result	Limit of Detection	Result	Limit of Detection			
Arsenic	<0.0005	<0.0005	<0.005	<0.005	0.5	2	25
Barium	0.00256	<0.0002	0.0256	<0.002	20	100	300
Cadmium	<0.00008	<0.00008	<0.0008	<0.0008	0.04	1	5
Chromium	<0.001	<0.001	<0.01	<0.01	0.5	10	70
Copper	0.000575	<0.0003	0.00575	<0.003	2	50	100
Mercury Dissolved (CVAF)	<0.00001	<0.00001	<0.0001	<0.0001	0.01	0.2	2
Molybdenum	<0.003	<0.003	<0.03	<0.03	0.5	10	30
Nickel	<0.0004	<0.0004	<0.004	<0.004	0.4	10	40
Lead	<0.0002	<0.0002	<0.002	<0.002	0.5	10	50
Antimony	<0.001	<0.001	<0.01	<0.01	0.06	0.7	5
Selenium	<0.001	<0.001	<0.01	<0.01	0.1	0.5	7
Zinc	<0.001	<0.001	<0.01	<0.01	4	50	200
Chloride	<2	<2	<20	<20	800	15000	25000
Fluoride	<0.5	<0.5	<5	<5	10	150	500
Sulphate (soluble)	17.8	<2	178	<20	1000	20000	50000
Total Dissolved Solids	-	-	-	-	4000	60000	100000
Total Monohydric Phenols (W)	<0.016	<0.016	<0.16	<0.16	1	-	-
Dissolved Organic Carbon	<3	<3	<30	<30	500	800	1000

Leach Test Information

Date Prepared	27-Mar-2024
pH (pH Units)	8.26
Conductivity (µS/cm)	115
Volume Leachant (Litres)	0.885

Solid Results are expressed on a dry weight basis, after correction for moisture content where applicable

Leachates prepared in accordance with BS EN 12457 will be carried out at room temperature (20±5°C)

Stated limits are for guidance only and ALS Laboratories (UK) Limited cannot be held responsible for any discrepancies with current legislation

04/04/2024 09:19:17

09:19:08 04/04/2024

SDG: 240325-40
Client Ref.: 6234

Report Number: 724702
Location: Bray

Superseded Report:

CEN 10:1 SINGLE STAGE LEACHATE TEST

CEN ANALYTICAL RESULTS

REF : BS EN 12457/2

Client Reference	
Mass Sample taken (kg)	0.107
Mass of dry sample (kg)	0.090
Particle Size <4mm	>95%

Site Location	Bray
Natural Moisture Content (%)	18.9
Dry Matter Content (%)	84.1

Case

SDG	240325-40
Lab Sample Number(s)	29546413
Sampled Date	
Customer Sample Ref.	TP 02
Depth (m)	1.00 - 1.00

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Eluate Analysis	C2 Conc ⁿ in 10:1 eluate (mg/l)		A2 10:1 conc ⁿ leached (mg/kg)				
	Result	Limit of Detection	Result	Limit of Detection			
Dissolved solids, Total (meter)	37.5	<10	375	<100	-	-	-

Leach Test Information

Date Prepared	25-Mar-2024
pH (pH Units)	7.97
Conductivity (µS/cm)	49
Volume Leachant (Litres)	0.883

Leachates prepared in accordance with BS EN 12457 will be carried out at room temperature (20±5°C)

SDG: 240325-40
Client Ref.: 6234

Report Number: 724702
Location: Bray

Superseded Report:

CEN 10:1 SINGLE STAGE LEACHATE TEST

CEN ANALYTICAL RESULTS

REF : BS EN 12457/2

Client Reference	
Mass Sample taken (kg)	0.109
Mass of dry sample (kg)	0.090
Particle Size <4mm	>95%

Site Location	Bray
Natural Moisture Content (%)	19.8
Dry Matter Content (%)	83.5

Case

SDG	240325-40
Lab Sample Number(s)	29546416
Sampled Date	
Customer Sample Ref.	TP 05
Depth (m)	1.00 - 1.00

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Eluate Analysis	C2 Conc ⁿ in 10:1 eluate (mg/l)		A2 10:1 conc ⁿ leached (mg/kg)				
	Result	Limit of Detection	Result	Limit of Detection			
Dissolved solids, Total (meter)	106	<10	1060	<100	-	-	-

Leach Test Information

Date Prepared	25-Mar-2024
pH (pH Units)	8.50
Conductivity (µS/cm)	138
Volume Leachant (Litres)	0.882

Leachates prepared in accordance with BS EN 12457 will be carried out at room temperature (20±5°C)

SDG: 240325-40
Client Ref.: 6234

Report Number: 724702
Location: Bray

Superseded Report:

CEN 10:1 SINGLE STAGE LEACHATE TEST

CEN ANALYTICAL RESULTS

REF : BS EN 12457/2

Client Reference	
Mass Sample taken (kg)	0.107
Mass of dry sample (kg)	0.090
Particle Size <4mm	>95%

Site Location	Bray
Natural Moisture Content (%)	18.9
Dry Matter Content (%)	84.1

Case

SDG	240325-40
Lab Sample Number(s)	29546417
Sampled Date	
Customer Sample Ref.	TP 06
Depth (m)	1.00 - 1.00

Eluate Analysis	C2 Conc ⁿ in 10:1 eluate (mg/l)		A2 10:1 conc ⁿ leached (mg/kg)				
	Result	Limit of Detection	Result	Limit of Detection			
Dissolved solids, Total (meter)	20	<10	200	<100	-	-	-

Leach Test Information

Date Prepared	25-Mar-2024
pH (pH Units)	7.32
Conductivity (µS/cm)	26
Volume Leachant (Litres)	0.883

Leachates prepared in accordance with BS EN 12457 will be carried out at room temperature (20±5°C)

SDG: 240325-40
Client Ref.: 6234

Report Number: 724702
Location: Bray

Superseded Report:

CEN 10:1 SINGLE STAGE LEACHATE TEST

CEN ANALYTICAL RESULTS

REF : BS EN 12457/2

Client Reference	
Mass Sample taken (kg)	0.106
Mass of dry sample (kg)	0.090
Particle Size <4mm	>95%

Site Location	Bray
Natural Moisture Content (%)	17.4
Dry Matter Content (%)	85.2

Case

SDG	240325-40
Lab Sample Number(s)	29546418
Sampled Date	
Customer Sample Ref.	TP 08
Depth (m)	1.00 - 1.00

Eluate Analysis	C2 Conc ⁿ in 10:1 eluate (mg/l)		A2 10:1 conc ⁿ leached (mg/kg)				
	Result	Limit of Detection	Result	Limit of Detection			
Dissolved solids, Total (meter)	13.9	<10	139	<100	-	-	-

Leach Test Information

Date Prepared	25-Mar-2024
pH (pH Units)	7.39
Conductivity (µS/cm)	18
Volume Leachant (Litres)	0.884

Leachates prepared in accordance with BS EN 12457 will be carried out at room temperature (20±5°C)

SDG: 240325-40
Client Ref.: 6234

Report Number: 724702
Location: Bray

Superseded Report:

CEN 10:1 SINGLE STAGE LEACHATE TEST

CEN ANALYTICAL RESULTS

REF : BS EN 12457/2

Client Reference	
Mass Sample taken (kg)	0.107
Mass of dry sample (kg)	0.090
Particle Size <4mm	>95%

Site Location	Bray
Natural Moisture Content (%)	18.9
Dry Matter Content (%)	84.1

Case

SDG	240325-40
Lab Sample Number(s)	29546419
Sampled Date	
Customer Sample Ref.	TP 11
Depth (m)	1.00 - 1.00

Eluate Analysis	C2 Conc ⁿ in 10:1 eluate (mg/l)		A2 10:1 conc ⁿ leached (mg/kg)				
	Result	Limit of Detection	Result	Limit of Detection			
Dissolved solids, Total (meter)	18.3	<10	183	<100	-	-	-

Leach Test Information

Date Prepared	25-Mar-2024
pH (pH Units)	7.01
Conductivity (µS/cm)	24
Volume Leachant (Litres)	0.883

Leachates prepared in accordance with BS EN 12457 will be carried out at room temperature ($20\pm5^{\circ}\text{C}$)

SDG: 240325-40
Client Ref.: 6234

Report Number: 724702
Location: Bray

Superseded Report:

CEN 10:1 SINGLE STAGE LEACHATE TEST

CEN ANALYTICAL RESULTS

REF : BS EN 12457/2

Client Reference	
Mass Sample taken (kg)	0.103
Mass of dry sample (kg)	0.090
Particle Size <4mm	>95%

Site Location	Bray
Natural Moisture Content (%)	13.9
Dry Matter Content (%)	87.8

Case

SDG	240325-40
Lab Sample Number(s)	29546420
Sampled Date	
Customer Sample Ref.	TP 13
Depth (m)	1.00 - 1.00

Eluate Analysis	C2 Conc ⁿ in 10:1 eluate (mg/l)		A2 10:1 conc ⁿ leached (mg/kg)				
	Result	Limit of Detection	Result	Limit of Detection			
Dissolved solids, Total (meter)	15.6	<10	156	<100	-	-	-

Leach Test Information

Date Prepared	25-Mar-2024
pH (pH Units)	7.03
Conductivity (µS/cm)	20
Volume Leachant (Litres)	0.888

Leachates prepared in accordance with BS EN 12457 will be carried out at room temperature (20±5°C)

SDG: 240325-40
Client Ref.: 6234

Report Number: 724702
Location: Bray

Superseded Report:

CEN 10:1 SINGLE STAGE LEACHATE TEST

CEN ANALYTICAL RESULTS

REF : BS EN 12457/2

Client Reference	
Mass Sample taken (kg)	0.103
Mass of dry sample (kg)	0.090
Particle Size <4mm	>95%

Site Location	Bray
Natural Moisture Content (%)	14.9
Dry Matter Content (%)	87

Case

SDG	240325-40
Lab Sample Number(s)	29546421
Sampled Date	
Customer Sample Ref.	TP 14
Depth (m)	1.00 - 1.00

Eluate Analysis	C2 Conc ⁿ in 10:1 eluate (mg/l)		A2 10:1 conc ⁿ leached (mg/kg)				
	Result	Limit of Detection	Result	Limit of Detection			
Dissolved solids, Total (meter)	90.2	<10	902	<100	-	-	-

Leach Test Information

Date Prepared	25-Mar-2024
pH (pH Units)	8.62
Conductivity (µS/cm)	118
Volume Leachant (Litres)	0.887

Leachates prepared in accordance with BS EN 12457 will be carried out at room temperature (20±5°C)

SDG: 240325-40
Client Ref.: 6234

Report Number: 724702
Location: Bray

Superseded Report:

CEN 10:1 SINGLE STAGE LEACHATE TEST

CEN ANALYTICAL RESULTS

REF : BS EN 12457/2

Client Reference	
Mass Sample taken (kg)	0.103
Mass of dry sample (kg)	0.090
Particle Size <4mm	>95%

Site Location	Bray
Natural Moisture Content (%)	15.4
Dry Matter Content (%)	86.6

Case

SDG	240325-40
Lab Sample Number(s)	29546422
Sampled Date	
Customer Sample Ref.	TP 15
Depth (m)	1.00 - 1.00

Eluate Analysis	C2 Conc ⁿ in 10:1 eluate (mg/l)		A2 10:1 conc ⁿ leached (mg/kg)				
	Result	Limit of Detection	Result	Limit of Detection			
Dissolved solids, Total (meter)	108	<10	1080	<100	-	-	-

Leach Test Information

Date Prepared	25-Mar-2024
pH (pH Units)	8.48
Conductivity (µS/cm)	141
Volume Leachant (Litres)	0.887

Leachates prepared in accordance with BS EN 12457 will be carried out at room temperature ($20 \pm 5^\circ\text{C}$)

SDG: 240325-40
Client Ref.: 6234

Report Number: 724702
Location: Bray

Superseded Report:

CEN 10:1 SINGLE STAGE LEACHATE TEST

CEN ANALYTICAL RESULTS

REF : BS EN 12457/2

Client Reference	
Mass Sample taken (kg)	0.109
Mass of dry sample (kg)	0.090
Particle Size <4mm	>95%

Site Location	Bray
Natural Moisture Content (%)	21.9
Dry Matter Content (%)	82

Case

SDG	240325-40
Lab Sample Number(s)	29554973
Sampled Date	
Customer Sample Ref.	BH02
Depth (m)	1.00 - 1.00

Eluate Analysis	C2 Conc ⁿ in 10:1 eluate (mg/l)		A2 10:1 conc ⁿ leached (mg/kg)				
	Result	Limit of Detection	Result	Limit of Detection			
Dissolved solids, Total (meter)	92.1	<10	921	<100	-	-	-

Leach Test Information

Date Prepared	27-Mar-2024
pH (pH Units)	8.40
Conductivity ($\mu\text{S}/\text{cm}$)	120
Volume Leachant (Litres)	0.880

Leachates prepared in accordance with BS EN 12457 will be carried out at room temperature ($20\pm5^{\circ}\text{C}$)

SDG: 240325-40
Client Ref.: 6234

Report Number: 724702
Location: Bray

Superseded Report:

CEN 10:1 SINGLE STAGE LEACHATE TEST

CEN ANALYTICAL RESULTS

REF : BS EN 12457/2

Client Reference	
Mass Sample taken (kg)	0.115
Mass of dry sample (kg)	0.090
Particle Size <4mm	>95%

Site Location	Bray
Natural Moisture Content (%)	27.6
Dry Matter Content (%)	78.4

Case

SDG	240325-40
Lab Sample Number(s)	29554974
Sampled Date	
Customer Sample Ref.	BH03
Depth (m)	1.00 - 1.00

Eluate Analysis	C2 Conc ⁿ in 10:1 eluate (mg/l)		A2 10:1 conc ⁿ leached (mg/kg)				
	Result	Limit of Detection	Result	Limit of Detection			
Dissolved solids, Total (meter)	22.5	<10	225	<100	-	-	-

Leach Test Information

Date Prepared	27-Mar-2024
pH (pH Units)	7.50
Conductivity (µS/cm)	29
Volume Leachant (Litres)	0.875

Leachates prepared in accordance with BS EN 12457 will be carried out at room temperature ($20 \pm 5^\circ\text{C}$)



CERTIFICATE OF ANALYSIS

Validated

SDG: 240325-40
Client Ref.: 6234

Report Number: 724702
Location: Bray

Superseded Report:

Table of Results - Appendix

Method No	Description
PM024	Soil preparation including homogenisation, moisture, screens of soils for Asbestos Containing Material
PM115	Leaching Procedure for CEN One Stage Leach Test 2:1 & 10:1 1 Step
TM018	Determination of Loss on Ignition
TM089	Determination of Gasoline Range Hydrocarbons (GRO) by Headspace GC-FID (C4-C12)
TM090	Determination of Total Organic Carbon/Total Inorganic Carbon in Water and Waste Water
TM104	Determination of Fluoride using the Kone Analyser
TM116	Determination of Volatile Organic Compounds by Headspace / GC-MS
TM132	ELTRA CS800 Operators Guide
TM133	Determination of pH in Soil and Water using the GLpH pH Meter
TM151	Determination of Hexavalent Chromium using Kone analyser
TM152	Analysis of Aqueous Samples by ICP-MS
TM168	Determination of WHO12 and EC7 Polychlorinated Biphenyl Congeners by GC-MS in Soils
TM181	Determination of Routine Metals in Soil by iCap 6500 Duo ICP-OES
TM183	Determination of Trace Level Mercury in Waters and Leachates by PSA Cold Vapour Atomic Fluorescence Spectrometry
TM184	The Determination of Anions in Aqueous Matrices using the Kone Spectrophotometric Analysers
TM218	The determination of PAH in soil samples by GC-MS
TM256	Determination of pH, EC, TDS and Alkalinity in Aqueous samples
TM259	Determination of Phenols in Waters and Leachates by HPLC
TM410	Determination of Coronene in soils by GCMS
TM414	Determination of Speciated Extractable Petroleum Hydrocarbons in Soils by GCxGC-FID
TM415	Determination of Extractable Petroleum Hydrocarbons in Soils by GCxGC-FID

NA = not applicable.

