NDFA Social Housing Lot 3
Lambs Cross – Interpretive Report

Client:	NDFA on behalf of Dún Laoghaire-Rathdown County Council (DLRCC)
Client's Representative:	Malone O'Regan Consulting Engineers
Report No.:	23-0881D
Date:	July 2024
Status:	Final for Issue

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Approved: ISO 9001 • ISO 14001 • OHSAS 18001

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Revision:	A01	**Status:**	Final for Issue	**Issue Date:**	11th July 2024
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The works were conducted in accordance with:

British Standards Institute (2015) BS 5930:2015+A1:2020, Code of practice for ground investigations.

BS EN 1997-2: 2007: Eurocode 7 - Geotechnical design - Part 2 Ground investigation and testing.

Geotechnical Society of Ireland (2016), Specification & Related Documents for Ground Investigation in Ireland

Laboratory testing was conducted in accordance with:

British Standards Institute BS 1377:1990 parts 2, 4, 5, 7 and 9

METHODS OF DESCRIBING SOILS AND ROCKS

Soil and rock descriptions are based on the guidance in BS5930:2015+A1:2020, The Code of Practice for Ground Investigation.

Abbreviations used on exploratory hole logs	
U	Nominal 100mm diameter undisturbed open tube sample (thick walled sampler).
UT	Nominal 100mm diameter undisturbed open tube sample (thin walled sampler).
P	Nominal 100mm diameter undisturbed piston sample.
B	Bulk disturbed sample.
LB	Large bulk disturbed sample.
SB	Sonic bulk disturbed sample.
D	Small disturbed sample.
C	Core sub-sample (displayed in the Field Records column on the logs).
L	Liner sample from dynamic sampled borehole.
W	Water sample.
ES / EW	Soil sample for environmental testing / Water sample for environmental testing.
SPT (s)	Standard penetration test using a split spoon sampler (small disturbed sample obtained).
SPT (c)	Standard penetration test using 60 degree solid cone.
(x,x/x,x,x,x)	Blows per increment during the standard penetration test. The initial two values relate to the seating drive (150mm) and the remaining four to the 75mm increments of the test length.
(Y for Z/ Y for Z)	Incomplete standard penetration test where the full test length was not achieved. The blows 'X' represent the total blows for the given seating or test length 'Z' (mm).
N=X	SPT blow count 'N' given by the summation of the blows 'X' required to drive the full test length (300mm).
HVP / HVR	In situ hand vane test result (HVP) and vane test residual result (HVR). Results presented in kPa.
V VR	Shear vane test (borehole). Shear strength stated in kPa. V: undisturbed vane shear strength VR: remoulded vane shear strength
Soil consistency description	In cohesive soils, where samples are disturbed and there are no suitable laboratory tests, N values may be used to indicate consistency on borehole logs – a median relationship of Nx5=Cu is used (as set out in Stroud & Butler 1975).
dd-mm-yyyy	Date at the end and start of shifts, shown at the relevant borehole depth. Corresponding casing and water depths shown in the adjacent columns.
▽	Water strike: initial depth of strike.
▼	Water strike: depth water rose to.
Abbreviations relating to rock core – reference Clause 36.4.4 of BS 5930: 2015+A1:2020	
TCR (%)	Total Core Recovery: Ratio of rock/soil core recovered (both solid and non-intact) to the total length of core run.
SCR (%)	Solid Core Recovery: Ratio of solid core to the total length of core run. Solid core has a full diameter, uninterrupted by natural discontinuities, but not necessarily a full circumference and is measured along the core axis between natural fractures.
RQD (%)	Rock Quality Designation: Ratio of total length of solid core pieces greater than 100mm to the total length of core run.
FI	Fracture Index: Number of natural discontinuities per metre over an indicated length of core of similar intensity of fracturing.
NI	Non Intact: Used where the rock material was recovered fragmented, for example as fine to coarse gravel size particles.
AZCL	Assessed zone of core loss: The estimated depth range where core was not recovered.
DIF	Drilling induced fracture: A fracture of non-geological origin brought about by the rock coring.
(xxx/xxx/xxx)	Spacing between discontinuities (minimum/average/maximum) measured in millimetres.

NDFA Social Housing Lot 3 – Lambs Cross - Interpretive Report

1 AUTHORITY

On the instructions of Malone O'Regan Consulting Engineers, ("the Client's Representative"), acting on the behalf of NDFA and Dún Laoghaire-Rathdown County Council (DLRCC) ("the Client"), a ground investigation was undertaken at the above location to provide geotechnical and environmental information for input to the design and construction of a proposed residential development.

This report details the work carried out both on site and in the geotechnical and chemical testing laboratories; it contains a description of the site and the works undertaken, the exploratory hole logs and the laboratory test results. A discussion on the recommendations for construction is also provided.

All information given in this report is based upon the ground conditions encountered during the ground investigation works, and on the results of the laboratory and field tests performed. However, there may be conditions at the site that have not been taken into account, such as unpredictable soil strata, contaminant concentrations, and water conditions between or below exploratory holes. It should be noted that groundwater levels usually vary due to seasonal and/or other effects and may at times differ to those recorded during the investigation. No responsibility can be taken for conditions not encountered through the scope of work commissioned, for example between exploratory hole points, or beneath the termination depths achieved.

This report was prepared by Causeway Geotech Ltd for the use of the Client and the Client's Representative in response to a particular set of instructions. Any other parties using the information contained in this report do so at their own risk and any duty of care to those parties is excluded.

2 SCOPE

The extent of the investigation, as instructed by the Client's Representative, included boreholes, trial pits, slit trenches, soil and rock core sampling, environmental sampling, in-situ and laboratory testing, and the preparation of a report on the findings including recommendations for construction.

3 DESCRIPTION OF SITE

As shown on the site location plan in Appendix A, the works were conducted to the north-eastern section of the junction of Enniskerry Road (R117) and Hillcrest Road (R113), in Sandyford, South Dubin. The site is bordered to the north by residential properties.

The site was occupied at the time by Murphy's contractors who were using the site as a compound for local works they were undertaking.

4 SITE OPERATIONS

4.1 Summary of site works

Site operations, which were conducted between 20th November and 14th December 2023, comprised:

- six boreholes
  - five light cable percussion boreholes
  - one borehole by rotary drilling
- a standpipe installation in one borehole
- three machine dug trial pits
- four machine and hand dug slit trenches; and
- an infiltration test performed in two trial pits.

NOTE: The scope was reduced due to the small nature of the site and reduced working area due to Murphy's contractor's working on the site.

The exploratory holes and in-situ tests were located as instructed by the Client's Representative, and as shown on the exploratory hole location plan in Appendix A.

4.2 Boreholes

A total of six boreholes were put down in a minimum diameter of 150mm through soils and rock strata to their completion depths by a combination of methods including light cable percussion boring by a Dando 2000 rig, and rotary drilling by a Comacchio 405 tracked rotary drilling rig.

The borehole logs state the methodology and plant used for each location, as well as the appropriate depth ranges.

A summary of the boreholes, subdivided by category in accordance with the methods employed for their completion, is presented in the following sub-sections.

4.2.1 Light cable percussion boreholes

Five boreholes (BH01-BH02, BH06 and BH08-BH09) were put down to completion in minimum 200mm diameter using a Dando 2000 light cable percussion boring rig. All boreholes were terminated on encountering virtual refusal on obstructions, including weathered bedrock. Note BH02 was only undertaken as an inspection pit, with suspected weathered bedrock encountered in the hand pit at the borehole location.

Hand dug inspection pits were carried out between ground level and 1.20m depth to ensure boreholes were put down at locations clear of services or subsurface obstructions.

Disturbed (bulk and small bag) samples were taken within the encountered strata. Environmental samples were taken at standard intervals, as directed by the Client's Representative.

Standard penetration tests were carried out in accordance with BS EN 22476-3:2005+A1:2011 at standard depth intervals using the split spoon sampler ($SPT_{(s)}$) or solid cone attachment ($SPT_{(c)}$). The penetrations are stated for those tests for which the full 150mm seating drive or 300mm test drive was not possible. The N-values provided on the borehole logs are uncorrected and no allowance has been made for energy ratio corrections. The SPT hammer energy measurement report is provided in Appendix K.

Groundwater was not noted during drilling at any of the borehole locations.

Where water was added to assist with boring, a note has been added to the log to account for same.

Appendix B presents the borehole logs.

4.2.2 Rotary drilled borehole

One borehole (RC01) was put to completion by rotary drilling techniques only. The borehole was completed using a low ground bearing tracked Comacchio 405 drilling rig.

Hand dug inspection pits were carried out between ground level and 1.20m depth to ensure boreholes were put down at locations clear of services or subsurface obstructions.

Symmetrix-cased full hole rotary percussive drilling techniques were employed to advance the boreholes to bedrock, after which rotary coring was employed to recover core samples of the bedrock.

Where coring was carried out within bedrock strata, Geobor S Coring was used. The core was extracted in up to 1.5m lengths using an SK6L core barrel, which produced core of nominal 102mm diameter, and was placed in single channel wooden core boxes.

The core was subsequently photographed and examined by a qualified and experienced Engineering Geologist, thus enabling the production of an engineering log in accordance with *BS 5930: 2015+A1:2020: Code of practice for ground investigations*.

Appendix B presents the borehole logs, with core photographs presented in Appendix C.

4.3 Standpipe installations

A groundwater monitoring standpipe was installed in BH01.

Details of the installations, including the depth range of the response zone, are provided in Appendix B on the individual borehole logs.

4.4 Trial Pits

Three trial pits (TP01-TP03) were excavated using a 3t tracked excavator fitted with a 600mm wide bucket, to depths ranging between 0.90m and 1.80m. Two trial pits were excavated to allow completion of infiltration test.

Environmental samples were taken at half meter intervals in each trial pit.

Disturbed (small jar and bulk bag) samples were taken at standard depth intervals and at change of strata.

No water strikes were encountered during excavation. The stability of the trial pit walls was noted on completion.

Appendix D presents the trial pit logs with photographs of the pits and arising provided in Appendix E.

4.5 Slit trenches

Four slit trenches (ST01-ST04) were excavated by a combination of hand digging and mechanical excavation using a compact 3t tracked excavator fitted with a 600mm wide toothless bucket, to locate and identify buried services at the site.

Drawing of the trenches and the locations of services encountered during excavation are shown along with the slit trench logs in Appendix F, with photographs presented in Appendix G.

4.6 Infiltration tests

Two infiltration/soakaway tests (IT01 and IT02) were carried out in accordance with BRE Digest 365 - Soakaways (BRE, 2016). IT01 was undertaken in TP02 and IT02 was completed in TP01.

Appendix H presents the results and analysis of the infiltration test with photographs of the pits presented in Appendix E.

4.7 Surveying

The as-built exploratory hole positions were surveyed following completion of site operations by a Site Engineer from Causeway Geotech. Surveying was carried out using a Trimble R10 GPS system employing VRS and real time kinetic (RTK) techniques.

The plan coordinates (Irish Transverse Mercator) and ground elevation (mOD Malin) at each location are recorded on the individual exploratory hole logs. The exploratory hole location plan presented in Appendix A shows these as-built positions

5 LABORATORY WORK

Upon their receipt in the laboratory, all disturbed samples were carefully examined and accurately described, and their descriptions incorporated into the borehole logs.

5.1 Geotechnical laboratory testing of soils

Laboratory testing of soils comprised:

- **soil classification:** moisture content measurement, Atterberg Limit tests and particle size distribution analysis
- **compaction related:** California bearing ratio tests
- **soil chemistry:** pH and water soluble sulphate content

Laboratory testing of soils samples was carried out in accordance with British Standards Institute: *BS 1377, Methods of test for soils for civil engineering purposes; Part 1 (2016), and Parts 2-9 (1990).*

The test results are presented in Appendix I.

5.2 Geotechnical laboratory testing of rock

Laboratory testing of rock sub-samples comprised:

- point load index
- unconfined compressive strength (UCS) tests

Test	Test carried out in accordance with
Point load index	ISRM Suggested Methods (1985) Suggested method for determining point-load strength. Int. J. Rock Mech. Min. Sci. Geomech. Abstr. 22, pp. 53–60
Uniaxial compression strength tests	ISRM Suggested Methods (1981) Suggested method for determining deformability of rock materials in uniaxial compression, Part 2 and ISRM (2007) Ulusay R, Hudson JA (eds) The complete ISRM suggested methods for rock characterization, testing and monitoring, 2007

The test results are presented in Appendix I.

5.3 Environmental laboratory testing of soils

Environmental testing, as specified by the Client's Representative was conducted on selected soil samples by Derwentside Environmental Testing Services in Consett, Durham.

Rilta suite of analysis was carried out on several samples for landfill disposal criteria. This included testing for a range of determinants, including:

- Metals
- Speciated total petroleum hydrocarbons (TPH)
- Speciated polycyclic aromatic hydrocarbons (PAH)
- BTEX compounds
- Phenols
- Organic matter
- Cyanides
- Asbestos screen
- Sulphate and sulphide
- pH

Results of environmental laboratory testing are presented in Appendix J.

A waste classification report was compiled analysing results of the above testing. The report is presented in Appendix L and findings discussed in Section 7.5.

6 GROUND CONDITIONS

6.1 General geology of the area

Published geological mapping indicate the superficial deposits underlying the site comprise bedrock outcrop or surcrop. These deposits are underlain by granite with muscovite phenocrysts of the Northern and Upper Liffey Valley Plutons.

6.2 Ground types encountered during investigation of the site

A summary of the ground types encountered in the exploratory holes is listed below, in approximate stratigraphic order:

- **Paved Surfaces:** 100mm of tarmac surfacing was encountered in BH06.
- **Made Ground (hardcore):** approximately 100mm of aggregate fill encountered across the site.
- **Made Ground (fill):** reworked sandy gravelly clay fill or sandy clayey gravel fill with varying fragments of concrete, plastic and red brick extending to a depth of 0.40-1.10m.
- **Glacial Till:** brown sandy gravelly clay encountered across the site, generally firm to stiff, locally soft in BH09.

- **Bedrock (Granite):** Strong grey granite was confirmed and encountered at a depth of 2.50m in RC01. The driller noted bedrock was encountered at a depth of 1.10m, however did not core until the could safely install the casing for the hole. Suspected bedrock was encountered in the base of most of the cable percussion boreholes and excavations.

6.3 Groundwater

Groundwater was not noted during drilling at any of the borehole locations. However, it should be noted that the casing used in supporting the borehole walls during drilling may have sealed out any groundwater strikes and the possibility of encountering groundwater during excavation works should not be ruled out.

It should be noted that any groundwater strikes within bedrock may have been masked by the fluid used as the drilling flush medium.

No groundwater was encountered during excavation of any of the pits or trenches.

Continued monitoring of the installed standpipe will give an indication of the seasonal variation in groundwater level which should be factored into design considerations.

7 DISCUSSION

7.1 Proposed construction

It is proposed to construct a new residential development on the site with associated infrastructure.

No further details were available to Causeway Geotech at the time of preparing this report and any designs based on the recommendations or conclusions within this report should be completed in accordance with the current design codes, taking into account the variation and the specific details contained within the exploratory holes. Causeway Geotech were commissioned to provide a geotechnical report, and it is outwith our remit to advise on structure design.

7.2 Recommendations for construction

7.2.1 Summary

Based on the presence of firm to stiff clay or weathered bedrock at relatively shallow depths across the footprint of the proposed development, the implementation of traditional shallow (spread) foundations (strip/pad and trench fill) are considered suitable.

7.2.2 Soil strength parameters

When estimating the shear strength of fine soils (silt/clay), reference is made to the results of Standard Penetration Tests (SPT's) carried out within the boreholes. The undrained shear strength of fine soils can be estimated using the correlation developed by Stroud & Butler:

$$C_u = f_1 \times N$$

where f_1 is typically in the range 4 to 6. A median f_1 value of 5 is adopted for this report.

For granular soils (sand/gravel), a graphical relationship between SPT "N" value and angle of shearing resistance, φ, has been developed by Peck, Hanson and Thorburn. This is published in *Foundation Design and Construction* (Tomlinson, 2001) and is referenced in this report when deriving angles of shearing resistance for the gravel soils.

7.2.3 Foundations and ground floor construction

Foundations should transfer loading to below any Made Ground or subsoil. The recommended foundation construction and allowable bearing pressure (ABP) at the borehole locations are presented in Table 1.

Table 1: Construction recommendations

Borehole	Depth below EGL* to suitable bearing stratum	Estimated ABP (kPa)	Stratum description	Foundation type	Ground floor construction	Groundwater
BH01	1.20m	200	Medium dense GRAVEL	Strip & pad	Ground bearing	Not encountered
BH02	0.40m	Terminated on hand pit (suspected rockhead)				
BH06	1.20m	130	Firm CLAY	Strip & pad	Ground bearing	Not encountered
BH08	1.10m	Terminated in hand pit (suspected rockhead)				
BH09	1.20m	90	Firm CLAY	Strip & pad	Ground bearing	Not encountered
RC01	1.10m	300	Weathered GRANITE	Strip & pad	Ground bearing	Not encountered

*Existing Ground Level

Based on the findings of the ground investigation, spread foundations (strip/pad) are considered suitable with estimated allowable bearing pressures between 90kPa and 300kPa at depths between 0.40m and 1.20m on medium dense gravel, firm to stiff clay or weathered bedrock. Bedrock was confirmed at a depth of 1.10m in RC01, and based on published geological maps for the area, which indicate shallow bedrock in the area, it is likely all cable percussion boreholes, trial pit excavations and slit trench excavations terminated on weathered bedrock, however further investigation by rotary drilling would be required to definitively confirm.

It should be noted that BH06 and BH09 achieved depths of 3.60m and 5.25m respectively suggesting that depth to bedrock does become deeper moving towards the north-east direction of the site, with a local high in the south-west of the site.
BH09 indicated softer strata at depths below those shown in Table 1 with a very soft clay strata encountered at 3.00m. If shallow foundations are chosen, the sizing of the foundation should take this soft stratum into account and ensure minimal impact upon it to reduce the risk of potential settlement.
The base of foundation excavations should be thoroughly inspected in accordance with the Earthworks Specification; any soft or loose soils removed with the resultant void backfilled with ST1 concrete or engineered backfill. A consistent bearing stratum should be provided for any building unit to limit differential settlements.

Given the generally fine grained/cohesive nature of the soils throughout the proposed formation levels, excavations for foundations are likely to be relatively stable. However, any instability can be minimised by battering the side slopes at 1 vertical to 2 horizontal and by limiting the duration that the excavation is open. Groundwater control, where required, will be possible by pumping from sumps formed in the base of excavations.

7.2.4 Floor slabs

Floor slabs should not bear directly onto Made Ground or soft soils. Consequently, the use of ground bearing floor slabs is considered appropriate following the removal of any surface Made Ground and soft clay layers and their replacement using well-graded well-compacted granular fill. However, a suspended floor slab should be adopted where the difference in levels of the proposed floor and the base of Made Ground/soft soils is greater than 600mm.

Therefore, given the depth to the base of Made Ground, a suspended floor slab may be required over parts of the site. The use of intermediate lines of support stub walls would reduce the spans required for flooring units.

7.2.5 Excavations for services

For the installation of services ducts/trenches, it is suggested that open trenching will be the most practicable construction method. Generally speaking, the ground conditions should render the use of open trenching by backhoe excavator possible, with the possibility for some localised breaking based on the varying depth to weathered bedrock/bedrock.

Where working in open trenches, it is thought that trench support systems, by way of a trench box (or possibly sheet piles), will be required to maintain trench stability and safe working conditions. Groundwater control at these locations should be possible by means of sump pumping.

To preclude the eventuality of differential settlements in pipes, they should be laid on a consistent stratum of appropriate allowable bearing capacity and protected with appropriate fill cover.

Where ducts and chambers must be installed in areas where localised soft spots are encountered, the use of geogrid reinforcement along the base of the excavation is recommended. This will stiffen the base of the trench and help control longitudinal differential settlement.

Backfilling of trenches may be completed by using compacted Cl 804 granular fill and reinstated as appropriate.

7.2.6 Bedrock summary

Cable Percussion boreholes, rotary boreholes, trial pit excavations and slit trench excavations indicated that depth to weathered bedrock and competent bedrock varied across the site, with depths shown in Table 2 below.
It should be noted that only rotary borehole conclusively prove depth to bedrock, as this method recovers core from the ground. Cable Percussion boreholes and trial pit/slit trench excavations terminations could possibly be boulders or other obstructions mistaken for bedrock.

Table 2 Depth to rockhead

Exploratory method	Weathered bedrock depth (mbgl)	Bedrock depth (mbgl)
Cable Percussion boreholes	0.40-5.20	n/a
Rotary boreholes	1.10	2.50
Trial Pit excavations	0.90-1.60	n/a
Slit Trench excavations	Varies across the trench	n/a

Based on the depths shown in Table 2, the depth to (weathered) bedrock varies across the site from 0.40-5.20m, being shallowest in the south-west of the site and deepest in the north-east. Therefore, it is reasonable to expect weathered bedrock in any excavation undertaken on site. Where weathered bedrock is encountered, it will likely be in the form of a dense gravel. This stratum should be relatively easy to excavate using a reasonably sized excavator, although some hydraulic breaking will almost certainly be required.

Where hydraulic breaking of rock is required, a plan for control of noise and vibration should be produced in advance of construction activities. This should outline the extent and type of monitoring required for the duration of site works, as well as the requirement for respite periods to punctuate breaking activities.

7.2.7 Soil aggressivity

An assessment of the Aggressive Chemical Environment for Concrete (ACEC) was undertaken through reference to the Building Research Establishment (BRE) Special Digest 1 (2017).

As noted by BRE Special Digest 1, sulphates in the soil and groundwater are the chemical agents most likely to attack concrete. The extent to which sulphates affect concrete is linked to their concentrations, the type of ground, the presence of groundwater, the type of concrete and the form of construction in which concrete is used.

BRE Special Digest 1 identifies four different categories of site which require specific procedures for investigation for aggressive ground conditions:

- Sites not subjected to previous industrial development and not perceived as containing pyrite;
- Sites not subjected to previous industrial development and perceived as containing pyrite;
- Brownfield sites not perceived as containing pyrite;
- Brownfield sites perceived as containing pyrite.

For the purposes of this report the site was classified as not having been subject to previous industrial development and not perceived as containing pyrite.

The results of chemical tests (pH and water soluble sulphate contents) on soil samples indicate Design Sulphate Class DS-1 and ACEC Class AC-1s – reference Table C1 of BRE Special Digest 1 (Building Research Establishment, 2005). The selection of the concrete Design Chemical (DC) Class and Additional Protective Measures (APMs) should be based on the ACEC Class of the ground, taking into account a number of factors including the type of concrete element, its mode of exposure to the aggressive ground and the required durability. The options for limiting values of concrete required to satisfy various DC Classes are presented in Section D5 of BRE Special Digest 1 (2005).

7.2.8 Slit trench summary/existing services

The original scope included thirteen (13) trenches to identify buried services on the site. However, this was reduced, due to all services being diverted off-site prior to CGL beginning works on site. Summary of services found are shown below in Table 3.

Table 3 Summary of slit trench findings

Slit Trench	Services present	Comments
ST01	None	Shallow bedrock encountered across the base of each trench
ST02	None	
ST03	None	
ST04	None	

7.3 Infiltration drainage

Infiltration test/Soakaway tests undertaken on site yielded results as shown below in Table 4.

Table 4 Soakaway test results

GI Ref	Trial Pit	Infiltration Rate (m/h)	Strata tested	Comments
IT01	TP02	0.06	Weathered bedrock at base of pit	
IT02	TP01	n/a	Sandy gravelly CLAY	Test did not soakaway

IT01 indicated an infiltration rate of 0.06 m/h. The rates of infiltration coupled with the soil descriptions imply that the subsoil may be considered suitable media for an infiltration drainage system, however it should be noted that the base of this pit was suspected to be in weathered bedrock. This result should be reviewed if the attenuation tank is not proposed to be within bedrock.

The absence of outflow precluded the calculation of infiltration coefficients in IT02.

Reference should be made the Sustainable Drainage Systems (SuDS) design guidance, taking into account meteorological conditions and a hydrogeological assessment.

7.4 Material re-use

In assessing the reusability of soil several approaches may be considered. Most commonly, the following parameters are used:

a) moisture content and the plastic limit / moisture content ratio of potential Cohesive Fill: an upper bound ratio of 1.2 is often adopted.

b) undrained shear strength (undisturbed and remoulded) of potential Cohesive Fill: a lower bound strength of 40kPa is often adopted.

c) Moisture Condition Value (MCV) of potential Cohesive Fill: a lower bound MCV of 8 is often adopted.

d) California Bearing Ratio (CBR) of potential Cohesive Fill: a lower bound CBR of 2% is often adopted.

e) measured SPT *N*value of potential Cohesive Fill: a lower bound value of 12 is often adopted, using the published relationships between *N*value and c_u, Clayton (1995). However, the individual blow counts need to be examined to allow assessment of whether *N*values have been elevated by the presence of coarse gravel or cobbles.

f) particle size distribution, in particular the fines content, of potential Granular Fill.

g) moisture content of potential Granular Fill as reflected by laboratory test results and the records of groundwater strikes in coarse grained soils

h) coefficient of uniformity, C_u, of granular material.

Allowance will also have to be made of construction expedients and their impact on the proportion of reusable soil, including:

- the effects of weathering of the near surface soils
- the presence of moisture susceptible soils
- the difficulties of separating layers and lenses of potential Granular and Cohesive Fill
- the presence of groundwater in lenses and layers of coarse grained soils.

Note that not all the aforementioned parameters are applicable in each case, more so a combination of those most applicable.

In assessing its suitability for use as fill, reference is made to the insitu test results and the laboratory testing conducted on representative disturbed samples obtained from the trial pits and boreholes during the ground investigation.

PSD results have been compared against gradings outlined in Table 6/2 of the TII publication "*Specification for Road Works Series 600 – Earthworks*", for acceptable earthworks materials. Test results indicated that the material tested can be classified as Class 1 *General Granular Fill* or Class 2 *General Cohesive Fill* subject to further testing.

Thirteen (13) single point CBR tests were completed on samples from within the upper 1m which comprised natural strata in the form of soft, firm and stiff clay or made ground, as it is assumed any earthworks across the site will not go beyond this depth. As can be seen from the tests results, all results indicated values below a CBR of 2% across various moisture content ranges. Therefore, it is likely given the high natural moisture content of the upper soils, coupled with the low CBR value that these soils will not be suitable for re-use as fill.

It is possible that processing of the cohesive material prior to re-use may increase its strength such as decreasing moisture content, however further laboratory testing would be required to confirm. It should be noted that seasonal variations in the groundwater table will affect the natural moisture content of these soils and as such will affect their suitability for re-use.

It should be noted that the field logs make note of low cobble content across the area in concern; these would have tended not to have been included in the samples taken for testing and as such have not been considered in the above assessment. Certain pockets of coarse soils encountered may fall under classification of starter layers.

The above assessment is based on the information gleaned from the investigation points. When carrying out excavation works, further on-site testing should be conducted to verify the type/classification and suitability of fill material.

7.5 Waste Classification

Material excavated from site during clearance works and foundation construction would be considered a waste under the Waste Framework Directive 2008 (WFD) where this material is to be disposed off site. Without prejudice to the provisions of Article 7(3) of Directive 2008/98/EC, if a waste has a non-hazardous entry, it is non-hazardous without further assessment. If a waste has a hazardous entry, it is hazardous without further assessment. If it has a mirror entry in the LoW it must be dealt with in accordance with Section 1.2. of the WFD where it can be classified via a process of analysis against standard criteria set out in the WFD. The assessment process is described in detail in guidance published by the Irish EPA (Waste Classification, List of Waste & Determining if Waste is Hazardous or Non-Hazardous, July 2018) and UK regulatory authorities (Guidance on the Classification and Assessment of Waste: Technical Guidance WM3, Oct 2021). The assessment involves comparison of the concentration of various parameters against defined threshold values.

Due to the typical homogeneous nature of the material present during the ground investigation work the most appropriate List of Waste (LoW) code with 'mirror' entries (i.e. a waste can be either hazardous or non-hazardous) considered applicable to excavated material to be removed from site is:

1. 17-05-03* (soil and stone containing dangerous substances, classified as hazardous) or 17-05-04 (soil and stone other than those mentioned in 17-05-03, not hazardous).

For consideration of material to be removed from site, a waste classification of the solid soil laboratory result was completed using the web-based HazWasteOnline™ software. This tool was used to determine whether the samples results are classified as hazardous or non-hazardous. It is noted however that the environmental regulator (in this case the Irish EPA) and the waste facilitator (for example a landfill operator or treatment facility) have final authority on the decision whether a waste is hazardous or non-hazardous and what the appropriate disposal route is.

7.5.1 Hazwasteonline ™ Classification Results

Thirteen (13 no.) samples were assessed using the HazWasteOnline™ software. All samples were classified as being non-hazardous as presented in the HazWasteOnline™ reports included in Appendix L.

The specific LoW code applied to the material at each sample location is summarised in Table 5. The assigning of the LoW code is based on observations recorded in exploratory hole during the investigation work, an estimation of the percentage of anthropogenic material present at each location and the results of the HazWasteOnline™ assessment. The final LoW codes applied at the time of disposal may vary depending on the percentage of anthropogenic material observed in the excavation phase. Where there is in excess of 2% anthropogenic material observed the LoW code 17 09 04 may be applied[1].

Table 5: Applied LoW Codes

EH location	Depth (m)	Classification	Asbestos Type (if present)	LoW Code
ST01	0.50	Non-Hazardous	NAD#	17 05 04
ST02	0.50	Non-Hazardous	NAD	17 05 04
ST03	0.30	Non-Hazardous	NAD	17 05 04
ST04	0.50	Non-Hazardous	NAD	17 05 04
ST04	1.0	Non-Hazardous	NAD	17 05 04
TP01	0.50	Non-Hazardous	NAD	17 05 04
TP01	1.0	Non-Hazardous	NAD	17 05 04
TP02	0.50	Non-Hazardous	NAD	17 05 04
TP02	1.0	Non-Hazardous	NAD	17 05 04
TP03	0.50	Non-Hazardous	NAD	17 05 04
BH01	0.50	Non-Hazardous	NAD	17 05 04
BH09	0.50	Non-Hazardous	NAD	17 05 04
BH09	1.0	Non-Hazardous	NAD	17 05 04
BH01	1.0	Non-Hazardous	NAD	17 05 04
BH11	0.50	Non-Hazardous	NAD	17 05 04
BH11	1.0	Non-Hazardous	NAD	17 05 04

No asbestos detected

7.5.2 Landfill Waste Acceptance Criteria

WAC limits and the associated laboratory analysis are not suitable for use in the determination of whether a waste is hazardous or non-hazardous. Waste Acceptance Criteria (WAC) have been agreed by the EU (Council Decision 2003/33/EC) and are only applicable to material if it is to be disposed of as a waste at a landfill facility while each individual member state and licensed operator of landfill facilities may apply more stringent WAC.

The laboratory data have been compared to the WAC limits set out in Council Decision 2003/33/EC as well as the specific WAC which the EPA have applied to the Integrated Materials Solutions (IMS) Landfill in north County Dublin. The IMS landfill has higher limits for a range of parameters while still operating under an inert landfill licence. The WAC data considered in combination with the waste classification outlined in Section 7.5.1 allows the most suitable waste category to be applied to the samples tested. The applicable waste category criteria are summarised in Table 6 along with potential outlets for the various waste categories. Note that this list is not exhaustive and applicable at the time of the writing this report. The WAC data is presented in the Appendix L.

1 EPA (2020) Guidance on Waste Acceptance Criteria at Authorised Soil Recovery Facilities

Table 6: Waste Category for off-site Disposal/Recovery

Waste Category	Classification Criteria	Potential disposal facilities
Category A Unlined Soil Recovery Facilities	Soil and Stone only which are free from[2] anthropogenic materials such as concrete, brock timber. Soil must be free from "contamination" e.g. PAHs, Hydrocarbons[3].	Soil Recovery Facilities, Waste Facility Permitted Sites, COR Sites or potential by-product if deemed not to be a waste and complying with requirements under Article 27 of European Waste Directive Regulations (2011)[4].
Category B1 Inert Landfill	Reported concentrations within inert waste limits, which are set out by the adopted EU Council Decision 2003/33/EC establishing criteria and procedures for the acceptance of waste at landfills pursuant to Article 16 and Annex II of Directive 1999/31/EC (2002). Results also found to be non-hazardous using the HWOL application.	Integrated Materials Solutions Limited Partnership (IMS), Naul, County Dublin W0129-02 Walshestown Landfill Walshestown, Blackhall, Tipperkevin & Bawnoge, Naas, Co. Kildare W0254-01
Category B2 Inert Landfill	Reported concentrations greater than Category B1 criteria but less than IMS Hollywood Landfill acceptance criteria, as set out in their Waste Licence W0129-02. Results also found to be non-hazardous using the HWOL application	Integrated Materials Solutions Limited Partnership (IMS), Naul, Co. Dublin W0129-02 Walshestown Landfill, Walshestown, Blackhall, Tipperkevin & Bawnoge, Naas, County Kildare W0254-01[5]
Category C Non-Haz Landfill	Reported concentrations greater than Category B2 criteria but within non-haz landfill waste acceptance limits set out by the adopted EU Council Decision 2003/33/EC establishing criteria and procedures for the acceptance of waste at landfills pursuant to Article 16 and Annex II of Directive 1999/31/EC (2002).	Walshestown Landfill Walshestown, Blackhall, Tipperkevin & Bawnoge, Naas, Co. Kildare W0254-01[6] Ballynagran Landfill, Co. Wicklow. W165-02 Drehid Landfill, Co. Kildare.

[2] Free from equates to <2%
[3] Total BTEX 0.05mg/kg, Mineral Oil 50mg/kg, Total PAHs 1.0mg/kg, Total PCBs 0.05mg/kg and Asbestos No Asbestos Detected – EPA Guidance on Waste Acceptance Criteria at Authorised Soil Recovery Facilities, 2020.
[4] S.I. No. 126/2011 - European Communities (Waste Directive) Regulations 2011 (Article 27).
[5] Licenced to accept Category B2 material for recovery.
[6] Licenced to accept Category C material for recovery

Waste Category	Classification Criteria	Potential disposal facilities
	Results also found to be non-hazardous using the HWOL application.	W0201-01 East Galway Landfill, Co. Galway. W0178-02 Knockharley Landfill, Co. Meath. W0146-02
Category C1 Non-Haz Landfill	As Category C but containing < 0.001% w/w asbestos fibres.	RILTA Environmental Ltd. W0192-03 Enva Portlaoise. W0184-02
Category C2 Non-Haz Landfill	As Category C but containing >0.001% and <0.01% w/w asbestos fibres	RILTA Environmental Ltd. W0192-03 Enva Portlaoise. W0184-02
Category C3 Non-Haz Landfill	As Category C but containing >0.01% and <0.1% w/w asbestos fibres.	RILTA Environmental Ltd. W0192-03 Enva Portlaoise. W0184-02
Category D Hazardous Treatment	Results found to be hazardous using HWOLApplication.	RILTA Environmental Ltd. W0192-03 Enva Portlaoise. W0184-02
Category D1 Hazardous Treatment	Results found to be hazardous due to the presence of asbestos (>0.1%).	RILTA Environmental Ltd. W0192-03

The Waste Classification report shows that the material tested can be classified as non-hazardous material considering the List of Wastes (LoW) code 17 for Construction and Demolition Wastes (including soils excavated from contaminated sites), specifically 17 05 04.

On review of the laboratory results against the Calculated Maximum Concentrations and Soil Trigger Levels for Metals in the defined Geochemical Domains, as detailed in the EPA Guidance on Waste Acceptance Criteria at Authorised Soil Recovery Facilities (EPA, 2020), the results of the chemical analysis show that most results in excess of the trigger levels for Domain 6 where the site is located as detailed in Table 7.

Table 7: Laboratory results assessed against the Maximum Concentrations /or Trigger Levels Domain 2 (mg/kg unless states otherwise)

Determinant	Max. Concentration/ Trigger Level	ST01 0.50	ST02 0.50	ST03 0.30	ST04 0.50	ST04 1.0	TP01 0.50	TP01 1.0	TP02 0.50	TP02 1.0	TP03 0.50	BH01 0.50	BH09 0.50	BH09 1.0
Arsenic	85.6	47	34	43	22	33	20	18	20	22	180	13	28	17
Cadmium	2.38	1.8	1.2	0.5	1.8	1.3	1.4	1.3	1.0	1.3	0.8	0.7	0.7	0.9
Chromium	54.0	20	16	12	18	16	20	21	10	13	18	17	11	14
Copper	40.0	44	29	17	43	28	58	40	180	56	46	26	19	36
Mercury	0.53	0.12	0.08	<0.05	<0.05	0.13	0.84	2.2	1.3	1.7	1.9	<0.05	<0.05	0.17
Nickel	28.2	32	18	15	30	27	38	34	18	23	21	17	15	22
Lead	108	63	29	26	65	38	58	40	180	56	46	24	47	44
Zinc	168	110	65	57	120	92	100	95	68	88	83	70	66	75
TOC	3%	2.2	0.5	1.0	2.5	2.0	1.8	1.2	2.5	2.4	1.1	8.5	4.1	2.0
Total BTEX	0.05	<0.04	<0.04	<0.04	<0.04	<0.04	<0.04	<0.04	<0.04	<0.04	<0.04	<0.04	<0.04	<0.04
Mineral Oil	50	110	590	55	22	260	<10	<10	270	190	41	140	35	130
Total PAHs	1	24	<1.6	2.2	1.9	15	<1.6	<1.6	18	11	<1.6	4.8	<1.6	2.9
Total PCBs	0.05	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01
Asbestos	NAD	NAD	NAD	NAD	NAD	NAD	NAD	NAD	NAD	NAD	NAD	NAD	NAD	NAD

All samples were assessed in terms of waste classification using the HazWasteOnline™ software, the WAC set out in Council Decision 2003/33/EC and in the IMS specific WAC and against the EPA maximum concentration values to give a final waste categorisation to determine the most appropriate disposal route for any waste generated. The final and most applicable waste category for each sample is summarised in Table 8. It is noted again that the environmental regulator (in this case the Irish EPA) and the waste facilitator (for example a landfill operator or treatment facility) have final authority on the decision the appropriate disposal route.

Table 8: Applicable Waste Category for stockpile samples

EH location	Depth (m)	Waste Category	LoW Code
ST01	0.50	Category C	17 05 04
ST02	0.50	Category C	17 05 04
ST03	0.30	Category C	17 05 04
ST04	0.50	Category C	17 05 04
ST04	1.0	Category C	17 05 04
TP01	0.50	Category C	17 05 04
TP01	1.0	Category C	17 05 04
TP02	0.50	Category C	17 05 04
TP02	1.0	Category C	17 05 04
TP03	0.50	Category C	17 05 04
BH01	0.50	Category C	17 05 04
BH09	0.50	Category C	17 05 04
BH09	1.0	Category C	17 05 04

It is noted that this waste classification assessment has been based solely on the available sample results and corresponding investigation findings. In making this assessment all due care and attention to available and relevant legislative and guidance frameworks has been taken in arriving at the conclusions. All results should be presented to a licenced waste carrier to identify a suitable disposal route.

8 REFERENCES

Geotechnical Society of Ireland (2016), Specification & Related Documents for Ground Investigation in Ireland.

IS EN 1997-2: 2007: Eurocode 7 - Geotechnical design - Part 2 Ground investigation and testing. National Standards Authority of Ireland.

BS 5930: 2015+A1:2020: Code of practice for ground investigations. British Standards Institution.

BS EN ISO 14688-1:2018: Geotechnical investigation and testing. Identification and classification of soil. Part 1 Identification and description.

BS EN ISO 14688-2:2018: Geotechnical investigation and testing. Identification and classification of soil. Part 2 Principles for a classification.

BS 1377: 1990: Methods of test for soils for civil engineering purposes. British Standards Institution.

BS EN ISO 14689-1:2018: Geotechnical investigation and testing. Identification and classification of rock. Identification and description.

BS EN ISO 22476-3:2005+A1:2011: Geotechnical investigation and testing. Field testing. Standard penetration test.

Building Research Establishment (2007), BRE Digest 365: Soakaways.

CAUSEWAY GEOTECH

APPENDIX A

SITE AND EXPLORATORY HOLE LOCATION PLANS

CAUSEWAY GEOTECH

Project No.:	23-0881D	**Client:**	NDFA
Project Name:	NDFA Social Housing Lot 3 - Lambs Cross	**Client's Representative:**	Malone O'Regan Consulting Engineers

Legend Key

Title:

Site Location Plan

Last Revised:	**Scale:**
20/12/2023	1:8000

CAUSEWAY GEOTECH

Project No.:	23-0881D	**Client:**	NDFA
Project Name:	NDFA Social Housing Lot 3 - Lambs Cross	**Client's Representative:**	Malone O'Regan Consulting Engineers

Legend Key

- Locations By Type - CP
- Locations By Type - IP
- Locations By Type - RC
- Locations By Type - TP

NOTE: Aerial mapping is outdated. Site is currently occupied by a contractor's compound.

Title:
Exploratory Hole Location Plan

Last Revised:	**Scale:**
20/12/2023	1:500

CAUSEWAY GEOTECH

APPENDIX B

BOREHOLE LOGS

CAUSEWAY GEOTECH

Project No.	Project Name:	Borehole ID
23-0881D	NDFA Social Housing Lot 3 - Lambs Cross	BH01
	Client: NDFA	
	Client's Rep: Malone O'Regan Consulting Engineers	

Method	Plant Used	Top (m)	Base (m)	Coordinates
Cable Percussion	Dando 2000	0.00	2.10	718160.96 E 725400.85 N

Final Depth:	Start Date:	Driller:	Sheet 1 of 1
2.10 m	14/12/2023	BE	Scale: 1:40
Elevation: 125.08 mOD	**End Date:** 14/12/2023	**Logger:** SR	FINAL

Depth (m)	Sample / Tests	Field Records	Casing Depth (m)	Water Depth (m)	Level mOD	Depth (m)	Legend	Description	Water	Backfill
0.10 - 1.20	B4				124.98	0.10		MADE GROUND: Grey angular fine to coarse GRAVEL.		
0.50	ES1							MADE GROUND: Firm brown slightly sandy slightly gravelly CLAY. Sand is fine to coarse. Gravel is subangular fine to coarse.		
1.00	D3									
1.00	ES2									
1.20 - 1.65	D6				123.88	1.20				
1.20 - 2.00	B5									
1.20 - 1.65	SPT (S)	N=24 (3,4/6,6,6,6) Hammer SN = 0895	1.20	0.00				Medium dense brown sandy silty subrounded fine to coarse GRAVEL with medium cobble content. Sand is fine to coarse. Cobbles are subrounded.		
2.00 - 2.04	SPT (S)	50 (25 for 10mm/50 for 30mm) Hammer SN = 0895	2.00	0.00	123.08 122.98	2.00 2.10		GRANITE (Recovered through percussive drilling as dense angular gravel)		
								End of Borehole at 2.10m		

Water Strikes

Struck at (m)	Casing to (m)	Time (min)	Rose to (m)

Casing Details

To (m)	Diameter

Water Added

From (m)	To (m)

Chiselling Details

From (m)	To (m)	Time (hh:mm)

Remarks

Inspection pit hand dug to 1.20m.
No groundwater encountered.

Termination Reason

Terminated at refusal on boulder / possible bedrock.

Last Updated

06/02/2024

AGS

CAUSEWAY GEOTECH

Project No. 23-0881D	**Project Name:** NDFA Social Housing Lot 3 - Lambs Cross		**Trial Pit ID** BH02
Coordinates 718148.58 E 725372.67 N	**Client:** NDFA		
Method: Inspection Pit	**Client's Representative:** Malone O'Regan Consulting Engineers		Sheet 1 of 1 Scale: 1:25
Plant: Hand Tools	**Elevation** 125.12 mOD	**Date:** 14/12/2023	**Logger:** BE	FINAL

Depth (m)	Sample / Tests	Field Records	Level (mOD)	Depth (m)	Legend	Description	Water
			125.02	0.10		MADE GROUND: Grey slightly sandy subangular fine to coarse GRAVEL. Sand is fine to coarse.	
						MADE GROUND: Brown slightly sandy slightly clayey subangular fine to coarse GRAVEL with low cobble content. Sand is fine to coarse. Cobbles are subangular of granite.	
			124.72	0.40		End of trial pit at 0.40m	

0.5
1.0
1.5
2.0
2.5
3.0
3.5
4.0
4.5

Water Strikes	
Struck at (m)	Remarks

Depth: 0.40
Width: 0.40
Length: 0.50

Remarks:
Inspection pit hand dug to 0.40m.

Stability:
Stable

Termination Reason
Terminated at refusal on boulder / possible bedrock.

Last Updated
06/02/2024

AGS

CAUSEWAY GEOTECH

Project No.	Project Name:	Borehole ID
23-0881D	NDFA Social Housing Lot 3 - Lambs Cross	BH06
	Client: NDFA	
	Client's Rep: Malone O'Regan Consulting Engineers	

Method	Plant Used	Top (m)	Base (m)	Coordinates
Cable Percussion	Dando 2000	0.00	3.50	718181.82 E 725402.82 N

Final Depth:	Start Date:	Driller:	Sheet 1 of 1
3.60 m	12/12/2023	BE	Scale: 1:40
Elevation: 124.39 mOD	**End Date:** 12/12/2023	**Logger:** SR	FINAL

Depth (m)	Sample / Tests	Field Records	Casing Depth (m)	Water Depth (m)	Level mOD	Depth (m)	Legend	Description	Water	Backfill
0.10 - 0.60	B4				124.28	0.10		TARMAC MADE GROUND: Soft greyish brown slightly sandy slightly gravelly CLAY. Sand is fine to coarse. Gravel is subangular fine to coarse.		
0.50	ES1									
0.60 - 1.20	B5				123.78	0.60		Firm dark greyish black slightly sandy slightly gravelly CLAY. Sand is fine to coarse. Gravel is subrounded fine to medium.		
1.00	D3									
1.00	ES2									
1.20 - 1.65	D6									
1.20 - 1.65	SPT (S)	N=13 (1,2/3,3,3,4) Hammer SN = 0895	1.20	0.00						
2.00	D7									
2.00 - 2.45	D8									
2.00 - 3.00	B9									
2.00 - 2.45	SPT (S)	N=17 (1,3/4,4,5,4) Hammer SN = 0895	2.00	0.00						
3.00	D13									
3.00 - 3.45	D12									
3.00 - 3.50	B10									
3.00 - 3.45	SPT (S)	N=14 (2,3/4,3,3,4) Hammer SN = 0895	3.00	0.00						
					120.88	3.50		GRANITE (Recovered through percussive drilling as dense angular gravel)		
3.50 - 3.60	B11				120.78	3.60		End of Borehole at 3.60m		
3.60 - 3.64	SPT (S)	50 (25 for 15mm/50 for 25mm) Hammer SN = 0895	3.00	0.00						

Water Strikes

Struck at (m)	Casing to (m)	Time (min)	Rose to (m)

Casing Details

To (m)	Diameter
3.00	200

Water Added

From (m)	To (m)

Chiselling Details

From (m)	To (m)	Time (hh:mm)
3.50	3.60	01:00

Remarks

Inspection pit hand dug to 1.20m.
No groundwater encountered.

Termination Reason

Terminated at refusal on boulder / possible bedrock.

Last Updated

06/02/2024

AGS

CAUSEWAY GEOTECH

Project No.	Project Name:	Borehole ID
23-0881D	NDFA Social Housing Lot 3 - Lambs Cross	BH08
	Client: NDFA	
	Client's Rep: Malone O'Regan Consulting Engineers	

Method	Plant Used	Top (m)	Base (m)	Coordinates
Cable Percussion	Dando 2000	0.00	1.10	718181.72 E 725384.44 N

Final Depth:	Start Date:	Driller:	Sheet 1 of 1
1.10 m	12/12/2023	BE	Scale: 1:40
Elevation: 124.56 mOD	**End Date:** 12/12/2023	**Logger:** SR	FINAL

Depth (m)	Sample / Tests	Field Records	Casing Depth (m)	Water Depth (m)	Level mOD	Depth (m)	Legend	Description	Water	Backfill
0.00 - 0.30	B4							MADE GROUND: Grey slightly sandy angular fine to coarse GRAVEL. Sand is fine to coarse.		
0.30 - 1.00	B5				124.26	0.30		Soft yellowish brown slightly sandy gravelly SILT. Sand is fine to coarse. Gravel is subrounded fine to medium.		
0.50	ES1									
1.00	D3				123.56	1.00		GRANITE (Recovered as angular gravel)		
1.00	ES2				123.46	1.10		End of Borehole at 1.10m		
1.00 - 1.10	B6									

Water Strikes

Struck at (m)	Casing to (m)	Time (min)	Rose to (m)

Casing Details

To (m)	Diameter

Water Added

From (m)	To (m)

Chiselling Details

From (m)	To (m)	Time (hh:mm)

Remarks

Inspection pit hand dug to 1.10m.
No groundwater encountered.

Termination Reason

Terminated at refusal on boulder / possible bedrock.

Last Updated

06/02/2024

AGS

CAUSEWAY GEOTECH

Project No.	Project Name:	Borehole ID
23-0881D	NDFA Social Housing Lot 3 - Lambs Cross	BH09
	Client: NDFA	
	Client's Rep: Malone O'Regan Consulting Engineers	

Method	Plant Used	Top (m)	Base (m)	Coordinates
Cable Percussion	Dando 2000	0.00	5.20	718216.36 E 725402.24 N

Final Depth:	Start Date:	Driller:	Sheet 1 of 1
5.25 m	11/12/2023	BE	Scale: 1:40
Elevation: 123.69 mOD	**End Date:** 11/12/2023	**Logger:** SR	FINAL

Depth (m)	Sample / Tests	Field Records	Casing Depth (m)	Water Depth (m)	Level mOD	Depth (m)	Legend	Description	Water	Backfill
0.10 - 0.60	B4				123.59	0.10		MADE GROUND: Grey slightly sandy angular fine to coarse GRAVEL. Sand is fine to coarse.		
0.50	ES1							MADE GROUND: Soft dark grey slightly sandy gravelly CLAY. Sand is fine to coarse. Gravel is subangular fine to coarse.		
0.60 - 1.20	B5				123.09	0.60		Firm brown slightly gravelly sandy CLAY. Sand is fine to coarse. Gravel is subrounded fine to medium.		
1.00	D3									
1.00	ES2									
1.20 - 1.65	D6									
1.20 - 2.00	B11									
1.20 - 1.65	SPT (S)	N=9 (1,2/2,2,2,3) Hammer SN = 0895	1.20	0.00						
2.00	D9									
2.00 - 2.45	D7									
2.00 - 3.00	B12									
2.00 - 2.45	SPT (S)	N=12 (1,2/3,3,3,3) Hammer SN = 0895	2.00	0.00						
3.00	D10				120.69	3.00		Soft becoming firm grey slightly gravelly sandy CLAY. Sand is fine to coarse. Gravel is subrounded fine to medium.		
3.00 - 3.45	D8									
3.00 - 3.45	SPT (S)	N=5 (1,1/1,1,1,2) Hammer SN = 0895	3.00	0.00						
4.00	D14									
4.00 - 4.45	D13									
4.00 - 5.00	B16									
4.00 - 4.45	SPT (S)	N=9 (1,1/2,2,3,2) Hammer SN = 0895	3.00	0.00						
5.00	D15									
5.00 - 5.20	B17				118.49	5.20				
5.00 - 5.24	SPT (S)	50 (2,3/50 for 93mm) Hammer SN = 0895	3.00	0.00	118.44	5.25		GRANITE (Recovered through percussive drilling as dense angular gravel) End of Borehole at 5.25m		

Water Strikes

Struck at (m)	Casing to (m)	Time (min)	Rose to (m)

Casing Details

To (m)	Diameter
3.00	200

Water Added

From (m)	To (m)

Chiselling Details

From (m)	To (m)	Time (hh:mm)
5.20	5.25	00:45

Remarks

Inspection pit hand dug to 1.20m.
No groundwater encountered.

Termination Reason

Terminated at refusal on boulder / possible bedrock.

Last Updated

06/02/2024

AGS

CAUSEWAY GEOTECH

Project No.	Project Name:	Borehole ID
23-0881D	NDFA Social Housing Lot 3 - Lambs Cross	RC01
	Client: NDFA	
	Client's Rep: Malone O'Regan Consulting Engineers	

Method	Plant Used	Top (m)	Base (m)
Rotary Percussion	Comacchio 405	0.00	2.50
Rotary Coring	Comacchio 405	2.50	5.20

Coordinates: 718150.55 E, 725394.35 N

Final Depth: 5.20 m | Start Date: 14/12/2023 | Driller: SMCW

Elevation: 125.26 mOD | End Date: 14/12/2023 | Logger:

Sheet 1 of 1
Scale: 1:40
FINAL

Depth (m)	Samples / Field Records	TCR	SCR	RQD	FI	Casing Depth (m)	Water Depth (m)	Level mOD	Depth (m)	Legend	Description
								124.76	0.50		MADE GROUND: Grey sandy angular fine to coarse GRAVEL with high cobble content and fragments of concrete and red brick. Sand is fine to coarse. Cobbles are subangular.
								124.16	1.10		MADE GROUND: Soft dark brown sandy gravelly CLAY. Sand is fine to coarse. Gravel is subrounded fine to coarse.
								122.76	2.50		GRANITE (Driller's description)
2.70 - 2.90	C2										Strong grey coarse grained GRANITE. Slightly weathered: slightly closer fracture spacing and rare orange discolouration. Discontinuities: 1. 60 to 80 degree joints, medium spaced (160/250/320), planar, smooth and unstained.
3.00 - 3.10	C1	100	100	95							
3.20 - 3.50	C3										
3.70					2						
		100	100	100							
5.20								120.06	5.20		End of Borehole at 5.20m
		TCR	SCR	RQD	FI						

Water | Backfill

0.5 1.0 1.5 2.0 2.5 3.0 3.5 4.0 4.5 5.0 5.5 6.0 6.5 7.0

Water Strikes

Struck at (m)	Casing to (m)	Time (min)	Rose to (m)

Casing Details

To (m)	Diam (mm)
2.50	200

Core Barrel

Flush Type

Remarks

Inspection pit hand dug to 1.20m.
No groundwater encountered.

Termination Reason

Terminated at scheduled depth.

Last Updated

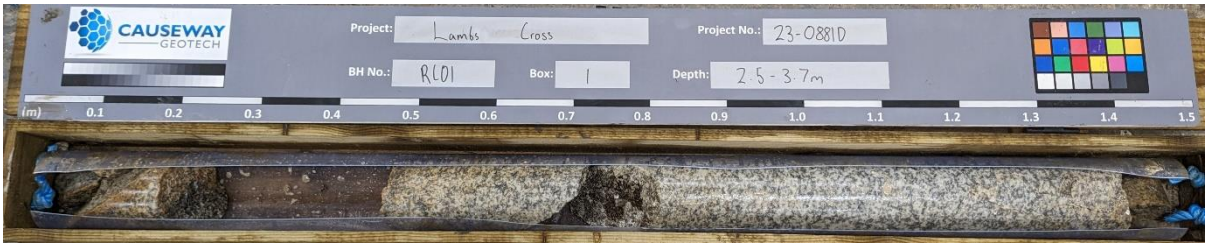
06/02/2024

AGS

CAUSEWAY GEOTECH

APPENDIX C

CORE PHOTOGRAPHS



RC01 Box 1 (2.50-3.70m)

RC01 Box 2 (3.70-5.20m)

CAUSEWAY GEOTECH

APPENDIX D

TRIAL PIT LOGS

CAUSEWAY GEOTECH

Project No. 23-0881D	**Project Name:** NDFA Social Housing Lot 3 - Lambs Cross		**Trial Pit ID** TP01
Coordinates 718183.52 E 725398.41 N	**Client:** NDFA		
Method: Trial Pitting	**Client's Representative:** Malone O'Regan Consulting Engineers		Sheet 1 of 1 Scale: 1:25
Plant: 3T Tracked Excavator	**Elevation** 124.40 mOD	**Date:** 20/11/2023	**Logger:** EGA	FINAL

Depth (m)	Sample / Tests	Field Records	Level (mOD)	Depth (m)	Legend	Description	Water
						MADE GROUND: Dark grey sandy slightly clayey subangular fine to coarse GRAVEL. Sand is fine to coarse.	
0.30 - 1.30	B4		124.10	0.30		MADE GROUND: Firm brown slightly sandy slightly gravelly CLAY with roots and rootlets. Sand is fine to coarse. Gravel is subangular fine to medium of mixed lithologies.	
0.50	ES1						
1.00	ES2						
1.40 - 1.80	B5		123.00	1.40		Firm brown slightly gravelly sandy CLAY. Sand is fine to coarse. Gravel is subangular fine to medium of mixed lithologies.	
1.50	ES3						
			122.60	1.80		End of trial pit at 1.80m	

0.5 1.0 1.5 2.0 2.5 3.0 3.5 4.0 4.5

Water Strikes	
Struck at (m)	Remarks

Depth: 1.80
Width: 0.50
Length: 1.60

Remarks:
No groundwater encountered.
Soakaway IT01 completed in pit.

Stability:	Termination Reason	Last Updated
Stable	Terminated on refusal - possible bedrock.	15/01/2024

AGS

CAUSEWAY GEOTECH

Project No. 23-0881D	**Project Name:** NDFA Social Housing Lot 3 - Lambs Cross		**Trial Pit ID** TP02
Coordinates 718165.96 E 725398.26 N	**Client:** NDFA		
Method: Trial Pitting	**Client's Representative:** Malone O'Regan Consulting Engineers		Sheet 1 of 1 Scale: 1:25
Plant: 3T Tracked Excavator	**Elevation** 124.90 mOD	**Date:** 20/11/2023	**Logger:** EGA	FINAL

Depth (m)	Sample / Tests	Field Records	Level (mOD)	Depth (m)	Legend	Description	Water
						MADE GROUND: Very dark grey sandy slightly clayey subangular fine to coarse GRAVEL. Sand is fine to coarse.	
0.25 - 1.00	B3		124.65	0.25		MADE GROUND: Stiff brown slightly gravelly sandy SILT with roots, rootlets and fragments of plastic. Sand is fine to coarse. Gravel is subangular fine to medium of mixed lithologies.	
0.50 - 1.00	ES1						
1.00 - 1.50	B4		123.90	1.00		Firm brown slightly sandy gravelly CLAY. Gravel is subangular fine to medium of mixed lithologies.	
1.50	ES2						
			123.30	1.60		End of trial pit at 1.60m	

0.5 1.0 1.5 2.0 2.5 3.0 3.5 4.0 4.5

Water Strikes	
Struck at (m)	Remarks

Depth: 1.60
Width: 0.50
Length: 1.60

Remarks:
No groundwater encountered.
Soakaway IT02 completed in pit.

Stability:	Termination Reason	Last Updated
Stable	Terminated on refusal - possible bedrock.	15/01/2024

AGS

CAUSEWAY GEOTECH

Project No. 23-0881D	**Project Name:** NDFA Social Housing Lot 3 - Lambs Cross		**Trial Pit ID** TP03
Coordinates 718149.30 E 725378.54 N	**Client:** NDFA		
Method: Trial Pitting	**Client's Representative:** Malone O'Regan Consulting Engineers		Sheet 1 of 1 Scale: 1:25
Plant: 3T Tracked Excavator	**Elevation** 125.20 mOD	**Date:** 21/11/2023	**Logger:** EGA	FINAL

Depth (m)	Sample / Tests	Field Records	Level (mOD)	Depth (m)	Legend	Description	Water
0.10 - 0.60	B2		125.10	0.10		MADE GROUND: Dark grey slightly sandy slightly clayey subangular fine to coarse GRAVEL. Sand is fine to coarse.	
						MADE GROUND: Firm brown slightly sandy gravelly SILT with fragments of red brick. Sand is fine to coarse. Gravel is subangular fine to medium.	
0.50	ES1						
0.60 - 0.90	B3		124.60	0.60		Firm brown slightly sandy slightly gravelly CLAY. Sand is fine to coarse. Gravel is subangular fine to medium.	
			124.30	0.90		End of trial pit at 0.90m	

0.5 1.0 1.5 2.0 2.5 3.0 3.5 4.0 4.5

Water Strikes	
Struck at (m)	Remarks

Depth: 0.90
Width: 0.40
Length: 1.45

Remarks:
No groundwater encountered.

Stability:
Stable

Termination Reason
Terminated on refusal - possible bedrock.

Last Updated
15/01/2024

AGS

CAUSEWAY GEOTECH

APPENDIX E

TRIAL PIT PHOTOGRAPHS


CAUSEWAY
GEOTECH
Project Name
NDFA Lambs Cross
Project Number
23-0881D
Date
20-11-2023
EH Number
TP01
(m) 0.1 0.2 0.3 0.4 0.5

TP01

TP01


CAUSEWAY
GEOTECH
Project Name
NDFA Lambs Cross
Project Number
23-0881D
Date
20-11-2023
EH Number
TP01
(m) 0.1 0.2 0.3 0.4 0.5

TP01

TP01


CAUSEWAY
GEOTECH
Project Number
23-0881D
Project Name
NDFA Lambs Cross
EH Number
TP01
Date
20-11-2023
0.2
0.3
0.4
0.5

TP01


CAUSEWAY
GEOTECH
Project Name
NDFA Lambs Cross
Project Number
23-0881D
Date
20-11-2023
EH Number
TP01
(m)
0.1
0.2
0.3
0.4
0.5

TP01

TP01


CAUSEWAY
GEOTECH
Project Name
NDFA Lambs Cross
Project Number
23-0881D
Date
20-11-2023
EH Number
TP02
(m) 0.1 0.2 0.3 0.4 0.5

TP02


CAUSEWAY
GEOTECH
Project Name
NDFA Lambs Cross
Project Number
23-0881D
Date
20-11-2023
EH Number
TP02
(m) 0.1 0.2 0.3 0.4 0.5

TP02

TP02

TP02


CAUSEWAY
GEOTECH
Project Name
NDFA Lambs Cross
Project Number
23-0881D
Date
11-2023
TP02
(m) 0.1 0.2 0.3 0.4 0.5

TP02

TP02

TP02


CAUSEWAY
GEOTECH
Project Name
NDFA Lambs Cross
Project Number
23-0881D
Date
21-11-2023
EH Number
TP03
(m) 0.1 0.2 0.3 0.4 0.5

TP03


CAUSEWAY
GEOTECH
Project Name
NDFA Lambs Cross
Project Number
23-0881D
Date
21-11-2023
EH Number
TP03
(m) 0.1 0.2 0.3 0.4

TP03

TP03


CAUSEWAY GEOTECH
Project Number
23-0881D
TP03
NDFA Lambs Cross

TP03

TP03


CAUSEWAY
GEOTECH
Project Name
NDFA Lambs Cross
Project Number
23-0881D
Date
21-11-2023
EH Number
TP03
(m)
0.1
0.2
0.3
0.4
0.5

TP03

TP03

CAUSEWAY GEOTECH

APPENDIX F

SLIT TRENCH LOGS AND DRAWINGS

CAUSEWAY GEOTECH

Project No. 23-0881D	**Project Name:** NDFA Social Housing Lot 3 - Lambs Cross		**Trial Pit ID** ST01
Coordinates 718143.77 E 725391.17 N	**Client:** NDFA		
Method: Slit Trenching	**Client's Representative:** Malone O'Regan Consulting Engineers		Sheet 1 of 1 Scale: 1:25
Plant: 3T Tracked Excavator	**Elevation** 124.90 mOD	**Date:** 20/11/2023	**Logger:** EGA	FINAL

Depth (m)	Sample / Tests	Field Records	Level (mOD)	Depth (m)	Legend	Description	Water
0.15 - 0.90	B2		124.75	0.15		MADE GROUND: Dark grey slightly sandy subangular fine to coarse GRAVEL. Sand is fine to coarse.	
0.50	ES1					MADE GROUND: Stiff brown slightly sandy gravelly CLAY with fragments of plastic. Sand is fine to coarse. Gravel is subangular fine to coarse.	
			124.00	0.90		End of trial pit at 0.90m	

0.5 1.0 1.5 2.0 2.5 3.0 3.5 4.0 4.5

Water Strikes	
Struck at (m)	Remarks

Depth: 0.90
Width: 0.50
Length: 5.00

Remarks:
No groundwater encountered.

