NDFA Social Housing Lot 3
Oldtown Mill – Interpretive Report

Client:	NDFA on behalf of Kildare County Council
Client's Representative:	Malone O'Regan Consulting Engineers
Report No.:	23-0881E
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Document Control Sheet

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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 – Oldtown Mill - Interpretive Report

1 AUTHORITY

On the instructions of Malone O'Regan Consulting Engineers, ("the Client's Representative"), acting on the behalf of NDFA and Kildare County Council ("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, groundwater monitoring, 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 on an undeveloped site located in Oldtown, County Kildare. The site is bordered by agricultural land to the north and west, The Orchard housing estate to the south, and Oldtown Road to the east. Elevations vary across the site, with a slight rise in elevation towards the east.

The site is currently comprised of several stockpiles of spoil material. These were required to be moved to gain access to some of the positions.

4 SITE OPERATIONS

4.1 Summary of site works

Site operations, which were conducted between the 10th of October and 28th of November 2023, comprised:

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

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 sixteen 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 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

Thirteen boreholes (BH01-BH03A and BH04-BH12) 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 large boulders and weathered bedrock.

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.

No groundwater strikes were encountered during boring.

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 boreholes

Three boreholes (RC01-RC03) were put to their completion by rotary drilling techniques only. The boreholes were completed using a Comacchio 405 drilling rig.

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 BH06 and RC02.

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

Six trial pits (TP01-TP06) were excavated using a 13t tracked excavator fitted with a 1000mm wide bucket, to depths ranging between 1.30m and 2.20m.

Environmental samples were taken at depths of 0.50m and 1.00m in each trial pit.

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

No groundwater 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

Three slit trenches (ST01-ST03) 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).

Appendix H presents the infiltration pit logs followed by the results and analysis of the infiltration test.

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.

4.8 Groundwater monitoring

Following completion of site works, groundwater monitoring was conducted over four rounds. Ground water monitoring was carried out using a water interface probe.

The monitoring records are presented in Section 6.3.

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.

6 GROUND CONDITIONS

6.1 General geology of the area

Published geological mapping indicate the superficial deposits underlying the site comprise glacial till. These deposits are underlain by dark limestone and shale of the Lucan Formation.

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 surface:** BH02-BH03A encountered 200mm to 300mm of bitmac surfacing.
- **Topsoil:** encountered in BH05 and RC02 in 100mm and 300mm thickness respectively.
- **Made Ground (sub-base):** approximately 550mm of aggregate fill beneath the paved surface in BH03 and BH03A.
- **Made Ground (fill):** reworked sandy silty gravel fill or sandy gravelly clay fill with varying fragments of bitmac, concrete, plastic, wood and red brick extending to a depth of 0.30m-2.20m.
- **Glacial Till:** sandy gravelly clay, frequently with low cobble content, typically firm or stiff in upper horizons, becoming very stiff with increasing depth.
- **Bedrock (Mudstone and Limestone):** Weak grey mudstone rockhead was encountered at depths

ranging from 1.60m in RC01 to about 1.70m in RC02. Strong dark grey limestone rockhead was encountered at a depth of 1.90m in RC03. In addition, all other exploratory holes were terminated at depths ranging between 1.00m and 2.45m upon encountering possible bedrock, with the exception of the slit trenches, indicating that they all terminated on either weathered or competent bedrock.

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.

Groundwater was also not noted during excavation of any of the trial pits or slit trenches.

Subsequent groundwater monitoring of the standpipe installations recorded water levels as shown in Table 1.

Table 1 Groundwater monitoring

Date	Water Level (mbgl)	
	BH06	RC02
02/11/2023	0.00*	-
30/11/2023	0.00*	2.94
07/12/2023	0.00*	2.84
15/12/2023	0.00*	2.26
17/01/2024	0.00*	2.92
20/02/2024	0.00*	2.45
13/03/2024	0.00*	2.56

*The area around BH06 was flooded, with water covering the flush cover. Water level was estimated to be 10cm above the flush cover but is not indicative of groundwater levels.

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

The standpipe installation in RC02 has been placed within the rock, as it is believed the groundwater table for the site is likely within bedrock. Water levels were recorded (2.26-2.94mbgl) across the site over a two week period, however it is recommended that further monitoring (minimum 6 months) be undertaken to give a larger dataset to draw any conclusions from. It should be noted that the levels shown in Table 1 are winter levels, with summer levels likely to be lower given the generally drier weather during this period.

None of the trial pits or slit trenches encountered groundwater during excavation of the overburden, implying that the there is no perched aquifer present within the overburden and any groundwater encountered during excavations is likely to isolated pockets which can be dealt with by localised sump and pump techniques.

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 building, the implementation of traditional shallow (spread) foundations (strip/pad) 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 2.

Table 2: 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	Stiff CLAY	Strip & pad	Suspended	Not encountered
BH02	1.20m	180	Medium dense GRAVEL	Strip & pad	Ground bearing	Not encountered
BH03	1.00m	250	Dense GRAVEL (Weathered BEDROCK)	Strip & pad	Suspended	Not encountered
BH03A	1.10m	250	Dense GRAVEL (Weathered BEDROCK)	Strip & pad	Suspended	Not encountered
BH04	1.20m	250	Dense GRAVEL (Weathered BEDROCK)	Strip & pad	Ground bearing	Not encountered
BH05	1.20m	240	Stiff CLAY	Strip & pad	Ground bearing	Not encountered
BH06	1.20m	130	Firm CLAY	Strip & pad	Suspended	Not encountered
BH07	1.20m	230	Stiff CLAY	Strip & pad	Ground bearing	Not encountered
BH08	1.20m	120	Firm CLAY	Strip & pad	Suspended	Not encountered
BH09	1.20m	150	Stiff CLAY	Strip & pad	Suspended	Not encountered
BH10	1.20m	190	Stiff CLAY	Strip & pad	Suspended	Not encountered
BH11	1.20m	130	Firm CLAY	Strip & pad	Suspended	Not encountered
BH12	1.20m	170	Stiff CLAY	Strip & pad	Suspended	Not encountered
RC01	1.60m	250	Weathered BEDROCK	Strip & pad	Ground bearing	Not encountered
RC02	1.70m	250	Weathered BEDROCK	Strip & pad	Ground bearing	Not encountered
RC03	1.90m	250	Weathered BEDROCK	Strip & pad	Suspended	Not encountered

*Existing Ground Level

**providing made ground is removed and replaced with engineered fill

Based on the findings of the ground investigation, spread foundations (strip/pad) are considered suitable with estimated allowable bearing pressures between 130kPa and 250kPa at depths between 1.00m and 1.90m on firm to stiff clay or weathered bedrock.

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.

Some localized breaking out of weathered rock may be required, however it is anticipated that any weathered bedrock will be excavatable using conventional digging techniques.

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 and relative low strength of upper soil layers, 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 some trench support required for excavation through any made ground.

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 Rock excavatability

Rotary drilling established the depth to rockhead, as summarised below in Table 2.

Table 2: Depth to rockhead

BH ID	Depth to weathered bedrock (mbgl)	Depth to competent bedrock (mbgl)	Comments
RC01	1.60	2.20	Cored from 2.50m
RC02	1.70	2.20	Cored from 2.50m
RC03	1.90	2.20	Cored from 2.50m

As shown above, depth to weathered bedrock rockhead depth proven by rotary drilling is 1.60-1.90m. Based on those depths and termination depths of cable percussion and trial pits of 1.00m to 2.50m it is reasonable to expect shallow bedrock conditions across the site with local variations in depth likely.

Findings of the rotary boreholes indicated that the upper bedrock encountered is weathered in nature and more of a mudstone which is generally weaker than it's limestone counterpart. This stratum is likely to be excavatable using a large excavator by, however should more competent bedrock be encountered, localized hydraulic breaking will be likely.

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 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 or DS-2 and ACEC Class AC-1s or AC-2 – 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).

7.3 Infiltration drainage

In infiltration test carried out in SA01, the rate of infiltration was calculated as 0.06m/hr whilst the absence of outflow from the pit in SA02 precluded the calculation of any infiltration coefficients. The low-permeability fine-grained soils are therefore considered to be poor infiltration media, and would be deemed unsuitable for the implementation of infiltration drainage systems.

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 majority of material tested can be classified as Class 2 General Cohesive Fill subject to further testing.

Several single point CBR tests were completed on samples from the upper 1m in order as it is assumed any earthworks across the site will not go beyond this depth. As can be seen from the tests results, only three tests results indicated a CBR>2%, with test results indicating a large NMC range. It is possible that processing of the material prior to re-use may increase its strength, 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.

Lastly, it should be noted that the stockpiles on site were not tested as part of this scope of works. If the material on site is required to be re-used within the site a rigorous lab testing regime should be carried out to fully classify the material.

7.5 Site contamination and waste disposal

Selected soil samples were analysed for a range of potential contaminants including:

- Metals;
- Speciated total petroleum hydrocarbons (TPH);
- Speciated polycyclic aromatic hydrocarbons (PAH);
- Cyanides;
- Sulphates and sulphide;
- Phenols; and
- Asbestos screening

Select samples were also tested for a Waste Acceptance Criteria (WAC) suite to assess the potential categorisation of waste from the site.

In the initial examination of the potential risk of site contamination, the laboratory results have been compared to the LQM/CIEH S4UL's assessment criteria relevant to the proposed land use.

The results from the tested samples do not identify significantly elevated concentrations above the available S4UL's.

It should be noted that the above assessment is based on the results of the soil samples against available S4UL's and this assessment has not been undertaken following the LCRM guidelines. Any potential contamination identified during site development by visual or olfactory means should be investigated, including further laboratory testing, and appropriate health & safety, waste disposal and remediation measures adopted.

In assessment of the waste acceptance criteria (WAC) results, the test results have been compared with the European Union Directive limits for Inert waste landfill, Stable, Non-reactive hazardous waste in non-hazardous landfill and hazardous waste landfill criteria. From the samples tested for WAC analysis material from the site may potentially be classified as inert/non-hazardous. Any material excavated for off-site disposal would have to be classified under the guidance in the National Hazardous Waste Management Plan (EPA, 2014).

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 (2005) BRE Special Digest 1, Concrete in aggressive ground.

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

Highways England (2020), CS 229, Data for pavement assessment.

Land contamination risk management (LCRM), (2020) Environment Agency.

CAUSEWAY GEOTECH

APPENDIX A

SITE AND EXPLORATORY HOLE LOCATION PLANS

CAUSEWAY GEOTECH

Project No.:	23-0881E	**Client:**	NDFA
Project Name:	NDFA Social Housing Lot 3 - Oldtown Mill	**Client's Representative:**	Malone O'Regan Consulting Engineers

Legend Key

Title:

Site Location Plan

Last Revised:	**Scale:**
05/12/2023	1:8000

CAUSEWAY GEOTECH

Project No.:	23-0881E	**Client:**	NDFA
Project Name:	NDFA Social Housing Lot 3 - Oldtown Mill	**Client's Representative:**	Malone O'Regan Consulting Engineers

Legend Key

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

Title:
Exploratory Hole Location Plan

Last Revised:	**Scale:**
08/12/2023	1:1500

CAUSEWAY GEOTECH

APPENDIX B

BOREHOLE LOGS

CAUSEWAY GEOTECH

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

Method	Plant Used	Top (m)	Base (m)	Coordinates
Cable Percussion	Dando 2000	0.00	2.45	696217.46 E 734043.66 N

Final Depth:	2.45 m	Start Date:	10/10/2023	Driller:	BE	Sheet 1 of 1 Scale: 1:40
Elevation:	70.72 mOD	End Date:	10/10/2023	Logger:	SR	FINAL

Depth (m)	Sample / Tests	Field Records	Casing Depth (m)	Water Depth (m)	Level mOD	Depth (m)	Legend	Description	Water	Backfill
0.50	ES1							MADE GROUND: Soft brown sandy gravelly CLAY with fragments of concrete. Sand is fine to coarse. Gravel is subangular fine to coarse.		
0.50 - 1.20	B5				70.12	0.60		Stiff becoming very stiff brown slightly sandy gravelly CLAY. Sand is fine to coarse. Gravel is subangular fine to medium.		
1.00	D3									
1.00	ES2									
1.20	B6									
1.20 - 1.65	D4									
1.20 - 1.50	SPT (S)	50 (4,5/50 for 155mm) Hammer SN = 0895	1.20	Dry						
2.00	D8				68.72	2.00		Very stiff dark grey sandy gravelly CLAY with low cobble content. Sand is fine to coarse. Gravel is subangular fine to coarse. Cobbles are subangular.		
2.00 - 2.30	B9									
2.00 - 2.45	D7									
2.00 - 2.15	SPT (S)	50 (25 for 145mm/50 for 10mm) Hammer SN = 0895	2.00	Dry						
2.30		10-10-2023	2.30	0.00	68.27	2.45		End of Borehole at 2.45m		

Water Strikes

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

Casing Details

To (m)	Diameter
2.30	200

Water Added

From (m)	To (m)

Chiselling Details

From (m)	To (m)	Time (hh:mm)
2.00	2.30	00:45

Remarks

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

Termination Reason

Terminated at refusal on boulder / possible bedrock.

Last Updated

08/12/2023

AGS

CAUSEWAY GEOTECH

Project No.	Project Name:	Borehole ID
23-0881E	NDFA Social Housing Lot 3 - Oldtown Mill	BH02
	Client: NDFA	
	Client's Rep: Malone O'Regan Consulting Engineers	

Method	Plant Used	Top (m)	Base (m)	Coordinates
Cable Percussion	Dando 2000	0.00	1.70	696200.92 E 734036.24 N

Final Depth:	1.70 m	Start Date:	11/10/2023	Driller:	BE	Sheet 1 of 1 Scale: 1:40
Elevation:	70.72 mOD	End Date:	11/10/2023	Logger:	SR	FINAL

Depth (m)	Sample / Tests	Field Records	Casing Depth (m)	Water Depth (m)	Level mOD	Depth (m)	Legend	Description	Water	Backfill
								BITMAC		
0.30 - 0.80	B4				70.42	0.30		Firm brown slightly sandy slightly gravelly CLAY. Sand is fine to coarse. Gravel is subangular fine to medium.		
0.50	ES1									
0.80	B5									
1.00	D3									
1.00	ES2									
1.20 - 1.65	D6				69.52	1.20		Medium dense dark grey angular fine to coarse GRAVEL with low cobble content. Cobbles are angular. (Possible weathered bedrock)		
1.20 - 1.70	B7									
1.20 - 1.65	SPT (S)	N=18 (2,4/4,4,5,5) Hammer SN = 0895	1.20	Dry						
1.70	B8				69.02	1.70		End of Borehole at 1.70m		

Water Strikes

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

Casing Details

To (m)	Diameter
1.70	200

Water Added

From (m)	To (m)

Chiselling Details

From (m)	To (m)	Time (hh:mm)
1.70	1.70	01:00

Remarks

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

Termination Reason

Terminated at refusal on boulder / possible bedrock.