Chemical testing (unless subcontracted) performed at ALS Laboratories (UK) Limited Hawarden (Method codes TM).



CERTIFICATE OF ANALYSIS

Validated

SDG: 240325-40
Client Ref.: 6234

Report Number: 724702
Location: Bray

Superseded Report:

Test Completion Dates

Lab Sample No(s) Customer Sample Ref.	29554972	29554973	29554974	29554975	29554976	29554977	29546413	29546416	29546417	29546418
	BH01	BH02	BH03	BH04	BH05	BH06	TP 02	TP 05	TP 06	TP 08
	AGS Ref. Depth Type									
	Soil/Solid (S)	Soil/Solid (S)	Soil/Solid (S)	Soil/Solid (S)	Soil/Solid (S)	Soil/Solid (S)	Soil/Solid (S)	Soil/Solid (S)	Soil/Solid (S)	Soil/Solid (S)
Anions by Kone (w)	28-Mar-2024	28-Mar-2024	28-Mar-2024	28-Mar-2024	28-Mar-2024	28-Mar-2024	28-Mar-2024	28-Mar-2024	28-Mar-2024	28-Mar-2024
CEN 10:1 Leachate (1 Stage)	27-Mar-2024	27-Mar-2024	27-Mar-2024	27-Mar-2024	27-Mar-2024	27-Mar-2024	26-Mar-2024	26-Mar-2024	26-Mar-2024	26-Mar-2024
CEN Readings	03-Apr-2024	03-Apr-2024	03-Apr-2024	03-Apr-2024	03-Apr-2024	03-Apr-2024	03-Apr-2024	03-Apr-2024	03-Apr-2024	03-Apr-2024
Chromium III	02-Apr-2024	02-Apr-2024	02-Apr-2024	02-Apr-2024	02-Apr-2024	31-Mar-2024	02-Apr-2024	02-Apr-2024	02-Apr-2024	02-Apr-2024
Coronene	02-Apr-2024	28-Mar-2024	28-Mar-2024	28-Mar-2024	02-Apr-2024	28-Mar-2024	28-Mar-2024	02-Apr-2024	28-Mar-2024	28-Mar-2024
Dissolved Metals by ICP-MS	02-Apr-2024	02-Apr-2024	02-Apr-2024	02-Apr-2024	02-Apr-2024	02-Apr-2024	02-Apr-2024	02-Apr-2024	02-Apr-2024	02-Apr-2024
Dissolved Organic/Inorganic Carbon	29-Mar-2024	29-Mar-2024	29-Mar-2024	29-Mar-2024	29-Mar-2024	29-Mar-2024	28-Mar-2024	28-Mar-2024	28-Mar-2024	28-Mar-2024
EPH by GCxGC-FID	02-Apr-2024	02-Apr-2024	02-Apr-2024	02-Apr-2024	02-Apr-2024	02-Apr-2024	28-Mar-2024	28-Mar-2024	28-Mar-2024	28-Mar-2024
EPH CWG GC (S)	28-Mar-2024	28-Mar-2024	28-Mar-2024	27-Mar-2024	28-Mar-2024	27-Mar-2024	02-Apr-2024	02-Apr-2024	02-Apr-2024	28-Mar-2024
Fluoride	03-Apr-2024	03-Apr-2024	03-Apr-2024	03-Apr-2024	03-Apr-2024	03-Apr-2024	28-Mar-2024	28-Mar-2024	28-Mar-2024	28-Mar-2024
GRO by GC-FID (S)	02-Apr-2024	02-Apr-2024	02-Apr-2024	02-Apr-2024	02-Apr-2024	02-Apr-2024	02-Apr-2024	28-Mar-2024	02-Apr-2024	28-Mar-2024
Hexavalent Chromium (s)	28-Mar-2024	28-Mar-2024	28-Mar-2024	28-Mar-2024	28-Mar-2024	28-Mar-2024	28-Mar-2024	28-Mar-2024	28-Mar-2024	28-Mar-2024
Loss on Ignition in soils	28-Mar-2024	02-Apr-2024	28-Mar-2024	02-Apr-2024	28-Mar-2024	02-Apr-2024	28-Mar-2024	28-Mar-2024	02-Apr-2024	28-Mar-2024
Mercury Dissolved	03-Apr-2024	03-Apr-2024	03-Apr-2024	03-Apr-2024	03-Apr-2024	03-Apr-2024	28-Mar-2024	28-Mar-2024	28-Mar-2024	28-Mar-2024
Metals in solid samples by OES	02-Apr-2024	02-Apr-2024	02-Apr-2024	02-Apr-2024	02-Apr-2024	28-Mar-2024	02-Apr-2024	02-Apr-2024	02-Apr-2024	02-Apr-2024
Moisture at 105C	27-Mar-2024	27-Mar-2024	27-Mar-2024	27-Mar-2024	27-Mar-2024	27-Mar-2024	25-Mar-2024	25-Mar-2024	25-Mar-2024	25-Mar-2024
PAH 16 & 17 Calc	02-Apr-2024	02-Apr-2024	28-Mar-2024	02-Apr-2024	02-Apr-2024	28-Mar-2024	28-Mar-2024	02-Apr-2024	28-Mar-2024	02-Apr-2024
PAH by GCMS	02-Apr-2024	02-Apr-2024	28-Mar-2024	02-Apr-2024	02-Apr-2024	28-Mar-2024	27-Mar-2024	02-Apr-2024	28-Mar-2024	02-Apr-2024
PCBs by GCMS	02-Apr-2024	28-Mar-2024	02-Apr-2024	28-Mar-2024	02-Apr-2024	02-Apr-2024	27-Mar-2024	02-Apr-2024	02-Apr-2024	28-Mar-2024
pH	03-Apr-2024	03-Apr-2024	03-Apr-2024	04-Apr-2024	04-Apr-2024	03-Apr-2024	03-Apr-2024	03-Apr-2024	03-Apr-2024	03-Apr-2024
pH Value of Filtered Water	03-Apr-2024	03-Apr-2024	03-Apr-2024	03-Apr-2024	03-Apr-2024	03-Apr-2024	03-Apr-2024	03-Apr-2024	03-Apr-2024	03-Apr-2024
Phenols by HPLC (W)	02-Apr-2024	02-Apr-2024	02-Apr-2024	02-Apr-2024	02-Apr-2024	02-Apr-2024	02-Apr-2024	02-Apr-2024	02-Apr-2024	02-Apr-2024
Sample description	26-Mar-2024	26-Mar-2024	26-Mar-2024	26-Mar-2024	26-Mar-2024	26-Mar-2024	25-Mar-2024	25-Mar-2024	25-Mar-2024	25-Mar-2024
Total Organic Carbon	03-Apr-2024	03-Apr-2024	03-Apr-2024	03-Apr-2024	03-Apr-2024	03-Apr-2024	03-Apr-2024	03-Apr-2024	03-Apr-2024	03-Apr-2024
TPH CWG GC (S)	02-Apr-2024	02-Apr-2024	02-Apr-2024	02-Apr-2024	02-Apr-2024	02-Apr-2024	02-Apr-2024	02-Apr-2024	02-Apr-2024	28-Mar-2024
VOC MS (S)	02-Apr-2024	02-Apr-2024	02-Apr-2024	02-Apr-2024	02-Apr-2024	02-Apr-2024	28-Mar-2024	27-Mar-2024	28-Mar-2024	27-Mar-2024

Lab Sample No(s) Customer Sample Ref.	29546419	29546420	29546421	29546422
	TP 11	TP 13	TP 14	TP 15
	AGS Ref. Depth Type			
	Soil/Solid (S)	Soil/Solid (S)	Soil/Solid (S)	Soil/Solid (S)
Anions by Kone (w)	28-Mar-2024	28-Mar-2024	28-Mar-2024	28-Mar-2024
CEN 10:1 Leachate (1 Stage)	26-Mar-2024	26-Mar-2024	26-Mar-2024	26-Mar-2024
CEN Readings	03-Apr-2024	03-Apr-2024	28-Mar-2024	03-Apr-2024
Chromium III	02-Apr-2024	02-Apr-2024	28-Mar-2024	02-Apr-2024
Coronene	28-Mar-2024	28-Mar-2024	28-Mar-2024	28-Mar-2024
Dissolved Metals by ICP-MS	02-Apr-2024	02-Apr-2024	02-Apr-2024	02-Apr-2024
Dissolved Organic/Inorganic Carbon	28-Mar-2024	28-Mar-2024	28-Mar-2024	28-Mar-2024
EPH by GCxGC-FID	03-Apr-2024	28-Mar-2024	28-Mar-2024	28-Mar-2024
EPH CWG GC (S)	02-Apr-2024	02-Apr-2024	02-Apr-2024	02-Apr-2024
Fluoride	28-Mar-2024	28-Mar-2024	28-Mar-2024	28-Mar-2024
GRO by GC-FID (S)	02-Apr-2024	02-Apr-2024	02-Apr-2024	28-Mar-2024
Hexavalent Chromium (s)	28-Mar-2024	28-Mar-2024	28-Mar-2024	28-Mar-2024
Loss on Ignition in soils	28-Mar-2024	28-Mar-2024	28-Mar-2024	28-Mar-2024
Mercury Dissolved	28-Mar-2024	28-Mar-2024	28-Mar-2024	28-Mar-2024
Metals in solid samples by OES	02-Apr-2024	02-Apr-2024	28-Mar-2024	02-Apr-2024
Moisture at 105C	25-Mar-2024	25-Mar-2024	25-Mar-2024	25-Mar-2024
PAH 16 & 17 Calc	28-Mar-2024	28-Mar-2024	28-Mar-2024	02-Apr-2024
PAH by GCMS	27-Mar-2024	28-Mar-2024	28-Mar-2024	02-Apr-2024
PCBs by GCMS	27-Mar-2024	02-Apr-2024	02-Apr-2024	28-Mar-2024
pH	03-Apr-2024	03-Apr-2024	03-Apr-2024	04-Apr-2024
pH Value of Filtered Water	03-Apr-2024	03-Apr-2024	28-Mar-2024	03-Apr-2024
Phenols by HPLC (W)	02-Apr-2024	02-Apr-2024	02-Apr-2024	02-Apr-2024
Sample description	25-Mar-2024	25-Mar-2024	25-Mar-2024	25-Mar-2024
Total Organic Carbon	03-Apr-2024	03-Apr-2024	03-Apr-2024	03-Apr-2024
TPH CWG GC (S)	02-Apr-2024	02-Apr-2024	02-Apr-2024	02-Apr-2024
VOC MS (S)	28-Mar-2024	28-Mar-2024	28-Mar-2024	27-Mar-2024



CERTIFICATE OF ANALYSIS

SDG: 240325-40
Client Ref: 6234

Report Number: 724702
Location: Bray

Superseded Report:

Appendix

1. Results are expressed on a dry weight basis (dried at 35°C) for all soil analyses except for the following: NRA and CEN Leach tests, flash point LOI, pH, ammonium as NH₄ by the BRE method, VOC TICs and SVOC TICs.

2. If sufficient sample is received a sub sample will be retained free of charge for 15 days after analysis is completed (e-mailed) for all sample types unless the sample is destroyed on testing. The prepared soil sub sample that is analysed for asbestos will be retained for a period of 6 months after the analysis date. All bulk samples will be retained for a period of 6 months after the analysis date. All samples received and not scheduled will be disposed of 15 days after the date of receipt unless we are instructed to the contrary. Once the initial period has expired, a storage charge will be applied for each month or part thereof until the client cancels the request for sample storage. ALS reserve the right to charge for samples received and stored but not analysed.

3. With respect to turnaround, we will always endeavour to meet client requirements wherever possible, but turnaround times cannot be absolutely guaranteed due to so many variables beyond our control.

4. We take responsibility for any test performed by sub-contractors (marked with an asterisk). We endeavour to use UKAS/MCERTS Accredited Laboratories, who either complete a quality questionnaire or are audited by ourselves. For some determinands there are no UKAS/MCERTS Accredited Laboratories, in this instance a laboratory with a known track record will be utilised.

5. If no separate volatile sample is supplied by the client, or if a headspace or sediment is present in the volatile sample, the integrity of the data may be compromised. This will be flagged up as an invalid VOC on the test schedule and the result marked as deviating on the test certificate.

6. NDP - No determination possible due to insufficient/unsuitable sample.

7. Results relate only to the items tested.

8. LoDs (Limit of Detection) for wet tests reported on a dry weight basis are not corrected for moisture content.

9. **Surrogate recoveries** - Surrogates are added to your sample to monitor recovery of the test requested. A % recovery is reported, results are not corrected for the recovery measured. Typical recoveries for organics tests are 70-130%. Recoveries in soils are affected by organic rich or clay rich matrices. Waters can be affected by remediation fluids or high amounts of sediment. Test results are only ever reported if all of the associated quality checks pass; it is assumed that all recoveries outside of the values above are due to matrix affect.

10. Stones/debris are not routinely removed. We always endeavour to take a representative sub sample from the received sample.

11. In certain circumstances the method detection limit may be elevated due to the sample being outside the calibration range. Other factors that may contribute to this include possible interferences. In both cases the sample would be diluted which would cause the method detection limit to be raised.

12. For dried and crushed preparations of soils volatile loss may occur e.g volatile mercury

13. For leachate preparations other than Zero Headspace Extraction (ZHE) volatile loss may occur.

14. For the BSEN 12457-3 two batch process to allow the cumulative release to be calculated, the volume of the leachate produced is measured and filtered for all tests. We therefore cannot carry out any unfiltered analysis. The tests affected include volatiles GCFID/GCMS and all subcontracted analysis.

15. Analysis and identification of specific compounds using GCFID is by retention time only, and we routinely calibrate and quantify for benzene, toluene, ethylbenzenes and xylenes (BTEX). For total volatiles in the C5-C12 range, the total area of the chromatogram is integrated and expressed as ug/kg or ug/l. Although this analysis is commonly used for the quantification of gasoline range organics (GRO), the system will also detect other compounds such as chlorinated solvents, and this may lead to a falsely high result with respect to hydrocarbons only. It is not possible to specifically identify these non-hydrocarbons, as standards are not routinely run for any other compounds, and for more definitive identification, volatiles by GCMS should be utilised.

16. We are accredited to MCERTS for sand, clay and loam/topsoil, or any of these materials - whether these are derived from naturally occurring soil profiles, or from fill/made ground, as long as these materials constitute the major part of the sample. Other coarse granular material such as concrete, gravel and brick are not accredited if they comprise the major part of the sample.