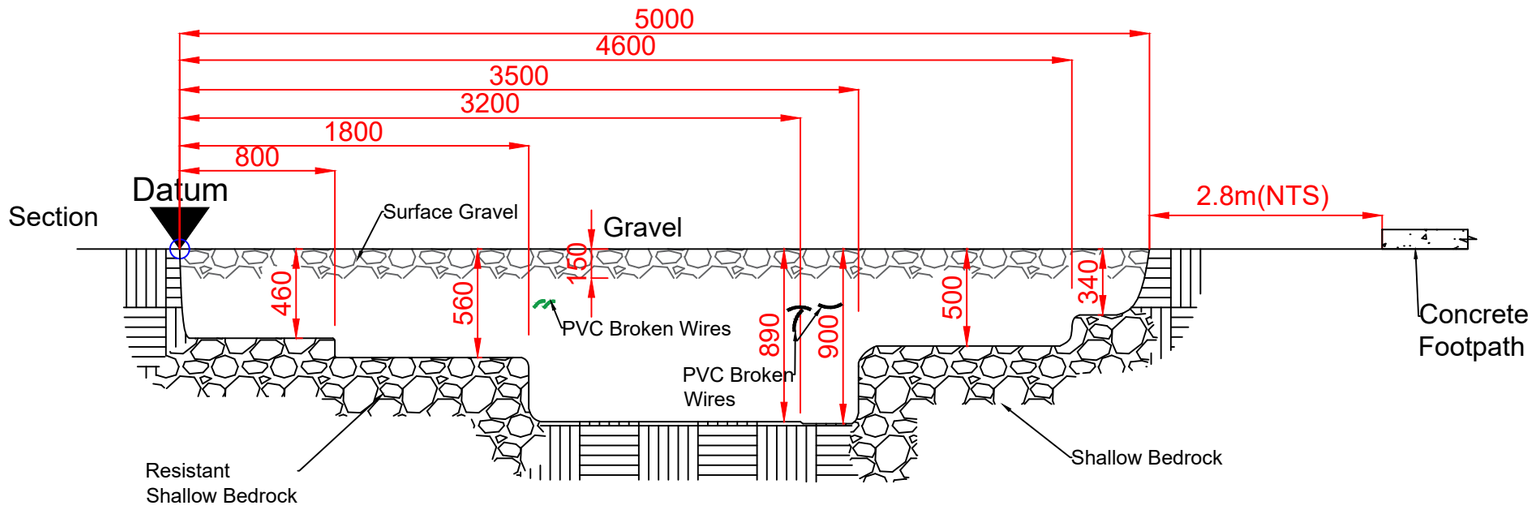
Stability:	Termination Reason	Last Updated
Stable	Terminated on refusal - possible bedrock.	15/01/2024

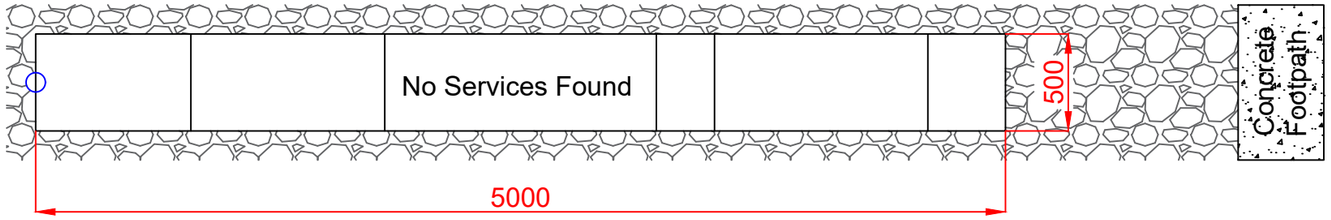
AGS

JOB NUMBER: 23-0881D	JOB NAME: NDFA Social Housing Lot 3 – Lamb's Cross	LOCATION: ST01

CLIENT:	CLIENTS REPRESENTATIVE:	CREW:	PLANT & EQUIPMENT
NDFA	Malone O'Regan Consulting Engineers	EGA	3 Tonne Excavator & Hand Tools

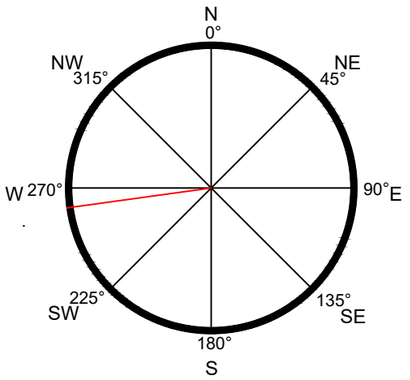
TRENCH: (SECTION & PLAN)





No:	Type of Service:	Diameter (in mm)	Depth to Top of Service (m)	Distance to Centre of Service (m)	Details/Comments
01					No Services Found
02					
03					
04					
05					
06					
07					
08					
09					
10					
11					
12					
13					
14					
15					

TRENCH - ORIENTATION



TRENCH ORIENTATED : 265° FROM NORTH

COORDINATES: DATUM

EASTING: 718143.77

NORTHING: 725391.17

ELEVATION: 124.90

TRENCH LENGTH (m) : 5.00

TRENCH DEPTH (m) : 0.90

TRENCH WIDTH (m) : 0.50

STABILITY: Stable

GROUNDWATER: None

SCALE: NTS@A3

DRAWN: JD

CHECKED: SR

DATE EXCAVATED: 20/11/2023

CAUSEWAY GEOTECH

CAUSEWAY GEOTECH

Project No. 23-0881D	**Project Name:** NDFA Social Housing Lot 3 - Lambs Cross		**Trial Pit ID** ST02
Coordinates 718145.81 E 725373.19 N	**Client:** NDFA		
Method: Slit Trenching	**Client's Representative:** Malone O'Regan Consulting Engineers		Sheet 1 of 1 Scale: 1:25
Plant: 3T Tracked Excavator	**Elevation** 125.18 mOD	**Date:** 21/11/2023	**Logger:** EGA	FINAL

Depth (m)	Sample / Tests	Field Records	Level (mOD)	Depth (m)	Legend	Description	Water
			125.08	0.10		MADE GROUND: Dark grey slightly sandy slightly clayey subangular fine to coarse GRAVEL. Sand is fine to coarse.	
						MADE GROUND: Brown slightly sandy clayey subangular fine to coarse GRAVEL with low cobble content and fragments of plastic. Sand is fine to coarse. Cobbles are subangular.	
0.50	ES1						
0.65 - 0.90	B2		124.53	0.65		Stiff brown slightly sandy slightly gravelly CLAY. Sand is fine to coarse. Gravel is subrounded fine to medium.	
			124.28	0.90		End of trial pit at 0.90m	

0.5 1.0 1.5 2.0 2.5 3.0 3.5 4.0 4.5

Water Strikes	
Struck at (m)	Remarks

Depth: 0.90
Width: 0.50
Length: 5.00

Remarks:
No groundwater encountered.

Stability:
Stable

Termination Reason
Terminated on refusal - possible bedrock.

Last Updated
15/01/2024

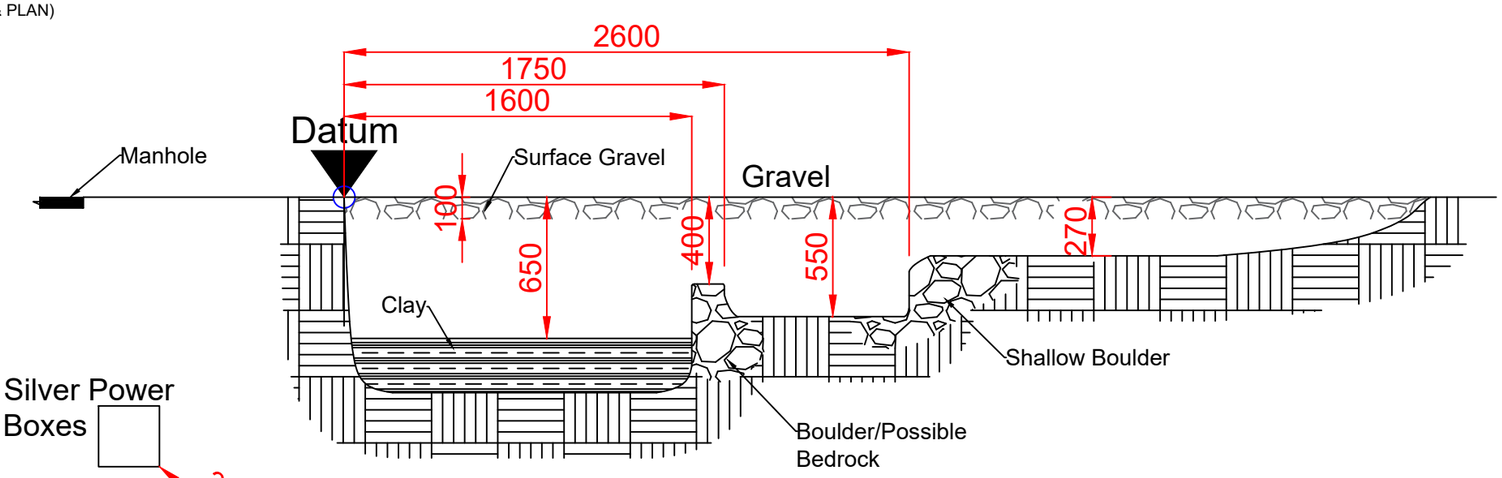
AGS

JOB NUMBER: 23-0881D	JOB NAME: NDFA Social Housing Lot 3 – Lamb's Cross	LOCATION: ST02

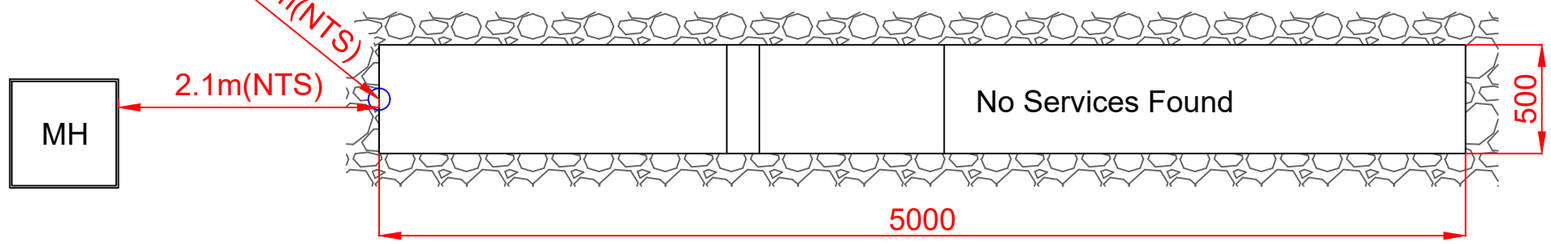
CLIENT:	CLIENTS REPRESENTATIVE:	CREW:	PLANT & EQUIPMENT
NDFA	Malone O'Regan Consulting Engineers	EGA	3 Tonne Excavator & Hand Tools

TRENCH: (SECTION & PLAN)

Section

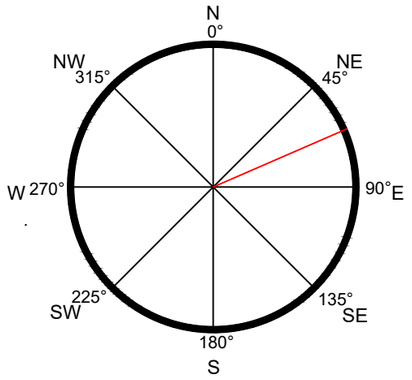


Plan



No:	Type of Service:	Diameter (in mm)	Depth to Top of Service (m)	Distance to Centre of Service (m)	Details/Comments
01					No Services Found
02					
03					
04					
05					
06					
07					
08					
09					
10					
11					
12					
13					
14					
15					

TRENCH - ORIENTATION



TRENCH ORIENTATED : 65° FROM NORTH

COORDINATES: DATUM

EASTING: 718145.81

NORTHING: 725373.19

ELEVATION: 125.02

TRENCH LENGTH (m) : 5.00

TRENCH DEPTH (m) : 0.90

TRENCH WIDTH (m) : 0.50

STABILITY: Stable

GROUNDWATER: None

SCALE: NTS@A3

DRAWN: JD

CHECKED: SR

DATE EXCAVATED: 20/11/2023

CAUSEWAY GEOTECH

CAUSEWAY GEOTECH

Project No. 23-0881D	**Project Name:** NDFA Social Housing Lot 3 - Lambs Cross		**Trial Pit ID** ST03
Coordinates 718156.48 E 725367.94 N	**Client:** NDFA		
Method: Slit Trenching	**Client's Representative:** Malone O'Regan Consulting Engineers		Sheet 1 of 1 Scale: 1:25
Plant: 3T Tracked Excavator	**Elevation** 124.87 mOD	**Date:** 21/11/2023	**Logger:** EGA	FINAL

Depth (m)	Sample / Tests	Field Records	Level (mOD)	Depth (m)	Legend	Description	Water
0.30	ES1		124.57	0.30		MADE GROUND: Dark brownish grey slightly sandy clayey subangular fine to coarse GRAVEL. Sand is fine to coarse.	
						End of trial pit at 0.30m	

0.5
1.0
1.5
2.0
2.5
3.0
3.5
4.0
4.5

Water Strikes

Struck at (m)	Remarks

Depth: 0.30
Width: 0.45
Length: 5.00

Remarks:
No groundwater encountered.

Stability:
Stable

Termination Reason
Terminated on refusal - possible bedrock.

Last Updated
15/01/2024

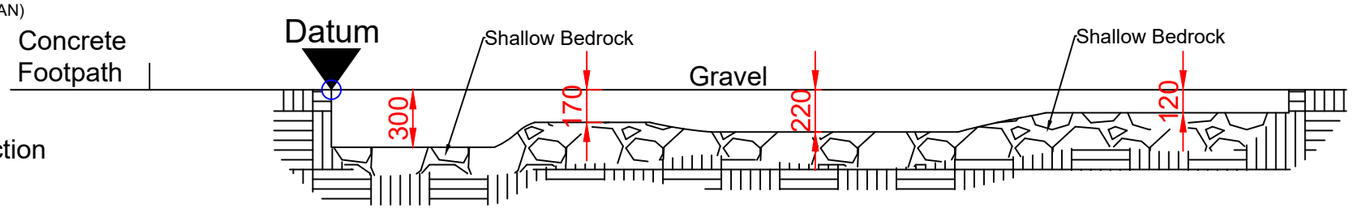
AGS

JOB NUMBER: 23-0881D	JOB NAME: NDFA Social Housing Lot 3 – Lamb's Cross	LOCATION: ST03

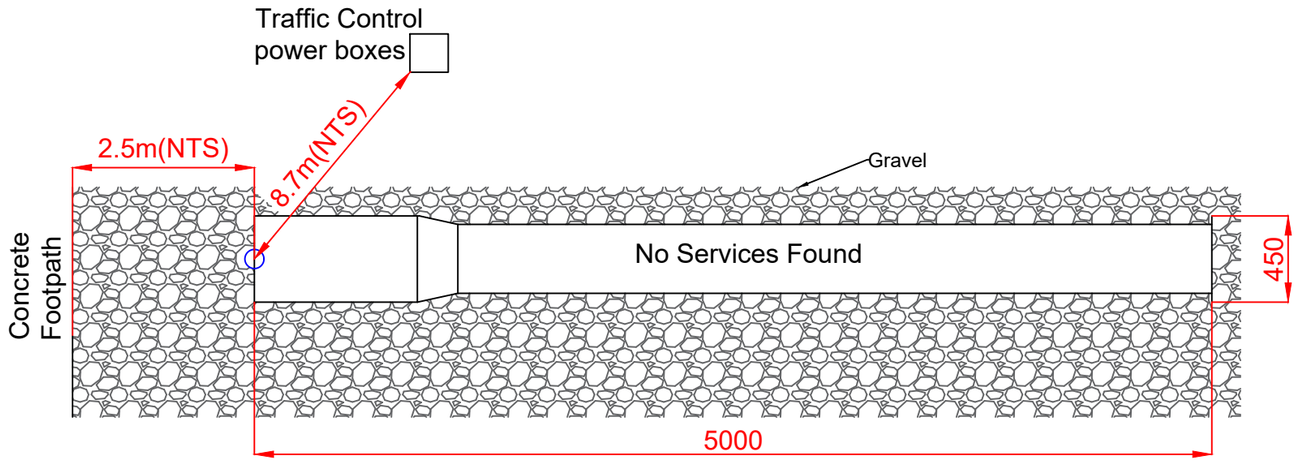
CLIENT:	CLIENTS REPRESENTATIVE:	CREW:	PLANT & EQUIPMENT
NDFA	Malone O'Regan Consulting Engineers	EGA	3 Tonne Excavator & Hand Tools

TRENCH: (SECTION & PLAN)

Section

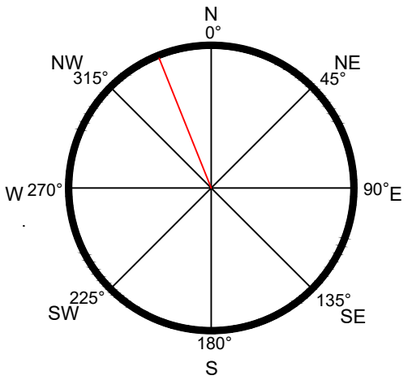


Plan



No:	Type of Service:	Diameter (in mm)	Depth to Top of Service (m)	Distance to Centre of Service (m)	Details/Comments
01					No Services Found
02					
03					
04					
05					
06					
07					
08					
09					
10					
11					
12					
13					
14					
15					

TRENCH - ORIENTATION



TRENCH ORIENTATED : 345° FROM NORTH

COORDINATES: DATUM

EASTING: 718156.48

NORTHING: 725367.94

ELEVATION: 124.87

TRENCH LENGTH (m) : 5.00

TRENCH DEPTH (m) : 0.30

TRENCH WIDTH (m) : 0.45

STABILITY: Stable

GROUNDWATER: None

SCALE: NTS@A3

DRAWN: JD

CHECKED: SR

DATE EXCAVATED: 21/11/2023

CAUSEWAY GEOTECH

CAUSEWAY GEOTECH

Project No. 23-0881D	**Project Name:** NDFA Social Housing Lot 3 - Lambs Cross		**Trial Pit ID** ST04
Coordinates 718194.33 E 725390.60 N	**Client:** NDFA		
Method: Slit Trenching	**Client's Representative:** Malone O'Regan Consulting Engineers		Sheet 1 of 1 Scale: 1:25
Plant: 3T Tracked Excavator	**Elevation** 124.25 mOD	**Date:** 20/11/2023	**Logger:** EGA	FINAL

Depth (m)	Sample / Tests	Field Records	Level (mOD)	Depth (m)	Legend	Description	Water
						MADE GROUND: Dark grey slightly silty subangular fine to coarse GRAVEL.	
0.20 - 1.20	B3		124.05	0.20		MADE GROUND: Stiff brown slightly gravelly sandy CLAY with fragments of plastic. Sand is fine to coarse. Gravel is subangular fine to medium.	
0.50	ES1						
1.00	ES2						
1.20 - 1.70	B4		123.05	1.20		Firm brown slightly sandy slightly gravelly CLAY. Sand is fine to coarse. Gravel is subangular fine to medium of mixed lithologies.	
			122.55	1.70		End of trial pit at 1.70m	

0.5 1.0 1.5 2.0 2.5 3.0 3.5 4.0 4.5

Water Strikes	
Struck at (m)	Remarks

Depth: 1.70
Width: 0.60
Length: 5.00

Remarks:
No groundwater encountered.

Stability:
Stable

Termination Reason
Terminated on refusal - possible bedrock.

Last Updated
15/01/2024

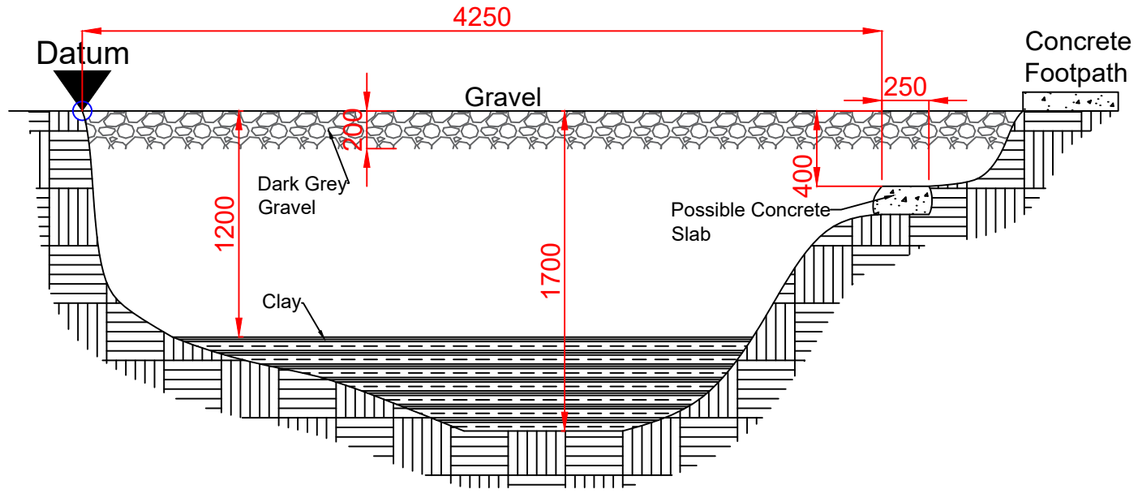
AGS

JOB NUMBER: 23-0881D	JOB NAME: NDFA Social Housing Lot 3 – Lamb's Cross	LOCATION: ST04

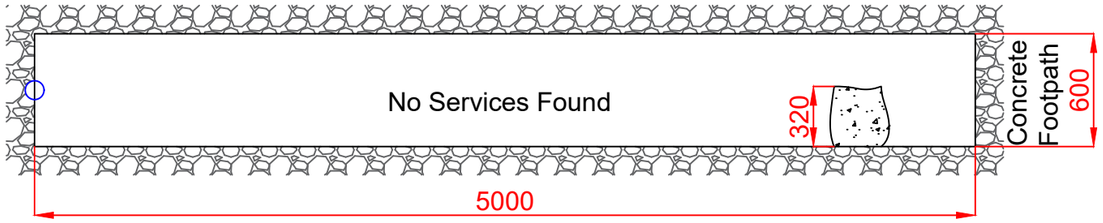
CLIENT:	CLIENTS REPRESENTATIVE:	CREW:	PLANT & EQUIPMENT
NDFA	Malone O'Regan Consulting Engineers	EGA	3 Tonne Excavator & Hand Tools

TRENCH: (SECTION & PLAN)

Section

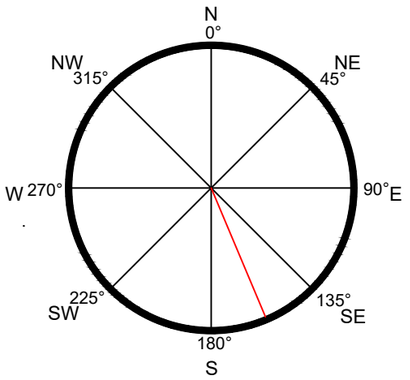


Plan



No:	Type of Service:	Diameter (in mm)	Depth to Top of Service (m)	Distance to Centre of Service (m)	Details/Comments
01					No Services Found
02					
03					
04					
05					
06					
07					
08					
09					
10					
11					
12					
13					
14					
15					

TRENCH - ORIENTATION



TRENCH ORIENTATED : 150° FROM NORTH

COORDINATES: DATUM

EASTING: 718194.33

NORTHING: 725390.60

ELEVATION: 124.25

TRENCH LENGTH (m) : 5.00

TRENCH DEPTH (m) : 1.70

TRENCH WIDTH (m) : 0.60

STABILITY: Stable

GROUNDWATER: None

SCALE: NTS@A3

DRAWN: JD

CHECKED: SR

DATE EXCAVATED: 20/11/2023

CAUSEWAY GEOTECH

CAUSEWAY GEOTECH

APPENDIX G

SLIT TRENCH PHOTOGRAPHS


CAUSEWAY
GEOTECH
NDFA Lambs Cross
23-0881D
ST01
(m) 0.1 0.2 0.3 0.4 0.5

ST01

ST01


CAUSEWAY
GEOTECH
Project Name
NDFA Lambs Cross
Project Number
23-0881D
Date
EH Number
ST01

ST01

ST01

ST01

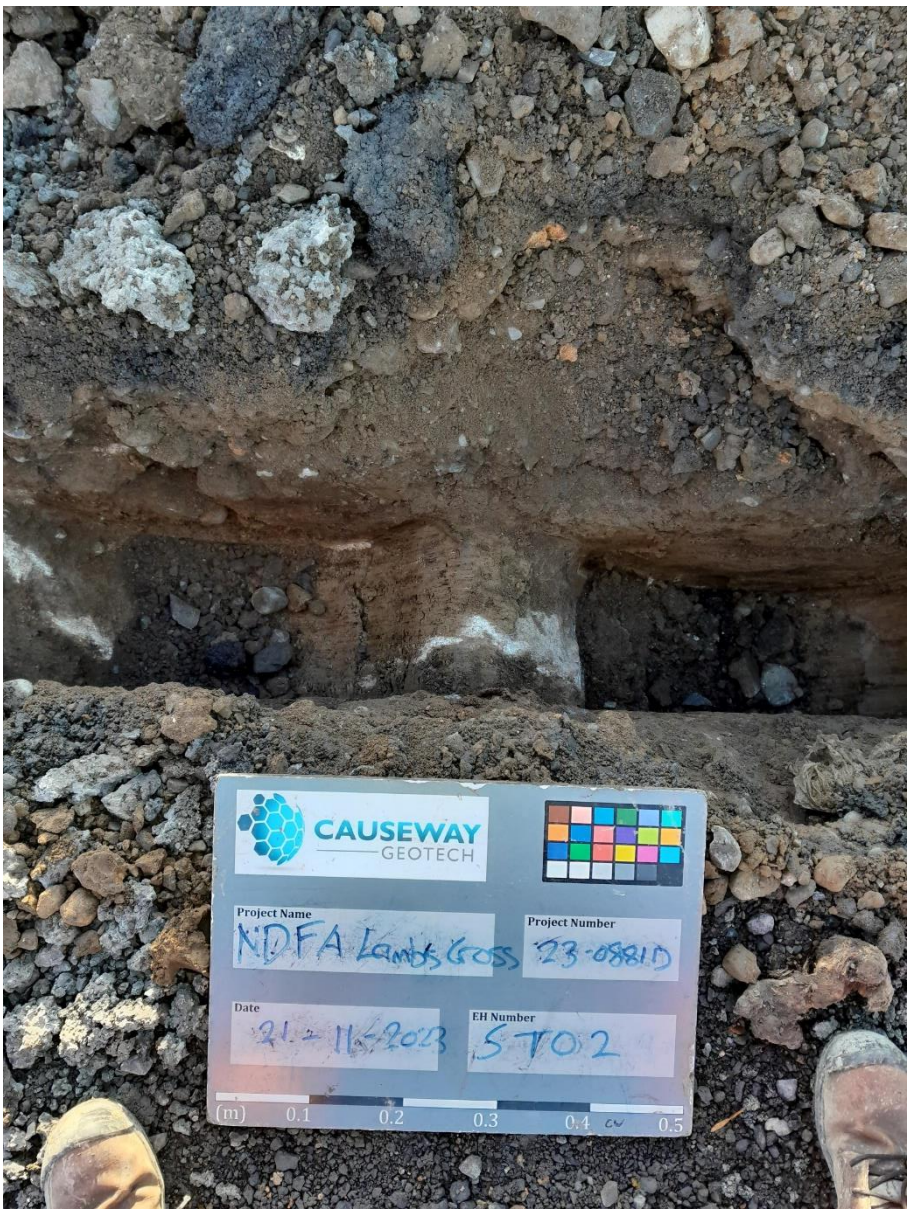

CAUSEWAY
GEOTECH
Project Name
NDFA Lambs Cross
Project Number
23-0881D
Date
20-11-2023
EH Number
ST01
(m) 0.1 0.2 0.3 0.4 0.5

ST01

ST01


CAUSEWAY
GEOTECH
Project Name
NDFA Lambs Cross
Project Number
23-0881D
Date
21-11-2023
EH Number
ST02
(m) 0.1 0.2 0.3 0.4 0.5

ST02


CAUSEWAY
GEOTECH
Project Name
NDFA Lambs Cross
Project Number
23-0881D
Date
21-11-2023
EH Number
ST02
(m) 0.1 0.2 0.3 0.4 0.5

ST02


CAUSEWAY
GEOTECH
Project Name
NDFA Lambs Cross
Project Number
23-0881D
Date
EH Number
ST02

ST02


CAUSEWAY
GEOTECH
Project Name
NDFA Lambs Cross
Project Number
23-0881D
Date
EH Number
ST02

ST02

ST02


CAUSEWAY
GEOTECH
Project Number
23-0881D
Project Name
NDFA Lambs Cross
ST02

ST02

ST02

ST02


CAUSEWAY
GEOTECH
Project Name
NDFA Lambs Cross
Project Number
23-0881D
Date
21-11-2023
EH Number
ST03
(m) 0.1 0.2 0.3 0.4 0.5

ST03


CAUSEWAY
GEOTECH
Project Name
NDFA Lambs Cross
Project Number
23-0881D
Date
21-11-2023
EH Number
ST03

ST03


CAUSEWAY
GEOTECH
Project Name
NDFA Lambs Cross
Project Number
23-0881D
Date
21-11-2023
EH Number
ST03

ST03

ST03


CAUSEWAY
Project Name
NDFA Lambs Cross
Project Number
23-0881D
Date
21-11-2023
Test Number
ST03
0.1
0.2
0.3
0.4
0.5
(m)

ST03

ST03

ST03

ST04

ST04

ST04


CAUSEWAY
GEOTECH
Project Name
NDFA Lambs Cross
Date
20-11-2023
Project Number
23-0881D
BH Number
ST 04
(m)
0.1
0.2
0.3
0.4

ST04


CAUSEWAY
GEOTECH
Project Name
NDFA Lambs Cross
Project Number
23-0881D
Date
20-11-2023
EH Number
ST04
0.2
0.3
0.4
0.5

ST04


CAUSEWAY
GEOTECH
Project Name
NDFA Lambs Cross
Project Number
23-0881D
Date
20-11-2023
EH Number
ST04
(m)
0.1
0.2
0.3
0.4
0.5

ST04

ST04


CAUSEWAY
GEOTECH
Project Name
NDFA Lambs Cross
Project Number
23-0881D
Date
20-11-2023
EH Number
ST04
(m)
0.1
0.2
0.3
0.4
0.5

ST04


CAUSEWAY
GEOTECH
Project Name
NDFA Lambs Cross
Project Number
23-0881D
Date
20-11-2023
EH Number
ST04
(m) 0.1 0.2 0.3 0.4 0.5

ST04

ST04

CAUSEWAY GEOTECH

APPENDIX H

SOAKAWAY TEST RESULTS

Soakaway Infiltration Test

Project No.: 23-0881D
Site: NDFA Lambs Cross
Test Location: IT01
Test Date: 20 November 2023

	width (m)	length (m)
test pit top dimensions	0.50	1.60
test pit base dimensions	0.35	0.50
test pit depth (m)	1.60	

Analysis using method as described in BRE Digest 365 and CIRIA Report C697-The SUDS Manual

depth to groundwater before adding water (m) = Dry

Time (mins)	Depth to water surface (m)	Head of water in pit (m)
0	0.40	1.20
1	0.42	1.18
1	0.44	1.16
2	0.45	1.15
4	0.46	1.14
6	0.47	1.13
8	0.49	1.11
10	0.50	1.10
15	0.55	1.05
20	0.59	1.01
30	0.69	0.91
45	0.78	0.82
60	0.83	0.77
75	0.88	0.72
90	0.95	0.65
105	1.01	0.59
120	1.05	0.55
210	1.40	0.20

*extrapolated

RESULTS (FROM GRAPH BELOW)

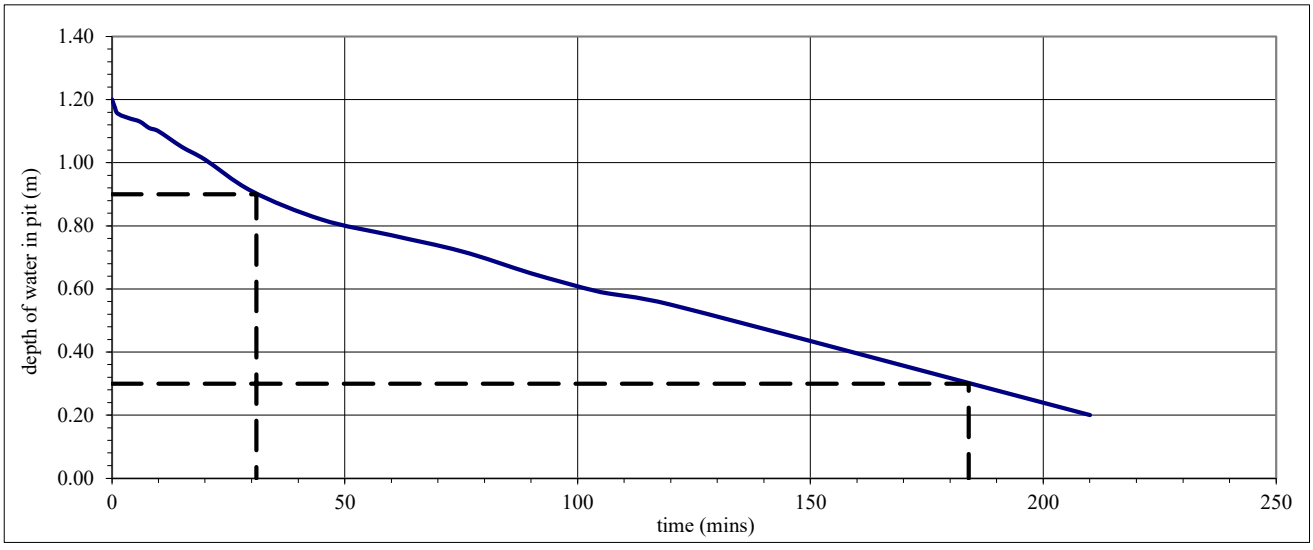
Test start
75% head of water at 0.90 m
depth to water surface (target) 0.70 m
time to reach target depth 31.0 mins

Test end
25% head of water at 0.30 m
depth to water surface (target) 1.30 m
time to reach target depth 184.0 mins

test infiltration rate (q) = 0.06 m/h

TARGET DEPTHS AND CALCULATED VALUES

time (mins)	depth to water surface (m)	head of water in pit (m)	time elapsed (mins)	volume of water lost (m^3)	Area of walls and base at 50% drop (m^2)	q (m/min)	q (m/h)
31	0.70	0.90	153	0.23	1.55	9.5E-04	0.057
184	1.30	0.30					



Soakaway Infiltration Test

Project No.: 23-0881D
Site: NDFA Lambs Cross
Test Location: IT02
Test Date: 20 November 2023

	width (m)	length (m)
test pit top dimensions	0.50	1.80
test pit base dimensions	0.35	0.40
test pit depth (m)	1.80	

Analysis using method as described in BRE Digest 365 and CIRIA Report C697-The SUDS Manual

depth to groundwater before adding water (m) = Dry

Time (mins)	Depth to water surface (m)	Head of water in pit (m)
0	0.31	1.49
1	0.31	1.49
1	0.32	1.48
2	0.32	1.48
4	0.32	1.48
6	0.32	1.48
8	0.32	1.48
10	0.32	1.48
15	0.33	1.47
20	0.33	1.47
30	0.33	1.47
45	0.33	1.47
60	0.33	1.47
75	0.33	1.47
90	0.33	1.47
105	0.33	1.47
120	0.33	1.47

RESULTS (FROM GRAPH BELOW)

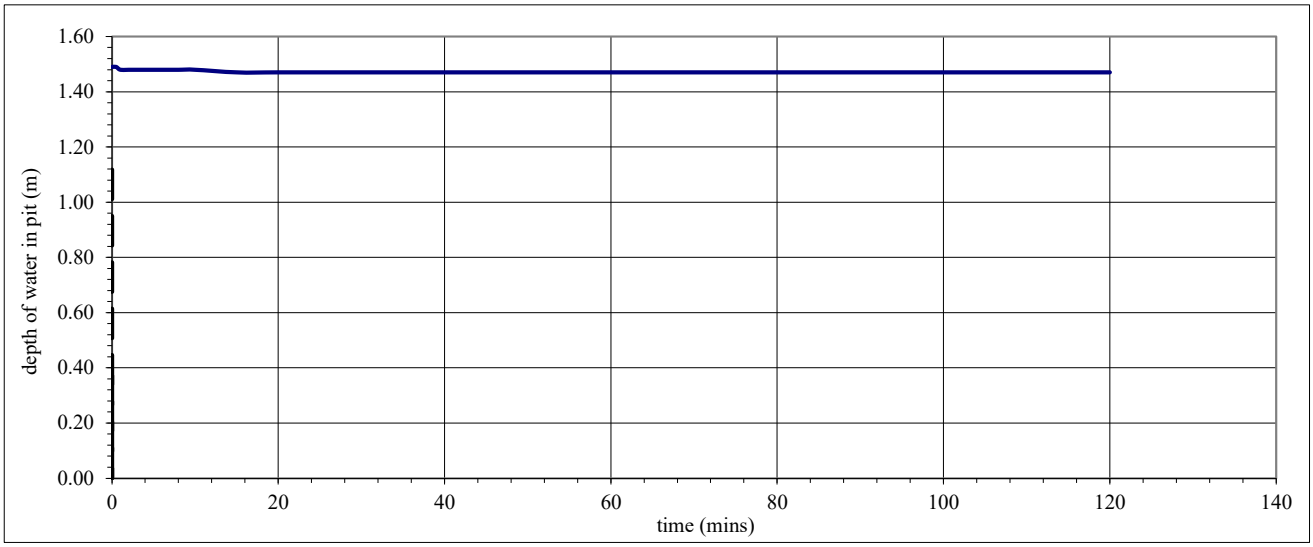
Test start
75% head of water at 1.12 m
depth to water surface (target) 0.68 m
time to reach target depth not reached

Test end
25% head of water at 0.37 m
depth to water surface (target) 1.43 m
time to reach target depth not reached

infiltration rate (q) is very low

TARGET DEPTHS AND CALCULATED VALUES

time (mins)	depth to water surface (m)	head of water in pit (m)	time elapsed (mins)	volume of water lost (m^3)	Area of walls and base at 50% drop (m^2)	q (m/min)	q (m/h)
	0.68	1.12	N/A				
	1.43	0.37					



CAUSEWAY GEOTECH

APPENDIX I

GEOTECHNICAL LABORATORY TEST RESULTS

CAUSEWAY GEOTECH

HEAD OFFICE
Causeway Geotech Ltd
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Registered in Ireland.
Company Number: 633786

www.causewaygeotech.com

SOIL AND ROCK SAMPLE ANALYSIS
LABORATORY TEST REPORT

15 January 2024

Project Name:	NDFA Social Housing Lot 3 – Lambs Cross – GI
Project No.:	23-0881D
Client:	NDFA
Engineer:	Malone O'Regan Consulting Engineers

We are pleased to attach the results of laboratory testing carried out for the above project. This memo and its attachments constitute a report of the results of tests as detailed in the Contents page(s). This testing was performed between 04/12/2023 and 15/01/2024.

The attached results complete the testing requested and we would therefore wish to confirm that samples will be retained without charge for a period of 28 days from the above date after which they will be appropriately disposed of unless we receive written instructions to the contrary prior to that date.

We trust our report meets with your approval but if you have any queries or require additional information, please do not hesitate to contact the undersigned.

Stephen Watson

Laboratory Manager

Signed for and on behalf of Causeway Geotech Ltd

Project Name: NDFA Social Housing Lot 3 – Lambs Cross – GI

Report Reference: Schedule 1

The table below details the tests carried out, the specifications used, and the number of tests included in this report. Tests marked with* in this report are not United Kingdom Accreditation Service (UKAS) accredited and are not included in Causeway Geotech Limited's scope of UKAS Accreditation Schedule of Tests.

The results contained in this report relate to the sample(s) as received. Opinions and interpretations expressed herein are outside the scope of UKAS accreditation. This report shall not be reproduced other than in full, without the prior written approval of the laboratory.

Material tested	Type of test/Properties measured/Range of measurement	Standard specifications	No. of results included in the report
SOIL	Water Content of Soil	BS 1377-2: 1990: Cl 3.2	10
SOIL	Liquid and Plastic Limits of soil-1 point cone penetrometer method	BS 1377-2: 1990: Cl 4.4, 5.3 & 5.4	10
SOIL	Particle size distribution - wet sieving	BS 1377-2: 1990: Cl 9.2	10
SOIL	Particle size distribution - sedimentation hydrometer method	BS 1377-2: 1990: Cl 9.5	10
SOIL	California Bearing Ratio (CBR)	BS 1377-4: 1990: Cl 7	10
ROCK	Point load index	ISRM Commission on Testing Methods. Suggested Method for Determining Point Load Strength 1985	2
ROCK	Uniaxial Compressive Strength (UCS)*	ISRM Suggested Methods -Rock Characterization Testing and Monitoring, Ed. E T Brown - 1981	1

SUB-CONTRACTED TESTS

In agreement with Client, the following tests were conducted by an approved sub-contractor. All sub-contracting laboratories used are UKAS accredited.

Material tested	Type of test/Properties measured/Range of measurement	Standard specifications	No. of results included in the report
SOIL – Subcontracted to Derwentside Environmental Testing Services Limited *(UKAS 2139)*	pH Value of Soil		10
SOIL – Subcontracted to Derwentside Environmental Testing Services Limited *(UKAS 2139)*	Sulphate Content water extract		10

CAUSEWAY GEOTECH

Summary of Classification Test Results

Project No.	Project Name
23-0881D	NDFA Social Housing Lot 3 - Lambs Cross

Hole No.	Sample				Specimen Description	Density bulk / dry		*w*	Passing 425µm	LL	PL	PI	Particle density	Casagrande Classification
	Ref	Top	Base	Type		Mg/m3		%	%	%	%	%	Mg/m3	
ST01	2	0.15	0.90	B	Brown sandy gravelly silty CLAY.			10	55	41 -1pt	22	19		CI
ST02	2	0.65	0.90	B	Brown sandy slightly gravelly silty CLAY.			18	76	40 -1pt	23	17		CI
ST04	3	0.20	1.20	B	Brown sandy slightly gravelly silty CLAY.			23	67	40 -1pt	21	19		CI
ST04	4	1.20	1.70	B	Brown sandy slightly gravelly silty CLAY.			14	76	47 -1pt	25	22		CI
TP01	4	0.30	1.30	B	Brown sandy slightly gravelly silty CLAY.			15	69	31 -1pt	17	14		CL
TP01	5	1.40	1.80	B	Brown sandy slightly gravelly silty CLAY.			17	76	32 -1pt	20	12		CL
TP02	3	0.25	1.00	B	Brown sandy slightly gravelly silty CLAY.			17	53	44 -1pt	26	18		MI/CI
TP02	4	1.00	1.50	B	Brown sandy slightly gravelly silty CLAY.			18	57	51 -1pt	27	24		CH
TP03	2	0.10	0.60	B	Brown sandy slightly gravelly silty CLAY.			15	53	38 -1pt	25	13		MI/CI
TP03	3	0.60	0.90	B	Brown sandy slightly gravelly silty CLAY.			17	78	43 -1pt	23	20		CI

All tests performed in accordance with BS1377:1990 unless specified otherwise

LAB 01R Version 6

Key

Density test	Liquid Limit	Particle density
Linear measurement unless :	4pt cone unless :	sp - small pyknometer
wd - water displacement	cas - Casagrande method	gj - gas jar
wi - immersion in water	1pt - single point test	

Date Printed

01/12/2024 00:00

Approved By

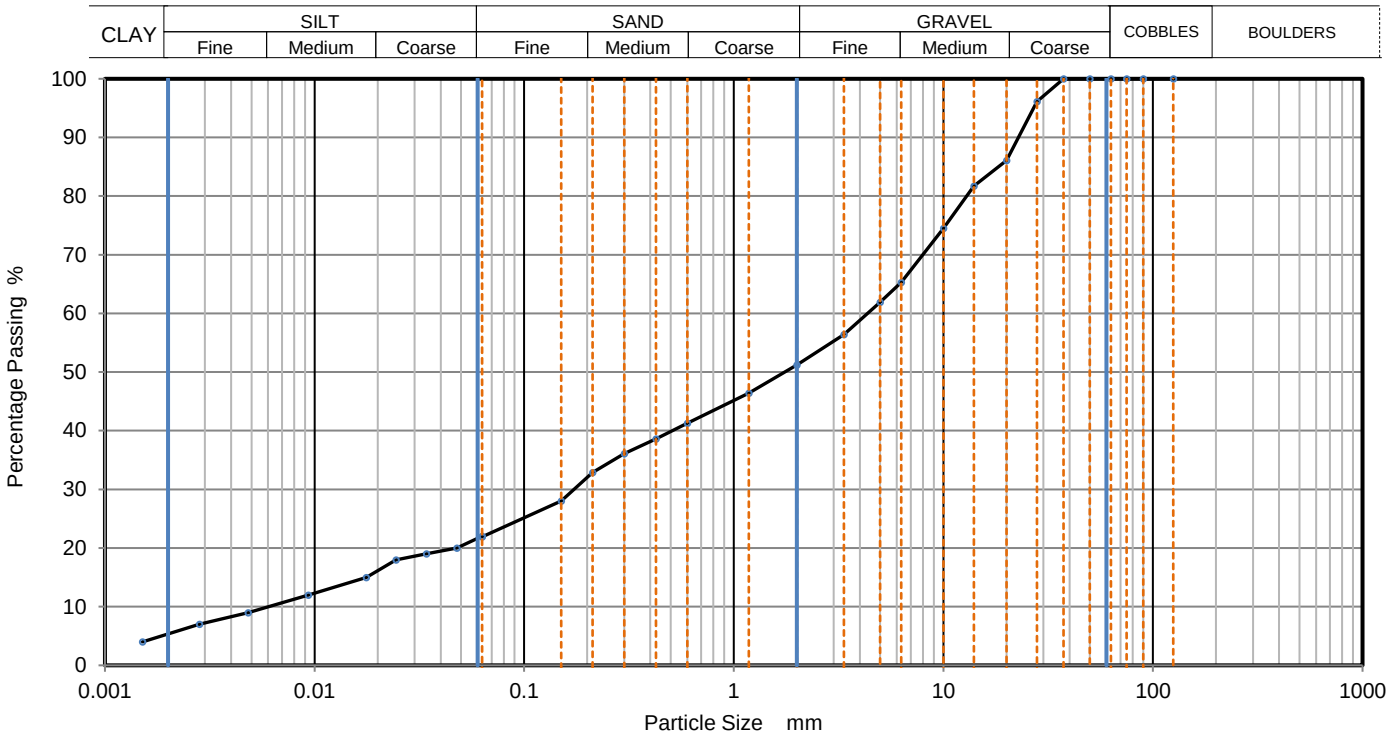
Stephen Watson

UKAS TESTING

10122

PARTICLE SIZE DISTRIBUTION

Job Ref					23-0881D
Borehole/Pit No.					ST01
Site Name	NDFA Social Housing Lot 3 - Lambs Cross			Sample No.	2
Specimen Description	Brown sandy gravelly silty CLAY.			Sample Depth (m) Top	0.15
				Base	0.90
Specimen Reference	11	Specimen Depth	0.15 m	Sample Type	B
Test Method	BS1377:Part 2:1990, clauses 9.2 and 9.5			KeyLAB ID	Caus2023120433



Sieving		Sedimentation	
Particle Size mm	% Passing	Particle Size mm	% Passing
125	100	0.06300	22
90	100	0.04771	20
75	100	0.03420	19
63	100	0.02450	18
50	100	0.01766	15
37.5	100	0.00935	12
28	96	0.00481	9
20	86	0.00283	7
14	82	0.00151	4
10	75		
6.3	65		
5	62		
3.35	56		
2	51		
1.18	46		
0.6	41	Particle density	(assumed)
0.425	39	2.65	Mg/m3
0.3	36		
0.212	33		
0.15	28		
0.063	22		

Dry Mass of sample, g: 2634

Sample Proportions	% dry mass
Cobbles	0.0
Gravel	48.8
Sand	29.3
Silt	16.5
Clay	5.4

Grading Analysis		
D100	mm	
D60	mm	4.36
D30	mm	0.172
D10	mm	0.00603
Uniformity Coefficient		720
Curvature Coefficient		1.1

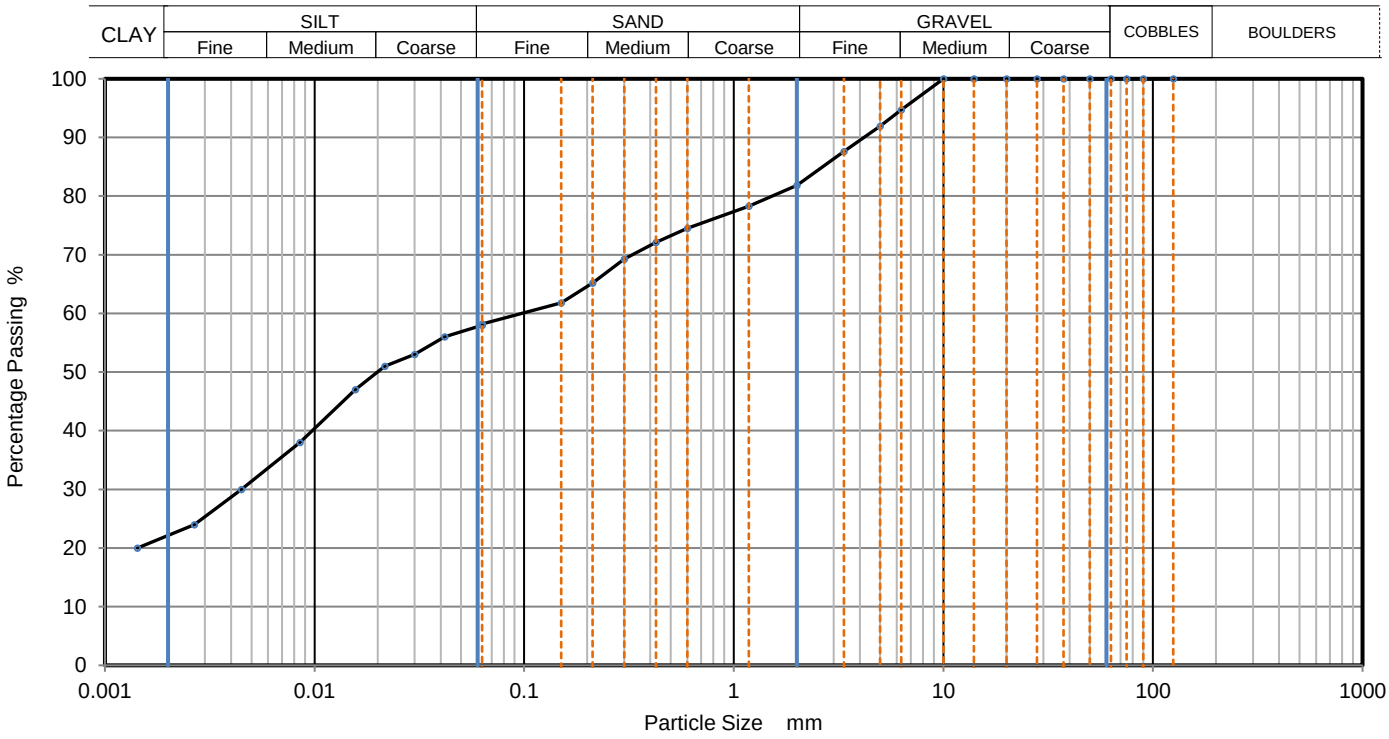
Remarks

Preparation and testing in accordance with BS1377-2 :1990 unless noted below

Approved
Stephen Watson

PARTICLE SIZE DISTRIBUTION

Job Ref					23-0881D
Borehole/Pit No.					ST02
Site Name	NDFA Social Housing Lot 3 - Lambs Cross			Sample No.	2
Specimen Description	Brown sandy slightly gravelly silty CLAY.			Sample Depth (m) Top	0.65
				Base	0.90
Specimen Reference	11	Specimen Depth	0.65 m	Sample Type	B
Test Method	BS1377:Part 2:1990, clauses 9.2 and 9.5			KeyLAB ID	Caus2023120434



Sieving		Sedimentation	
Particle Size mm	% Passing	Particle Size mm	% Passing
125	100	0.06300	58
90	100	0.04172	56
75	100	0.03003	53
63	100	0.02160	51
50	100	0.01566	47
37.5	100	0.00853	38
28	100	0.00447	30
20	100	0.00267	24
14	100	0.00143	20
10	100		
6.3	95		
5	92		
3.35	88		
2	82		
1.18	78		
0.6	75	Particle density	(assumed)
0.425	72	2.65	Mg/m3
0.3	69		
0.212	65		
0.15	62		
0.063	58		

Dry Mass of sample, g: 354

Sample Proportions	% dry mass
Cobbles	0.0
Gravel	18.2
Sand	23.6
Silt	36.4
Clay	21.8

Grading Analysis		
D100	mm	
D60	mm	0.0975
D30	mm	0.00457
D10	mm	
Uniformity Coefficient		
Curvature Coefficient		

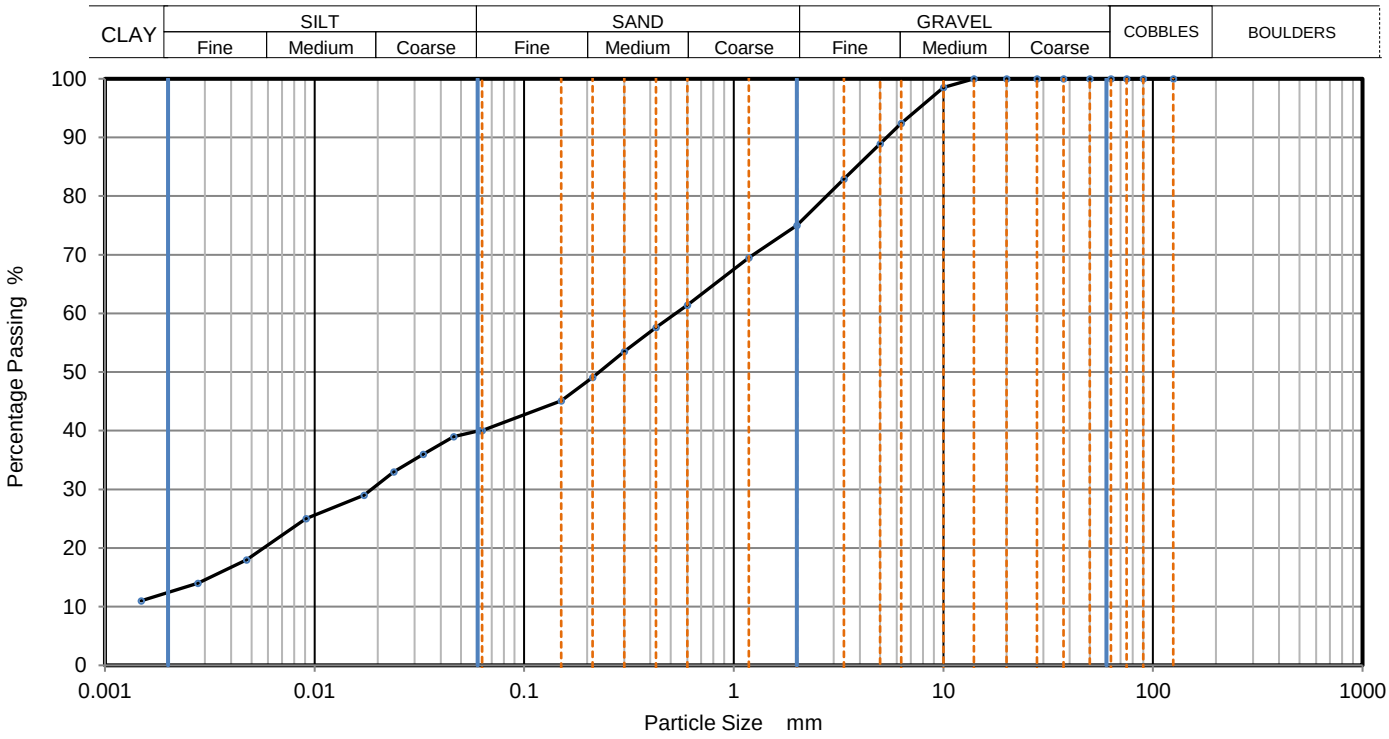
Remarks

Preparation and testing in accordance with BS1377-2 :1990 unless noted below

Approved
Stephen Watson

PARTICLE SIZE DISTRIBUTION

Job Ref					23-0881D
Borehole/Pit No.					ST04
Site Name	NDFA Social Housing Lot 3 - Lambs Cross			Sample No.	3
Specimen Description	Brown sandy slightly gravelly silty CLAY.			Sample Depth (m) Top	0.20
				Base	1.20
Specimen Reference	11	Specimen Depth	0.2 m	Sample Type	B
Test Method	BS1377:Part 2:1990, clauses 9.2 and 9.5			KeyLAB ID	Caus2023120435



Sieving		Sedimentation	
Particle Size mm	% Passing	Particle Size mm	% Passing
125	100	0.06144	40
90	100	0.04603	39
75	100	0.03303	36
63	100	0.02385	33
50	100	0.01721	29
37.5	100	0.00912	25
28	100	0.00473	18
20	100	0.00278	14
14	100	0.00149	11
10	99		
6.3	92		
5	89		
3.35	83		
2	75		
1.18	70		
0.6	61	Particle density	(assumed)
0.425	58	2.65	Mg/m3
0.3	54		
0.212	49		
0.15	45		
0.063	40		

Dry Mass of sample, g: 348

Sample Proportions	% dry mass
Cobbles	0.0
Gravel	25.0
Sand	35.0
Silt	27.7
Clay	12.3

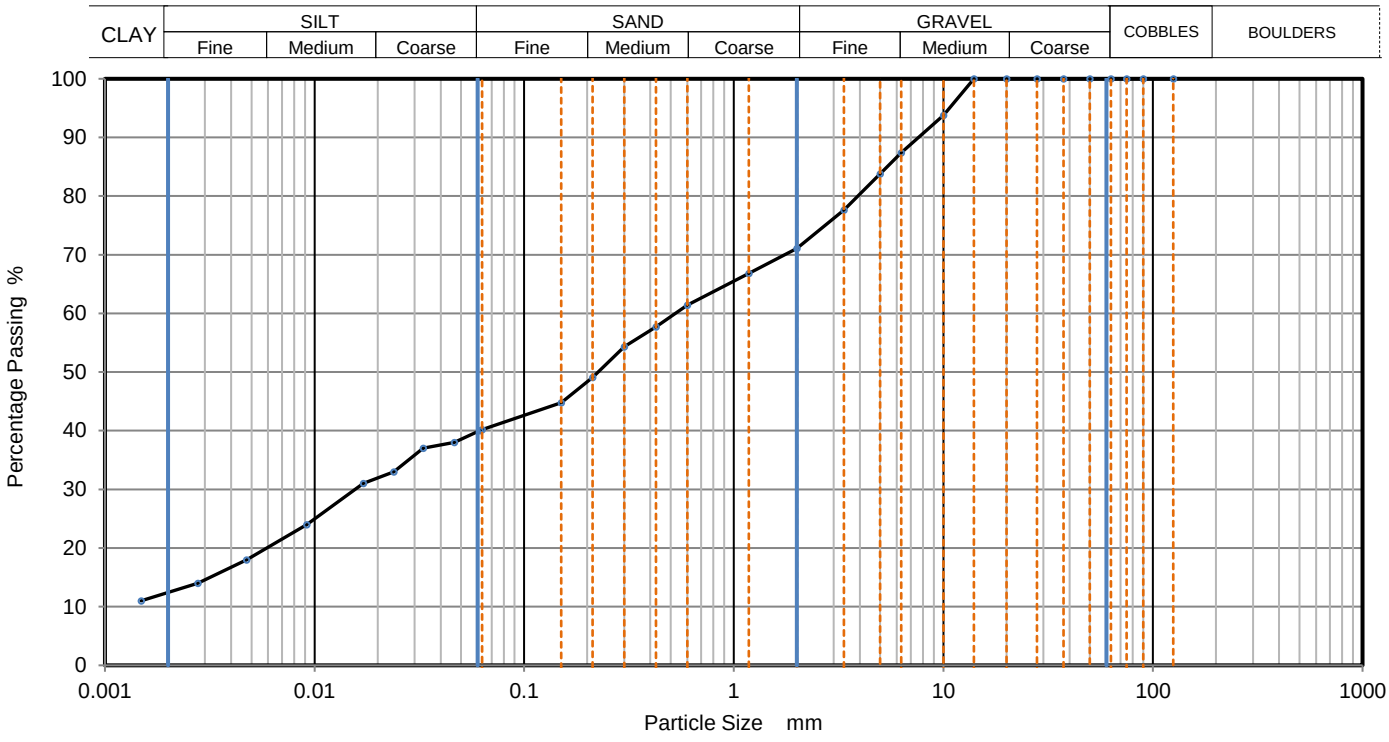
Grading Analysis		
D100	mm	
D60	mm	0.527
D30	mm	0.0182
D10	mm	
Uniformity Coefficient		
Curvature Coefficient		

Remarks

Preparation and testing in accordance with BS1377-2 :1990 unless noted below

Approved
Stephen Watson

CAUSEWAY GEOTECH	PARTICLE SIZE DISTRIBUTION				Job Ref		23-0881D
					Borehole/Pit No.		ST04
Site Name	NDFA Social Housing Lot 3 - Lambs Cross				Sample No.		4
Specimen Description	Brown sandy slightly gravelly silty CLAY.				Sample Depth (m)	Top	1.20
						Base	1.70
Specimen Reference	11	Specimen Depth	1.2	m	Sample Type		B
Test Method	BS1377:Part 2:1990, clauses 9.2 and 9.5				KeyLAB ID		Caus2023120436



Sieving		Sedimentation	
Particle Size mm	% Passing	Particle Size mm	% Passing
125	100	0.06144	40
90	100	0.04637	38
75	100	0.03303	37
63	100	0.02385	33
50	100	0.01710	31
37.5	100	0.00918	24
28	100	0.00473	18
20	100	0.00278	14
14	100	0.00149	11
10	94		
6.3	87		
5	84		
3.35	78		
2	71		
1.18	67		
0.6	61	Particle density	(assumed)
0.425	58	2.65	Mg/m3
0.3	54		
0.212	49		
0.15	45		
0.063	40		

Dry Mass of sample, g: 405

Sample Proportions	% dry mass
Cobbles	0.0
Gravel	28.9
Sand	30.8
Silt	28.0
Clay	12.3

Grading Analysis		
D100	mm	
D60	mm	0.527
D30	mm	0.016
D10	mm	
Uniformity Coefficient		
Curvature Coefficient		

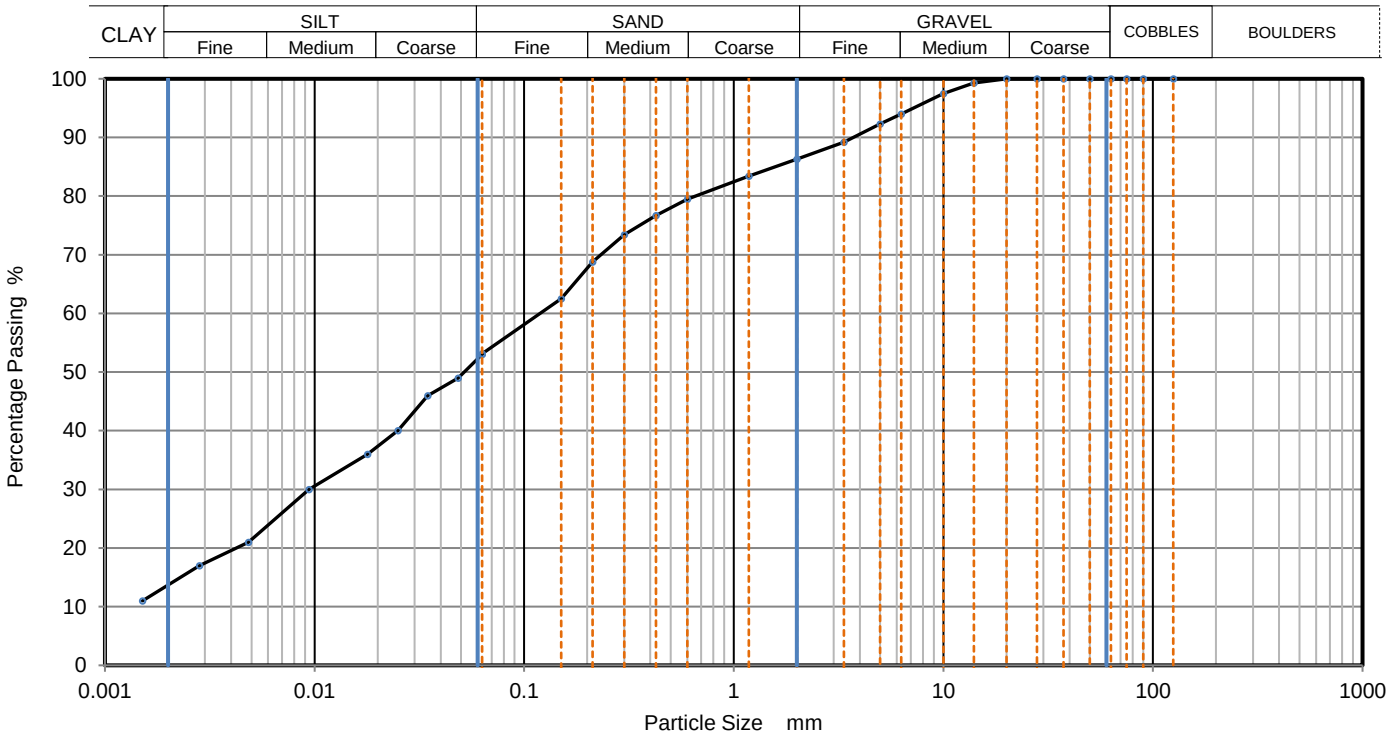
Remarks

Preparation and testing in accordance with BS1377-2 :1990 unless noted below

Approved
Stephen Watson

UKAS TESTING

CAUSEWAY GEOTECH	**PARTICLE SIZE DISTRIBUTION**			Job Ref	**23-0881D**
				Borehole/Pit No.	TP01
Site Name	NDFA Social Housing Lot 3 - Lambs Cross			Sample No.	4
Specimen Description	Brown sandy slightly gravelly silty CLAY.			Sample Depth (m) Top	0.30
				Base	1.30
Specimen Reference	11	Specimen Depth	0.3 m	Sample Type	B
Test Method	BS1377:Part 2:1990, clauses 9.2 and 9.5			KeyLAB ID	Caus2023120437