Last Updated

08/12/2023

AGS

CAUSEWAY GEOTECH

Project No.	Project Name:	Borehole ID
23-0881E	NDFA Social Housing Lot 3 - Oldtown Mill	BH03
	Client: NDFA	
	Client's Rep: Malone O'Regan Consulting Engineers	

Method	Plant Used	Top (m)	Base (m)	Coordinates
Cable Percussion	Dando 2000	0.00	1.00	696230.70 E 734006.47 N

Final Depth:	1.00 m	Start Date:	10/10/2023	Driller:	BE	Sheet 1 of 1 Scale: 1:40
Elevation:	70.61 mOD	End Date:	10/10/2023	Logger:	SR	FINAL

Depth (m)	Sample / Tests	Field Records	Casing Depth (m)	Water Depth (m)	Level mOD	Depth (m)	Legend	Description	Water	Backfill
					70.41	0.20		BITMAC		
0.50	ES1							MADE GROUND: Dark grey very sandy angular fine to coarse GRAVEL with low cobble content. Sand is fine to coarse. Cobbles are angular of limestone.		
					69.81	0.80				
1.00	D3				69.61	1.00		Dense grey sandy slightly silty angular fine to coarse GRAVEL with low cobble content. Cobbles are subangular of limestone. (Possible bedrock)		
1.00	ES2									
1.00 - 1.01	SPT (S)	50 (25 for 5mm/50 for 5mm) Hammer SN = 0895	1.00	Dry						
1.00		10-10-2023	0.00	0.00				End of Borehole at 1.00m		

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)
1.00	1.00	01:00

Remarks

Inspection pit hand dug to 1.00m.
No groundwater encountered.

Termination Reason

Terminated at refusal on boulder / possible bedrock.

Last Updated

08/12/2023

AGS

CAUSEWAY GEOTECH

Project No.	Project Name:	Borehole ID
23-0881E	NDFA Social Housing Lot 3 - Oldtown Mill	BH03A
	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	696230.70 E 734006.47 N

Final Depth:	1.10 m	Start Date:	10/10/2023	Driller:	BE	Sheet 1 of 1 Scale: 1:40
Elevation:	70.65 mOD	End Date:	10/10/2023	Logger:	SR	FINAL

Depth (m)	Sample / Tests	Field Records	Casing Depth (m)	Water Depth (m)	Level mOD	Depth (m)	Legend	Description	Water	Backfill
								BITMAC		
0.30 - 0.80	B4				70.35	0.30		MADE GROUND: Dark grey sandy angular fine to coarse GRAVEL with low cobble content. Sand is fine to coarse. Cobbles are angular.		
0.50	ES1									
0.80 - 1.00	B6				69.85	0.80		Firm brown sandy gravelly CLAY. Sand is fine to coarse. Gravel is suabngular fine to coarse.		
1.00	D3									
1.00	ES2				69.55	1.10		End of Borehole at 1.10m		
1.10 - 1.12	SPT (S)	50 (25 for 10mm/50 for 5mm) Hammer SN = 0895	1.10	Dry						

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)	Diameter

Water Added

From (m)	To (m)

Chiselling Details

From (m)	To (m)	Time (hh:mm)
1.10	1.10	01:00

Remarks

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

Termination Reason

Terminated at refusal on boulder / possible bedrock.

Last Updated

08/12/2023

AGS

CAUSEWAY GEOTECH

Project No.	Project Name:	Borehole ID
23-0881E	NDFA Social Housing Lot 3 - Oldtown Mill	BH04
	Client: NDFA	
	Client's Rep: Malone O'Regan Consulting Engineers	

Method	Plant Used	Top (m)	Base (m)	Coordinates
Cable Percussion	Dando 2000	0.00	1.35	696181.40 E 734009.37 N

Final Depth:	1.35 m	Start Date:	11/10/2023	Driller:	BE	Sheet 1 of 1 Scale: 1:40
Elevation:	70.43 mOD	End Date:	11/10/2023	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 - 0.40	B4				70.33	0.10		MADE GROUND: Soft brown sandy gravelly clay with fragments of bitmac. Sand is fine to coarse. Gravel is subangular fine to coarse.		
0.40 - 0.90	B5				70.03	0.40		MADE GROUND: Soft dark grey sandy gravelly CLAY with low cobble content. Sand is fine to coarse. Gravel is angular fine to coarse. Cobbles are angular.		
0.50	ES1							Firm dark brown sandy gravelly CLAY with low cobble content. Sand is fine to coarse. Gravel is subangular fine to coarse. Cobbles are subangular.		
0.90	B6				69.53	0.90		Stiff brown slightly sandy slightly gravelly CLAY. Sand is fine to coarse. Gravel is subangular fine to medium.		
1.00	D3							Possible BEDROCK (recovered through percussive drilling as angular gravel)		
1.00	ES2							End of Borehole at 1.35m		
1.20 - 1.35	B8				69.23	1.20				
1.20 - 1.35	D7				69.08	1.35				
1.20 - 1.40	SPT (S)	50 (3,22/50 for 50mm) Hammer SN = 0895	1.20	Dry						

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)
1.20	1.35	01:00

Remarks

Inspection pit hand dug to 1.20m.
No groundwater encountered.
Stockpiles cleared prior to drilling.

Termination Reason

Terminated at refusal on boulder / possible bedrock.

Last Updated

08/12/2023

AGS

CAUSEWAY GEOTECH

Project No.	Project Name: NDFA Social Housing Lot 3 - Oldtown Mill	Borehole ID
23-0881E	Client: NDFA	BH05
	Client's Rep: Malone O'Regan Consulting Engineers	

Method	Plant Used	Top (m)	Base (m)	Coordinates
Cable Percussion	Dando 2000	0.00	2.30	696234.99 E 733980.67 N

Final Depth:	2.30 m	Start Date:	10/10/2023	Driller:	BE	Sheet 1 of 1 Scale: 1:40
Elevation:	70.77 mOD	End Date:	11/10/2023	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				70.67	0.10		TOPSOIL: Dark brown slightly sandy CLAY. Sand is fine.		
0.50	ES1							Firm becoming stiff brown slightly sandy slightly gravelly CLAY. Sand is fine to coarse. Gravel is subangular fine to medium.		
1.00	B									
1.00	D3									
1.00	ES2									
1.20 - 1.65	D5									
1.20 - 2.00	B6									
1.20 - 1.65	SPT (S)	N=24 (4,5/5,6,6,7) Hammer SN = 0895	1.20	Dry						
2.00	D7				68.77	2.00		Possible BEDROCK (recovered through percussive drilling as angular gravel)		
2.00 - 2.20	B9									
2.00 - 2.20	D8									
2.00 - 2.12	SPT (S)	50 (25 for 70mm/50 for 50mm) Hammer SN = 0895	2.00	Dry	68.47	2.30		End of Borehole at 2.30m		
2.20 - 2.30	B10									

Water Strikes

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

Casing Details

To (m)	Diameter
1.70	200

Water Added

From (m)	To (m)

Chiselling Details

From (m)	To (m)	Time (hh:mm)
2.20	2.30	01:00

Remarks

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

Termination Reason

Terminated at refusal on boulder / possible bedrock.

Last Updated

08/12/2023

AGS

CAUSEWAY GEOTECH

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

Method	Plant Used	Top (m)	Base (m)	Coordinates
Cable Percussion	Dando 2000	0.00	2.30	696151.64 E 733944.55 N

Final Depth:	2.30 m	Start Date:	17/10/2023	Driller:	BE	Sheet 1 of 1 Scale: 1:40
Elevation:	69.95 mOD	End Date:	17/10/2023	Logger:	CB	FINAL

Depth (m)	Sample / Tests	Field Records	Casing Depth (m)	Water Depth (m)	Level mOD	Depth (m)	Legend	Description
0.00 - 0.80	B4							MADE GROUND: Soft brown sandy gravelly CLAY with fragments of concrete and red brick. Sand is fine to coarse. Gravel is subrounded fine to medium.
0.50	ES1							
0.80 - 1.20	B5				69.15	0.80		Soft becoming firm brown 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 - 2.00	B7							
1.20 - 1.65	SPT (S)	N=13 (2,3/4,3,3,3) Hammer SN = 0895	1.20	0.00				
2.00	D9				67.95	2.00		Very stiff dark grey slightly sandy slightly gravelly CLAY. Sand is fine to coarse. Gravel is subangular fine to coarse.
2.00 - 2.30	B8							
2.00 - 2.04	SPT (S)	50 (25 for 10mm/50 for 25mm) Hammer SN = 0895	2.00	0.00	67.65	**2.30**		Possible BEDROCK (recovered through percussive drilling as angular gravel)
					67.65			End of Borehole at 2.30m

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)	Diameter
2.00	200

Water Added

From (m)	To (m)

Chiselling Details

From (m)	To (m)	Time (hh:mm)
2.00	2.30	01:00

Remarks

Inspection pit hand dug to 1.20m.
No groundwater encountered.
Stockpiles cleared prior to drilling.

Termination Reason

Terminated at refusal on boulder / possible bedrock.

Last Updated

08/12/2023

AGS

CAUSEWAY GEOTECH

Project No.	Project Name:	Borehole ID
23-0881E	NDFA Social Housing Lot 3 - Oldtown Mill	BH07
	Client: NDFA	
	Client's Rep: Malone O'Regan Consulting Engineers	

Method	Plant Used	Top (m)	Base (m)	Coordinates
Cable Percussion	Dando 2000	0.00	2.00	696189.73 E 733935.56 N

Final Depth:	2.00 m	Start Date:	16/10/2023	Driller:	BE	Sheet 1 of 1 Scale: 1:40
Elevation:	69.72 mOD	End Date:	16/10/2023	Logger:	CB	FINAL

Depth (m)	Sample / Tests	Field Records	Casing Depth (m)	Water Depth (m)	Level mOD	Depth (m)	Legend	Description	Water	Backfill
0.00 - 0.50	B3							MADE GROUND: Soft brown sandy gravelly CLAY. Sand is fine to coarse. Gravel is subrounded fine to coarse.		
0.50	ES1				69.22	0.50				
0.50 - 1.20	B4							Firm becoming stiff brown sandy gravelly CLAY. Sand is fine to coarse. Gravel is subrounded fine to medium.		
1.00	D6									
1.00	ES2									
1.20 - 1.65	D8									
1.20 - 1.65	SPT (S)	N=23 (3,4/3,4,4,12)	1.20	Dry						
1.55 - 1.80	B5				68.17	1.55		Very stiff grey sandy gravelly CLAY. Sand is fine to coarse. Gravel is subangular fine to coarse.		
					67.82	1.90		Possible BEDROCK (recovered through percussive drilling as angular gravel)		
2.00	D7				67.72	2.00				
2.00 - 2.04	SPT (C)	50 (25 for 25mm/50 for 10mm)	1.90	Dry				End of Borehole at 2.00m		

Water Strikes

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

Casing Details

To (m)	Diameter
1.80	200

Water Added

From (m)	To (m)

Chiselling Details

From (m)	To (m)	Time (hh:mm)
1.80	2.00	01:00

Remarks

Inspection pit hand dug to 1.20m.
No groundwater encountered.
Stockpiles cleared prior to drilling.

Termination Reason

Terminated at refusal on boulder / possible bedrock.

Last Updated

08/12/2023

AGS

CAUSEWAY GEOTECH

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

Method	Plant Used	Top (m)	Base (m)	Coordinates
Cable Percussion	Dando 2000	0.00	1.90	696098.23 E 733888.73 N

Final Depth:	1.90 m	Start Date:	19/10/2023	Driller:	BE	Sheet 1 of 1 Scale: 1:40
Elevation:	69.20 mOD	End Date:	20/10/2023	Logger:	CB	FINAL

Depth (m)	Sample / Tests	Field Records	Casing Depth (m)	Water Depth (m)	Level mOD	Depth (m)	Legend	Description	Water	Backfill
0.00 - 1.20	B5							MADE GROUND: Soft brown slightly sandy slightly gravelly CLAY with fragments of concrete and red brick. Sand is fine to coarse. Gravel is subrounded fine to medium.		
0.50	ES1									
1.00	D3									
1.00	ES2									
1.20 - 1.65	D4				68.00	1.20		Firm dark brown slightly sandy slightly gravelly CLAY. Sand is fine to coarse. Gravel is subrounded fine to medium.		
1.20 - 1.70	B6									
1.20 - 1.65	SPT (S)	N=12 (3,3/3,3,3,3)	1.20	Dry						
					67.50	1.70		Possible BEDROCK (recovered through percussive drilling as angular gravel)		
1.90 - 1.90	SPT (C)	50 (25 for 0mm/50 for 0mm)	1.90	Dry	67.30	1.90		End of Borehole at 1.90m		

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)	Diameter
1.90	200

Water Added

From (m)	To (m)

Chiselling Details

From (m)	To (m)	Time (hh:mm)
1.70	1.70	01:00

Remarks

Inspection pit hand dug to 1.20m.
No groundwater encountered.
Stockpiles cleared prior to drilling.

Termination Reason

Terminated at refusal on boulder / possible bedrock.

Last Updated

08/12/2023

AGS

CAUSEWAY GEOTECH

Project No.	Project Name:	Borehole ID
23-0881E	NDFA Social Housing Lot 3 - Oldtown Mill	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	2.20	696144.02 E 733914.60 N

Final Depth:	2.20 m	Start Date:	17/10/2023	Driller:	BE
Elevation:	70.00 mOD	End Date:	17/10/2023	Logger:	CB

Sheet 1 of 1
Scale: 1:40
FINAL

Depth (m)	Sample / Tests	Field Records	Casing Depth (m)	Water Depth (m)	Level mOD	Depth (m)	Legend	Description	Water	Backfill
0.00 - 0.70	B3							MADE GROUND: Soft brown sandy gravelly CLAY. Sand is fine to coarse. Gravel is subangular fine to coarse.		
0.50	ES1									
0.70 - 1.50	B4				69.30	0.70		Firm to stiff brown sandy gravelly CLAY. Sand is fine to coarse. Gravel is subrounded fine to medium.		
1.00	D8									
1.00	ES2									
1.20	D6									
1.20 - 1.65	SPT (S)	N=15 (5,6/3,4,4,4)	1.20	Dry						
1.80 - 2.10	B5				68.20	1.80		Very stiff greyish black sandy gravelly CLAY. Sand is fine to coarse. Gravel is subagular fine to coarse.		
2.00	D7									
2.00 - 2.24	SPT (C)	50 (3,5/50 for 95mm)	2.00	Dry	67.90	2.10		Possible BEDROCK (recovered through percussive drilling as angular gravel)		
					67.80	2.20		End of Borehole at 2.20m		

Water Strikes

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

Casing Details

To (m)	Diameter
2.00	200

Water Added

From (m)	To (m)

Chiselling Details

From (m)	To (m)	Time (hh:mm)
2.00	2.20	01:00

Remarks

Inspection pit hand dug to 1.20m.
No groundwater encountered.
Stockpiles cleared prior to drilling.

Termination Reason

Terminated at refusal on boulder / possible bedrock.

Last Updated

08/12/2023

AGS

CAUSEWAY GEOTECH

Project No.	Project Name:	Borehole ID
23-0881E	NDFA Social Housing Lot 3 - Oldtown Mill	BH10
	Client: NDFA	
	Client's Rep: Malone O'Regan Consulting Engineers	

Method	Plant Used	Top (m)	Base (m)	Coordinates
Cable Percussion	Dando 2000	0.00	2.00	696149.25 E 733889.65 N

Final Depth:	2.00 m	Start Date:	18/10/2023	Driller:	BE
Elevation:	68.99 mOD	End Date:	18/10/2023	Logger:	CB

Sheet 1 of 1
Scale: 1:40
FINAL

Depth (m)	Sample / Tests	Field Records	Casing Depth (m)	Water Depth (m)	Level mOD	Depth (m)	Legend	Description	Water	Backfill
0.00 - 0.70	B3							MADE GROUND: Soft brown sandy gravelly CLAY. Sand is fine to coarse. Gravel is subangular fine to coarse.		
0.50	ES1									
0.70 - 1.20	B4				68.29	0.70		Firm becoming stiff brown sandy gravelly CLAY. Sand is fine to coarse. Gravel is subagular fine to coarse.		
1.00	D6									
1.00	ES2									
1.20	D7									
1.20 - 1.80	B5									
1.20 - 1.65	SPT (S)	N=19 (2,3/5,5,4,5)	1.20	Dry						
					67.19	1.80		Possible BEDROCK (recovered through percussive drilling as angular gravel)		
2.00	D8				66.99	2.00		End of Borehole at 2.00m		
2.00 - 2.01	SPT (S)	50 (25 for 10mm/50 for 0mm)	1.80	Dry						

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)	Diameter
1.80	200

Water Added

From (m)	To (m)

Chiselling Details

From (m)	To (m)	Time (hh:mm)
1.80	2.00	01:00

Remarks

Inspection pit hand dug to 1.20m.
No groundwater encountered.
Stockpiles cleared prior to drilling.