17 Data retention. All records, communications and reports pertaining to the analysis are archived for seven years from the date of issue of the final report.

General

18. **Tentatively Identified Compounds (TICs)** are non-target peaks in VOC and SVOC analysis. All non-target peaks detected with a concentration above the LoD are subjected to a mass spectral library search. Non-target peaks with a library search confidence of >75% are reported based on the best mass spectral library match. When a non-target peak with a library search confidence of <75% is detected it is reported as "mixed hydrocarbons". Non-target compounds identified from the scan data are semi-quantified relative to one of the deuterated internal standards, under the same chromatographic conditions as the target compounds. This result is reported as a semi-quantitative value and reported as Tentatively Identified Compounds (TICs). TICs are outside the scope of UKAS accreditation and are not moisture corrected.

19. Sample Deviations

If a sample is classed as deviated then the associated results may be compromised.

1	Container with Headspace provided for volatiles analysis
2	Incorrect container received
3	Deviation from method
4	Matrix interference
♦	Sample holding time exceeded in laboratory
@	Sample holding time exceeded due to late arrival of instructions or samples
§	Sampled on date not provided

20. Asbestos

When requested, the individual sub sample scheduled will be analysed in house for the presence of asbestos fibres and asbestos containing material by our documented in house method TM048 based on HSG 248 (2021), which is accredited to ISO17025. If a specific asbestos fibre type is not found this will be reported as "Not detected". If no asbestos fibre types are found all will be reported as "Not detected" and the sub sample analysed deemed to be clear of asbestos. If an asbestos fibre type is found it will be reported as detected (for each fibre type found). Testing can be carried out on asbestos positive samples, but, due to Health and Safety considerations, may be replaced by alternative tests or reported as No Determination Possible (NDP). The quantity of asbestos present is not determined unless specifically requested.

Identification of Asbestos in Bulk Materials & Soils

The results for identification of asbestos in bulk materials and soils are obtained from supplied bulk materials and soils which have been examined to determine the presence of asbestos fibres using ALS (Hawarden) in-house method of transmitted/polarised light microscopy and central stop dispersion staining, based on HSG 248 (2021).

The results for identification of asbestos in soils are obtained from a homogenised sub sample which has been examined to determine the presence of asbestos fibres using ALS (Hawarden) in-house method of transmitted/polarised light microscopy and central stop dispersion staining.

Asbestos Type	Common Name
Chrysotile	White Asbestos
Amosite	Brown Asbestos
Crocidolite	Blue Asbestos
Fibrous Actinolite	-
Fibrous Anthophyllite	-
Fibrous Tremolite	-

Visual Estimation Of Fibre Content

Estimation of fibre content is not permitted as part of our UKAS accredited test other than: - Trace - Where only one or two asbestos fibres were identified.

Respirable Fibres

Respirable fibres are defined as fibres of <3 µm diameter, longer than 5 µm and with aspect ratios of at least 3:1 that can be inhaled into the lower regions of the lung and are generally acknowledged to be most important predictor of hazard and risk for cancers of the lung.

Further guidance on typical asbestos fibre content of manufactured products can be found in HSG 264.

The identification of asbestos containing materials and soils falls within our schedule of tests for which we hold UKAS accreditation, however opinions, interpretations and all other information contained in the report are outside the scope of UKAS accreditation.



Unit 7-8 Hawarden Business Park
Manor Road (off Manor Lane)
Hawarden
Deeside
CH5 3US

Tel: (01244) 528777
email: hawardencustomerservices@alsglobal.com
Website: www.alsenvironmental.co.uk

Site Investigations Ltd
The Grange
Carhugar
12th Lock Road
Lucan
Co. Dublin

Attention: Stephen Letch

CERTIFICATE OF ANALYSIS

Date of report Generation:	16 February 2024
Customer:	Site Investigations Ltd
Sample Delivery Group (SDG):	240212-38
Your Reference:	6234
Location:	Old Connaught Avenue, Bray
Report No:	720369
Order Number:	03/B/24

We received 10 samples on Monday February 12, 2024 and 10 of these samples were scheduled for analysis which was completed on Friday February 16, 2024. Accredited laboratory tests are defined within the report, but opinions, interpretations and on-site data expressed herein are outside the scope of ISO 17025 accreditation.

Should this report require incorporation into client reports, it must be used in its entirety and not simply with the data sections alone.

Chemical testing (unless subcontracted) performed at ALS Laboratories (UK) Limited Hawarden.

All sample data is provided by the customer. The reported results relate to the sample supplied, and on the basis that this data is correct.

Incorrect sampling dates and/or sample information will affect the validity of results.

The customer is not permitted to reproduce this report except in full without the approval of the laboratory.

Approved By:

Sonia McWhan

Operations Manager





CERTIFICATE OF ANALYSIS

Validated

SDG: 240212-38
Client Ref.: 6234

Report Number: 720369
Location: Old Connaught Avenue, Bray

Superseded Report:

Received Sample Overview

Lab Sample No(s)	Customer Sample Ref.	AGS Ref.	Depth (m)	Sampled Date
29350755	TP 01		1.00	08/02/2024
29350756	TP 03		1.00	08/02/2024
29350757	TP 05		1.00	08/02/2024
29350758	TP 07		1.00	08/02/2024
29350759	TP 08		1.00	08/02/2024
29350760	TP 09		1.00	08/02/2024
29350761	TP 10		1.00	08/02/2024
29350762	TP 12		1.00	08/02/2024
29350763	TP 14		1.00	08/02/2024
29350764	TP 15		1.00	08/02/2024

Only received samples which have had analysis scheduled will be shown on the following pages.



CERTIFICATE OF ANALYSIS

Validated

SDG: 240212-38
Client Ref.: 6234

Report Number: 720369
Location: Old Connaught Avenue, Bray

Superseded Report:

Results Legend

- X** Test
N No Determination Possible

Sample Types -

S - Soil/Solid
UNS - Unspecified Solid
GW - Ground Water
SW - Surface Water
LE - Land Leachate
PL - Prepared Leachate
PR - Process Water
SA - Saline Water
TE - Trade Effluent
TS - Treated Sewage
US - Untreated Sewage
RE - Recreational Water
DW - Drinking Water
Non-regulatory
UNL - Unspecified Liquid
SL - Sludge
G - Gas
OTH - Other

Lab Sample No(s)			29350755	29350756	29350757	29350758	29350759	29350760	29350761	29350762	29350763	29350764
Customer Sample Reference			TP 01	TP 03	TP 05	TP 07	TP 08	TP 09	TP 10	TP 12	TP 14	TP 15
AGS Reference												
Depth (m)			1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Container			250g Amber Jar (ALE210)	250g Amber Jar (ALE210)	250g Amber Jar (ALE210)	250g Amber Jar (ALE210)	250g Amber Jar (ALE210)	250g Amber Jar (ALE210)	250g Amber Jar (ALE210)	250g Amber Jar (ALE210)	250g Amber Jar (ALE210)	250g Amber Jar (ALE210)
Sample Type			S	S	S	S	S	S	S	S	S	S
Sample description	All	NDPs: 0 Tests: 10	X	X	X	X	X	X	X	X	X	X
Total Organic Carbon	All	NDPs: 0 Tests: 6	X	X					X	X	X	X
Total Sulphur	All	NDPs: 0 Tests: 10	X	X	X	X	X	X	X	X	X	X



CERTIFICATE OF ANALYSIS

Validated

SDG: 240212-38
Client Ref.: 6234

Report Number: 720369
Location: Old Connaught Avenue, Bray

Superseded Report:

Sample Descriptions

Grain Sizes

very fine	<0.063mm	fine	0.063mm - 0.1mm	medium	0.1mm - 2mm	coarse	2mm - 10mm	very coarse	>10mm
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Lab Sample No(s)	Customer Sample Ref.	Depth (m)	Colour	Description	Inclusions	Inclusions 2
29350755	TP 01	1.00	Light Brown	Sandy Loam	Stones	Vegetation
29350756	TP 03	1.00	Light Brown	Sandy Loam	Stones	Vegetation
29350757	TP 05	1.00	Light Brown	Sandy Loam	Stones	Vegetation
29350758	TP 07	1.00	Light Brown	Sandy Clay Loam	Stones	None
29350759	TP 08	1.00	Light Brown	Sandy Loam	Stones	Vegetation
29350760	TP 09	1.00	Light Brown	Sandy Loam	Stones	Vegetation
29350761	TP 10	1.00	Light Brown	Sandy Loam	Stones	Vegetation
29350762	TP 12	1.00	Light Brown	Sandy Loam	Stones	Vegetation
29350763	TP 14	1.00	Light Brown	Sandy Loam	Stones	Vegetation
29350764	TP 15	1.00	Light Brown	Sandy Loam	Stones	Vegetation

These descriptions are only intended to act as a cross check if sample identities are questioned, and to provide a log of sample matrices with respect to MCERTS validation. They are not intended as full geological descriptions.

We are accredited to MCERTS for sand, clay and loam/topsoil, or any of these materials - whether these are derived from naturally occurring soil profiles, or from fill/made ground, as long as these materials constitute the major part of the sample.

Other coarse granular materials such as concrete, gravel and brick are not accredited if they comprise the major part of the sample.



CERTIFICATE OF ANALYSIS

Validated

SDG: 240212-38

Report Number: 720369

Superseded Report:

Client Ref.: 6234

Location: Old Connaught Avenue, Bray

Table of Results - Appendix

Method No	Description
PM024	Soil preparation including homogenisation, moisture, screens of soils for Asbestos Containing Material
TM132	ELTRA CS800 Operators Guide

NA = not applicable.
Chemical testing (unless subcontracted) performed at ALS Laboratories (UK) Limited Hawarden (Method codes TM).



CERTIFICATE OF ANALYSIS

Validated

SDG: 240212-38
Client Ref.: 6234

Report Number: 720369
Location: Old Connaught Avenue, Bray

Superseded Report:

Test Completion Dates

Lab Sample No(s)	29350755	29350756	29350757	29350758	29350759	29350760	29350761	29350762	29350763	29350764
Customer Sample Ref.	TP 01	TP 03	TP 05	TP 07	TP 08	TP 09	TP 10	TP 12	TP 14	TP 15
AGS Ref.										
Depth	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Type	Soil/Solid (S)	Soil/Solid (S)	Soil/Solid (S)	Soil/Solid (S)	Soil/Solid (S)	Soil/Solid (S)	Soil/Solid (S)	Soil/Solid (S)	Soil/Solid (S)	Soil/Solid (S)
Sample description	13-Feb-2024	13-Feb-2024	13-Feb-2024	13-Feb-2024	13-Feb-2024	13-Feb-2024	13-Feb-2024	13-Feb-2024	13-Feb-2024	13-Feb-2024
Total Organic Carbon	16-Feb-2024	16-Feb-2024					15-Feb-2024	15-Feb-2024	15-Feb-2024	15-Feb-2024
Total Sulphur	14-Feb-2024	14-Feb-2024	14-Feb-2024	14-Feb-2024	14-Feb-2024	14-Feb-2024	14-Feb-2024	14-Feb-2024	14-Feb-2024	14-Feb-2024



CERTIFICATE OF ANALYSIS

SDG: 240212-38
Client Ref: 6234

Report Number: 720369

Superseded Report:
Location: Old Connaught Avenue, Bray

Appendix

1. Results are expressed on a dry weight basis (dried at 35°C) for all soil analyses except for the following: NRA and CEN Leach tests, flash point LOI, pH, ammonium as NH₄ by the BRE method, VOC TICs and SVOC TICs.

2. If sufficient sample is received a sub sample will be retained free of charge for 15 days after analysis is completed (e-mailed) for all sample types unless the sample is destroyed on testing. The prepared soil sub sample that is analysed for asbestos will be retained for a period of 6 months after the analysis date. All bulk samples will be retained for a period of 6 months after the analysis date. All samples received and not scheduled will be disposed of 15 days after the date of receipt unless we are instructed to the contrary. Once the initial period has expired, a storage charge will be applied for each month or part thereof until the client cancels the request for sample storage. ALS reserve the right to charge for samples received and stored but not analysed.

3. With respect to turnaround, we will always endeavour to meet client requirements wherever possible, but turnaround times cannot be absolutely guaranteed due to so many variables beyond our control.

4. We take responsibility for any test performed by sub-contractors (marked with an asterisk). We endeavour to use UKAS/MCERTS Accredited Laboratories, who either complete a quality questionnaire or are audited by ourselves. For some determinands there are no UKAS/MCERTS Accredited Laboratories, in this instance a laboratory with a known track record will be utilised.

5. If no separate volatile sample is supplied by the client, or if a headspace or sediment is present in the volatile sample, the integrity of the data may be compromised. This will be flagged up as an invalid VOC on the test schedule and the result marked as deviating on the test certificate.

6. NDP - No determination possible due to insufficient/unsuitable sample.

7. Results relate only to the items tested.

8. LoDs (Limit of Detection) for wet tests reported on a dry weight basis are not corrected for moisture content.

9. **Surrogate recoveries** - Surrogates are added to your sample to monitor recovery of the test requested. A % recovery is reported, results are not corrected for the recovery measured. Typical recoveries for organics tests are 70-130%. Recoveries in soils are affected by organic rich or clay rich matrices. Waters can be affected by remediation fluids or high amounts of sediment. Test results are only ever reported if all of the associated quality checks pass; it is assumed that all recoveries outside of the values above are due to matrix affect.

10. Stones/debris are not routinely removed. We always endeavour to take a representative sub sample from the received sample.

11. In certain circumstances the method detection limit may be elevated due to the sample being outside the calibration range. Other factors that may contribute to this include possible interferences. In both cases the sample would be diluted which would cause the method detection limit to be raised.

12. For dried and crushed preparations of soils volatile loss may occur e.g volatile mercury

13. For leachate preparations other than Zero Headspace Extraction (ZHE) volatile loss may occur.

14. For the BSEN 12457-3 two batch process to allow the cumulative release to be calculated, the volume of the leachate produced is measured and filtered for all tests. We therefore cannot carry out any unfiltered analysis. The tests affected include volatiles GCFID/GCMS and all subcontracted analysis.

15. Analysis and identification of specific compounds using GCFID is by retention time only, and we routinely calibrate and quantify for benzene, toluene, ethylbenzenes and xylenes (BTEX). For total volatiles in the C5-C12 range, the total area of the chromatogram is integrated and expressed as ug/kg or ug/l. Although this analysis is commonly used for the quantification of gasoline range organics (GRO), the system will also detect other compounds such as chlorinated solvents, and this may lead to a falsely high result with respect to hydrocarbons only. It is not possible to specifically identify these non-hydrocarbons, as standards are not routinely run for any other compounds, and for more definitive identification, volatiles by GCMS should be utilised.

16. We are accredited to MCERTS for sand, clay and loam/topsoil, or any of these materials - whether these are derived from naturally occurring soil profiles, or from fill/made ground, as long as these materials constitute the major part of the sample. Other coarse granular material such as concrete, gravel and brick are not accredited if they comprise the major part of the sample.

17 Data retention. All records, communications and reports pertaining to the analysis are archived for seven years from the date of issue of the final report.