Sieving		Sedimentation	
Particle Size mm	% Passing	Particle Size mm	% Passing
125	100	0.06300	53
90	100	0.04836	49
75	100	0.03465	46
63	100	0.02498	40
50	100	0.01789	36
37.5	100	0.00940	30
28	100	0.00484	21
20	100	0.00283	17
14	99	0.00151	11
10	98		
6.3	94		
5	92		
3.35	89		
2	86		
1.18	83		
0.6	80	Particle density	(assumed)
0.425	77	2.65	Mg/m3
0.3	73		
0.212	69		
0.15	63		
0.063	53		

Dry Mass of sample, g: 471

Sample Proportions	% dry mass
Cobbles	0.0
Gravel	13.7
Sand	33.2
Silt	39.2
Clay	13.9

Grading Analysis		
D100	mm	
D60	mm	0.119
D30	mm	0.00918
D10	mm	
Uniformity Coefficient		
Curvature Coefficient		

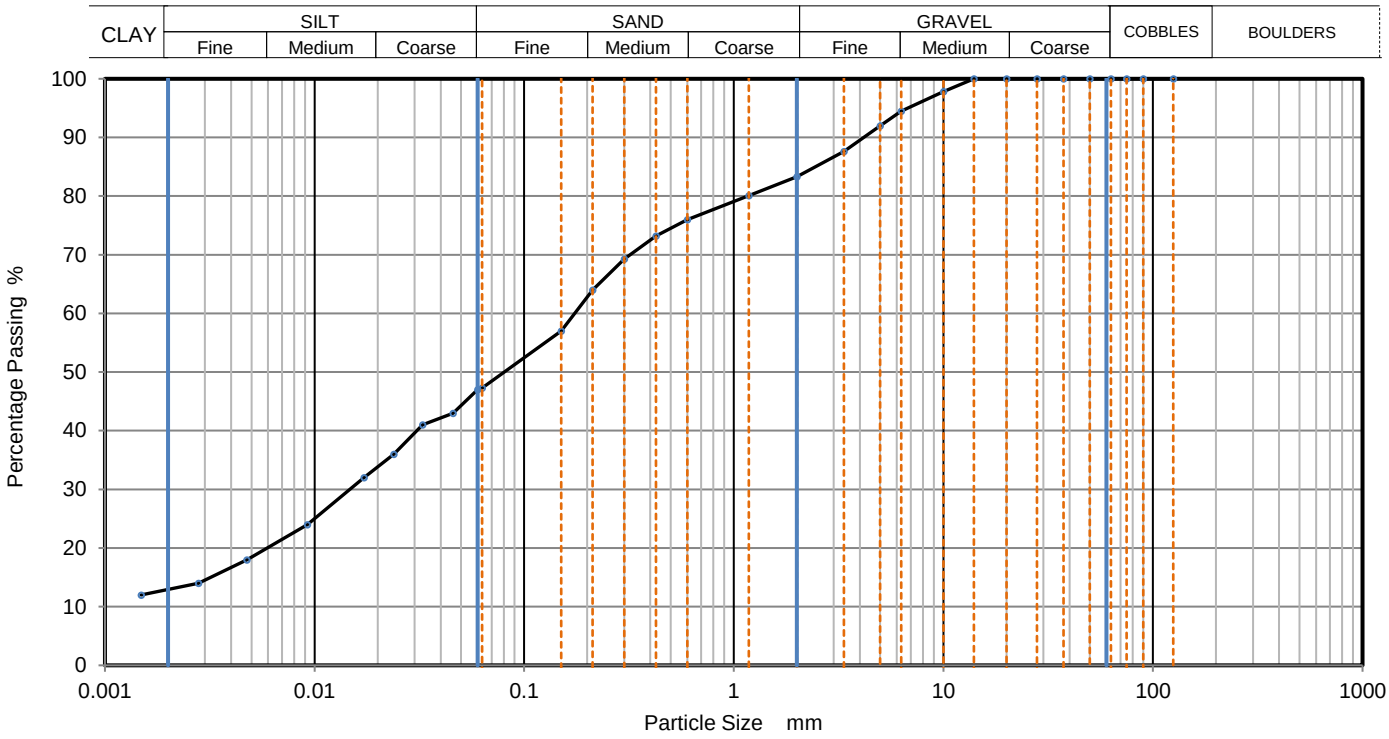
Remarks

Preparation and testing in accordance with BS1377-2 :1990 unless noted below

Approved
Stephen Watson

PARTICLE SIZE DISTRIBUTION

Job Ref					23-0881D
Borehole/Pit No.					TP01
Site Name	NDFA Social Housing Lot 3 - Lambs Cross			Sample No.	5
Specimen Description	Brown sandy slightly gravelly silty CLAY.			Sample Depth (m) Top	1.40
				Base	1.80
Specimen Reference	11	Specimen Depth	1.4 m	Sample Type	B
Test Method	BS1377:Part 2:1990, clauses 9.2 and 9.5			KeyLAB ID	Caus2023120438



Sieving		Sedimentation	
Particle Size mm	% Passing	Particle Size mm	% Passing
125	100	0.06003	47
90	100	0.04568	43
75	100	0.03279	41
63	100	0.02385	36
50	100	0.01721	32
37.5	100	0.00924	24
28	100	0.00476	18
20	100	0.00279	14
14	100	0.00149	12
10	98		
6.3	95		
5	92		
3.35	88		
2	83		
1.18	80		
0.6	76	Particle density	(assumed)
0.425	73	2.65	Mg/m3
0.3	69		
0.212	64		
0.15	57		
0.063	47		

Dry Mass of sample, g: 400

Sample Proportions	% dry mass
Cobbles	0.0
Gravel	16.7
Sand	36.0
Silt	34.6
Clay	12.7

Grading Analysis		
D100	mm	
D60	mm	0.174
D30	mm	0.0147
D10	mm	
Uniformity Coefficient		
Curvature Coefficient		

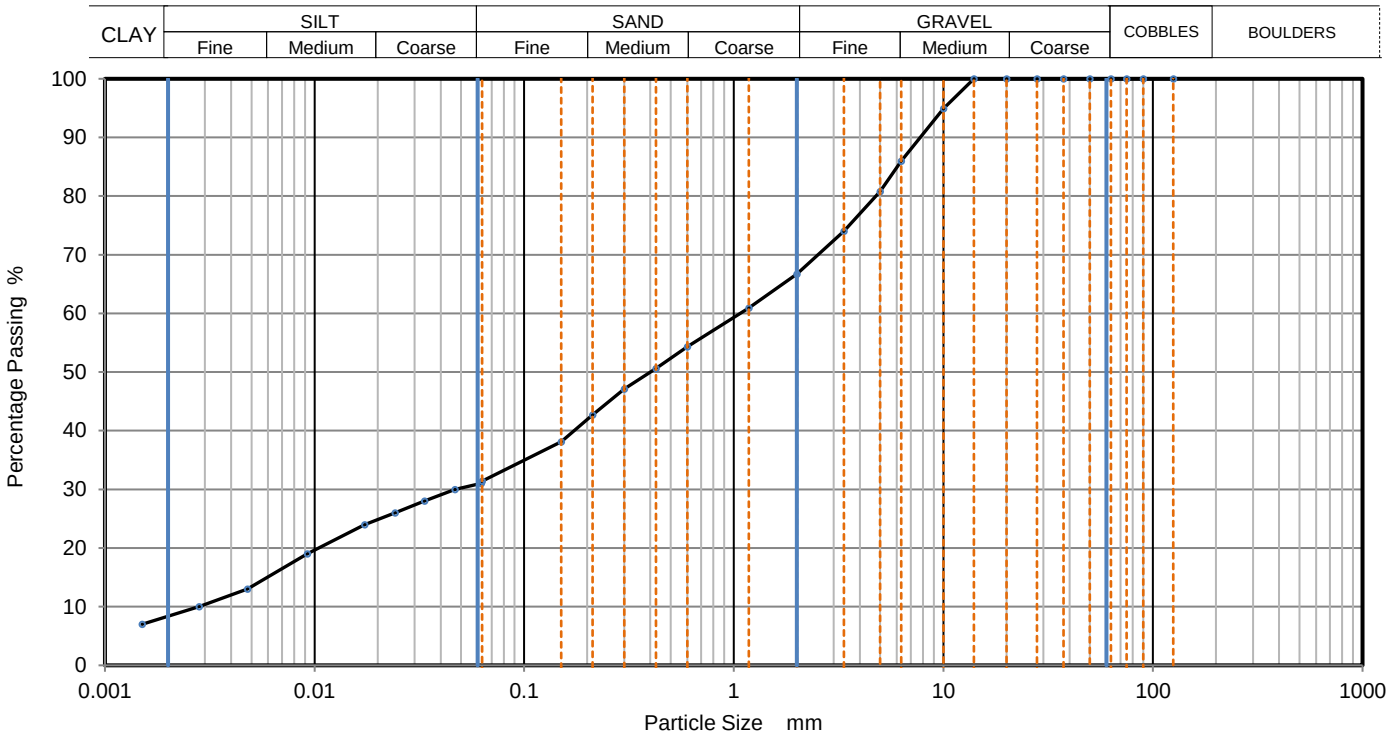
Remarks

Preparation and testing in accordance with BS1377-2 :1990 unless noted below

Approved
Stephen Watson

PARTICLE SIZE DISTRIBUTION

Job Ref					23-0881D
Borehole/Pit No.					TP02
Site Name	NDFA Social Housing Lot 3 - Lambs Cross			Sample No.	3
Specimen Description	Brown sandy slightly gravelly silty CLAY.			Sample Depth (m) Top	0.25
				Base	1.00
Specimen Reference	11	Specimen Depth	0.25 m	Sample Type	B
Test Method	BS1377:Part 2:1990, clauses 9.2 and 9.5			KeyLAB ID	Caus2023120439



Sieving		Sedimentation	
Particle Size mm	% Passing	Particle Size mm	% Passing
125	100	0.06236	31
90	100	0.04671	30
75	100	0.03350	28
63	100	0.02418	26
50	100	0.01733	24
37.5	100	0.00924	19
28	100	0.00479	13
20	100	0.00281	10
14	100	0.00150	7
10	95		
6.3	86		
5	81		
3.35	74		
2	67		
1.18	61		
0.6	54	Particle density	(assumed)
0.425	51	2.65	Mg/m3
0.3	47		
0.212	43		
0.15	38		
0.063	31		

Dry Mass of sample, g: 385

Sample Proportions	% dry mass
Cobbles	0.0
Gravel	33.3
Sand	35.3
Silt	23.2
Clay	8.2

Grading Analysis		
D100	mm	
D60	mm	1.08
D30	mm	0.0435
D10	mm	0.00291
Uniformity Coefficient		370
Curvature Coefficient		0.6

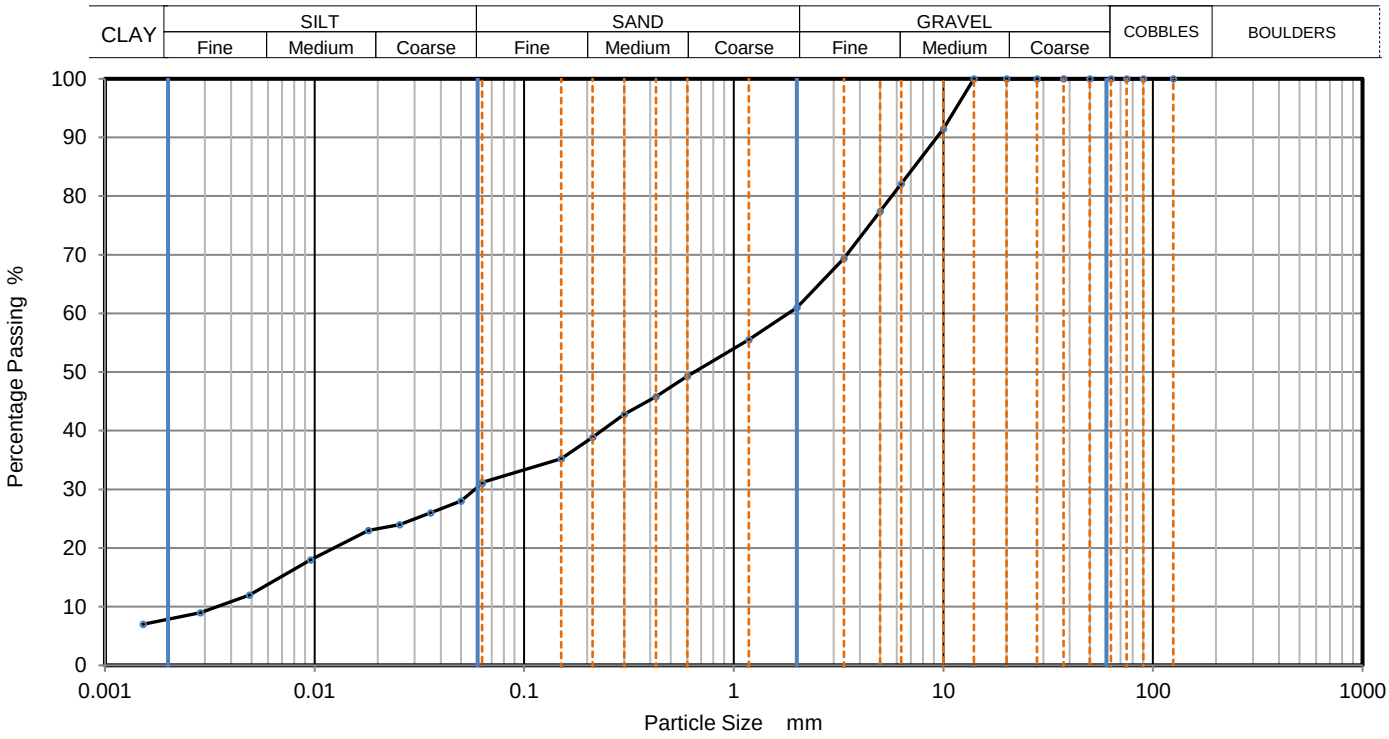
Remarks

Preparation and testing in accordance with BS1377-2 :1990 unless noted below

Approved
Stephen Watson

PARTICLE SIZE DISTRIBUTION

Job Ref					23-0881D
Borehole/Pit No.					TP02
Site Name	NDFA Social Housing Lot 3 - Lambs Cross			Sample No.	4
Specimen Description	Brown sandy slightly gravelly silty CLAY.			Sample Depth (m) Top	1.00
				Base	1.50
Specimen Reference	11	Specimen Depth	1 m	Sample Type	B
Test Method	BS1377:Part 2:1990, clauses 9.2 and 9.5			KeyLAB ID	Caus2023120440



Sieving		Sedimentation	
Particle Size mm	% Passing	Particle Size mm	% Passing
125	100	0.06300	31
90	100	0.04996	28
75	100	0.03577	26
63	100	0.02545	24
50	100	0.01810	23
37.5	100	0.00957	18
28	100	0.00489	12
20	100	0.00286	9
14	100	0.00152	7
10	92		
6.3	82		
5	77		
3.35	69		
2	61		
1.18	56		
0.6	49	Particle density	(assumed)
0.425	46	2.65	Mg/m3
0.3	43		
0.212	39		
0.15	35		
0.063	31		

Dry Mass of sample, g: 362

Sample Proportions	% dry mass
Cobbles	0.0
Gravel	39.0
Sand	29.8
Silt	23.2
Clay	8.0

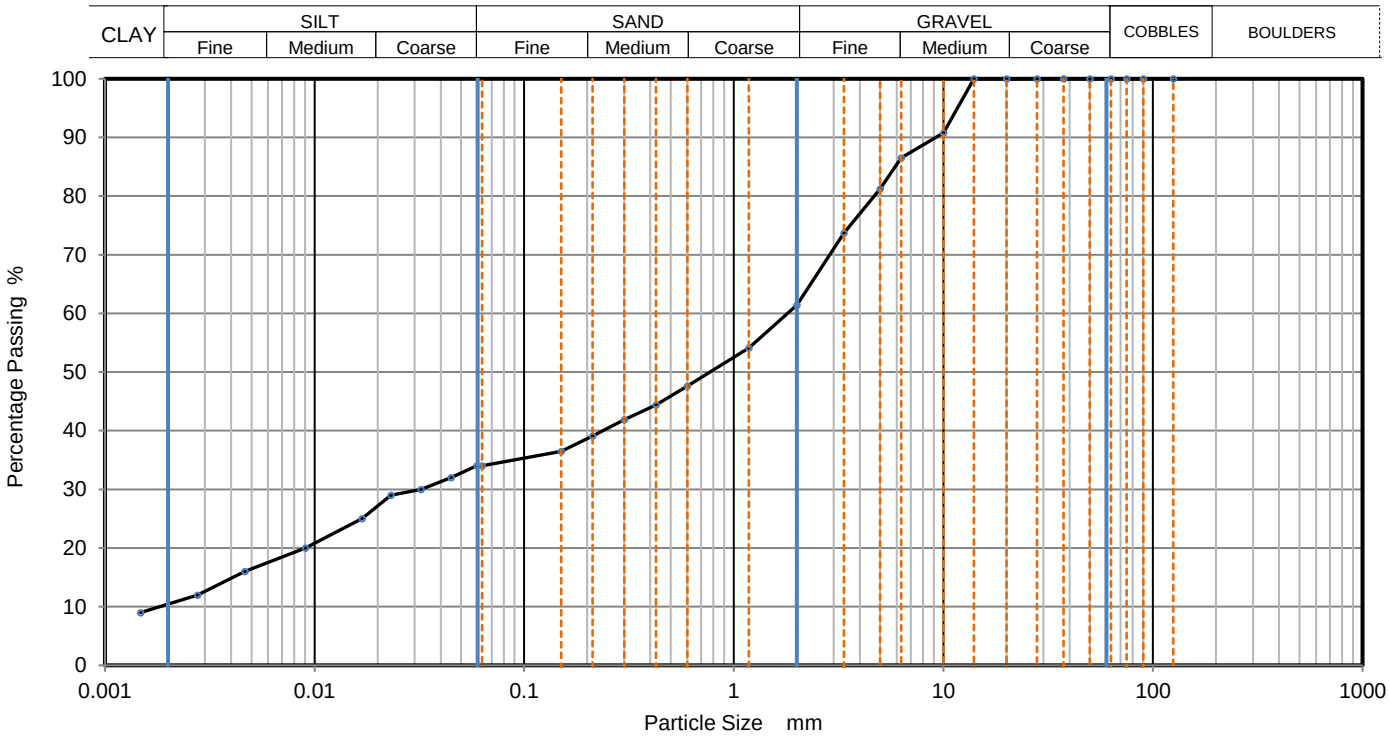
Grading Analysis		
D100	mm	
D60	mm	1.82
D30	mm	0.0569
D10	mm	0.00316
Uniformity Coefficient		580
Curvature Coefficient		0.56

Remarks

Preparation and testing in accordance with BS1377-2 :1990 unless noted below

Approved
Stephen Watson

CAUSEWAY GEOTECH	PARTICLE SIZE DISTRIBUTION				Job Ref		23-0881D
					Borehole/Pit No.		TP03
Site Name	NDFA Social Housing Lot 3 - Lambs Cross				Sample No.		2
Specimen Description	Brown sandy slightly gravelly silty CLAY.				Sample Depth (m)	Top	0.10
						Base	0.60
Specimen Reference	11	Specimen Depth	0.1	m	Sample Type		B
Test Method	BS1377:Part 2:1990, clauses 9.2 and 9.5				KeyLAB ID		Caus2023120441



Sieving		Sedimentation	
Particle Size mm	% Passing	Particle Size mm	% Passing
125	100	0.05931	34
90	100	0.04482	32
75	100	0.03220	30
63	100	0.02312	29
50	100	0.01684	25
37.5	100	0.00906	20
28	100	0.00465	16
20	100	0.00276	12
14	100	0.00148	9
10	91		
6.3	87		
5	81		
3.35	74		
2	61		
1.18	54		
0.6	48	Particle density	(assumed)
0.425	44	2.65	Mg/m3
0.3	42		
0.212	39		
0.15	37		
0.063	34		

Dry Mass of sample, g: 415

Sample Proportions	% dry mass
Cobbles	0.0
Gravel	38.6
Sand	27.4
Silt	23.8
Clay	10.2

Grading Analysis		
D100	mm	
D60	mm	1.8
D30	mm	0.0298
D10	mm	0.00189
Uniformity Coefficient		950
Curvature Coefficient		0.26

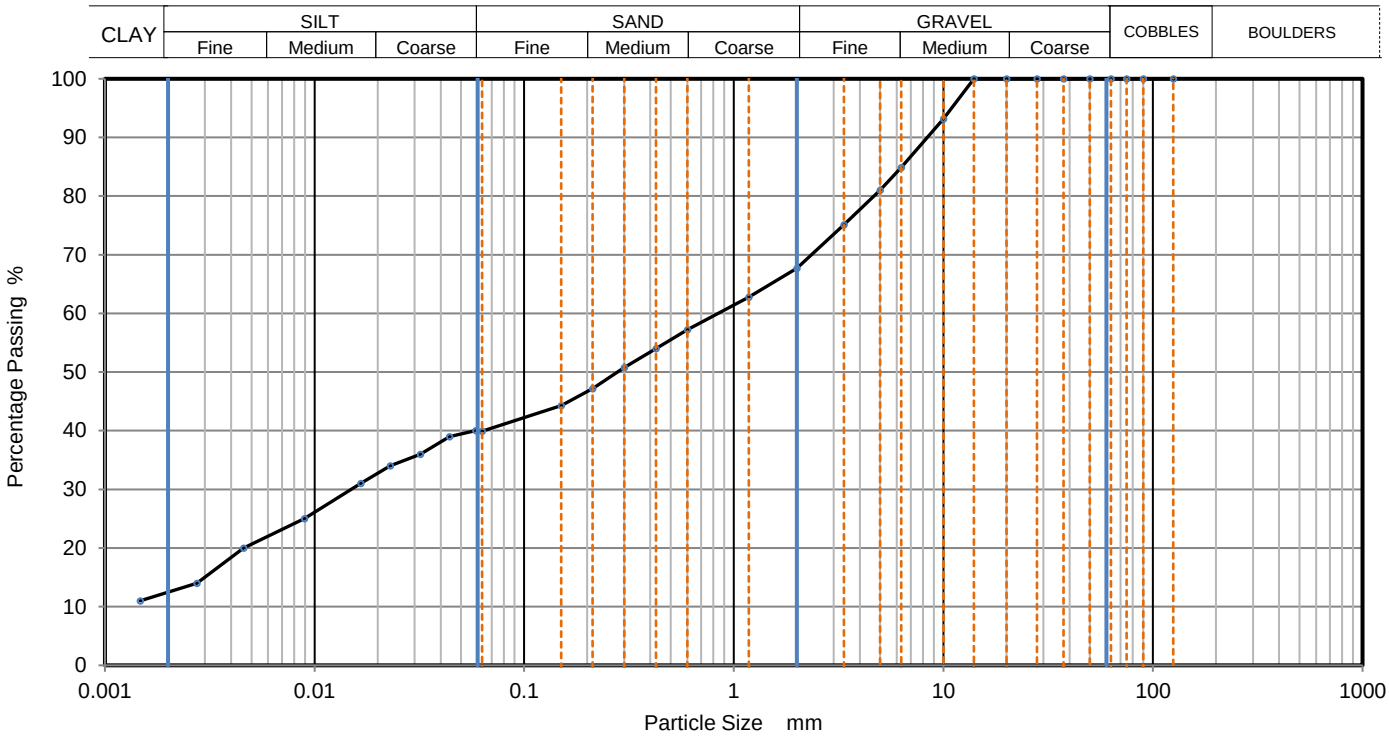
Remarks

Preparation and testing in accordance with BS1377-2 :1990 unless noted below

Approved
Stephen Watson

UKAS TESTING

CAUSEWAY GEOTECH	**PARTICLE SIZE DISTRIBUTION**			Job Ref	**23-0881D**
				Borehole/Pit No.	TP03
Site Name	NDFA Social Housing Lot 3 - Lambs Cross			Sample No.	3
Specimen Description	Brown sandy slightly gravelly silty CLAY.			Sample Depth (m) Top	0.60
				Base	0.90
Specimen Reference	11	Specimen Depth	0.6 m	Sample Type	B
Test Method	BS1377:Part 2:1990, clauses 9.2 and 9.5			KeyLAB ID	Caus2023120442



Sieving		Sedimentation	
Particle Size mm	% Passing	Particle Size mm	% Passing
125	100	0.05881	40
90	100	0.04410	39
75	100	0.03195	36
63	100	0.02295	34
50	100	0.01659	31
37.5	100	0.00894	25
28	100	0.00459	20
20	100	0.00275	14
14	100	0.00147	11
10	93		
6.3	85		
5	81		
3.35	75		
2	68		
1.18	63		
0.6	57	Particle density	(assumed)
0.425	54	2.65	Mg/m3
0.3	51		
0.212	47		
0.15	44		
0.063	40		

Dry Mass of sample, g: 331

Sample Proportions	% dry mass
Cobbles	0.0
Gravel	32.3
Sand	27.8
Silt	27.1
Clay	12.8

Grading Analysis		
D100	mm	
D60	mm	0.845
D30	mm	0.0155
D10	mm	
Uniformity Coefficient		
Curvature Coefficient		

Remarks

Preparation and testing in accordance with BS1377-2 :1990 unless noted below

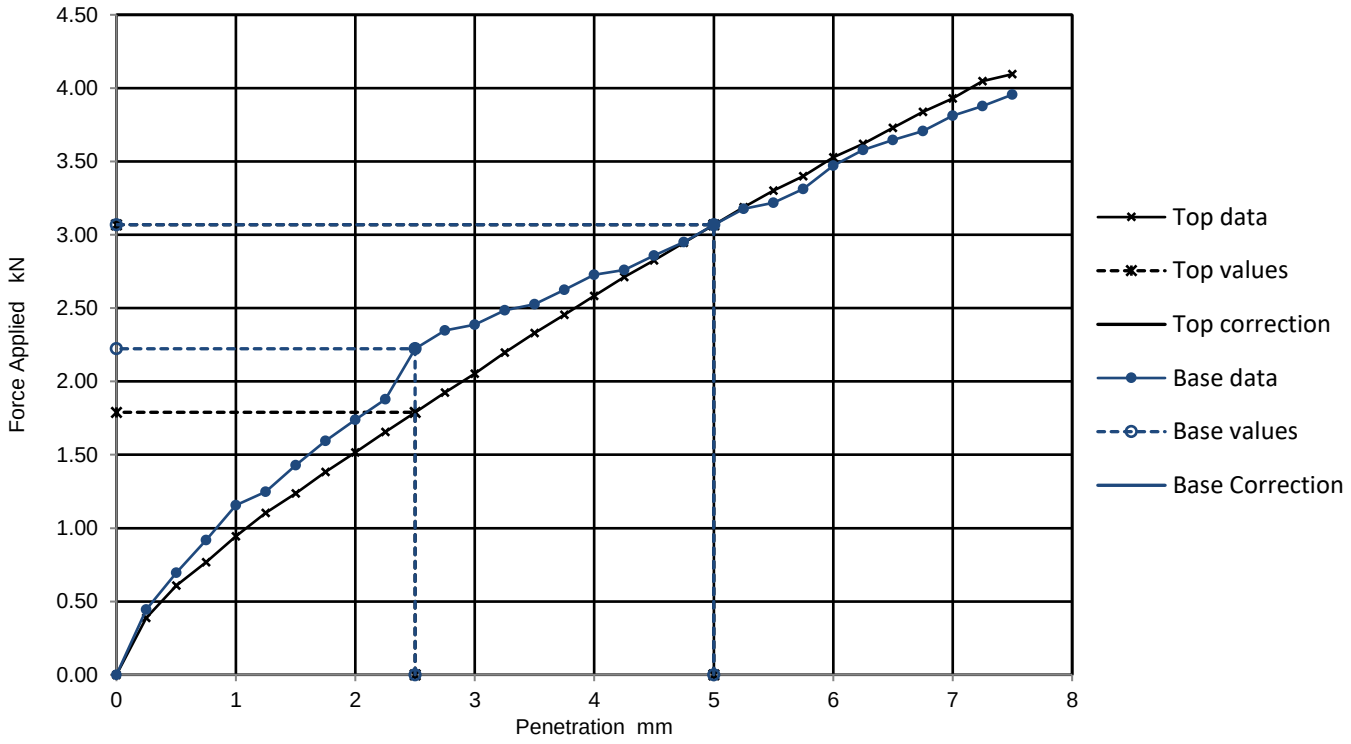
Approved
Stephen Watson

CAUSEWAY GEOTECH	**California Bearing Ratio (CBR)**			Job Ref	23-0881D
				Borehole/Pit No.	ST01
Site Name	NDFA Social Housing Lot 3 - Lambs Cross			Sample No.	2
Soil Description	Brown sandy gravelly silty CLAY.			Depth m	0.15
Specimen Reference		Specimen Depth	m	Sample Type	B
Specimen Description	Brown sandy gravelly silty CLAY.			KeyLAB ID	Caus2023120433
Test Method	BS1377 : Part 4 : 1990, clause 7			CBR Test Number	1

Specimen Preparation

Condition	REMOULDED			Soaking details	Not soaked	
Details	Recompacted to specified density using kg rammer			Period of soaking		days
				Time to surface		days
				Amount of swell recorded		mm
Material retained on 20mm sieve removed		20	%	Dry density after soaking		Mg/m3
Initial Specimen details	Bulk density	2.08	Mg/m3	Surcharge applied	4.5	kg
	Dry density	1.89	Mg/m3		3	kPa
	Moisture content	10	%			

Force v Penetration Plots



Results

	Curve correction applied	CBR Values, %				Moisture Content %
		2.5mm	5mm	Highest	Average	
TOP	No	14.0	15.0	15.0	16.0	10
BASE	No	17.0	15.0	17.0		12

General remarks	Test specific remarks	Approved
Tested at natural moisture content.	Average result may be reported if within 10% of the mean CBR value of top and base.	Stephen Watson

UKAS TESTING

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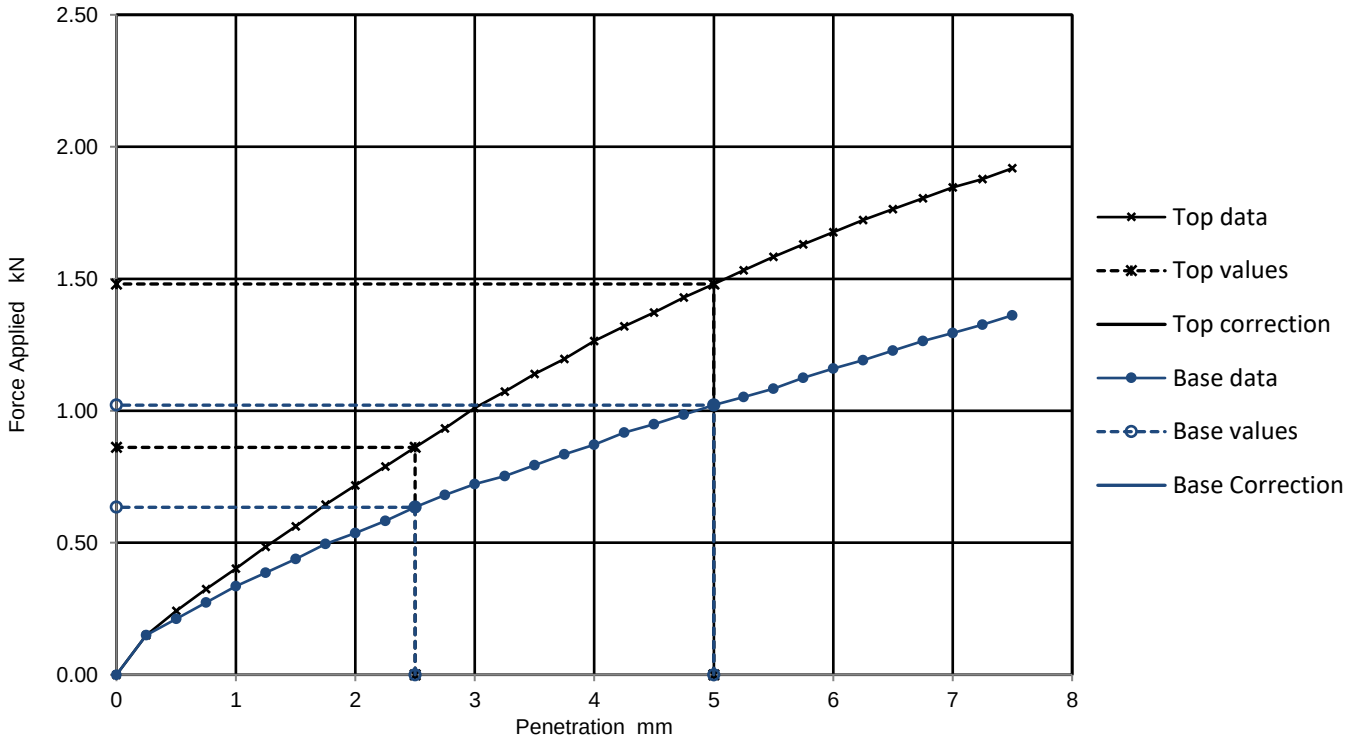
CAUSEWAY GEOTECH	**California Bearing Ratio (CBR)**			Job Ref	23-0881D
				Borehole/Pit No.	ST02
Site Name	NDFA Social Housing Lot 3 - Lambs Cross			Sample No.	2
Soil Description	Brown sandy slightly gravelly silty CLAY.			Depth m	0.65
Specimen Reference		Specimen Depth	m	Sample Type	B
Specimen Description	Brown sandy slightly gravelly silty CLAY.			KeyLAB ID	Caus2023120434
Test Method	BS1377 : Part 4 : 1990, clause 7			CBR Test Number	1

Specimen Preparation

Condition	REMOULDED			Soaking details	Not soaked	
Details	Recompacted with specified standard effort using 2.5kg rammer			Period of soaking		days
				Time to surface		days
				Amount of swell recorded		mm
Material retained on 20mm sieve removed		2	%	Dry density after soaking		Mg/m3
Initial Specimen details	Bulk density	1.97	Mg/m3	Surcharge applied	4.5	kg
	Dry density	1.65	Mg/m3		3	kPa
	Moisture content	19	%			

Force v Penetration Plots



Results

	Curve correction applied	CBR Values, %				Moisture Content %
		2.5mm	5mm	Highest	Average	
TOP	No	6.5	7.4	7.4		19
BASE	No	4.8	5.1	5.1		18

General remarks	Test specific remarks	Approved
Tested at natural moisture content.	Average result may be reported if within 10% of the mean CBR value of top and base.	Stephen Watson

UKAS TESTING

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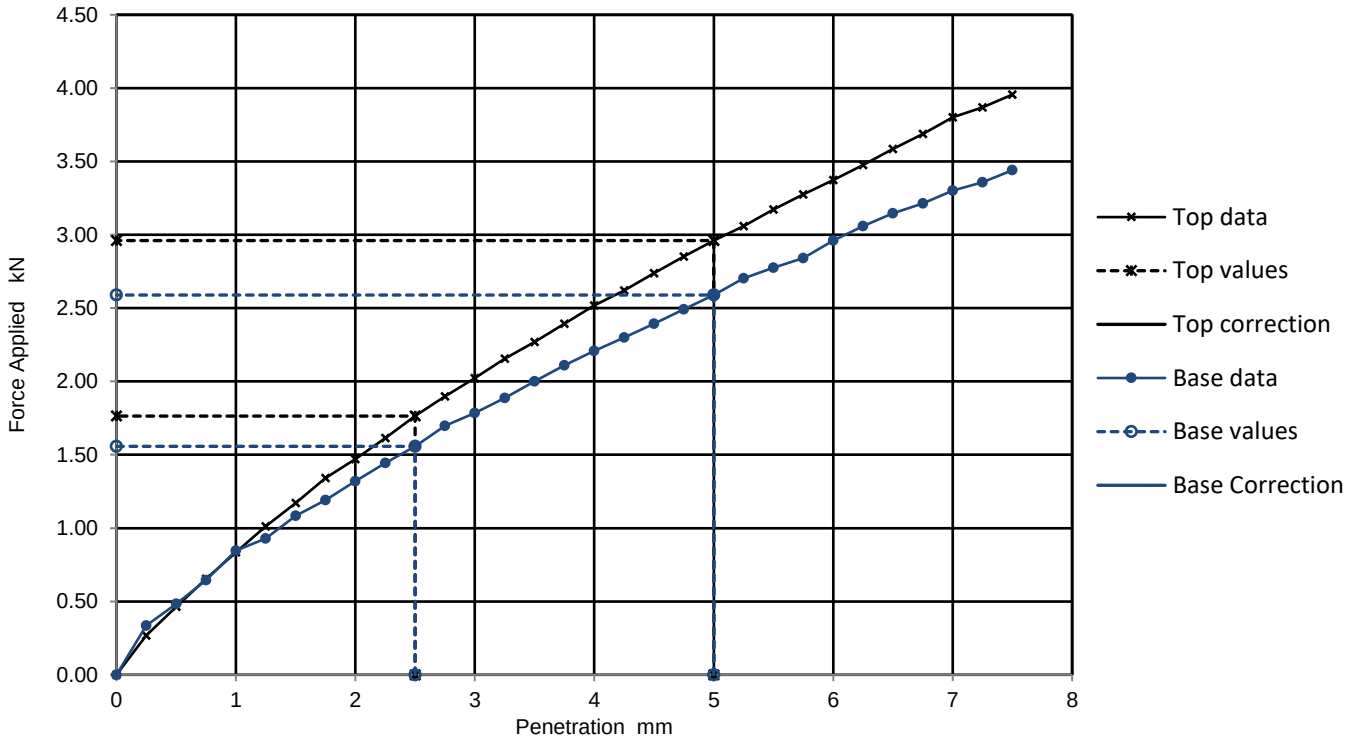
CAUSEWAY GEOTECH	California Bearing Ratio (CBR)			Job Ref	23-0881D
				Borehole/Pit No.	ST04
Site Name	NDFA Social Housing Lot 3 - Lambs Cross			Sample No.	3
Soil Description	Brown sandy slightly gravelly silty CLAY.			Depth m	0.20
Specimen Reference		Specimen Depth	m	Sample Type	B
Specimen Description	Brown sandy slightly gravelly silty CLAY.			KeyLAB ID	Caus2023120435
Test Method	BS1377 : Part 4 : 1990, clause 7			CBR Test Number	1

Specimen Preparation

Condition	REMOULDED			Soaking details	Not soaked	
Details	Recompacted with specified standard effort using 2.5kg rammer			Period of soaking		days
				Time to surface		days
				Amount of swell recorded		mm
Material retained on 20mm sieve removed		5	%	Dry density after soaking		Mg/m3
Initial Specimen details	Bulk density	2.02	Mg/m3	Surcharge applied	4.5	kg
	Dry density	1.79	Mg/m3		3	kPa
	Moisture content	13	%			

Force v Penetration Plots



Results

	Curve correction applied	CBR Values, %				Moisture Content %
		2.5mm	5mm	Highest	Average	
TOP	No	13.0	15.0	15.0	14.0	13
BASE	No	12.0	13.0	13.0		13

General remarks	Test specific remarks	Approved
Tested at natural moisture content.	Average result may be reported if within 10% of the mean CBR value of top and base.	Stephen Watson

UKAS TESTING

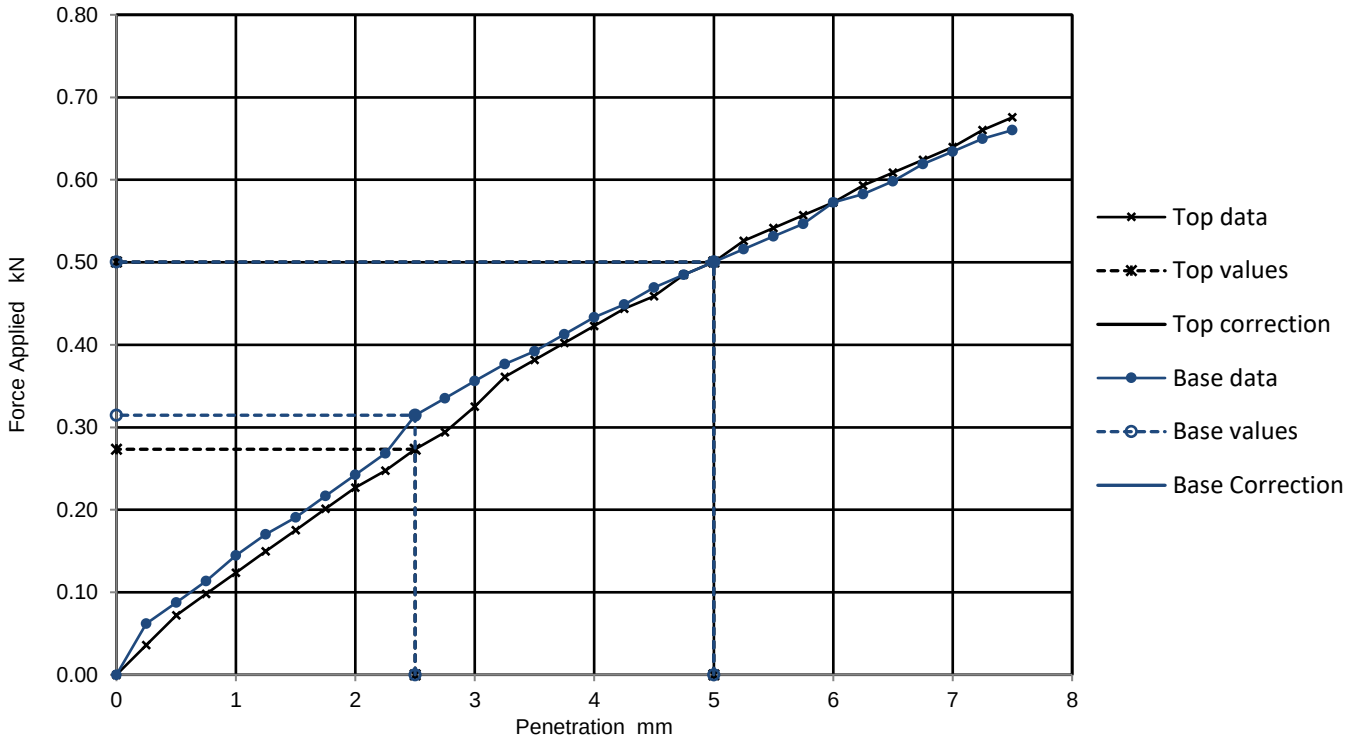
10122

CAUSEWAY GEOTECH	**California Bearing Ratio (CBR)**			Job Ref	23-0881D
				Borehole/Pit No.	ST04
Site Name	NDFA Social Housing Lot 3 - Lambs Cross			Sample No.	4
Soil Description	Brown sandy slightly gravelly silty CLAY.			Depth m	1.20
Specimen Reference		Specimen Depth	m	Sample Type	B
Specimen Description	Brown sandy slightly gravelly silty CLAY.			KeyLAB ID	Caus2023120436
Test Method	BS1377 : Part 4 : 1990, clause 7			CBR Test Number	1

Specimen Preparation

Condition	REMOULDED			Soaking details	Not soaked	
Details	Recompacted with specified standard effort using 2.5kg rammer			Period of soaking		days
				Time to surface		days
				Amount of swell recorded		mm
Material retained on 20mm sieve removed		17	%	Dry density after soaking		Mg/m3
Initial Specimen details	Bulk density	2.02	Mg/m3	Surcharge applied	4.5	kg
	Dry density	1.68	Mg/m3		3	kPa
	Moisture content	20	%			

Force v Penetration Plots



Results

	Curve correction applied	CBR Values, %				Moisture Content %
		2.5mm	5mm	Highest	Average	
TOP	No	2.1	2.5	2.5	2.5	20
BASE	No	2.4	2.5	2.5		21

General remarks	Test specific remarks	Approved
Tested at natural moisture content.	Average result may be reported if within 10% of the mean CBR value of top and base.	Stephen Watson

UKAS TESTING

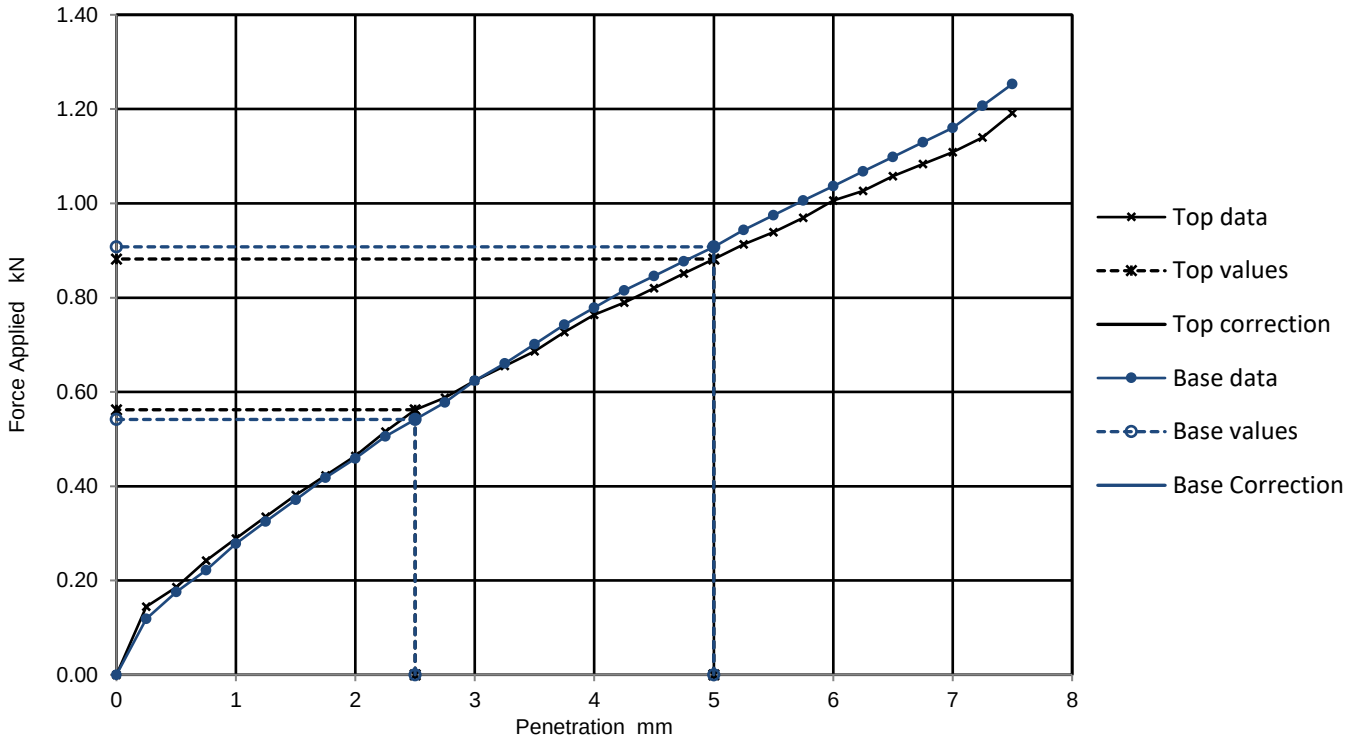
10122

CAUSEWAY GEOTECH	**California Bearing Ratio (CBR)**			Job Ref	23-0881D
				Borehole/Pit No.	TP01
Site Name	NDFA Social Housing Lot 3 - Lambs Cross			Sample No.	4
Soil Description	Brown sandy slightly gravelly silty CLAY.			Depth m	0.30
Specimen Reference		Specimen Depth	m	Sample Type	B
Specimen Description	Brown sandy slightly gravelly silty CLAY.			KeyLAB ID	Caus2023120437
Test Method	BS1377 : Part 4 : 1990, clause 7			CBR Test Number	1

Specimen Preparation

Condition	REMOULDED			Soaking details	Not soaked	
Details	Recompacted with specified standard effort using 2.5kg rammer			Period of soaking		days
				Time to surface		days
				Amount of swell recorded		mm
Material retained on 20mm sieve removed		8	%	Dry density after soaking		Mg/m3
Initial Specimen details	Bulk density	2.11	Mg/m3	Surcharge applied	4.5	kg
	Dry density	1.85	Mg/m3		3	kPa
	Moisture content	14	%			

Force v Penetration Plots



Results

	Curve correction applied	CBR Values, %				Moisture Content %
		2.5mm	5mm	Highest	Average	
TOP	No	4.3	4.4	4.4	4.5	14
BASE	No	4.1	4.5	4.5		15

General remarks	Test specific remarks	Approved
Tested at natural moisture content.	Average result may be reported if within 10% of the mean CBR value of top and base.	Stephen Watson

UKAS TESTING

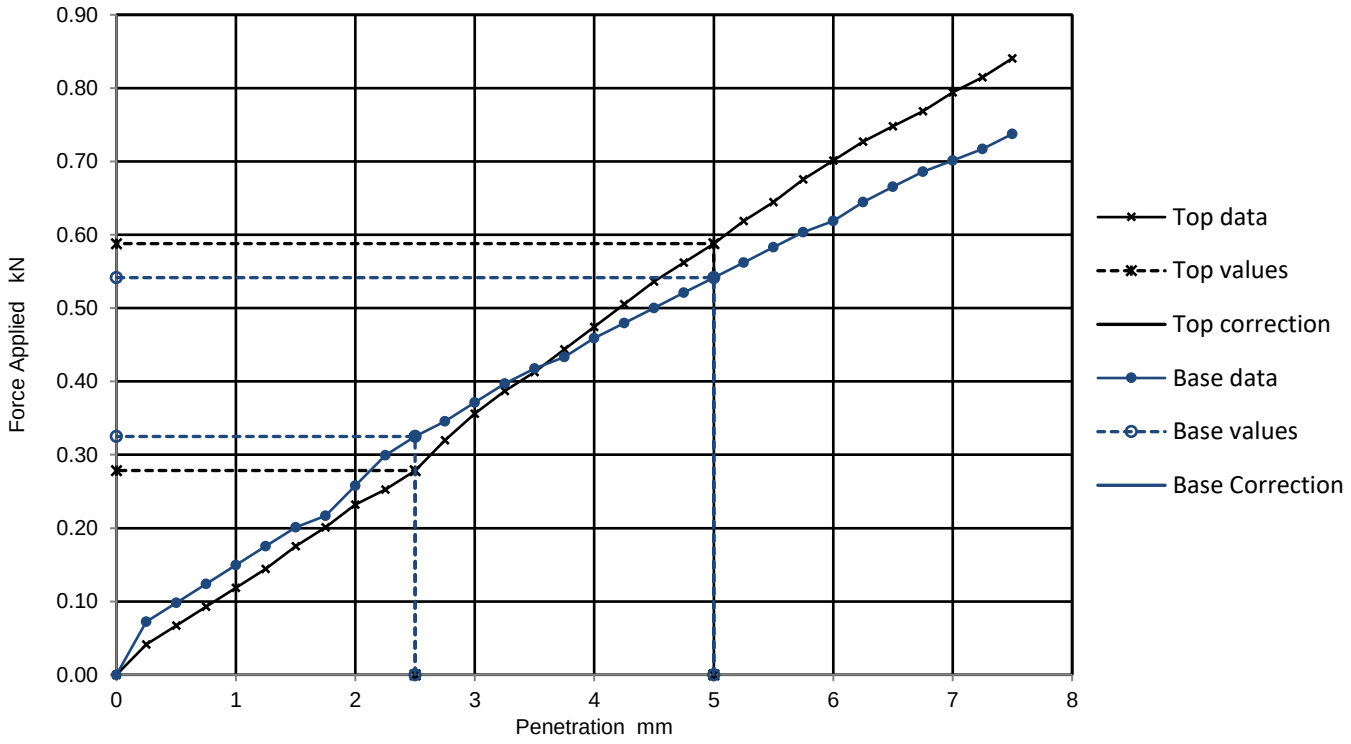
10122

CAUSEWAY GEOTECH	**California Bearing Ratio (CBR)**			Job Ref	23-0881D
				Borehole/Pit No.	TP01
Site Name	NDFA Social Housing Lot 3 - Lambs Cross			Sample No.	5
Soil Description	Brown sandy slightly gravelly silty CLAY.			Depth m	1.40
Specimen Reference		Specimen Depth	m	Sample Type	B
Specimen Description	Brown sandy slightly gravelly silty CLAY.			KeyLAB ID	Caus2023120438
Test Method	BS1377 : Part 4 : 1990, clause 7			CBR Test Number	1

Specimen Preparation

Condition	REMOULDED			Soaking details	Not soaked	
Details	Recompacted with specified standard effort using 2.5kg rammer			Period of soaking		days
				Time to surface		days
				Amount of swell recorded		mm
Material retained on 20mm sieve removed		8	%	Dry density after soaking		Mg/m3
Initial Specimen details	Bulk density	2.12	Mg/m3	Surcharge applied	4.5	kg
	Dry density	1.82	Mg/m3		3	kPa
	Moisture content	16	%			

Force v Penetration Plots



Results

	Curve correction applied	CBR Values, %				Moisture Content %
		2.5mm	5mm	Highest	Average	
TOP	No	2.1	2.9	2.9	2.8	16
BASE	No	2.5	2.7	2.7		17

General remarks	Test specific remarks	Approved
Tested at natural moisture content.	Average result may be reported if within 10% of the mean CBR value of top and base.	Stephen Watson

UKAS TESTING

10122

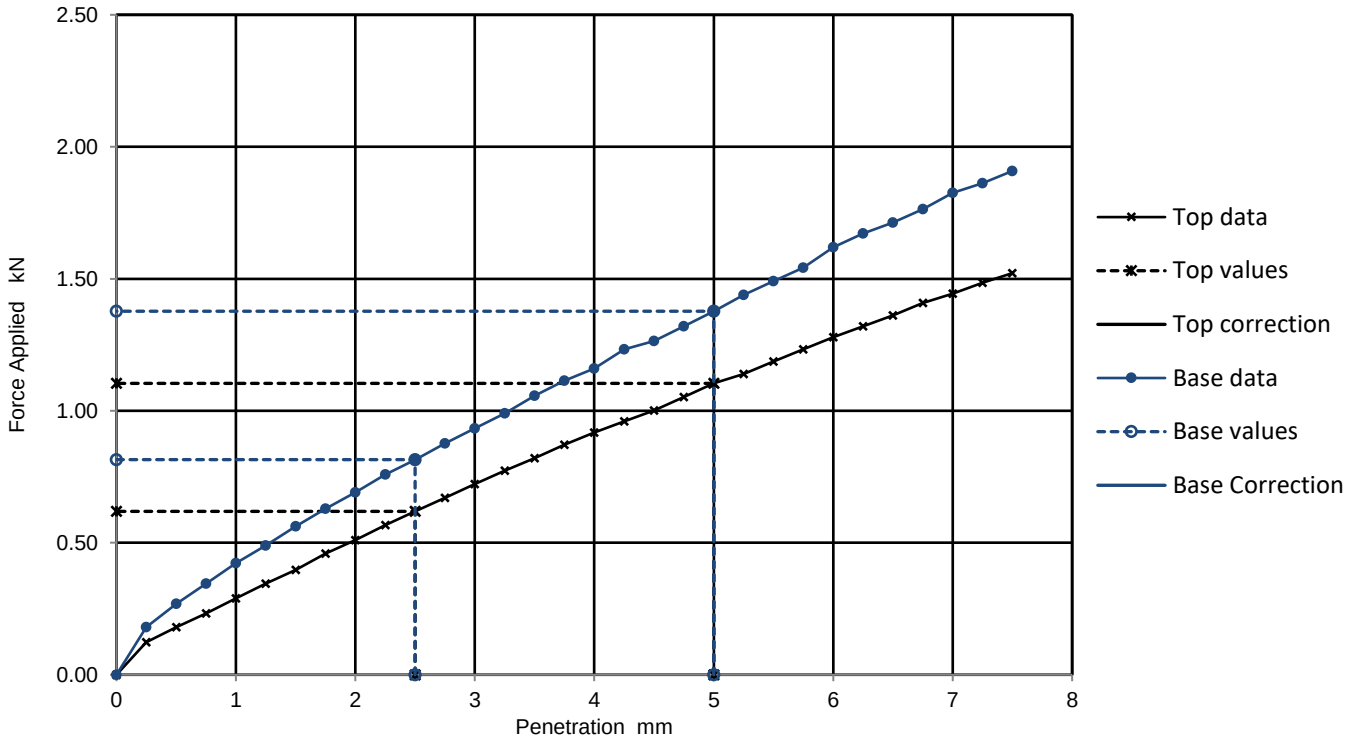
California Bearing Ratio (CBR)

CAUSEWAY GEOTECH				Job Ref	23-0881D
				Borehole/Pit No.	TP02
Site Name	NDFA Social Housing Lot 3 - Lambs Cross			Sample No.	3
Soil Description	Brown sandy slightly gravelly silty CLAY.			Depth m	0.25
Specimen Reference		Specimen Depth	m	Sample Type	B
Specimen Description	Brown sandy slightly gravelly silty CLAY.			KeyLAB ID	Caus2023120439
Test Method	BS1377 : Part 4 : 1990, clause 7			CBR Test Number	1

Specimen Preparation

Condition	REMOULDED			Soaking details	Not soaked	
Details	Recompacted with specified standard effort using 2.5kg rammer			Period of soaking		days
				Time to surface		days
				Amount of swell recorded		mm
Material retained on 20mm sieve removed		16	%	Dry density after soaking		Mg/m3
Initial Specimen details	Bulk density	2.12	Mg/m3	Surcharge applied	4.5	kg
	Dry density	1.83	Mg/m3		3	kPa
	Moisture content	16	%			

Force v Penetration Plots



Results

	Curve correction applied	CBR Values, %				Moisture Content %
		2.5mm	5mm	Highest	Average	
TOP	No	4.7	5.5	5.5		16
BASE	No	6.2	6.9	6.9		15

General remarks	Test specific remarks	Approved
Tested at natural moisture content.	Average result may be reported if within 10% of the mean CBR value of top and base.	Stephen Watson

UKAS TESTING

10122

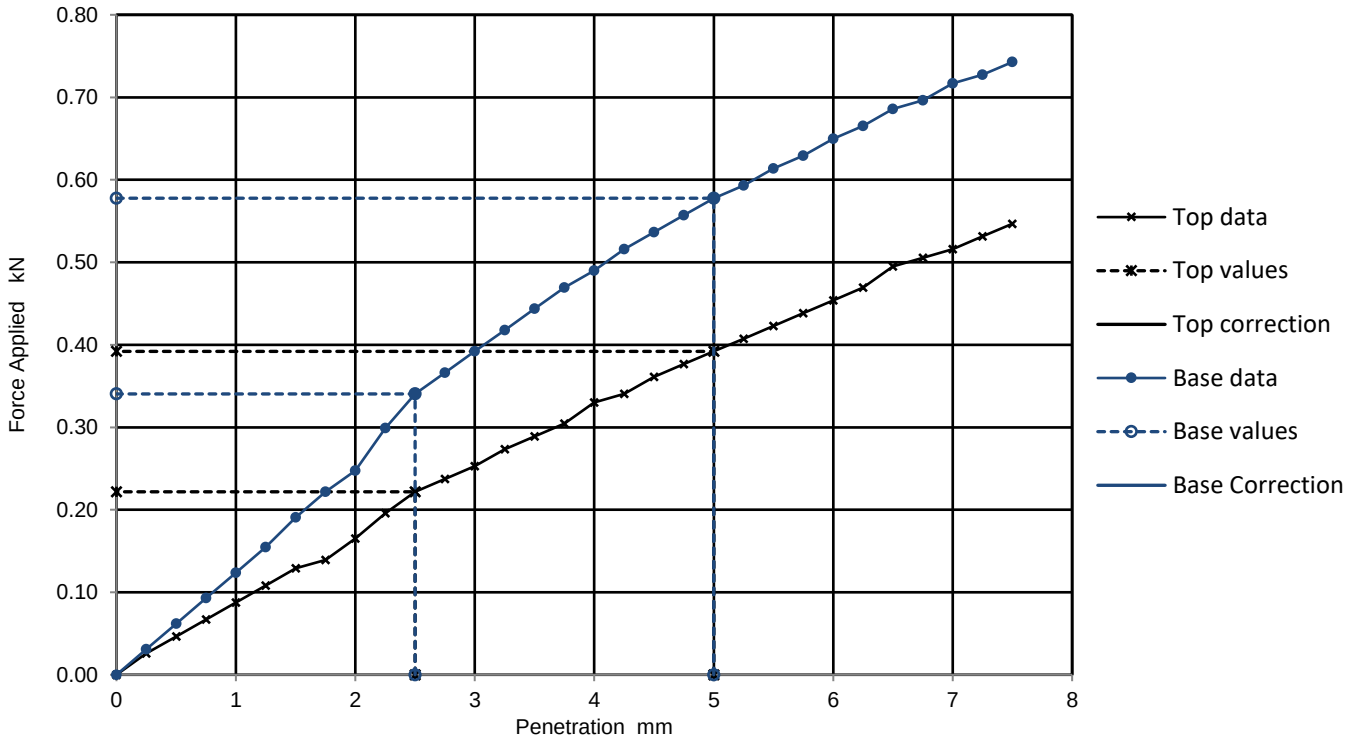
California Bearing Ratio (CBR)

				Job Ref	23-0881D
				Borehole/Pit No.	TP02
Site Name	NDFA Social Housing Lot 3 - Lambs Cross			Sample No.	4
Soil Description	Brown sandy slightly gravelly silty CLAY.			Depth m	1.00
Specimen Reference		Specimen Depth	m	Sample Type	B
Specimen Description	Brown sandy slightly gravelly silty CLAY.			KeyLAB ID	Caus2023120440
Test Method	BS1377 : Part 4 : 1990, clause 7			CBR Test Number	1

Specimen Preparation

Condition	REMOULDED			Soaking details	Not soaked	
Details	Recompacted with specified standard effort using 2.5kg rammer			Period of soaking		days
				Time to surface		days
				Amount of swell recorded		mm
Material retained on 20mm sieve removed		19	%	Dry density after soaking		Mg/m3
Initial Specimen details	Bulk density	2.02	Mg/m3	Surcharge applied	4.5	kg
	Dry density	1.68	Mg/m3		3	kPa
	Moisture content	20	%			

Force v Penetration Plots



Results

	Curve correction applied	CBR Values, % 2.5mm	5mm	Highest	Average	Moisture Content %
TOP	No	1.7	2.0	2.0		20
BASE	No	2.6	2.9	2.9		20

General remarks	Test specific remarks	Approved
Tested at natural moisture content.	Average result may be reported if within 10% of the mean CBR value of top and base.	Stephen Watson

UKAS TESTING

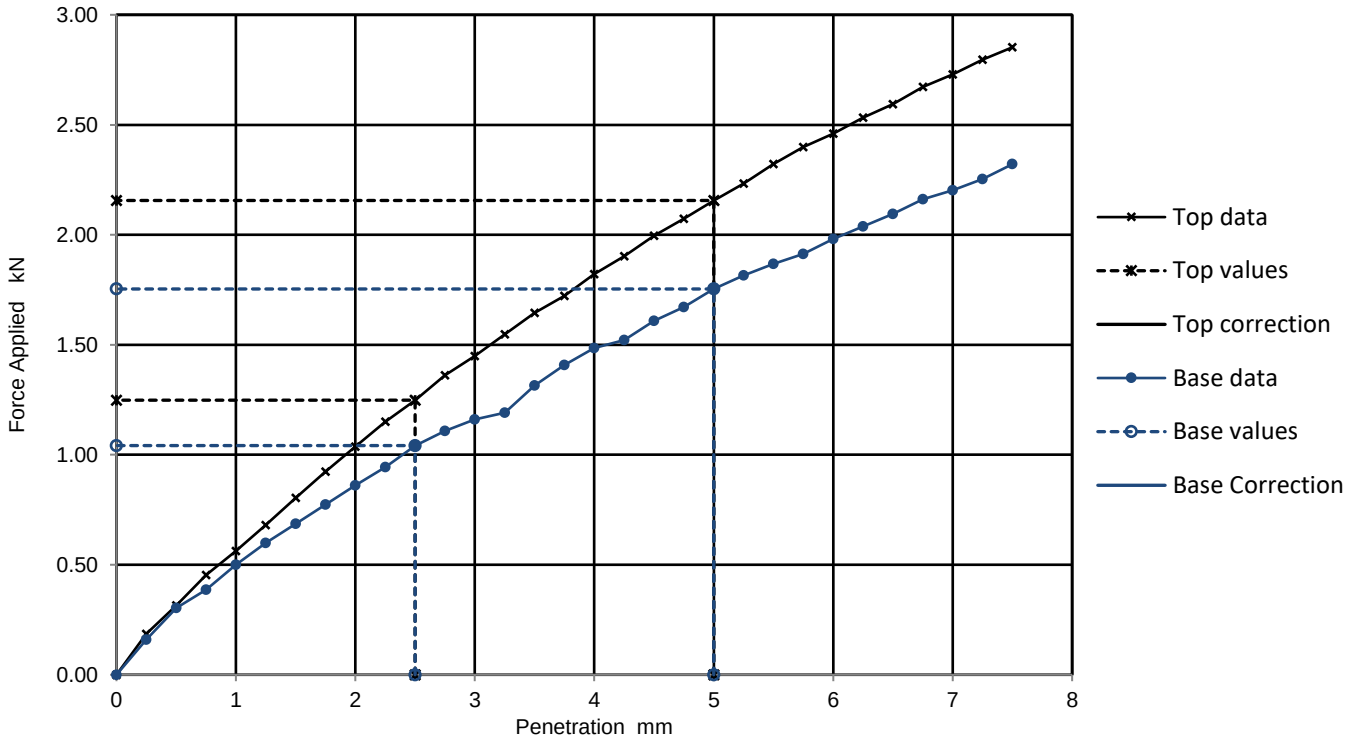
10122

CAUSEWAY GEOTECH	**California Bearing Ratio (CBR)**			Job Ref	23-0881D
				Borehole/Pit No.	TP03
Site Name	NDFA Social Housing Lot 3 - Lambs Cross			Sample No.	2
Soil Description	Brown sandy slightly gravelly silty CLAY.			Depth m	0.10
Specimen Reference		Specimen Depth	m	Sample Type	B
Specimen Description	Brown sandy slightly gravelly silty CLAY.			KeyLAB ID	Caus2023120441
Test Method	BS1377 : Part 4 : 1990, clause 7			CBR Test Number	1

Specimen Preparation

Condition	REMOULDED			Soaking details	Not soaked	
Details	Recompacted with specified standard effort using 2.5kg rammer			Period of soaking		days
				Time to surface		days
				Amount of swell recorded		mm
Material retained on 20mm sieve removed		9	%	Dry density after soaking		Mg/m3
Initial Specimen details	Bulk density	2.02	Mg/m3	Surcharge applied	4.5	kg
	Dry density	1.75	Mg/m3		3	kPa
	Moisture content	15	%			

Force v Penetration Plots



Results

	Curve correction applied	CBR Values, %				Moisture Content %
		2.5mm	5mm	Highest	Average	
TOP	No	9.5	11.0	11.0		15
BASE	No	7.9	8.8	8.8		14

General remarks	Test specific remarks	Approved
Tested at natural moisture content.	Average result may be reported if within 10% of the mean CBR value of top and base.	Stephen Watson

UKAS TESTING

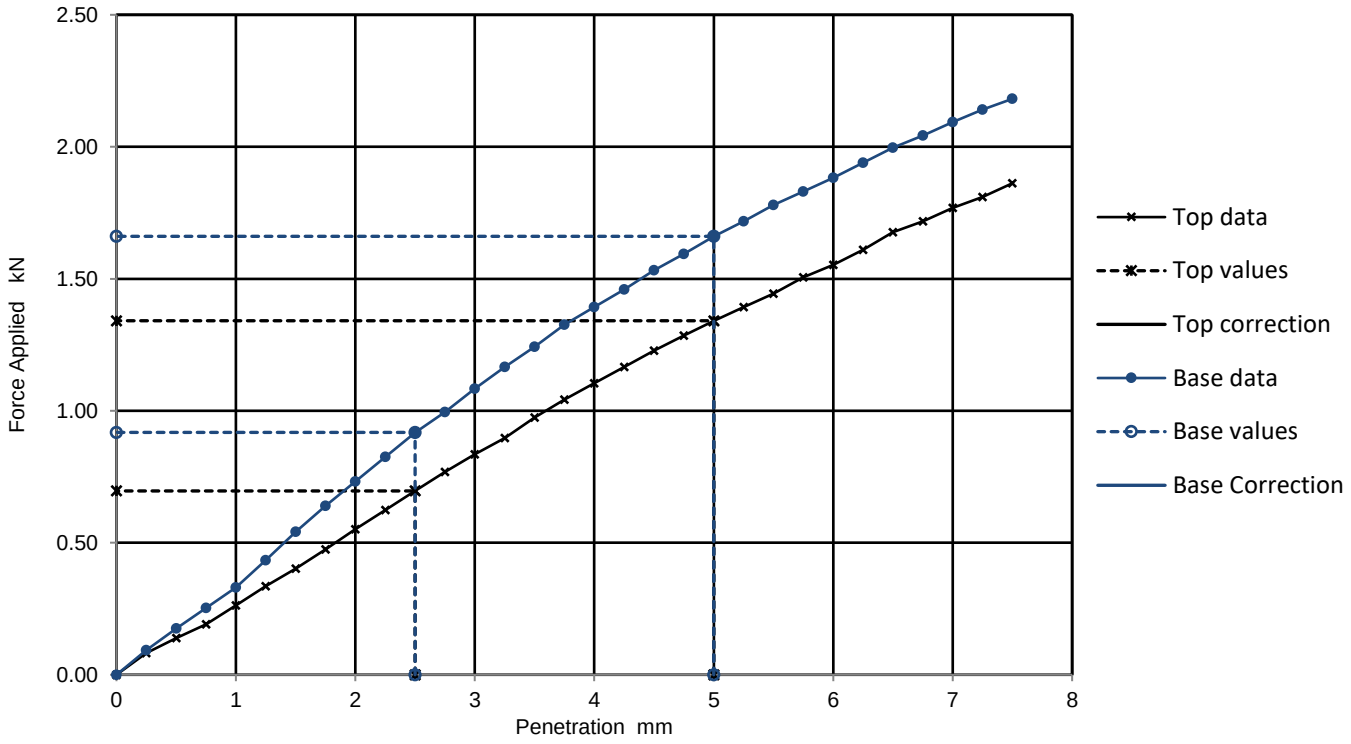
10122

CAUSEWAY GEOTECH	**California Bearing Ratio (CBR)**			Job Ref	23-0881D
				Borehole/Pit No.	TP03
Site Name	NDFA Social Housing Lot 3 - Lambs Cross			Sample No.	3
Soil Description	Brown sandy slightly gravelly silty CLAY.			Depth m	0.60
Specimen Reference		Specimen Depth	m	Sample Type	B
Specimen Description	Brown sandy slightly gravelly silty CLAY.			KeyLAB ID	Caus2023120442
Test Method	BS1377 : Part 4 : 1990, clause 7			CBR Test Number	1

Specimen Preparation

Condition	REMOULDED			Soaking details	Not soaked	
Details	Recompacted with specified standard effort using 2.5kg rammer			Period of soaking		days
				Time to surface		days
				Amount of swell recorded		mm
Material retained on 20mm sieve removed		4	%	Dry density after soaking		Mg/m3
Initial Specimen details	Bulk density	2.08	Mg/m3	Surcharge applied	4.5	kg
	Dry density	1.76	Mg/m3		3	kPa
	Moisture content	19	%			

Force v Penetration Plots



Results

	Curve correction applied	CBR Values, %				Moisture Content %
		2.5mm	5mm	Highest	Average	
TOP	No	5.3	6.7	6.7		19
BASE	No	7.0	8.3	8.3		17

General remarks	Test specific remarks	Approved
Tested at natural moisture content.	Average result may be reported if within 10% of the mean CBR value of top and base.	Stephen Watson

UKAS TESTING

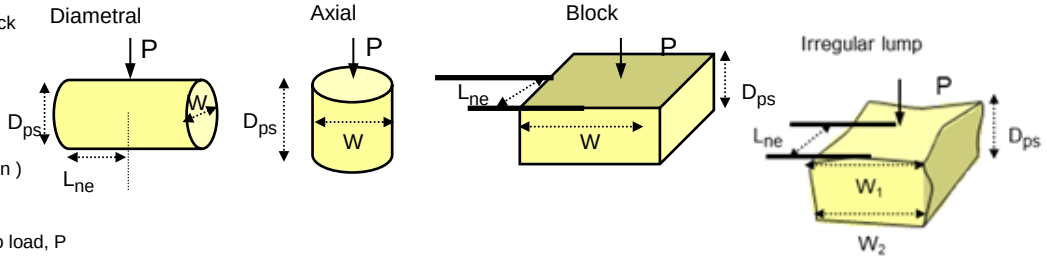
10122

Point Load Strength Index Tests
Summary of Results

Project No.	Project Name
23-0881D	NDFA Social Housing Lot 3 - Lambs Cross

Borehole No.	Sample			Specimen		Rock Type	Test Type see ISRM		Failure Valid (Y/N)	Dimensions				Force P	Equivalent diameter, De	Point Load Strength Index		Remarks (including water content if measured)
	Depth	Ref.	Type	Ref.	Depth		Type (D, A, I, B)	Direction (L, P or U)		Lne	W	Dps	Dps'			Is	Is(50)	
	m				m					mm	mm	mm	mm	kN	mm	MPa	MPa	
RC01	2.70	2	C	1	2.70	GRANITE	D	U	NO	93.4	101.3	101.3	99.0	24.9	100.1	2.5	3.4	
RC01	3.00	1	C	1	3.00	GRANITE	A	U	NO		101.4	89.0	86.0	21.6	105.4	1.9	2.7	

Test Type
D - Diametral, A - Axial, I - Irregular Lump, B - Block
Direction
L - parallel to planes of weakness
P - perpendicular to planes of weakness
U - unknown or random
Dimensions
Dps - Distance between platens (platen separation)
Dps' - at failure (see ISRM note 6)
Lne - Length from platens to nearest free end
W - Width of shortest dimension perpendicular to load, P



Test performed in accordance with ISRM Suggested Methods : 1985, unless noted otherwise

Detailed legend for test and dimensions, based on ISRM, is shown above.