Termination Reason

Terminated at refusal on boulder / possible bedrock.

Last Updated

08/12/2023

AGS

CAUSEWAY GEOTECH

Project No.	Project Name:	Borehole ID
23-0881E	NDFA Social Housing Lot 3 - Oldtown Mill	BH11
	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	696093.86 E 733863.73 N

Final Depth:	Start Date:	Driller:	Sheet 1 of 1
2.10 m	19/10/2023	BE	Scale: 1:40
Elevation: 69.36 mOD	**End Date:** 19/10/2023	**Logger:** CB	FINAL

Depth (m)	Sample / Tests	Field Records	Casing Depth (m)	Water Depth (m)	Level mOD	Depth (m)	Legend	Description	Water	Backfill
0.00 - 1.30	B5							MADE GROUND: Soft brown slightly sandy slightly gravelly CLAY. Sand is fine to coarse. Gravel is subrounded fine to medium.		
0.50	ES1									
1.00	D3									
1.00	ES2									
1.20 - 1.65	D4				68.16	1.20				
1.20 - 1.90	B8							Firm brown slightly gravelly sandy CLAY. Sand is fine to coarse. Gravel is subangular fine to medium.		
1.20 - 1.65	SPT (S)	N=13 (2,3/3,4,3,3)	1.20	0.00						
1.90 - 2.10	B6				67.46	1.90				
2.00	D9							Possible BEDROCK (recovered through percussive drilling as angular gravel)		
2.00 - 2.10	D7				67.26	2.10				
2.00 - 2.04	SPT (S)	50 (25 for 10mm/50 for 25mm)	2.00	0.00				End of Borehole at 2.10m		
2.10		19-10-2023	2.00	0.00						

Water Strikes

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

Casing Details

To (m)	Diameter
2.00	200

Water Added

From (m)	To (m)

Chiselling Details

From (m)	To (m)	Time (hh:mm)
1.90	2.10	01:00

Remarks

Inspection pit hand dug to 1.20m.
No groundwater encountered.
Stockpiles cleared prior to drilling.

Termination Reason

Terminated at refusal on boulder / possible bedrock.

Last Updated

08/12/2023

AGS

CAUSEWAY GEOTECH

Project No.	Project Name: NDFA Social Housing Lot 3 - Oldtown Mill	Borehole ID
23-0881E	Client: NDFA	BH12
	Client's Rep: Malone O'Regan Consulting Engineers	

Method	Plant Used	Top (m)	Base (m)	Coordinates
Cable Percussion	Dando 2000	0.00	2.40	696101.61 E 733836.82 N

Final Depth:	2.40 m	Start Date:	18/10/2023	Driller:	BE	Sheet 1 of 1 Scale: 1:40
Elevation:	68.25 mOD	End Date:	18/10/2023	Logger:	CB	FINAL

Depth (m)	Sample / Tests	Field Records	Casing Depth (m)	Water Depth (m)	Level mOD	Depth (m)	Legend	Description	Water	Backfill
0.00 - 1.20	B3							MADE GROUND: Soft to firm brown sandy gravelly CLAY with low cobble content. Sand is fine to coarse. Gravel is subangular fine to coarse.		
0.50	ES1									
1.00	D6									
1.00	ES2									
1.20	D7				67.05	1.20				
1.20 - 2.00	B4							Firm brown sandy gravelly CLAY with low cobble content. Sand is fine to coarse. Gravel is subangular fine to coarse. Cobbles are subangular.		
1.20 - 1.65	SPT (S)	N=17 (5,6/3,3,5,6)	1.20	Dry						
2.00	D8				66.25	2.00		Possible BEDROCK (recovered through percussive drilling as angular gravel)		
2.00 - 2.40	B5									
2.00 - 2.08	SPT (C)	50 (25 for 55mm/50 for 25mm)	2.00	Dry						
					65.85	2.40		End of Borehole at 2.40m		

Water Strikes

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

Casing Details

To (m)	Diameter
2.20	200

Water Added

From (m)	To (m)

Chiselling Details

From (m)	To (m)	Time (hh:mm)
2.20	2.40	01:00

Remarks

Inspection pit hand dug to 1.20m.
No groundwater encountered.
Stockpiles cleared prior to drilling.

Termination Reason

Terminated at refusal on boulder / possible bedrock.

Last Updated

08/12/2023

AGS

CAUSEWAY GEOTECH

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

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

Coordinates: 696212.05 E, 733991.13 N

Final Depth: 5.20 m | Start Date: 27/11/2023 | Driller: SMCW

Elevation: 70.20 mOD | End Date: 27/11/2023 | Logger: EGA

Sheet 1 of 1 | Scale: 1:40 | FINAL

Depth (m)	Samples / Field Records	TCR	SCR	RQD	FI	Level mOD	Depth (m)	Legend	Description
						69.90	0.30		MADE GROUND: Brownish grey sandy angular fine to coarse GRAVEL. Sand is fine to coarse.
									Firm brown sandy very gravelly CLAY with high cobble content. Sand is fine to coarse. Gravel is subangular fine to coarse. Cobbles are subangular.
						68.60	1.60		Dark grey weathered MUDSTONE. (Driller's description)
						68.00	2.20		Dark grey MUDSTONE. (Driller's description)
		100	80	5	>20	67.70	2.50		Weak indistinctly thinly laminated dark grey MUDSTONE. Distinctly weathered: greatly reduced strength, closer fracture spacing. Discontinuities: 1. 5-25 degree bedding fractures, closely spaced (20/60/90), planar, smooth, clean.
3.70					15	66.70	3.50		Strong indistinctly thinly laminated dark grey LIMESTONE with medium spaced beds of weak mudstone and rare calcite veins at random orientations (1-8mm thick). Slightly weathered: Slightly reduced strength, slightly closer fracture spacing. Discontinuities: 1. 10-20 degree bedding fractures, closely spaced (30/80/165) planar, smooth, clean. 2. 1 no. 80 degree joint at 4.85m, planar, rough, clean.
4.00 - 4.12	C1				>20				
4.50 - 4.65	C2	100	70	45	10				
4.65 - 4.80	C3				>20				
5.20					10	65.00	5.20		End of Borehole at 5.20m

Water: Backfill

TCR	SCR	RQD	FI

Water Strikes

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

Casing Details

To (m)	Diam (mm)
2.50	200
5.20	146

Core Barrel: SK6L

Flush Type: Water

Remarks

Inspection pit hand dug to 1.20m.
No noticeable groundwater strikes - water added during drilling.

Termination Reason: Terminated at scheduled depth.

Last Updated: 08/12/2023

AGS

CAUSEWAY GEOTECH

Project No.	Project Name:	Borehole ID
23-0881E	NDFA Social Housing Lot 3 - Oldtown Mill	RC02
	Client: NDFA	
	Client's Rep: Malone O'Regan Consulting Engineers	

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

Coordinates: 696202.94 E, 733954.91 N

Final Depth: 5.20 m | Start Date: 27/11/2023 | Driller: SMCW | Logger: EGA | Elevation: 69.94 mOD | End Date: 28/11/2023

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
								69.64	0.30		TOPSOIL: Dark brown slightly sandy CLAY. Sand is fine.
											Stiff brown sandy very gravelly CLAY with high cobble content. Sand is fine to coarse. Gravel is subangular fine to coarse. Cobbles are subangular.
								68.24	1.70		Dark grey weathered MUDSTONE (Driller's description)
								67.74	2.20		Dark grey MUDSTONE. (Drillers description)
								67.44	2.50		Weak indistinctly thinly laminated dark grey MUDSTONE. Distinctly weathered: reduced strength, much closer fracture spacing. Discontinuities: 1: 0-10 degree bedding fractures, very closely spaced (10/20/30), planar, rough, clean.
		100	70	40	>20			66.74	3.20		Strong indistinctly thinly laminated dark grey LIMESTONE with rare calcite veins at random orientations 2-4mm thick. Slightly weathered: slightly reduced strength, slightly closer fracture spacing. Discontinuities: 1. 10-30 degree bedding fractures, closely spaced (20/90/160), planar, rough, clean. 2. 1 no. 45 degree joint at 3.35m, planar, rough with white mineralisation on joint surface. 3. 2 no. sub-vertical joints at 4.40m and 4.90m, planar, rough, clean.
3.30 - 3.70	C1				8						
3.70											
		100	85	40	>20						
4.76 - 4.91	C2				12						
4.93 - 5.04	C3										
5.20								64.74	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
5.20	146

Core Barrel: SK6L

Flush Type: Water

Remarks

Inspection pit hand dug to 1.20m.
No noticeable groundwater strikes - water added during drilling.

Termination Reason: Terminated at scheduled depth.

Last Updated: 08/12/2023

AGS

CAUSEWAY GEOTECH

Project No.	Project Name:	Borehole ID
23-0881E	NDFA Social Housing Lot 3 - Oldtown Mill	RC03
	Client: NDFA	
	Client's Rep: Malone O'Regan Consulting Engineers	

Method	Plant Used	Top (m)	Base (m)	Coordinates
Rotary Drilling	Comacchio 405	0.00	2.50	
Rotary Coring	Comacchio 405	2.50	5.50	696110.14 E
				733879.75 N

Final Depth:	5.50 m	Start Date:	28/11/2023	Driller:	SMCW	Sheet 1 of 1
Elevation:	69.31 mOD	End Date:	28/11/2023	Logger:	EGA	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	Water	Backfill
											MADE GROUND: Soft brown sandy gravelly CLAY. Sand is fine to coarse. Gravel is subrounded fine to coarse.		
								68.11	1.20		Firm brown sandy gravelly CLAY. (Driller's description)		
								67.41	1.90		Dark grey weathered LIMESTONE. (Driller's description)		
								67.11	2.20		Dark grey LIMESTONE. (Driller's description)		
2.50 - 2.80	C1							66.81	2.50		Strong indistinctly thinly laminated dark grey LIMESTONE with rare calcite veins at random orientations (1-5mm thick). Slightly weathered: slightly reduced strength, slightly closer fracture spacing, with light brown discolouration on fracture surfaces. Discontinuities: 1. 10-30 degree bedding fractures, closely spaced (50/80/120), planar, smooth, clean. 2. 1 no. 80 degree joint from 4.00m to 4.90m, planar, rough, with light brown staining on joint surface. 3. 1 no. 75 degree joint at 4.90m, planar, rough, with 10cm of white calcite mineralisation on joint surface.		
		100	80	45	5								
					18								
4.00 - 4.33	C2												
4.00					8								
		100	90	20	3								
5.30 - 5.50	C3												
5.50								63.81	5.50		End of Borehole at 5.50m		
		TCR	SCR	RQD	FI								

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)

Remarks

Inspection pit hand dug to 1.20m.
No noticeable groundwater strikes - water added during drilling.

Casing Details

To (m)	Diam (mm)
2.50	200
5.50	146

Core Barrel

SK6L

Flush Type

Water

Termination Reason

Terminated at scheduled depth.

Last Updated

08/12/2023

AGS

CAUSEWAY GEOTECH

APPENDIX C

CORE PHOTOGRAPHS

RC01 Box 1 (2.50-3.70m)

RC01 Box 1 (3.70-5.20m)

RC02 Box 1 (2.50-3.70m)

RC02 Box 2 (3.70-5.20m)

RC03 Box 1 (2.50-4.00m)

RC03 Box 2 (4.00-5.50m)

CAUSEWAY GEOTECH

APPENDIX D

TRIAL PIT LOGS

CAUSEWAY GEOTECH

Project No. 23-0881E	**Project Name:** NDFA Social Housing Lot 3 - Oldtown Mill		**Trial Pit ID** TP01
Coordinates 696220.04 E 734037.74 N	**Client:** NDFA		
Method: Trial Pitting	**Client's Representative:** Malone O'Regan Consulting Engineers		Sheet 1 of 1 Scale: 1:25
Plant: 13t Tracked Excavator	**Elevation** 70.62 mOD	**Date:** 12/10/2023	**Logger:** RS	FINAL

Depth (m)	Sample / Tests	Field Records	Level (mOD)	Depth (m)	Legend	Description	Water
						MADE GROUND: Dark grey sandy very silty angular fine to coarse GRAVEL with high cobble content. Sand is fine to coarse. Cobbles are angular.	
0.50	ES1		70.07	0.55		MADE GROUND: Stiff brown slightly sandy slightly gravelly CLAY with low cobble content. Sand is fine to coarse. Gravel is angular fine to coarse. Cobbles are angular. *Terram at 0.55m.*	
1.00	B3						
1.00	ES2						
			69.22	1.40		End of trial pit at 1.40m	

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: 1.40
Width: 1.00
Length: 3.00

Remarks:
No groundwater encountered.

Stability:
Stable

Termination Reason
Terminated at refusal on boulder / possible bedrock.

Last Updated
05/12/2023

AGS

CAUSEWAY GEOTECH

Project No. 23-0881E	**Project Name:** NDFA Social Housing Lot 3 - Oldtown Mill		**Trial Pit ID** TP02
Coordinates 696140.58 E 733953.30 N	**Client:** NDFA		
Method: Trial Pitting	**Client's Representative:** Malone O'Regan Consulting Engineers		Sheet 1 of 1 Scale: 1:25
Plant: 13t Tracked Excavator	**Elevation** 70.29 mOD	**Date:** 12/10/2023	**Logger:** RS	FINAL

Depth (m)	Sample / Tests	Field Records	Level (mOD)	Depth (m)	Legend	Description	Water
						MADE GROUND: Dark grey sandy very silty angular fine to coarse GRAVEL with low cobble content. Sand is fine to coarse. Cobbles are angular.	
			69.94	0.35			
0.50	ES1					Stiff brown slightly sandy slightly gravelly CLAY with low cobble content. Sand is fine to coarse. Gravel is angular fine to medium. Cobbles are angular.	
1.00	B3						
1.00	ES2						
			68.49	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: 1.00
Length: 2.50

Remarks:
No groundwater encountered.

Stability:
Moderately stable

Termination Reason
Terminated at refusal on boulder / possible bedrock.

Last Updated
05/12/2023

AGS

CAUSEWAY GEOTECH

Project No. 23-0881E	**Project Name:** NDFA Social Housing Lot 3 - Oldtown Mill		**Trial Pit ID** TP03
Coordinates 696185.22 E 733967.32 N	**Client:** NDFA		
Method: Trial Pitting	**Client's Representative:** Malone O'Regan Consulting Engineers		Sheet 1 of 1 Scale: 1:25
Plant: 13t Tracked Excavator	**Elevation** 69.82 mOD	**Date:** 12/10/2023	**Logger:** RS	FINAL

Depth (m)	Sample / Tests	Field Records	Level (mOD)	Depth (m)	Legend	Description	Water
						MADE GROUND: Dark grey sandy very silty angular fine to coarse GRAVEL. Sand is fine to coarse.	
0.50	ES1		69.27	0.55		Stiff light brown slightly sandy slightly gravelly CLAY with low cobble content. Sand is fine to coarse. Gravel is angular fine to coarse. Cobbles are angular.	
1.00	B3						
1.00	ES2						
1.00		HVP=216, HVR=9					
			68.52	1.30		End of trial pit at 1.30m	

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: 1.30
Width: 1.00
Length: 2.50

Remarks:
No groundwater encountered.