General

18. **Tentatively Identified Compounds (TICs)** are non-target peaks in VOC and SVOC analysis. All non-target peaks detected with a concentration above the LoD are subjected to a mass spectral library search. Non-target peaks with a library search confidence of >75% are reported based on the best mass spectral library match. When a non-target peak with a library search confidence of <75% is detected it is reported as "mixed hydrocarbons". Non-target compounds identified from the scan data are semi-quantified relative to one of the deuterated internal standards, under the same chromatographic conditions as the target compounds. This result is reported as a semi-quantitative value and reported as Tentatively Identified Compounds (TICs). TICs are outside the scope of UKAS accreditation and are not moisture corrected.

19. Sample Deviations

If a sample is classed as deviated then the associated results may be compromised.

1	Container with Headspace provided for volatiles analysis
2	Incorrect container received
3	Deviation from method
4	Matrix interference
♦	Sample holding time exceeded in laboratory
@	Sample holding time exceeded due to late arrival of instructions or samples
§	Sampled on date not provided

20. Asbestos

When requested, the individual sub sample scheduled will be analysed in house for the presence of asbestos fibres and asbestos containing material by our documented in house method TM048 based on HSG 248 (2021), which is accredited to ISO17025. If a specific asbestos fibre type is not found this will be reported as "Not detected". If no asbestos fibre types are found all will be reported as "Not detected" and the sub sample analysed deemed to be clear of asbestos. If an asbestos fibre type is found it will be reported as detected (for each fibre type found). Testing can be carried out on asbestos positive samples, but, due to Health and Safety considerations, may be replaced by alternative tests or reported as No Determination Possible (NDP). The quantity of asbestos present is not determined unless specifically requested.

Identification of Asbestos in Bulk Materials & Soils

The results for identification of asbestos in bulk materials and soils are obtained from supplied bulk materials and soils which have been examined to determine the presence of asbestos fibres using ALS (Hawarden) in-house method of transmitted/polarised light microscopy and central stop dispersion staining, based on HSG 248 (2021).

The results for identification of asbestos in soils are obtained from a homogenised sub sample which has been examined to determine the presence of asbestos fibres using ALS (Hawarden) in-house method of transmitted/polarised light microscopy and central stop dispersion staining.

Asbestos Type	Common Name
Chrysotile	White Asbestos
Amosite	Brown Asbestos
Crocidolite	Blue Asbestos
Fibrous Actinolite	-
Fibrous Anthophyllite	-
Fibrous Tremolite	-

Visual Estimation Of Fibre Content

Estimation of fibre content is not permitted as part of our UKAS accredited test other than: - Trace - Where only one or two asbestos fibres were identified.

Respirable Fibres

Respirable fibres are defined as fibres of <3 µm diameter, longer than 5 µm and with aspect ratios of at least 3:1 that can be inhaled into the lower regions of the lung and are generally acknowledged to be most important predictor of hazard and risk for cancers of the lung.

Further guidance on typical asbestos fibre content of manufactured products can be found in HSG 264.

The identification of asbestos containing materials and soils falls within our schedule of tests for which we hold UKAS accreditation, however opinions, interpretations and all other information contained in the report are outside the scope of UKAS accreditation.

Appendix 8

Waste Classification Report



Waste Classification Report

HazWasteOnline™ classifies waste as either **hazardous** or **non-hazardous** based on its chemical composition, related legislation and the rules and data defined in the current UK or EU technical guidance (Appendix C) (note that HP 9 Infectious is not assessed). It is the responsibility of the classifier named below to:

- understand the origin of the waste
- select the correct List of Waste code(s)
- confirm that the list of determinands, results and sampling plan are fit for purpose
- select and justify the chosen metal species (Appendix B)
- correctly apply moisture correction and other available corrections
- add the meta data for their user-defined substances (Appendix A)
- check that the classification engine is suitable with respect to the national destination of the waste (Appendix C)



U3PQP-CNE09-5M8P4

To aid the reviewer, the laboratory results, assumptions and justifications managed by the classifier are highlighted in pale yellow.

Job name

6234

Description/Comments

Client: Dun Laoghaire Rathdown County Council

Project

Old Connaught Avenue

Site

Bray, Co. Dublin

Classified by

Name: **Stephen Letch**
Date: **22 Apr 2024 09:29 GMT**
Telephone: **00353 86817 9449**

Company: **Site Investigations Ltd**
The Grange
12th Lock Road
Lucan
K78 F598

HazWasteOnline™ provides a two day, hazardous waste classification course that covers the use of the software and both basic and advanced waste classification techniques. Certification has to be renewed every 3 years.

HazWasteOnline™ Certification:

CERTIFIED

Course
Hazardous Waste Classification
Most recent 3 year Refresher

Date
09 Oct 2019
04 Oct 2022

Next 3 year Refresher due by Oct 2025

Purpose of classification

2 - Material Characterisation

Address of the waste

Old Connaught Avenue, Bray, Co. Dublin

Post Code N/A

SIC for the process giving rise to the waste

43130 Test drilling and boring

Description of industry/producer giving rise to the waste

Site Investigation

Description of the specific process, sub-process and/or activity that created the waste

Soils recovered for environmental testing

Description of the waste

Natural soils



Job summary

#	Sample name	Depth [m]	Classification Result	Hazard properties	WAC Results			Page
					Inert	SNRHW	Hazardous	
1	BH01-1.00	1.00	Non Hazardous		Pass	Pass	N/A	3
2	BH02-1.00	1.00	Non Hazardous		Pass	Pass	N/A	7
3	BH03-1.00	1.00	Non Hazardous		Pass	Pass	N/A	11
4	BH04-1.00	1.00	Non Hazardous		Pass	Pass	N/A	15
5	BH05-1.00	1.00	Non Hazardous		Pass	Pass	N/A	19
6	BH06-1.00	1.00	Non Hazardous		Pass	Pass	N/A	23
7	TP02-1.00	1.00	Non Hazardous		Pass	Pass	N/A	27
8	TP05-1.00	1.00	Non Hazardous		Pass	Pass	N/A	31
9	TP06-1.00	1.00	Non Hazardous		Pass	Pass	N/A	35
10	TP08-1.00	1.00	Non Hazardous		Pass	Pass	N/A	39
11	TP11-1.00	1.00	Non Hazardous		Pass	Pass	N/A	43
12	TP13-1.00	1.00	Non Hazardous		Pass	Pass	N/A	47
13	TP14-1.00	1.00	Non Hazardous		Pass	Pass	N/A	51
14	TP15-1.00	1.00	Non Hazardous		Pass	Pass	N/A	55

Related documents

#	Name	Description
1	240325-40.hwol	ALS Hawarden .hwol file used to populate the Job
2	Rilta Suite NEW	waste stream template used to create this Job

WAC results

WAC Settings: samples in this Job constitute a single population.

WAC limits used to evaluate the samples in this Job: "UK"

The WAC used in this report are the WAC defined for the inert, stable non-reactive hazardous and hazardous classes of landfill in the UK. You should check the actual acceptance criteria when the disposal site is identified as they may differ from the generic WAC used in this report.

Report

Created by: Stephen Letch

Created date: 22 Apr 2024 09:29 GMT

Appendices	Page
Appendix A: Classifier defined and non EU CLP determinands	59
Appendix B: Rationale for selection of metal species	60
Appendix C: Version	61



Classification of sample: BH01-1.00

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

Sample details

Sample name:	LoW Code:
BH01-1.00	Chapter:
Sample Depth:	17: Construction and Demolition Wastes (including excavated soil from contaminated sites)
1.00 m	Entry:
Moisture content:	17 05 04 (Soil and stones other than those mentioned in 17 05 03)
17%	
(wet weight correction)	

Hazard properties

None identified

Determinands

Moisture content: 17% Wet Weight Moisture Correction applied (MC)

#	Determinand			CLP Note	User entered data	Conv. Factor	Compound conc.		Classification value	MC Applied	Conc. Not Used
	EU CLP index number	EC Number	CAS Number								
1	TPH (C6 to C40) petroleum group				<10 mg/kg		<10	mg/kg	<0.001 %		<LOD
			TPH								
2	confirm TPH has NOT arisen from diesel or petrol				☑						
3	antimony { antimony trioxide }				<0.6 mg/kg	1.197	<0.718	mg/kg	<0.0000718 %		<LOD
	051-005-00-X	215-175-0	1309-64-4								
4	arsenic { arsenic pentoxide }				29.4 mg/kg	1.534	37.43	mg/kg	0.00374 %	✓	
	033-004-00-6	215-116-9	1303-28-2								
5	barium { barium sulphide }				64.7 mg/kg	1.233	66.24	mg/kg	0.00662 %	✓	
	016-002-00-X	244-214-4	21109-95-5								
6	cadmium { cadmium sulfate }				1.76 mg/kg	1.855	2.709	mg/kg	0.000271 %	✓	
	048-009-00-9	233-331-6	10124-36-4								
7	copper { dicopper oxide; copper (I) oxide }				19.4 mg/kg	1.126	18.129	mg/kg	0.00181 %	✓	
	029-002-00-X	215-270-7	1317-39-1								
8	lead { lead compounds with the exception of those specified elsewhere in this Annex (worst case) }			1	23.4 mg/kg		19.422	mg/kg	0.00194 %	✓	
	082-001-00-6										
9	mercury { mercury dichloride }				<0.1 mg/kg	1.353	<0.135	mg/kg	<0.0000135 %		<LOD
	080-010-00-X	231-299-8	7487-94-7								
10	molybdenum { molybdenum(VI) oxide }				0.544 mg/kg	1.5	0.677	mg/kg	0.0000677 %	✓	
	042-001-00-9	215-204-7	1313-27-5								
11	nickel { nickel sulfate }				32.1 mg/kg	2.637	70.249	mg/kg	0.00702 %	✓	
	028-009-00-5	232-104-9	7786-81-4								
12	selenium { selenium compounds with the exception of cadmium sulphoselenide and those specified elsewhere in this Annex }				2.03 mg/kg	1.405	2.367	mg/kg	0.000237 %	✓	
	034-002-00-8										
13	zinc { zinc sulphate }				78.8 mg/kg	2.469	161.502	mg/kg	0.0162 %	✓	
	030-006-00-9	231-793-3 [1] 231-793-3 [2]	7446-19-7 [1] 7733-02-0 [2]								
14	chromium in chromium(III) compounds { chromium(III) oxide (worst case) }				18.3 mg/kg	1.462	22.2	mg/kg	0.00222 %	✓	
		215-160-9	1308-38-9								



#	Determinand			CLP Note	User entered data	Conv. Factor	Compound conc.	Classification value	MC Applied	Conc. Not Used
	EU CLP index number	EC Number	CAS Number							
15	chromium in chromium(VI) compounds { chromium(VI) oxide }	024-001-00-0	215-607-8	1333-82-0	<0.6 mg/kg	1.923	<1.154 mg/kg	<0.000115 %		<LOD
16	naphthalene	601-052-00-2	202-049-5	91-20-3	<0.009 mg/kg		<0.009 mg/kg	<0.0000009 %		<LOD
17	acenaphthylene	205-917-1	208-96-8		<0.012 mg/kg		<0.012 mg/kg	<0.0000012 %		<LOD
18	acenaphthene	201-469-6	83-32-9		0.053 mg/kg		0.044 mg/kg	0.0000044 %	✓	
19	fluorene	201-695-5	86-73-7		0.128 mg/kg		0.106 mg/kg	0.0000106 %	✓	
20	phenanthrene	201-581-5	85-01-8		<0.015 mg/kg		<0.015 mg/kg	<0.0000015 %		<LOD
21	anthracene	204-371-1	120-12-7		<0.016 mg/kg		<0.016 mg/kg	<0.0000016 %		<LOD
22	fluoranthene	205-912-4	206-44-0		<0.017 mg/kg		<0.017 mg/kg	<0.0000017 %		<LOD
23	pyrene	204-927-3	129-00-0		<0.015 mg/kg		<0.015 mg/kg	<0.0000015 %		<LOD
24	benzo[a]anthracene	601-033-00-9	200-280-6	56-55-3	<0.014 mg/kg		<0.014 mg/kg	<0.0000014 %		<LOD
25	chrysene	601-048-00-0	205-923-4	218-01-9	<0.01 mg/kg		<0.01 mg/kg	<0.000001 %		<LOD
26	benzo[b]fluoranthene	601-034-00-4	205-911-9	205-99-2	<0.015 mg/kg		<0.015 mg/kg	<0.0000015 %		<LOD
27	benzo[k]fluoranthene	601-036-00-5	205-916-6	207-08-9	<0.014 mg/kg		<0.014 mg/kg	<0.0000014 %		<LOD
28	benzo[a]pyrene; benzo[def]chrysene	601-032-00-3	200-028-5	50-32-8	<0.015 mg/kg		<0.015 mg/kg	<0.0000015 %		<LOD
29	indeno[123-cd]pyrene	205-893-2	193-39-5		<0.018 mg/kg		<0.018 mg/kg	<0.0000018 %		<LOD
30	dibenz[a,h]anthracene	601-041-00-2	200-181-8	53-70-3	<0.023 mg/kg		<0.023 mg/kg	<0.0000023 %		<LOD
31	benzo[ghi]perylene	205-883-8	191-24-2		<0.024 mg/kg		<0.024 mg/kg	<0.0000024 %		<LOD
32	polychlorobiphenyls; PCB	602-039-00-4	215-648-1	1336-36-3	<0.021 mg/kg		<0.021 mg/kg	<0.0000021 %		<LOD
33	tert-butyl methyl ether; MTBE; 2-methoxy-2-methylpropane	603-181-00-X	216-653-1	1634-04-4	<0.0005 mg/kg		<0.0005 mg/kg	<0.00000005 %		<LOD
34	benzene	601-020-00-8	200-753-7	71-43-2	<0.001 mg/kg		<0.001 mg/kg	<0.0000001 %		<LOD
35	toluene	601-021-00-3	203-625-9	108-88-3	<0.001 mg/kg		<0.001 mg/kg	<0.0000001 %		<LOD
36	ethylbenzene	601-023-00-4	202-849-4	100-41-4	<0.001 mg/kg		<0.001 mg/kg	<0.0000001 %		<LOD
37	coronene	205-881-7	191-07-1		<0.2 mg/kg		<0.2 mg/kg	<0.00002 %		<LOD
38	pH		PH		8.38 pH		8.38 pH	8.38 pH		
39	o-xylene; [1] p-xylene; [2] m-xylene; [3] xylene [4]	601-022-00-9	202-422-2 [1] 203-396-5 [2] 203-576-3 [3] 215-535-7 [4]	95-47-6 [1] 106-42-3 [2] 108-38-3 [3] 1330-20-7 [4]	<0.004 mg/kg		<0.004 mg/kg	<0.0000004 %		<LOD
Total:								0.0414 %		



Key

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



WAC results for sample: BH01-1.00

WAC Settings: samples in this Job constitute a single population.

WAC limits used to evaluate this sample: "UK"

The WAC used in this report are the WAC defined for the inert, stable non-reactive hazardous and hazardous classes of landfill in the UK. You should check the actual acceptance criteria when the disposal site is identified as they may differ from the generic WAC used in this report.

The sample **PASSES** the Inert (Inert waste landfill) criteria.

The sample **PASSES** the SNRHW (Stable non-reactive hazardous waste in non-hazardous landfill) criteria.