Size factor, F = (De/50)0.45 for all tests.

LAB 17R - Version 5

Date Printed: 15/01/2024

Approved By: Stephen Watson

UKAS TESTING
10122

UNIAXIAL COMPRESSION TEST ON ROCK - SUMMARY OF RESULTS

Project No.	Project Name
23-0881D	NDFA Social Housing Lot 3 - Lambs Cross

Hole No.	Sample				Rock Type	Specimen Dimensions2			Bulk Density2	Water Content 1	Uniaxial Compression3			Remarks
	Ref	Top	Base	Type		Dia. mm	Length mm	H/D	Mg/m3	%	Condition	Mode of failure	UCS MPa	
RC01	3	3.20	3.50	C	GRANITE	101.4	204.6	2.0	2.63	0.3	as received	MS	46.2	

Notes

1 ISRM p87 test 1, water content at 105 ± 3 oC, specimen as tested for UCS

2 ISRM p86 clause (vii), Caliper method used for determination of bulk volume and derivation of bulk density

3 ISRM p153 part 1, determination of Uniaxial Compressive Strength (UCS) of Rock Materials

above notes apply unless annotated otherwise in the remarks

Mode of failure :

S - Single shear MS - multiple shear

AC - Axial cleavage F - Fragmented

Test Specification	Date Printed	Approved By	Table
International Society for Rock Mechanics, The complete ISRM suggested methods for Rock Characterization Testing and Monitoring, 2007	15/01/2024	Stephen Watson	1 sheet 1

Certificate of Analysis

Certificate Number	23-30245	*Issued:*	29-Dec-23

Client Causeway Geotech
8 Drumahiskey Road
Ballymoney
County Antrim
BT53 7QL

Our Reference	23-30245
Client Reference	23-0881D
Order No	(not supplied)
Contract Title	Lambs Cross
Description	10 Soil samples.
Date Received	22-Dec-23
Date Started	22-Dec-23
Date Completed	29-Dec-23
Test Procedures	Identified by prefix DETSn (details on request).

Notes Opinions and interpretations are outside the laboratory's scope of ISO 17025 accreditation. This certificate is issued in accordance with the accreditation requirements of the United Kingdom Accreditation Service. The results reported herein relate only to the material supplied to the laboratory. This certificate shall not be reproduced except in full, without the prior written approval of the laboratory.

Approved By

Kirk Bridgewood
General Manager

2139

Summary of Chemical Analysis
Soil Samples

Our Ref 23-30245
Client Ref 23-0881D
Contract Title Lambs Cross

			Lab No	2281675	2281676	2281677	2281678	2281679	2281680	2281681	2281682	2281683	2281684
			.Sample ID	ST01	ST02	ST04	ST04	TP01	TP01	TP02	TP02	TP03	TP03
			Depth	0.15	0.65	0.20	1.20	0.30	1.40	0.25	1.00	0.10	0.60
			Other ID										
			Sample Type	B	B	B	B	B	B	B	B	B	B
			Sampling Date	21/12/2023	21/12/2023	21/12/2023	21/12/2023	21/12/2023	21/12/2023	21/12/2023	21/12/2023	21/12/2023	21/12/2023
			Sampling Time	n/s	n/s	n/s	n/s	n/s	n/s	n/s	n/s	n/s	n/s
Test	**Method**	**LOD**	**Units**										
Inorganics													
pH	DETSC 2008#		pH	8.0	7.7	8.0	7.7	8.0	8.0	7.8	7.5	7.7	7.9
Sulphate Aqueous Extract as SO4 (2:1)	DETSC 2076#	10	mg/l	280	310	45	89	54	83	34	31	35	75

Key: # -MCERTS (accreditation only applies if report carries the MCERTS logo). n/s -not supplied.

Information in Support of the Analytical Results

Our Ref 23-30245
Client Ref 23-0881D
Contract Lambs Cross

Containers Received & Deviating Samples

Lab No	Sample ID	Date Sampled	Containers Received	Holding time exceeded for tests	Inappropriate container for tests
2281675	ST01 0.15 SOIL	21/12/23	PT 500ml		
2281676	ST02 0.65 SOIL	21/12/23	PT 500ml		
2281677	ST04 0.20 SOIL	21/12/23	PT 500ml		
2281678	ST04 1.20 SOIL	21/12/23	PT 500ml		
2281679	TP01 0.30 SOIL	21/12/23	PT 500ml		
2281680	TP01 1.40 SOIL	21/12/23	PT 500ml		
2281681	TP02 0.25 SOIL	21/12/23	PT 500ml		
2281682	TP02 1.00 SOIL	21/12/23	PT 500ml		
2281683	TP03 0.10 SOIL	21/12/23	PT 500ml		
2281684	TP03 0.60 SOIL	21/12/23	PT 500ml		

Key: P-Plastic T-Tub

DETS cannot be held responsible for the integrity of samples received whereby the laboratory did not undertake the sampling. In this instance samples received may be deviating. Deviating Sample criteria are based on British and International standards and laboratory trials in conjunction with the UKAS note 'Guidance on Deviating Samples'. All samples received are listed above. However, those samples that have additional comments in relation to hold time, inappropriate containers etc are deviating due to the reasons stated. This means that the analysis is accredited where applicable, but results may be compromised due to sample deviations. If no sampled date (soils) or date+time (waters) has been supplied then samples are deviating. However, if you are able to supply a sampled date (and time for waters) this will prevent samples being reported as deviating where specific hold times are not exceeded and where the container supplied is suitable.

Soil Analysis Notes

Inorganic soil analysis was carried out on a dried sample, crushed to pass a 425µm sieve, in accordance with BS1377.

Organic soil analysis was carried out on an 'as received' sample. Organics results are corrected for moisture and expressed on a dry weight basis.

The Loss on Drying, used to express organics analysis on an air dried basis, is carried out at a temperature of 28°C +/-2°C.

Disposal

From the issue date of this test certificate, samples will be held for the following times prior to disposal :-

Soils - 1 month, Liquids - 2 weeks, Asbestos (test portion) - 6 months

End of Report

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Registered in Ireland.
Company Number: 633786

www.causewaygeotech.com

SOIL AND ROCK SAMPLE ANALYSIS
LABORATORY TEST REPORT

30 January 2024

Project Name:	NDFA Social Housing Lot 3 - Lambs Cross
Project No.:	23-0881D
Client:	NDFA
Engineer:	Malone O'Regan Consulting Engineers

We are pleased to attach the results of laboratory testing carried out for the above project. This memo and its attachments constitute a report of the results of tests as detailed in the Contents page(s). This testing was performed between 08/01/2024 and 02/02/2024.

The attached results complete the testing requested and we would therefore wish to confirm that samples will be retained without charge for a period of 28 days from the above date after which they will be appropriately disposed of unless we receive written instructions to the contrary prior to that date.

We trust our report meets with your approval but if you have any queries or require additional information, please do not hesitate to contact the undersigned.

Stephen Watson

Laboratory Manager

Signed for and on behalf of Causeway Geotech Ltd

Project Name: NDFA Social Housing Lot 3 - Lambs Cross

Report Reference: Schedule 2

The table below details the tests carried out, the specifications used, and the number of tests included in this report. Tests marked with* in this report are not United Kingdom Accreditation Service (UKAS) accredited and are not included in Causeway Geotech Limited's scope of UKAS Accreditation Schedule of Tests.

The results contained in this report relate to the sample(s) as received. Opinions and interpretations expressed herein are outside the scope of UKAS accreditation. This report shall not be reproduced other than in full, without the prior written approval of the laboratory.

Material tested	Type of test/Properties measured/Range of measurement	Standard specifications	No. of results included in the report
SOIL	Water Content of Soil	BS 1377-2: 1990: Cl 3.2	9
SOIL	Liquid and Plastic Limits of soil-1 point cone penetrometer method	BS 1377-2: 1990: Cl 4.4, 5.3 & 5.4	8
SOIL	Particle size distribution - wet sieving	BS 1377-2: 1990: Cl 9.2	9
SOIL	Particle size distribution - sedimentation hydrometer method	BS 1377-2: 1990: Cl 9.5	7
SOIL	California Bearing Ratio (CBR)	BS 1377-4: 1990: Cl 7	3

SUB-CONTRACTED TESTS

In agreement with Client, the following tests were conducted by an approved sub-contractor. All sub-contracting laboratories used are UKAS accredited.

Material tested	Type of test/Properties measured/Range of measurement	Standard specifications	No. of results included in the report
SOIL – Subcontracted to Derwentside Environmental Testing Services Limited *(UKAS 2139)*	pH Value of Soil		4
SOIL – Subcontracted to Derwentside Environmental Testing Services Limited *(UKAS 2139)*	Sulphate Content water extract		4

CAUSEWAY GEOTECH

Summary of Classification Test Results

Project No.: 23-0881D

Project Name: NDFA Social Housing Lot 3 - Lambs Cross

Hole No.	Sample				Specimen Description	Density bulk / dry Mg/m3		w %	Passing 425µm %	LL %	PL %	PI %	Particle density Mg/m3	Casagrande Classification
	Ref	Top	Base	Type										
BH01	5	1.20	2.00	B	Brown sandy slightly clayey subangular fine to coarse GRAVEL.			9.5	34	40 -1pt	25	15		MI/CI
BH06	5	0.60	1.20	B	Brown sandy gravelly silty CLAY.			20	74	31 -1pt	23	8		ML/CL
BH06	9	2.00	3.00	B	Brown sandy slightly gravelly clayey SILT.			21	66	36 -1pt	26	10		MI
BH06	11	3.50	3.60	B	Brownish grey COBBLES with some brown sandy subangular fine to coarse gravel.			2.3						
BH08	5	0.30	1.00	B	Brown sandy slightly gravelly clayey SILT.			14	51	36 -1pt	26	10		MI
BH09	5	0.60	1.20	B	Greyish brown sandy slightly gravelly silty CLAY.			20	68	33 -1pt	24	9		ML/CL
BH09	11	1.20	2.00	B	Brown sandy slightly gravelly silty CLAY.			17	75	29 -1pt	22	7		ML/CL
BH09	12	2.00	3.00	B	Brown sandy slightly gravelly silty CLAY.			18	73	30 -1pt	17	13		CL
BH09	16	4.00	5.00	B	Brown sandy slightly gravelly silty CLAY.			21	73	30 -1pt	22	8		CL

All tests performed in accordance with BS1377:1990 unless specified otherwise

LAB 01R Version 6

Key

Density test	Liquid Limit	Particle density
Linear measurement unless :	4pt cone unless :	sp - small pyknometer
wd - water displacement	cas - Casagrande method	gj - gas jar
wi - immersion in water	1pt - single point test	

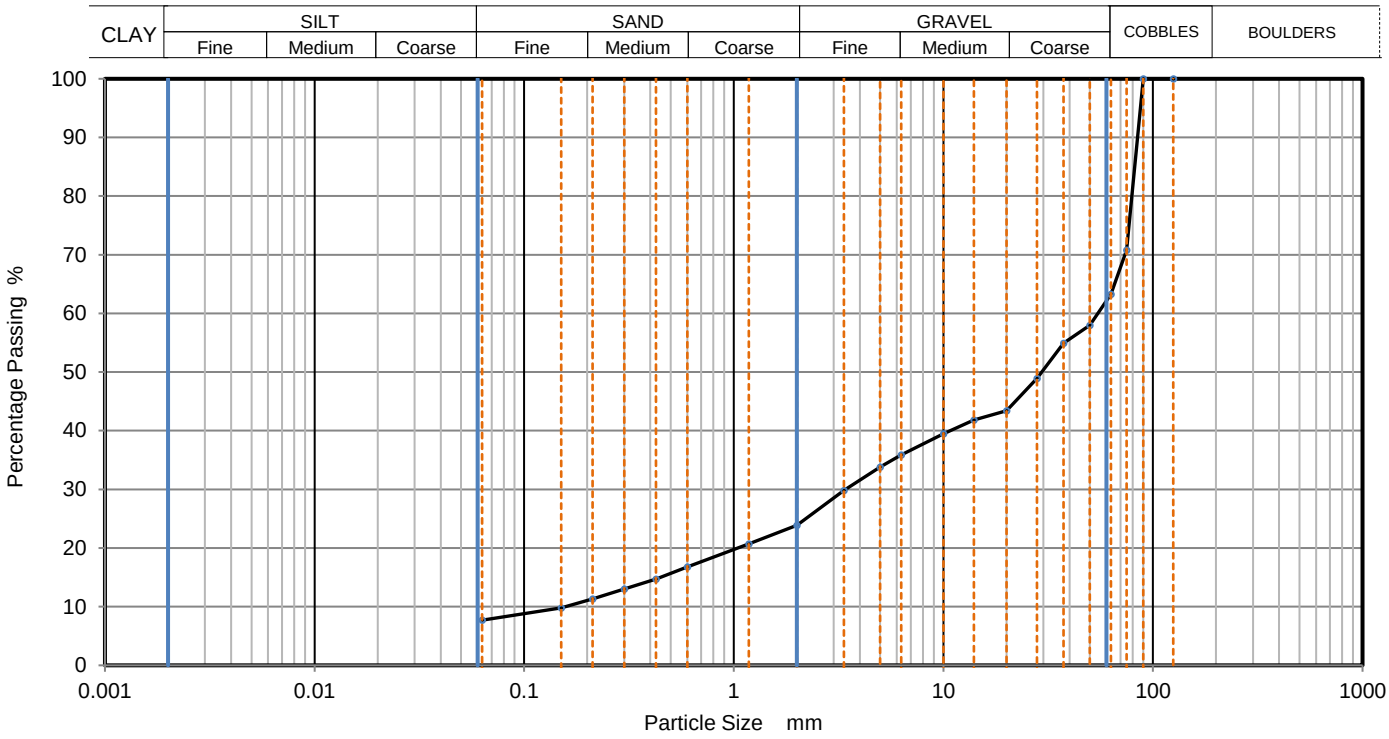
Date Printed: 30/01/2024

Approved By: Stephen Watson

UKAS TESTING 10122

PARTICLE SIZE DISTRIBUTION

Job Ref					23-0881D
Borehole/Pit No.					BH01
Site Name	NDFA Social Housing Lot 3 - Lambs Cross			Sample No.	5
Specimen Description	Brown sandy slightly clayey subangular fine to coarse GRAVEL.			Sample Depth (m) Top	1.20
				Base	2.00
Specimen Reference	6	Specimen Depth	1.2 m	Sample Type	B
Test Method	BS1377:Part 2:1990, clause 9.2			KeyLAB ID	Caus202312182



Sieving		Sedimentation	
Particle Size mm	% Passing	Particle Size mm	% Passing
125	100		
90	100		
75	71		
63	63		
50	58		
37.5	55		
28	49		
20	43		
14	42		
10	40		
6.3	36		
5	34		
3.35	30		
2	24		
1.18	21		
0.6	17		
0.425	15		
0.3	13		
0.212	11		
0.15	10		
0.063	8		

Dry Mass of sample, g: 5727

Sample Proportions	% dry mass
Cobbles	36.7
Gravel	39.3
Sand	16.2
Fines <0.063mm	8.0

Grading Analysis		
D100	mm	
D60	mm	54.5
D30	mm	3.4
D10	mm	0.156
Uniformity Coefficient		350
Curvature Coefficient		1.4

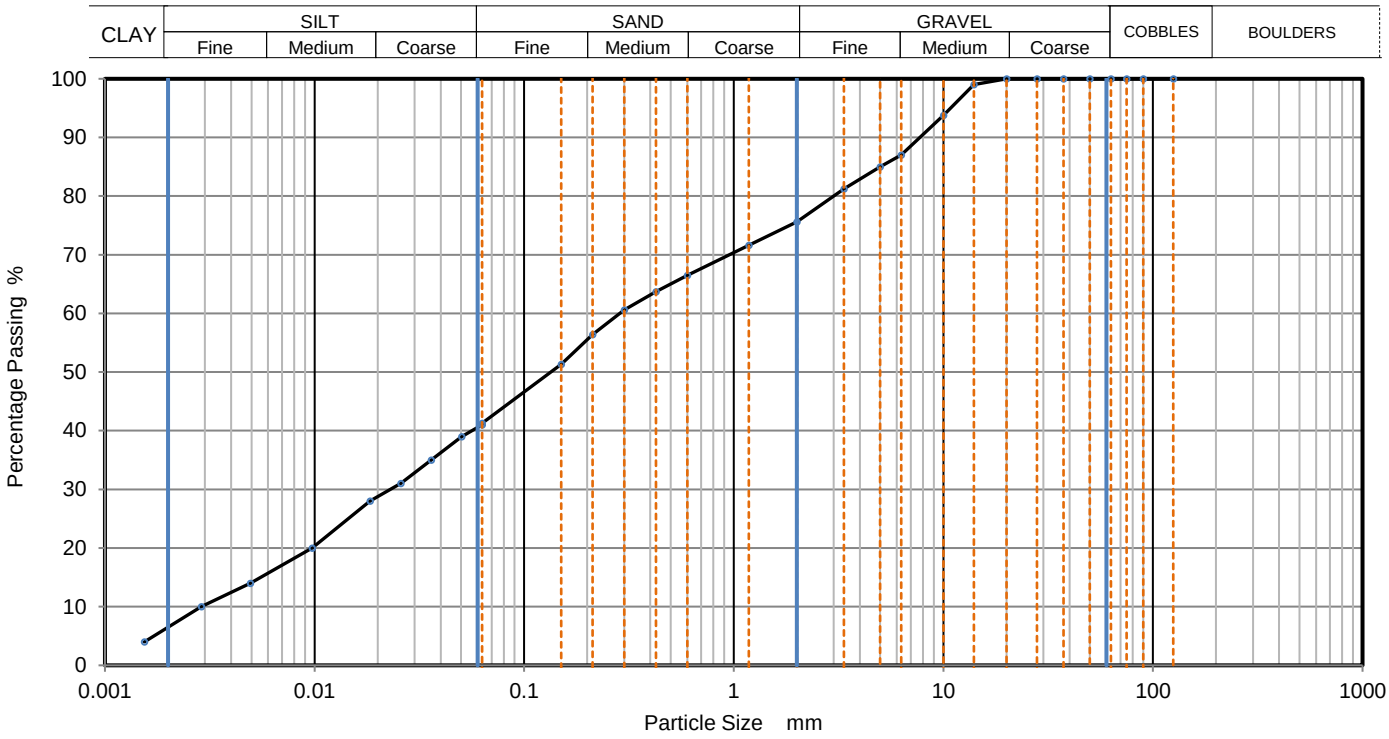
Remarks

Preparation and testing in accordance with BS1377-2 :1990 unless noted below

Approved
Stephen Watson

PARTICLE SIZE DISTRIBUTION

Job Ref					23-0881D
Borehole/Pit No.					BH06
Site Name	NDFA Social Housing Lot 3 - Lambs Cross			Sample No.	5
Specimen Description	Brown sandy gravelly silty CLAY.			Sample Depth (m) Top	0.60
				Base	1.20
Specimen Reference	8	Specimen Depth	0.6 m	Sample Type	B
Test Method	BS1377:Part 2:1990, clauses 9.2 and 9.5			KeyLAB ID	Caus202312184



Sieving		Sedimentation	
Particle Size mm	% Passing	Particle Size mm	% Passing
125	100	0.06300	41
90	100	0.05028	39
75	100	0.03599	35
63	100	0.02576	31
50	100	0.01843	28
37.5	100	0.00973	20
28	100	0.00495	14
20	100	0.00289	10
14	99	0.00154	4
10	94		
6.3	87		
5	85		
3.35	81		
2	76		
1.18	72		
0.6	67	Particle density	(assumed)
0.425	64	2.65	Mg/m3
0.3	61		
0.212	56		
0.15	51		
0.063	41		

Dry Mass of sample, g: 512

Sample Proportions	% dry mass
Cobbles	0.0
Gravel	24.4
Sand	34.3
Silt	34.9
Clay	6.4

Grading Analysis		
D100	mm	
D60	mm	0.285
D30	mm	0.0227
D10	mm	0.00295
Uniformity Coefficient		96
Curvature Coefficient		0.61

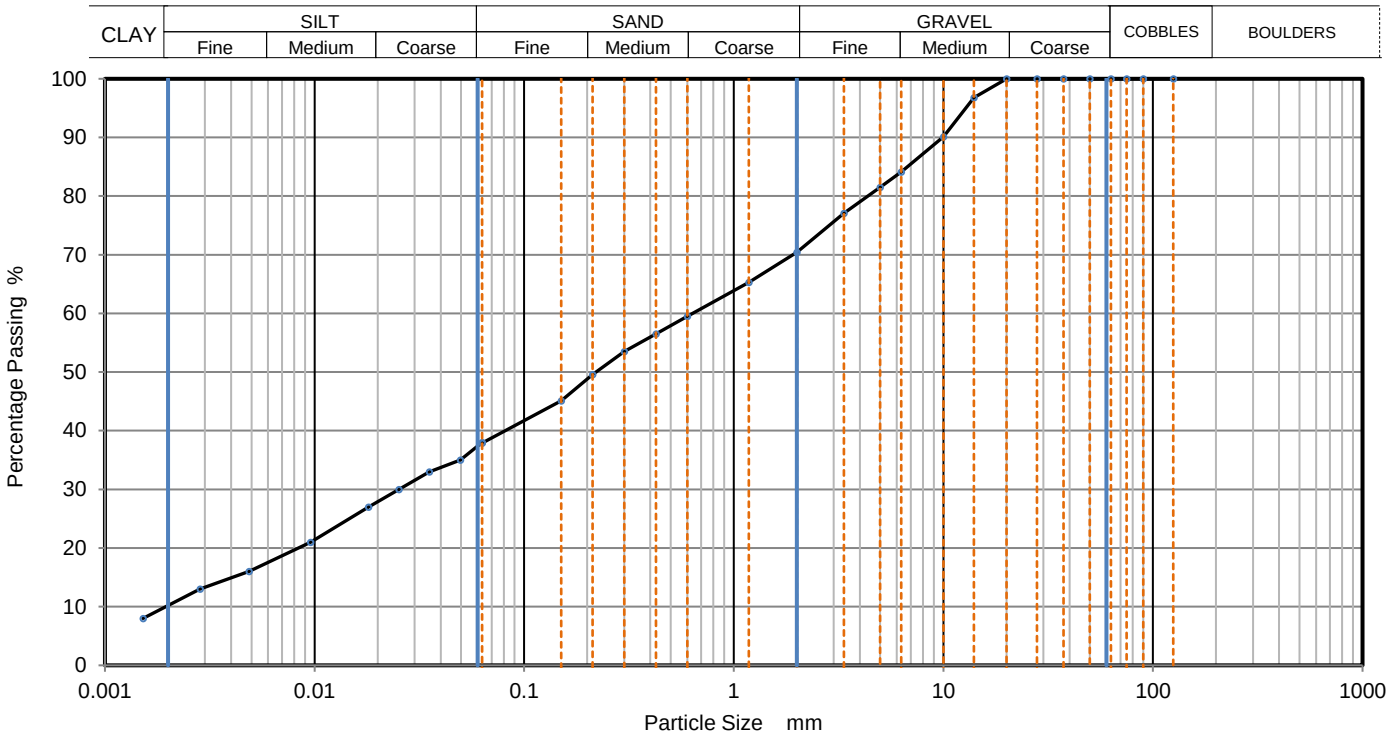
Remarks

Preparation and testing in accordance with BS1377-2 :1990 unless noted below

Approved
Stephen Watson

PARTICLE SIZE DISTRIBUTION

Job Ref					23-0881D
Borehole/Pit No.					BH06
Site Name	NDFA Social Housing Lot 3 - Lambs Cross			Sample No.	9
Specimen Description	Brown sandy slightly gravelly clayey SILT.			Sample Depth (m) Top	2.00
				Base	3.00
Specimen Reference	6	Specimen Depth	2 m	Sample Type	B
Test Method	BS1377:Part 2:1990, clauses 9.2 and 9.5			KeyLAB ID	Caus202312185



Sieving		Sedimentation	
Particle Size mm	% Passing	Particle Size mm	% Passing
125	100	0.06300	38
90	100	0.04965	35
75	100	0.03533	33
63	100	0.02529	30
50	100	0.01810	27
37.5	100	0.00957	21
28	100	0.00487	16
20	100	0.00284	13
14	97	0.00152	8
10	90		
6.3	84		
5	82		
3.35	77		
2	70		
1.18	65		
0.6	60	Particle density	(assumed)
0.425	57	2.65	Mg/m3
0.3	54		
0.212	50		
0.15	45		
0.063	38		

Dry Mass of sample, g: 518

Sample Proportions	% dry mass
Cobbles	0.0
Gravel	29.6
Sand	32.5
Silt	27.9
Clay	10.0

Grading Analysis		
D100	mm	
D60	mm	0.638
D30	mm	0.0253
D10	mm	0.00201
Uniformity Coefficient		320
Curvature Coefficient		0.5

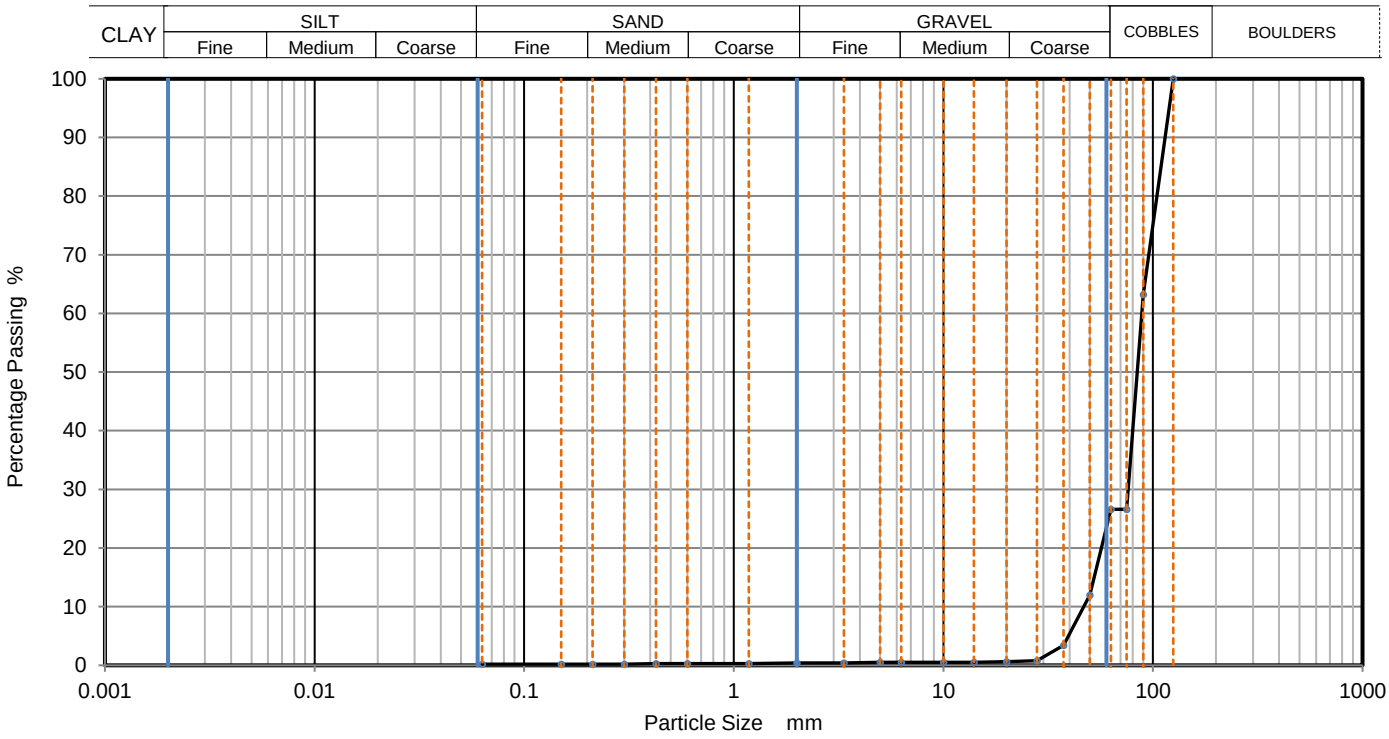
Remarks

Preparation and testing in accordance with BS1377-2 :1990 unless noted below

Approved
Stephen Watson

PARTICLE SIZE DISTRIBUTION

Job Ref					23-0881D
Borehole/Pit No.					BH06
Site Name	NDFA Social Housing Lot 3 - Lambs Cross			Sample No.	11
Specimen Description	Brownish grey COBBLES with some brown sandy subangular fine to coarse gravel.			Sample Depth (m) Top	3.50
				Base	3.60
Specimen Reference	6	Specimen Depth	3.5 m	Sample Type	B
Test Method	BS1377:Part 2:1990, clause 9.2			KeyLAB ID	Caus202312186



Sieving		Sedimentation	
Particle Size mm	% Passing	Particle Size mm	% Passing
125	100		
90	63		
75	27		
63	27		
50	12		
37.5	3		
28	1		
20	1		
14	1		
10	1		
6.3	1		
5	1		
3.35	0		
2	0		
1.18	0		
0.6	0		
0.425	0		
0.3	0		
0.212	0		
0.15	0		
0.063	0		

Dry Mass of sample, g	6205

Sample Proportions	% dry mass
Cobbles	73.4
Gravel	26.2
Sand	0.2
Fines <0.063mm	0.0

Grading Analysis		
D100	mm	125
D60	mm	88.6
D30	mm	76.3
D10	mm	46.8
Uniformity Coefficient		1.9
Curvature Coefficient		1.4

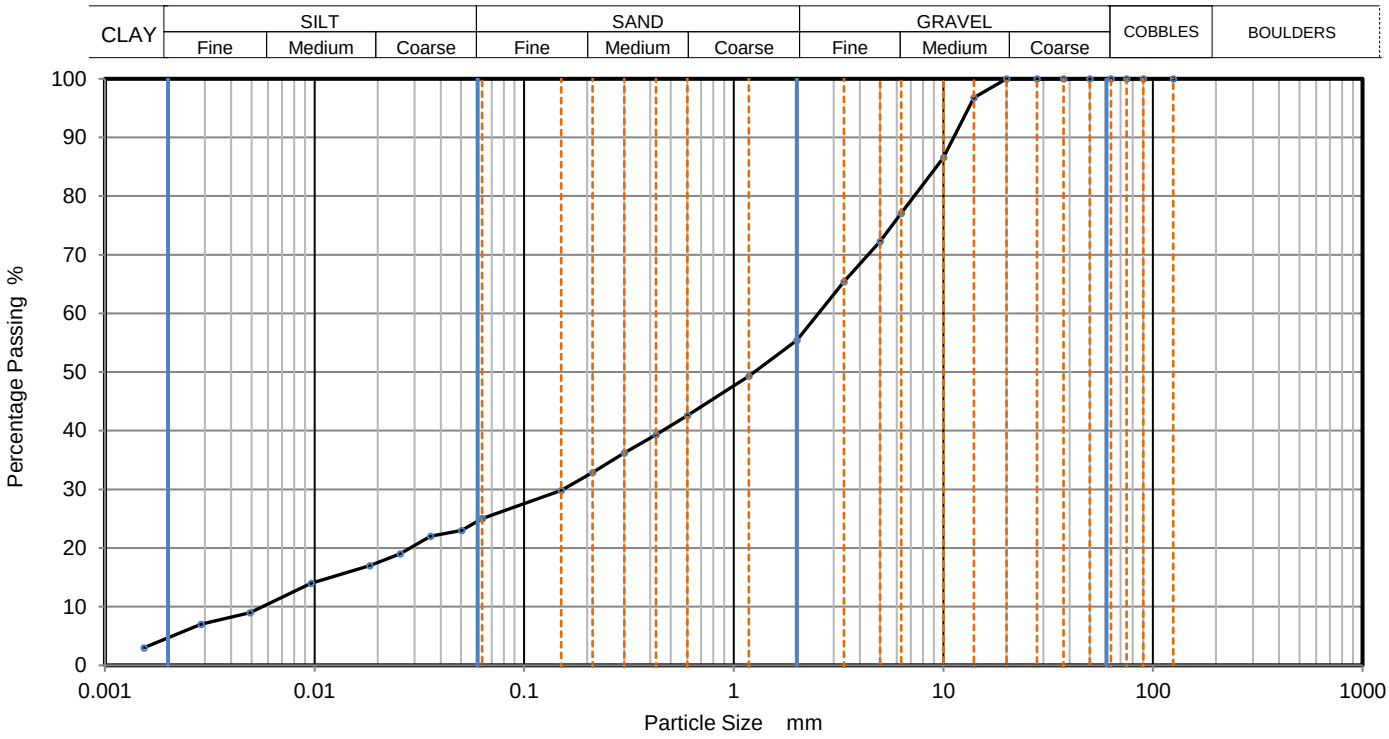
Remarks

Preparation and testing in accordance with BS1377-2 :1990 unless noted below

Approved
Stephen Watson

PARTICLE SIZE DISTRIBUTION

Job Ref					23-0881D
Borehole/Pit No.					BH08
Site Name	NDFA Social Housing Lot 3 - Lambs Cross			Sample No.	5
Specimen Description	Brown sandy slightly gravelly clayey SILT.			Sample Depth (m) Top	0.30
				Base	1.00
Specimen Reference	8	Specimen Depth	0.3 m	Sample Type	B
Test Method	BS1377:Part 2:1990, clauses 9.2 and 9.5			KeyLAB ID	Caus202312187



Sieving		Sedimentation	
Particle Size mm	% Passing	Particle Size mm	% Passing
125	100	0.06300	25
90	100	0.05028	23
75	100	0.03577	22
63	100	0.02560	19
50	100	0.01832	17
37.5	100	0.00963	14
28	100	0.00492	9
20	100	0.00287	7
14	97	0.00153	3
10	87		
6.3	77		
5	72		
3.35	65		
2	55		
1.18	49		
0.6	43	Particle density	(assumed)
0.425	39	2.65	Mg/m3
0.3	36		
0.212	33		
0.15	30		
0.063	25		

Dry Mass of sample, g: 507

Sample Proportions	% dry mass
Cobbles	0.0
Gravel	44.6
Sand	30.5
Silt	20.1
Clay	4.8

Grading Analysis		
D100	mm	
D60	mm	2.54
D30	mm	0.154
D10	mm	0.00563
Uniformity Coefficient		450
Curvature Coefficient		1.7

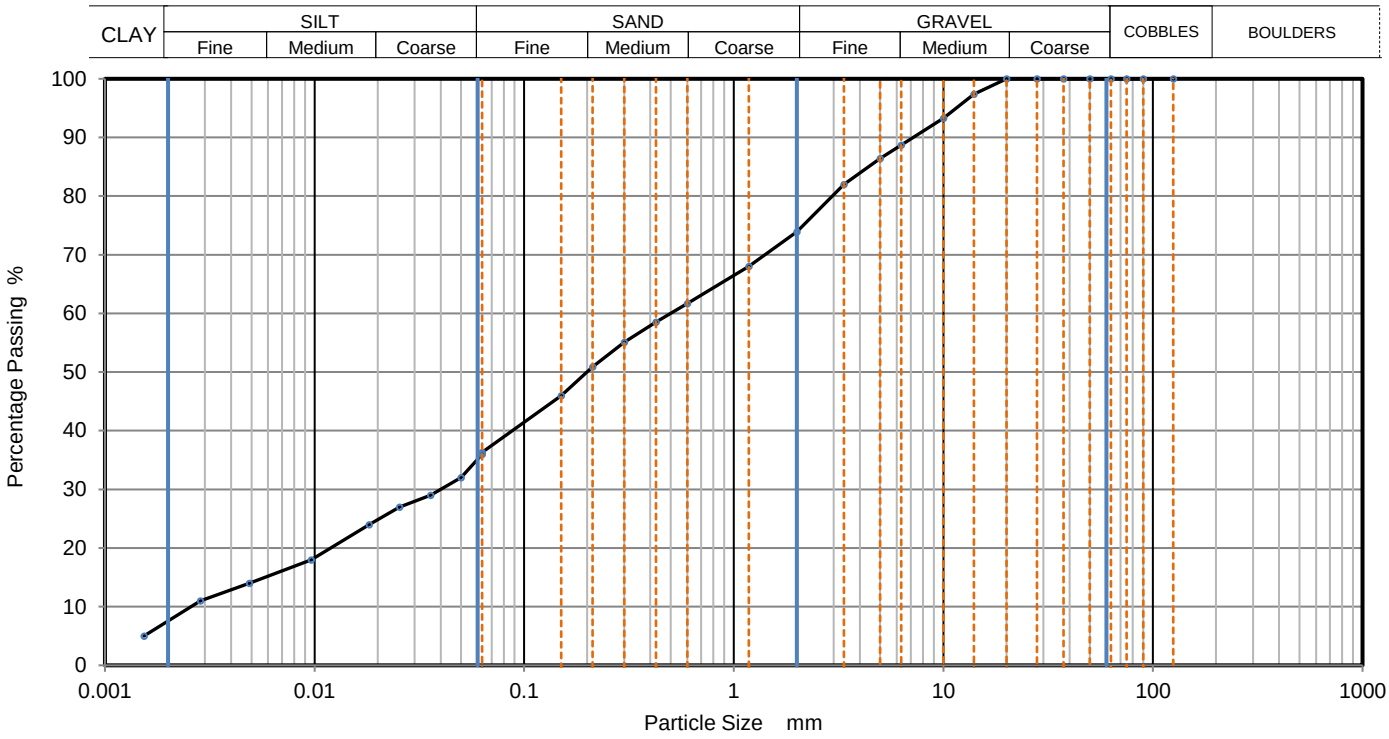
Remarks

Preparation and testing in accordance with BS1377-2 :1990 unless noted below

Approved
Stephen Watson

PARTICLE SIZE DISTRIBUTION

Job Ref					23-0881D
Borehole/Pit No.					BH09
Site Name	NDFA Social Housing Lot 3 - Lambs Cross			Sample No.	5
Specimen Description	Greyish brown sandy slightly gravelly silty CLAY.			Sample Depth (m) Top	0.60
				Base	1.20
Specimen Reference	6	Specimen Depth	0.6 m	Sample Type	B
Test Method	BS1377:Part 2:1990, clauses 9.2 and 9.5			KeyLAB ID	Caus202312189



Sieving		Sedimentation	
Particle Size mm	% Passing	Particle Size mm	% Passing
125	100	0.06300	36
90	100	0.04996	32
75	100	0.03577	29
63	100	0.02545	27
50	100	0.01821	24
37.5	100	0.00963	18
28	100	0.00489	14
20	100	0.00286	11
14	97	0.00153	5
10	93		
6.3	89		
5	86		
3.35	82		
2	74		
1.18	68		
0.6	62	Particle density	(assumed)
0.425	59	2.65	Mg/m3
0.3	55		
0.212	51		
0.15	46		
0.063	36		

Dry Mass of sample, g: 501

Sample Proportions	% dry mass
Cobbles	0.0
Gravel	26.1
Sand	37.6
Silt	29.2
Clay	7.1

Grading Analysis		
D100	mm	
D60	mm	0.499
D30	mm	0.0411
D10	mm	0.00269
Uniformity Coefficient		190
Curvature Coefficient		1.3

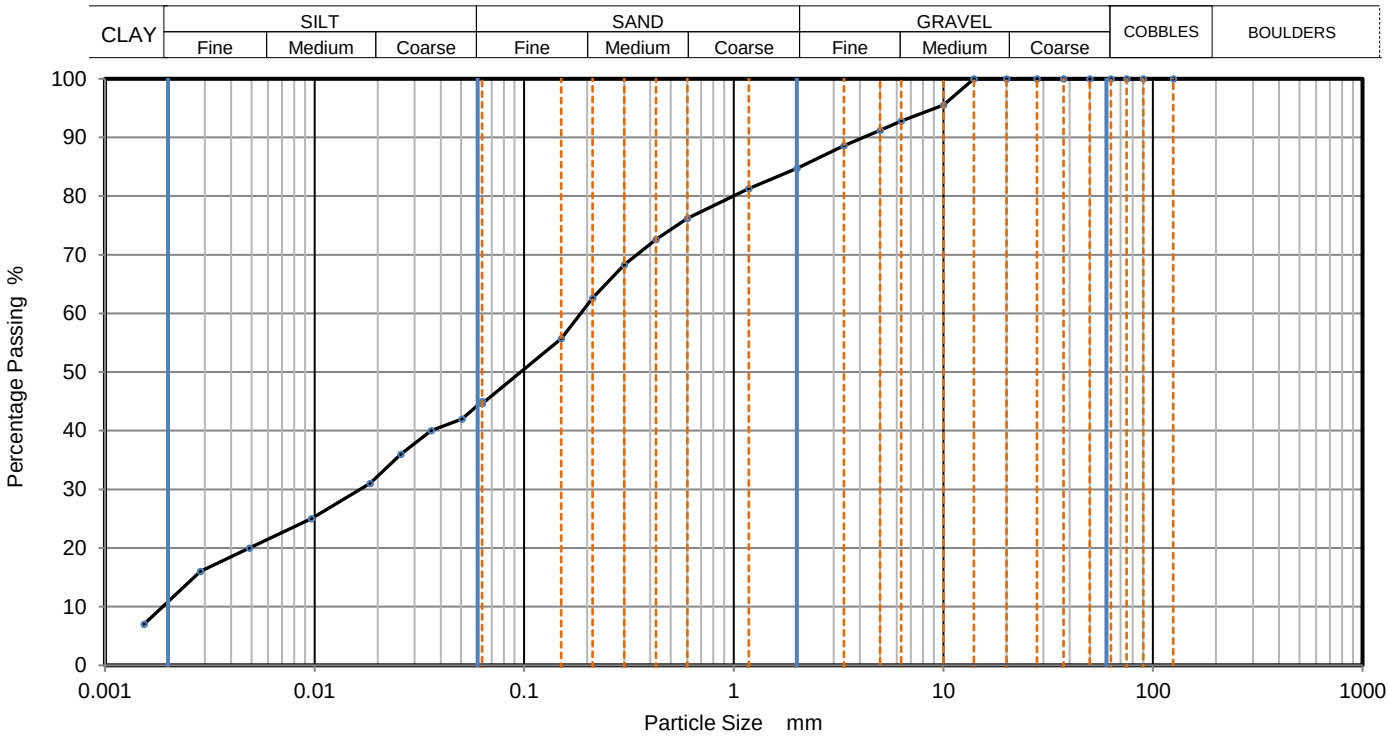
Remarks

Preparation and testing in accordance with BS1377-2 :1990 unless noted below

Approved
Stephen Watson

PARTICLE SIZE DISTRIBUTION

Job Ref					23-0881D
Borehole/Pit No.					BH09
Site Name	NDFA Social Housing Lot 3 - Lambs Cross			Sample No.	11
Specimen Description	Brown sandy slightly gravelly silty CLAY.			Sample Depth (m) Top	1.20
				Base	2.00
Specimen Reference	6	Specimen Depth	1.2 m	Sample Type	B
Test Method	BS1377:Part 2:1990, clauses 9.2 and 9.5			KeyLAB ID	Caus2023121810



Sieving		Sedimentation	
Particle Size mm	% Passing	Particle Size mm	% Passing
125	100	0.06300	45
90	100	0.05059	42
75	100	0.03599	40
63	100	0.02576	36
50	100	0.01843	31
37.5	100	0.00968	25
28	100	0.00489	20
20	100	0.00286	16
14	100	0.00153	7
10	96		
6.3	93		
5	91		
3.35	89		
2	85		
1.18	81		
0.6	76	Particle density	(assumed)
0.425	73	2.65	Mg/m3
0.3	68		
0.212	63		
0.15	56		
0.063	45		

Dry Mass of sample, g: 512

Sample Proportions	% dry mass
Cobbles	0.0
Gravel	15.3
Sand	40.1
Silt	34.1
Clay	10.5

Grading Analysis		
D100	mm	
D60	mm	0.186
D30	mm	0.0164
D10	mm	0.00193
Uniformity Coefficient		96
Curvature Coefficient		0.75

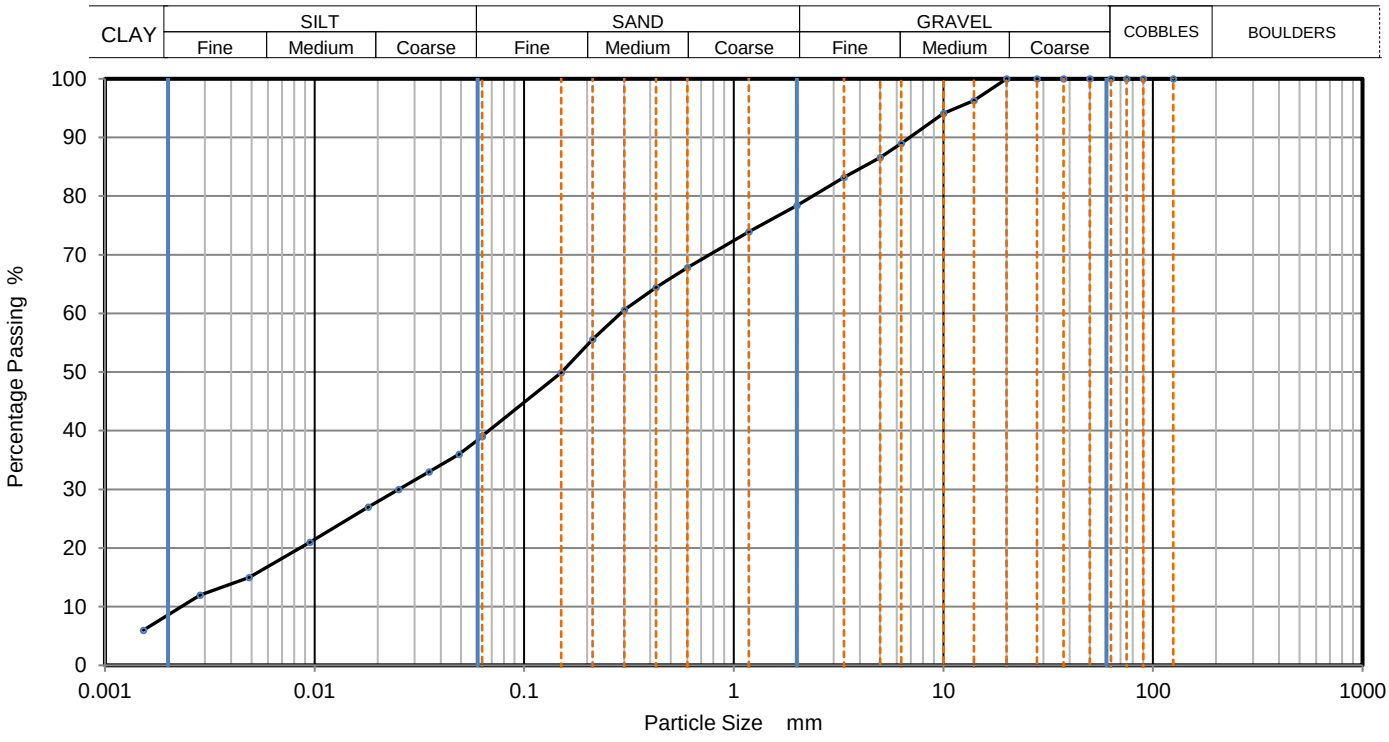
Remarks

Preparation and testing in accordance with BS1377-2 :1990 unless noted below

Approved
Stephen Watson

PARTICLE SIZE DISTRIBUTION

Job Ref					23-0881D
Borehole/Pit No.					BH09
Site Name	NDFA Social Housing Lot 3 - Lambs Cross			Sample No.	12
Specimen Description	Brown sandy slightly gravelly silty CLAY.			Sample Depth (m) Top	2.00
				Base	3.00
Specimen Reference	6	Specimen Depth	2 m	Sample Type	B
Test Method	BS1377:Part 2:1990, clauses 9.2 and 9.5			KeyLAB ID	Caus2023121811



Sieving		Sedimentation	
Particle Size mm	% Passing	Particle Size mm	% Passing
125	100	0.06300	39
90	100	0.04901	36
75	100	0.03510	33
63	100	0.02514	30
50	100	0.01800	27
37.5	100	0.00952	21
28	100	0.00487	15
20	100	0.00284	12
14	96	0.00153	6
10	94		
6.3	89		
5	87		
3.35	83		
2	78		
1.18	74		
0.6	68	Particle density	(assumed)
0.425	64	2.65	Mg/m3
0.3	61		
0.212	56		
0.15	50		
0.063	39		

Dry Mass of sample, g: 525

Sample Proportions	% dry mass
Cobbles	0.0
Gravel	21.6
Sand	39.4
Silt	30.4
Clay	8.6

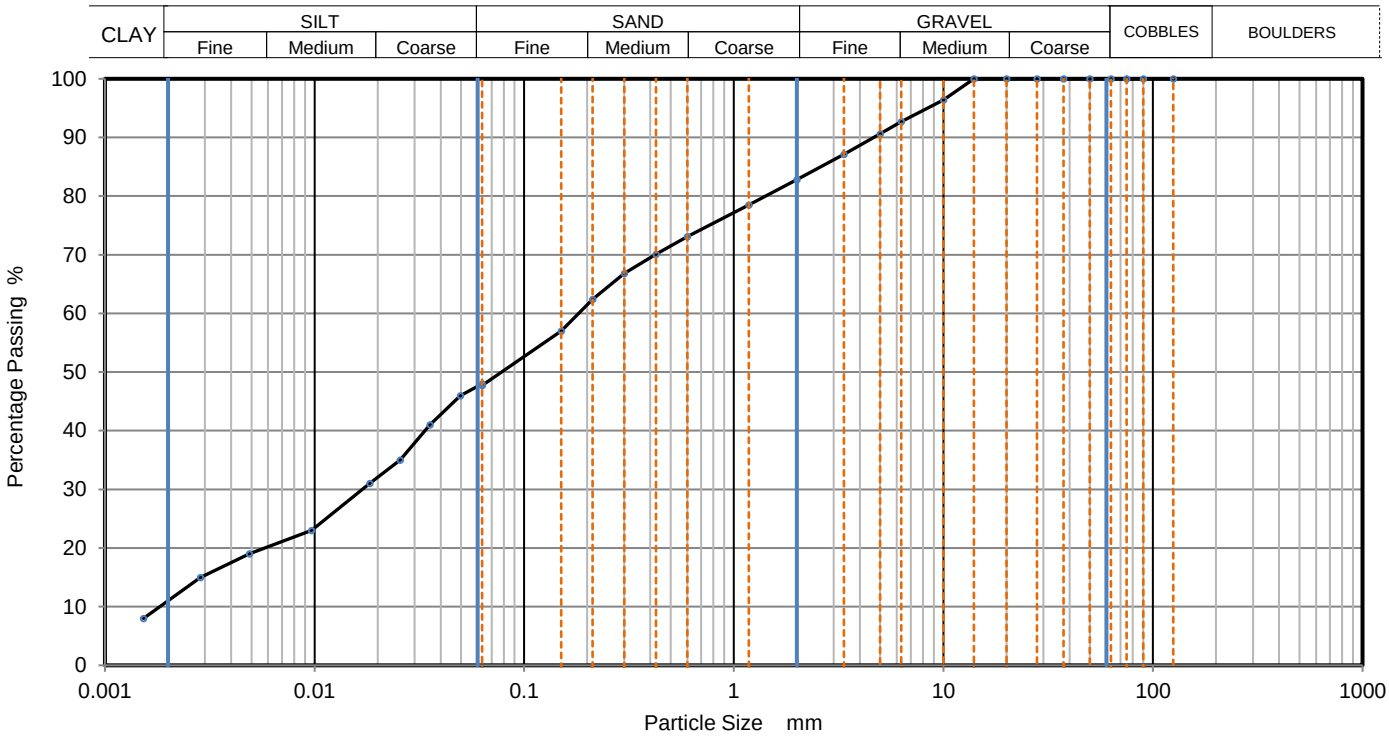
Grading Analysis		
D100	mm	
D60	mm	0.288
D30	mm	0.0249
D10	mm	0.0023
Uniformity Coefficient		130
Curvature Coefficient		0.94

Remarks

Preparation and testing in accordance with BS1377-2 :1990 unless noted below

Approved
Stephen Watson

CAUSEWAY GEOTECH	PARTICLE SIZE DISTRIBUTION			Job Ref		23-0881D
				Borehole/Pit No.		BH09
Site Name	NDFA Social Housing Lot 3 - Lambs Cross			Sample No.		16
Specimen Description	Brown sandy slightly gravelly silty CLAY.			Sample Depth (m)	Top	4.00
					Base	5.00
Specimen Reference	6	Specimen Depth	4 m	Sample Type		B
Test Method	BS1377:Part 2:1990, clauses 9.2 and 9.5			KeyLAB ID		Caus2023121812



Sieving		Sedimentation	
Particle Size mm	% Passing	Particle Size mm	% Passing
125	100	0.06300	48
90	100	0.04965	46
75	100	0.03555	41
63	100	0.02560	35
50	100	0.01832	31
37.5	100	0.00968	23
28	100	0.00489	19
20	100	0.00286	15
14	100	0.00153	8
10	96		
6.3	93		
5	91		
3.35	87		
2	83		
1.18	79		
0.6	73	Particle density	(assumed)
0.425	70	2.65	Mg/m3
0.3	67		
0.212	62		
0.15	57		
0.063	48		

Dry Mass of sample, g: 504

Sample Proportions	% dry mass
Cobbles	0.0
Gravel	17.2
Sand	35.0
Silt	36.8
Clay	11.0

Grading Analysis		
D100	mm	
D60	mm	0.182
D30	mm	0.0168
D10	mm	0.00181
Uniformity Coefficient		100
Curvature Coefficient		0.86

Remarks

Preparation and testing in accordance with BS1377-2 :1990 unless noted below

Approved
Stephen Watson

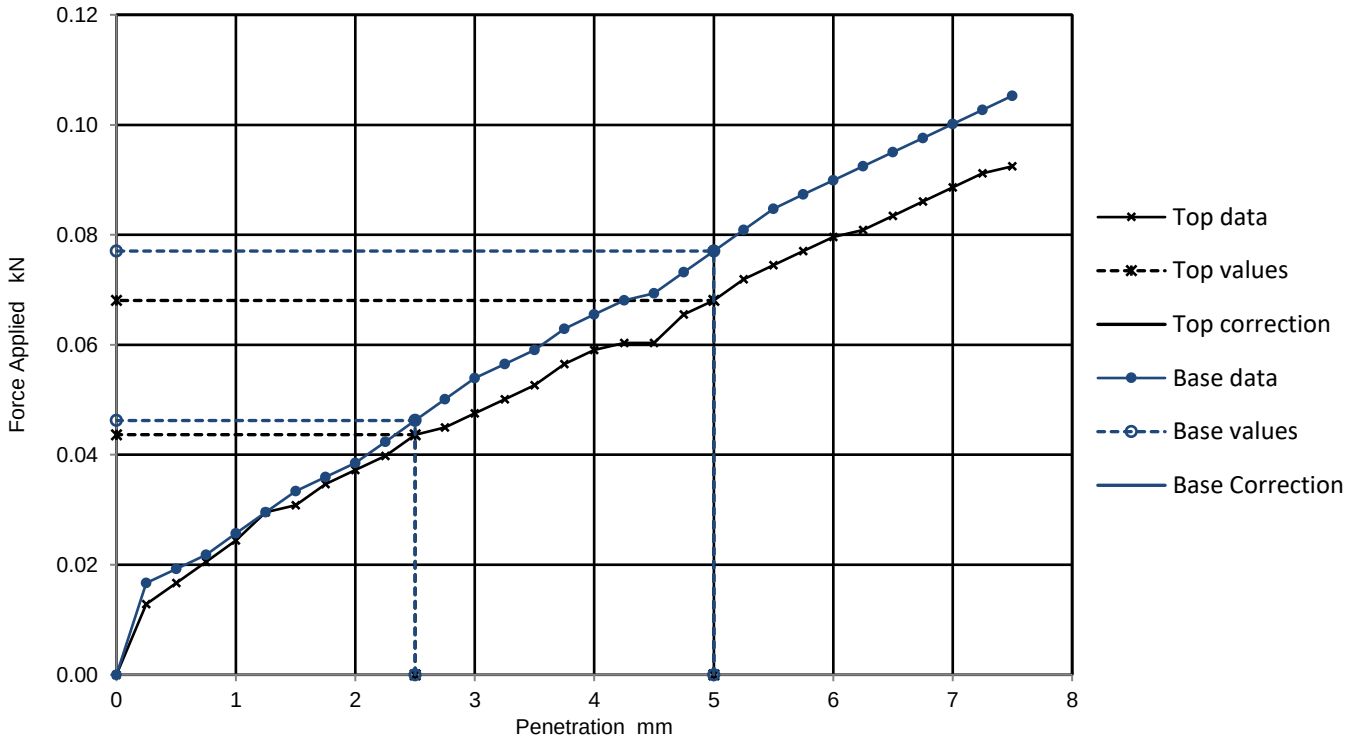
UKAS TESTING

CAUSEWAY GEOTECH	**California Bearing Ratio (CBR)**			Job Ref	23-0881D
				Borehole/Pit No.	BH06
Site Name	NDFA Social Housing Lot 3 - Lambs Cross			Sample No.	5
Soil Description	Brown sandy gravelly silty CLAY.			Depth m	0.60
Specimen Reference		Specimen Depth	m	Sample Type	B
Specimen Description	Brown sandy gravelly silty CLAY.			KeyLAB ID	Caus202312184
Test Method	BS1377 : Part 4 : 1990, clause 7			CBR Test Number	1