Stability:
Moderately stable

Termination Reason
Terminated at refusal on boulder / possible bedrock.

Last Updated
05/12/2023

AGS

CAUSEWAY GEOTECH

Project No. 23-0881E	**Project Name:** NDFA Social Housing Lot 3 - Oldtown Mill		**Trial Pit ID** TP04
Coordinates 696175.60 E 733918.75 N	**Client:** NDFA		
Method: Trial Pitting	**Client's Representative:** Malone O'Regan Consulting Engineers		Sheet 1 of 1 Scale: 1:25
Plant: 13t Tracked Excavator	**Elevation** 69.33 mOD	**Date:** 12/10/2023	**Logger:** RS	FINAL

Depth (m)	Sample / Tests	Field Records	Level (mOD)	Depth (m)	Legend	Description	Water
						MADE GROUND: Firm brown slightly sandy slightly gravelly CLAY with low cobble content. Sand is fine to coarse. Gravel is subangular fine to coarse. Cobbles are subangular.	
			68.93	0.40			
0.50	ES1					Stiff light brown slightly sandy slightly gravelly CLAY. Sand is fine to coarse. Gravel is subangular fine to medium.	
1.00	B3						
1.00	ES2						
1.00		HVP=113, HVR=31					
			67.93	1.40		End of trial pit at 1.40m	

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: 1.40
Width: 1.00
Length: 3.50

Remarks:
No groundwater encountered.

Stability:
Stable

Termination Reason
Terminated at refusal on boulder / possible bedrock.

Last Updated
05/12/2023

AGS

CAUSEWAY GEOTECH

Project No. 23-0881E	**Project Name:** NDFA Social Housing Lot 3 - Oldtown Mill		**Trial Pit ID** TP05
Coordinates 696094.98 E 733875.26 N	**Client:** NDFA		
Method: Trial Pitting	**Client's Representative:** Malone O'Regan Consulting Engineers		Sheet 1 of 1 Scale: 1:25
Plant: 13t Tracked Excavator	**Elevation** 69.49 mOD	**Date:** 11/10/2023	**Logger:** RS	FINAL

Depth (m)	Sample / Tests	Field Records	Level (mOD)	Depth (m)	Legend	Description	Water
0.50	ES1					MADE GROUND: Firm brownish grey slightly sandy gravelly CLAY with low cobble content and with household waste including sheets of plastic, styrofoam fragments and wood fragments. Sand is fine to coarse. Gravel is subangular fine to coarse. Cobbles are subrounded.	
1.00	ES2						
2.00	ES3						
			67.29	2.20		End of trial pit at 2.20m	

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: 2.20
Width: 1.00
Length: 2.50

Remarks:
No groundwater encountered.

Stability:
Unstable

Termination Reason
Terminated at refusal on boulder / possible bedrock.

Last Updated
05/12/2023

AGS

CAUSEWAY GEOTECH

Project No. 23-0881E	**Project Name:** NDFA Social Housing Lot 3 - Oldtown Mill		**Trial Pit ID** TP06
Coordinates 696122.14 E 733861.48 N	**Client:** NDFA		
Method: Trial Pitting	**Client's Representative:** Malone O'Regan Consulting Engineers		Sheet 1 of 1 Scale: 1:25
Plant: 13t Tracked Excavator	**Elevation** 68.33 mOD	**Date:** 12/10/2023	**Logger:** RS	FINAL

Depth (m)	Sample / Tests	Field Records	Level (mOD)	Depth (m)	Legend	Description	Water
0.50	ES1					MADE GROUND: Firm brown slightly sandy gravelly CLAY with low cobble content. Sand is fine to coarse. Gravel is subangular fine to coarse. Cobbles are subangular.	
			67.53	0.80			
1.00	B3					MADE GROUND: Stiff brown slightly sandy slightly gravelly CLAY with low cobble content. Sand is fine to coarse. Gravel is subangular fine to coarse. Cobbles are subangular.	
1.00	ES2						
1.00		HVP=113, HVR=9					
			66.43	1.90		End of trial pit at 1.90m	

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: 1.90
Width: 1.00
Length: 2.50

Remarks:
No groundwater encountered.

Stability:
Stable

Termination Reason
Terminated at refusal on boulder / possible bedrock.

Last Updated
05/12/2023

AGS

CAUSEWAY GEOTECH

APPENDIX E

TRIAL PIT PHOTOGRAPHS

TP01

TP01

TP01

TP01

TP01

TP01

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TP02

TP02

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CAUSEWAY GEOTECH

APPENDIX F

SLIT TRENCH LOGS AND DRAWINGS

CAUSEWAY GEOTECH

Project No. 23-0881E	**Project Name:** NDFA Social Housing Lot 3 - Oldtown Mill		**Trial Pit ID** ST01
Coordinates 696234.32 E 734019.92 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** 70.79 mOD	**Date:** 12/10/2023	**Logger:** RS	FINAL

Depth (m)	Sample / Tests	Field Records	Level (mOD)	Depth (m)	Legend	Description	Water
						MADE GROUND: Firm brown slightly sandy slightly gravelly CLAY. Sand is fine to coarse. Gravel is subangular fine to coarse.	
			70.49	0.30		MADE GROUND: Dark grey sandy silty subangular fine to coarse GRAVEL with high cobble content. Sand is fine to coarse. Cobbles are subangular.	
			70.19	0.60		MADE GROUND: Firm brown CLAY.	
			69.89	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:
Moderately stable

Termination Reason
Terminated at scheduled depth - services exposed.

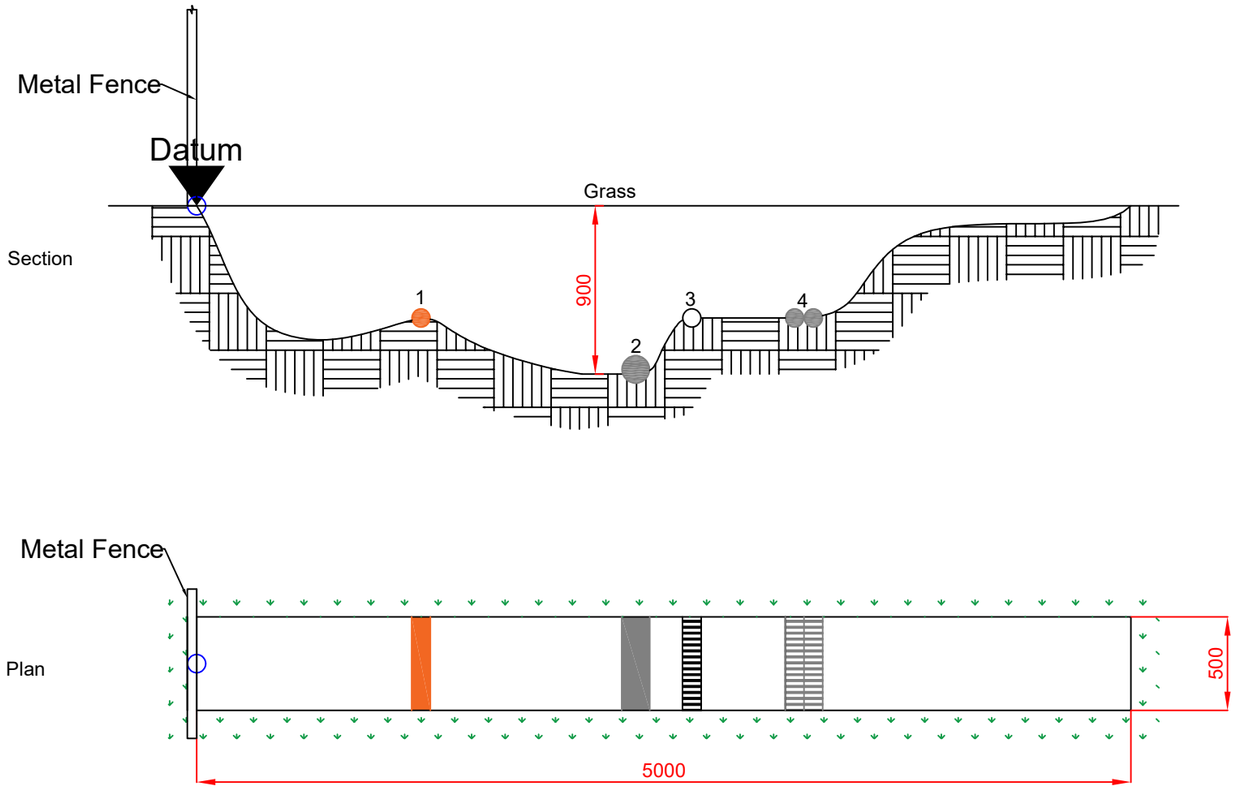
Last Updated
05/12/2023

AGS

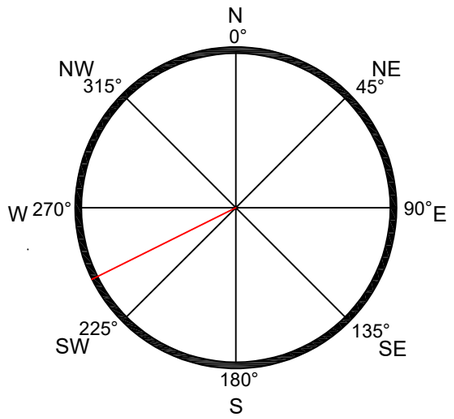
JOB NUMBER: 23-0881E	JOB NAME: NDFA Social Housing Lot 3 – Oldtown Mill	LOCATION: ST01

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

TRENCH: (SECTION & PLAN)



TRENCH - ORIENTATION



TRENCH ORIENTATED : 240° FROM NORTH

No:	Type of Service:	Diameter (in mm)	Depth to Top of Service (m)	Distance to Centre of Service (m)	Details/Comments
01	Unknown	100	0.55	1.20	100mm Unknown Orange Corrugated PVC Pipe
02	Water	150	0.80	2.35	150mm Water Main Grey PVC Pipe
03	Unknown	100	0.50	2.65	100mm Unknown White Corrugated PVC Pipe
04	Unknown	100 x 2	0.50	3.20-3.30	100mm x 2 Unknown Grey Corrugated PVC Pipe
05					
06					
07					
08					
09					
10					
11					
12					
13					
14					
15					

COORDINATES: DATUM

EASTING: - 696234.32

NORTHING: - 734019.92

ELEVATION: - 70.79

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: 12/10/2023

CAUSEWAY GEOTECH

CAUSEWAY GEOTECH

Project No. 23-0881E	**Project Name:** NDFA Social Housing Lot 3 - Oldtown Mill		**Trial Pit ID** ST02
Coordinates 696239.41 E 734003.05 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** 70.97 mOD	**Date:** 12/10/2023	**Logger:** RS	FINAL

Depth (m)	Sample / Tests	Field Records	Level (mOD)	Depth (m)	Legend	Description	Water
			70.87	0.10		MADE GROUND: Firm brown slightly sandy slightly gravelly CLAY. Sand is fine to coarse. Gravel is subangular fine to coarse.	
						MADE GROUND: Dark grey slightly sandy very silty angular fine to coarse GRAVEL with high cobble content. Sand is fine to coarse. Cobbles are angular.	
			70.52	0.45		MADE GROUND: Stiff brown slightly sandy slightly gravelly CLAY. Sand is fine to coarse. Gravel is subangular fine to coarse.	
			69.97	1.00		End of trial pit at 1.00m	

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: 1.00
Width: 0.50
Length: 4.30

Remarks:
No groundwater encountered.

Stability:
Moderately stable

Termination Reason
Terminated at scheduled depth - services exposed.

Last Updated
05/12/2023

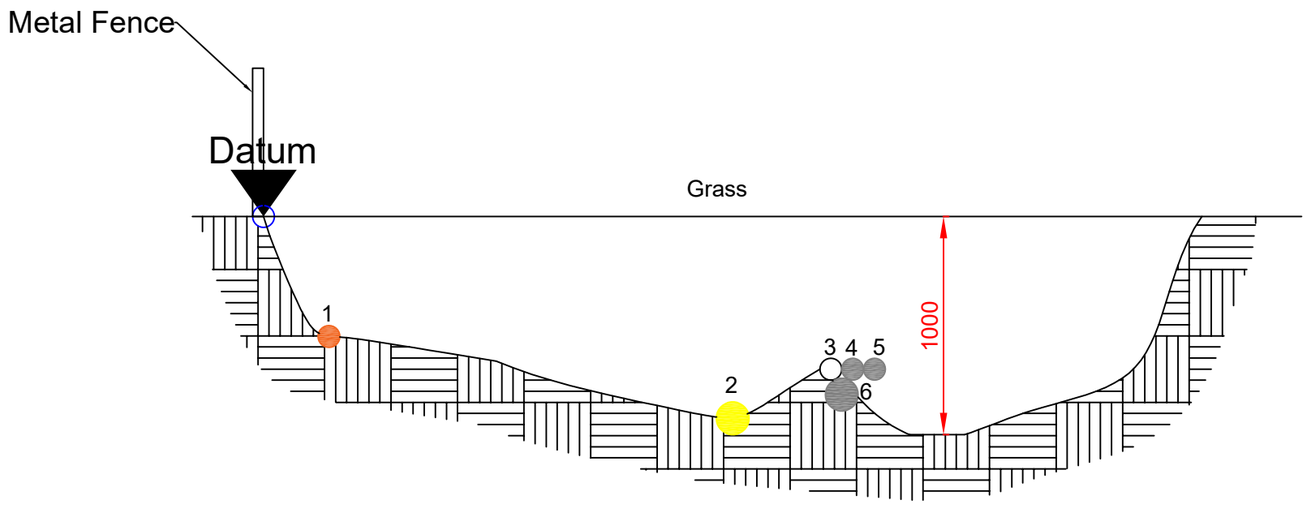
AGS

JOB NUMBER: 23-0881E	JOB NAME: NDFA Social Housing Lot 3 – Oldtown Mill	LOCATION: ST02

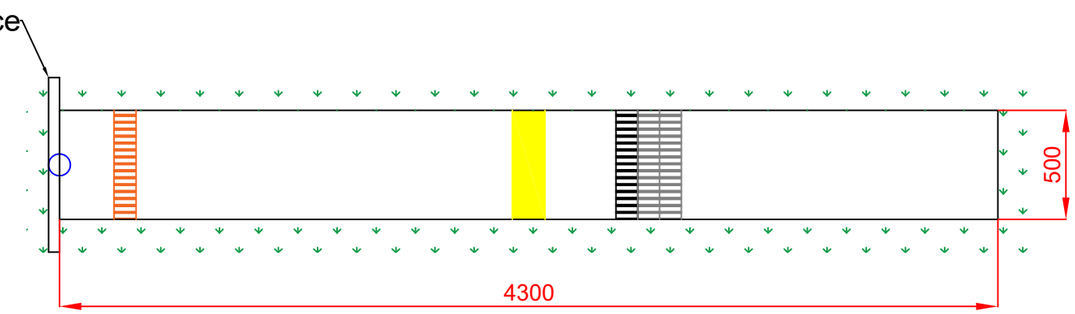
CLIENT: NDFA	CLIENTS REPRESENTATIVE: Malone O'Regan Consulting Engineers	CREW: RS	PLANT & EQUIPMENT: 3 Tonne Excavator & Hand Tools

TRENCH: (SECTION & PLAN)