WAC Determinands

Solid Waste Analysis				Landfill Waste Acceptance Criteria Limits		
#	Determinand		User entered data	Inert waste landfill	Stable non-reactive hazardous waste in non-hazardous landfill	Hazardous waste landfill
1	TOC (total organic carbon)	%	0.523	3	5	6
2	LOI (loss on ignition)	%	2.64	-	-	10
3	BTEX (benzene, toluene, ethylbenzene and xylenes)	mg/kg	<0.007	6	-	-
4	PCBs (polychlorinated biphenyls, 7 congeners)	mg/kg	<0.021	1	-	-
5	Mineral oil (C10 to C40)	mg/kg	<5	500	-	-
6	PAHs (polycyclic aromatic hydrocarbons)	mg/kg	<10	100	-	-
7	pH	pH	8.38	-	>6	-
8	ANC (acid neutralisation capacity)	mol/kg		-	-	-
Eluate Analysis 10:1						
9	arsenic	mg/kg	0.0054	0.5	2	25
10	barium	mg/kg	0.0193	20	100	300
11	cadmium	mg/kg	<0.0008	0.04	1	5
12	chromium	mg/kg	<0.01	0.5	10	70
13	copper	mg/kg	0.0113	2	50	100
14	mercury	mg/kg	<0.0001	0.01	0.2	2
15	molybdenum	mg/kg	<0.03	0.5	10	30
16	nickel	mg/kg	0.0092	0.4	10	40
17	lead	mg/kg	<0.002	0.5	10	50
18	antimony	mg/kg	<0.01	0.06	0.7	5
19	selenium	mg/kg	<0.01	0.1	0.5	7
20	zinc	mg/kg	<0.01	4	50	200
21	chloride	mg/kg	<20	800	15,000	25,000
22	fluoride	mg/kg	<5	10	150	500
23	sulphate	mg/kg	<20	1,000	20,000	50,000
24	phenol index	mg/kg	<0.16	1	-	-
25	DOC (dissolved organic carbon)	mg/kg	61.3	500	800	1,000
26	TDS (total dissolved solids)	mg/kg	750	4,000	60,000	100,000

Key

	User supplied data
	Not applicable



Classification of sample: BH02-1.00

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

Sample details

Sample name:	LoW Code:
BH02-1.00	Chapter:
Sample Depth:	17: Construction and Demolition Wastes (including excavated soil from contaminated sites)
1.00 m	Entry:
Moisture content:	17 05 04 (Soil and stones other than those mentioned in 17 05 03)
19%	
(wet weight correction)	

Hazard properties

None identified

Determinands

Moisture content: 19% Wet Weight Moisture Correction applied (MC)

#	Determinand			CLP Note	User entered data	Conv. Factor	Compound conc.	Classification value	MC Applied	Conc. Not Used
	EU CLP index number	EC Number	CAS Number							
1	TPH (C6 to C40) petroleum group				18.1 mg/kg		14.661 mg/kg	0.00147 %	✓	
			TPH							
2	confirm TPH has NOT arisen from diesel or petrol				☑					
3	antimony { antimony trioxide }				<0.6 mg/kg	1.197	<0.718 mg/kg	<0.0000718 %		<LOD
	051-005-00-X	215-175-0	1309-64-4							
4	arsenic { arsenic pentoxide }				27.4 mg/kg	1.534	34.043 mg/kg	0.0034 %	✓	
	033-004-00-6	215-116-9	1303-28-2							
5	barium { barium sulphide }				61.4 mg/kg	1.233	61.347 mg/kg	0.00613 %	✓	
	016-002-00-X	244-214-4	21109-95-5							
6	cadmium { cadmium sulfate }				1.61 mg/kg	1.855	2.419 mg/kg	0.000242 %	✓	
	048-009-00-9	233-331-6	10124-36-4							
7	copper { dicopper oxide; copper (I) oxide }				21.5 mg/kg	1.126	19.607 mg/kg	0.00196 %	✓	
	029-002-00-X	215-270-7	1317-39-1							
8	lead { lead compounds with the exception of those specified elsewhere in this Annex (worst case) }			1	26.8 mg/kg		21.708 mg/kg	0.00217 %	✓	
	082-001-00-6									
9	mercury { mercury dichloride }				<0.1 mg/kg	1.353	<0.135 mg/kg	<0.0000135 %		<LOD
	080-010-00-X	231-299-8	7487-94-7							
10	molybdenum { molybdenum(VI) oxide }				0.515 mg/kg	1.5	0.626 mg/kg	0.0000626 %	✓	
	042-001-00-9	215-204-7	1313-27-5							
11	nickel { nickel sulfate }				30.4 mg/kg	2.637	64.926 mg/kg	0.00649 %	✓	
	028-009-00-5	232-104-9	7786-81-4							
12	selenium { selenium compounds with the exception of cadmium sulphoselenide and those specified elsewhere in this Annex }				2 mg/kg	1.405	2.276 mg/kg	0.000228 %	✓	
	034-002-00-8									
13	zinc { zinc sulphate }				86.1 mg/kg	2.469	172.211 mg/kg	0.0172 %	✓	
	030-006-00-9	231-793-3 [1] 231-793-3 [2]	7446-19-7 [1] 7733-02-0 [2]							
14	chromium in chromium(III) compounds { chromium(III) oxide (worst case) }				17.9 mg/kg	1.462	21.191 mg/kg	0.00212 %	✓	
		215-160-9	1308-38-9							



#	Determinand			CLP Note	User entered data	Conv. Factor	Compound conc.	Classification value	MC Applied	Conc. Not Used
	EU CLP index number	EC Number	CAS Number							
15	chromium in chromium(VI) compounds { chromium(VI) oxide }	024-001-00-0	215-607-8	1333-82-0	<0.6 mg/kg	1.923	<1.154 mg/kg	<0.000115 %		<LOD
16	naphthalene	601-052-00-2	202-049-5	91-20-3	<0.009 mg/kg		<0.009 mg/kg	<0.0000009 %		<LOD
17	acenaphthylene	205-917-1	208-96-8		<0.012 mg/kg		<0.012 mg/kg	<0.0000012 %		<LOD
18	acenaphthene	201-469-6	83-32-9		<0.008 mg/kg		<0.008 mg/kg	<0.0000008 %		<LOD
19	fluorene	201-695-5	86-73-7		<0.01 mg/kg		<0.01 mg/kg	<0.000001 %		<LOD
20	phenanthrene	201-581-5	85-01-8		<0.015 mg/kg		<0.015 mg/kg	<0.0000015 %		<LOD
21	anthracene	204-371-1	120-12-7		<0.016 mg/kg		<0.016 mg/kg	<0.0000016 %		<LOD
22	fluoranthene	205-912-4	206-44-0		<0.017 mg/kg		<0.017 mg/kg	<0.0000017 %		<LOD
23	pyrene	204-927-3	129-00-0		<0.015 mg/kg		<0.015 mg/kg	<0.0000015 %		<LOD
24	benzo[a]anthracene	601-033-00-9	200-280-6	56-55-3	<0.014 mg/kg		<0.014 mg/kg	<0.0000014 %		<LOD
25	chrysene	601-048-00-0	205-923-4	218-01-9	<0.01 mg/kg		<0.01 mg/kg	<0.000001 %		<LOD
26	benzo[b]fluoranthene	601-034-00-4	205-911-9	205-99-2	<0.015 mg/kg		<0.015 mg/kg	<0.0000015 %		<LOD
27	benzo[k]fluoranthene	601-036-00-5	205-916-6	207-08-9	<0.014 mg/kg		<0.014 mg/kg	<0.0000014 %		<LOD
28	benzo[a]pyrene; benzo[def]chrysene	601-032-00-3	200-028-5	50-32-8	<0.015 mg/kg		<0.015 mg/kg	<0.0000015 %		<LOD
29	indeno[123-cd]pyrene	205-893-2	193-39-5		<0.018 mg/kg		<0.018 mg/kg	<0.0000018 %		<LOD
30	dibenz[a,h]anthracene	601-041-00-2	200-181-8	53-70-3	<0.023 mg/kg		<0.023 mg/kg	<0.0000023 %		<LOD
31	benzo[ghi]perylene	205-883-8	191-24-2		<0.024 mg/kg		<0.024 mg/kg	<0.0000024 %		<LOD
32	polychlorobiphenyls; PCB	602-039-00-4	215-648-1	1336-36-3	<0.021 mg/kg		<0.021 mg/kg	<0.0000021 %		<LOD
33	tert-butyl methyl ether; MTBE; 2-methoxy-2-methylpropane	603-181-00-X	216-653-1	1634-04-4	<0.0005 mg/kg		<0.0005 mg/kg	<0.00000005 %		<LOD
34	benzene	601-020-00-8	200-753-7	71-43-2	<0.001 mg/kg		<0.001 mg/kg	<0.0000001 %		<LOD
35	toluene	601-021-00-3	203-625-9	108-88-3	0.0017 mg/kg		0.0014 mg/kg	0.00000014 %	✓	
36	ethylbenzene	601-023-00-4	202-849-4	100-41-4	<0.001 mg/kg		<0.001 mg/kg	<0.0000001 %		<LOD
37	coronene	205-881-7	191-07-1		<0.2 mg/kg		<0.2 mg/kg	<0.00002 %		<LOD
38	pH		PH		8.26 pH		8.26 pH	8.26 pH		
39	o-xylene; [1] p-xylene; [2] m-xylene; [3] xylene [4]	601-022-00-9	202-422-2 [1] 203-396-5 [2] 203-576-3 [3] 215-535-7 [4]	95-47-6 [1] 106-42-3 [2] 108-38-3 [3] 1330-20-7 [4]	<0.004 mg/kg		<0.004 mg/kg	<0.0000004 %		<LOD
Total:								0.0417 %		



Key

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

Supplementary Hazardous Property Information

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

Force this Hazardous property to non hazardous because HP 3 can be discounted as this is a solid waste without a free draining liquid phase.

Hazard Statements hit:

Flam. Liq. 2; H225 "Highly flammable liquid and vapour."

Because of determinand:

toluene: (conc.: 1.4e-07%)

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

Because of determinand:

TPH (C6 to C40) petroleum group: (conc.: 0.00147%)



WAC results for sample: BH02-1.00

WAC Settings: samples in this Job constitute a single population.

WAC limits used to evaluate this sample: "UK"

The WAC used in this report are the WAC defined for the inert, stable non-reactive hazardous and hazardous classes of landfill in the UK. You should check the actual acceptance criteria when the disposal site is identified as they may differ from the generic WAC used in this report.

The sample **PASSES** the Inert (Inert waste landfill) criteria.

The sample **PASSES** the SNRHW (Stable non-reactive hazardous waste in non-hazardous landfill) criteria.

WAC Determinands

Solid Waste Analysis				Landfill Waste Acceptance Criteria Limits		
#	Determinand		User entered data	Inert waste landfill	Stable non-reactive hazardous waste in non-hazardous landfill	Hazardous waste landfill
1	TOC (total organic carbon)	%	0.903	3	5	6
2	LOI (loss on ignition)	%	3.34	-	-	10
3	BTEX (benzene, toluene, ethylbenzene and xylenes)	mg/kg	0.0017	6	-	-
4	PCBs (polychlorinated biphenyls, 7 congeners)	mg/kg	<0.021	1	-	-
5	Mineral oil (C10 to C40)	mg/kg	<5	500	-	-
6	PAHs (polycyclic aromatic hydrocarbons)	mg/kg	<10	100	-	-
7	pH	pH	8.26	-	>6	-
8	ANC (acid neutralisation capacity)	mol/kg		-	-	-
Eluate Analysis 10:1						
9	arsenic	mg/kg	0.0057	0.5	2	25
10	barium	mg/kg	0.0272	20	100	300
11	cadmium	mg/kg	<0.0008	0.04	1	5
12	chromium	mg/kg	<0.01	0.5	10	70
13	copper	mg/kg	0.0224	2	50	100
14	mercury	mg/kg	<0.0001	0.01	0.2	2
15	molybdenum	mg/kg	<0.03	0.5	10	30
16	nickel	mg/kg	0.0117	0.4	10	40
17	lead	mg/kg	<0.002	0.5	10	50
18	antimony	mg/kg	<0.01	0.06	0.7	5
19	selenium	mg/kg	<0.01	0.1	0.5	7
20	zinc	mg/kg	0.0109	4	50	200
21	chloride	mg/kg	<20	800	15,000	25,000
22	fluoride	mg/kg	<5	10	150	500
23	sulphate	mg/kg	<20	1,000	20,000	50,000
24	phenol index	mg/kg	<0.16	1	-	-
25	DOC (dissolved organic carbon)	mg/kg	49	500	800	1,000
26	TDS (total dissolved solids)	mg/kg	921	4,000	60,000	100,000

Key

	User supplied data
	Not applicable



Classification of sample: BH03-1.00

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

Sample details

Sample name:	LoW Code:
BH03-1.00	Chapter:
Sample Depth:	17: Construction and Demolition Wastes (including excavated soil from contaminated sites)
1.00 m	Entry:
Moisture content:	17 05 04 (Soil and stones other than those mentioned in 17 05 03)
22%	
(wet weight correction)	

Hazard properties

None identified

Determinands

Moisture content: 22% Wet Weight Moisture Correction applied (MC)

#	Determinand			CLP Note	User entered data	Conv. Factor	Compound conc.		Classification value	MC Applied	Conc. Not Used
	EU CLP index number	EC Number	CAS Number								
1	TPH (C6 to C40) petroleum group				<10 mg/kg		<10	mg/kg	<0.001 %		<LOD
			TPH								
2	confirm TPH has NOT arisen from diesel or petrol				☒						
3	antimony { antimony trioxide }				<0.6 mg/kg	1.197	<0.718	mg/kg	<0.0000718 %		<LOD
	051-005-00-X	215-175-0	1309-64-4								
4	arsenic { arsenic pentoxide }				15.7 mg/kg	1.534	18.784	mg/kg	0.00188 %	✓	
	033-004-00-6	215-116-9	1303-28-2								
5	barium { barium sulphide }				60.2 mg/kg	1.233	57.92	mg/kg	0.00579 %	✓	
	016-002-00-X	244-214-4	21109-95-5								
6	cadmium { cadmium sulfate }				1.16 mg/kg	1.855	1.678	mg/kg	0.000168 %	✓	
	048-009-00-9	233-331-6	10124-36-4								
7	copper { dicopper oxide; copper (I) oxide }				15.4 mg/kg	1.126	13.524	mg/kg	0.00135 %	✓	
	029-002-00-X	215-270-7	1317-39-1								
8	lead { lead compounds with the exception of those specified elsewhere in this Annex (worst case) }			1	24.2 mg/kg		18.876	mg/kg	0.00189 %	✓	
	082-001-00-6										
9	mercury { mercury dichloride }				<0.1 mg/kg	1.353	<0.135	mg/kg	<0.0000135 %		<LOD
	080-010-00-X	231-299-8	7487-94-7								
10	molybdenum { molybdenum(VI) oxide }				0.472 mg/kg	1.5	0.552	mg/kg	0.0000552 %	✓	
	042-001-00-9	215-204-7	1313-27-5								
11	nickel { nickel sulfate }				25.9 mg/kg	2.637	53.266	mg/kg	0.00533 %	✓	
	028-009-00-5	232-104-9	7786-81-4								
12	selenium { selenium compounds with the exception of cadmium sulphoselenide and those specified elsewhere in this Annex }				1.3 mg/kg	1.405	1.425	mg/kg	0.000142 %	✓	
	034-002-00-8										
13	zinc { zinc sulphate }				82.1 mg/kg	2.469	158.129	mg/kg	0.0158 %	✓	
	030-006-00-9	231-793-3 [1] 231-793-3 [2]	7446-19-7 [1] 7733-02-0 [2]								
14	chromium in chromium(III) compounds { chromium(III) oxide (worst case) }				24.5 mg/kg	1.462	27.93	mg/kg	0.00279 %	✓	
		215-160-9	1308-38-9								