Specimen Preparation

Condition	REMOULDED			Soaking details	Not soaked	
Details	Recompacted with specified standard effort using 2.5kg rammer			Period of soaking		days
				Time to surface		days
				Amount of swell recorded		mm
Material retained on 20mm sieve removed		29	%	Dry density after soaking		Mg/m3
Initial Specimen details	Bulk density	1.99	Mg/m3	Surcharge applied	4.5	kg
	Dry density	1.67	Mg/m3		3	kPa
	Moisture content	20	%			

Force v Penetration Plots



Results

	Curve correction applied	CBR Values, %				Moisture Content %
		2.5mm	5mm	Highest	Average	
TOP	No	0.3	0.3	0.3	0.4	20
BASE	No	0.4	0.4	0.4		20

General remarks	Test specific remarks	Approved
Tested at natural moisture content.	Average result may be reported if within 10% of the mean CBR value of top and base.	Stephen Watson

UKAS TESTING

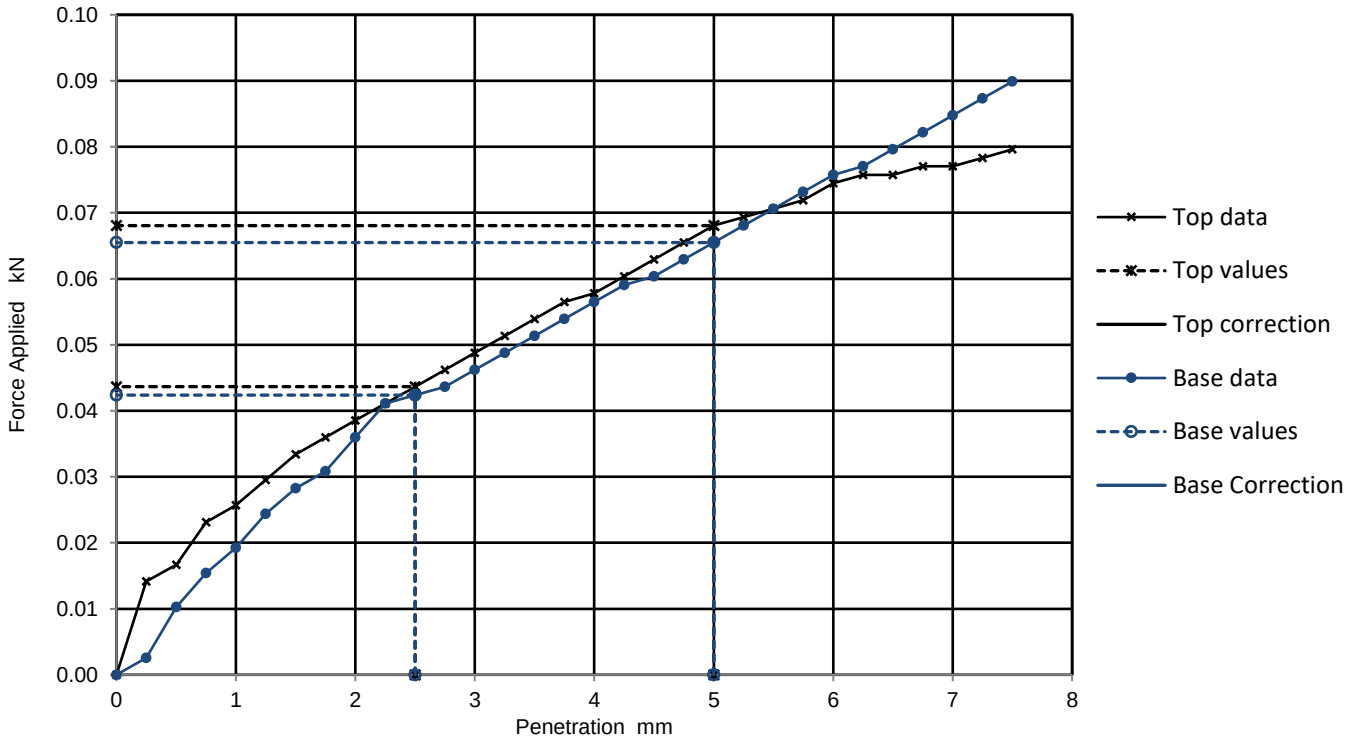
10122

CAUSEWAY GEOTECH	**California Bearing Ratio (CBR)**			Job Ref	23-0881D
				Borehole/Pit No.	BH08
Site Name	NDFA Social Housing Lot 3 - Lambs Cross			Sample No.	5
Soil Description	Brown sandy slightly gravelly clayey SILT.			Depth m	0.30
Specimen Reference		Specimen Depth	m	Sample Type	B
Specimen Description	Brown sandy slightly gravelly clayey SILT.			KeyLAB ID	Caus202312187
Test Method	BS1377 : Part 4 : 1990, clause 7			CBR Test Number	1

Specimen Preparation

Condition	REMOULDED			Soaking details	Not soaked	
Details	Recompacted with specified standard effort using 2.5kg rammer			Period of soaking		days
				Time to surface		days
				Amount of swell recorded		mm
Material retained on 20mm sieve removed		8	%	Dry density after soaking		Mg/m3
Initial Specimen details	Bulk density	2.06	Mg/m3	Surcharge applied	4.5	kg
	Dry density	1.75	Mg/m3		3	kPa
	Moisture content	17	%			

Force v Penetration Plots



Results

	Curve correction applied	CBR Values, %				Moisture Content %
		2.5mm	5mm	Highest	Average	
TOP	No	0.3	0.3	0.3	0.3	17
BASE	No	0.3	0.3	0.3		16

General remarks	Test specific remarks	Approved
Tested at natural moisture content.	Average result may be reported if within 10% of the mean CBR value of top and base.	Stephen Watson

UKAS TESTING

10122

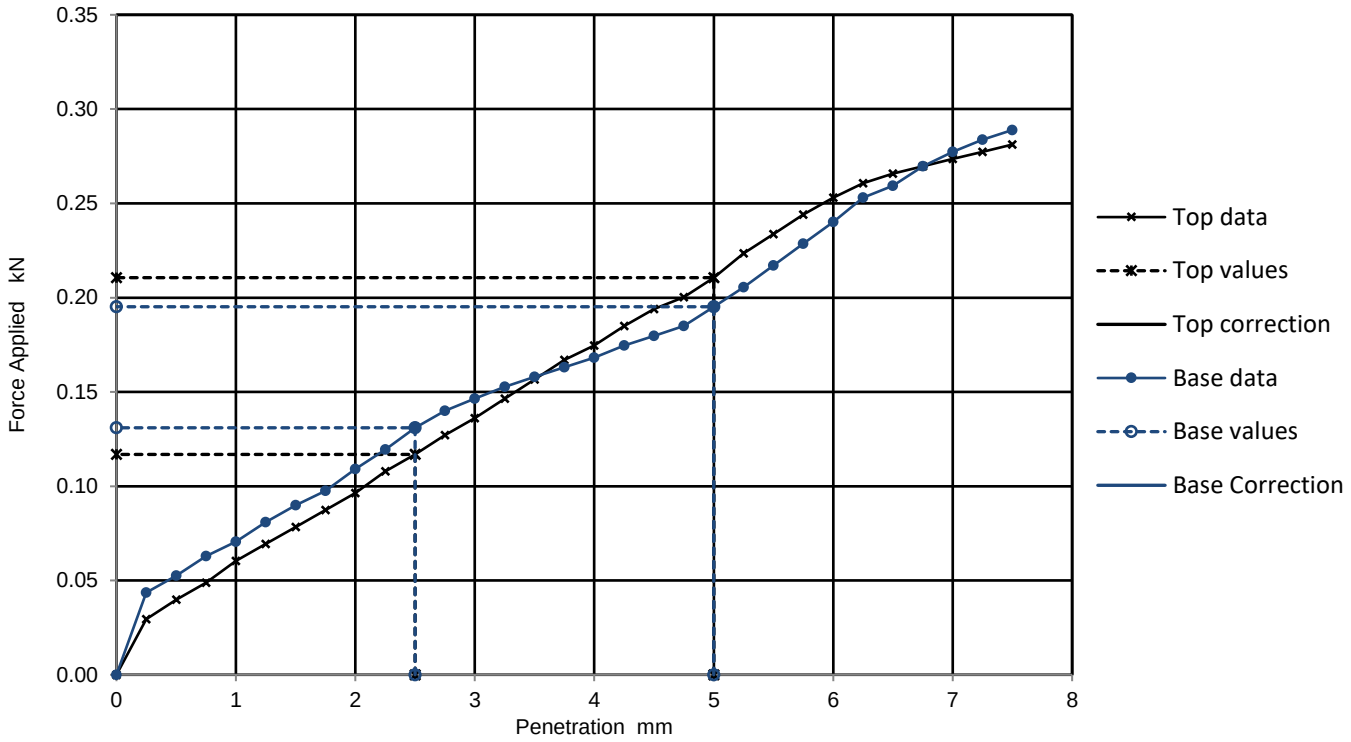
California Bearing Ratio (CBR)

				Job Ref	23-0881D
				Borehole/Pit No.	BH09
Site Name	NDFA Social Housing Lot 3 - Lambs Cross			Sample No.	4
Soil Description	Brown sandy slightly gravelly silty CLAY.			Depth m	0.10
Specimen Reference		Specimen Depth	m	Sample Type	B
Specimen Description	Brown sandy slightly gravelly silty CLAY.			KeyLAB ID	Caus202312188
Test Method	BS1377 : Part 4 : 1990, clause 7			CBR Test Number	1

Specimen Preparation

Condition	REMOULDED			Soaking details	Not soaked	
Details	Recompacted with specified standard effort using 2.5kg rammer			Period of soaking		days
				Time to surface		days
				Amount of swell recorded		mm
Material retained on 20mm sieve removed		12	%	Dry density after soaking		Mg/m3
Initial Specimen details	Bulk density	2.03	Mg/m3	Surcharge applied	4.5	kg
	Dry density	1.74	Mg/m3		3	kPa
	Moisture content	17	%			

Force v Penetration Plots



Results

	Curve correction applied	CBR Values, %				Moisture Content %
		2.5mm	5mm	Highest	Average	
TOP	No	0.9	1.1	1.1	1.0	17
BASE	No	1.0	1.0	1.0		18

General remarks	Test specific remarks	Approved
Tested at natural moisture content.	Average result may be reported if within 10% of the mean CBR value of top and base.	Stephen Watson

Certificate of Analysis

Certificate Number 24-01801 *Issued:* 01-Feb-24

Client Causeway Geotech
8 Drumahiskey Road
Ballymoney
County Antrim
BT53 7QL

Our Reference 24-01801

Client Reference 23-0881D

Order No (not supplied)

Contract Title NDFA Social Housing Lot 3 - Lambs Cross

Description 4 Soil samples.

Date Received 29-Jan-24

Date Started 29-Jan-24

Date Completed 01-Feb-24

Test Procedures Identified by prefix DETSn (details on request).

Notes Opinions and interpretations are outside the laboratory's scope of ISO 17025 accreditation. This certificate is issued in accordance with the accreditation requirements of the United Kingdom Accreditation Service. The results reported herein relate only to the material supplied to the laboratory. This certificate shall not be reproduced except in full, without the prior written approval of the laboratory.

Approved By

Kirk Bridgewood
General Manager

2139

Summary of Chemical Analysis
Soil Samples

Our Ref 24-01801
Client Ref 23-0881D
Contract Title NDFA Social Housing Lot 3 - Lambs Cross

			Lab No	2292289	2292290	2292291	2292292
			.Sample ID	BH01	BH06	BH08	BH09
			Depth	1.20	0.10	0.30	0.60
			Other ID	6	4	5	5
			Sample Type	D	B	B	B
			Sampling Date	25/01/2024	25/01/2024	25/01/2024	25/01/2024
			Sampling Time	n/s	n/s	n/s	n/s
Test	**Method**	**LOD**	**Units**				
Inorganics							
pH	DETSC 2008#		pH	8.1	8.1	8.2	9.2
Sulphate Aqueous Extract as SO4 (2:1)	DETSC 2076#	10	mg/l	28	77	130	120

Key: # -MCERTS (accreditation only applies if report carries the MCERTS logo). n/s -not supplied.

Information in Support of the Analytical Results

Our Ref 24-01801
Client Ref 23-0881D
Contract NDFA Social Housing Lot 3 - Lambs Cross

Containers Received & Deviating Samples

Lab No	Sample ID	Date Sampled	Containers Received	Holding time exceeded for tests	Inappropriate container for tests
2292289	BH01 1.20 SOIL	25/01/24	PT 500ml		
2292290	BH06 0.10 SOIL	25/01/24	PT 500ml		
2292291	BH08 0.30 SOIL	25/01/24	PT 500ml		
2292292	BH09 0.60 SOIL	25/01/24	PT 500ml		

Key: P-Plastic T-Tub

DETS cannot be held responsible for the integrity of samples received whereby the laboratory did not undertake the sampling. In this instance samples received may be deviating. Deviating Sample criteria are based on British and International standards and laboratory trials in conjunction with the UKAS note 'Guidance on Deviating Samples'. All samples received are listed above. However, those samples that have additional comments in relation to hold time, inappropriate containers etc are deviating due to the reasons stated. This means that the analysis is accredited where applicable, but results may be compromised due to sample deviations. If no sampled date (soils) or date+time (waters) has been supplied then samples are deviating. However, if you are able to supply a sampled date (and time for waters) this will prevent samples being reported as deviating where specific hold times are not exceeded and where the container supplied is suitable.

Soil Analysis Notes

Inorganic soil analysis was carried out on a dried sample, crushed to pass a 425µm sieve, in accordance with BS1377.

Organic soil analysis was carried out on an 'as received' sample. Organics results are corrected for moisture and expressed on a dry weight basis.

The Loss on Drying, used to express organics analysis on an air dried basis, is carried out at a temperature of 28°C +/-2°C.

Disposal

From the issue date of this test certificate, samples will be held for the following times prior to disposal :-

Soils - 1 month, Liquids - 2 weeks, Asbestos (test portion) - 6 months

End of Report

LABORATORY RESTRICTION REPORT

Project Reference	23-0881D	To	Sean Ross
		Position	Project Manager
Project Name	NDFA Social Housing Lot 3 - Lambs Cross	From	Joseph Nicholl
TR reference	23-0881D / G02	Position	Laboratory Quality Manager

The following sample(s) and test(s) are restricted as detailed below. Could you please complete the "Required Action" column and return the completed form to the laboratory.

Hole Number	Sample			Test Type	Reason for Restriction	Required Action
	Number	Depth (m)	Type			
BH01	4	0.10	B	CBR	Insufficient material for test	CANCEL
BH06	4	0.10	B	CBR	Insufficient material for test	CANCEL
BH06	11	3.50	B	Atterberg limits	Unsuitable material for test - GRAVEL	CANCEL

For electronic reporting a form of electronic signature or printed name is acceptable

Laboratory Signature	Project Manager Signature
Joseph Nicholl	Sean Ross
Date	Date
23 January 2024	

CAUSEWAY GEOTECH

APPENDIX J

ENVIRONMENTAL LABORATORY TEST RESULTS

Certificate of Analysis

Certificate Number	23-28106	*Issued:*	12-Dec-23

Client Causeway Geotech
Unit 1 Fingal House
Stephenstown Industrial Estate
Balbriggan
Co. Dublin
K32 VR66

Our Reference	23-28106
Client Reference	23-0881D
Order No	(not supplied)
Contract Title	NDFA Social Housing PPP Bundle 4 and 5 - Lambs Cross
Description	10 Soil samples, 10 Leachate prepared by DETS samples.
Date Received	29-Nov-23
Date Started	29-Nov-23
Date Completed	12-Dec-23
Test Procedures	Identified by prefix DETSn (details on request).

Notes Opinions and interpretations are outside the laboratory's scope of ISO 17025 accreditation. This certificate is issued in accordance with the accreditation requirements of the United Kingdom Accreditation Service. The results reported herein relate only to the material supplied to the laboratory. This certificate shall not be reproduced except in full, without the prior written approval of the laboratory.

Approved By

Kirk Bridgewood
General Manager

ilac-MRA

UKAS TESTING
2139

Summary of Chemical Analysis
Soil Samples

Our Ref 23-28106
Client Ref 23-0881D
Contract Title NDFA Social Housing PPP Bundle 4 and 5 - Lambs Cross

			Lab No	2269581	2269582	2269583	2269584	2269585	2269586
			.Sample ID	ST01	ST02	ST03	ST04	ST04	TP01
			Depth	0.50	0.50	0.30	0.50	1.00	0.50
			Other ID	1	1	1	1	1	1
			Sample Type	ES	ES	ES	ES	ES	ES
			Sampling Date	20/11/2023	21/11/2023	21/11/2023	20/11/2023	20/11/2023	20/11/2023
			Sampling Time	n/s	n/s	n/s	n/s	n/s	n/s
Test	**Method**	**LOD**	**Units**						
Preparation									
Moisture Content	DETSC 1004	0.1	%	8.9	8.9	8.5	9.5	11	13
Metals									
Antimony	DETSC 2301*	1	mg/kg	1.6	1.1	< 1.0	1.6	1.2	1.5
Arsenic	DETSC 2301#	0.2	mg/kg	47	34	43	22	33	20
Barium	DETSC 2301#	1.5	mg/kg	100	47	57	67	84	77
Boron, Water Soluble (2.5:1)	DETSC 2311#	0.2	mg/kg	< 0.2	< 0.2	< 0.2	< 0.2	0.2	0.2
Cadmium	DETSC 2301#	0.1	mg/kg	1.8	1.2	0.5	1.8	1.3	1.4
Chromium	DETSC 2301#	0.15	mg/kg	20	16	12	18	16	20
Chromium III	DETSC 2301*	0.15	mg/kg	20	16	12	18	16	20
Chromium, Hexavalent	DETSC 2204*	1	mg/kg	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0
Copper	DETSC 2301#	0.2	mg/kg	44	29	17	43	28	38
Lead	DETSC 2301#	0.3	mg/kg	63	29	26	65	38	58
Mercury	DETSC 2325#	0.05	mg/kg	0.12	0.08	< 0.05	< 0.05	0.13	0.84
Molybdenum	DETSC 2301#	0.4	mg/kg	2.3	1.6	1.2	1.9	1.8	2.7
Nickel	DETSC 2301#	1	mg/kg	32	18	15	30	27	38
Selenium	DETSC 2301#	0.5	mg/kg	1.2	< 0.5	< 0.5	< 0.5	< 0.5	0.7
Zinc	DETSC 2301#	1	mg/kg	110	65	57	120	92	100
Inorganics									
pH	DETSC 2008#		pH	8.0	8.2	9.8	8.1	8.0	8.1
Cyanide, Total	DETSC 2130#	0.1	mg/kg	0.1	< 0.1	< 0.1	0.1	0.1	0.1
Total Organic Carbon	DETSC 2084#	0.5	%	2.2	0.5	1.0	2.5	2.0	1.8
Sulphide	DETSC 2024*	10	mg/kg	12	68	36	16	< 10	16
Sulphur (free)	DETSC 3049#	0.75	mg/kg	< 0.75	< 0.75	< 0.75	< 0.75	< 0.75	2.1
Sulphate as SO4, Total	DETSC 2321#	0.01	%	0.07	0.04	0.11	0.08	0.11	0.06
Petroleum Hydrocarbons									
Aliphatic C5-C6: HS_1D_AL	DETSC 3321*	0.01	mg/kg	< 0.01	< 0.01	< 0.01	< 0.01	< 0.01	< 0.01
Aliphatic C6-C8: HS_1D_AL	DETSC 3321*	0.01	mg/kg	< 0.01	< 0.01	< 0.01	< 0.01	< 0.01	< 0.01
Aliphatic C8-C10: HS_1D_AL	DETSC 3321*	0.01	mg/kg	< 0.01	< 0.01	< 0.01	< 0.01	< 0.01	< 0.01
Aliphatic >EC10-EC12: EH_2D_AL	DETSC 3521#	1.5	mg/kg	< 1.50	< 1.50	< 1.50	< 1.50	< 1.50	< 1.50
Aliphatic >EC12-EC16: EH_2D_AL	DETSC 3521#	1.2	mg/kg	< 1.20	14.38	2.79	< 1.20	< 1.20	< 1.20
Aliphatic >EC16-EC21: EH_2D_AL	DETSC 3521#	1.5	mg/kg	< 1.50	37.65	10.08	< 1.50	< 1.50	< 1.50
Aliphatic >EC21-EC35: EH_2D_AL	DETSC 3521#	3.4	mg/kg	< 3.40	14.51	< 3.40	< 3.40	< 3.40	< 3.40
Aliphatic >EC35-EC40: EH_2D_AL	DETSC 3521*	3.4	mg/kg	< 3.40	< 3.40	< 3.40	< 3.40	< 3.40	< 3.40
Aliphatic >EC40-EC44: EH_2D_AL	DETSC 3521*	3.4	mg/kg	< 3.40	< 3.40	< 3.40	< 3.40	< 3.40	< 3.40
Aliphatic C5-C44: EH_2D+HS_1D_AL	DETSC 3521*	10	mg/kg	< 10.00	66.54	12.86	< 10.00	< 10.00	< 10.00
Aromatic C5-C7: HS_1D_AR	DETSC 3321*	0.01	mg/kg	< 0.01	< 0.01	< 0.01	< 0.01	< 0.01	< 0.01
Aromatic C7-C8: HS_1D_AR	DETSC 3321*	0.01	mg/kg	< 0.01	< 0.01	< 0.01	< 0.01	< 0.01	< 0.01
Aromatic C8-C10: HS_1D_AR	DETSC 3321*	0.01	mg/kg	< 0.01	< 0.01	< 0.01	< 0.01	< 0.01	< 0.01
Aromatic >EC10-EC12: EH_2D_AR	DETSC 3521#	0.9	mg/kg	< 0.90	< 0.90	< 0.90	< 0.90	< 0.90	< 0.90
Aromatic >EC12-EC16: EH_2D_AR	DETSC 3521#	0.5	mg/kg	< 0.50	3.64	2.13	< 0.50	< 0.50	< 0.50
Aromatic >EC16-EC21: EH_2D_AR	DETSC 3521#	0.6	mg/kg	1.94	4.34	6.26	< 0.60	9.74	< 0.60

Key: * -not accredited. # -MCERTS (accreditation only applies if report carries the MCERTS logo). n/s -not supplied.

Summary of Chemical Analysis
Soil Samples

Our Ref 23-28106
Client Ref 23-0881D
Contract Title NDFA Social Housing PPP Bundle 4 and 5 - Lambs Cross

			Lab No	2269581	2269582	2269583	2269584	2269585	2269586
			.Sample ID	ST01	ST02	ST03	ST04	ST04	TP01
			Depth	0.50	0.50	0.30	0.50	1.00	0.50
			Other ID	1	1	1	1	1	1
			Sample Type	ES	ES	ES	ES	ES	ES
			Sampling Date	20/11/2023	21/11/2023	21/11/2023	20/11/2023	20/11/2023	20/11/2023
			Sampling Time	n/s	n/s	n/s	n/s	n/s	n/s
Test	**Method**	**LOD**	**Units**						
Aromatic >EC21-EC35: EH_2D_AR	DETSC 3521#	1.4	mg/kg	6.10	10.34	9.06	< 1.40	38.36	< 1.40
Aromatic >EC35-EC40: EH_2D_AR	DETSC 3521*	1.4	mg/kg	< 1.40	< 1.40	< 1.40	< 1.40	< 1.40	< 1.40
Aromatic >EC40-EC44: EH_2D_AR	DETSC 3521*	1.4	mg/kg	< 1.40	< 1.40	< 1.40	< 1.40	< 1.40	< 1.40
Aromatic C5-C44: EH_2D+HS_1D_AR	DETSC 3521*	10	mg/kg	< 10.00	18.32	17.45	< 10.00	48.10	< 10.00
TPH Ali/Aro C5-C44: EH_2D+HS_1D_Total	DETSC 3521*	10	mg/kg	< 10.00	84.86	30.31	< 10.00	48.10	< 10.00
Benzene	DETSC 3321#	0.01	mg/kg	< 0.01	< 0.01	< 0.01	< 0.01	< 0.01	< 0.01
Ethylbenzene	DETSC 3321#	0.01	mg/kg	< 0.01	< 0.01	< 0.01	< 0.01	< 0.01	< 0.01
Toluene	DETSC 3321#	0.01	mg/kg	< 0.01	< 0.01	< 0.01	< 0.01	< 0.01	< 0.01
Xylene	DETSC 3321#	0.01	mg/kg	< 0.01	< 0.01	< 0.01	< 0.01	< 0.01	< 0.01
MTBE	DETSC 3321	0.01	mg/kg	< 0.01	< 0.01	< 0.01	< 0.01	< 0.01	< 0.01
C24-C40 Lube Oil Range Organics (LORO): EH_1D_Total	DETSC 3311#	10	mg/kg	87	400	29	11	180	< 10
PAHs									
Naphthalene	DETSC 3301	0.1	mg/kg	0.1	< 0.1	< 0.1	< 0.1	< 0.1	< 0.1
Acenaphthylene	DETSC 3301	0.1	mg/kg	0.2	< 0.1	< 0.1	< 0.1	< 0.1	< 0.1
Acenaphthene	DETSC 3301	0.1	mg/kg	0.2	< 0.1	0.1	< 0.1	< 0.1	< 0.1
Fluorene	DETSC 3301	0.1	mg/kg	0.2	< 0.1	< 0.1	< 0.1	< 0.1	< 0.1
Phenanthrene	DETSC 3301	0.1	mg/kg	0.2	< 0.1	0.2	< 0.1	0.6	< 0.1
Anthracene	DETSC 3301	0.1	mg/kg	0.2	< 0.1	0.1	< 0.1	0.2	< 0.1
Fluoranthene	DETSC 3301	0.1	mg/kg	3.2	< 0.1	0.4	0.4	2.6	0.1
Pyrene	DETSC 3301	0.1	mg/kg	3.9	< 0.1	0.5	0.3	2.5	0.1
Benzo(a)anthracene	DETSC 3301	0.1	mg/kg	1.8	< 0.1	0.2	0.1	1.4	< 0.1
Chrysene	DETSC 3301	0.1	mg/kg	1.6	< 0.1	0.1	0.1	1.2	< 0.1
Benzo(b)fluoranthene	DETSC 3301	0.1	mg/kg	2.5	< 0.1	0.1	0.2	1.1	< 0.1
Benzo(k)fluoranthene	DETSC 3301	0.1	mg/kg	1.2	< 0.1	< 0.1	0.1	0.7	< 0.1
Benzo(a)pyrene	DETSC 3301	0.1	mg/kg	3.7	< 0.1	0.2	0.2	1.6	< 0.1
Indeno(1,2,3-c,d)pyrene	DETSC 3301	0.1	mg/kg	2.4	< 0.1	0.3	0.3	1.2	< 0.1
Dibenzo(a,h)anthracene	DETSC 3301	0.1	mg/kg	0.3	< 0.1	< 0.1	< 0.1	0.3	< 0.1
Benzo(g,h,i)perylene	DETSC 3301	0.1	mg/kg	2.2	< 0.1	0.1	0.2	1.1	< 0.1
Coronene	DETSC 3301*	0.1	mg/kg	< 0.1	< 0.1	< 0.1	< 0.1	0.3	< 0.1
PAH 16 Total	DETSC 3301	1.6	mg/kg	24	< 1.6	2.2	1.9	15	< 1.6
PCBs									
PCB 28 + PCB 31	DETSC 3401#	0.01	mg/kg	< 0.01	< 0.01	< 0.01	< 0.01	0.02	< 0.01
PCB 52	DETSC 3401#	0.01	mg/kg	< 0.01	< 0.01	< 0.01	< 0.01	0.02	< 0.01
PCB 101	DETSC 3401#	0.01	mg/kg	< 0.01	< 0.01	< 0.01	< 0.01	< 0.01	< 0.01
PCB 118	DETSC 3401#	0.01	mg/kg	< 0.01	< 0.01	< 0.01	< 0.01	< 0.01	< 0.01
PCB 153	DETSC 3401#	0.01	mg/kg	< 0.01	< 0.01	< 0.01	< 0.01	< 0.01	< 0.01
PCB 138	DETSC 3401#	0.01	mg/kg	< 0.01	< 0.01	< 0.01	< 0.01	< 0.01	< 0.01
PCB 180	DETSC 3401#	0.01	mg/kg	< 0.01	< 0.01	< 0.01	< 0.01	< 0.01	< 0.01
PCB 7 Total	DETSC 3401#	0.01	mg/kg	< 0.01	< 0.01	< 0.01	< 0.01	0.03	< 0.01
Phenols									
Phenol - Monohydric	DETSC 2130#	0.3	mg/kg	0.6	< 0.3	< 0.3	1.1	1.2	1.6

Key: * -not accredited. # -MCERTS (accreditation only applies if report carries the MCERTS logo). n/s -not supplied.

Summary of Chemical Analysis
Soil Samples

Our Ref 23-28106
Client Ref 23-0881D
Contract Title NDFA Social Housing PPP Bundle 4 and 5 - Lambs Cr

				Lab No	2269587	2269588	2269589	2269590
				.Sample ID	TP01	TP02	TP02	TP03
				Depth	1.00	0.50	1.00	0.50
				Other ID	1	1	1	1
				Sample Type	ES	ES	ES	ES
				Sampling Date	20/11/2023	20/11/2023	20/11/2023	21/11/2023
				Sampling Time	n/s	n/s	n/s	n/s
Test	**Method**	**LOD**	**Units**					
Preparation								
Moisture Content	DETSC 1004	0.1	%	11	8.4	13	12
Metals								
Antimony	DETSC 2301*	1	mg/kg	1.6	1.2	1.9	< 1.0
Arsenic	DETSC 2301#	0.2	mg/kg	18	20	22	180
Barium	DETSC 2301#	1.5	mg/kg	68	77	59	72
Boron, Water Soluble (2.5:1)	DETSC 2311#	0.2	mg/kg	< 0.2	< 0.2	< 0.2	0.3
Cadmium	DETSC 2301#	0.1	mg/kg	1.3	1.0	1.3	0.8
Chromium	DETSC 2301#	0.15	mg/kg	21	10	13	18
Chromium III	DETSC 2301*	0.15	mg/kg	21	10	13	18
Chromium, Hexavalent	DETSC 2204*	1	mg/kg	< 1.0	< 1.0	< 1.0	< 1.0
Copper	DETSC 2301#	0.2	mg/kg	34	30	37	23
Lead	DETSC 2301#	0.3	mg/kg	40	180	56	46
Mercury	DETSC 2325#	0.05	mg/kg	0.71	0.09	0.12	0.10
Molybdenum	DETSC 2301#	0.4	mg/kg	2.2	1.3	1.7	1.9
Nickel	DETSC 2301#	1	mg/kg	34	18	23	21
Selenium	DETSC 2301#	0.5	mg/kg	< 0.5	< 0.5	0.6	1.4
Zinc	DETSC 2301#	1	mg/kg	95	68	88	83
Inorganics							
pH	DETSC 2008#		pH	8.3	8.3	8.0	7.7
Cyanide, Total	DETSC 2130#	0.1	mg/kg	< 0.1	< 0.1	0.1	0.2
Total Organic Carbon	DETSC 2084#	0.5	%	1.2	2.5	2.4	1.1
Sulphide	DETSC 2024*	10	mg/kg	38	40	44	40
Sulphur (free)	DETSC 3049#	0.75	mg/kg	1.9	< 0.75	< 0.75	2.7
Sulphate as SO4, Total	DETSC 2321#	0.01	%	0.06	0.07	0.07	0.07
Petroleum Hydrocarbons							
Aliphatic C5-C6: HS_1D_AL	DETSC 3321*	0.01	mg/kg	< 0.01	< 0.01	< 0.01	< 0.01
Aliphatic C6-C8: HS_1D_AL	DETSC 3321*	0.01	mg/kg	< 0.01	< 0.01	< 0.01	< 0.01
Aliphatic C8-C10: HS_1D_AL	DETSC 3321*	0.01	mg/kg	< 0.01	< 0.01	< 0.01	< 0.01
Aliphatic >EC10-EC12: EH_2D_AL	DETSC 3521#	1.5	mg/kg	< 1.50	< 1.50	< 1.50	< 1.50
Aliphatic >EC12-EC16: EH_2D_AL	DETSC 3521#	1.2	mg/kg	< 1.20	< 1.20	< 1.20	< 1.20
Aliphatic >EC16-EC21: EH_2D_AL	DETSC 3521#	1.5	mg/kg	< 1.50	< 1.50	< 1.50	< 1.50
Aliphatic >EC21-EC35: EH_2D_AL	DETSC 3521#	3.4	mg/kg	< 3.40	< 3.40	< 3.40	< 3.40
Aliphatic >EC35-EC40: EH_2D_AL	DETSC 3521*	3.4	mg/kg	< 3.40	< 3.40	< 3.40	< 3.40
Aliphatic >EC40-EC44: EH_2D_AL	DETSC 3521*	3.4	mg/kg	< 3.40	< 3.40	< 3.40	< 3.40
Aliphatic C5-C44: EH_2D+HS_1D_AL	DETSC 3521*	10	mg/kg	< 10.00	< 10.00	< 10.00	< 10.00
Aromatic C5-C7: HS_1D_AR	DETSC 3321*	0.01	mg/kg	< 0.01	< 0.01	< 0.01	< 0.01
Aromatic C7-C8: HS_1D_AR	DETSC 3321*	0.01	mg/kg	< 0.01	< 0.01	< 0.01	< 0.01
Aromatic C8-C10: HS_1D_AR	DETSC 3321*	0.01	mg/kg	< 0.01	< 0.01	< 0.01	< 0.01
Aromatic >EC10-EC12: EH_2D_AR	DETSC 3521#	0.9	mg/kg	< 0.90	< 0.90	< 0.90	< 0.90
Aromatic >EC12-EC16: EH_2D_AR	DETSC 3521#	0.5	mg/kg	< 0.50	< 0.50	< 0.50	< 0.50
Aromatic >EC16-EC21: EH_2D_AR	DETSC 3521#	0.6	mg/kg	< 0.60	3.09	7.47	< 0.60

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Summary of Chemical Analysis
Soil Samples

Our Ref 23-28106
Client Ref 23-0881D
Contract Title NDFA Social Housing PPP Bundle 4 and 5 - Lambs Cr

			Lab No	2269587	2269588	2269589	2269590
			.Sample ID	TP01	TP02	TP02	TP03
			Depth	1.00	0.50	1.00	0.50
			Other ID	1	1	1	1
			Sample Type	ES	ES	ES	ES
			Sampling Date	20/11/2023	20/11/2023	20/11/2023	21/11/2023
			Sampling Time	n/s	n/s	n/s	n/s
Test	**Method**	**LOD**	**Units**				
Aromatic >EC21-EC35: EH_2D_AR	DETSC 3521#	1.4	mg/kg	< 1.40	7.79	17.05	< 1.40
Aromatic >EC35-EC40: EH_2D_AR	DETSC 3521*	1.4	mg/kg	< 1.40	< 1.40	< 1.40	< 1.40
Aromatic >EC40-EC44: EH_2D_AR	DETSC 3521*	1.4	mg/kg	< 1.40	< 1.40	< 1.40	< 1.40
Aromatic C5-C44: EH_2D+HS_1D_AR	DETSC 3521*	10	mg/kg	< 10.00	10.88	24.52	< 10.00
TPH Ali/Aro C5-C44: EH_2D+HS_1D_Total	DETSC 3521*	10	mg/kg	< 10.00	10.88	24.52	< 10.00
Benzene	DETSC 3321#	0.01	mg/kg	< 0.01	< 0.01	< 0.01	< 0.01
Ethylbenzene	DETSC 3321#	0.01	mg/kg	< 0.01	< 0.01	< 0.01	< 0.01
Toluene	DETSC 3321#	0.01	mg/kg	< 0.01	< 0.01	< 0.01	< 0.01
Xylene	DETSC 3321#	0.01	mg/kg	< 0.01	< 0.01	< 0.01	< 0.01
MTBE	DETSC 3321	0.01	mg/kg	< 0.01	< 0.01	< 0.01	< 0.01
C24-C40 Lube Oil Range Organics (LORO): EH_1D_Total	DETSC 3311#	10	mg/kg	< 10	170	120	25
PAHs							
Naphthalene	DETSC 3301	0.1	mg/kg	< 0.1	< 0.1	< 0.1	< 0.1
Acenaphthylene	DETSC 3301	0.1	mg/kg	< 0.1	< 0.1	< 0.1	< 0.1
Acenaphthene	DETSC 3301	0.1	mg/kg	< 0.1	0.2	< 0.1	0.1
Fluorene	DETSC 3301	0.1	mg/kg	< 0.1	0.2	< 0.1	< 0.1
Phenanthrene	DETSC 3301	0.1	mg/kg	< 0.1	1.5	0.5	< 0.1
Anthracene	DETSC 3301	0.1	mg/kg	< 0.1	0.6	0.2	< 0.1
Fluoranthene	DETSC 3301	0.1	mg/kg	< 0.1	3.4	1.9	0.2
Pyrene	DETSC 3301	0.1	mg/kg	< 0.1	3.1	1.9	0.2
Benzo(a)anthracene	DETSC 3301	0.1	mg/kg	< 0.1	1.5	1.1	< 0.1
Chrysene	DETSC 3301	0.1	mg/kg	< 0.1	1.4	0.9	< 0.1
Benzo(b)fluoranthene	DETSC 3301	0.1	mg/kg	< 0.1	1.2	0.9	< 0.1
Benzo(k)fluoranthene	DETSC 3301	0.1	mg/kg	< 0.1	0.8	0.6	< 0.1
Benzo(a)pyrene	DETSC 3301	0.1	mg/kg	< 0.1	1.8	1.3	< 0.1
Indeno(1,2,3-c,d)pyrene	DETSC 3301	0.1	mg/kg	< 0.1	1.2	1.0	< 0.1
Dibenzo(a,h)anthracene	DETSC 3301	0.1	mg/kg	< 0.1	0.2	0.2	< 0.1
Benzo(g,h,i)perylene	DETSC 3301	0.1	mg/kg	< 0.1	1.2	0.8	< 0.1
Coronene	DETSC 3301*	0.1	mg/kg	< 0.1	0.3	0.2	< 0.1
PAH 16 Total	DETSC 3301	1.6	mg/kg	< 1.6	18	11	< 1.6
PCBs							
PCB 28 + PCB 31	DETSC 3401#	0.01	mg/kg	< 0.01	< 0.01	< 0.01	< 0.01
PCB 52	DETSC 3401#	0.01	mg/kg	< 0.01	< 0.01	< 0.01	< 0.01
PCB 101	DETSC 3401#	0.01	mg/kg	< 0.01	< 0.01	< 0.01	< 0.01
PCB 118	DETSC 3401#	0.01	mg/kg	< 0.01	< 0.01	< 0.01	< 0.01
PCB 153	DETSC 3401#	0.01	mg/kg	< 0.01	< 0.01	< 0.01	< 0.01
PCB 138	DETSC 3401#	0.01	mg/kg	< 0.01	< 0.01	< 0.01	< 0.01
PCB 180	DETSC 3401#	0.01	mg/kg	< 0.01	< 0.01	< 0.01	< 0.01
PCB 7 Total	DETSC 3401#	0.01	mg/kg	< 0.01	< 0.01	< 0.01	< 0.01
Phenols							
Phenol - Monohydric	DETSC 2130#	0.3	mg/kg	< 0.3	< 0.3	< 0.3	< 0.3

Key: * -not accredited. # -MCERTS (accreditation only applies if report carries the MCERTS logo). n/s -not supplied.

Summary of Chemical Analysis
Leachate Samples

Our Ref 23-28106
Client Ref 23-0881D
Contract Title NDFA Social Housing PPP Bundle 4 and 5 - Lambs Cross

				Lab No	2269591	2269592	2269593	2269594	2269595	2269596	2269597	2269598	2269599	2269600
				.Sample ID	ST01	ST02	ST03	ST04	ST04	TP01	TP01	TP02	TP02	TP03
				Depth	0.50	0.50	0.30	0.50	1.00	0.50	1.00	0.50	1.00	0.50
				Other ID	1	1	1	1	1	1	1	1	1	1
				Sample Type	ES	ES	ES	ES	ES	ES	ES	ES	ES	ES
				Sampling Date	20/11/2023	21/11/2023	21/11/2023	20/11/2023	20/11/2023	20/11/2023	20/11/2023	20/11/2023	20/11/2023	21/11/2023
				Sampling Time	n/s	n/s	n/s	n/s	n/s	n/s	n/s	n/s	n/s	n/s
Test	**Method**	**LOD**	**Units**											
Preparation														
BS EN 12457 10:1	DETSC 1009*			Y	Y	Y	Y	Y	Y	Y	Y	Y	Y
Inorganics														
Un-Ionised Ammonia	*	0.02	mg/l	< 0.02	< 0.02	< 0.02	< 0.02	< 0.02	< 0.02	< 0.02	< 0.02	< 0.02	< 0.02
Ammoniacal Nitrogen as NH4	DETSC 2207	0.0193	mg/l	< 0.02	0.03	0.28	0.21	0.02	< 0.02	0.03	0.33	0.07	0.02

Key: * -not accredited. n/s -not supplied.

WASTE ACCEPTANCE CRITERIA TESTING ANALYTICAL REPORT

Our Ref 23-28106
Client Ref 23-0881D
Contract Title NDFA Social Housing PPP Bundle 4 and 5 - Lambs Cross
Sample Id ST01 1 0.50
Sample Numbers 2269581 2269591
Date Analysed 11/12/2023

Test Results On Waste

Determinand and Method Reference	Units	Result	WAC Limit Values Inert Waste	SNRHW	Hazardous Waste
DETSC 2084# Total Organic Carbon	%	2.2	3	5	6
DETSC 2003# Loss On Ignition	%	4.0	n/a	n/a	10
DETSC 3321# BTEX	mg/kg	< 0.04	6	n/a	n/a
DETSC 3401# PCBs (7 congeners)	mg/kg	< 0.01	1	n/a	n/a
DETSC 3311# EPH (C10 - C40): EH_1D_Total	mg/kg	110.0	500	n/a	n/a
DETSC 3301 PAHs	mg/kg	24.0	100	n/a	n/a
DETSC 2008# pH	pH Units	8.0	n/a	>6	n/a
DETSC 2073* Acid Neutralisation Capacity (pH4)	mol/kg	< 1.0	n/a	TBE	TBE
DETSC 2073* Acid Neutralisation Capacity (pH7)	mol/kg	< 1.0	n/a	TBE	TBE

Test Results On Leachate

Determinand and Method Reference	Conc in Eluate ug/l 10:1	Amount Leached* mg/kg LS10	WAC Limit Values (Limit values for LS10 Leachate) Inert Waste	SNRHW	Hazardous Waste
DETSC 2306 Arsenic as As	1.6	0.016	0.5	2	25
DETSC 2306 Barium as Ba	11	0.11	20	100	300
DETSC 2306 Cadmium as Cd	< 0.030	< 0.02	0.04	1	5
DETSC 2306 Chromium as Cr	0.34	< 0.1	0.5	10	70
DETSC 2306 Copper as Cu	1.2	< 0.02	2	50	100
DETSC 2306 Mercury as Hg	< 0.010	< 0.002	0.01	0.2	2
DETSC 2306 Molybdenum as Mo	< 1.1	< 0.1	0.5	10	30
DETSC 2306 Nickel as Ni	< 0.50	< 0.1	0.4	10	40
DETSC 2306 Lead as Pb	0.27	< 0.05	0.5	10	50
DETSC 2306 Antimony as Sb	< 0.17	< 0.05	0.06	0.7	5
DETSC 2306 Selenium as Se	2.2	< 0.03	0.1	0.5	7
DETSC 2306 Zinc as Zn	1.4	0.014	4	50	200
DETSC 2055 Chloride as Cl	740	< 100	800	15,000	25,000
DETSC 2055* Fluoride as F	< 100	< 0.1	10	150	500
DETSC 2055 Sulphate as SO4	11000	110	1000	20,000	50,000
DETSC 2009* Total Dissolved Solids	93000	930	4000	60,000	100,000
DETSC 2130 Phenol Index	< 100	< 1	1	n/a	n/a
DETSC 2085 Dissolved Organic Carbon	< 2000	< 50	500	800	1000

TBE - To Be Evaluated
SNRHW - Stable Non-Reactive Hazardous Waste

Additional Information

DETSC 2008 pH	6.4
DETSC 2009 Conductivity uS/cm	132.0
* Temperature*	17.0
Mass of Sample Kg*	0.110
Mass of dry Sample Kg*	0.100
Stage 1	
Volume of Leachant L2*	0.992
Volume of Eluate VE1*	0.942

Disclaimer: *The WAC limit values are provided for guidance only. DETS does not accept responsibility for errors or omissions. Values are correct at time of issue.*

V.2.06 ** DETS are accredited for the testing of leachates and not the leachate preparation stage which is unaccredited.*

WASTE ACCEPTANCE CRITERIA TESTING ANALYTICAL REPORT

Our Ref 23-28106
Client Ref 23-0881D
Contract Title NDFA Social Housing PPP Bundle 4 and 5 - Lambs Cross
Sample Id ST02 1 0.50
Sample Numbers 2269582 2269592
Date Analysed 11/12/2023

Test Results On Waste

Determinand and Method Reference	Units	Result	WAC Limit Values: Inert Waste	SNRHW	Hazardous Waste
DETSC 2084# Total Organic Carbon	%	0.5	3	5	6
DETSC 2003# Loss On Ignition	%	1.7	n/a	n/a	10
DETSC 3321# BTEX	mg/kg	< 0.04	6	n/a	n/a
DETSC 3401# PCBs (7 congeners)	mg/kg	< 0.01	1	n/a	n/a
DETSC 3311# EPH (C10 - C40): EH_1D_Total	mg/kg	590.0	500	n/a	n/a
DETSC 3301 PAHs	mg/kg	< 1.6	100	n/a	n/a
DETSC 2008# pH	pH Units	8.2	n/a	>6	n/a
DETSC 2073* Acid Neutralisation Capacity (pH4)	mol/kg	< 1.0	n/a	TBE	TBE
DETSC 2073* Acid Neutralisation Capacity (pH7)	mol/kg	< 1.0	n/a	TBE	TBE

Test Results On Leachate

Determinand and Method Reference	Conc in Eluate ug/l 10:1	Amount Leached* mg/kg LS10	WAC Limit Values (Limit values for LS10 Leachate): Inert Waste	SNRHW	Hazardous Waste
DETSC 2306 Arsenic as As	2.4	0.024	0.5	2	25
DETSC 2306 Barium as Ba	7.3	< 0.1	20	100	300
DETSC 2306 Cadmium as Cd	< 0.030	< 0.02	0.04	1	5
DETSC 2306 Chromium as Cr	0.38	< 0.1	0.5	10	70
DETSC 2306 Copper as Cu	0.86	< 0.02	2	50	100
DETSC 2306 Mercury as Hg	< 0.010	< 0.002	0.01	0.2	2
DETSC 2306 Molybdenum as Mo	< 1.1	< 0.1	0.5	10	30
DETSC 2306 Nickel as Ni	< 0.50	< 0.1	0.4	10	40
DETSC 2306 Lead as Pb	0.61	< 0.05	0.5	10	50
DETSC 2306 Antimony as Sb	< 0.17	< 0.05	0.06	0.7	5
DETSC 2306 Selenium as Se	2.3	< 0.03	0.1	0.5	7
DETSC 2306 Zinc as Zn	< 1.3	< 0.01	4	50	200
DETSC 2055 Chloride as Cl	780	< 100	800	15,000	25,000
DETSC 2055* Fluoride as F	< 100	< 0.1	10	150	500
DETSC 2055 Sulphate as SO4	4300	< 100	1000	20,000	50,000
DETSC 2009* Total Dissolved Solids	36000	360	4000	60,000	100,000
DETSC 2130 Phenol Index	< 100	< 1	1	n/a	n/a
DETSC 2085 Dissolved Organic Carbon	< 2000	< 50	500	800	1000

TBE - To Be Evaluated
SNRHW - Stable Non-Reactive Hazardous Waste

Additional Information

DETSC 2008 pH	6.7
DETSC 2009 Conductivity uS/cm	51.2
* Temperature*	16.0
Mass of Sample Kg*	0.110
Mass of dry Sample Kg*	0.100
Stage 1	
Volume of Leachant L2*	0.992
Volume of Eluate VE1*	0.94

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V.2.06 ** DETS are accredited for the testing of leachates and not the leachate preparation stage which is unaccredited.*

WASTE ACCEPTANCE CRITERIA TESTING ANALYTICAL REPORT

Our Ref 23-28106
Client Ref 23-0881D
Contract Title NDFA Social Housing PPP Bundle 4 and 5 - Lambs Cross
Sample Id ST03 1 0.30
Sample Numbers 2269583 2269593
Date Analysed 11/12/2023

Test Results On Waste

Determinand and Method Reference	Units	Result	WAC Limit Values: Inert Waste	SNRHW	Hazardous Waste
DETSC 2084# Total Organic Carbon	%	1.0	3	5	6
DETSC 2003# Loss On Ignition	%	1.6	n/a	n/a	10
DETSC 3321# BTEX	mg/kg	< 0.04	6	n/a	n/a
DETSC 3401# PCBs (7 congeners)	mg/kg	< 0.01	1	n/a	n/a
DETSC 3311# EPH (C10 - C40): EH_1D_Total	mg/kg	55.0	500	n/a	n/a
DETSC 3301 PAHs	mg/kg	2.2	100	n/a	n/a
DETSC 2008# pH	pH Units	9.8	n/a	>6	n/a
DETSC 2073* Acid Neutralisation Capacity (pH4)	mol/kg	< 1.0	n/a	TBE	TBE
DETSC 2073* Acid Neutralisation Capacity (pH7)	mol/kg	< 1.0	n/a	TBE	TBE

Test Results On Leachate

Determinand and Method Reference	Conc in Eluate ug/l 10:1	Amount Leached* mg/kg LS10	WAC Limit Values (Limit values for LS10 Leachate): Inert Waste	SNRHW	Hazardous Waste
DETSC 2306 Arsenic as As	9.7	0.097	0.5	2	25
DETSC 2306 Barium as Ba	6.7	< 0.1	20	100	300
DETSC 2306 Cadmium as Cd	< 0.030	< 0.02	0.04	1	5
DETSC 2306 Chromium as Cr	0.55	< 0.1	0.5	10	70
DETSC 2306 Copper as Cu	1.2	< 0.02	2	50	100
DETSC 2306 Mercury as Hg	< 0.010	< 0.002	0.01	0.2	2
DETSC 2306 Molybdenum as Mo	1.3	< 0.1	0.5	10	30
DETSC 2306 Nickel as Ni	< 0.50	< 0.1	0.4	10	40
DETSC 2306 Lead as Pb	0.42	< 0.05	0.5	10	50
DETSC 2306 Antimony as Sb	0.21	< 0.05	0.06	0.7	5
DETSC 2306 Selenium as Se	2.6	< 0.03	0.1	0.5	7
DETSC 2306 Zinc as Zn	< 1.3	< 0.01	4	50	200
DETSC 2055 Chloride as Cl	680	< 100	800	15,000	25,000
DETSC 2055* Fluoride as F	< 100	< 0.1	10	150	500
DETSC 2055 Sulphate as SO4	9700	< 100	1000	20,000	50,000
DETSC 2009* Total Dissolved Solids	49000	490	4000	60,000	100,000
DETSC 2130 Phenol Index	< 100	< 1	1	n/a	n/a
DETSC 2085 Dissolved Organic Carbon	< 2000	< 50	500	800	1000

TBE - To Be Evaluated
SNRHW - Stable Non-Reactive Hazardous Waste

Additional Information

DETSC 2008 pH	6.7
DETSC 2009 Conductivity uS/cm	70.4
* Temperature*	16.0
Mass of Sample Kg*	0.110
Mass of dry Sample Kg*	0.101
Stage 1	
Volume of Leachant L2*	0.997
Volume of Eluate VE1*	0.945

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WASTE ACCEPTANCE CRITERIA TESTING ANALYTICAL REPORT

Our Ref 23-28106
Client Ref 23-0881D
Contract Title NDFA Social Housing PPP Bundle 4 and 5 - Lambs Cross
Sample Id ST04 1 0.50
Sample Numbers 2269584 2269594
Date Analysed 11/12/2023

Test Results On Waste

Determinand and Method Reference	Units	Result	WAC Limit Values: Inert Waste	SNRHW	Hazardous Waste
DETSC 2084# Total Organic Carbon	%	2.5	3	5	6
DETSC 2003# Loss On Ignition	%	3.9	n/a	n/a	10
DETSC 3321# BTEX	mg/kg	< 0.04	6	n/a	n/a
DETSC 3401# PCBs (7 congeners)	mg/kg	< 0.01	1	n/a	n/a
DETSC 3311# EPH (C10 - C40): EH_1D_Total	mg/kg	22.0	500	n/a	n/a
DETSC 3301 PAHs	mg/kg	1.9	100	n/a	n/a
DETSC 2008# pH	pH Units	8.1	n/a	>6	n/a
DETSC 2073* Acid Neutralisation Capacity (pH4)	mol/kg	< 1.0	n/a	TBE	TBE
DETSC 2073* Acid Neutralisation Capacity (pH7)	mol/kg	< 1.0	n/a	TBE	TBE

Test Results On Leachate

Determinand and Method Reference	Conc in Eluate ug/l 10:1	Amount Leached* mg/kg LS10	WAC Limit Values (Limit values for LS10 Leachate): Inert Waste	SNRHW	Hazardous Waste
DETSC 2306 Arsenic as As	0.6	< 0.01	0.5	2	25
DETSC 2306 Barium as Ba	4	< 0.1	20	100	300
DETSC 2306 Cadmium as Cd	< 0.030	< 0.02	0.04	1	5
DETSC 2306 Chromium as Cr	0.26	< 0.1	0.5	10	70
DETSC 2306 Copper as Cu	1.1	< 0.02	2	50	100
DETSC 2306 Mercury as Hg	< 0.010	< 0.002	0.01	0.2	2
DETSC 2306 Molybdenum as Mo	1.4	< 0.1	0.5	10	30
DETSC 2306 Nickel as Ni	< 0.50	< 0.1	0.4	10	40
DETSC 2306 Lead as Pb	0.37	< 0.05	0.5	10	50
DETSC 2306 Antimony as Sb	0.24	< 0.05	0.06	0.7	5
DETSC 2306 Selenium as Se	1.1	< 0.03	0.1	0.5	7
DETSC 2306 Zinc as Zn	< 1.3	< 0.01	4	50	200
DETSC 2055 Chloride as Cl	370	< 100	800	15,000	25,000
DETSC 2055* Fluoride as F	< 100	< 0.1	10	150	500
DETSC 2055 Sulphate as SO4	3800	< 100	1000	20,000	50,000
DETSC 2009* Total Dissolved Solids	37000	370	4000	60,000	100,000
DETSC 2130 Phenol Index	< 100	< 1	1	n/a	n/a
DETSC 2085 Dissolved Organic Carbon	< 2000	< 50	500	800	1000

TBE - To Be Evaluated
SNRHW - Stable Non-Reactive Hazardous Waste

Additional Information

DETSC 2008 pH	6.7
DETSC 2009 Conductivity uS/cm	52.3
* Temperature*	16.0
Mass of Sample Kg*	0.110
Mass of dry Sample Kg*	0.100
Stage 1	
Volume of Leachant L2*	0.985
Volume of Eluate VE1*	0.931

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WASTE ACCEPTANCE CRITERIA TESTING ANALYTICAL REPORT

Our Ref 23-28106
Client Ref 23-0881D
Contract Title NDFA Social Housing PPP Bundle 4 and 5 - Lambs Cross
Sample Id ST04 1 1.00
Sample Numbers 2269585 2269595
Date Analysed 11/12/2023

Test Results On Waste

Determinand and Method Reference	Units	Result	WAC Limit Values: Inert Waste	SNRHW	Hazardous Waste
DETSC 2084# Total Organic Carbon	%	2.0	3	5	6
DETSC 2003# Loss On Ignition	%	3.8	n/a	n/a	10
DETSC 3321# BTEX	mg/kg	< 0.04	6	n/a	n/a
DETSC 3401# PCBs (7 congeners)	mg/kg	0.03	1	n/a	n/a
DETSC 3311# EPH (C10 - C40): EH_1D_Total	mg/kg	260.0	500	n/a	n/a
DETSC 3301 PAHs	mg/kg	15.0	100	n/a	n/a
DETSC 2008# pH	pH Units	8.0	n/a	>6	n/a
DETSC 2073* Acid Neutralisation Capacity (pH4)	mol/kg	< 1.0	n/a	TBE	TBE
DETSC 2073* Acid Neutralisation Capacity (pH7)	mol/kg	< 1.0	n/a	TBE	TBE

Test Results On Leachate

Determinand and Method Reference	Conc in Eluate ug/l 10:1	Amount Leached* mg/kg LS10	WAC Limit Values (Limit values for LS10 Leachate): Inert Waste	SNRHW	Hazardous Waste
DETSC 2306 Arsenic as As	1.2	0.012	0.5	2	25
DETSC 2306 Barium as Ba	8.1	< 0.1	20	100	300
DETSC 2306 Cadmium as Cd	< 0.030	< 0.02	0.04	1	5
DETSC 2306 Chromium as Cr	0.31	< 0.1	0.5	10	70
DETSC 2306 Copper as Cu	0.91	< 0.02	2	50	100
DETSC 2306 Mercury as Hg	< 0.010	< 0.002	0.01	0.2	2
DETSC 2306 Molybdenum as Mo	< 1.1	< 0.1	0.5	10	30
DETSC 2306 Nickel as Ni	< 0.50	< 0.1	0.4	10	40
DETSC 2306 Lead as Pb	0.22	< 0.05	0.5	10	50
DETSC 2306 Antimony as Sb	0.17	< 0.05	0.06	0.7	5
DETSC 2306 Selenium as Se	1.3	< 0.03	0.1	0.5	7
DETSC 2306 Zinc as Zn	< 1.3	< 0.01	4	50	200
DETSC 2055 Chloride as Cl	590	< 100	800	15,000	25,000
DETSC 2055* Fluoride as F	< 100	< 0.1	10	150	500
DETSC 2055 Sulphate as SO4	9500	< 100	1000	20,000	50,000
DETSC 2009* Total Dissolved Solids	63000	630	4000	60,000	100,000
DETSC 2130 Phenol Index	< 100	< 1	1	n/a	n/a
DETSC 2085 Dissolved Organic Carbon	< 2000	< 50	500	800	1000

TBE - To Be Evaluated
SNRHW - Stable Non-Reactive Hazardous Waste

Additional Information

DETSC 2008 pH	6.6
DETSC 2009 Conductivity uS/cm	90.1
* Temperature*	16.0

Mass of Sample Kg*	0.110
Mass of dry Sample Kg*	0.098

Stage 1

Volume of Leachant L2*	0.97
Volume of Eluate VE1*	0.92

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WASTE ACCEPTANCE CRITERIA TESTING ANALYTICAL REPORT

Our Ref 23-28106
Client Ref 23-0881D
Contract Title NDFA Social Housing PPP Bundle 4 and 5 - Lambs Cross
Sample Id TP01 1 0.50
Sample Numbers 2269586 2269596
Date Analysed 11/12/2023

Test Results On Waste

Determinand and Method Reference	Units	Result	WAC Limit Values: Inert Waste	SNRHW	Hazardous Waste
DETSC 2084# Total Organic Carbon	%	1.8	3	5	6
DETSC 2003# Loss On Ignition	%	4.1	n/a	n/a	10
DETSC 3321# BTEX	mg/kg	< 0.04	6	n/a	n/a
DETSC 3401# PCBs (7 congeners)	mg/kg	< 0.01	1	n/a	n/a
DETSC 3311# EPH (C10 - C40): EH_1D_Total	mg/kg	< 10	500	n/a	n/a
DETSC 3301 PAHs	mg/kg	< 1.6	100	n/a	n/a
DETSC 2008# pH	pH Units	8.1	n/a	>6	n/a
DETSC 2073* Acid Neutralisation Capacity (pH4)	mol/kg	< 1.0	n/a	TBE	TBE
DETSC 2073* Acid Neutralisation Capacity (pH7)	mol/kg	< 1.0	n/a	TBE	TBE

Test Results On Leachate

Determinand and Method Reference	Conc in Eluate ug/l 10:1	Amount Leached* mg/kg LS10	WAC Limit Values (Limit values for LS10 Leachate): Inert Waste	SNRHW	Hazardous Waste
DETSC 2306 Arsenic as As	0.69	< 0.01	0.5	2	25
DETSC 2306 Barium as Ba	9.9	< 0.1	20	100	300
DETSC 2306 Cadmium as Cd	< 0.030	< 0.02	0.04	1	5
DETSC 2306 Chromium as Cr	0.35	< 0.1	0.5	10	70
DETSC 2306 Copper as Cu	1	< 0.02	2	50	100
DETSC 2306 Mercury as Hg	< 0.010	< 0.002	0.01	0.2	2
DETSC 2306 Molybdenum as Mo	1.3	< 0.1	0.5	10	30
DETSC 2306 Nickel as Ni	< 0.50	< 0.1	0.4	10	40
DETSC 2306 Lead as Pb	0.27	< 0.05	0.5	10	50
DETSC 2306 Antimony as Sb	0.45	< 0.05	0.06	0.7	5
DETSC 2306 Selenium as Se	1.1	< 0.03	0.1	0.5	7
DETSC 2306 Zinc as Zn	< 1.3	< 0.01	4	50	200
DETSC 2055 Chloride as Cl	590	< 100	800	15,000	25,000
DETSC 2055* Fluoride as F	< 100	< 0.1	10	150	500
DETSC 2055 Sulphate as SO4	4800	< 100	1000	20,000	50,000
DETSC 2009* Total Dissolved Solids	46000	460	4000	60,000	100,000
DETSC 2130 Phenol Index	< 100	< 1	1	n/a	n/a
DETSC 2085 Dissolved Organic Carbon	< 2000	< 50	500	800	1000

TBE - To Be Evaluated
SNRHW - Stable Non-Reactive Hazardous Waste

Additional Information

DETSC 2008 pH	6.7
DETSC 2009 Conductivity uS/cm	66.1
* Temperature*	16.0

Mass of Sample Kg*	0.110
Mass of dry Sample Kg*	0.096

Stage 1

Volume of Leachant L2*	0.943
Volume of Eluate VE1*	0.89

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WASTE ACCEPTANCE CRITERIA TESTING ANALYTICAL REPORT

Our Ref 23-28106
Client Ref 23-0881D
Contract Title NDFA Social Housing PPP Bundle 4 and 5 - Lambs Cross
Sample Id TP01 1 1.00
Sample Numbers 2269587 2269597
Date Analysed 11/12/2023

Test Results On Waste

Determinand and Method Reference	Units	Result	WAC Limit Values: Inert Waste	SNRHW	Hazardous Waste
DETSC 2084# Total Organic Carbon	%	1.2	3	5	6
DETSC 2003# Loss On Ignition	%	2.5	n/a	n/a	10
DETSC 3321# BTEX	mg/kg	< 0.04	6	n/a	n/a
DETSC 3401# PCBs (7 congeners)	mg/kg	< 0.01	1	n/a	n/a
DETSC 3311# EPH (C10 - C40): EH_1D_Total	mg/kg	< 10	500	n/a	n/a
DETSC 3301 PAHs	mg/kg	< 1.6	100	n/a	n/a
DETSC 2008# pH	pH Units	8.3	n/a	>6	n/a
DETSC 2073* Acid Neutralisation Capacity (pH4)	mol/kg	< 1.0	n/a	TBE	TBE
DETSC 2073* Acid Neutralisation Capacity (pH7)	mol/kg	< 1.0	n/a	TBE	TBE

Test Results On Leachate

Determinand and Method Reference	Conc in Eluate ug/l 10:1	Amount Leached* mg/kg LS10	WAC Limit Values (Limit values for LS10 Leachate): Inert Waste	SNRHW	Hazardous Waste
DETSC 2306 Arsenic as As	1.1	0.011	0.5	2	25
DETSC 2306 Barium as Ba	6.5	< 0.1	20	100	300
DETSC 2306 Cadmium as Cd	0.032	< 0.02	0.04	1	5
DETSC 2306 Chromium as Cr	0.26	< 0.1	0.5	10	70
DETSC 2306 Copper as Cu	1.4	< 0.02	2	50	100
DETSC 2306 Mercury as Hg	< 0.010	< 0.002	0.01	0.2	2
DETSC 2306 Molybdenum as Mo	1.5	< 0.1	0.5	10	30
DETSC 2306 Nickel as Ni	< 0.50	< 0.1	0.4	10	40
DETSC 2306 Lead as Pb	0.41	< 0.05	0.5	10	50
DETSC 2306 Antimony as Sb	0.46	< 0.05	0.06	0.7	5
DETSC 2306 Selenium as Se	1.2	< 0.03	0.1	0.5	7
DETSC 2306 Zinc as Zn	< 1.3	< 0.01	4	50	200
DETSC 2055 Chloride as Cl	620	< 100	800	15,000	25,000
DETSC 2055* Fluoride as F	< 100	< 0.1	10	150	500
DETSC 2055 Sulphate as SO4	3300	< 100	1000	20,000	50,000
DETSC 2009* Total Dissolved Solids	37000	370	4000	60,000	100,000
DETSC 2130 Phenol Index	< 100	< 1	1	n/a	n/a
DETSC 2085 Dissolved Organic Carbon	< 2000	< 50	500	800	1000