Section

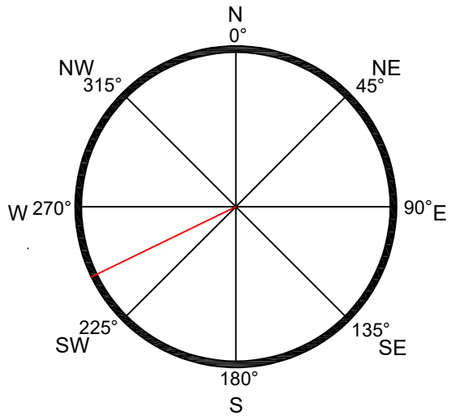


Plan



No:	Type of Service:	Diameter (in mm)	Depth to Top of Service (m)	Distance to Centre of Service (m)	Details/Comments
01	Unknown	100	0.50	0.30	100mm Unknown Orange Corrugated PVC Pipe
02	Gas	150	0.85	2.15	150mm Gas Main Yellow PVC Pipe (No Warning Tape)
03	Unknown	100	0.70	2.60	100mm Unknown White Corrugated PVC Pipe
04	Unknown	100 x 2	0.70	2.70-2.80	100mm x 2 Unknown Grey Corrugated PVC Pipe
05	Unknown	150	0.80	2.65	150mm Unknown Grey Corrugated PVC Pipe
06					
07					
08					
09					
10					
11					
12					
13					
14					
15					

TRENCH - ORIENTATION



TRENCH ORIENTATED : 240° FROM NORTH

COORDINATES: DATUM

EASTING: - 696239.41

NORTHING: - 734003.05

ELEVATION: - 70.97

TRENCH LENGTH (m) : 4.30

TRENCH DEPTH (m) : 1.00

TRENCH WIDTH (m) : 0.50

STABILITY: Stable

GROUNDWATER: None

SCALE: NTS@A3

DRAWN: JD

CHECKED: SR

DATE EXCAVATED: 12/10/2023

CAUSEWAY GEOTECH

CAUSEWAY GEOTECH

Project No. 23-0881E	**Project Name:** NDFA Social Housing Lot 3 - Oldtown Mill		**Trial Pit ID** ST03
Coordinates 696240.56 E 733999.44 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** 71.08 mOD	**Date:** 12/10/2023	**Logger:** RS	FINAL

Depth (m)	Sample / Tests	Field Records	Level (mOD)	Depth (m)	Legend	Description	Water
			70.93	0.15		MADE GROUND: Firm brown slightly sandy slightly gravelly CLAY. Sand is fine to coarse. Gravel is subrounded fine to coarse.	
						MADE GROUND: Dark grey slightly sandy very silty angular fine to coarse GRAVEL with high cobble content. Sand is fine to coarse. Cobbles are angular.	
			70.63	0.45		MADE GROUND: Stiff brown slightly sandy gravelly CLAY with low cobble content. Sand is fine to coarse. Gravel is subangular fine to coarse. Cobbles are subangular.	
			69.68	1.40		End of trial pit at 1.40m	

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: 1.40
Width: 0.50
Length: 5.75

Remarks:
No groundwater encountered.

Stability:
Moderately stable

Termination Reason
Terminated at scheduled depth - services exposed.

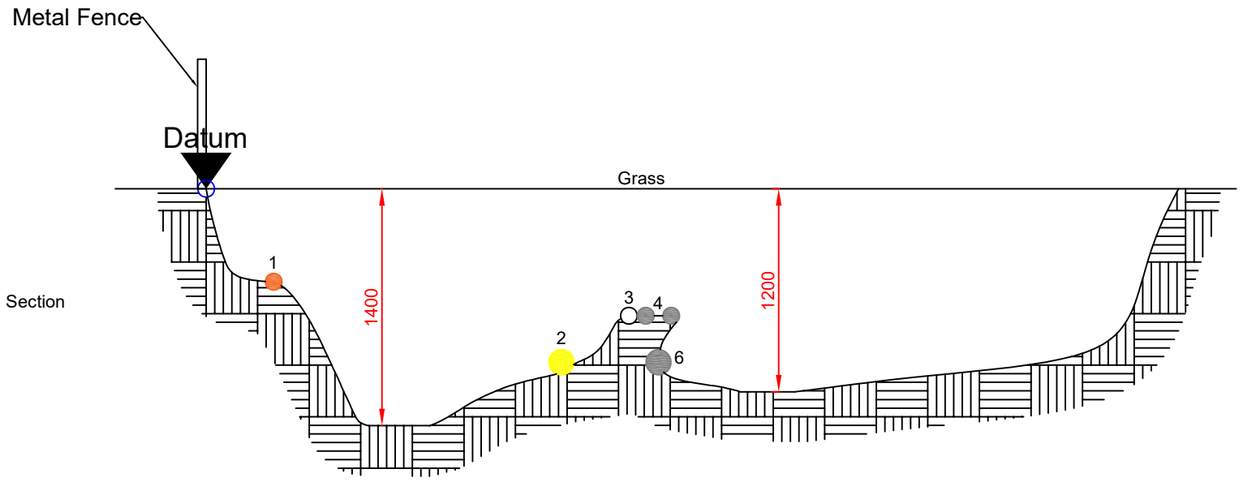
Last Updated
05/12/2023

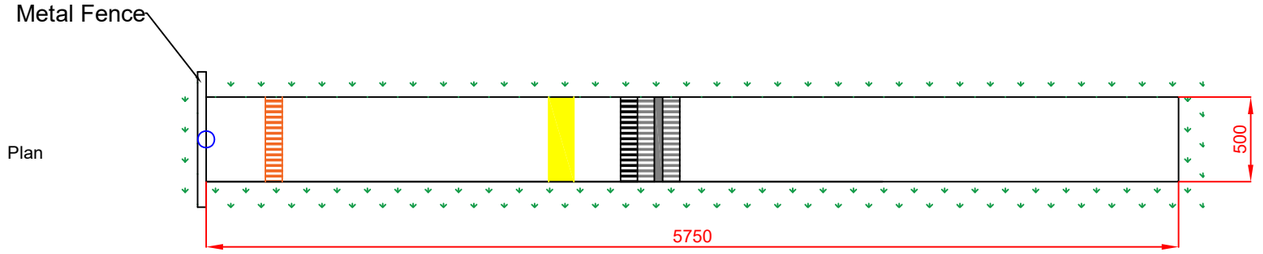
AGS

JOB NUMBER: 23-0881E	JOB NAME: NDFA Social Housing Lot 3 – Oldtown Mill	LOCATION: ST03

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

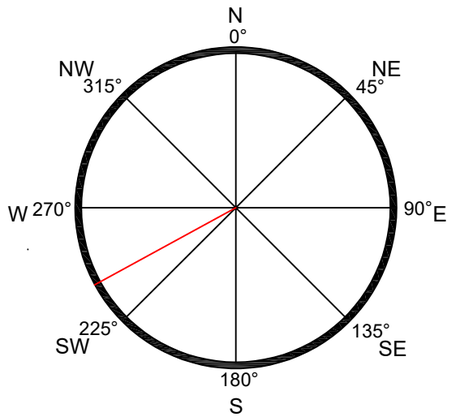
TRENCH: (SECTION & PLAN)





No:	Type of Service:	Diameter (in mm)	Depth to Top of Service (m)	Distance to Centre of Service (m)	Details/Comments
01	Unknown	100	0.50	0.40	100mm Unknown Orange Corrugated PVC Pipe
02	Gas	150	0.95	2.10	150mm Gas Main Yellow PVC Pipe (No Warning Tape)
03	Unknown	100	0.70	2.50	100mm Unknown White Corrugated PVC Pipe
04	Unknown	100	0.70	2.60	100mm Unknown Grey Corrugated PVC Pipe
05	Unknown	100	0.70	2.75	100mm Unknown Grey Corrugated PVC Pipe
06	Unknown	150	0.95	2.67	150mm Unknown Grey Corrugated PVC Pipe
07					
08					
09					
10					
11					
12					
13					
14					
15					

TRENCH - ORIENTATION



TRENCH ORIENTATED : 240° FROM NORTH

COORDINATES: DATUM

EASTING: - 696240.56

NORTHING: - 733999.44

ELEVATION: - 71.08

TRENCH LENGTH (m) : 5.75

TRENCH DEPTH (m) : 1.40

TRENCH WIDTH (m) : 0.50

STABILITY: Stable

GROUNDWATER: None

SCALE: NTS@A3

DRAWN: JD

CHECKED: SR

DATE EXCAVATED: 12/10/2023

CAUSEWAY GEOTECH

CAUSEWAY GEOTECH

APPENDIX G

SLIT TRENCH PHOTOGRAPHS

ST01

ST01

ST01

ST01

ST01

ST01

ST02

ST02

ST02

ST02

ST02

ST02

ST03

ST03

ST03

ST03

ST03

ST03

CAUSEWAY GEOTECH

APPENDIX H

INFILTRATION TEST RESULTS

CAUSEWAY GEOTECH

Project No. 23-0881E	**Project Name:** NDFA Social Housing Lot 3 - Oldtown Mill		**Trial Pit ID** IT01
Coordinates 696204.08 E 734011.86 N	**Client:** NDFA		
Method: Soakaway Pit	**Client's Representative:** Malone O'Regan Consulting Engineers		Sheet 1 of 1 Scale: 1:25
Plant: 13t Tracked Excavator	**Elevation** 70.13 mOD	**Date:** 12/10/2023	**Logger:** RS	FINAL

Depth (m)	Sample / Tests	Field Records	Level (mOD)	Depth (m)	Legend	Description	Water
			69.83	0.30		MADE GROUND: Grey sandy silty angular fine to coarse GRAVEL with low cobble content. Sand is fine to coarse. Cobbles are angular.	
						Stiff brown slightly sandy slightly gravelly CLAY. Sand is fine to coarse. Gravel is subangular fine to coarse. *Terram at 0.30m.*	
			68.93	1.20		End of trial pit at 1.20m	

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: 1.20
Width: 0.75
Length: 2.75

Remarks:
No groundwater encountered.

Stability:
Moderately stable

Termination Reason
Terminated at refusal on boulder / possible bedrock.

Last Updated
05/12/2023

AGS

Soakaway Infiltration Test

Project No.: 23-0881E
Site: NDFA Social Housing Lot 3 -Oldtown Mill
Test Location: IT01
Test Date: 12 October 2023

	width (m)	length (m)
test pit top dimensions	0.75	2.75
test pit base dimensions	0.40	1.00
test pit depth (m)	1.20	

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	0.51	0.69
1	0.51	0.69
1	0.51	0.70
2	0.51	0.70
4	0.51	0.69
6	0.52	0.69
8	0.52	0.68
10	0.53	0.68
15	0.53	0.67
20	0.54	0.66
25	0.55	0.66
30	0.55	0.65
45	0.58	0.63
60	0.60	0.61
100	0.66	0.54
190	0.79	0.41
330	1.20	0.00

RESULTS (FROM GRAPH BELOW)

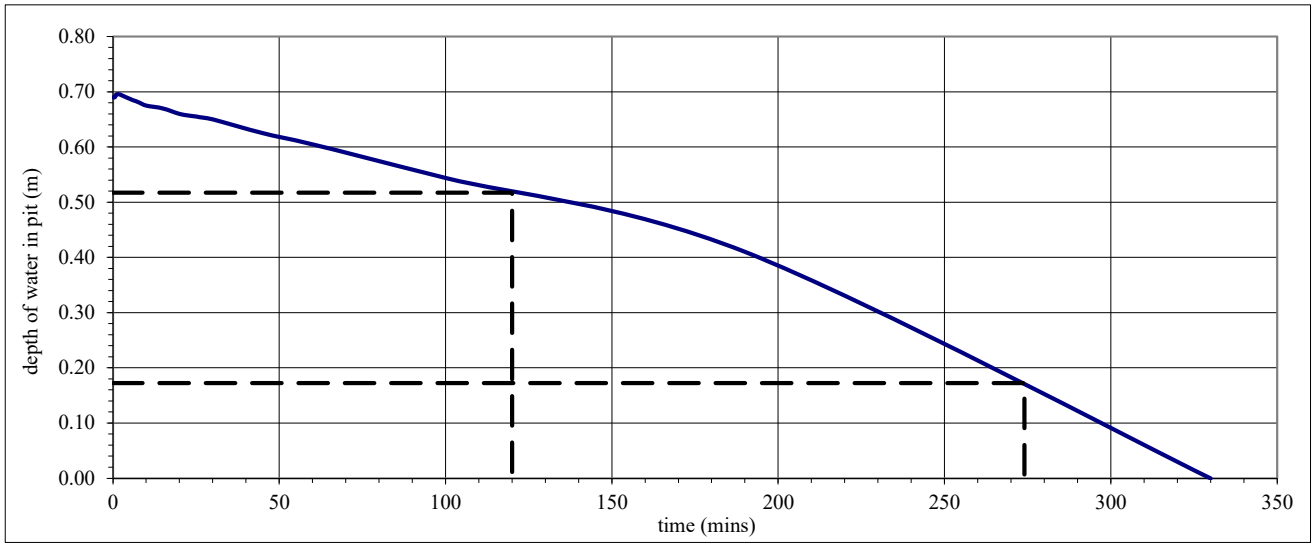
Test start
75% head of water at 0.52 m
depth to water surface (target) 0.68 m
time to reach target depth 120.0 mins

Test end
25% head of water at 0.17 m
depth to water surface (target) 1.03 m
time to reach target depth 274.0 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)
120	0.68	0.52	154	0.26	1.63	1.1E-03	0.063
274	1.03	0.17					



CAUSEWAY GEOTECH

Project No. 23-0881E	**Project Name:** NDFA Social Housing Lot 3 - Oldtown Mill		**Trial Pit ID** IT02
Coordinates 696138.13 E 733877.38 N	**Client:** NDFA		
Method: Soakaway Pit	**Client's Representative:** Malone O'Regan Consulting Engineers		Sheet 1 of 1 Scale: 1:25
Plant: 13t Tracked Excavator	**Elevation** 68.59 mOD	**Date:** 12/10/2023	**Logger:** RS	FINAL

Depth (m)	Sample / Tests	Field Records	Level (mOD)	Depth (m)	Legend	Description	Water
						MADE GROUND: Firm brown slightly sandy slightly gravelly CLAY with low cobble content. Sand is fine to coarse. Gravel is subangular fine to coarse. Cobbles are subrounded.	
			68.14	0.45		MADE GROUND: Stiff dark grey slightly sandy gravelly CLAY with low cobble content. Sand is fine to coarse. Gravel is subangular fine to coarse. Cobbles are subangular.	
			67.39	1.20		End of trial pit at 1.20m	

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: 1.20
Width: 0.70
Length: 2.50

Remarks:
No groundwater encountered.

Stability:
Moderately stable

Termination Reason
Terminated at refusal on boulder / possible bedrock.