#	Determinand			CLP Note	User entered data	Conv. Factor	Compound conc.	Classification value	MC Applied	Conc. Not Used
	EU CLP index number	EC Number	CAS Number							
15	chromium in chromium(VI) compounds { chromium(VI) oxide }	024-001-00-0	215-607-8	1333-82-0	<0.6 mg/kg	1.923	<1.154 mg/kg	<0.000115 %		<LOD
16	naphthalene	601-052-00-2	202-049-5	91-20-3	<0.009 mg/kg		<0.009 mg/kg	<0.0000009 %		<LOD
17	acenaphthylene	205-917-1	208-96-8		<0.012 mg/kg		<0.012 mg/kg	<0.0000012 %		<LOD
18	acenaphthene	201-469-6	83-32-9		0.0554 mg/kg		0.0432 mg/kg	0.00000432 %	✓	
19	fluorene	201-695-5	86-73-7		0.0929 mg/kg		0.0725 mg/kg	0.00000725 %	✓	
20	phenanthrene	201-581-5	85-01-8		<0.015 mg/kg		<0.015 mg/kg	<0.0000015 %		<LOD
21	anthracene	204-371-1	120-12-7		<0.016 mg/kg		<0.016 mg/kg	<0.0000016 %		<LOD
22	fluoranthene	205-912-4	206-44-0		<0.017 mg/kg		<0.017 mg/kg	<0.0000017 %		<LOD
23	pyrene	204-927-3	129-00-0		<0.015 mg/kg		<0.015 mg/kg	<0.0000015 %		<LOD
24	benzo[a]anthracene	601-033-00-9	200-280-6	56-55-3	<0.014 mg/kg		<0.014 mg/kg	<0.0000014 %		<LOD
25	chrysene	601-048-00-0	205-923-4	218-01-9	<0.01 mg/kg		<0.01 mg/kg	<0.000001 %		<LOD
26	benzo[b]fluoranthene	601-034-00-4	205-911-9	205-99-2	<0.015 mg/kg		<0.015 mg/kg	<0.0000015 %		<LOD
27	benzo[k]fluoranthene	601-036-00-5	205-916-6	207-08-9	<0.014 mg/kg		<0.014 mg/kg	<0.0000014 %		<LOD
28	benzo[a]pyrene; benzo[def]chrysene	601-032-00-3	200-028-5	50-32-8	<0.015 mg/kg		<0.015 mg/kg	<0.0000015 %		<LOD
29	indeno[123-cd]pyrene	205-893-2	193-39-5		<0.018 mg/kg		<0.018 mg/kg	<0.0000018 %		<LOD
30	dibenz[a,h]anthracene	601-041-00-2	200-181-8	53-70-3	<0.023 mg/kg		<0.023 mg/kg	<0.0000023 %		<LOD
31	benzo[ghi]perylene	205-883-8	191-24-2		<0.024 mg/kg		<0.024 mg/kg	<0.0000024 %		<LOD
32	polychlorobiphenyls; PCB	602-039-00-4	215-648-1	1336-36-3	<0.021 mg/kg		<0.021 mg/kg	<0.0000021 %		<LOD
33	tert-butyl methyl ether; MTBE; 2-methoxy-2-methylpropane	603-181-00-X	216-653-1	1634-04-4	<0.0005 mg/kg		<0.0005 mg/kg	<0.00000005 %		<LOD
34	benzene	601-020-00-8	200-753-7	71-43-2	<0.001 mg/kg		<0.001 mg/kg	<0.0000001 %		<LOD
35	toluene	601-021-00-3	203-625-9	108-88-3	<0.001 mg/kg		<0.001 mg/kg	<0.0000001 %		<LOD
36	ethylbenzene	601-023-00-4	202-849-4	100-41-4	<0.001 mg/kg		<0.001 mg/kg	<0.0000001 %		<LOD
37	coronene	205-881-7	191-07-1		<0.2 mg/kg		<0.2 mg/kg	<0.00002 %		<LOD
38	pH		PH		7.22 pH		7.22 pH	7.22 pH		
39	o-xylene; [1] p-xylene; [2] m-xylene; [3] xylene [4]	601-022-00-9	202-422-2 [1] 203-396-5 [2] 203-576-3 [3] 215-535-7 [4]	95-47-6 [1] 106-42-3 [2] 108-38-3 [3] 1330-20-7 [4]	<0.004 mg/kg		<0.004 mg/kg	<0.0000004 %		<LOD
Total:								0.0365 %		



Key

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



WAC results for sample: BH03-1.00

WAC Settings: samples in this Job constitute a single population.

WAC limits used to evaluate this sample: "UK"

The WAC used in this report are the WAC defined for the inert, stable non-reactive hazardous and hazardous classes of landfill in the UK. You should check the actual acceptance criteria when the disposal site is identified as they may differ from the generic WAC used in this report.

The sample **PASSES** the Inert (Inert waste landfill) criteria.

The sample **PASSES** the SNRHW (Stable non-reactive hazardous waste in non-hazardous landfill) criteria.

WAC Determinands

Solid Waste Analysis				Landfill Waste Acceptance Criteria Limits		
#	Determinand		User entered data	Inert waste landfill	Stable non-reactive hazardous waste in non-hazardous landfill	Hazardous waste landfill
1	TOC (total organic carbon)	%	0.726	3	5	6
2	LOI (loss on ignition)	%	3.68	-	-	10
3	BTEX (benzene, toluene, ethylbenzene and xylenes)	mg/kg	<0.007	6	-	-
4	PCBs (polychlorinated biphenyls, 7 congeners)	mg/kg	<0.021	1	-	-
5	Mineral oil (C10 to C40)	mg/kg	<5	500	-	-
6	PAHs (polycyclic aromatic hydrocarbons)	mg/kg	<10	100	-	-
7	pH	pH	7.22	-	>6	-
8	ANC (acid neutralisation capacity)	mol/kg		-	-	-
Eluate Analysis 10:1						
9	arsenic	mg/kg	0.0061	0.5	2	25
10	barium	mg/kg	0.0084	20	100	300
11	cadmium	mg/kg	<0.0008	0.04	1	5
12	chromium	mg/kg	<0.01	0.5	10	70
13	copper	mg/kg	0.0143	2	50	100
14	mercury	mg/kg	<0.0001	0.01	0.2	2
15	molybdenum	mg/kg	<0.03	0.5	10	30
16	nickel	mg/kg	0.009	0.4	10	40
17	lead	mg/kg	0.004	0.5	10	50
18	antimony	mg/kg	<0.01	0.06	0.7	5
19	selenium	mg/kg	<0.01	0.1	0.5	7
20	zinc	mg/kg	0.0202	4	50	200
21	chloride	mg/kg	<20	800	15,000	25,000
22	fluoride	mg/kg	<5	10	150	500
23	sulphate	mg/kg	<20	1,000	20,000	50,000
24	phenol index	mg/kg	<0.16	1	-	-
25	DOC (dissolved organic carbon)	mg/kg	45.5	500	800	1,000
26	TDS (total dissolved solids)	mg/kg	225	4,000	60,000	100,000

Key

	User supplied data
	Not applicable



Classification of sample: BH04-1.00

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

Sample details

Sample name:	LoW Code:
BH04-1.00	Chapter:
Sample Depth:	17: Construction and Demolition Wastes (including excavated soil from contaminated sites)
1.00 m	Entry:
Moisture content:	17 05 04 (Soil and stones other than those mentioned in 17 05 03)
18%	
(wet weight correction)	

Hazard properties

None identified

Determinands

Moisture content: 18% Wet Weight Moisture Correction applied (MC)

#	Determinand			CLP Note	User entered data	Conv. Factor	Compound conc.		Classification value	MC Applied	Conc. Not Used
	EU CLP index number	EC Number	CAS Number								
1	TPH (C6 to C40) petroleum group				<10 mg/kg		<10	mg/kg	<0.001 %		<LOD
			TPH								
2	confirm TPH has NOT arisen from diesel or petrol				☒						
3	antimony { antimony trioxide }				<0.6 mg/kg	1.197	<0.718	mg/kg	<0.0000718 %		<LOD
	051-005-00-X	215-175-0	1309-64-4								
4	arsenic { arsenic pentoxide }				19.9 mg/kg	1.534	25.03	mg/kg	0.0025 %	✓	
	033-004-00-6	215-116-9	1303-28-2								
5	barium { barium sulphide }				77.8 mg/kg	1.233	78.692	mg/kg	0.00787 %	✓	
	016-002-00-X	244-214-4	21109-95-5								
6	cadmium { cadmium sulfate }				1.61 mg/kg	1.855	2.448	mg/kg	0.000245 %	✓	
	048-009-00-9	233-331-6	10124-36-4								
7	copper { dicopper oxide; copper (I) oxide }				18 mg/kg	1.126	16.618	mg/kg	0.00166 %	✓	
	029-002-00-X	215-270-7	1317-39-1								
8	lead { lead compounds with the exception of those specified elsewhere in this Annex (worst case) }			1	23.3 mg/kg		19.106	mg/kg	0.00191 %	✓	
	082-001-00-6										
9	mercury { mercury dichloride }				<0.1 mg/kg	1.353	<0.135	mg/kg	<0.0000135 %		<LOD
	080-010-00-X	231-299-8	7487-94-7								
10	molybdenum { molybdenum(VI) oxide }				0.746 mg/kg	1.5	0.918	mg/kg	0.0000918 %	✓	
	042-001-00-9	215-204-7	1313-27-5								
11	nickel { nickel sulfate }				24.3 mg/kg	2.637	52.539	mg/kg	0.00525 %	✓	
	028-009-00-5	232-104-9	7786-81-4								
12	selenium { selenium compounds with the exception of cadmium sulphoselenide and those specified elsewhere in this Annex }				1.24 mg/kg	1.405	1.429	mg/kg	0.000143 %	✓	
	034-002-00-8										
13	zinc { zinc sulphate }				136 mg/kg	2.469	275.376	mg/kg	0.0275 %	✓	
	030-006-00-9	231-793-3 [1] 231-793-3 [2]	7446-19-7 [1] 7733-02-0 [2]								
14	chromium in chromium(III) compounds { chromium(III) oxide (worst case) }				13.3 mg/kg	1.462	15.94	mg/kg	0.00159 %	✓	
		215-160-9	1308-38-9								



#	Determinand			CLP Note	User entered data	Conv. Factor	Compound conc.	Classification value	MC Applied	Conc. Not Used
	EU CLP index number	EC Number	CAS Number							
15	chromium in chromium(VI) compounds { chromium(VI) oxide }	024-001-00-0	215-607-8	1333-82-0	<0.6 mg/kg	1.923	<1.154 mg/kg	<0.000115 %		<LOD
16	naphthalene	601-052-00-2	202-049-5	91-20-3	<0.009 mg/kg		<0.009 mg/kg	<0.0000009 %		<LOD
17	acenaphthylene	205-917-1	208-96-8		<0.012 mg/kg		<0.012 mg/kg	<0.0000012 %		<LOD
18	acenaphthene	201-469-6	83-32-9		0.0399 mg/kg		0.0327 mg/kg	0.00000327 %	✓	
19	fluorene	201-695-5	86-73-7		<0.01 mg/kg		<0.01 mg/kg	<0.000001 %		<LOD
20	phenanthrene	201-581-5	85-01-8		<0.015 mg/kg		<0.015 mg/kg	<0.0000015 %		<LOD
21	anthracene	204-371-1	120-12-7		<0.016 mg/kg		<0.016 mg/kg	<0.0000016 %		<LOD
22	fluoranthene	205-912-4	206-44-0		<0.017 mg/kg		<0.017 mg/kg	<0.0000017 %		<LOD
23	pyrene	204-927-3	129-00-0		<0.015 mg/kg		<0.015 mg/kg	<0.0000015 %		<LOD
24	benzo[a]anthracene	601-033-00-9	200-280-6	56-55-3	<0.014 mg/kg		<0.014 mg/kg	<0.0000014 %		<LOD
25	chrysene	601-048-00-0	205-923-4	218-01-9	<0.01 mg/kg		<0.01 mg/kg	<0.000001 %		<LOD
26	benzo[b]fluoranthene	601-034-00-4	205-911-9	205-99-2	<0.015 mg/kg		<0.015 mg/kg	<0.0000015 %		<LOD
27	benzo[k]fluoranthene	601-036-00-5	205-916-6	207-08-9	<0.014 mg/kg		<0.014 mg/kg	<0.0000014 %		<LOD
28	benzo[a]pyrene; benzo[def]chrysene	601-032-00-3	200-028-5	50-32-8	<0.015 mg/kg		<0.015 mg/kg	<0.0000015 %		<LOD
29	indeno[123-cd]pyrene	205-893-2	193-39-5		<0.018 mg/kg		<0.018 mg/kg	<0.0000018 %		<LOD
30	dibenz[a,h]anthracene	601-041-00-2	200-181-8	53-70-3	<0.023 mg/kg		<0.023 mg/kg	<0.0000023 %		<LOD
31	benzo[ghi]perylene	205-883-8	191-24-2		<0.024 mg/kg		<0.024 mg/kg	<0.0000024 %		<LOD
32	polychlorobiphenyls; PCB	602-039-00-4	215-648-1	1336-36-3	<0.021 mg/kg		<0.021 mg/kg	<0.0000021 %		<LOD
33	tert-butyl methyl ether; MTBE; 2-methoxy-2-methylpropane	603-181-00-X	216-653-1	1634-04-4	<0.0005 mg/kg		<0.0005 mg/kg	<0.00000005 %		<LOD
34	benzene	601-020-00-8	200-753-7	71-43-2	<0.001 mg/kg		<0.001 mg/kg	<0.0000001 %		<LOD
35	toluene	601-021-00-3	203-625-9	108-88-3	<0.001 mg/kg		<0.001 mg/kg	<0.0000001 %		<LOD
36	ethylbenzene	601-023-00-4	202-849-4	100-41-4	<0.001 mg/kg		<0.001 mg/kg	<0.0000001 %		<LOD
37	coronene	205-881-7	191-07-1		<0.2 mg/kg		<0.2 mg/kg	<0.00002 %		<LOD
38	pH		PH		7.18 pH		7.18 pH	7.18 pH		
39	o-xylene; [1] p-xylene; [2] m-xylene; [3] xylene [4]	601-022-00-9	202-422-2 [1] 203-396-5 [2] 203-576-3 [3] 215-535-7 [4]	95-47-6 [1] 106-42-3 [2] 108-38-3 [3] 1330-20-7 [4]	<0.004 mg/kg		<0.004 mg/kg	<0.0000004 %		<LOD
Total:								0.0501 %		



Key

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



WAC results for sample: BH04-1.00

WAC Settings: samples in this Job constitute a single population.

WAC limits used to evaluate this sample: "UK"

The WAC used in this report are the WAC defined for the inert, stable non-reactive hazardous and hazardous classes of landfill in the UK. You should check the actual acceptance criteria when the disposal site is identified as they may differ from the generic WAC used in this report.