TBE - To Be Evaluated
SNRHW - Stable Non-Reactive Hazardous Waste

Additional Information

DETSC 2008 pH	6.8
DETSC 2009 Conductivity uS/cm	53.2
* Temperature*	16.0

Mass of Sample Kg*	0.110
Mass of dry Sample Kg*	0.098

Stage 1

Volume of Leachant L2*	0.967
Volume of Eluate VE1*	0.915

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WASTE ACCEPTANCE CRITERIA TESTING ANALYTICAL REPORT

Our Ref 23-28106
Client Ref 23-0881D
Contract Title NDFA Social Housing PPP Bundle 4 and 5 - Lambs Cross
Sample Id TP02 1 0.50
Sample Numbers 2269588 2269598
Date Analysed 11/12/2023

Test Results On Waste

Determinand and Method Reference	Units	Result	WAC Limit Values: Inert Waste	SNRHW	Hazardous Waste
DETSC 2084# Total Organic Carbon	%	2.5	3	5	6
DETSC 2003# Loss On Ignition	%	2.1	n/a	n/a	10
DETSC 3321# BTEX	mg/kg	< 0.04	6	n/a	n/a
DETSC 3401# PCBs (7 congeners)	mg/kg	< 0.01	1	n/a	n/a
DETSC 3311# EPH (C10 - C40): EH_1D_Total	mg/kg	270.0	500	n/a	n/a
DETSC 3301 PAHs	mg/kg	18.0	100	n/a	n/a
DETSC 2008# pH	pH Units	8.3	n/a	>6	n/a
DETSC 2073* Acid Neutralisation Capacity (pH4)	mol/kg	< 1.0	n/a	TBE	TBE
DETSC 2073* Acid Neutralisation Capacity (pH7)	mol/kg	< 1.0	n/a	TBE	TBE

Test Results On Leachate

Determinand and Method Reference	Conc in Eluate ug/l 10:1	Amount Leached* mg/kg LS10	WAC Limit Values (Limit values for LS10 Leachate): Inert Waste	SNRHW	Hazardous Waste
DETSC 2306 Arsenic as As	1.5	0.015	0.5	2	25
DETSC 2306 Barium as Ba	8.1	< 0.1	20	100	300
DETSC 2306 Cadmium as Cd	< 0.030	< 0.02	0.04	1	5
DETSC 2306 Chromium as Cr	0.41	< 0.1	0.5	10	70
DETSC 2306 Copper as Cu	1.5	< 0.02	2	50	100
DETSC 2306 Mercury as Hg	< 0.010	< 0.002	0.01	0.2	2
DETSC 2306 Molybdenum as Mo	1.5	< 0.1	0.5	10	30
DETSC 2306 Nickel as Ni	0.53	< 0.1	0.4	10	40
DETSC 2306 Lead as Pb	0.17	< 0.05	0.5	10	50
DETSC 2306 Antimony as Sb	0.47	< 0.05	0.06	0.7	5
DETSC 2306 Selenium as Se	1.3	< 0.03	0.1	0.5	7
DETSC 2306 Zinc as Zn	< 1.3	< 0.01	4	50	200
DETSC 2055 Chloride as Cl	1300	< 100	800	15,000	25,000
DETSC 2055* Fluoride as F	< 100	< 0.1	10	150	500
DETSC 2055 Sulphate as SO4	6600	< 100	1000	20,000	50,000
DETSC 2009* Total Dissolved Solids	57000	570	4000	60,000	100,000
DETSC 2130 Phenol Index	< 100	< 1	1	n/a	n/a
DETSC 2085 Dissolved Organic Carbon	< 2000	< 50	500	800	1000

TBE - To Be Evaluated
SNRHW - Stable Non-Reactive Hazardous Waste

Additional Information

DETSC 2008 pH	6.7
DETSC 2009 Conductivity uS/cm	81.0
* Temperature*	16.0
Mass of Sample Kg*	0.110
Mass of dry Sample Kg*	0.101
Stage 1	
Volume of Leachant L2*	0.998
Volume of Eluate VE1*	0.948

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WASTE ACCEPTANCE CRITERIA TESTING ANALYTICAL REPORT

Our Ref 23-28106
Client Ref 23-0881D
Contract Title NDFA Social Housing PPP Bundle 4 and 5 - Lambs Cross
Sample Id TP02 1 1.00
Sample Numbers 2269589 2269599
Date Analysed 11/12/2023

Test Results On Waste

Determinand and Method Reference	Units	Result	WAC Limit Values: Inert Waste	SNRHW	Hazardous Waste
DETSC 2084# Total Organic Carbon	%	2.4	3	5	6
DETSC 2003# Loss On Ignition	%	3.7	n/a	n/a	10
DETSC 3321# BTEX	mg/kg	< 0.04	6	n/a	n/a
DETSC 3401# PCBs (7 congeners)	mg/kg	< 0.01	1	n/a	n/a
DETSC 3311# EPH (C10 - C40): EH_1D_Total	mg/kg	190.0	500	n/a	n/a
DETSC 3301 PAHs	mg/kg	11.0	100	n/a	n/a
DETSC 2008# pH	pH Units	8.0	n/a	>6	n/a
DETSC 2073* Acid Neutralisation Capacity (pH4)	mol/kg	< 1.0	n/a	TBE	TBE
DETSC 2073* Acid Neutralisation Capacity (pH7)	mol/kg	< 1.0	n/a	TBE	TBE

Test Results On Leachate

Determinand and Method Reference	Conc in Eluate ug/l 10:1	Amount Leached* mg/kg LS10	WAC Limit Values (Limit values for LS10 Leachate): Inert Waste	SNRHW	Hazardous Waste
DETSC 2306 Arsenic as As	1.3	0.013	0.5	2	25
DETSC 2306 Barium as Ba	5.6	< 0.1	20	100	300
DETSC 2306 Cadmium as Cd	< 0.030	< 0.02	0.04	1	5
DETSC 2306 Chromium as Cr	0.44	< 0.1	0.5	10	70
DETSC 2306 Copper as Cu	1.6	< 0.02	2	50	100
DETSC 2306 Mercury as Hg	< 0.010	< 0.002	0.01	0.2	2
DETSC 2306 Molybdenum as Mo	1.1	< 0.1	0.5	10	30
DETSC 2306 Nickel as Ni	< 0.50	< 0.1	0.4	10	40
DETSC 2306 Lead as Pb	0.38	< 0.05	0.5	10	50
DETSC 2306 Antimony as Sb	0.31	< 0.05	0.06	0.7	5
DETSC 2306 Selenium as Se	1.5	< 0.03	0.1	0.5	7
DETSC 2306 Zinc as Zn	< 1.3	< 0.01	4	50	200
DETSC 2055 Chloride as Cl	810	< 100	800	15,000	25,000
DETSC 2055* Fluoride as F	< 100	< 0.1	10	150	500
DETSC 2055 Sulphate as SO4	5200	< 100	1000	20,000	50,000
DETSC 2009* Total Dissolved Solids	46000	460	4000	60,000	100,000
DETSC 2130 Phenol Index	< 100	< 1	1	n/a	n/a
DETSC 2085 Dissolved Organic Carbon	< 2000	< 50	500	800	1000

TBE - To Be Evaluated
SNRHW - Stable Non-Reactive Hazardous Waste

Additional Information

DETSC 2008 pH	6.7
DETSC 2009 Conductivity uS/cm	65.4
* Temperature*	16.0

Mass of Sample Kg*	0.110
Mass of dry Sample Kg*	0.095

Stage 1

Volume of Leachant L2*	0.94
Volume of Eluate VE1*	0.89

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WASTE ACCEPTANCE CRITERIA TESTING ANALYTICAL REPORT

Our Ref 23-28106
Client Ref 23-0881D
Contract Title NDFA Social Housing PPP Bundle 4 and 5 - Lambs Cross
Sample Id TP03 1 0.50
Sample Numbers 2269590 2269600
Date Analysed 11/12/2023

Test Results On Waste

Determinand and Method Reference	Units	Result	WAC Limit Values: Inert Waste	SNRHW	Hazardous Waste
DETSC 2084# Total Organic Carbon	%	1.1	3	5	6
DETSC 2003# Loss On Ignition	%	3.3	n/a	n/a	10
DETSC 3321# BTEX	mg/kg	< 0.04	6	n/a	n/a
DETSC 3401# PCBs (7 congeners)	mg/kg	< 0.01	1	n/a	n/a
DETSC 3311# EPH (C10 - C40): EH_1D_Total	mg/kg	41.0	500	n/a	n/a
DETSC 3301 PAHs	mg/kg	< 1.6	100	n/a	n/a
DETSC 2008# pH	pH Units	7.7	n/a	>6	n/a
DETSC 2073* Acid Neutralisation Capacity (pH4)	mol/kg	< 1.0	n/a	TBE	TBE
DETSC 2073* Acid Neutralisation Capacity (pH7)	mol/kg	< 1.0	n/a	TBE	TBE

Test Results On Leachate

Determinand and Method Reference	Conc in Eluate ug/l 10:1	Amount Leached* mg/kg LS10	WAC Limit Values (Limit values for LS10 Leachate): Inert Waste	SNRHW	Hazardous Waste
DETSC 2306 Arsenic as As	6	0.06	0.5	2	25
DETSC 2306 Barium as Ba	3.8	< 0.1	20	100	300
DETSC 2306 Cadmium as Cd	< 0.030	< 0.02	0.04	1	5
DETSC 2306 Chromium as Cr	0.27	< 0.1	0.5	10	70
DETSC 2306 Copper as Cu	1.1	< 0.02	2	50	100
DETSC 2306 Mercury as Hg	< 0.010	< 0.002	0.01	0.2	2
DETSC 2306 Molybdenum as Mo	< 1.1	< 0.1	0.5	10	30
DETSC 2306 Nickel as Ni	< 0.50	< 0.1	0.4	10	40
DETSC 2306 Lead as Pb	0.28	< 0.05	0.5	10	50
DETSC 2306 Antimony as Sb	0.17	< 0.05	0.06	0.7	5
DETSC 2306 Selenium as Se	1.6	< 0.03	0.1	0.5	7
DETSC 2306 Zinc as Zn	< 1.3	< 0.01	4	50	200
DETSC 2055 Chloride as Cl	1100	< 100	800	15,000	25,000
DETSC 2055* Fluoride as F	< 100	< 0.1	10	150	500
DETSC 2055 Sulphate as SO4	4800	< 100	1000	20,000	50,000
DETSC 2009* Total Dissolved Solids	42000	420	4000	60,000	100,000
DETSC 2130 Phenol Index	< 100	< 1	1	n/a	n/a
DETSC 2085 Dissolved Organic Carbon	2200	< 50	500	800	1000

TBE - To Be Evaluated
SNRHW - Stable Non-Reactive Hazardous Waste

Additional Information

DETSC 2008 pH	6.8
DETSC 2009 Conductivity uS/cm	60.0
* Temperature*	16.0

Mass of Sample Kg*	0.110
Mass of dry Sample Kg*	0.096

Stage 1

Volume of Leachant L2*	0.951
Volume of Eluate VE1*	0.9

Disclaimer: *The WAC limit values are provided for guidance only. DETS does not accept responsibility for errors or omissions. Values are correct at time of issue.*

V.2.06 ** DETS are accredited for the testing of leachates and not the leachate preparation stage which is unaccredited.*

Summary of Asbestos Analysis
Soil Samples

Our Ref 23-28106
Client Ref 23-0881D
Contract Title NDFA Social Housing PPP Bundle 4 and 5 - Lambs Cross

Lab No	Sample ID	Material Type	Result	Comment*	Analyst
2269581	ST01 1 0.50	SOIL	NAD	none	Ben Barsby
2269582	ST02 1 0.50	SOIL	NAD	none	Ben Barsby
2269583	ST03 1 0.30	SOIL	NAD	none	Ben Barsby
2269584	ST04 1 0.50	SOIL	NAD	none	Ben Barsby
2269585	ST04 1 1.00	SOIL	NAD	none	Ben Barsby
2269586	TP01 1 0.50	SOIL	NAD	none	Ben Barsby
2269587	TP01 1 1.00	SOIL	NAD	none	Ben Barsby
2269588	TP02 1 0.50	SOIL	NAD	none	Ben Barsby
2269589	TP02 1 1.00	SOIL	NAD	none	Ben Barsby
2269590	TP03 1 0.50	SOIL	NAD	none	Ben Barsby

Crocidolite = Blue Asbestos, Amosite = Brown Asbestos, Chrysotile = White Asbestos. Anthophyllite, Actinolite and Tremolite are other forms of Asbestos. Samples are analysed by DETSC 1101 using polarised light microscopy in accordance with HSG248 and documented in-house methods. NAD = No Asbestos Detected. Where a sample is NAD, the result is based on analysis of at least 2 sub-samples and should be taken to mean 'no asbestos detected in sample'. Key: * - not included in laboratory scope of accreditation.

Information in Support of the Analytical Results

Our Ref 23-28106
Client Ref 23-0881D
Contract NDFA Social Housing PPP Bundle 4 and 5 - Lambs Cross

Containers Received & Deviating Samples

Lab No	Sample ID	Date Sampled	Containers Received	Holding time exceeded for tests	Inappropriate container for tests
2269581	ST01 0.50 SOIL	20/11/23	GJ 250ml, GJ 60ml, PT 1L	Sulphur (free) (7 days), pH + Conductivity (7 days)	
2269582	ST02 0.50 SOIL	21/11/23	GJ 250ml, GJ 60ml, PT 1L	Sulphur (free) (7 days), pH + Conductivity (7 days)	
2269583	ST03 0.30 SOIL	21/11/23	GJ 250ml, GJ 60ml, PT 1L	Sulphur (free) (7 days), pH + Conductivity (7 days)	
2269584	ST04 0.50 SOIL	20/11/23	GJ 250ml, GJ 60ml, PT 1L	Sulphur (free) (7 days), pH + Conductivity (7 days)	
2269585	ST04 1.00 SOIL	20/11/23	GJ 250ml, GJ 60ml, PT 1L	Sulphur (free) (7 days), pH + Conductivity (7 days)	
2269586	TP01 0.50 SOIL	20/11/23	GJ 250ml, GJ 60ml, PT 1L	Sulphur (free) (7 days), pH + Conductivity (7 days)	
2269587	TP01 1.00 SOIL	20/11/23	GJ 250ml, GJ 60ml, PT 1L	Sulphur (free) (7 days), pH + Conductivity (7 days)	
2269588	TP02 0.50 SOIL	20/11/23	GJ 250ml, GJ 60ml, PT 1L	Sulphur (free) (7 days), pH + Conductivity (7 days)	
2269589	TP02 1.00 SOIL	20/11/23	GJ 250ml, GJ 60ml, PT 1L	Sulphur (free) (7 days), pH + Conductivity (7 days)	
2269590	TP03 0.50 SOIL	21/11/23	GJ 250ml, GJ 60ml, PT 1L	Sulphur (free) (7 days), pH + Conductivity (7 days)	
2269591	ST01 0.50 LEACHATE	20/11/23	GJ 250ml, GJ 60ml, PT 1L		
2269592	ST02 0.50 LEACHATE	21/11/23	GJ 250ml, GJ 60ml, PT 1L		
2269593	ST03 0.30 LEACHATE	21/11/23	GJ 250ml, GJ 60ml, PT 1L		
2269594	ST04 0.50 LEACHATE	20/11/23	GJ 250ml, GJ 60ml, PT 1L		
2269595	ST04 1.00 LEACHATE	20/11/23	GJ 250ml, GJ 60ml, PT 1L		
2269596	TP01 0.50 LEACHATE	20/11/23	GJ 250ml, GJ 60ml, PT 1L		
2269597	TP01 1.00 LEACHATE	20/11/23	GJ 250ml, GJ 60ml, PT 1L		
2269598	TP02 0.50 LEACHATE	20/11/23	GJ 250ml, GJ 60ml, PT 1L		
2269599	TP02 1.00 LEACHATE	20/11/23	GJ 250ml, GJ 60ml, PT 1L		
2269600	TP03 0.50 LEACHATE	21/11/23	GJ 250ml, GJ 60ml, PT 1L		

Key: G-Glass P-Plastic J-Jar T-Tub

DETS cannot be held responsible for the integrity of samples received whereby the laboratory did not undertake the sampling. In this instance samples received may be deviating. Deviating Sample criteria are based on British and International standards and laboratory trials in conjunction with the UKAS note 'Guidance on Deviating Samples'. All samples received are listed above. However, those samples that have additional comments in relation to hold time, inappropriate containers etc are deviating due to the reasons stated. This means that the analysis is accredited where applicable, but results may be compromised due to sample deviations. If no sampled date (soils) or date+time (waters) has been supplied then samples are deviating. However, if you are able to supply a sampled date (and time for waters) this will prevent samples being reported as deviating where specific hold times are not exceeded and where the container supplied is suitable.

Information in Support of the Analytical Results

Our Ref 23-28106
Client Ref 23-0881D
Contract NDFA Social Housing PPP Bundle 4 and 5 - Lambs Cross

Soil Analysis Notes

Inorganic soil analysis was carried out on a dried sample, crushed to pass a 425µm sieve, in accordance with BS1377.
Organic soil analysis was carried out on an 'as received' sample. Organics results are corrected for moisture and expressed on a dry weight basis.
The Loss on Drying, used to express organics analysis on an air dried basis, is carried out at a temperature of 28°C +/-2°C.

Disposal

From the issue date of this test certificate, samples will be held for the following times prior to disposal :-
Soils - 1 month, Liquids - 2 weeks, Asbestos (test portion) - 6 months

Information in Support of the Analytical Results

List of HWOL Acronyms and Operators

Acronym	Description
HS	Headspace analysis
EH	Extractable Hydrocarbons - i.e. everything extracted by the solvent
CU	Clean-up - e.g. by florisil, silica gel
1D	GC - Single coil gas chromatography
2D	GC-GC - Double coil gas chromatography
Total	Aliphatics & Aromatics
AL	Aliphatics only
AR	Aromatics only
#1	EH_2D_Total but with humics mathematically subtracted
#2	EH_2D_Total but with fatty acids mathematically subtracted
_	Operator - underscore to separate acronyms (exception for +)
+	Operator to indicate cumulative eg. EH+HS_Total or EH_CU+HS_Total

Det	Acronym
Aliphatic C5-C6	HS_1D_AL
Aliphatic C6-C8	HS_1D_AL
Aliphatic C8-C10	HS_1D_AL
Aliphatic >EC10-EC12	EH_2D_AL
Aliphatic >EC12-EC16	EH_2D_AL
Aliphatic >EC16-EC21	EH_2D_AL
Aliphatic >EC21-EC35	EH_2D_AL
Aliphatic >EC35-EC40	EH_2D_AL
Aliphatic >EC40-EC44	EH_2D_AL
Aliphatic C5-C44	EH_2D+HS_1D_AL
Aromatic C5-C7	HS_1D_AR
Aromatic C7-C8	HS_1D_AR
Aromatic C8-C10	HS_1D_AR
Aromatic >EC10-EC12	EH_2D_AR
Aromatic >EC12-EC16	EH_2D_AR
Aromatic >EC16-EC21	EH_2D_AR
Aromatic >EC21-EC35	EH_2D_AR
Aromatic >EC35-EC40	EH_2D_AR
Aromatic >EC40-EC44	EH_2D_AR
Aromatic C5-C44	EH_2D+HS_1D_AR
TPH Ali/Aro C5-C44	EH_2D+HS_1D_Total
TPH (C10-C40)	EH_1D_Total
C24-C40 Lube Oil Range Organics (LO	EH_1D_Total

End of Report

Certificate of Analysis

Certificate Number	23-29768	*Issued:*	05-Jan-24

Client Causeway Geotech
Unit 1 Fingal House
Stephenstown Industrial Estate
Balbriggan
Co. Dublin
K32 VR66

Our Reference	23-29768
Client Reference	23-0881D
Order No	(not supplied)
Contract Title	NDFA Social Housing PPP Bundle 4 and 5 - Lambs Cross
Description	2 Soil samples, 2 Leachate prepared by DETS samples.
Date Received	18-Dec-23
Date Started	18-Dec-23
Date Completed	05-Jan-24
Test Procedures	Identified by prefix DETSn (details on request).

Notes Opinions and interpretations are outside the laboratory's scope of ISO 17025 accreditation. This certificate is issued in accordance with the accreditation requirements of the United Kingdom Accreditation Service. The results reported herein relate only to the material supplied to the laboratory. This certificate shall not be reproduced except in full, without the prior written approval of the laboratory.

Approved By

Kirk Bridgewood
General Manager

UKAS TESTING
2139

Summary of Chemical Analysis
Soil Samples

Our Ref 23-29768
Client Ref 23-0881D
Contract Title NDFA Social Housing PPP Bundle 4 and 5 - Lambs Cross

			Lab No	2278920	2278921
			.Sample ID	BH09	BH09
			Depth	0.50	1.00
			Other ID		
			Sample Type	ES	ES
			Sampling Date	11/12/2023	11/12/2023
			Sampling Time	n/s	n/s
Test	**Method**	**LOD**	**Units**		
Preparation					
Moisture Content	DETSC 1004	0.1	%	10	13
Metals					
Antimony	DETSC 2301*	1	mg/kg	< 1.0	1.0
Arsenic	DETSC 2301#	0.2	mg/kg	28	17
Barium	DETSC 2301#	1.5	mg/kg	67	83
Boron, Water Soluble (2.5:1)	DETSC 2311#	0.2	mg/kg	0.4	0.3
Cadmium	DETSC 2301#	0.1	mg/kg	0.7	0.9
Chromium	DETSC 2301#	0.15	mg/kg	11	14
Chromium III	DETSC 2301*	0.15	mg/kg	11	14
Chromium, Hexavalent	DETSC 2204*	1	mg/kg	< 1.0	< 1.0
Copper	DETSC 2301#	0.2	mg/kg	19	36
Lead	DETSC 2301#	0.3	mg/kg	47	44
Mercury	DETSC 2325#	0.05	mg/kg	< 0.05	0.17
Molybdenum	DETSC 2301#	0.4	mg/kg	1.1	1.7
Nickel	DETSC 2301#	1	mg/kg	15	22
Selenium	DETSC 2301#	0.5	mg/kg	< 0.5	< 0.5
Zinc	DETSC 2301#	1	mg/kg	66	75
Inorganics					
pH	DETSC 2008#		pH	11.2	9.4
Cyanide, Total	DETSC 2130#	0.1	mg/kg	< 0.1	< 0.1
Total Organic Carbon	DETSC 2084#	0.5	%	4.1	2.0
Sulphide	DETSC 2024*	10	mg/kg	120	88
Sulphur (free)	DETSC 3049#	0.75	mg/kg	< 0.75	< 0.75
Sulphate as SO4, Total	DETSC 2321#	0.01	%	0.22	0.09
Petroleum Hydrocarbons					
Aliphatic C5-C6: HS_1D_AL	DETSC 3321*	0.01	mg/kg	< 0.01	< 0.01
Aliphatic C6-C8: HS_1D_AL	DETSC 3321*	0.01	mg/kg	< 0.01	< 0.01
Aliphatic C8-C10: HS_1D_AL	DETSC 3321*	0.01	mg/kg	< 0.01	< 0.01
Aliphatic >EC10-EC12: EH_2D_AL	DETSC 3521#	1.5	mg/kg	< 1.50	< 1.50
Aliphatic >EC12-EC16: EH_2D_AL	DETSC 3521#	1.2	mg/kg	< 1.20	< 1.20
Aliphatic >EC16-EC21: EH_2D_AL	DETSC 3521#	1.5	mg/kg	< 1.50	< 1.50
Aliphatic >EC21-EC35: EH_2D_AL	DETSC 3521#	3.4	mg/kg	< 3.40	< 3.40
Aliphatic >EC35-EC40: EH_2D_AL	DETSC 3521*	3.4	mg/kg	< 3.40	< 3.40
Aliphatic >EC40-EC44: EH_2D_AL	DETSC 3521*	3.4	mg/kg	< 3.40	< 3.40
Aliphatic C5-C44: EH_2D+HS_1D_AL	DETSC 3521*	10	mg/kg	< 10.00	< 10.00
Aromatic C5-C7: HS_1D_AR	DETSC 3321*	0.01	mg/kg	< 0.01	< 0.01
Aromatic C7-C8: HS_1D_AR	DETSC 3321*	0.01	mg/kg	< 0.01	< 0.01
Aromatic C8-C10: HS_1D_AR	DETSC 3321*	0.01	mg/kg	< 0.01	< 0.01
Aromatic >EC10-EC12: EH_2D_AR	DETSC 3521#	0.9	mg/kg	< 0.90	< 0.90
Aromatic >EC12-EC16: EH_2D_AR	DETSC 3521#	0.5	mg/kg	< 0.50	< 0.50
Aromatic >EC16-EC21: EH_2D_AR	DETSC 3521#	0.6	mg/kg	0.92	1.07

Key: * -not accredited. # -MCERTS (accreditation only applies if report carries the MCERTS logo). n/s -not supplied.

Summary of Chemical Analysis
Soil Samples

Our Ref 23-29768
Client Ref 23-0881D
Contract Title NDFA Social Housing PPP Bundle 4 and 5 - Lambs Cross

			Lab No	2278920	2278921
			.Sample ID	BH09	BH09
			Depth	0.50	1.00
			Other ID		
			Sample Type	ES	ES
			Sampling Date	11/12/2023	11/12/2023
			Sampling Time	n/s	n/s
Test	**Method**	**LOD**	**Units**		
Aromatic >EC21-EC35: EH_2D_AR	DETSC 3521#	1.4	mg/kg	< 1.40	35.04
Aromatic >EC35-EC40: EH_2D_AR	DETSC 3521*	1.4	mg/kg	< 1.40	< 1.40
Aromatic >EC40-EC44: EH_2D_AR	DETSC 3521*	1.4	mg/kg	< 1.40	< 1.40
Aromatic C5-C44: EH_2D+HS_1D_AR	DETSC 3521*	10	mg/kg	< 10.00	36.11
TPH Ali/Aro C5-C44: EH_2D+HS_1D_Total	DETSC 3521*	10	mg/kg	< 10.00	36.11
Benzene	DETSC 3321#	0.01	mg/kg	< 0.01	< 0.01
Ethylbenzene	DETSC 3321#	0.01	mg/kg	< 0.01	< 0.01
Toluene	DETSC 3321#	0.01	mg/kg	< 0.01	< 0.01
Xylene	DETSC 3321#	0.01	mg/kg	< 0.01	< 0.01
MTBE	DETSC 3321	0.01	mg/kg	< 0.01	< 0.01
C24-C40 Lube Oil Range Organics (LORO): EH_1D_Total	DETSC 3311#	10	mg/kg	23	110
PAHs					
Naphthalene	DETSC 3301	0.1	mg/kg	< 0.1	< 0.1
Acenaphthylene	DETSC 3301	0.1	mg/kg	0.2	0.2
Acenaphthene	DETSC 3301	0.1	mg/kg	0.1	< 0.1
Fluorene	DETSC 3301	0.1	mg/kg	< 0.1	< 0.1
Phenanthrene	DETSC 3301	0.1	mg/kg	0.1	0.1
Anthracene	DETSC 3301	0.1	mg/kg	< 0.1	< 0.1
Fluoranthene	DETSC 3301	0.1	mg/kg	0.4	0.5
Pyrene	DETSC 3301	0.1	mg/kg	0.4	0.5
Benzo(a)anthracene	DETSC 3301	0.1	mg/kg	< 0.1	0.4
Chrysene	DETSC 3301	0.1	mg/kg	< 0.1	0.2
Benzo(b)fluoranthene	DETSC 3301	0.1	mg/kg	< 0.1	0.3
Benzo(k)fluoranthene	DETSC 3301	0.1	mg/kg	< 0.1	0.1
Benzo(a)pyrene	DETSC 3301	0.1	mg/kg	< 0.1	0.6
Indeno(1,2,3-c,d)pyrene	DETSC 3301	0.1	mg/kg	< 0.1	< 0.1
Dibenzo(a,h)anthracene	DETSC 3301	0.1	mg/kg	< 0.1	< 0.1
Benzo(g,h,i)perylene	DETSC 3301	0.1	mg/kg	< 0.1	< 0.1
Coronene	DETSC 3301*	0.1	mg/kg	< 0.1	< 0.1
PAH 16 Total	DETSC 3301	1.6	mg/kg	< 1.6	2.9
PCBs					
PCB 28 + PCB 31	DETSC 3401#	0.01	mg/kg	< 0.01	< 0.01
PCB 52	DETSC 3401#	0.01	mg/kg	< 0.01	< 0.01
PCB 101	DETSC 3401#	0.01	mg/kg	< 0.01	< 0.01
PCB 118	DETSC 3401#	0.01	mg/kg	< 0.01	< 0.01
PCB 153	DETSC 3401#	0.01	mg/kg	< 0.01	< 0.01
PCB 138	DETSC 3401#	0.01	mg/kg	< 0.01	< 0.01
PCB 180	DETSC 3401#	0.01	mg/kg	< 0.01	< 0.01
PCB 7 Total	DETSC 3401#	0.01	mg/kg	< 0.01	< 0.01
Phenols					
Phenol - Monohydric	DETSC 2130#	0.3	mg/kg	< 0.3	< 0.3

Key: * -not accredited. # -MCERTS (accreditation only applies if report carries the MCERTS logo). n/s -not supplied.

Summary of Chemical Analysis
Leachate Samples

Our Ref 23-29768
Client Ref 23-0881D
Contract Title NDFA Social Housing PPP Bundle 4 and 5 - Lambs Cross

			Lab No	2278922	2278923
			.Sample ID	BH09	BH09
			Depth	0.50	1.00
			Other ID		
			Sample Type	ES	ES
			Sampling Date	11/12/2023	11/12/2023
			Sampling Time	n/s	n/s
Test	**Method**	**LOD**	**Units**		
Preparation					
BS EN 12457 10:1	DETSC 1009*			Y	Y
Inorganics					
Un-Ionised Ammonia	*	0.02	mg/l	0.86	< 0.02
Ammoniacal Nitrogen as NH4	DETSC 2207	0.0193	mg/l	1.1	0.12

Key: * -not accredited. n/s -not supplied.

WASTE ACCEPTANCE CRITERIA TESTING ANALYTICAL REPORT

Our Ref 23-29768
Client Ref 23-0881D
Contract Title NDFA Social Housing PPP Bundle 4 and 5 - Lambs Cross
Sample Id BH09 0.50
Sample Numbers 2278920 2278922
Date Analysed 05/01/2024

Test Results On Waste

Determinand and Method Reference	Units	Result	WAC Limit Values Inert Waste	SNRHW	Hazardous Waste
DETSC 2084# Total Organic Carbon	%	4.1	3	5	6
DETSC 2003# Loss On Ignition	%	2.5	n/a	n/a	10
DETSC 3321# BTEX	mg/kg	< 0.04	6	n/a	n/a
DETSC 3401# PCBs (7 congeners)	mg/kg	< 0.01	1	n/a	n/a
DETSC 3311# EPH (C10 - C40): EH_1D_Total	mg/kg	35.0	500	n/a	n/a
DETSC 3301 PAHs	mg/kg	< 1.6	100	n/a	n/a
DETSC 2008# pH	pH Units	11.2	n/a	>6	n/a
DETSC 2073* Acid Neutralisation Capacity (pH4)	mol/kg	< 1.0	n/a	TBE	TBE
DETSC 2073* Acid Neutralisation Capacity (pH7)	mol/kg	< 1.0	n/a	TBE	TBE

Test Results On Leachate

Determinand and Method Reference	Conc in Eluate ug/l 10:1	Amount Leached* mg/kg LS10	WAC Limit Values (Limit values for LS10 Leachate) Inert Waste	SNRHW	Hazardous Waste
DETSC 2306 Arsenic as As	1.2	0.012	0.5	2	25
DETSC 2306 Barium as Ba	4.5	< 0.1	20	100	300
DETSC 2306 Cadmium as Cd	< 0.030	< 0.02	0.04	1	5
DETSC 2306 Chromium as Cr	< 0.25	< 0.1	0.5	10	70
DETSC 2306 Copper as Cu	1.3	< 0.02	2	50	100
DETSC 2306 Mercury as Hg	< 0.010	< 0.002	0.01	0.2	2
DETSC 2306 Molybdenum as Mo	< 1.1	< 0.1	0.5	10	30
DETSC 2306 Nickel as Ni	< 0.50	< 0.1	0.4	10	40
DETSC 2306 Lead as Pb	0.2	< 0.05	0.5	10	50
DETSC 2306 Antimony as Sb	0.2	< 0.05	0.06	0.7	5
DETSC 2306 Selenium as Se	0.28	< 0.03	0.1	0.5	7
DETSC 2306 Zinc as Zn	< 1.3	< 0.01	4	50	200
DETSC 2055 Chloride as Cl	1200	< 100	800	15,000	25,000
DETSC 2055* Fluoride as F	< 100	< 0.1	10	150	500
DETSC 2055 Sulphate as SO4	11000	110	1000	20,000	50,000
DETSC 2009* Total Dissolved Solids	96000	960	4000	60,000	100,000
DETSC 2130 Phenol Index	< 100	< 1	1	n/a	n/a
DETSC 2085 Dissolved Organic Carbon	4100	< 50	500	800	1000

TBE - To Be Evaluated
SNRHW - Stable Non-Reactive Hazardous Waste

Additional Information

DETSC 2008 pH	10.3
DETSC 2009 Conductivity uS/cm	138.0
* Temperature*	17.0

Mass of Sample Kg*	0.110
Mass of dry Sample Kg*	0.098

Stage 1

Volume of Leachant L2*	0.973
Volume of Eluate VE1*	0.92

Disclaimer: *The WAC limit values are provided for guidance only. DETS does not accept responsibility for errors or omissions. Values are correct at time of issue.*

V.2.06 ** DETS are accredited for the testing of leachates and not the leachate preparation stage which is unaccredited.*

WASTE ACCEPTANCE CRITERIA TESTING ANALYTICAL REPORT

Our Ref 23-29768
Client Ref 23-0881D
Contract Title NDFA Social Housing PPP Bundle 4 and 5 - Lambs Cross
Sample Id BH09 1.00
Sample Numbers 2278921 2278923
Date Analysed 05/01/2024

Test Results On Waste

Determinand and Method Reference	Units	Result	WAC Limit Values: Inert Waste	SNRHW	Hazardous Waste
DETSC 2084# Total Organic Carbon	%	2.0	3	5	6
DETSC 2003# Loss On Ignition	%	3.0	n/a	n/a	10
DETSC 3321# BTEX	mg/kg	< 0.04	6	n/a	n/a
DETSC 3401# PCBs (7 congeners)	mg/kg	< 0.01	1	n/a	n/a
DETSC 3311# EPH (C10 - C40): EH_1D_Total	mg/kg	130.0	500	n/a	n/a
DETSC 3301 PAHs	mg/kg	2.9	100	n/a	n/a
DETSC 2008# pH	pH Units	9.4	n/a	>6	n/a
DETSC 2073* Acid Neutralisation Capacity (pH4)	mol/kg	< 1.0	n/a	TBE	TBE
DETSC 2073* Acid Neutralisation Capacity (pH7)	mol/kg	< 1.0	n/a	TBE	TBE

Test Results On Leachate

Determinand and Method Reference	Conc in Eluate ug/l 10:1	Amount Leached* mg/kg LS10	WAC Limit Values (Limit values for LS10 Leachate): Inert Waste	SNRHW	Hazardous Waste
DETSC 2306 Arsenic as As	9.7	0.097	0.5	2	25
DETSC 2306 Barium as Ba	7.3	< 0.1	20	100	300
DETSC 2306 Cadmium as Cd	< 0.030	< 0.02	0.04	1	5
DETSC 2306 Chromium as Cr	1	< 0.1	0.5	10	70
DETSC 2306 Copper as Cu	17	0.17	2	50	100
DETSC 2306 Mercury as Hg	< 0.010	< 0.002	0.01	0.2	2
DETSC 2306 Molybdenum as Mo	3.2	< 0.1	0.5	10	30
DETSC 2306 Nickel as Ni	4.6	< 0.1	0.4	10	40
DETSC 2306 Lead as Pb	0.37	< 0.05	0.5	10	50
DETSC 2306 Antimony as Sb	0.59	< 0.05	0.06	0.7	5
DETSC 2306 Selenium as Se	0.71	< 0.03	0.1	0.5	7
DETSC 2306 Zinc as Zn	1.5	0.015	4	50	200
DETSC 2055 Chloride as Cl	1000	< 100	800	15,000	25,000
DETSC 2055* Fluoride as F	< 100	< 0.1	10	150	500
DETSC 2055 Sulphate as SO4	15000	150	1000	20,000	50,000
DETSC 2009* Total Dissolved Solids	47000	470	4000	60,000	100,000
DETSC 2130 Phenol Index	< 100	< 1	1	n/a	n/a
DETSC 2085 Dissolved Organic Carbon	2100	< 50	500	800	1000

TBE - To Be Evaluated
SNRHW - Stable Non-Reactive Hazardous Waste

Additional Information

DETSC 2008 pH	8.5
DETSC 2009 Conductivity uS/cm	66.9
* Temperature*	18.0

Mass of Sample Kg*	0.110
Mass of dry Sample Kg*	0.096

Stage 1

Volume of Leachant L2*	0.944
Volume of Eluate VE1*	0.89

Disclaimer: *The WAC limit values are provided for guidance only. DETS does not accept responsibility for errors or omissions. Values are correct at time of issue.*

V.2.06 ** DETS are accredited for the testing of leachates and not the leachate preparation stage which is unaccredited.*

Summary of Asbestos Analysis
Soil Samples

Our Ref 23-29768
Client Ref 23-0881D
Contract Title NDFA Social Housing PPP Bundle 4 and 5 - Lambs Cross

Lab No	Sample ID	Material Type	Result	Comment*	Analyst
2278920	BH09 0.50	SOIL	NAD	none	Josh Best
2278921	BH09 1.00	SOIL	NAD	none	Josh Best

Crocidolite = Blue Asbestos, Amosite = Brown Asbestos, Chrysotile = White Asbestos. Anthophyllite, Actinolite and Tremolite are other forms of Asbestos. Samples are analysed by DETSC 1101 using polarised light microscopy in accordance with HSG248 and documented in-house methods. NAD = No Asbestos Detected. Where a sample is NAD, the result is based on analysis of at least 2 sub-samples and should be taken to mean 'no asbestos detected in sample'. Key: * - not included in laboratory scope of accreditation.

Information in Support of the Analytical Results

Our Ref 23-29768
Client Ref 23-0881D
Contract NDFA Social Housing PPP Bundle 4 and 5 - Lambs Cross

Containers Received & Deviating Samples

Lab No	Sample ID	Date Sampled	Containers Received	Holding time exceeded for tests	Inappropriate container for tests
2278920	BH09 0.50 SOIL	11/12/23	GJ 250ml, GJ 60ml, PT 1L		
2278921	BH09 1.00 SOIL	11/12/23	GJ 250ml, GJ 60ml, PT 1L		
2278922	BH09 0.50 LEACHATE	11/12/23	GJ 250ml, GJ 60ml, PT 1L		
2278923	BH09 1.00 LEACHATE	11/12/23	GJ 250ml, GJ 60ml, PT 1L		

Key: G-Glass P-Plastic J-Jar T-Tub

DETS cannot be held responsible for the integrity of samples received whereby the laboratory did not undertake the sampling. In this instance samples received may be deviating. Deviating Sample criteria are based on British and International standards and laboratory trials in conjunction with the UKAS note 'Guidance on Deviating Samples'. All samples received are listed above. However, those samples that have additional comments in relation to hold time, inappropriate containers etc are deviating due to the reasons stated. This means that the analysis is accredited where applicable, but results may be compromised due to sample deviations. If no sampled date (soils) or date+time (waters) has been supplied then samples are deviating. However, if you are able to supply a sampled date (and time for waters) this will prevent samples being reported as deviating where specific hold times are not exceeded and where the container supplied is suitable.

Soil Analysis Notes

Inorganic soil analysis was carried out on a dried sample, crushed to pass a 425µm sieve, in accordance with BS1377.

Organic soil analysis was carried out on an 'as received' sample. Organics results are corrected for moisture and expressed on a dry weight basis.

The Loss on Drying, used to express organics analysis on an air dried basis, is carried out at a temperature of 28°C +/-2°C.

Disposal

From the issue date of this test certificate, samples will be held for the following times prior to disposal :-

Soils - 1 month, Liquids - 2 weeks, Asbestos (test portion) - 6 months

Information in Support of the Analytical Results

List of HWOL Acronyms and Operators

Acronym	Description
HS	Headspace analysis
EH	Extractable Hydrocarbons - i.e. everything extracted by the solvent
CU	Clean-up - e.g. by florisil, silica gel
1D	GC - Single coil gas chromatography
2D	GC-GC - Double coil gas chromatography
Total	Aliphatics & Aromatics
AL	Aliphatics only
AR	Aromatics only
#1	EH_2D_Total but with humics mathematically subtracted
#2	EH_2D_Total but with fatty acids mathematically subtracted
_	Operator - underscore to separate acronyms (exception for +)
+	Operator to indicate cumulative eg. EH+HS_Total or EH_CU+HS_Total

Det	Acronym
Aliphatic C5-C6	HS_1D_AL
Aliphatic C6-C8	HS_1D_AL
Aliphatic C8-C10	HS_1D_AL
Aliphatic >EC10-EC12	EH_2D_AL
Aliphatic >EC12-EC16	EH_2D_AL
Aliphatic >EC16-EC21	EH_2D_AL
Aliphatic >EC21-EC35	EH_2D_AL
Aliphatic >EC35-EC40	EH_2D_AL
Aliphatic >EC40-EC44	EH_2D_AL
Aliphatic C5-C44	EH_2D+HS_1D_AL
Aromatic C5-C7	HS_1D_AR
Aromatic C7-C8	HS_1D_AR
Aromatic C8-C10	HS_1D_AR
Aromatic >EC10-EC12	EH_2D_AR
Aromatic >EC12-EC16	EH_2D_AR
Aromatic >EC16-EC21	EH_2D_AR
Aromatic >EC21-EC35	EH_2D_AR
Aromatic >EC35-EC40	EH_2D_AR
Aromatic >EC40-EC44	EH_2D_AR
Aromatic C5-C44	EH_2D+HS_1D_AR
TPH Ali/Aro C5-C44	EH_2D+HS_1D_Total
TPH (C10-C40)	EH_1D_Total
C24-C40 Lube Oil Range Organics (LO	EH_1D_Total

End of Report

Certificate of Analysis

Certificate Number	23-29766	*Issued:*	05-Jan-24

Client Causeway Geotech
Unit 1 Fingal House
Stephenstown Industrial Estate
Balbriggan
Co. Dublin
K32 VR66

Our Reference	23-29766
Client Reference	23-0881D
Order No	(not supplied)
Contract Title	NDFA Social Housing PPP Bundle 4 and 5 - Lambs Cross
Description	1 Soil sample, 1 Leachate prepared by DETS sample.
Date Received	18-Dec-23
Date Started	18-Dec-23
Date Completed	05-Jan-24
Test Procedures	Identified by prefix DETSn (details on request).

Notes Opinions and interpretations are outside the laboratory's scope of ISO 17025 accreditation. This certificate is issued in accordance with the accreditation requirements of the United Kingdom Accreditation Service. The results reported herein relate only to the material supplied to the laboratory. This certificate shall not be reproduced except in full, without the prior written approval of the laboratory.

Approved By

Kirk Bridgewood
General Manager

ilac-MRA

UKAS TESTING
2139

Summary of Chemical Analysis
Soil Samples

Our Ref 23-29766
Client Ref 23-0881D
Contract Title NDFA Social Housing PPP Bundle 4 and 5 - Lambs Cross

Lab No	2278917
.Sample ID	BH01
Depth	0.50
Other ID	1
Sample Type	ES
Sampling Date	13/12/2023
Sampling Time	n/s

Test	Method	LOD	Units	
Preparation				
Moisture Content	DETSC 1004	0.1	%	32
Metals				
Antimony	DETSC 2301*	1	mg/kg	< 1.0
Arsenic	DETSC 2301#	0.2	mg/kg	13
Barium	DETSC 2301#	1.5	mg/kg	45
Boron, Water Soluble (2.5:1)	DETSC 2311#	0.2	mg/kg	1.0
Cadmium	DETSC 2301#	0.1	mg/kg	0.7
Chromium	DETSC 2301#	0.15	mg/kg	17
Chromium III	DETSC 2301*	0.15	mg/kg	17
Chromium, Hexavalent	DETSC 2204*	1	mg/kg	< 1.0
Copper	DETSC 2301#	0.2	mg/kg	26
Lead	DETSC 2301#	0.3	mg/kg	24
Mercury	DETSC 2325#	0.05	mg/kg	< 0.05
Molybdenum	DETSC 2301#	0.4	mg/kg	1.4
Nickel	DETSC 2301#	1	mg/kg	17
Selenium	DETSC 2301#	0.5	mg/kg	< 0.5
Zinc	DETSC 2301#	1	mg/kg	70
Inorganics				
pH	DETSC 2008#		pH	8.0
Cyanide, Total	DETSC 2130#	0.1	mg/kg	0.3
Total Organic Carbon	DETSC 2084#	0.5	%	8.5
Sulphide	DETSC 2024*	10	mg/kg	68
Sulphur (free)	DETSC 3049#	0.75	mg/kg	9.2
Sulphate as SO4, Total	DETSC 2321#	0.01	%	0.10
Petroleum Hydrocarbons				
Aliphatic C5-C6: HS_1D_AL	DETSC 3321*	0.01	mg/kg	< 0.01
Aliphatic C6-C8: HS_1D_AL	DETSC 3321*	0.01	mg/kg	< 0.01
Aliphatic C8-C10: HS_1D_AL	DETSC 3321*	0.01	mg/kg	< 0.01
Aliphatic >EC10-EC12: EH_2D_AL	DETSC 3521#	1.5	mg/kg	2.23
Aliphatic >EC12-EC16: EH_2D_AL	DETSC 3521#	1.2	mg/kg	< 1.20
Aliphatic >EC16-EC21: EH_2D_AL	DETSC 3521#	1.5	mg/kg	< 1.50
Aliphatic >EC21-EC35: EH_2D_AL	DETSC 3521#	3.4	mg/kg	< 3.40
Aliphatic >EC35-EC40: EH_2D_AL	DETSC 3521*	3.4	mg/kg	< 3.40
Aliphatic >EC40-EC44: EH_2D_AL	DETSC 3521*	3.4	mg/kg	< 3.40
Aliphatic C5-C44: EH_2D+HS_1D_AL	DETSC 3521*	10	mg/kg	< 10.00
Aromatic C5-C7: HS_1D_AR	DETSC 3321*	0.01	mg/kg	< 0.01
Aromatic C7-C8: HS_1D_AR	DETSC 3321*	0.01	mg/kg	< 0.01
Aromatic C8-C10: HS_1D_AR	DETSC 3321*	0.01	mg/kg	< 0.01
Aromatic >EC10-EC12: EH_2D_AR	DETSC 3521#	0.9	mg/kg	< 0.90
Aromatic >EC12-EC16: EH_2D_AR	DETSC 3521#	0.5	mg/kg	8.21
Aromatic >EC16-EC21: EH_2D_AR	DETSC 3521#	0.6	mg/kg	44.88

Key: * -not accredited. # -MCERTS (accreditation only applies if report carries the MCERTS logo). n/s -not supplied.

Summary of Chemical Analysis
Soil Samples

Our Ref 23-29766
Client Ref 23-0881D
Contract Title NDFA Social Housing PPP Bundle 4 and 5 - Lambs Cross

Lab No	2278917
.Sample ID	BH01
Depth	0.50
Other ID	1
Sample Type	ES
Sampling Date	13/12/2023
Sampling Time	n/s

Test	Method	LOD	Units	
Aromatic >EC21-EC35: EH_2D_AR	DETSC 3521#	1.4	mg/kg	69.00
Aromatic >EC35-EC40: EH_2D_AR	DETSC 3521*	1.4	mg/kg	< 1.40
Aromatic >EC40-EC44: EH_2D_AR	DETSC 3521*	1.4	mg/kg	< 1.40
Aromatic C5-C44: EH_2D+HS_1D_AR	DETSC 3521*	10	mg/kg	122.1
TPH Ali/Aro C5-C44: EH_2D+HS_1D_Total	DETSC 3521*	10	mg/kg	122.1
Benzene	DETSC 3321#	0.01	mg/kg	< 0.01
Ethylbenzene	DETSC 3321#	0.01	mg/kg	< 0.01
Toluene	DETSC 3321#	0.01	mg/kg	< 0.01
Xylene	DETSC 3321#	0.01	mg/kg	< 0.01
MTBE	DETSC 3321	0.01	mg/kg	< 0.01
C24-C40 Lube Oil Range Organics (LORO): EH_1D_Total	DETSC 3311#	10	mg/kg	120
PAHs				
Naphthalene	DETSC 3301	0.1	mg/kg	< 0.1
Acenaphthylene	DETSC 3301	0.1	mg/kg	0.2
Acenaphthene	DETSC 3301	0.1	mg/kg	< 0.1
Fluorene	DETSC 3301	0.1	mg/kg	< 0.1
Phenanthrene	DETSC 3301	0.1	mg/kg	0.2
Anthracene	DETSC 3301	0.1	mg/kg	< 0.1
Fluoranthene	DETSC 3301	0.1	mg/kg	0.5
Pyrene	DETSC 3301	0.1	mg/kg	1.0
Benzo(a)anthracene	DETSC 3301	0.1	mg/kg	0.3
Chrysene	DETSC 3301	0.1	mg/kg	0.2
Benzo(b)fluoranthene	DETSC 3301	0.1	mg/kg	0.6
Benzo(k)fluoranthene	DETSC 3301	0.1	mg/kg	0.1
Benzo(a)pyrene	DETSC 3301	0.1	mg/kg	0.6
Indeno(1,2,3-c,d)pyrene	DETSC 3301	0.1	mg/kg	0.8
Dibenzo(a,h)anthracene	DETSC 3301	0.1	mg/kg	0.2
Benzo(g,h,i)perylene	DETSC 3301	0.1	mg/kg	< 0.1
Coronene	DETSC 3301*	0.1	mg/kg	< 0.1
PAH 16 Total	DETSC 3301	1.6	mg/kg	4.8
PCBs				
PCB 28 + PCB 31	DETSC 3401#	0.01	mg/kg	< 0.01
PCB 52	DETSC 3401#	0.01	mg/kg	< 0.01
PCB 101	DETSC 3401#	0.01	mg/kg	< 0.01
PCB 118	DETSC 3401#	0.01	mg/kg	< 0.01
PCB 153	DETSC 3401#	0.01	mg/kg	< 0.01
PCB 138	DETSC 3401#	0.01	mg/kg	< 0.01
PCB 180	DETSC 3401#	0.01	mg/kg	< 0.01
PCB 7 Total	DETSC 3401#	0.01	mg/kg	< 0.01
Phenols				
Phenol - Monohydric	DETSC 2130#	0.3	mg/kg	2.7

Key: * -not accredited. # -MCERTS (accreditation only applies if report carries the MCERTS logo). n/s -not supplied.

Summary of Chemical Analysis
Leachate Samples

Our Ref 23-29766
Client Ref 23-0881D
Contract Title NDFA Social Housing PPP Bundle 4 and 5 - Lambs Cross

Lab No	2278918
.Sample ID	BH01
Depth	0.50
Other ID	1
Sample Type	ES
Sampling Date	13/12/2023
Sampling Time	n/s

Test	Method	LOD	Units	
Preparation				
BS EN 12457 10:1	DETSC 1009*			Y
Inorganics				
Un-Ionised Ammonia	*	0.02	mg/l	< 0.02
Ammoniacal Nitrogen as NH4	DETSC 2207	0.0193	mg/l	2.6

Key: * -not accredited. n/s -not supplied.

WASTE ACCEPTANCE CRITERIA TESTING ANALYTICAL REPORT

Our Ref 23-29766
Client Ref 23-0881D
Contract Title NDFA Social Housing PPP Bundle 4 and 5 - Lambs Cross
Sample Id BH01 1 0.50
Sample Numbers 2278917 2278918
Date Analysed 05/01/2024

Test Results On Waste

Determinand and Method Reference	Units	Result	WAC Limit Values Inert Waste	SNRHW	Hazardous Waste
DETSC 2084# Total Organic Carbon	%	8.5	3	5	6
DETSC 2003# Loss On Ignition	%	24.0	n/a	n/a	10
DETSC 3321# BTEX	mg/kg	< 0.04	6	n/a	n/a
DETSC 3401# PCBs (7 congeners)	mg/kg	< 0.01	1	n/a	n/a
DETSC 3311# EPH (C10 - C40): EH_1D_Total	mg/kg	140.0	500	n/a	n/a
DETSC 3301 PAHs	mg/kg	4.8	100	n/a	n/a
DETSC 2008# pH	pH Units	8.0	n/a	>6	n/a
DETSC 2073* Acid Neutralisation Capacity (pH4)	mol/kg	< 1.0	n/a	TBE	TBE
DETSC 2073* Acid Neutralisation Capacity (pH7)	mol/kg	< 1.0	n/a	TBE	TBE

Test Results On Leachate

Determinand and Method Reference	Conc in Eluate ug/l 10:1	Amount Leached* mg/kg LS10	WAC Limit Values (Limit values for LS10 Leachate) Inert Waste	SNRHW	Hazardous Waste
DETSC 2306 Arsenic as As	5.4	0.054	0.5	2	25
DETSC 2306 Barium as Ba	11	0.11	20	100	300
DETSC 2306 Cadmium as Cd	0.068	< 0.02	0.04	1	5
DETSC 2306 Chromium as Cr	0.27	< 0.1	0.5	10	70
DETSC 2306 Copper as Cu	4.2	0.042	2	50	100
DETSC 2306 Mercury as Hg	< 0.010	< 0.002	0.01	0.2	2
DETSC 2306 Molybdenum as Mo	2.5	< 0.1	0.5	10	30
DETSC 2306 Nickel as Ni	2.1	< 0.1	0.4	10	40
DETSC 2306 Lead as Pb	1.3	< 0.05	0.5	10	50
DETSC 2306 Antimony as Sb	0.9	< 0.05	0.06	0.7	5
DETSC 2306 Selenium as Se	0.37	< 0.03	0.1	0.5	7
DETSC 2306 Zinc as Zn	6.2	0.062	4	50	200
DETSC 2055 Chloride as Cl	3000	< 100	800	15,000	25,000
DETSC 2055* Fluoride as F	< 100	< 0.1	10	150	500
DETSC 2055 Sulphate as SO4	20000	200	1000	20,000	50,000
DETSC 2009* Total Dissolved Solids	82000	820	4000	60,000	100,000
DETSC 2130 Phenol Index	< 100	< 1	1	n/a	n/a
DETSC 2085 Dissolved Organic Carbon	12000	120	500	800	1000

TBE - To Be Evaluated
SNRHW - Stable Non-Reactive Hazardous Waste

Additional Information

DETSC 2008 pH	7.4
DETSC 2009 Conductivity uS/cm	117.0
* Temperature*	17.0

Mass of Sample Kg*	0.140
Mass of dry Sample Kg*	0.095

Stage 1

Volume of Leachant L2*	0.906
Volume of Eluate VE1*	0.85

Disclaimer: *The WAC limit values are provided for guidance only. DETS does not accept responsibility for errors or omissions. Values are correct at time of issue.*

V.2.06 ** DETS are accredited for the testing of leachates and not the leachate preparation stage which is unaccredited.*

Summary of Asbestos Analysis
Soil Samples

Our Ref 23-29766
Client Ref 23-0881D
Contract Title NDFA Social Housing PPP Bundle 4 and 5 - Lambs Cross

Lab No	Sample ID	Material Type	Result	Comment*	Analyst
2278917	BH01 1 0.50	SOIL	NAD	none	Pierce Booth

Crocidolite = Blue Asbestos, Amosite = Brown Asbestos, Chrysotile = White Asbestos. Anthophyllite, Actinolite and Tremolite are other forms of Asbestos. Samples are analysed by DETSC 1101 using polarised light microscopy in accordance with HSG248 and documented in-house methods. NAD = No Asbestos Detected. Where a sample is NAD, the result is based on analysis of at least 2 sub-samples and should be taken to mean 'no asbestos detected in sample'. Key: * - not included in laboratory scope of accreditation.

Information in Support of the Analytical Results

Our Ref 23-29766
Client Ref 23-0881D
Contract NDFA Social Housing PPP Bundle 4 and 5 - Lambs Cross

Containers Received & Deviating Samples

Lab No	Sample ID	Date Sampled	Containers Received	Holding time exceeded for tests	Inappropriate container for tests
2278917	BH01 0.50 SOIL	13/12/23	GJ 250ml, GJ 60ml, PT 1L		
2278918	BH01 0.50 LEACHATE	13/12/23	GJ 250ml, GJ 60ml, PT 1L		

Key: G-Glass P-Plastic J-Jar T-Tub

DETS cannot be held responsible for the integrity of samples received whereby the laboratory did not undertake the sampling. In this instance samples received may be deviating. Deviating Sample criteria are based on British and International standards and laboratory trials in conjunction with the UKAS note 'Guidance on Deviating Samples'. All samples received are listed above. However, those samples that have additional comments in relation to hold time, inappropriate containers etc are deviating due to the reasons stated. This means that the analysis is accredited where applicable, but results may be compromised due to sample deviations. If no sampled date (soils) or date+time (waters) has been supplied then samples are deviating. However, if you are able to supply a sampled date (and time for waters) this will prevent samples being reported as deviating where specific hold times are not exceeded and where the container supplied is suitable.

Soil Analysis Notes

Inorganic soil analysis was carried out on a dried sample, crushed to pass a 425µm sieve, in accordance with BS1377.

Organic soil analysis was carried out on an 'as received' sample. Organics results are corrected for moisture and expressed on a dry weight basis.

The Loss on Drying, used to express organics analysis on an air dried basis, is carried out at a temperature of 28°C +/-2°C.

Disposal

From the issue date of this test certificate, samples will be held for the following times prior to disposal :-

Soils - 1 month, Liquids - 2 weeks, Asbestos (test portion) - 6 months

Information in Support of the Analytical Results

List of HWOL Acronyms and Operators

Acronym	Description
HS	Headspace analysis
EH	Extractable Hydrocarbons - i.e. everything extracted by the solvent
CU	Clean-up - e.g. by florisil, silica gel
1D	GC - Single coil gas chromatography
2D	GC-GC - Double coil gas chromatography
Total	Aliphatics & Aromatics
AL	Aliphatics only
AR	Aromatics only
#1	EH_2D_Total but with humics mathematically subtracted
#2	EH_2D_Total but with fatty acids mathematically subtracted
_	Operator - underscore to separate acronyms (exception for +)
+	Operator to indicate cumulative eg. EH+HS_Total or EH_CU+HS_Total

Det	Acronym
Aliphatic C5-C6	HS_1D_AL
Aliphatic C6-C8	HS_1D_AL
Aliphatic C8-C10	HS_1D_AL
Aliphatic >EC10-EC12	EH_2D_AL
Aliphatic >EC12-EC16	EH_2D_AL
Aliphatic >EC16-EC21	EH_2D_AL
Aliphatic >EC21-EC35	EH_2D_AL
Aliphatic >EC35-EC40	EH_2D_AL
Aliphatic >EC40-EC44	EH_2D_AL
Aliphatic C5-C44	EH_2D+HS_1D_AL
Aromatic C5-C7	HS_1D_AR
Aromatic C7-C8	HS_1D_AR
Aromatic C8-C10	HS_1D_AR
Aromatic >EC10-EC12	EH_2D_AR
Aromatic >EC12-EC16	EH_2D_AR
Aromatic >EC16-EC21	EH_2D_AR
Aromatic >EC21-EC35	EH_2D_AR
Aromatic >EC35-EC40	EH_2D_AR
Aromatic >EC40-EC44	EH_2D_AR
Aromatic C5-C44	EH_2D+HS_1D_AR
TPH Ali/Aro C5-C44	EH_2D+HS_1D_Total
TPH (C10-C40)	EH_1D_Total
C24-C40 Lube Oil Range Organics (LO	EH_1D_Total

End of Report

CAUSEWAY GEOTECH

APPENDIX L

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:

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

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

T6KIX-FM16Z-INWGV

Job name

23-0881D Lamb's Cross

Description/Comments

Waste classification of material recovered from site during ground investigation works in October/November 2023.

Project

23-0881D

Site

Lamb's Cross

Classified by

Name:
Sean Ross
Date:
25 Jun 2024 16:31 GMT
Telephone:

Company:
Causeway Geotech Ltd
Unit 1 Fingal House, Stephenstown Industrial Estate,
Balbriggan
K32 VR66

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: -

Course	Date
Hazardous Waste Classification	50% complete

Purpose of classification

2 - Material Characterisation

Address of the waste

Lamb's Cross, Sandyford, South County Dublin. **Post Code** Ireland

Description of industry/producer giving rise to the waste

Redevelopment of the existing site.

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

Waste created due to construction activities associated with redevelopment of the existing site.

Description of the waste

Made ground comprising reworked sandy gravelly clay with varying amounts of anthropogenic material overlying natural glacial till (sandy gravelly clay).

Job summary

#	Sample name	Depth [m]	Classification Result	Hazard properties	WAC Results		Page
					Inert	Non Haz	
1	ST01 1/0.50/2023-11-20		Non Hazardous		Pass	Pass	3
2	ST02 1/0.50/2023-11-21		Non Hazardous		Fail	Pass	7
3	ST03 1/0.30/2023-11-21		Non Hazardous		Pass	Pass	11
4	ST04 1/0.50/2023-11-20		Non Hazardous		Pass	Pass	15
5	ST04 1/1.00/2023-11-20		Non Hazardous		Pass	Pass	19
6	TP01 1/0.50/2023-11-20		Non Hazardous		Pass	Pass	23
7	TP01 1/1.00/2023-11-20		Non Hazardous		Pass	Pass	27
8	TP02 1/0.50/2023-11-20		Non Hazardous		Pass	Pass	31
9	TP02 1/1.00/2023-11-20		Non Hazardous		Pass	Pass	35
10	TP03 1/0.50/2023-11-21		Non Hazardous		Pass	Pass	39
11	BH01 1/0.50/2023-12-13		Non Hazardous		Fail	Fail	43
12	BH09/0.50/2023-12-11		Non Hazardous		Fail	Pass	47
13	BH09/1.00/2023-12-11		Non Hazardous		Pass	Pass	51

Related documents

#	Name	Description
1	23-28106.batch	DETS North .batch file used to populate the Job
2	23-28106.hwol	DETS North .hwol file used to populate the Job
3	23-29766.hwol	DETS North .hwol file used to populate the Job
4	23-29768.hwol	DETS North .hwol file used to populate the Job
5	Example waste stream template for contaminated soils	waste stream template used to create this Job

WAC results

WAC Settings: samples in this Job do not constitute a single population.