Last Updated
05/12/2023

AGS

Soakaway Infiltration Test

Project No.: 23-0881E
Site: NDFA Social Housing Lot 3 -Oldtown Mill
Test Location: IT02
Test Date: 12 October 2023

	width (m)	length (m)
test pit top dimensions	0.70	2.50
test pit base dimensions	0.40	1.00
test pit depth (m)	1.20	

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	0.45	0.75
1	0.45	0.75
1	0.46	0.75
2	0.46	0.74
4	0.47	0.74
6	0.47	0.73
8	0.48	0.73
10	0.48	0.72
15	0.50	0.71
20	0.51	0.70
25	0.52	0.68
30	0.53	0.68
45	0.56	0.65
60	0.58	0.62
75	0.60	0.60
175	0.73	0.47
320	0.88	0.32
370	0.92	0.28

RESULTS (FROM GRAPH BELOW)

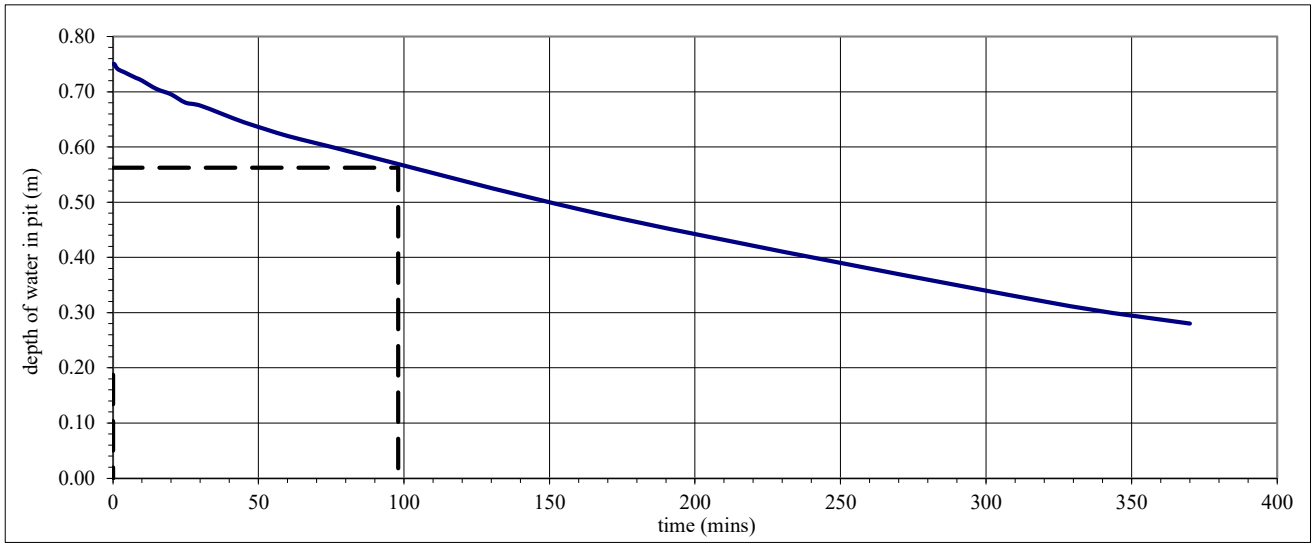
Test start
75% head of water at 0.56 m
depth to water surface (target) 0.64 m
time to reach target depth 98.0 mins

Test end
25% head of water at 0.19 m
depth to water surface (target) 1.01 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)
98	0.64	0.56	N/A				
	1.01	0.19					



CAUSEWAY GEOTECH

APPENDIX I

GEOTECHNICAL LABORATORY TEST RESULTS

HEAD OFFICE
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Registered in Ireland.
Company Number: 633786

www.causewaygeotech.com

SOIL AND ROCK SAMPLE ANALYSIS
LABORATORY TEST REPORT

17 November 2023

Project Name:	NDFA Social Housing Lot 3 - Oldtown Mill
Project No.:	23-0881E
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 16/10/2023 and 17/11/2023.

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 - Oldtown Mill

Report Reference: Schedule 1

The table below details the tests carried out, the specifications used, and the number of tests included in this report. The results contained in this report relate to the sample(s) as received.

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. Opinions and interpretations expressed herein are outside the scope of UKAS accreditation.

Material tested	Type of test/Properties measured/Range of measurement	Standard specifications	No. of results included in the report
SOIL	Moisture 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	9
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	9
SOIL	California Bearing Ratio (CBR)	BS 1377-4: 1990: Cl 7	9

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		9
SOIL – Subcontracted to Derwentside Environmental Testing Services Limited *(UKAS 2139)*	Sulphate Content water extract		9

Summary of Classification Test Results

Project No.	Project Name
23-0881E	NDFA Social Housing Lot 3 - Oldtown Mill

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	6	1.20	2.00	B	Brownish grey sandy gravelly silty CLAY.			16	49	36 -1pt	21	15		CI
BH02	5	0.80	1.20	B	Brownish grey sandy slightly gravelly silty CLAY.			25	80	40 -1pt	22	18		CI
BH04	6	0.90	1.20	B	Grey sandy slightly gravelly silty CLAY.			20	59	36 -1pt	21	15		CI
BH05	6	1.20	2.00	B	Brownish grey sandy slightly gravelly silty CLAY.			21	64	37 -1pt	23	14		CI
TP01	3	1.00		B	Brownish grey sandy slightly gravelly silty CLAY.			14	71	34 -1pt	19	15		CL
TP02	3	1.00		B	Brownish grey sandy slightly gravelly silty CLAY.			17	67	34 -1pt	20	14		CL
TP03	3	1.00		B	Brownish grey sandy slightly gravelly silty CLAY.			15	71	35 -1pt	19	16		CL/CI
TP04	3	1.00		B	Brownish grey sandy slightly gravelly silty CLAY.			29	83	46 -1pt	24	22		CI
TP06	3	1.00		B	Brownish grey sandy slightly gravelly silty CLAY.			21	71	38 -1pt	21	17		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

16/11/2023

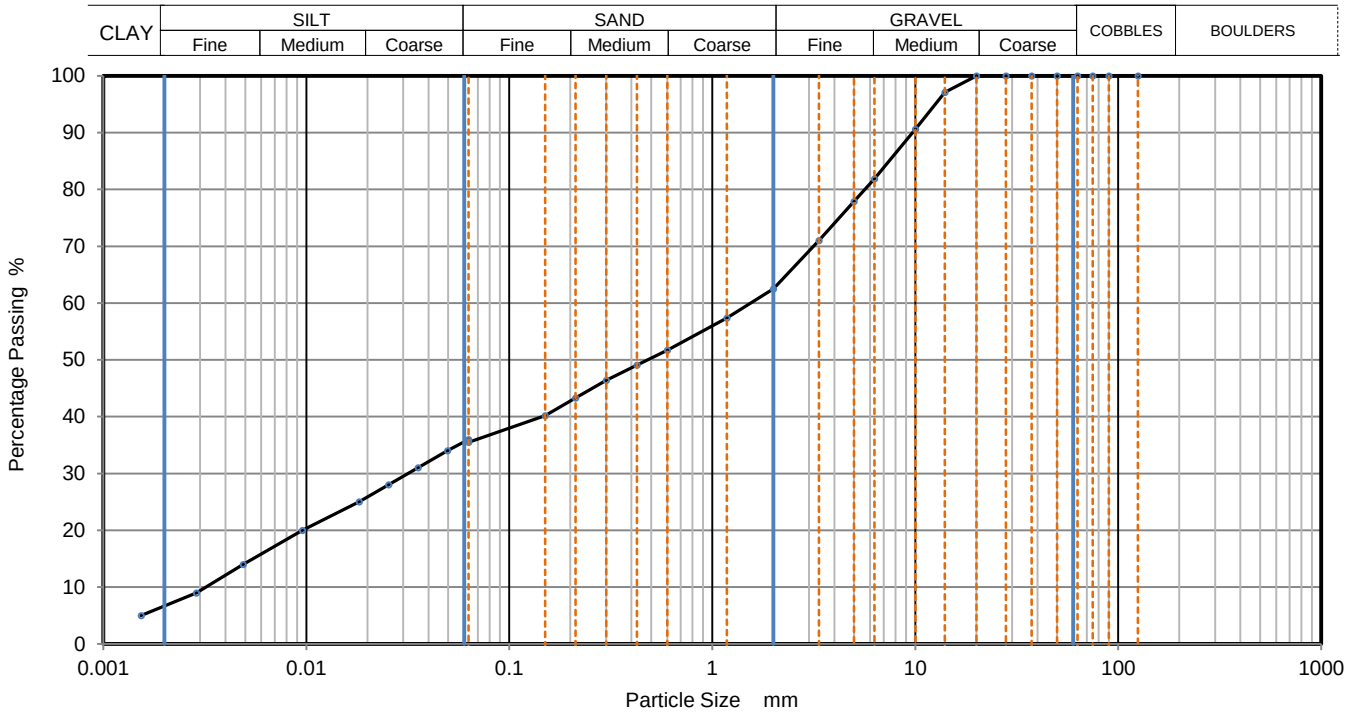
Approved By

Stephen Watson

UKAS TESTING

10122

CAUSEWAY GEOTECH	PARTICLE SIZE DISTRIBUTION				Job Ref		23-0881E
					Borehole/Pit No.		BH01
Site Name	NDFA Social Housing Lot 3 - Oldtown Mill				Sample No.		6
Specimen Description	Brownish grey sandy gravelly silty CLAY.				Sample Depth (m)	Top	1.20
						Base	2.00
Specimen Reference	7	Specimen Depth	1.2	m	Sample Type		B
Test Method	BS1377:Part 2:1990, clauses 9.2 and 9.5				KeyLAB ID		Caus2023101622



Sieving		Sedimentation	
Particle Size mm	% Passing	Particle Size mm	% Passing
125	100	0.06300	36
90	100	0.04965	34
75	100	0.03555	31
63	100	0.02545	28
50	100	0.01821	25
37.5	100	0.00957	20
28	100	0.00489	14
20	100	0.00287	9
14	97	0.00153	5
10	91		
6.3	82		
5	78		
3.35	71		
2	63		
1.18	57		
0.6	52	Particle density	(assumed)
0.425	49	2.65	Mg/m3
0.3	46		
0.212	43		
0.15	40		
0.063	36		

Dry Mass of sample, g: 430

Sample Proportions	% dry mass
Cobbles	0.0
Gravel	37.5
Sand	27.1
Silt	28.8
Clay	6.6

Grading Analysis		
D100	mm	
D60	mm	1.54
D30	mm	0.0324
D10	mm	0.00313
Uniformity Coefficient		490
Curvature Coefficient		0.22

Remarks

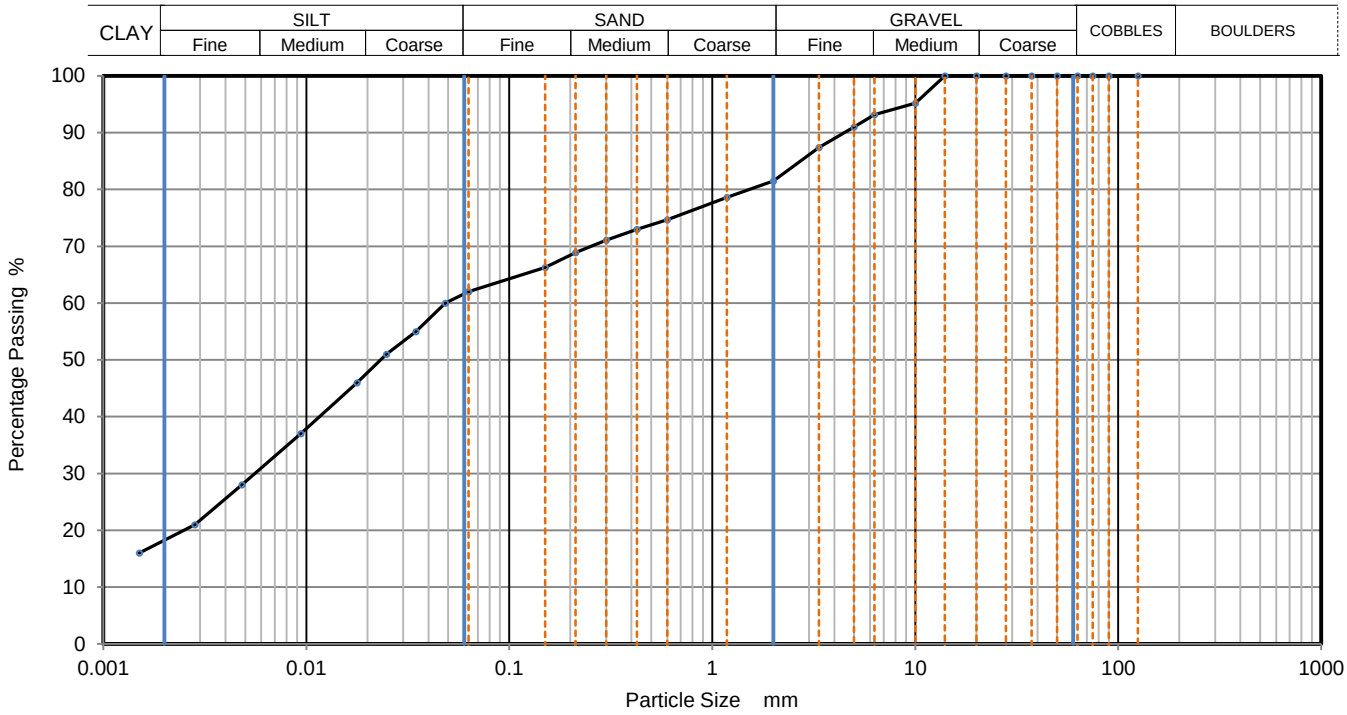
Preparation and testing in accordance with BS1377-2 :1990 unless noted below

Approved
Stephen Watson

LAB 05R - Version 6

UKAS TESTING 10122

CAUSEWAY GEOTECH	PARTICLE SIZE DISTRIBUTION				Job Ref		23-0881E
					Borehole/Pit No.		BH02
Site Name	NDFA Social Housing Lot 3 - Oldtown Mill				Sample No.		5
Specimen Description	Brownish grey sandy slightly gravelly silty CLAY.				Sample Depth (m)	Top	0.80
						Base	1.20
Specimen Reference	7	Specimen Depth	0.8	m	Sample Type		B
Test Method	BS1377:Part 2:1990, clauses 9.2 and 9.5				KeyLAB ID		Caus2023101623



Sieving		Sedimentation	
Particle Size mm	% Passing	Particle Size mm	% Passing
125	100	0.06300	62
90	100	0.04836	60
75	100	0.03465	55
63	100	0.02482	51
50	100	0.01778	46
37.5	100	0.00940	37
28	100	0.00481	28
20	100	0.00283	21
14	100	0.00150	16
10	95		
6.3	93		
5	91		
3.35	87		
2	82		
1.18	79		
0.6	75	Particle density	(assumed)
0.425	73	2.65	Mg/m3
0.3	71		
0.212	69		
0.15	66		
0.063	62		

Dry Mass of sample, g	383

Sample Proportions	% dry mass
Cobbles	0.0
Gravel	18.5
Sand	19.5
Silt	43.8
Clay	18.2

Grading Analysis		
D100	mm	
D60	mm	0.05
D30	mm	0.00575
D10	mm	
Uniformity Coefficient		
Curvature Coefficient		