The sample **PASSES** the Inert (Inert waste landfill) criteria.

The sample **PASSES** the SNRHW (Stable non-reactive hazardous waste in non-hazardous landfill) criteria.

WAC Determinands

Solid Waste Analysis				Landfill Waste Acceptance Criteria Limits		
#	Determinand		User entered data	Inert waste landfill	Stable non-reactive hazardous waste in non-hazardous landfill	Hazardous waste landfill
1	TOC (total organic carbon)	%	1.1	3	5	6
2	LOI (loss on ignition)	%	4.35	-	-	10
3	BTEX (benzene, toluene, ethylbenzene and xylenes)	mg/kg	<0.007	6	-	-
4	PCBs (polychlorinated biphenyls, 7 congeners)	mg/kg	<0.021	1	-	-
5	Mineral oil (C10 to C40)	mg/kg	<5	500	-	-
6	PAHs (polycyclic aromatic hydrocarbons)	mg/kg	<10	100	-	-
7	pH	pH	7.18	-	>6	-
8	ANC (acid neutralisation capacity)	mol/kg		-	-	-
Eluate Analysis 10:1						
9	arsenic	mg/kg	0.0079	0.5	2	25
10	barium	mg/kg	0.433	20	100	300
11	cadmium	mg/kg	<0.0008	0.04	1	5
12	chromium	mg/kg	<0.01	0.5	10	70
13	copper	mg/kg	0.0104	2	50	100
14	mercury	mg/kg	<0.0001	0.01	0.2	2
15	molybdenum	mg/kg	<0.03	0.5	10	30
16	nickel	mg/kg	0.0054	0.4	10	40
17	lead	mg/kg	0.0033	0.5	10	50
18	antimony	mg/kg	<0.01	0.06	0.7	5
19	selenium	mg/kg	<0.01	0.1	0.5	7
20	zinc	mg/kg	0.0724	4	50	200
21	chloride	mg/kg	<20	800	15,000	25,000
22	fluoride	mg/kg	<5	10	150	500
23	sulphate	mg/kg	<20	1,000	20,000	50,000
24	phenol index	mg/kg	<0.16	1	-	-
25	DOC (dissolved organic carbon)	mg/kg	47.2	500	800	1,000
26	TDS (total dissolved solids)	mg/kg	218	4,000	60,000	100,000

Key

	User supplied data
	Not applicable



Classification of sample: BH05-1.00

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

Sample details

Sample name: **BH05-1.00** LoW Code: Chapter: 17: Construction and Demolition Wastes (including excavated soil from contaminated sites)
Sample Depth: **1.00 m** Entry: 17 05 04 (Soil and stones other than those mentioned in 17 05 03)
Moisture content: **17%**
(wet weight correction)

Hazard properties

None identified

Determinands

Moisture content: 17% Wet Weight Moisture Correction applied (MC)

#	Determinand			CLP Note	User entered data	Conv. Factor	Compound conc.		Classification value	MC Applied	Conc. Not Used
	EU CLP index number	EC Number	CAS Number								
1	TPH (C6 to C40) petroleum group				<10 mg/kg		<10	mg/kg	<0.001 %		<LOD
			TPH								
2	confirm TPH has NOT arisen from diesel or petrol				☒						
3	antimony { antimony trioxide }				<0.6 mg/kg	1.197	<0.718	mg/kg	<0.0000718 %		<LOD
	051-005-00-X	215-175-0	1309-64-4								
4	arsenic { arsenic pentoxide }				22.7 mg/kg	1.534	28.9	mg/kg	0.00289 %	✓	
	033-004-00-6	215-116-9	1303-28-2								
5	barium { barium sulphide }				80.6 mg/kg	1.233	82.518	mg/kg	0.00825 %	✓	
	016-002-00-X	244-214-4	21109-95-5								
6	cadmium { cadmium sulfate }				1.21 mg/kg	1.855	1.863	mg/kg	0.000186 %	✓	
	048-009-00-9	233-331-6	10124-36-4								
7	copper { dicopper oxide; copper (I) oxide }				13.5 mg/kg	1.126	12.616	mg/kg	0.00126 %	✓	
	029-002-00-X	215-270-7	1317-39-1								
8	lead { lead compounds with the exception of those specified elsewhere in this Annex (worst case) }			1	22 mg/kg		18.26	mg/kg	0.00183 %	✓	
	082-001-00-6										
9	mercury { mercury dichloride }				<0.1 mg/kg	1.353	<0.135	mg/kg	<0.0000135 %		<LOD
	080-010-00-X	231-299-8	7487-94-7								
10	molybdenum { molybdenum(VI) oxide }				0.63 mg/kg	1.5	0.784	mg/kg	0.0000784 %	✓	
	042-001-00-9	215-204-7	1313-27-5								
11	nickel { nickel sulfate }				23.9 mg/kg	2.637	52.304	mg/kg	0.00523 %	✓	
	028-009-00-5	232-104-9	7786-81-4								
12	selenium { selenium compounds with the exception of cadmium sulphoselenide and those specified elsewhere in this Annex }				1.17 mg/kg	1.405	1.364	mg/kg	0.000136 %	✓	
	034-002-00-8										
13	zinc { zinc sulphate }				112 mg/kg	2.469	229.546	mg/kg	0.023 %	✓	
	030-006-00-9	231-793-3 [1] 231-793-3 [2]	7446-19-7 [1] 7733-02-0 [2]								
14	chromium in chromium(III) compounds { chromium(III) oxide (worst case) }				22.8 mg/kg	1.462	27.658	mg/kg	0.00277 %	✓	
		215-160-9	1308-38-9								



#	Determinand			CLP Note	User entered data	Conv. Factor	Compound conc.	Classification value	MC Applied	Conc. Not Used
	EU CLP index number	EC Number	CAS Number							
15	chromium in chromium(VI) compounds { chromium(VI) oxide }	024-001-00-0	215-607-8	1333-82-0	<0.6 mg/kg	1.923	<1.154 mg/kg	<0.000115 %		<LOD
16	naphthalene	601-052-00-2	202-049-5	91-20-3	<0.009 mg/kg		<0.009 mg/kg	<0.0000009 %		<LOD
17	acenaphthylene	205-917-1	208-96-8		<0.012 mg/kg		<0.012 mg/kg	<0.0000012 %		<LOD
18	acenaphthene	201-469-6	83-32-9		0.0506 mg/kg		0.042 mg/kg	0.0000042 %	✓	
19	fluorene	201-695-5	86-73-7		0.0329 mg/kg		0.0273 mg/kg	0.00000273 %	✓	
20	phenanthrene	201-581-5	85-01-8		0.0227 mg/kg		0.0188 mg/kg	0.00000188 %	✓	
21	anthracene	204-371-1	120-12-7		<0.016 mg/kg		<0.016 mg/kg	<0.0000016 %		<LOD
22	fluoranthene	205-912-4	206-44-0		0.0243 mg/kg		0.0202 mg/kg	0.00000202 %	✓	
23	pyrene	204-927-3	129-00-0		0.0196 mg/kg		0.0163 mg/kg	0.00000163 %	✓	
24	benzo[a]anthracene	601-033-00-9	200-280-6	56-55-3	<0.014 mg/kg		<0.014 mg/kg	<0.0000014 %		<LOD
25	chrysene	601-048-00-0	205-923-4	218-01-9	<0.01 mg/kg		<0.01 mg/kg	<0.000001 %		<LOD
26	benzo[b]fluoranthene	601-034-00-4	205-911-9	205-99-2	<0.015 mg/kg		<0.015 mg/kg	<0.0000015 %		<LOD
27	benzo[k]fluoranthene	601-036-00-5	205-916-6	207-08-9	<0.014 mg/kg		<0.014 mg/kg	<0.0000014 %		<LOD
28	benzo[a]pyrene; benzo[def]chrysene	601-032-00-3	200-028-5	50-32-8	<0.015 mg/kg		<0.015 mg/kg	<0.0000015 %		<LOD
29	indeno[123-cd]pyrene	205-893-2	193-39-5		<0.018 mg/kg		<0.018 mg/kg	<0.0000018 %		<LOD
30	dibenz[a,h]anthracene	601-041-00-2	200-181-8	53-70-3	<0.023 mg/kg		<0.023 mg/kg	<0.0000023 %		<LOD
31	benzo[ghi]perylene	205-883-8	191-24-2		<0.024 mg/kg		<0.024 mg/kg	<0.0000024 %		<LOD
32	polychlorobiphenyls; PCB	602-039-00-4	215-648-1	1336-36-3	<0.021 mg/kg		<0.021 mg/kg	<0.0000021 %		<LOD
33	tert-butyl methyl ether; MTBE; 2-methoxy-2-methylpropane	603-181-00-X	216-653-1	1634-04-4	<0.0005 mg/kg		<0.0005 mg/kg	<0.00000005 %		<LOD
34	benzene	601-020-00-8	200-753-7	71-43-2	<0.001 mg/kg		<0.001 mg/kg	<0.0000001 %		<LOD
35	toluene	601-021-00-3	203-625-9	108-88-3	<0.001 mg/kg		<0.001 mg/kg	<0.0000001 %		<LOD
36	ethylbenzene	601-023-00-4	202-849-4	100-41-4	<0.001 mg/kg		<0.001 mg/kg	<0.0000001 %		<LOD
37	coronene	205-881-7	191-07-1		<0.2 mg/kg		<0.2 mg/kg	<0.00002 %		<LOD
38	pH		PH		7.07 pH		7.07 pH	7.07 pH		
39	o-xylene; [1] p-xylene; [2] m-xylene; [3] xylene [4]	601-022-00-9	202-422-2 [1] 203-396-5 [2] 203-576-3 [3] 215-535-7 [4]	95-47-6 [1] 106-42-3 [2] 108-38-3 [3] 1330-20-7 [4]	<0.004 mg/kg		<0.004 mg/kg	<0.0000004 %		<LOD
Total:								0.0468 %		



Key

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



WAC results for sample: BH05-1.00

WAC Settings: samples in this Job constitute a single population.

WAC limits used to evaluate this sample: "UK"

The WAC used in this report are the WAC defined for the inert, stable non-reactive hazardous and hazardous classes of landfill in the UK. You should check the actual acceptance criteria when the disposal site is identified as they may differ from the generic WAC used in this report.

The sample **PASSES** the Inert (Inert waste landfill) criteria.

The sample **PASSES** the SNRHW (Stable non-reactive hazardous waste in non-hazardous landfill) criteria.

WAC Determinands

Solid Waste Analysis				Landfill Waste Acceptance Criteria Limits		
#	Determinand		User entered data	Inert waste landfill	Stable non-reactive hazardous waste in non-hazardous landfill	Hazardous waste landfill
1	TOC (total organic carbon)	%	0.491	3	5	6
2	LOI (loss on ignition)	%	3.01	-	-	10
3	BTEX (benzene, toluene, ethylbenzene and xylenes)	mg/kg	<0.007	6	-	-
4	PCBs (polychlorinated biphenyls, 7 congeners)	mg/kg	<0.021	1	-	-
5	Mineral oil (C10 to C40)	mg/kg	<5	500	-	-
6	PAHs (polycyclic aromatic hydrocarbons)	mg/kg	<10	100	-	-
7	pH	pH	7.07	-	>6	-
8	ANC (acid neutralisation capacity)	mol/kg		-	-	-
Eluate Analysis 10:1						
9	arsenic	mg/kg	0.0119	0.5	2	25
10	barium	mg/kg	0.106	20	100	300
11	cadmium	mg/kg	<0.0008	0.04	1	5
12	chromium	mg/kg	0.0128	0.5	10	70
13	copper	mg/kg	0.0157	2	50	100
14	mercury	mg/kg	<0.0001	0.01	0.2	2
15	molybdenum	mg/kg	<0.03	0.5	10	30
16	nickel	mg/kg	0.0081	0.4	10	40
17	lead	mg/kg	0.0057	0.5	10	50
18	antimony	mg/kg	<0.01	0.06	0.7	5
19	selenium	mg/kg	<0.01	0.1	0.5	7
20	zinc	mg/kg	0.184	4	50	200
21	chloride	mg/kg	<20	800	15,000	25,000
22	fluoride	mg/kg	<5	10	150	500
23	sulphate	mg/kg	<20	1,000	20,000	50,000
24	phenol index	mg/kg	<0.16	1	-	-
25	DOC (dissolved organic carbon)	mg/kg	49.4	500	800	1,000
26	TDS (total dissolved solids)	mg/kg	174	4,000	60,000	100,000

Key

	User supplied data
	Not applicable



Classification of sample: BH06-1.00

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

Sample details

Sample name:	LoW Code:
BH06-1.00	Chapter:
Sample Depth:	17: Construction and Demolition Wastes (including excavated soil from contaminated sites)
1.00 m	Entry:
Moisture content:	17 05 04 (Soil and stones other than those mentioned in 17 05 03)
11%	
(wet weight correction)	

Hazard properties

None identified

Determinands

Moisture content: 11% Wet Weight Moisture Correction applied (MC)

#	Determinand			CLP Note	User entered data	Conv. Factor	Compound conc.		Classification value	MC Applied	Conc. Not Used
	EU CLP index number	EC Number	CAS Number								
1	TPH (C6 to C40) petroleum group				<10 mg/kg		<10	mg/kg	<0.001 %		<LOD
			TPH								
2	confirm TPH has NOT arisen from diesel or petrol				☒						
3	antimony { antimony trioxide }				0.713 mg/kg	1.197	0.76	mg/kg	0.000076 %	✓	
	051-005-00-X	215-175-0	1309-64-4								
4	arsenic { arsenic pentoxide }				13.9 mg/kg	1.534	18.976	mg/kg	0.0019 %	✓	
	033-004-00-6	215-116-9	1303-28-2								
5	barium { barium sulphide }				49.4 mg/kg	1.233	54.232	mg/kg	0.00542 %	✓	
	016-002-00-X	244-214-4	21109-95-5								
6	cadmium { cadmium sulfate }				1.92 mg/kg	1.855	3.169	mg/kg	0.000317 %	✓	
	048-009-00-9	233-331-6	10124-36-4								
7	copper { dicopper oxide; copper (I) oxide }				22.7 mg/kg	1.126	22.746	mg/kg	0.00227 %	✓	
	029-002-00-X	215-270-7	1317-39-1								
8	lead { lead compounds with the exception of those specified elsewhere in this Annex (worst case) }			1	19.5 mg/kg		17.355	mg/kg	0.00174 %	✓	
	082-001-00-6										
9	mercury { mercury dichloride }				<0.1 mg/kg	1.353	<0.135	mg/kg	<0.0000135 %		<LOD
	080-010-00-X	231-299-8	7487-94-7								
10	molybdenum { molybdenum(VI) oxide }				1.89 mg/kg	1.5	2.523	mg/kg	0.000252 %	✓	
	042-001-00-9	215-204-7	1313-27-5								
11	nickel { nickel sulfate }				35.3 mg/kg	2.637	82.837	mg/kg	0.00828 %	✓	
	028-009-00-5	232-104-9	7786-81-4								
12	selenium { selenium compounds with the exception of cadmium sulphoselenide and those specified elsewhere in this Annex }				2.88 mg/kg	1.405	3.601	mg/kg	0.00036 %	✓	
	034-002-00-8										
13	zinc { zinc sulphate }				83.1 mg/kg	2.469	182.627	mg/kg	0.0183 %	✓	
	030-006-00-9	231-793-3 [1] 231-793-3 [2]	7446-19-7 [1] 7733-02-0 [2]								
14	chromium in chromium(III) compounds { chromium(III) oxide (worst case) }				15.1 mg/kg	1.462	19.642	mg/kg	0.00196 %	✓	
		215-160-9	1308-38-9								