WAC limits used to evaluate the samples in this Job: "Ireland"
The WAC used in this report are the WAC defined for the inert and non-hazardous classes of landfill in the Republic of Ireland. 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: Sean Ross

Created date: 25 Jun 2024 16:31 GMT

Classification of sample: ST01 1/0.50/2023-11-20

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

Sample details

Sample name:
ST01 1/0.50/2023-11-20
Moisture content:
8.9%
(wet weight correction)

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

Hazard properties

None identified

Determinands

Moisture content: 8.9% Wet Weight Moisture Correction applied (MC)

#	Determinand	EU CLP index number	EC Number	CAS Number	CLP Note	User entered data	Conv. Factor	Compound conc.	Classification value	MC Applied	Conc. Not Used
1	antimony { antimony trioxide }	051-005-00-X	215-175-0	1309-64-4		1.6 mg/kg	1.197	1.745 mg/kg	0.000174 %	✓	
2	arsenic { arsenic trioxide }	033-003-00-0	215-481-4	1327-53-3		47 mg/kg	1.32	56.532 mg/kg	0.00565 %	✓	
3	boron { diboron trioxide }	005-008-00-8	215-125-8	1303-86-2	11	<0.2 mg/kg	3.22	<0.644 mg/kg	<0.0000644 %		<**LOD**
4	cadmium { cadmium oxide }	048-002-00-0	215-146-2	1306-19-0		1.8 mg/kg	1.142	1.873 mg/kg	0.000187 %	✓	
5	chromium in chromium(III) compounds { chromium(III) oxide (worst case) }		215-160-9	1308-38-9		20 mg/kg	1.462	26.63 mg/kg	0.00266 %	✓	
6	chromium in chromium(VI) compounds { chromium (VI) compounds, with the exception of barium chromate and of compounds specified elsewhere in this Annex }	024-017-00-8				<1 mg/kg	2.27	<2.27 mg/kg	<0.000227 %		<**LOD**
7	copper { dicopper oxide; copper (I) oxide }	029-002-00-X	215-270-7	1317-39-1		44 mg/kg	1.126	45.13 mg/kg	0.00451 %	✓	
8	lead { lead chromate }	082-004-00-2	231-846-0	7758-97-6	1	63 mg/kg	1.56	89.522 mg/kg	0.00574 %	✓	
9	mercury { mercury dichloride }	080-010-00-X	231-299-8	7487-94-7		0.12 mg/kg	1.353	0.148 mg/kg	0.0000148 %	✓	
10	molybdenum { molybdenum(VI) oxide }	042-001-00-9	215-204-7	1313-27-5		2.3 mg/kg	1.5	3.143 mg/kg	0.000314 %	✓	
11	nickel { nickel chromate }	028-035-00-7	238-766-5	14721-18-7		32 mg/kg	2.976	86.764 mg/kg	0.00868 %	✓	
12	selenium { nickel selenate }	028-031-00-5	239-125-2	15060-62-5		1.2 mg/kg	2.554	2.792 mg/kg	0.000279 %	✓	
13	zinc { zinc chromate }	024-007-00-3	236-878-9	13530-65-9		110 mg/kg	2.774	277.997 mg/kg	0.0278 %	✓	
14	tert-butyl methyl ether; MTBE; 2-methoxy-2-methylpropane	603-181-00-X	216-653-1	1634-04-4		<0.01 mg/kg		<0.01 mg/kg	<0.000001 %		<**LOD**
15	benzene	601-020-00-8	200-753-7	71-43-2		<0.01 mg/kg		<0.01 mg/kg	<0.000001 %		<**LOD**
16	toluene	601-021-00-3	203-625-9	108-88-3		<0.01 mg/kg		<0.01 mg/kg	<0.000001 %		<**LOD**

#	Determinand	EU CLP index number	EC Number	CAS Number	CLP Note	User entered data	Conv. Factor	Compound conc.	Classification value	MC Applied	Conc. Not Used
17	ethylbenzene	601-023-00-4	202-849-4	100-41-4		<0.01 mg/kg		<0.01 mg/kg	<0.000001 %		<**LOD**
18	xylene	601-022-00-9	202-422-2 [1] 203-396-5 [2] 203-576-3 [3] 215-535-7 [4]	95-47-6 [1] 106-42-3 [2] 108-38-3 [3] 1330-20-7 [4]		<0.01 mg/kg		<0.01 mg/kg	<0.000001 %		<**LOD**
19	cyanides { salts of hydrogen cyanide with the exception of complex cyanides such as ferrocyanides, ferricyanides and mercuric oxycyanide and those specified elsewhere in this Annex }	006-007-00-5				0.1 mg/kg	1.884	0.172 mg/kg	0.0000172 %	✓	
20	pH			PH		8 pH		8 pH	8pH		
21	naphthalene	601-052-00-2	202-049-5	91-20-3		0.1 mg/kg		0.0911 mg/kg	0.00000911 %	✓	
22	acenaphthylene		205-917-1	208-96-8		0.2 mg/kg		0.182 mg/kg	0.0000182 %	✓	
23	acenaphthene		201-469-6	83-32-9		0.2 mg/kg		0.182 mg/kg	0.0000182 %	✓	
24	fluorene		201-695-5	86-73-7		0.2 mg/kg		0.182 mg/kg	0.0000182 %	✓	
25	phenanthrene		201-581-5	85-01-8		0.2 mg/kg		0.182 mg/kg	0.0000182 %	✓	
26	anthracene		204-371-1	120-12-7		0.2 mg/kg		0.182 mg/kg	0.0000182 %	✓	
27	fluoranthene		205-912-4	206-44-0		3.2 mg/kg		2.915 mg/kg	0.000292 %	✓	
28	pyrene		204-927-3	129-00-0		3.9 mg/kg		3.553 mg/kg	0.000355 %	✓	
29	benzo[a]anthracene	601-033-00-9	200-280-6	56-55-3		1.8 mg/kg		1.64 mg/kg	0.000164 %	✓	
30	chrysene	601-048-00-0	205-923-4	218-01-9		1.6 mg/kg		1.458 mg/kg	0.000146 %	✓	
31	benzo[b]fluoranthene	601-034-00-4	205-911-9	205-99-2		2.5 mg/kg		2.278 mg/kg	0.000228 %	✓	
32	benzo[k]fluoranthene	601-036-00-5	205-916-6	207-08-9		1.2 mg/kg		1.093 mg/kg	0.000109 %	✓	
33	benzo[a]pyrene; benzo[def]chrysene	601-032-00-3	200-028-5	50-32-8		3.7 mg/kg		3.371 mg/kg	0.000337 %	✓	
34	indeno[123-cd]pyrene		205-893-2	193-39-5		2.4 mg/kg		2.186 mg/kg	0.000219 %	✓	
35	dibenz[a,h]anthracene	601-041-00-2	200-181-8	53-70-3		0.3 mg/kg		0.273 mg/kg	0.0000273 %	✓	
36	benzo[ghi]perylene		205-883-8	191-24-2		2.2 mg/kg		2.004 mg/kg	0.0002 %	✓	
37	polychlorobiphenyls; PCB	602-039-00-4	215-648-1	1336-36-3		<0.01 mg/kg		<0.01 mg/kg	<0.000001 %		<**LOD**
38	barium { barium chloride }	056-004-00-8	233-788-1	10361-37-2		100 mg/kg	1.516	138.138 mg/kg	0.0138 %	✓	
39	monohydric phenols			P1186		0.6 mg/kg		0.547 mg/kg	0.0000547 %	✓	
40	coronene		205-881-7	191-07-1		<0.1 mg/kg		<0.1 mg/kg	<0.00001 %		<**LOD**
41	sulfur { sulfur }	016-094-00-1	231-722-6	7704-34-9		<0.75 mg/kg		<0.75 mg/kg	<0.000075 %		<**LOD**
								Total:	0.0725 %		

Key

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

WAC results for sample: ST01 1/0.50/2023-11-20

WAC Settings: samples in this Job do not constitute a single population.

WAC limits used to evaluate this sample: "Ireland"
The WAC used in this report are the WAC defined for the inert and non-hazardous classes of landfill in the Republic of Ireland. 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 Non Haz (Non hazardous waste landfill) criteria.

WAC Determinands

Solid Waste Analysis				Landfill Waste Acceptance Criteria Limits	
#	Determinand		User entered data	Inert waste landfill	Non hazardous waste landfill
1	TOC (total organic carbon)	%	2.2	3	5
2	LOI (loss on ignition)	%	4	-	-
3	BTEX (benzene, toluene, ethylbenzene and xylenes)	mg/kg	<0.04	6	-
4	PCBs (polychlorinated biphenyls, 7 congeners)	mg/kg	<0.01	1	-
5	Mineral oil (C10 to C40)	mg/kg	110	500	-
6	PAHs (polycyclic aromatic hydrocarbons)	mg/kg	24	100	-
7	pH	pH	8	-	>6
8	ANC (acid neutralisation capacity)	mol/kg	<1	-	-
Eluate Analysis 10:1					
9	arsenic	mg/kg	0.016	0.5	2
10	barium	mg/kg	0.11	20	100
11	cadmium	mg/kg	<0.02	0.04	1
12	chromium	mg/kg	<0.1	0.5	10
13	copper	mg/kg	<0.02	2	50
14	mercury	mg/kg	<0.002	0.01	0.2
15	molybdenum	mg/kg	<0.1	0.5	10
16	nickel	mg/kg	<0.1	0.4	10
17	lead	mg/kg	<0.05	0.5	10
18	antimony	mg/kg	<0.05	0.06	0.7
19	selenium	mg/kg	<0.03	0.1	0.5
20	zinc	mg/kg	0.014	4	50
21	chloride	mg/kg	<100	800	15,000
22	fluoride	mg/kg	<0.1	10	150
23	sulphate	mg/kg	110	1,000	20,000
24	phenol index	mg/kg	<1	1	-
25	DOC (dissolved organic carbon)	mg/kg	<50	500	800
26	TDS (total dissolved solids)	mg/kg	930	4,000	60,000

Key

User supplied data

Classification of sample: ST02 1/0.50/2023-11-21

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

Sample details

Sample name:
ST02 1/0.50/2023-11-21
Moisture content:
8.9%
(wet weight correction)

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

Hazard properties

None identified

Determinands

Moisture content: 8.9% Wet Weight Moisture Correction applied (MC)

#	Determinand	EU CLP index number	EC Number	CAS Number	CLP Note	User entered data	Conv. Factor	Compound conc.	Classification value	MC Applied	Conc. Not Used
1	antimony { antimony trioxide }	051-005-00-X	215-175-0	1309-64-4		1.1 mg/kg	1.197	1.2 mg/kg	0.00012 %	✓	
2	arsenic { arsenic trioxide }	033-003-00-0	215-481-4	1327-53-3		34 mg/kg	1.32	40.896 mg/kg	0.00409 %	✓	
3	boron { diboron trioxide }	005-008-00-8	215-125-8	1303-86-2	11	<0.2 mg/kg	3.22	<0.644 mg/kg	<0.0000644 %		<**LOD**
4	cadmium { cadmium oxide }	048-002-00-0	215-146-2	1306-19-0		1.2 mg/kg	1.142	1.249 mg/kg	0.000125 %	✓	
5	chromium in chromium(III) compounds { chromium(III) oxide (worst case) }		215-160-9	1308-38-9		16 mg/kg	1.462	21.304 mg/kg	0.00213 %	✓	
6	chromium in chromium(VI) compounds { chromium (VI) compounds, with the exception of barium chromate and of compounds specified elsewhere in this Annex }	024-017-00-8				<1 mg/kg	2.27	<2.27 mg/kg	<0.000227 %		<**LOD**
7	copper { dicopper oxide; copper (I) oxide }	029-002-00-X	215-270-7	1317-39-1		29 mg/kg	1.126	29.745 mg/kg	0.00297 %	✓	
8	lead { lead chromate }	082-004-00-2	231-846-0	7758-97-6	1	29 mg/kg	1.56	41.209 mg/kg	0.00264 %	✓	
9	mercury { mercury dichloride }	080-010-00-X	231-299-8	7487-94-7		0.08 mg/kg	1.353	0.0986 mg/kg	0.00000986 %	✓	
10	molybdenum { molybdenum(VI) oxide }	042-001-00-9	215-204-7	1313-27-5		1.6 mg/kg	1.5	2.187 mg/kg	0.000219 %	✓	
11	nickel { nickel chromate }	028-035-00-7	238-766-5	14721-18-7		18 mg/kg	2.976	48.805 mg/kg	0.00488 %	✓	
12	selenium { nickel selenate }	028-031-00-5	239-125-2	15060-62-5		<0.5 mg/kg	2.554	<1.277 mg/kg	<0.000128 %		<**LOD**
13	zinc { zinc chromate }	024-007-00-3	236-878-9	13530-65-9		65 mg/kg	2.774	164.271 mg/kg	0.0164 %	✓	
14	tert-butyl methyl ether; MTBE; 2-methoxy-2-methylpropane	603-181-00-X	216-653-1	1634-04-4		<0.01 mg/kg		<0.01 mg/kg	<0.000001 %		<**LOD**
15	benzene	601-020-00-8	200-753-7	71-43-2		<0.01 mg/kg		<0.01 mg/kg	<0.000001 %		<**LOD**
16	toluene	601-021-00-3	203-625-9	108-88-3		<0.01 mg/kg		<0.01 mg/kg	<0.000001 %		<**LOD**

#	Determinand	EU CLP index number	EC Number	CAS Number	CLP Note	User entered data	Conv. Factor	Compound conc.	Classification value	MC Applied	Conc. Not Used
17	ethylbenzene	601-023-00-4	202-849-4	100-41-4		<0.01 mg/kg		<0.01 mg/kg	<0.000001 %		<LOD
18	xylene	601-022-00-9	202-422-2 [1] 203-396-5 [2] 203-576-3 [3] 215-535-7 [4]	95-47-6 [1] 106-42-3 [2] 108-38-3 [3] 1330-20-7 [4]		<0.01 mg/kg		<0.01 mg/kg	<0.000001 %		<LOD
19	cyanides { salts of hydrogen cyanide with the exception of complex cyanides such as ferrocyanides, ferricyanides and mercuric oxycyanide and those specified elsewhere in this Annex }	006-007-00-5				<0.1 mg/kg	1.884	<0.188 mg/kg	<0.0000188 %		<LOD
20	pH			PH		8.2 pH		8.2 pH	8.2 pH		
21	naphthalene	601-052-00-2	202-049-5	91-20-3		<0.1 mg/kg		<0.1 mg/kg	<0.00001 %		<LOD
22	acenaphthylene		205-917-1	208-96-8		<0.1 mg/kg		<0.1 mg/kg	<0.00001 %		<LOD
23	acenaphthene		201-469-6	83-32-9		<0.1 mg/kg		<0.1 mg/kg	<0.00001 %		<LOD
24	fluorene		201-695-5	86-73-7		<0.1 mg/kg		<0.1 mg/kg	<0.00001 %		<LOD
25	phenanthrene		201-581-5	85-01-8		<0.1 mg/kg		<0.1 mg/kg	<0.00001 %		<LOD
26	anthracene		204-371-1	120-12-7		<0.1 mg/kg		<0.1 mg/kg	<0.00001 %		<LOD
27	fluoranthene		205-912-4	206-44-0		<0.1 mg/kg		<0.1 mg/kg	<0.00001 %		<LOD
28	pyrene		204-927-3	129-00-0		<0.1 mg/kg		<0.1 mg/kg	<0.00001 %		<LOD
29	benzo[a]anthracene	601-033-00-9	200-280-6	56-55-3		<0.1 mg/kg		<0.1 mg/kg	<0.00001 %		<LOD
30	chrysene	601-048-00-0	205-923-4	218-01-9		<0.1 mg/kg		<0.1 mg/kg	<0.00001 %		<LOD
31	benzo[b]fluoranthene	601-034-00-4	205-911-9	205-99-2		<0.1 mg/kg		<0.1 mg/kg	<0.00001 %		<LOD
32	benzo[k]fluoranthene	601-036-00-5	205-916-6	207-08-9		<0.1 mg/kg		<0.1 mg/kg	<0.00001 %		<LOD
33	benzo[a]pyrene; benzo[def]chrysene	601-032-00-3	200-028-5	50-32-8		<0.1 mg/kg		<0.1 mg/kg	<0.00001 %		<LOD
34	indeno[123-cd]pyrene		205-893-2	193-39-5		<0.1 mg/kg		<0.1 mg/kg	<0.00001 %		<LOD
35	dibenz[a,h]anthracene	601-041-00-2	200-181-8	53-70-3		<0.1 mg/kg		<0.1 mg/kg	<0.00001 %		<LOD
36	benzo[ghi]perylene		205-883-8	191-24-2		<0.1 mg/kg		<0.1 mg/kg	<0.00001 %		<LOD
37	polychlorobiphenyls; PCB	602-039-00-4	215-648-1	1336-36-3		<0.01 mg/kg		<0.01 mg/kg	<0.000001 %		<LOD
38	barium { barium chloride }	056-004-00-8	233-788-1	10361-37-2		47 mg/kg	1.516	64.925 mg/kg	0.00649 %	✓	
39	monohydric phenols			P1186		<0.3 mg/kg		<0.3 mg/kg	<0.00003 %		<LOD
40	coronene		205-881-7	191-07-1		<0.1 mg/kg		<0.1 mg/kg	<0.00001 %		<LOD
41	sulfur { sulfur }	016-094-00-1	231-722-6	7704-34-9		<0.75 mg/kg		<0.75 mg/kg	<0.000075 %		<LOD
								Total:	0.0408 %		

Key

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

WAC results for sample: ST02 1/0.50/2023-11-21

WAC Settings: samples in this Job do not constitute a single population.

WAC limits used to evaluate this sample: "Ireland"
The WAC used in this report are the WAC defined for the inert and non-hazardous classes of landfill in the Republic of Ireland. 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 FAILS the Inert (Inert waste landfill) criteria.

The sample PASSES the Non Haz (Non hazardous waste landfill) criteria.

WAC Determinands

Solid Waste Analysis				Landfill Waste Acceptance Criteria Limits	
#	Determinand		User entered data	Inert waste landfill	Non hazardous waste landfill
1	TOC (total organic carbon)	%	0.5	3	5
2	LOI (loss on ignition)	%	1.7	-	-
3	BTEX (benzene, toluene, ethylbenzene and xylenes)	mg/kg	<0.04	6	-
4	PCBs (polychlorinated biphenyls, 7 congeners)	mg/kg	<0.01	1	-
5	Mineral oil (C10 to C40)	mg/kg	590	500	-
6	PAHs (polycyclic aromatic hydrocarbons)	mg/kg	<1.6	100	-
7	pH	pH	8.2	-	>6
8	ANC (acid neutralisation capacity)	mol/kg	<1	-	-
Eluate Analysis 10:1					
9	arsenic	mg/kg	0.024	0.5	2
10	barium	mg/kg	<0.1	20	100
11	cadmium	mg/kg	<0.02	0.04	1
12	chromium	mg/kg	<0.1	0.5	10
13	copper	mg/kg	<0.02	2	50
14	mercury	mg/kg	<0.002	0.01	0.2
15	molybdenum	mg/kg	<0.1	0.5	10
16	nickel	mg/kg	<0.1	0.4	10
17	lead	mg/kg	<0.05	0.5	10
18	antimony	mg/kg	<0.05	0.06	0.7
19	selenium	mg/kg	<0.03	0.1	0.5
20	zinc	mg/kg	<0.01	4	50
21	chloride	mg/kg	<100	800	15,000
22	fluoride	mg/kg	<0.1	10	150
23	sulphate	mg/kg	<100	1,000	20,000
24	phenol index	mg/kg	<1	1	-
25	DOC (dissolved organic carbon)	mg/kg	<50	500	800
26	TDS (total dissolved solids)	mg/kg	360	4,000	60,000

Key

User supplied data

Inert WAC criteria fail

Classification of sample: ST03 1/0.30/2023-11-21

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

Sample details

Sample name:
ST03 1/0.30/2023-11-21
Moisture content:
8.5%
(wet weight correction)

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

Hazard properties

None identified

Determinands

Moisture content: 8.5% Wet Weight Moisture Correction applied (MC)

#	Determinand	EU CLP index number	EC Number	CAS Number	CLP Note	User entered data	Conv. Factor	Compound conc.	Classification value	MC Applied	Conc. Not Used
1	antimony { antimony trioxide }	051-005-00-X	215-175-0	1309-64-4		<1 mg/kg	1.197	<1.197 mg/kg	<0.00012 %		<**LOD**
2	arsenic { arsenic trioxide }	033-003-00-0	215-481-4	1327-53-3		43 mg/kg	1.32	51.948 mg/kg	0.00519 %	✓	
3	boron { diboron trioxide }	005-008-00-8	215-125-8	1303-86-2	11	<0.2 mg/kg	3.22	<0.644 mg/kg	<0.0000644 %		<**LOD**
4	cadmium { cadmium oxide }	048-002-00-0	215-146-2	1306-19-0		0.5 mg/kg	1.142	0.523 mg/kg	0.0000523 %	✓	
5	chromium in chromium(III) compounds { chromium(III) oxide (worst case) }		215-160-9	1308-38-9		12 mg/kg	1.462	16.048 mg/kg	0.0016 %	✓	
6	chromium in chromium(VI) compounds { chromium (VI) compounds, with the exception of barium chromate and of compounds specified elsewhere in this Annex }	024-017-00-8				<1 mg/kg	2.27	<2.27 mg/kg	<0.000227 %		<**LOD**
7	copper { dicopper oxide; copper (I) oxide }	029-002-00-X	215-270-7	1317-39-1		17 mg/kg	1.126	17.513 mg/kg	0.00175 %	✓	
8	lead { lead chromate }	082-004-00-2	231-846-0	7758-97-6	1	26 mg/kg	1.56	37.108 mg/kg	0.00238 %	✓	
9	mercury { mercury dichloride }	080-010-00-X	231-299-8	7487-94-7		<0.05 mg/kg	1.353	<0.0677 mg/kg	<0.00000677 %		<**LOD**
10	molybdenum { molybdenum(VI) oxide }	042-001-00-9	215-204-7	1313-27-5		1.2 mg/kg	1.5	1.647 mg/kg	0.000165 %	✓	
11	nickel { nickel chromate }	028-035-00-7	238-766-5	14721-18-7		15 mg/kg	2.976	40.849 mg/kg	0.00408 %	✓	
12	selenium { nickel selenate }	028-031-00-5	239-125-2	15060-62-5		<0.5 mg/kg	2.554	<1.277 mg/kg	<0.000128 %		<**LOD**
13	zinc { zinc chromate }	024-007-00-3	236-878-9	13530-65-9		57 mg/kg	2.774	144.686 mg/kg	0.0145 %	✓	
14	tert-butyl methyl ether; MTBE; 2-methoxy-2-methylpropane	603-181-00-X	216-653-1	1634-04-4		<0.01 mg/kg		<0.01 mg/kg	<0.000001 %		<**LOD**
15	benzene	601-020-00-8	200-753-7	71-43-2		<0.01 mg/kg		<0.01 mg/kg	<0.000001 %		<**LOD**
16	toluene	601-021-00-3	203-625-9	108-88-3		<0.01 mg/kg		<0.01 mg/kg	<0.000001 %		<**LOD**

#	Determinand	EU CLP index number	EC Number	CAS Number	CLP Note	User entered data	Conv. Factor	Compound conc.	Classification value	MC Applied	Conc. Not Used
17	ethylbenzene	601-023-00-4	202-849-4	100-41-4		<0.01 mg/kg		<0.01 mg/kg	<0.000001 %		<LOD
18	xylene	601-022-00-9	202-422-2 [1] 203-396-5 [2] 203-576-3 [3] 215-535-7 [4]	95-47-6 [1] 106-42-3 [2] 108-38-3 [3] 1330-20-7 [4]		<0.01 mg/kg		<0.01 mg/kg	<0.000001 %		<LOD
19	cyanides { salts of hydrogen cyanide with the exception of complex cyanides such as ferrocyanides, ferricyanides and mercuric oxycyanide and those specified elsewhere in this Annex }	006-007-00-5				<0.1 mg/kg	1.884	<0.188 mg/kg	<0.0000188 %		<LOD
20	pH			PH		9.8 pH		9.8 pH	9.8 pH		
21	naphthalene	601-052-00-2	202-049-5	91-20-3		<0.1 mg/kg		<0.1 mg/kg	<0.00001 %		<LOD
22	acenaphthylene		205-917-1	208-96-8		<0.1 mg/kg		<0.1 mg/kg	<0.00001 %		<LOD
23	acenaphthene		201-469-6	83-32-9		0.1 mg/kg		0.0915 mg/kg	0.00000915 %	✓	
24	fluorene		201-695-5	86-73-7		<0.1 mg/kg		<0.1 mg/kg	<0.00001 %		<LOD
25	phenanthrene		201-581-5	85-01-8		0.2 mg/kg		0.183 mg/kg	0.0000183 %	✓	
26	anthracene		204-371-1	120-12-7		0.1 mg/kg		0.0915 mg/kg	0.00000915 %	✓	
27	fluoranthene		205-912-4	206-44-0		0.4 mg/kg		0.366 mg/kg	0.0000366 %	✓	
28	pyrene		204-927-3	129-00-0		0.5 mg/kg		0.458 mg/kg	0.0000457 %	✓	
29	benzo[a]anthracene	601-033-00-9	200-280-6	56-55-3		0.2 mg/kg		0.183 mg/kg	0.0000183 %	✓	
30	chrysene	601-048-00-0	205-923-4	218-01-9		0.1 mg/kg		0.0915 mg/kg	0.00000915 %	✓	
31	benzo[b]fluoranthene	601-034-00-4	205-911-9	205-99-2		0.1 mg/kg		0.0915 mg/kg	0.00000915 %	✓	
32	benzo[k]fluoranthene	601-036-00-5	205-916-6	207-08-9		<0.1 mg/kg		<0.1 mg/kg	<0.00001 %		<LOD
33	benzo[a]pyrene; benzo[def]chrysene	601-032-00-3	200-028-5	50-32-8		0.2 mg/kg		0.183 mg/kg	0.0000183 %	✓	
34	indeno[123-cd]pyrene		205-893-2	193-39-5		0.3 mg/kg		0.274 mg/kg	0.0000274 %	✓	
35	dibenz[a,h]anthracene	601-041-00-2	200-181-8	53-70-3		<0.1 mg/kg		<0.1 mg/kg	<0.00001 %		<LOD
36	benzo[ghi]perylene		205-883-8	191-24-2		0.1 mg/kg		0.0915 mg/kg	0.00000915 %	✓	
37	polychlorobiphenyls; PCB	602-039-00-4	215-648-1	1336-36-3		<0.01 mg/kg		<0.01 mg/kg	<0.000001 %		<LOD
38	barium { barium chloride }	056-004-00-8	233-788-1	10361-37-2		57 mg/kg	1.516	79.084 mg/kg	0.00791 %	✓	
39	monohydric phenols			P1186		<0.3 mg/kg		<0.3 mg/kg	<0.00003 %		<LOD
40	coronene		205-881-7	191-07-1		<0.1 mg/kg		<0.1 mg/kg	<0.00001 %		<LOD
41	sulfur { sulfur }	016-094-00-1	231-722-6	7704-34-9		<0.75 mg/kg		<0.75 mg/kg	<0.000075 %		<LOD
								Total:	0.0386 %		

Key

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

WAC results for sample: ST03 1/0.30/2023-11-21

WAC Settings: samples in this Job do not constitute a single population.

WAC limits used to evaluate this sample: "Ireland"
The WAC used in this report are the WAC defined for the inert and non-hazardous classes of landfill in the Republic of Ireland. 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 Non Haz (Non hazardous waste landfill) criteria.

WAC Determinands

Solid Waste Analysis				Landfill Waste Acceptance Criteria Limits	
#	Determinand		User entered data	Inert waste landfill	Non hazardous waste landfill
1	TOC (total organic carbon)	%	1	3	5
2	LOI (loss on ignition)	%	1.6	-	-
3	BTEX (benzene, toluene, ethylbenzene and xylenes)	mg/kg	<0.04	6	-
4	PCBs (polychlorinated biphenyls, 7 congeners)	mg/kg	<0.01	1	-
5	Mineral oil (C10 to C40)	mg/kg	55	500	-
6	PAHs (polycyclic aromatic hydrocarbons)	mg/kg	2.2	100	-
7	pH	pH	9.8	-	>6
8	ANC (acid neutralisation capacity)	mol/kg	<1	-	-
Eluate Analysis 10:1					
9	arsenic	mg/kg	0.097	0.5	2
10	barium	mg/kg	<0.1	20	100
11	cadmium	mg/kg	<0.02	0.04	1
12	chromium	mg/kg	<0.1	0.5	10
13	copper	mg/kg	<0.02	2	50
14	mercury	mg/kg	<0.002	0.01	0.2
15	molybdenum	mg/kg	<0.1	0.5	10
16	nickel	mg/kg	<0.1	0.4	10
17	lead	mg/kg	<0.05	0.5	10
18	antimony	mg/kg	<0.05	0.06	0.7
19	selenium	mg/kg	<0.03	0.1	0.5
20	zinc	mg/kg	<0.01	4	50
21	chloride	mg/kg	<100	800	15,000
22	fluoride	mg/kg	<0.1	10	150
23	sulphate	mg/kg	<100	1,000	20,000
24	phenol index	mg/kg	<1	1	-
25	DOC (dissolved organic carbon)	mg/kg	<50	500	800
26	TDS (total dissolved solids)	mg/kg	490	4,000	60,000

Key

User supplied data

Classification of sample: ST04 1/0.50/2023-11-20

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

Sample details

Sample name:
ST04 1/0.50/2023-11-20
Moisture content:
9.5%
(wet weight correction)

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

Hazard properties

None identified

Determinands

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

#	Determinand	EU CLP index number	EC Number	CAS Number	CLP Note	User entered data	Conv. Factor	Compound conc.	Classification value	MC Applied	Conc. Not Used
1	antimony { antimony trioxide }	051-005-00-X	215-175-0	1309-64-4		1.6 mg/kg	1.197	1.733 mg/kg	0.000173 %	✓	
2	arsenic { arsenic trioxide }	033-003-00-0	215-481-4	1327-53-3		22 mg/kg	1.32	26.288 mg/kg	0.00263 %	✓	
3	boron { diboron trioxide }	005-008-00-8	215-125-8	1303-86-2	11	<0.2 mg/kg	3.22	<0.644 mg/kg	<0.0000644 %		<**LOD**
4	cadmium { cadmium oxide }	048-002-00-0	215-146-2	1306-19-0		1.8 mg/kg	1.142	1.861 mg/kg	0.000186 %	✓	
5	chromium in chromium(III) compounds { chromium(III) oxide (worst case) }		215-160-9	1308-38-9		18 mg/kg	1.462	23.809 mg/kg	0.00238 %	✓	
6	chromium in chromium(VI) compounds { chromium (VI) compounds, with the exception of barium chromate and of compounds specified elsewhere in this Annex }	024-017-00-8				<1 mg/kg	2.27	<2.27 mg/kg	<0.000227 %		<**LOD**
7	copper { dicopper oxide; copper (I) oxide }	029-002-00-X	215-270-7	1317-39-1		43 mg/kg	1.126	43.814 mg/kg	0.00438 %	✓	
8	lead { lead chromate }	082-004-00-2	231-846-0	7758-97-6	1	65 mg/kg	1.56	91.756 mg/kg	0.00588 %	✓	
9	mercury { mercury dichloride }	080-010-00-X	231-299-8	7487-94-7		<0.05 mg/kg	1.353	<0.0677 mg/kg	<0.00000677 %		<**LOD**
10	molybdenum { molybdenum(VI) oxide }	042-001-00-9	215-204-7	1313-27-5		1.9 mg/kg	1.5	2.58 mg/kg	0.000258 %	✓	
11	nickel { nickel chromate }	028-035-00-7	238-766-5	14721-18-7		30 mg/kg	2.976	80.806 mg/kg	0.00808 %	✓	
12	selenium { nickel selenate }	028-031-00-5	239-125-2	15060-62-5		<0.5 mg/kg	2.554	<1.277 mg/kg	<0.000128 %		<**LOD**
13	zinc { zinc chromate }	024-007-00-3	236-878-9	13530-65-9		120 mg/kg	2.774	301.272 mg/kg	0.0301 %	✓	
14	tert-butyl methyl ether; MTBE; 2-methoxy-2-methylpropane	603-181-00-X	216-653-1	1634-04-4		<0.01 mg/kg		<0.01 mg/kg	<0.000001 %		<**LOD**
15	benzene	601-020-00-8	200-753-7	71-43-2		<0.01 mg/kg		<0.01 mg/kg	<0.000001 %		<**LOD**
16	toluene	601-021-00-3	203-625-9	108-88-3		<0.01 mg/kg		<0.01 mg/kg	<0.000001 %		<**LOD**

#		Determinand	EU CLP index number	EC Number	CAS Number	CLP Note	User entered data		Conv. Factor	Compound conc.		Classification value	MC Applied	Conc. Not Used
17		ethylbenzene	601-023-00-4	202-849-4	100-41-4		<0.01	mg/kg		<0.01	mg/kg	<0.000001 %		<**LOD**
18		xylene	601-022-00-9	202-422-2 [1] 203-396-5 [2] 203-576-3 [3] 215-535-7 [4]	95-47-6 [1] 106-42-3 [2] 108-38-3 [3] 1330-20-7 [4]		<0.01	mg/kg		<0.01	mg/kg	<0.000001 %		<**LOD**
19		cyanides { salts of hydrogen cyanide with the exception of complex cyanides such as ferrocyanides, ferricyanides and mercuric oxycyanide and those specified elsewhere in this Annex }	006-007-00-5				0.1	mg/kg	1.884	0.171	mg/kg	0.0000171 %	✓	
20		pH			PH		8.1	pH		8.1	pH	8.1 pH		
21		naphthalene	601-052-00-2	202-049-5	91-20-3		<0.1	mg/kg		<0.1	mg/kg	<0.00001 %		<**LOD**
22		acenaphthylene		205-917-1	208-96-8		<0.1	mg/kg		<0.1	mg/kg	<0.00001 %		<**LOD**
23		acenaphthene		201-469-6	83-32-9		<0.1	mg/kg		<0.1	mg/kg	<0.00001 %		<**LOD**
24		fluorene		201-695-5	86-73-7		<0.1	mg/kg		<0.1	mg/kg	<0.00001 %		<**LOD**
25		phenanthrene		201-581-5	85-01-8		<0.1	mg/kg		<0.1	mg/kg	<0.00001 %		<**LOD**
26		anthracene		204-371-1	120-12-7		<0.1	mg/kg		<0.1	mg/kg	<0.00001 %		<**LOD**
27		fluoranthene		205-912-4	206-44-0		0.4	mg/kg		0.362	mg/kg	0.0000362 %	✓	
28		pyrene		204-927-3	129-00-0		0.3	mg/kg		0.271	mg/kg	0.0000271 %	✓	
29		benzo[a]anthracene	601-033-00-9	200-280-6	56-55-3		0.1	mg/kg		0.0905	mg/kg	0.00000905 %	✓	
30		chrysene	601-048-00-0	205-923-4	218-01-9		0.1	mg/kg		0.0905	mg/kg	0.00000905 %	✓	
31		benzo[b]fluoranthene	601-034-00-4	205-911-9	205-99-2		0.2	mg/kg		0.181	mg/kg	0.0000181 %	✓	
32		benzo[k]fluoranthene	601-036-00-5	205-916-6	207-08-9		0.1	mg/kg		0.0905	mg/kg	0.00000905 %	✓	
33		benzo[a]pyrene; benzo[def]chrysene	601-032-00-3	200-028-5	50-32-8		0.2	mg/kg		0.181	mg/kg	0.0000181 %	✓	
34		indeno[123-cd]pyrene		205-893-2	193-39-5		0.3	mg/kg		0.271	mg/kg	0.0000271 %	✓	
35		dibenz[a,h]anthracene	601-041-00-2	200-181-8	53-70-3		<0.1	mg/kg		<0.1	mg/kg	<0.00001 %		<**LOD**
36		benzo[ghi]perylene		205-883-8	191-24-2		0.2	mg/kg		0.181	mg/kg	0.0000181 %	✓	
37		polychlorobiphenyls; PCB	602-039-00-4	215-648-1	1336-36-3		<0.01	mg/kg		<0.01	mg/kg	<0.000001 %		<**LOD**
38		barium { barium chloride }	056-004-00-8	233-788-1	10361-37-2		67	mg/kg	1.516	91.943	mg/kg	0.00919 %	✓	
39		monohydric phenols			P1186		1.1	mg/kg		0.996	mg/kg	0.0000996 %	✓	
40		coronene		205-881-7	191-07-1		<0.1	mg/kg		<0.1	mg/kg	<0.00001 %		<**LOD**
41		sulfur { sulfur }	016-094-00-1	231-722-6	7704-34-9		<0.75	mg/kg		<0.75	mg/kg	<0.000075 %		<**LOD**
											Total:	0.0642 %		

Key

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

WAC results for sample: ST04 1/0.50/2023-11-20

WAC Settings: samples in this Job do not constitute a single population.

WAC limits used to evaluate this sample: "Ireland"
The WAC used in this report are the WAC defined for the inert and non-hazardous classes of landfill in the Republic of Ireland. 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 Non Haz (Non hazardous waste landfill) criteria.

WAC Determinands

Solid Waste Analysis				Landfill Waste Acceptance Criteria Limits	
#	Determinand		User entered data	Inert waste landfill	Non hazardous waste landfill
1	TOC (total organic carbon)	%	2.5	3	5
2	LOI (loss on ignition)	%	3.9	-	-
3	BTEX (benzene, toluene, ethylbenzene and xylenes)	mg/kg	<0.04	6	-
4	PCBs (polychlorinated biphenyls, 7 congeners)	mg/kg	<0.01	1	-
5	Mineral oil (C10 to C40)	mg/kg	22	500	-
6	PAHs (polycyclic aromatic hydrocarbons)	mg/kg	1.9	100	-
7	pH	pH	8.1	-	>6
8	ANC (acid neutralisation capacity)	mol/kg	<1	-	-
Eluate Analysis 10:1					
9	arsenic	mg/kg	<0.01	0.5	2
10	barium	mg/kg	<0.1	20	100
11	cadmium	mg/kg	<0.02	0.04	1
12	chromium	mg/kg	<0.1	0.5	10
13	copper	mg/kg	<0.02	2	50
14	mercury	mg/kg	<0.002	0.01	0.2
15	molybdenum	mg/kg	<0.1	0.5	10
16	nickel	mg/kg	<0.1	0.4	10
17	lead	mg/kg	<0.05	0.5	10
18	antimony	mg/kg	<0.05	0.06	0.7
19	selenium	mg/kg	<0.03	0.1	0.5
20	zinc	mg/kg	<0.01	4	50
21	chloride	mg/kg	<100	800	15,000
22	fluoride	mg/kg	<0.1	10	150
23	sulphate	mg/kg	<100	1,000	20,000
24	phenol index	mg/kg	<1	1	-
25	DOC (dissolved organic carbon)	mg/kg	<50	500	800
26	TDS (total dissolved solids)	mg/kg	370	4,000	60,000

Key

User supplied data

Classification of sample: ST04 1/1.00/2023-11-20

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

Sample details

Sample name:
ST04 1/1.00/2023-11-20
Moisture content:
11%
(wet weight correction)

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

Hazard properties

None identified

Determinands

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

#	Determinand	EU CLP index number	EC Number	CAS Number	CLP Note	User entered data	Conv. Factor	Compound conc.	Classification value	MC Applied	Conc. Not Used
1	antimony { antimony trioxide }	051-005-00-X	215-175-0	1309-64-4		1.2 mg/kg	1.197	1.279 mg/kg	0.000128 %	✓	
2	arsenic { arsenic trioxide }	033-003-00-0	215-481-4	1327-53-3		33 mg/kg	1.32	38.778 mg/kg	0.00388 %	✓	
3	boron { diboron trioxide }	005-008-00-8	215-125-8	1303-86-2	11	0.2 mg/kg	3.22	0.573 mg/kg	0.0000573 %	✓	
4	cadmium { cadmium oxide }	048-002-00-0	215-146-2	1306-19-0		1.3 mg/kg	1.142	1.322 mg/kg	0.000132 %	✓	
5	chromium in chromium(III) compounds { chromium(III) oxide (worst case) }		215-160-9	1308-38-9		16 mg/kg	1.462	20.813 mg/kg	0.00208 %	✓	
6	chromium in chromium(VI) compounds { chromium (VI) compounds, with the exception of barium chromate and of compounds specified elsewhere in this Annex }	024-017-00-8				<1 mg/kg	2.27	<2.27 mg/kg	<0.000227 %		<**LOD**
7	copper { dicopper oxide; copper (I) oxide }	029-002-00-X	215-270-7	1317-39-1		28 mg/kg	1.126	28.057 mg/kg	0.00281 %	✓	
8	lead { lead chromate }	082-004-00-2	231-846-0	7758-97-6	1	38 mg/kg	1.56	52.753 mg/kg	0.00338 %	✓	
9	mercury { mercury dichloride }	080-010-00-X	231-299-8	7487-94-7		0.13 mg/kg	1.353	0.157 mg/kg	0.0000157 %	✓	
10	molybdenum { molybdenum(VI) oxide }	042-001-00-9	215-204-7	1313-27-5		1.8 mg/kg	1.5	2.403 mg/kg	0.00024 %	✓	
11	nickel { nickel chromate }	028-035-00-7	238-766-5	14721-18-7		27 mg/kg	2.976	71.52 mg/kg	0.00715 %	✓	
12	selenium { nickel selenate }	028-031-00-5	239-125-2	15060-62-5		<0.5 mg/kg	2.554	<1.277 mg/kg	<0.000128 %		<**LOD**
13	zinc { zinc chromate }	024-007-00-3	236-878-9	13530-65-9		92 mg/kg	2.774	227.147 mg/kg	0.0227 %	✓	
14	tert-butyl methyl ether; MTBE; 2-methoxy-2-methylpropane	603-181-00-X	216-653-1	1634-04-4		<0.01 mg/kg		<0.01 mg/kg	<0.000001 %		<**LOD**
15	benzene	601-020-00-8	200-753-7	71-43-2		<0.01 mg/kg		<0.01 mg/kg	<0.000001 %		<**LOD**
16	toluene	601-021-00-3	203-625-9	108-88-3		<0.01 mg/kg		<0.01 mg/kg	<0.000001 %		<**LOD**

#	Determinand	EU CLP index number	EC Number	CAS Number	CLP Note	User entered data	Conv. Factor	Compound conc.	Classification value	MC Applied	Conc. Not Used
17	ethylbenzene	601-023-00-4	202-849-4	100-41-4		<0.01 mg/kg		<0.01 mg/kg	<0.000001 %		<LOD
18	xylene	601-022-00-9	202-422-2 [1] 203-396-5 [2] 203-576-3 [3] 215-535-7 [4]	95-47-6 [1] 106-42-3 [2] 108-38-3 [3] 1330-20-7 [4]		<0.01 mg/kg		<0.01 mg/kg	<0.000001 %		<LOD
19	cyanides { salts of hydrogen cyanide with the exception of complex cyanides such as ferrocyanides, ferricyanides and mercuric oxycyanide and those specified elsewhere in this Annex }	006-007-00-5				0.1 mg/kg	1.884	0.168 mg/kg	0.0000168 %	✓	
20	pH			PH		8 pH		8 pH	8pH		
21	naphthalene	601-052-00-2	202-049-5	91-20-3		<0.1 mg/kg		<0.1 mg/kg	<0.00001 %		<LOD
22	acenaphthylene		205-917-1	208-96-8		<0.1 mg/kg		<0.1 mg/kg	<0.00001 %		<LOD
23	acenaphthene		201-469-6	83-32-9		<0.1 mg/kg		<0.1 mg/kg	<0.00001 %		<LOD
24	fluorene		201-695-5	86-73-7		<0.1 mg/kg		<0.1 mg/kg	<0.00001 %		<LOD
25	phenanthrene		201-581-5	85-01-8		0.6 mg/kg		0.534 mg/kg	0.0000534 %	✓	
26	anthracene		204-371-1	120-12-7		0.2 mg/kg		0.178 mg/kg	0.0000178 %	✓	
27	fluoranthene		205-912-4	206-44-0		2.6 mg/kg		2.314 mg/kg	0.000231 %	✓	
28	pyrene		204-927-3	129-00-0		2.5 mg/kg		2.225 mg/kg	0.000223 %	✓	
29	benzo[a]anthracene	601-033-00-9	200-280-6	56-55-3		1.4 mg/kg		1.246 mg/kg	0.000125 %	✓	
30	chrysene	601-048-00-0	205-923-4	218-01-9		1.2 mg/kg		1.068 mg/kg	0.000107 %	✓	
31	benzo[b]fluoranthene	601-034-00-4	205-911-9	205-99-2		1.1 mg/kg		0.979 mg/kg	0.0000979 %	✓	
32	benzo[k]fluoranthene	601-036-00-5	205-916-6	207-08-9		0.7 mg/kg		0.623 mg/kg	0.0000623 %	✓	
33	benzo[a]pyrene; benzo[def]chrysene	601-032-00-3	200-028-5	50-32-8		1.6 mg/kg		1.424 mg/kg	0.000142 %	✓	
34	indeno[123-cd]pyrene		205-893-2	193-39-5		1.2 mg/kg		1.068 mg/kg	0.000107 %	✓	
35	dibenz[a,h]anthracene	601-041-00-2	200-181-8	53-70-3		0.3 mg/kg		0.267 mg/kg	0.0000267 %	✓	
36	benzo[ghi]perylene		205-883-8	191-24-2		1.1 mg/kg		0.979 mg/kg	0.0000979 %	✓	
37	polychlorobiphenyls; PCB	602-039-00-4	215-648-1	1336-36-3		0.03 mg/kg		0.0267 mg/kg	0.00000267 %	✓	
38	barium { barium chloride }	056-004-00-8	233-788-1	10361-37-2		84 mg/kg	1.516	113.361 mg/kg	0.0113 %	✓	
39	monohydric phenols			P1186		1.2 mg/kg		1.068 mg/kg	0.000107 %	✓	
40	coronene		205-881-7	191-07-1		0.3 mg/kg		0.267 mg/kg	0.0000267 %	✓	
41	sulfur { sulfur }	016-094-00-1	231-722-6	7704-34-9		<0.75 mg/kg		<0.75 mg/kg	<0.000075 %		<LOD
								Total:	0.0558 %		

Key

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

WAC results for sample: ST04 1/1.00/2023-11-20

WAC Settings: samples in this Job do not constitute a single population.

WAC limits used to evaluate this sample: "Ireland"
The WAC used in this report are the WAC defined for the inert and non-hazardous classes of landfill in the Republic of Ireland. 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 Non Haz (Non hazardous waste landfill) criteria.

WAC Determinands

Solid Waste Analysis				Landfill Waste Acceptance Criteria Limits	
#	Determinand		User entered data	Inert waste landfill	Non hazardous waste landfill
1	TOC (total organic carbon)	%	2	3	5
2	LOI (loss on ignition)	%	3.8	-	-
3	BTEX (benzene, toluene, ethylbenzene and xylenes)	mg/kg	<0.04	6	-
4	PCBs (polychlorinated biphenyls, 7 congeners)	mg/kg	0.03	1	-
5	Mineral oil (C10 to C40)	mg/kg	260	500	-
6	PAHs (polycyclic aromatic hydrocarbons)	mg/kg	15	100	-
7	pH	pH	8	-	>6
8	ANC (acid neutralisation capacity)	mol/kg	<1	-	-
Eluate Analysis 10:1					
9	arsenic	mg/kg	0.012	0.5	2
10	barium	mg/kg	<0.1	20	100
11	cadmium	mg/kg	<0.02	0.04	1
12	chromium	mg/kg	<0.1	0.5	10
13	copper	mg/kg	<0.02	2	50
14	mercury	mg/kg	<0.002	0.01	0.2
15	molybdenum	mg/kg	<0.1	0.5	10
16	nickel	mg/kg	<0.1	0.4	10
17	lead	mg/kg	<0.05	0.5	10
18	antimony	mg/kg	<0.05	0.06	0.7
19	selenium	mg/kg	<0.03	0.1	0.5
20	zinc	mg/kg	<0.01	4	50
21	chloride	mg/kg	<100	800	15,000
22	fluoride	mg/kg	<0.1	10	150
23	sulphate	mg/kg	<100	1,000	20,000
24	phenol index	mg/kg	<1	1	-
25	DOC (dissolved organic carbon)	mg/kg	<50	500	800
26	TDS (total dissolved solids)	mg/kg	630	4,000	60,000

Key

User supplied data

Classification of sample: TP01 1/0.50/2023-11-20

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

Sample details

Sample name:
TP01 1/0.50/2023-11-20
Moisture content:
13%
(wet weight correction)

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

Hazard properties

None identified

Determinands

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

#		Determinand	EU CLP index number	EC Number	CAS Number	CLP Note	User entered data		Conv. Factor	Compound conc.		Classification value	MC Applied	Conc. Not Used
1		antimony { antimony trioxide }	051-005-00-X	215-175-0	1309-64-4		1.5	mg/kg	1.197	1.562	mg/kg	0.000156 %	✓	
2		arsenic { arsenic trioxide }	033-003-00-0	215-481-4	1327-53-3		20	mg/kg	1.32	22.974	mg/kg	0.0023 %	✓	
3		boron { diboron trioxide }	005-008-00-8	215-125-8	1303-86-2	11	0.2	mg/kg	3.22	0.56	mg/kg	0.000056 %	✓	
4		cadmium { cadmium oxide }	048-002-00-0	215-146-2	1306-19-0		1.4	mg/kg	1.142	1.391	mg/kg	0.000139 %	✓	
5		chromium in chromium(III) compounds { chromium(III) oxide (worst case) }		215-160-9	1308-38-9		20	mg/kg	1.462	25.431	mg/kg	0.00254 %	✓	
6		chromium in chromium(VI) compounds { chromium (VI) compounds, with the exception of barium chromate and of compounds specified elsewhere in this Annex }	024-017-00-8				<1	mg/kg	2.27	<2.27	mg/kg	<0.000227 %		<**LOD**
7		copper { dicopper oxide; copper (I) oxide }	029-002-00-X	215-270-7	1317-39-1		38	mg/kg	1.126	37.222	mg/kg	0.00372 %	✓	
8		lead { lead chromate }	082-004-00-2	231-846-0	7758-97-6	1	58	mg/kg	1.56	78.708	mg/kg	0.00505 %	✓	
9		mercury { mercury dichloride }	080-010-00-X	231-299-8	7487-94-7		0.84	mg/kg	1.353	0.989	mg/kg	0.0000989 %	✓	
10		molybdenum { molybdenum(VI) oxide }	042-001-00-9	215-204-7	1313-27-5		2.7	mg/kg	1.5	3.524	mg/kg	0.000352 %	✓	
11		nickel { nickel chromate }	028-035-00-7	238-766-5	14721-18-7		38	mg/kg	2.976	98.395	mg/kg	0.00984 %	✓	
12		selenium { nickel selenate }	028-031-00-5	239-125-2	15060-62-5		0.7	mg/kg	2.554	1.555	mg/kg	0.000156 %	✓	
13		zinc { zinc chromate }	024-007-00-3	236-878-9	13530-65-9		100	mg/kg	2.774	241.351	mg/kg	0.0241 %	✓	
14		tert-butyl methyl ether; MTBE; 2-methoxy-2-methylpropane	603-181-00-X	216-653-1	1634-04-4		<0.01	mg/kg		<0.01	mg/kg	<0.000001 %		<**LOD**
15		benzene	601-020-00-8	200-753-7	71-43-2		<0.01	mg/kg		<0.01	mg/kg	<0.000001 %		<**LOD**
16		toluene	601-021-00-3	203-625-9	108-88-3		<0.01	mg/kg		<0.01	mg/kg	<0.000001 %		<**LOD**

#	Determinand	EU CLP index number	EC Number	CAS Number	CLP Note	User entered data	Conv. Factor	Compound conc.	Classification value	MC Applied	Conc. Not Used
17	ethylbenzene	601-023-00-4	202-849-4	100-41-4		<0.01 mg/kg		<0.01 mg/kg	<0.000001 %		<LOD
18	xylene	601-022-00-9	202-422-2 [1] 203-396-5 [2] 203-576-3 [3] 215-535-7 [4]	95-47-6 [1] 106-42-3 [2] 108-38-3 [3] 1330-20-7 [4]		<0.01 mg/kg		<0.01 mg/kg	<0.000001 %		<LOD
19	cyanides { salts of hydrogen cyanide with the exception of complex cyanides such as ferrocyanides, ferricyanides and mercuric oxycyanide and those specified elsewhere in this Annex }	006-007-00-5				0.1 mg/kg	1.884	0.164 mg/kg	0.0000164 %	✓	
20	pH			PH		8.1 pH		8.1 pH	8.1 pH		
21	naphthalene	601-052-00-2	202-049-5	91-20-3		<0.1 mg/kg		<0.1 mg/kg	<0.00001 %		<LOD
22	acenaphthylene		205-917-1	208-96-8		<0.1 mg/kg		<0.1 mg/kg	<0.00001 %		<LOD
23	acenaphthene		201-469-6	83-32-9		<0.1 mg/kg		<0.1 mg/kg	<0.00001 %		<LOD
24	fluorene		201-695-5	86-73-7		<0.1 mg/kg		<0.1 mg/kg	<0.00001 %		<LOD
25	phenanthrene		201-581-5	85-01-8		<0.1 mg/kg		<0.1 mg/kg	<0.00001 %		<LOD
26	anthracene		204-371-1	120-12-7		<0.1 mg/kg		<0.1 mg/kg	<0.00001 %		<LOD
27	fluoranthene		205-912-4	206-44-0		0.1 mg/kg		0.087 mg/kg	0.0000087 %	✓	
28	pyrene		204-927-3	129-00-0		0.1 mg/kg		0.087 mg/kg	0.0000087 %	✓	
29	benzo[a]anthracene	601-033-00-9	200-280-6	56-55-3		<0.1 mg/kg		<0.1 mg/kg	<0.00001 %		<LOD
30	chrysene	601-048-00-0	205-923-4	218-01-9		<0.1 mg/kg		<0.1 mg/kg	<0.00001 %		<LOD
31	benzo[b]fluoranthene	601-034-00-4	205-911-9	205-99-2		<0.1 mg/kg		<0.1 mg/kg	<0.00001 %		<LOD
32	benzo[k]fluoranthene	601-036-00-5	205-916-6	207-08-9		<0.1 mg/kg		<0.1 mg/kg	<0.00001 %		<LOD
33	benzo[a]pyrene; benzo[def]chrysene	601-032-00-3	200-028-5	50-32-8		<0.1 mg/kg		<0.1 mg/kg	<0.00001 %		<LOD
34	indeno[123-cd]pyrene		205-893-2	193-39-5		<0.1 mg/kg		<0.1 mg/kg	<0.00001 %		<LOD
35	dibenz[a,h]anthracene	601-041-00-2	200-181-8	53-70-3		<0.1 mg/kg		<0.1 mg/kg	<0.00001 %		<LOD
36	benzo[ghi]perylene		205-883-8	191-24-2		<0.1 mg/kg		<0.1 mg/kg	<0.00001 %		<LOD
37	polychlorobiphenyls; PCB	602-039-00-4	215-648-1	1336-36-3		<0.01 mg/kg		<0.01 mg/kg	<0.000001 %		<LOD
38	barium { barium chloride }	056-004-00-8	233-788-1	10361-37-2		77 mg/kg	1.516	101.579 mg/kg	0.0102 %	✓	
39	monohydric phenols			P1186		1.6 mg/kg		1.392 mg/kg	0.000139 %	✓	
40	coronene		205-881-7	191-07-1		<0.1 mg/kg		<0.1 mg/kg	<0.00001 %		<LOD
41	sulfur { sulfur }	016-094-00-1	231-722-6	7704-34-9		2.1 mg/kg		1.827 mg/kg	0.000183 %	✓	
								Total:	0.0594 %		

Key

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

WAC results for sample: TP01 1/0.50/2023-11-20

WAC Settings: samples in this Job do not constitute a single population.

WAC limits used to evaluate this sample: "Ireland"
The WAC used in this report are the WAC defined for the inert and non-hazardous classes of landfill in the Republic of Ireland. 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 Non Haz (Non hazardous waste landfill) criteria.

WAC Determinands

Solid Waste Analysis				Landfill Waste Acceptance Criteria Limits	
#	Determinand		User entered data	Inert waste landfill	Non hazardous waste landfill
1	TOC (total organic carbon)	%	1.8	3	5
2	LOI (loss on ignition)	%	4.1	-	-
3	BTEX (benzene, toluene, ethylbenzene and xylenes)	mg/kg	<0.04	6	-
4	PCBs (polychlorinated biphenyls, 7 congeners)	mg/kg	<0.01	1	-
5	Mineral oil (C10 to C40)	mg/kg	<10	500	-
6	PAHs (polycyclic aromatic hydrocarbons)	mg/kg	<1.6	100	-
7	pH	pH	8.1	-	>6
8	ANC (acid neutralisation capacity)	mol/kg	<1	-	-
Eluate Analysis 10:1					
9	arsenic	mg/kg	<0.01	0.5	2
10	barium	mg/kg	<0.1	20	100
11	cadmium	mg/kg	<0.02	0.04	1
12	chromium	mg/kg	<0.1	0.5	10
13	copper	mg/kg	<0.02	2	50
14	mercury	mg/kg	<0.002	0.01	0.2
15	molybdenum	mg/kg	<0.1	0.5	10
16	nickel	mg/kg	<0.1	0.4	10
17	lead	mg/kg	<0.05	0.5	10
18	antimony	mg/kg	<0.05	0.06	0.7
19	selenium	mg/kg	<0.03	0.1	0.5
20	zinc	mg/kg	<0.01	4	50
21	chloride	mg/kg	<100	800	15,000
22	fluoride	mg/kg	<0.1	10	150
23	sulphate	mg/kg	<100	1,000	20,000
24	phenol index	mg/kg	<1	1	-
25	DOC (dissolved organic carbon)	mg/kg	<50	500	800
26	TDS (total dissolved solids)	mg/kg	460	4,000	60,000

Key

User supplied data

Classification of sample: TP01 1/1.00/2023-11-20

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

Sample details

Sample name:
TP01 1/1.00/2023-11-20
Moisture content:
11%
(wet weight correction)

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

Hazard properties

None identified

Determinands

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

#	Determinand	EU CLP index number	EC Number	CAS Number	CLP Note	User entered data	Conv. Factor	Compound conc.	Classification value	MC Applied	Conc. Not Used
1	antimony { antimony trioxide }	051-005-00-X	215-175-0	1309-64-4		1.6 mg/kg	1.197	1.705 mg/kg	0.00017 %	✓	
2	arsenic { arsenic trioxide }	033-003-00-0	215-481-4	1327-53-3		18 mg/kg	1.32	21.152 mg/kg	0.00212 %	✓	
3	boron { diboron trioxide }	005-008-00-8	215-125-8	1303-86-2	11	<0.2 mg/kg	3.22	<0.644 mg/kg	<0.0000644 %		<**LOD**
4	cadmium { cadmium oxide }	048-002-00-0	215-146-2	1306-19-0		1.3 mg/kg	1.142	1.322 mg/kg	0.000132 %	✓	
5	chromium in chromium(III) compounds { chromium(III) oxide (worst case) }		215-160-9	1308-38-9		21 mg/kg	1.462	27.316 mg/kg	0.00273 %	✓	
6	chromium in chromium(VI) compounds { chromium (VI) compounds, with the exception of barium chromate and of compounds specified elsewhere in this Annex }	024-017-00-8				<1 mg/kg	2.27	<2.27 mg/kg	<0.000227 %		<**LOD**
7	copper { dicopper oxide; copper (I) oxide }	029-002-00-X	215-270-7	1317-39-1		34 mg/kg	1.126	34.069 mg/kg	0.00341 %	✓	
8	lead { lead chromate }	082-004-00-2	231-846-0	7758-97-6	1	40 mg/kg	1.56	55.529 mg/kg	0.00356 %	✓	
9	mercury { mercury dichloride }	080-010-00-X	231-299-8	7487-94-7		0.71 mg/kg	1.353	0.855 mg/kg	0.0000855 %	✓	
10	molybdenum { molybdenum(VI) oxide }	042-001-00-9	215-204-7	1313-27-5		2.2 mg/kg	1.5	2.937 mg/kg	0.000294 %	✓	
11	nickel { nickel chromate }	028-035-00-7	238-766-5	14721-18-7		34 mg/kg	2.976	90.062 mg/kg	0.00901 %	✓	
12	selenium { nickel selenate }	028-031-00-5	239-125-2	15060-62-5		<0.5 mg/kg	2.554	<1.277 mg/kg	<0.000128 %		<**LOD**
13	zinc { zinc chromate }	024-007-00-3	236-878-9	13530-65-9		95 mg/kg	2.774	234.554 mg/kg	0.0235 %	✓	
14	tert-butyl methyl ether; MTBE; 2-methoxy-2-methylpropane	603-181-00-X	216-653-1	1634-04-4		<0.01 mg/kg		<0.01 mg/kg	<0.000001 %		<**LOD**
15	benzene	601-020-00-8	200-753-7	71-43-2		<0.01 mg/kg		<0.01 mg/kg	<0.000001 %		<**LOD**
16	toluene	601-021-00-3	203-625-9	108-88-3		<0.01 mg/kg		<0.01 mg/kg	<0.000001 %		<**LOD**

#	Determinand	EU CLP index number	EC Number	CAS Number	CLP Note	User entered data	Conv. Factor	Compound conc.	Classification value	MC Applied	Conc. Not Used
17	ethylbenzene	601-023-00-4	202-849-4	100-41-4		<0.01 mg/kg		<0.01 mg/kg	<0.000001 %		<**LOD**
18	xylene	601-022-00-9	202-422-2 [1] 203-396-5 [2] 203-576-3 [3] 215-535-7 [4]	95-47-6 [1] 106-42-3 [2] 108-38-3 [3] 1330-20-7 [4]		<0.01 mg/kg		<0.01 mg/kg	<0.000001 %		<**LOD**
19	cyanides { salts of hydrogen cyanide with the exception of complex cyanides such as ferrocyanides, ferricyanides and mercuric oxycyanide and those specified elsewhere in this Annex }	006-007-00-5				<0.1 mg/kg	1.884	<0.188 mg/kg	<0.0000188 %		<**LOD**
20	pH			PH		8.3 pH		8.3 pH	8.3 pH		
21	naphthalene	601-052-00-2	202-049-5	91-20-3		<0.1 mg/kg		<0.1 mg/kg	<0.00001 %		<**LOD**
22	acenaphthylene		205-917-1	208-96-8		<0.1 mg/kg		<0.1 mg/kg	<0.00001 %		<**LOD**
23	acenaphthene		201-469-6	83-32-9		<0.1 mg/kg		<0.1 mg/kg	<0.00001 %		<**LOD**
24	fluorene		201-695-5	86-73-7		<0.1 mg/kg		<0.1 mg/kg	<0.00001 %		<**LOD**
25	phenanthrene		201-581-5	85-01-8		<0.1 mg/kg		<0.1 mg/kg	<0.00001 %		<**LOD**
26	anthracene		204-371-1	120-12-7		<0.1 mg/kg		<0.1 mg/kg	<0.00001 %		<**LOD**
27	fluoranthene		205-912-4	206-44-0		<0.1 mg/kg		<0.1 mg/kg	<0.00001 %		<**LOD**
28	pyrene		204-927-3	129-00-0		<0.1 mg/kg		<0.1 mg/kg	<0.00001 %		<**LOD**
29	benzo[a]anthracene	601-033-00-9	200-280-6	56-55-3		<0.1 mg/kg		<0.1 mg/kg	<0.00001 %		<**LOD**
30	chrysene	601-048-00-0	205-923-4	218-01-9		<0.1 mg/kg		<0.1 mg/kg	<0.00001 %		<**LOD**
31	benzo[b]fluoranthene	601-034-00-4	205-911-9	205-99-2		<0.1 mg/kg		<0.1 mg/kg	<0.00001 %		<**LOD**
32	benzo[k]fluoranthene	601-036-00-5	205-916-6	207-08-9		<0.1 mg/kg		<0.1 mg/kg	<0.00001 %		<**LOD**
33	benzo[a]pyrene; benzo[def]chrysene	601-032-00-3	200-028-5	50-32-8		<0.1 mg/kg		<0.1 mg/kg	<0.00001 %		<**LOD**
34	indeno[123-cd]pyrene		205-893-2	193-39-5		<0.1 mg/kg		<0.1 mg/kg	<0.00001 %		<**LOD**
35	dibenz[a,h]anthracene	601-041-00-2	200-181-8	53-70-3		<0.1 mg/kg		<0.1 mg/kg	<0.00001 %		<**LOD**
36	benzo[ghi]perylene		205-883-8	191-24-2		<0.1 mg/kg		<0.1 mg/kg	<0.00001 %		<**LOD**
37	polychlorobiphenyls; PCB	602-039-00-4	215-648-1	1336-36-3		<0.01 mg/kg		<0.01 mg/kg	<0.000001 %		<**LOD**
38	barium { barium chloride }	056-004-00-8	233-788-1	10361-37-2		68 mg/kg	1.516	91.768 mg/kg	0.00918 %	✓	
39	monohydric phenols			P1186		<0.3 mg/kg		<0.3 mg/kg	<0.00003 %		<**LOD**
40	coronene		205-881-7	191-07-1		<0.1 mg/kg		<0.1 mg/kg	<0.00001 %		<**LOD**
41	sulfur { sulfur }	016-094-00-1	231-722-6	7704-34-9		1.9 mg/kg		1.691 mg/kg	0.000169 %	✓	
								Total:	0.0549 %		

Key

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

WAC results for sample: TP01 1/1.00/2023-11-20

WAC Settings: samples in this Job do not constitute a single population.

WAC limits used to evaluate this sample: "Ireland"
The WAC used in this report are the WAC defined for the inert and non-hazardous classes of landfill in the Republic of Ireland. 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 Non Haz (Non hazardous waste landfill) criteria.