Remarks

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

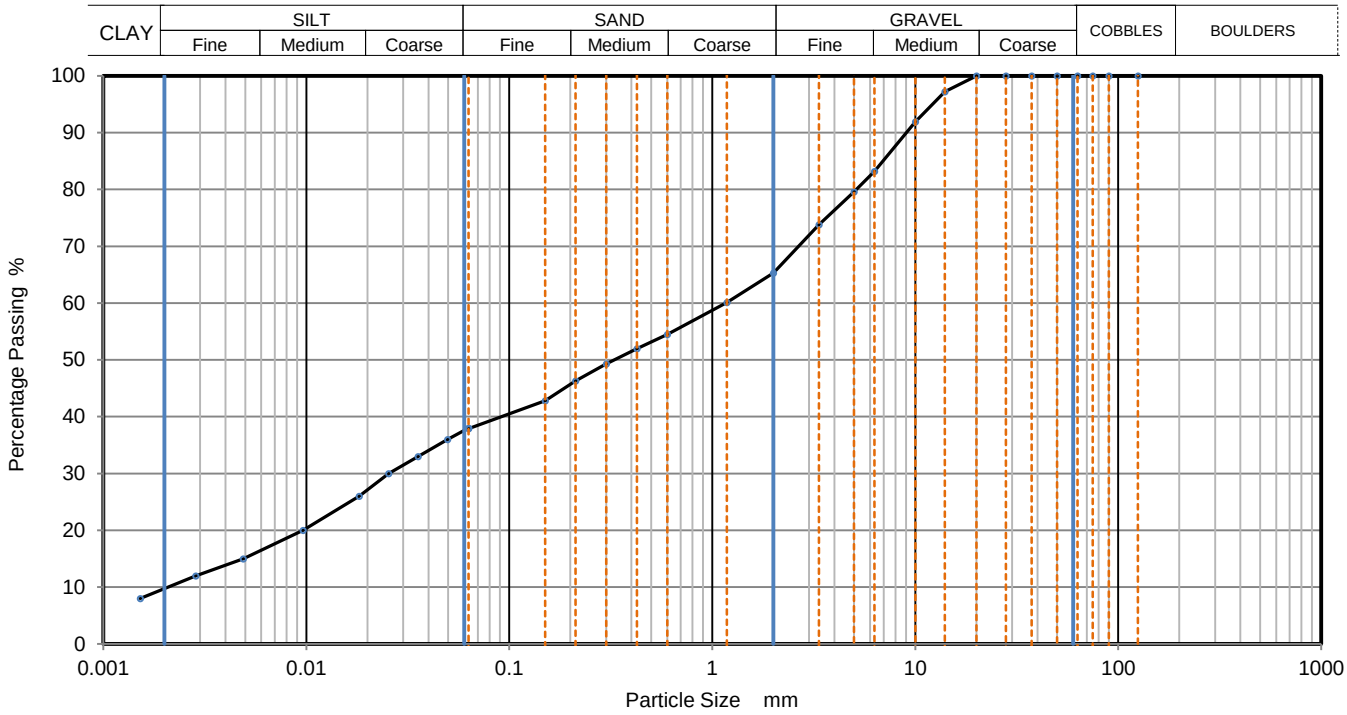
Approved
Stephen Watson

LAB 05R - Version 6

UKAS TESTING

10122

CAUSEWAY GEOTECH	PARTICLE SIZE DISTRIBUTION				Job Ref		23-0881E
					Borehole/Pit No.		BH04
Site Name	NDFA Social Housing Lot 3 - Oldtown Mill				Sample No.		6
Specimen Description	Grey sandy slightly gravelly silty CLAY.				Sample Depth (m)	Top	0.90
						Base	1.20
Specimen Reference	7	Specimen Depth	0.9	m	Sample Type		B
Test Method	BS1377:Part 2:1990, clauses 9.2 and 9.5				KeyLAB ID		Caus2023101624



Sieving		Sedimentation	
Particle Size mm	% Passing	Particle Size mm	% Passing
125	100	0.06300	38
90	100	0.04965	36
75	100	0.03555	33
63	100	0.02545	30
50	100	0.01821	26
37.5	100	0.00963	20
28	100	0.00489	15
20	100	0.00286	12
14	97	0.00152	8
10	92		
6.3	83		
5	80		
3.35	74		
2	65		
1.18	60		
0.6	55	Particle density	(assumed)
0.425	52	2.65	Mg/m3
0.3	49		
0.212	46		
0.15	43		
0.063	38		

Dry Mass of sample, g: 422

Sample Proportions	% dry mass
Cobbles	0.0
Gravel	34.7
Sand	27.4
Silt	28.2
Clay	9.7

Grading Analysis		
D100	mm	
D60	mm	1.17
D30	mm	0.0263
D10	mm	0.00213
Uniformity Coefficient		550
Curvature Coefficient		0.28

Remarks

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

Approved
Stephen Watson

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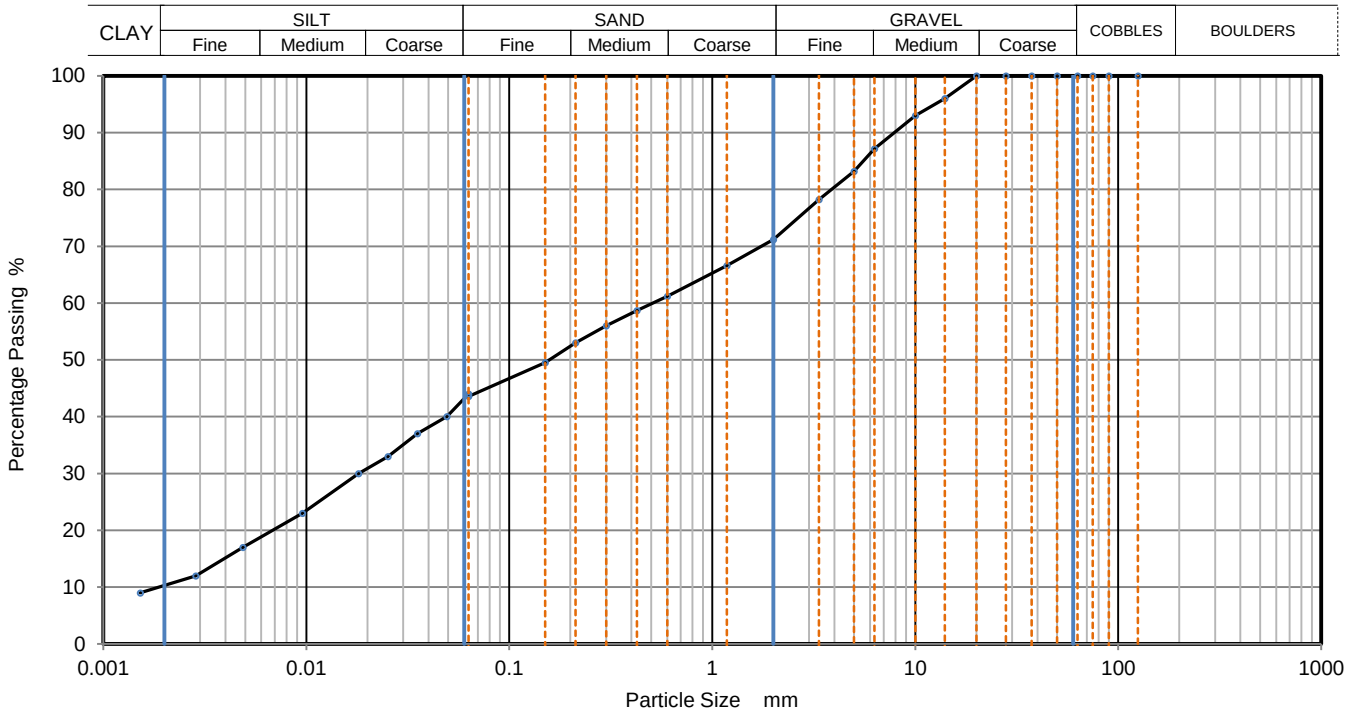
UKAS TESTING 10122

CAUSEWAY GEOTECH	PARTICLE SIZE DISTRIBUTION				Job Ref		23-0881E
					Borehole/Pit No.		BH05
Site Name	NDFA Social Housing Lot 3 - Oldtown Mill				Sample No.		6
Specimen Description	Brownish grey sandy slightly gravelly silty CLAY.				Sample Depth (m)	Top	1.20
						Base	2.00
Specimen Reference	7	Specimen Depth	1.2	m	Sample Type		B
Test Method	BS1377:Part 2:1990, clauses 9.2 and 9.5				KeyLAB ID		Caus2023101625



Sieving		Sedimentation	
Particle Size mm	% Passing	Particle Size mm	% Passing
125	100	0.06300	44
90	100	0.04933	40
75	100	0.03533	37
63	100	0.02529	33
50	100	0.01810	30
37.5	100	0.00957	23
28	100	0.00487	17
20	100	0.00286	12
14	96	0.00152	9
10	93		
6.3	87		
5	83		
3.35	78		
2	71		
1.18	67		
0.6	61	Particle density	(assumed)
0.425	59	2.65	Mg/m3
0.3	56		
0.212	53		
0.15	50		
0.063	44		

Dry Mass of sample, g: 401

Sample Proportions	% dry mass
Cobbles	0.0
Gravel	28.8
Sand	27.6
Silt	33.4
Clay	10.2

Grading Analysis		
D100	mm	
D60	mm	0.509
D30	mm	0.0187
D10	mm	0.00192
Uniformity Coefficient		270
Curvature Coefficient		0.36

Remarks

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

Approved
Stephen Watson

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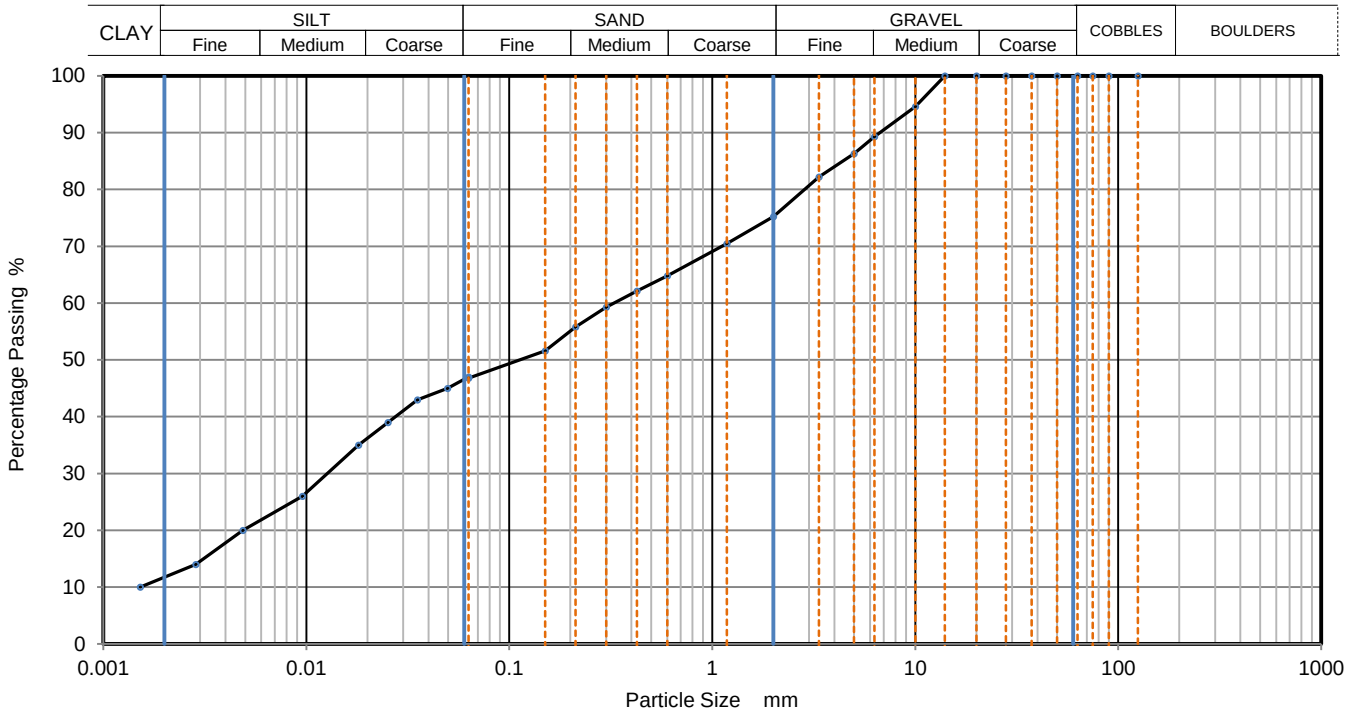
UKAS TESTING 10122

CAUSEWAY GEOTECH	PARTICLE SIZE DISTRIBUTION				Job Ref		23-0881E
					Borehole/Pit No.		TP01
Site Name	NDFA Social Housing Lot 3 - Oldtown Mill				Sample No.		3
Specimen Description	Brownish grey sandy slightly gravelly silty CLAY.				Sample Depth (m)	Top	1.00
						Base	
Specimen Reference	7	Specimen Depth	1	m	Sample Type		B
Test Method	BS1377:Part 2:1990, clauses 9.2 and 9.5				KeyLAB ID		Caus2023101626



Sieving		Sedimentation	
Particle Size mm	% Passing	Particle Size mm	% Passing
125	100	0.06300	47
90	100	0.04965	45
75	100	0.03533	43
63	100	0.02529	39
50	100	0.01810	35
37.5	100	0.00957	26
28	100	0.00487	20
20	100	0.00286	14
14	100	0.00152	10
10	95		
6.3	89		
5	86		
3.35	82		
2	75		
1.18	71		
0.6	65	Particle density	(assumed)
0.425	62	2.65	Mg/m3
0.3	59		
0.212	56		
0.15	52		
0.063	47		

Dry Mass of sample, g	427

Sample Proportions	% dry mass
Cobbles	0.0
Gravel	24.8
Sand	28.4
Silt	34.9
Clay	11.9

Grading Analysis		
D100	mm	
D60	mm	0.328
D30	mm	0.0126
D10	mm	
Uniformity Coefficient		
Curvature Coefficient		

Remarks

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

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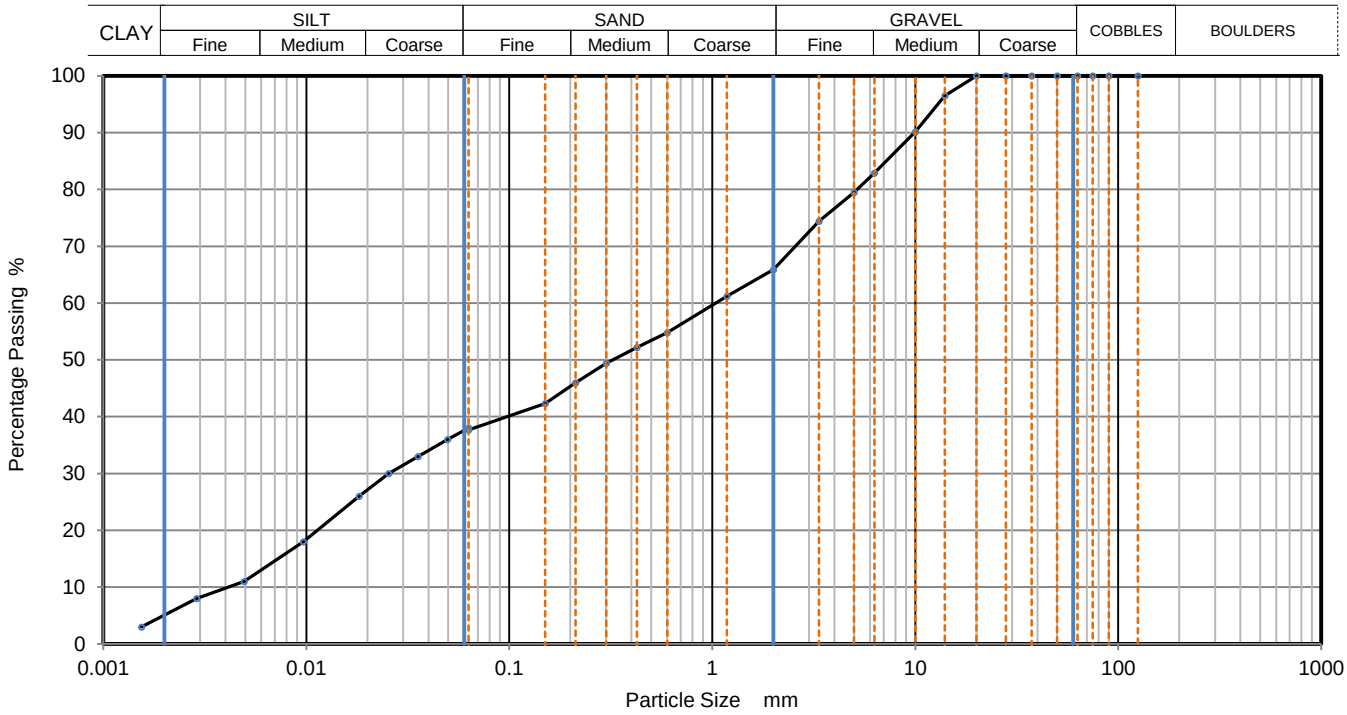
UKAS TESTING