#	Determinand			CLP Note	User entered data	Conv. Factor	Compound conc.	Classification value	MC Applied	Conc. Not Used
	EU CLP index number	EC Number	CAS Number							
15	chromium in chromium(VI) compounds { chromium(VI) oxide }	024-001-00-0	215-607-8	1333-82-0	<0.6 mg/kg	1.923	<1.154 mg/kg	<0.000115 %		<LOD
16	naphthalene	601-052-00-2	202-049-5	91-20-3	<0.009 mg/kg		<0.009 mg/kg	<0.0000009 %		<LOD
17	acenaphthylene	205-917-1	208-96-8		<0.012 mg/kg		<0.012 mg/kg	<0.0000012 %		<LOD
18	acenaphthene	201-469-6	83-32-9		0.0188 mg/kg		0.0167 mg/kg	0.00000167 %	✓	
19	fluorene	201-695-5	86-73-7		0.0212 mg/kg		0.0189 mg/kg	0.00000189 %	✓	
20	phenanthrene	201-581-5	85-01-8		<0.015 mg/kg		<0.015 mg/kg	<0.0000015 %		<LOD
21	anthracene	204-371-1	120-12-7		<0.016 mg/kg		<0.016 mg/kg	<0.0000016 %		<LOD
22	fluoranthene	205-912-4	206-44-0		<0.017 mg/kg		<0.017 mg/kg	<0.0000017 %		<LOD
23	pyrene	204-927-3	129-00-0		<0.015 mg/kg		<0.015 mg/kg	<0.0000015 %		<LOD
24	benzo[a]anthracene	601-033-00-9	200-280-6	56-55-3	<0.014 mg/kg		<0.014 mg/kg	<0.0000014 %		<LOD
25	chrysene	601-048-00-0	205-923-4	218-01-9	<0.01 mg/kg		<0.01 mg/kg	<0.000001 %		<LOD
26	benzo[b]fluoranthene	601-034-00-4	205-911-9	205-99-2	<0.015 mg/kg		<0.015 mg/kg	<0.0000015 %		<LOD
27	benzo[k]fluoranthene	601-036-00-5	205-916-6	207-08-9	<0.014 mg/kg		<0.014 mg/kg	<0.0000014 %		<LOD
28	benzo[a]pyrene; benzo[def]chrysene	601-032-00-3	200-028-5	50-32-8	<0.015 mg/kg		<0.015 mg/kg	<0.0000015 %		<LOD
29	indeno[123-cd]pyrene	205-893-2	193-39-5		<0.018 mg/kg		<0.018 mg/kg	<0.0000018 %		<LOD
30	dibenz[a,h]anthracene	601-041-00-2	200-181-8	53-70-3	<0.023 mg/kg		<0.023 mg/kg	<0.0000023 %		<LOD
31	benzo[ghi]perylene	205-883-8	191-24-2		<0.024 mg/kg		<0.024 mg/kg	<0.0000024 %		<LOD
32	polychlorobiphenyls; PCB	602-039-00-4	215-648-1	1336-36-3	<0.021 mg/kg		<0.021 mg/kg	<0.0000021 %		<LOD
33	tert-butyl methyl ether; MTBE; 2-methoxy-2-methylpropane	603-181-00-X	216-653-1	1634-04-4	<0.0005 mg/kg		<0.0005 mg/kg	<0.00000005 %		<LOD
34	benzene	601-020-00-8	200-753-7	71-43-2	<0.001 mg/kg		<0.001 mg/kg	<0.0000001 %		<LOD
35	toluene	601-021-00-3	203-625-9	108-88-3	0.0017 mg/kg		0.0015 mg/kg	0.000000155 %	✓	
36	ethylbenzene	601-023-00-4	202-849-4	100-41-4	<0.001 mg/kg		<0.001 mg/kg	<0.0000001 %		<LOD
37	coronene	205-881-7	191-07-1		<0.2 mg/kg		<0.2 mg/kg	<0.00002 %		<LOD
38	pH		PH		8.49 pH		8.49 pH	8.49 pH		
39	o-xylene; [1] p-xylene; [2] m-xylene; [3] xylene [4]	601-022-00-9	202-422-2 [1] 203-396-5 [2] 203-576-3 [3] 215-535-7 [4]	95-47-6 [1] 106-42-3 [2] 108-38-3 [3] 1330-20-7 [4]	<0.004 mg/kg		<0.004 mg/kg	<0.0000004 %		<LOD
Total:								0.042 %		



Key

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

Supplementary Hazardous Property Information

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

Force this Hazardous property to non hazardous because HP 3 can be discounted as this is a solid waste without a free draining liquid phase.

Hazard Statements hit:

Flam. Liq. 2; H225 "Highly flammable liquid and vapour."

Because of determinand:

toluene: (conc.: 1.55e-07%)



WAC results for sample: BH06-1.00

WAC Settings: samples in this Job constitute a single population.

WAC limits used to evaluate this sample: "UK"

The WAC used in this report are the WAC defined for the inert, stable non-reactive hazardous and hazardous classes of landfill in the UK. You should check the actual acceptance criteria when the disposal site is identified as they may differ from the generic WAC used in this report.

The sample **PASSES** the Inert (Inert waste landfill) criteria.

The sample **PASSES** the SNRHW (Stable non-reactive hazardous waste in non-hazardous landfill) criteria.

WAC Determinands

Solid Waste Analysis				Landfill Waste Acceptance Criteria Limits		
#	Determinand		User entered data	Inert waste landfill	Stable non-reactive hazardous waste in non-hazardous landfill	Hazardous waste landfill
1	TOC (total organic carbon)	%	0.473	3	5	6
2	LOI (loss on ignition)	%	2.36	-	-	10
3	BTEX (benzene, toluene, ethylbenzene and xylenes)	mg/kg	0.0017	6	-	-
4	PCBs (polychlorinated biphenyls, 7 congeners)	mg/kg	<0.021	1	-	-
5	Mineral oil (C10 to C40)	mg/kg	<5	500	-	-
6	PAHs (polycyclic aromatic hydrocarbons)	mg/kg	<10	100	-	-
7	pH	pH	8.49	-	>6	-
8	ANC (acid neutralisation capacity)	mol/kg		-	-	-
Eluate Analysis 10:1						
9	arsenic	mg/kg	<0.005	0.5	2	25
10	barium	mg/kg	0.0256	20	100	300
11	cadmium	mg/kg	<0.0008	0.04	1	5
12	chromium	mg/kg	<0.01	0.5	10	70
13	copper	mg/kg	0.0057	2	50	100
14	mercury	mg/kg	<0.0001	0.01	0.2	2
15	molybdenum	mg/kg	<0.03	0.5	10	30
16	nickel	mg/kg	<0.004	0.4	10	40
17	lead	mg/kg	<0.002	0.5	10	50
18	antimony	mg/kg	<0.01	0.06	0.7	5
19	selenium	mg/kg	<0.01	0.1	0.5	7
20	zinc	mg/kg	<0.01	4	50	200
21	chloride	mg/kg	<20	800	15,000	25,000
22	fluoride	mg/kg	<5	10	150	500
23	sulphate	mg/kg	178	1,000	20,000	50,000
24	phenol index	mg/kg	<0.16	1	-	-
25	DOC (dissolved organic carbon)	mg/kg	<30	500	800	1,000
26	TDS (total dissolved solids)	mg/kg	879	4,000	60,000	100,000

Key

	User supplied data
	Not applicable



Classification of sample: TP02-1.00

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

Sample details

Sample name:	LoW Code:
TP02-1.00	Chapter:
Sample Depth:	17: Construction and Demolition Wastes (including excavated soil from contaminated sites)
1.00 m	Entry:
Moisture content:	17 05 04 (Soil and stones other than those mentioned in 17 05 03)
18%	
(wet weight correction)	

Hazard properties

None identified

Determinands

Moisture content: 18% Wet Weight Moisture Correction applied (MC)

#	Determinand			CLP Note	User entered data	Conv. Factor	Compound conc.		Classification value	MC Applied	Conc. Not Used
	EU CLP index number	EC Number	CAS Number								
1	TPH (C6 to C40) petroleum group				<10 mg/kg		<10	mg/kg	<0.001 %		<LOD
			TPH								
2	confirm TPH has NOT arisen from diesel or petrol				☒						
3	antimony { antimony trioxide }				<0.6 mg/kg	1.197	<0.718	mg/kg	<0.0000718 %		<LOD
	051-005-00-X	215-175-0	1309-64-4								
4	arsenic { arsenic pentoxide }				30.3 mg/kg	1.534	38.111	mg/kg	0.00381 %	✓	
	033-004-00-6	215-116-9	1303-28-2								
5	barium { barium sulphide }				49.4 mg/kg	1.233	49.966	mg/kg	0.005 %	✓	
	016-002-00-X	244-214-4	21109-95-5								
6	cadmium { cadmium sulfate }				1.19 mg/kg	1.855	1.81	mg/kg	0.000181 %	✓	
	048-009-00-9	233-331-6	10124-36-4								
7	copper { dicopper oxide; copper (I) oxide }				20.1 mg/kg	1.126	18.557	mg/kg	0.00186 %	✓	
	029-002-00-X	215-270-7	1317-39-1								
8	lead { lead compounds with the exception of those specified elsewhere in this Annex (worst case) }			1	21.2 mg/kg		17.384	mg/kg	0.00174 %	✓	
	082-001-00-6										
9	mercury { mercury dichloride }				<0.1 mg/kg	1.353	<0.135	mg/kg	<0.0000135 %		<LOD
	080-010-00-X	231-299-8	7487-94-7								
10	molybdenum { molybdenum(VI) oxide }				0.689 mg/kg	1.5	0.848	mg/kg	0.0000848 %	✓	
	042-001-00-9	215-204-7	1313-27-5								
11	nickel { nickel sulfate }				32.1 mg/kg	2.637	69.403	mg/kg	0.00694 %	✓	
	028-009-00-5	232-104-9	7786-81-4								
12	selenium { selenium compounds with the exception of cadmium sulphoselenide and those specified elsewhere in this Annex }				1.3 mg/kg	1.405	1.498	mg/kg	0.00015 %	✓	
	034-002-00-8										
13	zinc { zinc sulphate }				76.4 mg/kg	2.469	154.696	mg/kg	0.0155 %	✓	
	030-006-00-9	231-793-3 [1] 231-793-3 [2]	7446-19-7 [1] 7733-02-0 [2]								
14	chromium in chromium(III) compounds { chromium(III) oxide (worst case) }				24.2 mg/kg	1.462	29.003	mg/kg	0.0029 %	✓	
		215-160-9	1308-38-9								



#	Determinand			CLP Note	User entered data	Conv. Factor	Compound conc.	Classification value	MC Applied	Conc. Not Used
	EU CLP index number	EC Number	CAS Number							
15	chromium in chromium(VI) compounds { chromium(VI) oxide }	024-001-00-0	215-607-8	1333-82-0	<0.6 mg/kg	1.923	<1.154 mg/kg	<0.000115 %		<LOD
16	naphthalene	601-052-00-2	202-049-5	91-20-3	<0.009 mg/kg		<0.009 mg/kg	<0.0000009 %		<LOD
17	acenaphthylene	205-917-1	208-96-8		<0.012 mg/kg		<0.012 mg/kg	<0.0000012 %		<LOD
18	acenaphthene	201-469-6	83-32-9		<0.008 mg/kg		<0.008 mg/kg	<0.0000008 %		<LOD
19	fluorene	201-695-5	86-73-7		<0.01 mg/kg		<0.01 mg/kg	<0.000001 %		<LOD
20	phenanthrene	201-581-5	85-01-8		<0.015 mg/kg		<0.015 mg/kg	<0.0000015 %		<LOD
21	anthracene	204-371-1	120-12-7		<0.016 mg/kg		<0.016 mg/kg	<0.0000016 %		<LOD
22	fluoranthene	205-912-4	206-44-0		<0.017 mg/kg		<0.017 mg/kg	<0.0000017 %		<LOD
23	pyrene	204-927-3	129-00-0		<0.015 mg/kg		<0.015 mg/kg	<0.0000015 %		<LOD
24	benzo[a]anthracene	601-033-00-9	200-280-6	56-55-3	<0.014 mg/kg		<0.014 mg/kg	<0.0000014 %		<LOD
25	chrysene	601-048-00-0	205-923-4	218-01-9	<0.01 mg/kg		<0.01 mg/kg	<0.000001 %		<LOD
26	benzo[b]fluoranthene	601-034-00-4	205-911-9	205-99-2	<0.015 mg/kg		<0.015 mg/kg	<0.0000015 %		<LOD
27	benzo[k]fluoranthene	601-036-00-5	205-916-6	207-08-9	<0.014 mg/kg		<0.014 mg/kg	<0.0000014 %		<LOD
28	benzo[a]pyrene; benzo[def]chrysene	601-032-00-3	200-028-5	50-32-8	<0.015 mg/kg		<0.015 mg/kg	<0.0000015 %		<LOD
29	indeno[123-cd]pyrene	205-893-2	193-39-5		<0.018 mg/kg		<0.018 mg/kg	<0.0000018 %		<LOD
30	dibenz[a,h]anthracene	601-041-00-2	200-181-8	53-70-3	<0.023 mg/kg		<0.023 mg/kg	<0.0000023 %		<LOD
31	benzo[ghi]perylene	205-883-8	191-24-2		<0.024 mg/kg		<0.024 mg/kg	<0.0000024 %		<LOD
32	polychlorobiphenyls; PCB	602-039-00-4	215-648-1	1336-36-3	<0.021 mg/kg		<0.021 mg/kg	<0.0000021 %		<LOD
33	tert-butyl methyl ether; MTBE; 2-methoxy-2-methylpropane	603-181-00-X	216-653-1	1634-04-4	<0.0005 mg/kg		<0.0005 mg/kg	<0.00000005 %		<LOD
34	benzene	601-020-00-8	200-753-7	71-43-2	<0.001 mg/kg		<0.001 mg/kg	<0.0000001 %		<LOD
35	toluene	601-021-00-3	203-625-9	108-88-3	<0.001 mg/kg		<0.001 mg/kg	<0.0000001 %		<LOD
36	ethylbenzene	601-023-00-4	202-849-4	100-41-4	<0.001 mg/kg		<0.001 mg/kg	<0.0000001 %		<LOD
37	coronene	205-881-7	191-07-1		<0.2 mg/kg		<0.2 mg/kg	<0.00002 %		<LOD
38	pH		PH		7.89 pH		7.89 pH	7.89 pH		
39	o-xylene; [1] p-xylene; [2] m-xylene; [3] xylene [4]	601-022-00-9	202-422-2 [1] 203-396-5 [2] 203-576-3 [3] 215-535-7 [4]	95-47-6 [1] 106-42-3 [2] 108-38-3 [3] 1330-20-7 [4]	<0.004 mg/kg		<0.004 mg/kg	<0.0000004 %		<LOD
Total:								0.0394 %		