WAC Determinands

Solid Waste Analysis				Landfill Waste Acceptance Criteria Limits	
#	Determinand		User entered data	Inert waste landfill	Non hazardous waste landfill
1	TOC (total organic carbon)	%	1.2	3	5
2	LOI (loss on ignition)	%	2.5	-	-
3	BTEX (benzene, toluene, ethylbenzene and xylenes)	mg/kg	<0.04	6	-
4	PCBs (polychlorinated biphenyls, 7 congeners)	mg/kg	<0.01	1	-
5	Mineral oil (C10 to C40)	mg/kg	<10	500	-
6	PAHs (polycyclic aromatic hydrocarbons)	mg/kg	<1.6	100	-
7	pH	pH	8.3	-	>6
8	ANC (acid neutralisation capacity)	mol/kg	<1	-	-
Eluate Analysis 10:1					
9	arsenic	mg/kg	0.011	0.5	2
10	barium	mg/kg	<0.1	20	100
11	cadmium	mg/kg	<0.02	0.04	1
12	chromium	mg/kg	<0.1	0.5	10
13	copper	mg/kg	<0.02	2	50
14	mercury	mg/kg	<0.002	0.01	0.2
15	molybdenum	mg/kg	<0.1	0.5	10
16	nickel	mg/kg	<0.1	0.4	10
17	lead	mg/kg	<0.05	0.5	10
18	antimony	mg/kg	<0.05	0.06	0.7
19	selenium	mg/kg	<0.03	0.1	0.5
20	zinc	mg/kg	<0.01	4	50
21	chloride	mg/kg	<100	800	15,000
22	fluoride	mg/kg	<0.1	10	150
23	sulphate	mg/kg	<100	1,000	20,000
24	phenol index	mg/kg	<1	1	-
25	DOC (dissolved organic carbon)	mg/kg	<50	500	800
26	TDS (total dissolved solids)	mg/kg	370	4,000	60,000

Key

User supplied data

Classification of sample: TP02 1/0.50/2023-11-20

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

Sample details

Sample name:
TP02 1/0.50/2023-11-20
Moisture content:
8.4%
(wet weight correction)

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

Hazard properties

None identified

Determinands

Moisture content: 8.4% Wet Weight Moisture Correction applied (MC)

#	Determinand	EU CLP index number	EC Number	CAS Number	CLP Note	User entered data		Conv. Factor	Compound conc.		Classification value	MC Applied	Conc. Not Used
1	antimony { antimony trioxide }	051-005-00-X	215-175-0	1309-64-4		1.2	mg/kg	1.197	1.316	mg/kg	0.000132 %	✓	
2	arsenic { arsenic trioxide }	033-003-00-0	215-481-4	1327-53-3		20	mg/kg	1.32	24.188	mg/kg	0.00242 %	✓	
3	boron { diboron trioxide }	005-008-00-8	215-125-8	1303-86-2	11	<0.2	mg/kg	3.22	<0.644	mg/kg	<0.0000644 %		<**LOD**
4	cadmium { cadmium oxide }	048-002-00-0	215-146-2	1306-19-0		1	mg/kg	1.142	1.046	mg/kg	0.000105 %	✓	
5	chromium in chromium(III) compounds { chromium(III) oxide (worst case) }		215-160-9	1308-38-9		10	mg/kg	1.462	13.388	mg/kg	0.00134 %	✓	
6	chromium in chromium(VI) compounds { chromium (VI) compounds, with the exception of barium chromate and of compounds specified elsewhere in this Annex }	024-017-00-8				<1	mg/kg	2.27	<2.27	mg/kg	<0.000227 %		<**LOD**
7	copper { dicopper oxide; copper (I) oxide }	029-002-00-X	215-270-7	1317-39-1		30	mg/kg	1.126	30.939	mg/kg	0.00309 %	✓	
8	lead { lead chromate }	082-004-00-2	231-846-0	7758-97-6	1	180	mg/kg	1.56	257.182	mg/kg	0.0165 %	✓	
9	mercury { mercury dichloride }	080-010-00-X	231-299-8	7487-94-7		0.09	mg/kg	1.353	0.112	mg/kg	0.0000112 %	✓	
10	molybdenum { molybdenum(VI) oxide }	042-001-00-9	215-204-7	1313-27-5		1.3	mg/kg	1.5	1.786	mg/kg	0.000179 %	✓	
11	nickel { nickel chromate }	028-035-00-7	238-766-5	14721-18-7		18	mg/kg	2.976	49.073	mg/kg	0.00491 %	✓	
12	selenium { nickel selenate }	028-031-00-5	239-125-2	15060-62-5		<0.5	mg/kg	2.554	<1.277	mg/kg	<0.000128 %		<**LOD**
13	zinc { zinc chromate }	024-007-00-3	236-878-9	13530-65-9		68	mg/kg	2.774	172.796	mg/kg	0.0173 %	✓	
14	tert-butyl methyl ether; MTBE; 2-methoxy-2-methylpropane	603-181-00-X	216-653-1	1634-04-4		<0.01	mg/kg		<0.01	mg/kg	<0.000001 %		<**LOD**
15	benzene	601-020-00-8	200-753-7	71-43-2		<0.01	mg/kg		<0.01	mg/kg	<0.000001 %		<**LOD**
16	toluene	601-021-00-3	203-625-9	108-88-3		<0.01	mg/kg		<0.01	mg/kg	<0.000001 %		<**LOD**

#		Determinand	EU CLP index number	EC Number	CAS Number	CLP Note	User entered data		Conv. Factor	Compound conc.		Classification value	MC Applied	Conc. Not Used
17		ethylbenzene	601-023-00-4	202-849-4	100-41-4		<0.01	mg/kg		<0.01	mg/kg	<0.000001 %		<**LOD**
18		xylene	601-022-00-9	202-422-2 [1] 203-396-5 [2] 203-576-3 [3] 215-535-7 [4]	95-47-6 [1] 106-42-3 [2] 108-38-3 [3] 1330-20-7 [4]		<0.01	mg/kg		<0.01	mg/kg	<0.000001 %		<**LOD**
19		cyanides { salts of hydrogen cyanide with the exception of complex cyanides such as ferrocyanides, ferricyanides and mercuric oxycyanide and those specified elsewhere in this Annex }	006-007-00-5				<0.1	mg/kg	1.884	<0.188	mg/kg	<0.0000188 %		<**LOD**
20		pH			PH		8.3	pH		8.3	pH	8.3 pH		
21		naphthalene	601-052-00-2	202-049-5	91-20-3		<0.1	mg/kg		<0.1	mg/kg	<0.00001 %		<**LOD**
22		acenaphthylene		205-917-1	208-96-8		<0.1	mg/kg		<0.1	mg/kg	<0.00001 %		<**LOD**
23		acenaphthene		201-469-6	83-32-9		0.2	mg/kg		0.183	mg/kg	0.0000183 %	✓	
24		fluorene		201-695-5	86-73-7		0.2	mg/kg		0.183	mg/kg	0.0000183 %	✓	
25		phenanthrene		201-581-5	85-01-8		1.5	mg/kg		1.374	mg/kg	0.000137 %	✓	
26		anthracene		204-371-1	120-12-7		0.6	mg/kg		0.55	mg/kg	0.000055 %	✓	
27		fluoranthene		205-912-4	206-44-0		3.4	mg/kg		3.114	mg/kg	0.000311 %	✓	
28		pyrene		204-927-3	129-00-0		3.1	mg/kg		2.84	mg/kg	0.000284 %	✓	
29		benzo[a]anthracene	601-033-00-9	200-280-6	56-55-3		1.5	mg/kg		1.374	mg/kg	0.000137 %	✓	
30		chrysene	601-048-00-0	205-923-4	218-01-9		1.4	mg/kg		1.282	mg/kg	0.000128 %	✓	
31		benzo[b]fluoranthene	601-034-00-4	205-911-9	205-99-2		1.2	mg/kg		1.099	mg/kg	0.00011 %	✓	
32		benzo[k]fluoranthene	601-036-00-5	205-916-6	207-08-9		0.8	mg/kg		0.733	mg/kg	0.0000733 %	✓	
33		benzo[a]pyrene; benzo[def]chrysene	601-032-00-3	200-028-5	50-32-8		1.8	mg/kg		1.649	mg/kg	0.000165 %	✓	
34		indeno[123-cd]pyrene		205-893-2	193-39-5		1.2	mg/kg		1.099	mg/kg	0.00011 %	✓	
35		dibenz[a,h]anthracene	601-041-00-2	200-181-8	53-70-3		0.2	mg/kg		0.183	mg/kg	0.0000183 %	✓	
36		benzo[ghi]perylene		205-883-8	191-24-2		1.2	mg/kg		1.099	mg/kg	0.00011 %	✓	
37		polychlorobiphenyls; PCB	602-039-00-4	215-648-1	1336-36-3		<0.01	mg/kg		<0.01	mg/kg	<0.000001 %		<**LOD**
38		barium { barium chloride }	056-004-00-8	233-788-1	10361-37-2		77	mg/kg	1.516	106.95	mg/kg	0.0107 %	✓	
39		monohydric phenols			P1186		<0.3	mg/kg		<0.3	mg/kg	<0.00003 %		<**LOD**
40		coronene		205-881-7	191-07-1		0.3	mg/kg		0.275	mg/kg	0.0000275 %	✓	
41		sulfur { sulfur }	016-094-00-1	231-722-6	7704-34-9		<0.75	mg/kg		<0.75	mg/kg	<0.000075 %		<**LOD**
											Total:	0.0589 %		

Key

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

WAC results for sample: TP02 1/0.50/2023-11-20

WAC Settings: samples in this Job do not constitute a single population.

WAC limits used to evaluate this sample: "Ireland"
The WAC used in this report are the WAC defined for the inert and non-hazardous classes of landfill in the Republic of Ireland. 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 Non Haz (Non hazardous waste landfill) criteria.

WAC Determinands

Solid Waste Analysis				Landfill Waste Acceptance Criteria Limits	
#	Determinand		User entered data	Inert waste landfill	Non hazardous waste landfill
1	TOC (total organic carbon)	%	2.5	3	5
2	LOI (loss on ignition)	%	2.1	-	-
3	BTEX (benzene, toluene, ethylbenzene and xylenes)	mg/kg	<0.04	6	-
4	PCBs (polychlorinated biphenyls, 7 congeners)	mg/kg	<0.01	1	-
5	Mineral oil (C10 to C40)	mg/kg	270	500	-
6	PAHs (polycyclic aromatic hydrocarbons)	mg/kg	18	100	-
7	pH	pH	8.3	-	>6
8	ANC (acid neutralisation capacity)	mol/kg	<1	-	-
Eluate Analysis 10:1					
9	arsenic	mg/kg	0.015	0.5	2
10	barium	mg/kg	<0.1	20	100
11	cadmium	mg/kg	<0.02	0.04	1
12	chromium	mg/kg	<0.1	0.5	10
13	copper	mg/kg	<0.02	2	50
14	mercury	mg/kg	<0.002	0.01	0.2
15	molybdenum	mg/kg	<0.1	0.5	10
16	nickel	mg/kg	<0.1	0.4	10
17	lead	mg/kg	<0.05	0.5	10
18	antimony	mg/kg	<0.05	0.06	0.7
19	selenium	mg/kg	<0.03	0.1	0.5
20	zinc	mg/kg	<0.01	4	50
21	chloride	mg/kg	<100	800	15,000
22	fluoride	mg/kg	<0.1	10	150
23	sulphate	mg/kg	<100	1,000	20,000
24	phenol index	mg/kg	<1	1	-
25	DOC (dissolved organic carbon)	mg/kg	<50	500	800
26	TDS (total dissolved solids)	mg/kg	570	4,000	60,000

Key

User supplied data

Classification of sample: TP02 1/1.00/2023-11-20

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

Sample details

Sample name:
TP02 1/1.00/2023-11-20
Moisture content:
13%
(wet weight correction)

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

Hazard properties

None identified

Determinands

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

#		Determinand	EU CLP index number	EC Number	CAS Number	CLP Note	User entered data		Conv. Factor	Compound conc.		Classification value	MC Applied	Conc. Not Used
1		antimony { antimony trioxide }	051-005-00-X	215-175-0	1309-64-4		1.9	mg/kg	1.197	1.979	mg/kg	0.000198 %	✓	
2		arsenic { arsenic trioxide }	033-003-00-0	215-481-4	1327-53-3		22	mg/kg	1.32	25.271	mg/kg	0.00253 %	✓	
3		boron { diboron trioxide }	005-008-00-8	215-125-8	1303-86-2	11	<0.2	mg/kg	3.22	<0.644	mg/kg	<0.0000644 %		<**LOD**
4		cadmium { cadmium oxide }	048-002-00-0	215-146-2	1306-19-0		1.3	mg/kg	1.142	1.292	mg/kg	0.000129 %	✓	
5		chromium in chromium(III) compounds { chromium(III) oxide (worst case) }		215-160-9	1308-38-9		13	mg/kg	1.462	16.53	mg/kg	0.00165 %	✓	
6		chromium in chromium(VI) compounds { chromium (VI) compounds, with the exception of barium chromate and of compounds specified elsewhere in this Annex }	024-017-00-8				<1	mg/kg	2.27	<2.27	mg/kg	<0.000227 %		<**LOD**
7		copper { dicopper oxide; copper (I) oxide }	029-002-00-X	215-270-7	1317-39-1		37	mg/kg	1.126	36.242	mg/kg	0.00362 %	✓	
8		lead { lead chromate }	082-004-00-2	231-846-0	7758-97-6	1	56	mg/kg	1.56	75.994	mg/kg	0.00487 %	✓	
9		mercury { mercury dichloride }	080-010-00-X	231-299-8	7487-94-7		0.12	mg/kg	1.353	0.141	mg/kg	0.0000141 %	✓	
10		molybdenum { molybdenum(VI) oxide }	042-001-00-9	215-204-7	1313-27-5		1.7	mg/kg	1.5	2.219	mg/kg	0.000222 %	✓	
11		nickel { nickel chromate }	028-035-00-7	238-766-5	14721-18-7		23	mg/kg	2.976	59.555	mg/kg	0.00596 %	✓	
12		selenium { nickel selenate }	028-031-00-5	239-125-2	15060-62-5		0.6	mg/kg	2.554	1.333	mg/kg	0.000133 %	✓	
13		zinc { zinc chromate }	024-007-00-3	236-878-9	13530-65-9		88	mg/kg	2.774	212.389	mg/kg	0.0212 %	✓	
14		tert-butyl methyl ether; MTBE; 2-methoxy-2-methylpropane	603-181-00-X	216-653-1	1634-04-4		<0.01	mg/kg		<0.01	mg/kg	<0.000001 %		<**LOD**
15		benzene	601-020-00-8	200-753-7	71-43-2		<0.01	mg/kg		<0.01	mg/kg	<0.000001 %		<**LOD**
16		toluene	601-021-00-3	203-625-9	108-88-3		<0.01	mg/kg		<0.01	mg/kg	<0.000001 %		<**LOD**

#	Determinand	EU CLP index number	EC Number	CAS Number	CLP Note	User entered data	Conv. Factor	Compound conc.	Classification value	MC Applied	Conc. Not Used
17	ethylbenzene	601-023-00-4	202-849-4	100-41-4		<0.01 mg/kg		<0.01 mg/kg	<0.000001 %		<LOD
18	xylene	601-022-00-9	202-422-2 [1] 203-396-5 [2] 203-576-3 [3] 215-535-7 [4]	95-47-6 [1] 106-42-3 [2] 108-38-3 [3] 1330-20-7 [4]		<0.01 mg/kg		<0.01 mg/kg	<0.000001 %		<LOD
19	cyanides { salts of hydrogen cyanide with the exception of complex cyanides such as ferrocyanides, ferricyanides and mercuric oxycyanide and those specified elsewhere in this Annex }	006-007-00-5				0.1 mg/kg	1.884	0.164 mg/kg	0.0000164 %	✓	
20	pH			PH		8 pH		8 pH	8pH		
21	naphthalene	601-052-00-2	202-049-5	91-20-3		<0.1 mg/kg		<0.1 mg/kg	<0.00001 %		<LOD
22	acenaphthylene		205-917-1	208-96-8		<0.1 mg/kg		<0.1 mg/kg	<0.00001 %		<LOD
23	acenaphthene		201-469-6	83-32-9		<0.1 mg/kg		<0.1 mg/kg	<0.00001 %		<LOD
24	fluorene		201-695-5	86-73-7		<0.1 mg/kg		<0.1 mg/kg	<0.00001 %		<LOD
25	phenanthrene		201-581-5	85-01-8		0.5 mg/kg		0.435 mg/kg	0.0000435 %	✓	
26	anthracene		204-371-1	120-12-7		0.2 mg/kg		0.174 mg/kg	0.0000174 %	✓	
27	fluoranthene		205-912-4	206-44-0		1.9 mg/kg		1.653 mg/kg	0.000165 %	✓	
28	pyrene		204-927-3	129-00-0		1.9 mg/kg		1.653 mg/kg	0.000165 %	✓	
29	benzo[a]anthracene	601-033-00-9	200-280-6	56-55-3		1.1 mg/kg		0.957 mg/kg	0.0000957 %	✓	
30	chrysene	601-048-00-0	205-923-4	218-01-9		0.9 mg/kg		0.783 mg/kg	0.0000783 %	✓	
31	benzo[b]fluoranthene	601-034-00-4	205-911-9	205-99-2		0.9 mg/kg		0.783 mg/kg	0.0000783 %	✓	
32	benzo[k]fluoranthene	601-036-00-5	205-916-6	207-08-9		0.6 mg/kg		0.522 mg/kg	0.0000522 %	✓	
33	benzo[a]pyrene; benzo[def]chrysene	601-032-00-3	200-028-5	50-32-8		1.3 mg/kg		1.131 mg/kg	0.000113 %	✓	
34	indeno[123-cd]pyrene		205-893-2	193-39-5		1 mg/kg		0.87 mg/kg	0.000087 %	✓	
35	dibenz[a,h]anthracene	601-041-00-2	200-181-8	53-70-3		0.2 mg/kg		0.174 mg/kg	0.0000174 %	✓	
36	benzo[ghi]perylene		205-883-8	191-24-2		0.8 mg/kg		0.696 mg/kg	0.0000696 %	✓	
37	polychlorobiphenyls; PCB	602-039-00-4	215-648-1	1336-36-3		<0.01 mg/kg		<0.01 mg/kg	<0.000001 %		<LOD
38	barium { barium chloride }	056-004-00-8	233-788-1	10361-37-2		59 mg/kg	1.516	77.833 mg/kg	0.00778 %	✓	
39	monohydric phenols			P1186		<0.3 mg/kg		<0.3 mg/kg	<0.00003 %		<LOD
40	coronene		205-881-7	191-07-1		0.2 mg/kg		0.174 mg/kg	0.0000174 %	✓	
41	sulfur { sulfur }	016-094-00-1	231-722-6	7704-34-9		<0.75 mg/kg		<0.75 mg/kg	<0.000075 %		<LOD
								Total:	0.0498 %		

Key

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

WAC results for sample: TP02 1/1.00/2023-11-20

WAC Settings: samples in this Job do not constitute a single population.

WAC limits used to evaluate this sample: "Ireland"
The WAC used in this report are the WAC defined for the inert and non-hazardous classes of landfill in the Republic of Ireland. 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 Non Haz (Non hazardous waste landfill) criteria.

WAC Determinands

Solid Waste Analysis				Landfill Waste Acceptance Criteria Limits	
#	Determinand		User entered data	Inert waste landfill	Non hazardous waste landfill
1	TOC (total organic carbon)	%	2.4	3	5
2	LOI (loss on ignition)	%	3.7	-	-
3	BTEX (benzene, toluene, ethylbenzene and xylenes)	mg/kg	<0.04	6	-
4	PCBs (polychlorinated biphenyls, 7 congeners)	mg/kg	<0.01	1	-
5	Mineral oil (C10 to C40)	mg/kg	190	500	-
6	PAHs (polycyclic aromatic hydrocarbons)	mg/kg	11	100	-
7	pH	pH	8	-	>6
8	ANC (acid neutralisation capacity)	mol/kg	<1	-	-
Eluate Analysis 10:1					
9	arsenic	mg/kg	0.013	0.5	2
10	barium	mg/kg	<0.1	20	100
11	cadmium	mg/kg	<0.02	0.04	1
12	chromium	mg/kg	<0.1	0.5	10
13	copper	mg/kg	<0.02	2	50
14	mercury	mg/kg	<0.002	0.01	0.2
15	molybdenum	mg/kg	<0.1	0.5	10
16	nickel	mg/kg	<0.1	0.4	10
17	lead	mg/kg	<0.05	0.5	10
18	antimony	mg/kg	<0.05	0.06	0.7
19	selenium	mg/kg	<0.03	0.1	0.5
20	zinc	mg/kg	<0.01	4	50
21	chloride	mg/kg	<100	800	15,000
22	fluoride	mg/kg	<0.1	10	150
23	sulphate	mg/kg	<100	1,000	20,000
24	phenol index	mg/kg	<1	1	-
25	DOC (dissolved organic carbon)	mg/kg	<50	500	800
26	TDS (total dissolved solids)	mg/kg	460	4,000	60,000

Key

User supplied data

Classification of sample: TP03 1/0.50/2023-11-21

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

Sample details

Sample name:
TP03 1/0.50/2023-11-21
Moisture content:
12%
(wet weight correction)

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

Hazard properties

None identified

Determinands

Moisture content: 12% Wet Weight Moisture Correction applied (MC)

#		Determinand	EU CLP index number	EC Number	CAS Number	CLP Note	User entered data		Conv. Factor	Compound conc.		Classification value	MC Applied	Conc. Not Used
1		antimony { antimony trioxide }	051-005-00-X	215-175-0	1309-64-4		<1	mg/kg	1.197	<1.197	mg/kg	<0.00012 %		<**LOD**
2		arsenic { arsenic trioxide }	033-003-00-0	215-481-4	1327-53-3		180	mg/kg	1.32	209.14	mg/kg	0.0209 %	✓	
3		boron { diboron trioxide }	005-008-00-8	215-125-8	1303-86-2	11	0.3	mg/kg	3.22	0.85	mg/kg	0.000085 %	✓	
4		cadmium { cadmium oxide }	048-002-00-0	215-146-2	1306-19-0		0.8	mg/kg	1.142	0.804	mg/kg	0.0000804 %	✓	
5		chromium in chromium(III) compounds { chromium(III) oxide (worst case) }		215-160-9	1308-38-9		18	mg/kg	1.462	23.151	mg/kg	0.00232 %	✓	
6		chromium in chromium(VI) compounds { chromium (VI) compounds, with the exception of barium chromate and of compounds specified elsewhere in this Annex }	024-017-00-8				<1	mg/kg	2.27	<2.27	mg/kg	<0.000227 %		<**LOD**
7		copper { dicopper oxide; copper (I) oxide }	029-002-00-X	215-270-7	1317-39-1		23	mg/kg	1.126	22.788	mg/kg	0.00228 %	✓	
8		lead { lead chromate }	082-004-00-2	231-846-0	7758-97-6	1	46	mg/kg	1.56	63.141	mg/kg	0.00405 %	✓	
9		mercury { mercury dichloride }	080-010-00-X	231-299-8	7487-94-7		0.1	mg/kg	1.353	0.119	mg/kg	0.0000119 %	✓	
10		molybdenum { molybdenum(VI) oxide }	042-001-00-9	215-204-7	1313-27-5		1.9	mg/kg	1.5	2.508	mg/kg	0.000251 %	✓	
11		nickel { nickel chromate }	028-035-00-7	238-766-5	14721-18-7		21	mg/kg	2.976	55.001	mg/kg	0.0055 %	✓	
12		selenium { nickel selenate }	028-031-00-5	239-125-2	15060-62-5		1.4	mg/kg	2.554	3.146	mg/kg	0.000315 %	✓	
13		zinc { zinc chromate }	024-007-00-3	236-878-9	13530-65-9		83	mg/kg	2.774	202.624	mg/kg	0.0203 %	✓	
14		tert-butyl methyl ether; MTBE; 2-methoxy-2-methylpropane	603-181-00-X	216-653-1	1634-04-4		<0.01	mg/kg		<0.01	mg/kg	<0.000001 %		<**LOD**
15		benzene	601-020-00-8	200-753-7	71-43-2		<0.01	mg/kg		<0.01	mg/kg	<0.000001 %		<**LOD**
16		toluene	601-021-00-3	203-625-9	108-88-3		<0.01	mg/kg		<0.01	mg/kg	<0.000001 %		<**LOD**

#		Determinand	EU CLP index number	EC Number	CAS Number	CLP Note	User entered data		Conv. Factor	Compound conc.		Classification value	MC Applied	Conc. Not Used
17		ethylbenzene	601-023-00-4	202-849-4	100-41-4		<0.01	mg/kg		<0.01	mg/kg	<0.000001 %		<**LOD**
18		xylene	601-022-00-9	202-422-2 [1] 203-396-5 [2] 203-576-3 [3] 215-535-7 [4]	95-47-6 [1] 106-42-3 [2] 108-38-3 [3] 1330-20-7 [4]		<0.01	mg/kg		<0.01	mg/kg	<0.000001 %		<**LOD**
19		cyanides { salts of hydrogen cyanide with the exception of complex cyanides such as ferrocyanides, ferricyanides and mercuric oxycyanide and those specified elsewhere in this Annex }	006-007-00-5				0.2	mg/kg	1.884	0.332	mg/kg	0.0000332 %	✓	
20		pH			PH		7.7	pH		7.7	pH	7.7 pH		
21		naphthalene	601-052-00-2	202-049-5	91-20-3		<0.1	mg/kg		<0.1	mg/kg	<0.00001 %		<**LOD**
22		acenaphthylene		205-917-1	208-96-8		<0.1	mg/kg		<0.1	mg/kg	<0.00001 %		<**LOD**
23		acenaphthene		201-469-6	83-32-9		0.1	mg/kg		0.088	mg/kg	0.0000088 %	✓	
24		fluorene		201-695-5	86-73-7		<0.1	mg/kg		<0.1	mg/kg	<0.00001 %		<**LOD**
25		phenanthrene		201-581-5	85-01-8		<0.1	mg/kg		<0.1	mg/kg	<0.00001 %		<**LOD**
26		anthracene		204-371-1	120-12-7		<0.1	mg/kg		<0.1	mg/kg	<0.00001 %		<**LOD**
27		fluoranthene		205-912-4	206-44-0		0.2	mg/kg		0.176	mg/kg	0.0000176 %	✓	
28		pyrene		204-927-3	129-00-0		0.2	mg/kg		0.176	mg/kg	0.0000176 %	✓	
29		benzo[a]anthracene	601-033-00-9	200-280-6	56-55-3		<0.1	mg/kg		<0.1	mg/kg	<0.00001 %		<**LOD**
30		chrysene	601-048-00-0	205-923-4	218-01-9		<0.1	mg/kg		<0.1	mg/kg	<0.00001 %		<**LOD**
31		benzo[b]fluoranthene	601-034-00-4	205-911-9	205-99-2		<0.1	mg/kg		<0.1	mg/kg	<0.00001 %		<**LOD**
32		benzo[k]fluoranthene	601-036-00-5	205-916-6	207-08-9		<0.1	mg/kg		<0.1	mg/kg	<0.00001 %		<**LOD**
33		benzo[a]pyrene; benzo[def]chrysene	601-032-00-3	200-028-5	50-32-8		<0.1	mg/kg		<0.1	mg/kg	<0.00001 %		<**LOD**
34		indeno[123-cd]pyrene		205-893-2	193-39-5		<0.1	mg/kg		<0.1	mg/kg	<0.00001 %		<**LOD**
35		dibenz[a,h]anthracene	601-041-00-2	200-181-8	53-70-3		<0.1	mg/kg		<0.1	mg/kg	<0.00001 %		<**LOD**
36		benzo[ghi]perylene		205-883-8	191-24-2		<0.1	mg/kg		<0.1	mg/kg	<0.00001 %		<**LOD**
37		polychlorobiphenyls; PCB	602-039-00-4	215-648-1	1336-36-3		<0.01	mg/kg		<0.01	mg/kg	<0.000001 %		<**LOD**
38		barium { barium chloride }	056-004-00-8	233-788-1	10361-37-2		72	mg/kg	1.516	96.075	mg/kg	0.00961 %	✓	
39		monohydric phenols			P1186		<0.3	mg/kg		<0.3	mg/kg	<0.00003 %		<**LOD**
40		coronene		205-881-7	191-07-1		<0.1	mg/kg		<0.1	mg/kg	<0.00001 %		<**LOD**
41		sulfur { sulfur }	016-094-00-1	231-722-6	7704-34-9		2.7	mg/kg		2.376	mg/kg	0.000238 %	✓	
											Total:	0.0665 %		

Key

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

WAC results for sample: TP03 1/0.50/2023-11-21

WAC Settings: samples in this Job do not constitute a single population.

WAC limits used to evaluate this sample: "Ireland"
The WAC used in this report are the WAC defined for the inert and non-hazardous classes of landfill in the Republic of Ireland. 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 Non Haz (Non hazardous waste landfill) criteria.

WAC Determinands

Solid Waste Analysis				Landfill Waste Acceptance Criteria Limits	
#	Determinand		User entered data	Inert waste landfill	Non hazardous waste landfill
1	TOC (total organic carbon)	%	1.1	3	5
2	LOI (loss on ignition)	%	3.3	-	-
3	BTEX (benzene, toluene, ethylbenzene and xylenes)	mg/kg	<0.04	6	-
4	PCBs (polychlorinated biphenyls, 7 congeners)	mg/kg	<0.01	1	-
5	Mineral oil (C10 to C40)	mg/kg	41	500	-
6	PAHs (polycyclic aromatic hydrocarbons)	mg/kg	<1.6	100	-
7	pH	pH	7.7	-	>6
8	ANC (acid neutralisation capacity)	mol/kg	<1	-	-
Eluate Analysis 10:1					
9	arsenic	mg/kg	0.06	0.5	2
10	barium	mg/kg	<0.1	20	100
11	cadmium	mg/kg	<0.02	0.04	1
12	chromium	mg/kg	<0.1	0.5	10
13	copper	mg/kg	<0.02	2	50
14	mercury	mg/kg	<0.002	0.01	0.2
15	molybdenum	mg/kg	<0.1	0.5	10
16	nickel	mg/kg	<0.1	0.4	10
17	lead	mg/kg	<0.05	0.5	10
18	antimony	mg/kg	<0.05	0.06	0.7
19	selenium	mg/kg	<0.03	0.1	0.5
20	zinc	mg/kg	<0.01	4	50
21	chloride	mg/kg	<100	800	15,000
22	fluoride	mg/kg	<0.1	10	150
23	sulphate	mg/kg	<100	1,000	20,000
24	phenol index	mg/kg	<1	1	-
25	DOC (dissolved organic carbon)	mg/kg	<50	500	800
26	TDS (total dissolved solids)	mg/kg	420	4,000	60,000

Key

User supplied data

Classification of sample: BH01 1/0.50/2023-12-13

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

Sample details

Sample name:
BH01 1/0.50/2023-12-13
Moisture content:
32%
(wet weight correction)

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

Hazard properties

None identified

Determinands

Moisture content: 32% Wet Weight Moisture Correction applied (MC)

#		Determinand	EU CLP index number	EC Number	CAS Number	CLP Note	User entered data		Conv. Factor	Compound conc.		Classification value	MC Applied	Conc. Not Used
1		antimony { antimony trioxide }	051-005-00-X	215-175-0	1309-64-4		<1	mg/kg	1.197	<1.197	mg/kg	<0.00012 %		<LOD
2		arsenic { arsenic trioxide }	033-003-00-0	215-481-4	1327-53-3		13	mg/kg	1.32	11.672	mg/kg	0.00117 %	✓	
3		boron { diboron trioxide }	005-008-00-8	215-125-8	1303-86-2	11	1	mg/kg	3.22	2.19	mg/kg	0.000219 %	✓	
4		cadmium { cadmium oxide }	048-002-00-0	215-146-2	1306-19-0		0.7	mg/kg	1.142	0.544	mg/kg	0.0000544 %	✓	
5		chromium in chromium(III) compounds { chromium(III) oxide (worst case) }		215-160-9	1308-38-9		17	mg/kg	1.462	16.896	mg/kg	0.00169 %	✓	
6		chromium in chromium(VI) compounds { chromium (VI) compounds, with the exception of barium chromate and of compounds specified elsewhere in this Annex }	024-017-00-8				<1	mg/kg	2.27	<2.27	mg/kg	<0.000227 %		<LOD
7		copper { dicopper oxide; copper (I) oxide }	029-002-00-X	215-270-7	1317-39-1		26	mg/kg	1.126	19.906	mg/kg	0.00199 %	✓	
8		lead { lead chromate }	082-004-00-2	231-846-0	7758-97-6	1	24	mg/kg	1.56	25.456	mg/kg	0.00163 %	✓	
9		mercury { mercury dichloride }	080-010-00-X	231-299-8	7487-94-7		<0.05	mg/kg	1.353	<0.0677	mg/kg	<0.00000677 %		<LOD
10		molybdenum { molybdenum(VI) oxide }	042-001-00-9	215-204-7	1313-27-5		1.4	mg/kg	1.5	1.428	mg/kg	0.000143 %	✓	
11		nickel { nickel chromate }	028-035-00-7	238-766-5	14721-18-7		17	mg/kg	2.976	34.406	mg/kg	0.00344 %	✓	
12		selenium { nickel selenate }	028-031-00-5	239-125-2	15060-62-5		<0.5	mg/kg	2.554	<1.277	mg/kg	<0.000128 %		<LOD
13		zinc { zinc chromate }	024-007-00-3	236-878-9	13530-65-9		70	mg/kg	2.774	132.049	mg/kg	0.0132 %	✓	
14		tert-butyl methyl ether; MTBE; 2-methoxy-2-methylpropane	603-181-00-X	216-653-1	1634-04-4		<0.01	mg/kg		<0.01	mg/kg	<0.000001 %		<LOD
15		benzene	601-020-00-8	200-753-7	71-43-2		<0.01	mg/kg		<0.01	mg/kg	<0.000001 %		<LOD
16		toluene	601-021-00-3	203-625-9	108-88-3		<0.01	mg/kg		<0.01	mg/kg	<0.000001 %		<LOD

#		Determinand	EU CLP index number	EC Number	CAS Number	CLP Note	User entered data		Conv. Factor	Compound conc.		Classification value	MC Applied	Conc. Not Used
17		ethylbenzene	601-023-00-4	202-849-4	100-41-4		<0.01	mg/kg		<0.01	mg/kg	<0.000001 %		<**LOD**
18		xylene	601-022-00-9	202-422-2 [1] 203-396-5 [2] 203-576-3 [3] 215-535-7 [4]	95-47-6 [1] 106-42-3 [2] 108-38-3 [3] 1330-20-7 [4]		<0.01	mg/kg		<0.01	mg/kg	<0.000001 %		<**LOD**
19		cyanides { salts of hydrogen cyanide with the exception of complex cyanides such as ferrocyanides, ferricyanides and mercuric oxycyanide and those specified elsewhere in this Annex }	006-007-00-5				0.3	mg/kg	1.884	0.384	mg/kg	0.0000384 %	✓	
20		pH			PH		8	pH		8	pH	8pH		
21		naphthalene	601-052-00-2	202-049-5	91-20-3		<0.1	mg/kg		<0.1	mg/kg	<0.00001 %		<**LOD**
22		acenaphthylene		205-917-1	208-96-8		0.2	mg/kg		0.136	mg/kg	0.0000136 %	✓	
23		acenaphthene		201-469-6	83-32-9		<0.1	mg/kg		<0.1	mg/kg	<0.00001 %		<**LOD**
24		fluorene		201-695-5	86-73-7		<0.1	mg/kg		<0.1	mg/kg	<0.00001 %		<**LOD**
25		phenanthrene		201-581-5	85-01-8		0.2	mg/kg		0.136	mg/kg	0.0000136 %	✓	
26		anthracene		204-371-1	120-12-7		<0.1	mg/kg		<0.1	mg/kg	<0.00001 %		<**LOD**
27		fluoranthene		205-912-4	206-44-0		0.5	mg/kg		0.34	mg/kg	0.000034 %	✓	
28		pyrene		204-927-3	129-00-0		1	mg/kg		0.68	mg/kg	0.000068 %	✓	
29		benzo[a]anthracene	601-033-00-9	200-280-6	56-55-3		0.3	mg/kg		0.204	mg/kg	0.0000204 %	✓	
30		chrysene	601-048-00-0	205-923-4	218-01-9		0.2	mg/kg		0.136	mg/kg	0.0000136 %	✓	
31		benzo[b]fluoranthene	601-034-00-4	205-911-9	205-99-2		0.6	mg/kg		0.408	mg/kg	0.0000408 %	✓	
32		benzo[k]fluoranthene	601-036-00-5	205-916-6	207-08-9		0.1	mg/kg		0.068	mg/kg	0.0000068 %	✓	
33		benzo[a]pyrene; benzo[def]chrysene	601-032-00-3	200-028-5	50-32-8		0.6	mg/kg		0.408	mg/kg	0.0000408 %	✓	
34		indeno[123-cd]pyrene		205-893-2	193-39-5		0.8	mg/kg		0.544	mg/kg	0.0000544 %	✓	
35		dibenz[a,h]anthracene	601-041-00-2	200-181-8	53-70-3		0.2	mg/kg		0.136	mg/kg	0.0000136 %	✓	
36		benzo[ghi]perylene		205-883-8	191-24-2		<0.1	mg/kg		<0.1	mg/kg	<0.00001 %		<**LOD**
37		polychlorobiphenyls; PCB	602-039-00-4	215-648-1	1336-36-3		<0.01	mg/kg		<0.01	mg/kg	<0.000001 %		<**LOD**
38		barium { barium chloride }	056-004-00-8	233-788-1	10361-37-2		45	mg/kg	1.516	46.4	mg/kg	0.00464 %	✓	
39		monohydric phenols			P1186		2.7	mg/kg		1.836	mg/kg	0.000184 %	✓	
40		coronene		205-881-7	191-07-1		<0.1	mg/kg		<0.1	mg/kg	<0.00001 %		<**LOD**
41		sulfur { sulfur }	016-094-00-1	231-722-6	7704-34-9		9.2	mg/kg		6.256	mg/kg	0.000626 %	✓	
											Total:	0.0299 %		

Key

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

WAC results for sample: BH01 1/0.50/2023-12-13

WAC Settings: samples in this Job do not constitute a single population.

WAC limits used to evaluate this sample: "Ireland"
The WAC used in this report are the WAC defined for the inert and non-hazardous classes of landfill in the Republic of Ireland. 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 FAILS the Inert (Inert waste landfill) criteria.

The sample FAILS the Non Haz (Non hazardous waste landfill) criteria.

WAC Determinands

Solid Waste Analysis				Landfill Waste Acceptance Criteria Limits	
#	Determinand		User entered data	Inert waste landfill	Non hazardous waste landfill
1	TOC (total organic carbon)	%	8.5	3	5
2	LOI (loss on ignition)	%	24	-	-
3	BTEX (benzene, toluene, ethylbenzene and xylenes)	mg/kg	<0.04	6	-
4	PCBs (polychlorinated biphenyls, 7 congeners)	mg/kg	<0.01	1	-
5	Mineral oil (C10 to C40)	mg/kg	140	500	-
6	PAHs (polycyclic aromatic hydrocarbons)	mg/kg	4.8	100	-
7	pH	pH	8	-	>6
8	ANC (acid neutralisation capacity)	mol/kg	<1	-	-
Eluate Analysis 10:1					
9	arsenic	mg/kg	0.054	0.5	2
10	barium	mg/kg	0.11	20	100
11	cadmium	mg/kg	<0.02	0.04	1
12	chromium	mg/kg	<0.1	0.5	10
13	copper	mg/kg	0.042	2	50
14	mercury	mg/kg	<0.002	0.01	0.2
15	molybdenum	mg/kg	<0.1	0.5	10
16	nickel	mg/kg	<0.1	0.4	10
17	lead	mg/kg	<0.05	0.5	10
18	antimony	mg/kg	<0.05	0.06	0.7
19	selenium	mg/kg	<0.03	0.1	0.5
20	zinc	mg/kg	0.062	4	50
21	chloride	mg/kg	<100	800	15,000
22	fluoride	mg/kg	<0.1	10	150
23	sulphate	mg/kg	200	1,000	20,000
24	phenol index	mg/kg	<1	1	-
25	DOC (dissolved organic carbon)	mg/kg	120	500	800
26	TDS (total dissolved solids)	mg/kg	820	4,000	60,000

Key

	User supplied data
	Inert WAC criteria fail
	Non Hazardous WAC criteria fail

Classification of sample: BH09/0.50/2023-12-11

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

Sample details

Sample name:
BH09/0.50/2023-12-11
Moisture content:
10%
(wet weight correction)

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

Hazard properties

None identified

Determinands

Moisture content: 10% Wet Weight Moisture Correction applied (MC)

#		Determinand	EU CLP index number	EC Number	CAS Number	CLP Note	User entered data		Conv. Factor	Compound conc.		Classification value	MC Applied	Conc. Not Used
1		antimony { antimony trioxide }	051-005-00-X	215-175-0	1309-64-4		<1	mg/kg	1.197	<1.197	mg/kg	<0.00012 %		<**LOD**
2		arsenic { arsenic trioxide }	033-003-00-0	215-481-4	1327-53-3		28	mg/kg	1.32	33.272	mg/kg	0.00333 %	✓	
3		boron { diboron trioxide }	005-008-00-8	215-125-8	1303-86-2	11	0.4	mg/kg	3.22	1.159	mg/kg	0.000116 %	✓	
4		cadmium { cadmium oxide }	048-002-00-0	215-146-2	1306-19-0		0.7	mg/kg	1.142	0.72	mg/kg	0.000072 %	✓	
5		chromium in chromium(III) compounds { chromium(III) oxide (worst case) }		215-160-9	1308-38-9		11	mg/kg	1.462	14.469	mg/kg	0.00145 %	✓	
6		chromium in chromium(VI) compounds { chromium (VI) compounds, with the exception of barium chromate and of compounds specified elsewhere in this Annex }	024-017-00-8				<1	mg/kg	2.27	<2.27	mg/kg	<0.000227 %		<**LOD**
7		copper { dicopper oxide; copper (I) oxide }	029-002-00-X	215-270-7	1317-39-1		19	mg/kg	1.126	19.253	mg/kg	0.00193 %	✓	
8		lead { lead chromate }	082-004-00-2	231-846-0	7758-97-6	1	47	mg/kg	1.56	65.98	mg/kg	0.00423 %	✓	
9		mercury { mercury dichloride }	080-010-00-X	231-299-8	7487-94-7		<0.05	mg/kg	1.353	<0.0677	mg/kg	<0.00000677 %		<**LOD**
10		molybdenum { molybdenum(VI) oxide }	042-001-00-9	215-204-7	1313-27-5		1.1	mg/kg	1.5	1.485	mg/kg	0.000149 %	✓	
11		nickel { nickel chromate }	028-035-00-7	238-766-5	14721-18-7		15	mg/kg	2.976	40.18	mg/kg	0.00402 %	✓	
12		selenium { nickel selenate }	028-031-00-5	239-125-2	15060-62-5		<0.5	mg/kg	2.554	<1.277	mg/kg	<0.000128 %		<**LOD**
13		zinc { zinc chromate }	024-007-00-3	236-878-9	13530-65-9		66	mg/kg	2.774	164.784	mg/kg	0.0165 %	✓	
14		tert-butyl methyl ether; MTBE; 2-methoxy-2-methylpropane	603-181-00-X	216-653-1	1634-04-4		<0.01	mg/kg		<0.01	mg/kg	<0.000001 %		<**LOD**
15		benzene	601-020-00-8	200-753-7	71-43-2		<0.01	mg/kg		<0.01	mg/kg	<0.000001 %		<**LOD**
16		toluene	601-021-00-3	203-625-9	108-88-3		<0.01	mg/kg		<0.01	mg/kg	<0.000001 %		<**LOD**

#	Determinand	EU CLP index number	EC Number	CAS Number	CLP Note	User entered data	Conv. Factor	Compound conc.	Classification value	MC Applied	Conc. Not Used
17	ethylbenzene	601-023-00-4	202-849-4	100-41-4		<0.01 mg/kg		<0.01 mg/kg	<0.000001 %		<LOD
18	xylene	601-022-00-9	202-422-2 [1] 203-396-5 [2] 203-576-3 [3] 215-535-7 [4]	95-47-6 [1] 106-42-3 [2] 108-38-3 [3] 1330-20-7 [4]		<0.01 mg/kg		<0.01 mg/kg	<0.000001 %		<LOD
19	cyanides { salts of hydrogen cyanide with the exception of complex cyanides such as ferrocyanides, ferricyanides and mercuric oxycyanide and those specified elsewhere in this Annex }	006-007-00-5				<0.1 mg/kg	1.884	<0.188 mg/kg	<0.0000188 %		<LOD
20	pH			PH		11.2 pH		11.2 pH	11.2 pH		
21	naphthalene	601-052-00-2	202-049-5	91-20-3		<0.1 mg/kg		<0.1 mg/kg	<0.00001 %		<LOD
22	acenaphthylene		205-917-1	208-96-8		0.2 mg/kg		0.18 mg/kg	0.000018 %	✓	
23	acenaphthene		201-469-6	83-32-9		0.1 mg/kg		0.09 mg/kg	0.000009 %	✓	
24	fluorene		201-695-5	86-73-7		<0.1 mg/kg		<0.1 mg/kg	<0.00001 %		<LOD
25	phenanthrene		201-581-5	85-01-8		0.1 mg/kg		0.09 mg/kg	0.000009 %	✓	
26	anthracene		204-371-1	120-12-7		<0.1 mg/kg		<0.1 mg/kg	<0.00001 %		<LOD
27	fluoranthene		205-912-4	206-44-0		0.4 mg/kg		0.36 mg/kg	0.000036 %	✓	
28	pyrene		204-927-3	129-00-0		0.4 mg/kg		0.36 mg/kg	0.000036 %	✓	
29	benzo[a]anthracene	601-033-00-9	200-280-6	56-55-3		<0.1 mg/kg		<0.1 mg/kg	<0.00001 %		<LOD
30	chrysene	601-048-00-0	205-923-4	218-01-9		<0.1 mg/kg		<0.1 mg/kg	<0.00001 %		<LOD
31	benzo[b]fluoranthene	601-034-00-4	205-911-9	205-99-2		<0.1 mg/kg		<0.1 mg/kg	<0.00001 %		<LOD
32	benzo[k]fluoranthene	601-036-00-5	205-916-6	207-08-9		<0.1 mg/kg		<0.1 mg/kg	<0.00001 %		<LOD
33	benzo[a]pyrene; benzo[def]chrysene	601-032-00-3	200-028-5	50-32-8		<0.1 mg/kg		<0.1 mg/kg	<0.00001 %		<LOD
34	indeno[123-cd]pyrene		205-893-2	193-39-5		<0.1 mg/kg		<0.1 mg/kg	<0.00001 %		<LOD
35	dibenz[a,h]anthracene	601-041-00-2	200-181-8	53-70-3		<0.1 mg/kg		<0.1 mg/kg	<0.00001 %		<LOD
36	benzo[ghi]perylene		205-883-8	191-24-2		<0.1 mg/kg		<0.1 mg/kg	<0.00001 %		<LOD
37	polychlorobiphenyls; PCB	602-039-00-4	215-648-1	1336-36-3		<0.01 mg/kg		<0.01 mg/kg	<0.000001 %		<LOD
38	barium { barium chloride }	056-004-00-8	233-788-1	10361-37-2		67 mg/kg	1.516	91.435 mg/kg	0.00914 %	✓	
39	monohydric phenols			P1186		<0.3 mg/kg		<0.3 mg/kg	<0.00003 %		<LOD
40	coronene		205-881-7	191-07-1		<0.1 mg/kg		<0.1 mg/kg	<0.00001 %		<LOD
41	sulfur { sulfur }	016-094-00-1	231-722-6	7704-34-9		<0.75 mg/kg		<0.75 mg/kg	<0.000075 %		<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 Deteminand - 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: BH09/0.50/2023-12-11

WAC Settings: samples in this Job do not constitute a single population.

WAC limits used to evaluate this sample: "Ireland"
The WAC used in this report are the WAC defined for the inert and non-hazardous classes of landfill in the Republic of Ireland. 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 FAILS the Inert (Inert waste landfill) criteria.

The sample PASSES the Non Haz (Non hazardous waste landfill) criteria.

WAC Determinands

Solid Waste Analysis				Landfill Waste Acceptance Criteria Limits	
#	Determinand		User entered data	Inert waste landfill	Non hazardous waste landfill
1	TOC (total organic carbon)	%	4.1	3	5
2	LOI (loss on ignition)	%	2.5	-	-
3	BTEX (benzene, toluene, ethylbenzene and xylenes)	mg/kg	<0.04	6	-
4	PCBs (polychlorinated biphenyls, 7 congeners)	mg/kg	<0.01	1	-
5	Mineral oil (C10 to C40)	mg/kg	35	500	-
6	PAHs (polycyclic aromatic hydrocarbons)	mg/kg	<1.6	100	-
7	pH	pH	11.2	-	>6
8	ANC (acid neutralisation capacity)	mol/kg	<1	-	-
Eluate Analysis 10:1					
9	arsenic	mg/kg	0.012	0.5	2
10	barium	mg/kg	<0.1	20	100
11	cadmium	mg/kg	<0.02	0.04	1
12	chromium	mg/kg	<0.1	0.5	10
13	copper	mg/kg	<0.02	2	50
14	mercury	mg/kg	<0.002	0.01	0.2
15	molybdenum	mg/kg	<0.1	0.5	10
16	nickel	mg/kg	<0.1	0.4	10
17	lead	mg/kg	<0.05	0.5	10
18	antimony	mg/kg	<0.05	0.06	0.7
19	selenium	mg/kg	<0.03	0.1	0.5
20	zinc	mg/kg	<0.01	4	50
21	chloride	mg/kg	<100	800	15,000
22	fluoride	mg/kg	<0.1	10	150
23	sulphate	mg/kg	110	1,000	20,000
24	phenol index	mg/kg	<1	1	-
25	DOC (dissolved organic carbon)	mg/kg	<50	500	800
26	TDS (total dissolved solids)	mg/kg	960	4,000	60,000

Key

User supplied data

Inert WAC criteria fail

Classification of sample: BH09/1.00/2023-12-11

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

Sample details

Sample name:
BH09/1.00/2023-12-11

Moisture content:
13%
(wet weight correction)

LoW Code:

Chapter: 17: Construction and Demolition Wastes (including excavated soil from contaminated sites)

Entry: 17 05 04 (Soil and stones other than those mentioned in 17 05 03)

Hazard properties

None identified

Determinands

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

#		Determinand	EU CLP index number	EC Number	CAS Number	CLP Note	User entered data		Conv. Factor	Compound conc.		Classification value	MC Applied	Conc. Not Used
1		antimony { antimony trioxide }	051-005-00-X	215-175-0	1309-64-4		1	mg/kg	1.197	1.041	mg/kg	0.000104 %	✓	
2		arsenic { arsenic trioxide }	033-003-00-0	215-481-4	1327-53-3		17	mg/kg	1.32	19.528	mg/kg	0.00195 %	✓	
3		boron { diboron trioxide }	005-008-00-8	215-125-8	1303-86-2	11	0.3	mg/kg	3.22	0.84	mg/kg	0.000084 %	✓	
4		cadmium { cadmium oxide }	048-002-00-0	215-146-2	1306-19-0		0.9	mg/kg	1.142	0.894	mg/kg	0.0000894 %	✓	
5		chromium in chromium(III) compounds { chromium(III) oxide (worst case) }		215-160-9	1308-38-9		14	mg/kg	1.462	17.802	mg/kg	0.00178 %	✓	
6		chromium in chromium(VI) compounds { chromium (VI) compounds, with the exception of barium chromate and of compounds specified elsewhere in this Annex }	024-017-00-8				<1	mg/kg	2.27	<2.27	mg/kg	<0.000227 %		<**LOD**
7		copper { dicopper oxide; copper (I) oxide }	029-002-00-X	215-270-7	1317-39-1		36	mg/kg	1.126	35.263	mg/kg	0.00353 %	✓	
8		lead { lead chromate }	082-004-00-2	231-846-0	7758-97-6	1	44	mg/kg	1.56	59.71	mg/kg	0.00383 %	✓	
9		mercury { mercury dichloride }	080-010-00-X	231-299-8	7487-94-7		0.17	mg/kg	1.353	0.2	mg/kg	0.00002 %	✓	
10		molybdenum { molybdenum(VI) oxide }	042-001-00-9	215-204-7	1313-27-5		1.7	mg/kg	1.5	2.219	mg/kg	0.000222 %	✓	
11		nickel { nickel chromate }	028-035-00-7	238-766-5	14721-18-7		22	mg/kg	2.976	56.966	mg/kg	0.0057 %	✓	
12		selenium { nickel selenate }	028-031-00-5	239-125-2	15060-62-5		<0.5	mg/kg	2.554	<1.277	mg/kg	<0.000128 %		<**LOD**
13		zinc { zinc chromate }	024-007-00-3	236-878-9	13530-65-9		75	mg/kg	2.774	181.013	mg/kg	0.0181 %	✓	
14		tert-butyl methyl ether; MTBE; 2-methoxy-2-methylpropane	603-181-00-X	216-653-1	1634-04-4		<0.01	mg/kg		<0.01	mg/kg	<0.000001 %		<**LOD**
15		benzene	601-020-00-8	200-753-7	71-43-2		<0.01	mg/kg		<0.01	mg/kg	<0.000001 %		<**LOD**
16		toluene	601-021-00-3	203-625-9	108-88-3		<0.01	mg/kg		<0.01	mg/kg	<0.000001 %		<**LOD**

#		Determinand	EU CLP index number	EC Number	CAS Number	CLP Note	User entered data		Conv. Factor	Compound conc.		Classification value	MC Applied	Conc. Not Used
17		ethylbenzene	601-023-00-4	202-849-4	100-41-4		<0.01	mg/kg		<0.01	mg/kg	<0.000001 %		<**LOD**
18		xylene	601-022-00-9	202-422-2 [1] 203-396-5 [2] 203-576-3 [3] 215-535-7 [4]	95-47-6 [1] 106-42-3 [2] 108-38-3 [3] 1330-20-7 [4]		<0.01	mg/kg		<0.01	mg/kg	<0.000001 %		<**LOD**
19		cyanides { salts of hydrogen cyanide with the exception of complex cyanides such as ferrocyanides, ferricyanides and mercuric oxycyanide and those specified elsewhere in this Annex }	006-007-00-5				<0.1	mg/kg	1.884	<0.188	mg/kg	<0.0000188 %		<**LOD**
20		pH			PH		9.4	pH		9.4	pH	9.4 pH		
21		naphthalene	601-052-00-2	202-049-5	91-20-3		<0.1	mg/kg		<0.1	mg/kg	<0.00001 %		<**LOD**
22		acenaphthylene		205-917-1	208-96-8		0.2	mg/kg		0.174	mg/kg	0.0000174 %	✓	
23		acenaphthene		201-469-6	83-32-9		<0.1	mg/kg		<0.1	mg/kg	<0.00001 %		<**LOD**
24		fluorene		201-695-5	86-73-7		<0.1	mg/kg		<0.1	mg/kg	<0.00001 %		<**LOD**
25		phenanthrene		201-581-5	85-01-8		0.1	mg/kg		0.087	mg/kg	0.0000087 %	✓	
26		anthracene		204-371-1	120-12-7		<0.1	mg/kg		<0.1	mg/kg	<0.00001 %		<**LOD**
27		fluoranthene		205-912-4	206-44-0		0.5	mg/kg		0.435	mg/kg	0.0000435 %	✓	
28		pyrene		204-927-3	129-00-0		0.5	mg/kg		0.435	mg/kg	0.0000435 %	✓	
29		benzo[a]anthracene	601-033-00-9	200-280-6	56-55-3		0.4	mg/kg		0.348	mg/kg	0.0000348 %	✓	
30		chrysene	601-048-00-0	205-923-4	218-01-9		0.2	mg/kg		0.174	mg/kg	0.0000174 %	✓	
31		benzo[b]fluoranthene	601-034-00-4	205-911-9	205-99-2		0.3	mg/kg		0.261	mg/kg	0.0000261 %	✓	
32		benzo[k]fluoranthene	601-036-00-5	205-916-6	207-08-9		0.1	mg/kg		0.087	mg/kg	0.0000087 %	✓	
33		benzo[a]pyrene; benzo[def]chrysene	601-032-00-3	200-028-5	50-32-8		0.6	mg/kg		0.522	mg/kg	0.0000522 %	✓	
34		indeno[123-cd]pyrene		205-893-2	193-39-5		<0.1	mg/kg		<0.1	mg/kg	<0.00001 %		<**LOD**
35		dibenz[a,h]anthracene	601-041-00-2	200-181-8	53-70-3		<0.1	mg/kg		<0.1	mg/kg	<0.00001 %		<**LOD**
36		benzo[ghi]perylene		205-883-8	191-24-2		<0.1	mg/kg		<0.1	mg/kg	<0.00001 %		<**LOD**
37		polychlorobiphenyls; PCB	602-039-00-4	215-648-1	1336-36-3		<0.01	mg/kg		<0.01	mg/kg	<0.000001 %		<**LOD**
38		barium { barium chloride }	056-004-00-8	233-788-1	10361-37-2		83	mg/kg	1.516	109.494	mg/kg	0.0109 %	✓	
39		monohydric phenols			P1186		<0.3	mg/kg		<0.3	mg/kg	<0.00003 %		<**LOD**
40		coronene		205-881-7	191-07-1		<0.1	mg/kg		<0.1	mg/kg	<0.00001 %		<**LOD**
41		sulfur { sulfur }	016-094-00-1	231-722-6	7704-34-9		<0.75	mg/kg		<0.75	mg/kg	<0.000075 %		<**LOD**
											Total:	0.0472 %		

Key

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

WAC results for sample: BH09/1.00/2023-12-11

WAC Settings: samples in this Job do not constitute a single population.

WAC limits used to evaluate this sample: "Ireland"
The WAC used in this report are the WAC defined for the inert and non-hazardous classes of landfill in the Republic of Ireland. 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 Non Haz (Non hazardous waste landfill) criteria.

WAC Determinands

Solid Waste Analysis				Landfill Waste Acceptance Criteria Limits	
#	Determinand		User entered data	Inert waste landfill	Non hazardous waste landfill
1	TOC (total organic carbon)	%	2	3	5
2	LOI (loss on ignition)	%	3	-	-
3	BTEX (benzene, toluene, ethylbenzene and xylenes)	mg/kg	<0.04	6	-
4	PCBs (polychlorinated biphenyls, 7 congeners)	mg/kg	<0.01	1	-
5	Mineral oil (C10 to C40)	mg/kg	130	500	-
6	PAHs (polycyclic aromatic hydrocarbons)	mg/kg	2.9	100	-
7	pH	pH	9.4	-	>6
8	ANC (acid neutralisation capacity)	mol/kg	<1	-	-
Eluate Analysis 10:1					
9	arsenic	mg/kg	0.097	0.5	2
10	barium	mg/kg	<0.1	20	100
11	cadmium	mg/kg	<0.02	0.04	1
12	chromium	mg/kg	<0.1	0.5	10
13	copper	mg/kg	0.17	2	50
14	mercury	mg/kg	<0.002	0.01	0.2
15	molybdenum	mg/kg	<0.1	0.5	10
16	nickel	mg/kg	<0.1	0.4	10
17	lead	mg/kg	<0.05	0.5	10
18	antimony	mg/kg	<0.05	0.06	0.7
19	selenium	mg/kg	<0.03	0.1	0.5
20	zinc	mg/kg	0.015	4	50
21	chloride	mg/kg	<100	800	15,000
22	fluoride	mg/kg	<0.1	10	150
23	sulphate	mg/kg	150	1,000	20,000
24	phenol index	mg/kg	<1	1	-
25	DOC (dissolved organic carbon)	mg/kg	<50	500	800
26	TDS (total dissolved solids)	mg/kg	470	4,000	60,000

Key

User supplied data

Appendix A: Classifier defined and non EU CLP determinands

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

Description/Comments: Data from C&L Inventory Database
Data source: https://echa.europa.eu/information-on-chemicals/cl-inventory-database/-/discli/details/33806
Data source date: 17 Jul 2015
Hazard Statements: Acute Tox. 4; H332 , Acute Tox. 4; H302 , Eye Irrit. 2; H319 , STOT SE 3; H335 , Skin Irrit. 2; H315 , Resp. Sens. 1; H334 , Skin Sens. 1; H317 , Repr. 1B; H360FD , Aquatic Acute 1; H400 , Aquatic Chronic 1; H410

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

EU CLP index number: 601-023-00-4
Description/Comments:
Additional Hazard Statement(s): Carc. 2; H351
Reason for additional Hazards Statement(s):
03 Jun 2015 - Carc. 2; H351 hazard statement sourced from: IARC Group 2B (77) 2000

salts of hydrogen cyanide with the exception of complex cyanides such as ferrocyanides, ferricyanides and mercuric oxycyanide and those specified elsewhere in this Annex

EU CLP index number: 006-007-00-5
Description/Comments: Conversion factor based on a worst case compound: sodium cyanide
Additional Hazard Statement(s): EUH032 >= 0.2 %
Reason for additional Hazards Statement(s):
14 Dec 2015 - EUH032 >= 0.2 % hazard statement sourced from: WM3, Table C12.2

pH (CAS Number: PH)

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

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

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

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

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

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

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

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

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

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

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

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

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

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

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

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

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

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

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

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

EU CLP index number: 602-039-00-4
Description/Comments: Worst Case: IARC considers PCB Group 1; Carcinogenic to humans;

POP specific threshold from ATP1 (Regulation 756/2010/EU) to POPs Regulation (Regulation 850/2004/EC). Where applicable, the calculation method laid down in European standards EN 12766-1 and EN 12766-2 shall be applied.
Additional Hazard Statement(s): Carc. 1A; H350
Reason for additional Hazards Statement(s):
29 Sep 2015 - Carc. 1A; H350 hazard statement sourced from: IARC Group 1 (23, Sup 7, 100C) 2012

- **monohydric phenols** (CAS Number: P1186)

Description/Comments: Combined hazards statements from harmonised entries in CLP for phenol, cresols and xylenols (604-001-00-2, 604-004-00-9, 604-006-00-X)
Data source: CLP combined data
Data source date: 26 Mar 2019
Hazard Statements: Muta. 2; H341 , Acute Tox. 3; H331 , Acute Tox. 3; H311 , Acute Tox. 3; H301 , STOT RE 2; H373 , Skin Corr. 1B; H314 , Skin Corr. 1B; H314 >= 3 % , Skin Irrit. 2; H315 1 <= conc. < 3 % , Eye Irrit. 2; H319 1 <= conc. < 3 % , Aquatic Chronic 2; H411

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

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

Appendix B: Rationale for selection of metal species

antimony {antimony trioxide}

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

arsenic {arsenic trioxide}

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

boron {diboron trioxide}

Reasonable case CLP species based on hazard statements/ molecular weight, physical form and low solubility. Industrial sources include: fluxing agent for glass/enamels; additive for fibre optics, borosilicate glass

cadmium {cadmium oxide}

Reasonable case CLP species based on hazard statements/molecular weight, very low solubility in water. Industrial sources include: electroplating baths, electrodes for storage batteries, catalysts, ceramic glazes, phosphors, pigments and nematocides.

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

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

chromium in chromium(VI) compounds {chromium (VI) compounds, with the exception of barium chromate and of compounds specified elsewhere in this Annex}

Worst case species based on hazard statements/molecular weight

copper {dicopper oxide; copper (I) oxide}

Reasonable case CLP species based on hazard statements/molecular weight and insolubility in water. Industrial sources include: oxidised copper metal, brake pads, pigments, antifouling paints, fungicide.

lead {lead chromate}

Worst case CLP species based on hazard statements/molecular weight

mercury {mercury dichloride}

Worst case CLP species based on hazard statements/molecular weight

molybdenum {molybdenum(VI) oxide}

Worst case CLP species based on hazard statements/molecular weight

nickel {nickel chromate}

Worst case CLP species based on hazard statements/molecular weight

selenium {nickel selenate}

Worst case CLP species based on hazard statements/molecular weight

zinc {zinc chromate}

Worst case CLP species based on hazard statements/molecular weight

cyanides {salts of hydrogen cyanide with the exception of complex cyanides such as ferrocyanides, ferricyanides and mercuric oxycyanide and those specified elsewhere in this Annex}

Harmonised group entry used as most reasonable case as complex cyanides and those specified elsewhere in the annex are not likely to be present in this soil: [Note conversion factor based on a worst case compound: sodium cyanide]

barium {barium chloride}

Resonable case

sulfur {sulfur}

Resonable case

Appendix C: Version

HazWasteOnline Classification Engine: EU WM3 1st Edition v1.1.NI using the EU LoW
HazWasteOnline Classification Engine Version: 2024.158.6092.11254 (06 Jun 2024)
HazWasteOnline Database: 2024.158.6092.11254 (06 Jun 2024)

This classification utilises the following guidance and legislation:
WM3 v1.1.NI - Waste Classification - 1st Edition v1.1.NI - Jan 2021
CLP Regulation - Regulation 1272/2008/EC of 16 December 2008
1st ATP - Regulation 790/2009/EC of 10 August 2009
2nd ATP - Regulation 286/2011/EC of 10 March 2011
3rd ATP - Regulation 618/2012/EU of 10 July 2012
4th ATP - Regulation 487/2013/EU of 8 May 2013
Correction to 1st ATP - Regulation 758/2013/EU of 7 August 2013
5th ATP - Regulation 944/2013/EU of 2 October 2013
6th ATP - Regulation 605/2014/EU of 5 June 2014
WFD Annex III replacement - Regulation 1357/2014/EU of 18 December 2014
Revised List of Waste 2014 - Decision 2014/955/EU of 18 December 2014
7th ATP - Regulation 2015/1221/EU of 24 July 2015
8th ATP - Regulation (EU) 2016/918 of 19 May 2016
9th ATP - Regulation (EU) 2016/1179 of 19 July 2016
10th ATP - Regulation (EU) 2017/776 of 4 May 2017
HP14 amendment - Regulation (EU) 2017/997 of 8 June 2017
13th ATP - Regulation (EU) 2018/1480 of 4 October 2018
14th ATP - Regulation (EU) 2020/217 of 4 October 2019
15th ATP - Regulation (EU) 2020/1182 of 19 May 2020
The Chemicals (Health and Safety) and Genetically Modified Organisms (Contained Use)(Amendment etc.) (EU Exit) Regulations 2020 - UK: 2020 No. 1567 of 16th December 2020
The Waste and Environmental Permitting etc. (Legislative Functions and Amendment etc.) (EU Exit) Regulations 2020 - UK: 2020 No. 1540 of 16th December 2020
17th ATP - Regulation (EU) 2021/849 of 11 March 2021
18th ATP - Regulation (EU) 2022/692 of 16 February 2022
POPs Amendment 2022 - Regulation (EU) 2022/2400 of 23 November 2022
19th ATP - Regulation (EU) 2023/1434 of 25 April 2023
20th ATP - Regulation (EU) 2023/1435 of 2 May 2023
21st ATP - Regulation (EU) 2024/197 of 19 October 2023