10122

PARTICLE SIZE DISTRIBUTION

Job Ref					23-0881E
Borehole/Pit No.					TP02
Site Name	NDFA Social Housing Lot 3 - Oldtown Mill			Sample No.	3
Specimen Description	Brownish grey sandy slightly gravelly silty CLAY.			Sample Depth (m) Top	1.00
				Base	
Specimen Reference	7	Specimen Depth	1 m	Sample Type	B
Test Method	BS1377:Part 2:1990, clauses 9.2 and 9.5			KeyLAB ID	Caus2023101627



Sieving		Sedimentation	
Particle Size mm	% Passing	Particle Size mm	% Passing
125	100	0.06300	38
90	100	0.04965	36
75	100	0.03555	33
63	100	0.02545	30
50	100	0.01821	26
37.5	100	0.00968	18
28	100	0.00495	11
20	100	0.00289	8
14	97	0.00154	3
10	90		
6.3	83		
5	80		
3.35	74		
2	66		
1.18	61		
0.6	55	Particle density	(assumed)
0.425	52	2.65	Mg/m3
0.3	49		
0.212	46		
0.15	42		
0.063	38		

Dry Mass of sample, g: 440

Sample Proportions	% dry mass
Cobbles	0.0
Gravel	34.1
Sand	28.2
Silt	32.4
Clay	5.3

Grading Analysis		
D100	mm	
D60	mm	1.04
D30	mm	0.0268
D10	mm	0.00388
Uniformity Coefficient		270
Curvature Coefficient		0.18

Remarks

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

Approved
Stephen Watson

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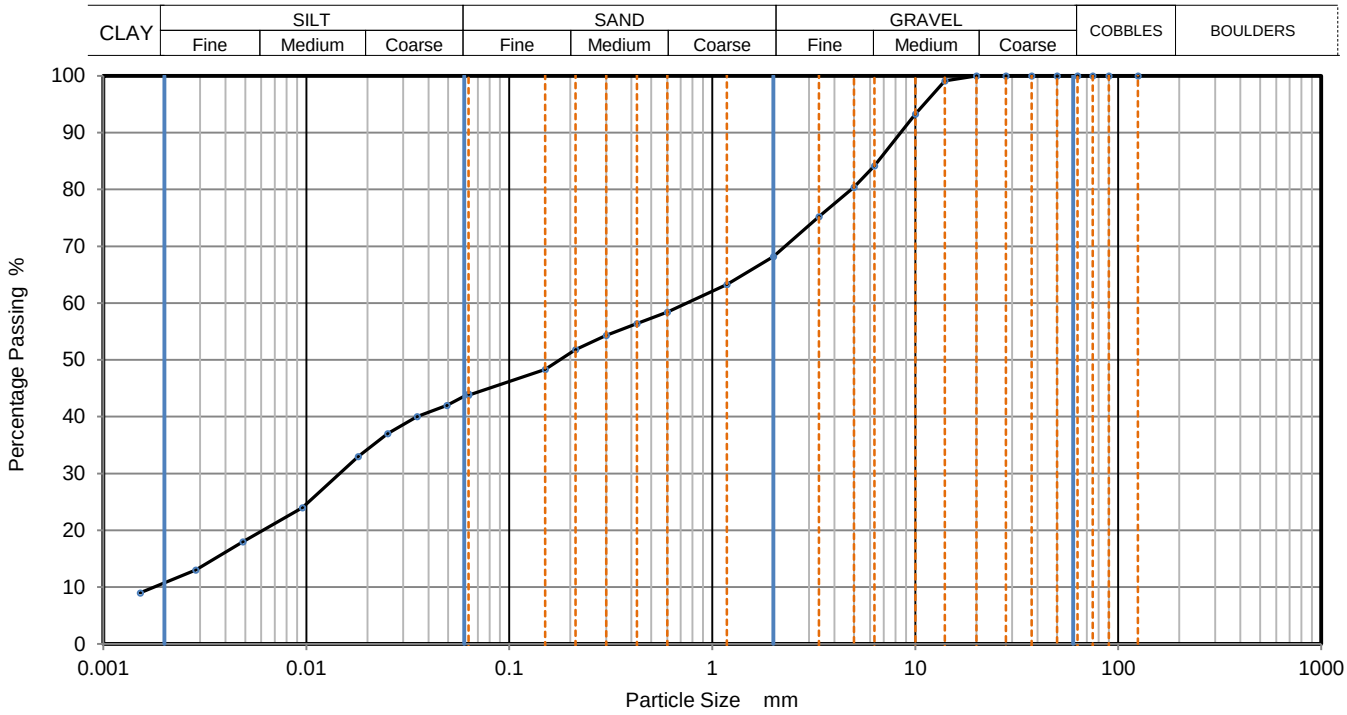
UKAS TESTING 10122

CAUSEWAY GEOTECH	PARTICLE SIZE DISTRIBUTION				Job Ref		23-0881E
					Borehole/Pit No.		TP03
Site Name	NDFA Social Housing Lot 3 - Oldtown Mill				Sample No.		3
Specimen Description	Brownish grey sandy slightly gravelly silty CLAY.				Sample Depth (m)	Top	1.00
						Base	
Specimen Reference	7	Specimen Depth	1	m	Sample Type		B
Test Method	BS1377:Part 2:1990, clauses 9.2 and 9.5				KeyLAB ID		Caus2023101628



Sieving		Sedimentation	
Particle Size mm	% Passing	Particle Size mm	% Passing
125	100	0.06300	44
90	100	0.04933	42
75	100	0.03510	40
63	100	0.02514	37
50	100	0.01800	33
37.5	100	0.00957	24
28	100	0.00487	18
20	100	0.00286	13
14	99	0.00152	9
10	93		
6.3	84		
5	80		
3.35	75		
2	68		
1.18	63		
0.6	58	Particle density	(assumed)
0.425	56	2.65	Mg/m3
0.3	54		
0.212	52		
0.15	48		
0.063	44		

Dry Mass of sample, g: 463

Sample Proportions	% dry mass
Cobbles	0.0
Gravel	31.8
Sand	24.4
Silt	33.1
Clay	10.7

Grading Analysis		
D100	mm	
D60	mm	0.746
D30	mm	0.0148
D10	mm	0.00177
Uniformity Coefficient		420
Curvature Coefficient		0.17

Remarks

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

Approved
Stephen Watson

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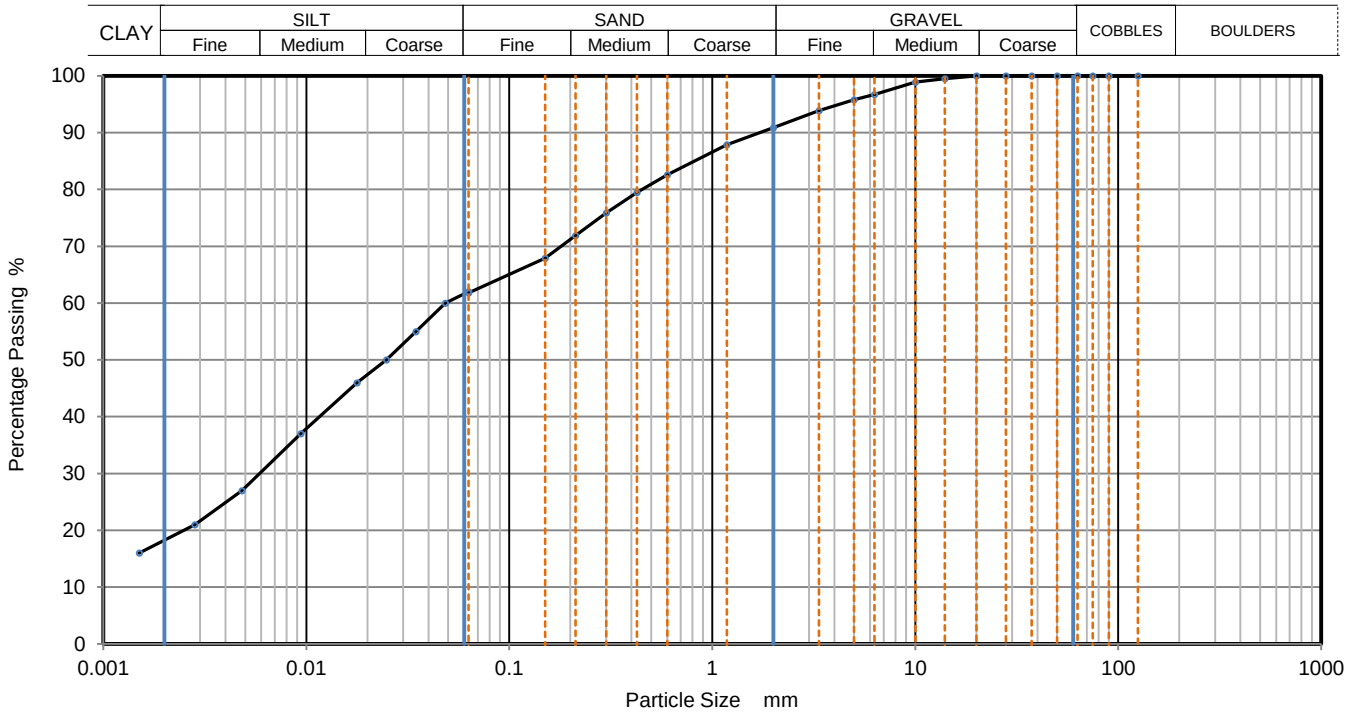
UKAS TESTING 10122

CAUSEWAY GEOTECH	**PARTICLE SIZE DISTRIBUTION**			Job Ref	**23-0881E**
				Borehole/Pit No.	TP04
Site Name	NDFA Social Housing Lot 3 - Oldtown Mill			Sample No.	3
Specimen Description	Brownish grey sandy slightly gravelly silty CLAY.			Sample Depth (m) Top	1.00
				Sample Depth (m) Base	
Specimen Reference	7	Specimen Depth	1 m	Sample Type	B
Test Method	BS1377:Part 2:1990, clauses 9.2 and 9.5			KeyLAB ID	Caus2023101629



Sieving		Sedimentation	
Particle Size mm	% Passing	Particle Size mm	% Passing
125	100	0.06300	62
90	100	0.04836	60
75	100	0.03465	55
63	100	0.02482	50
50	100	0.01778	46
37.5	100	0.00940	37
28	100	0.00481	27
20	100	0.00283	21
14	100	0.00150	16
10	99		
6.3	97		
5	96		
3.35	94		
2	91		
1.18	88		
0.6	83	Particle density	(assumed)
0.425	80	2.65	Mg/m3
0.3	76		
0.212	72		
0.15	68		
0.063	62		

Dry Mass of sample, g	375

Sample Proportions	% dry mass
Cobbles	0.0
Gravel	9.1
Sand	29.0
Silt	43.8
Clay	18.1

Grading Analysis		
D100	mm	
D60	mm	0.0511
D30	mm	0.00579
D10	mm	
Uniformity Coefficient		
Curvature Coefficient		

Remarks

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

Approved
Stephen Watson

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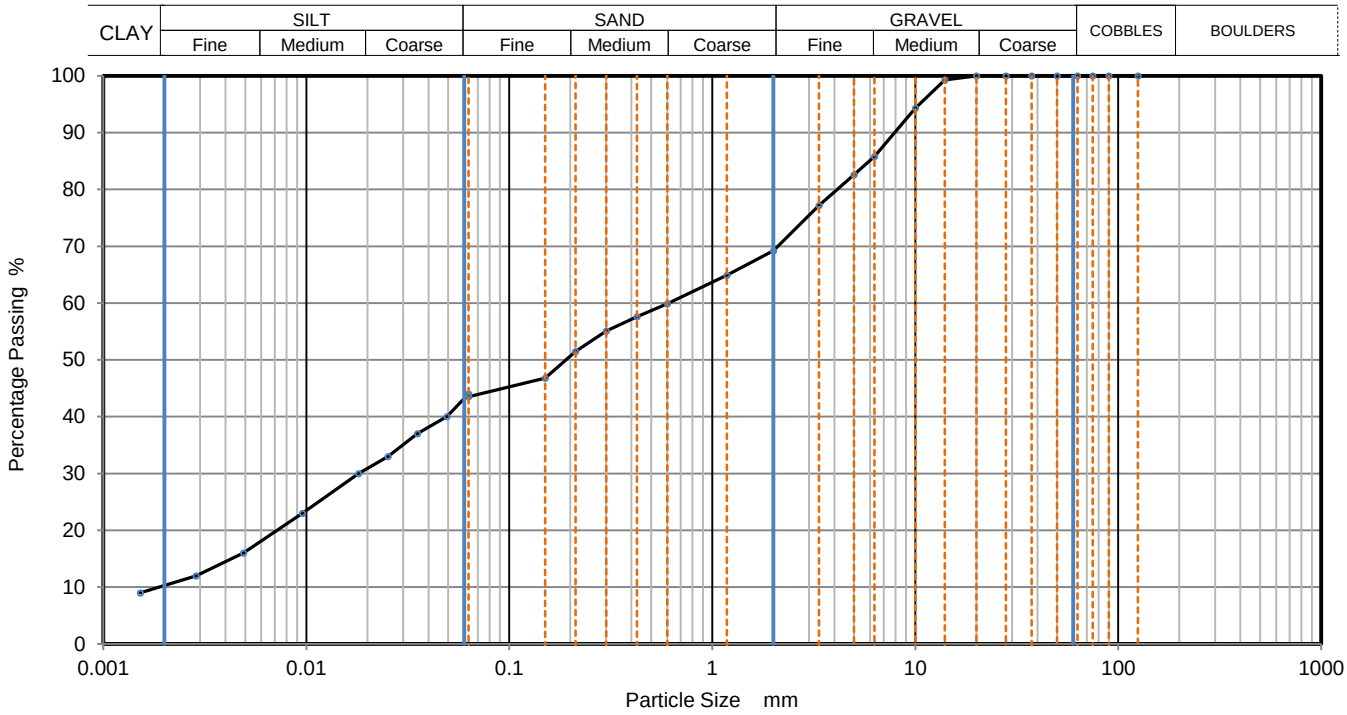
UKAS TESTING 10122

CAUSEWAY GEOTECH	PARTICLE SIZE DISTRIBUTION				Job Ref		23-0881E
					Borehole/Pit No.		TP06
Site Name	NDFA Social Housing Lot 3 - Oldtown Mill				Sample No.		3
Specimen Description	Brownish grey sandy slightly gravelly silty CLAY.				Sample Depth (m)	Top	1.00
						Base	
Specimen Reference	7	Specimen Depth	1	m	Sample Type		B
Test Method	BS1377:Part 2:1990, clauses 9.2 and 9.5				KeyLAB ID		Caus2023101630



Sieving		Sedimentation	
Particle Size mm	% Passing	Particle Size mm	% Passing
125	100	0.06300	44
90	100	0.04929	40
75	100	0.03531	37
63	100	0.02529	33
50	100	0.01811	30
37.5	100	0.00958	23
28	100	0.00490	16
20	100	0.00286	12
14	99	0.00152	9
10	94		
6.3	86		
5	83		
3.35	77		
2	69		
1.18	65		
0.6	60	Particle density	(assumed)
0.425	58	2.65	Mg/m3
0.3	55		
0.212	52		
0.15	47		
0.063	44		

Dry Mass of sample, g	402

Sample Proportions	% dry mass
Cobbles	0.0
Gravel	30.8
Sand	25.7
Silt	33.3
Clay	10.2

Grading Analysis		
D100	mm	
D60	mm	0.611
D30	mm	0.0189
D10	mm	0.00193
Uniformity Coefficient		320
Curvature Coefficient		0.3

Remarks

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

Approved
Stephen Watson

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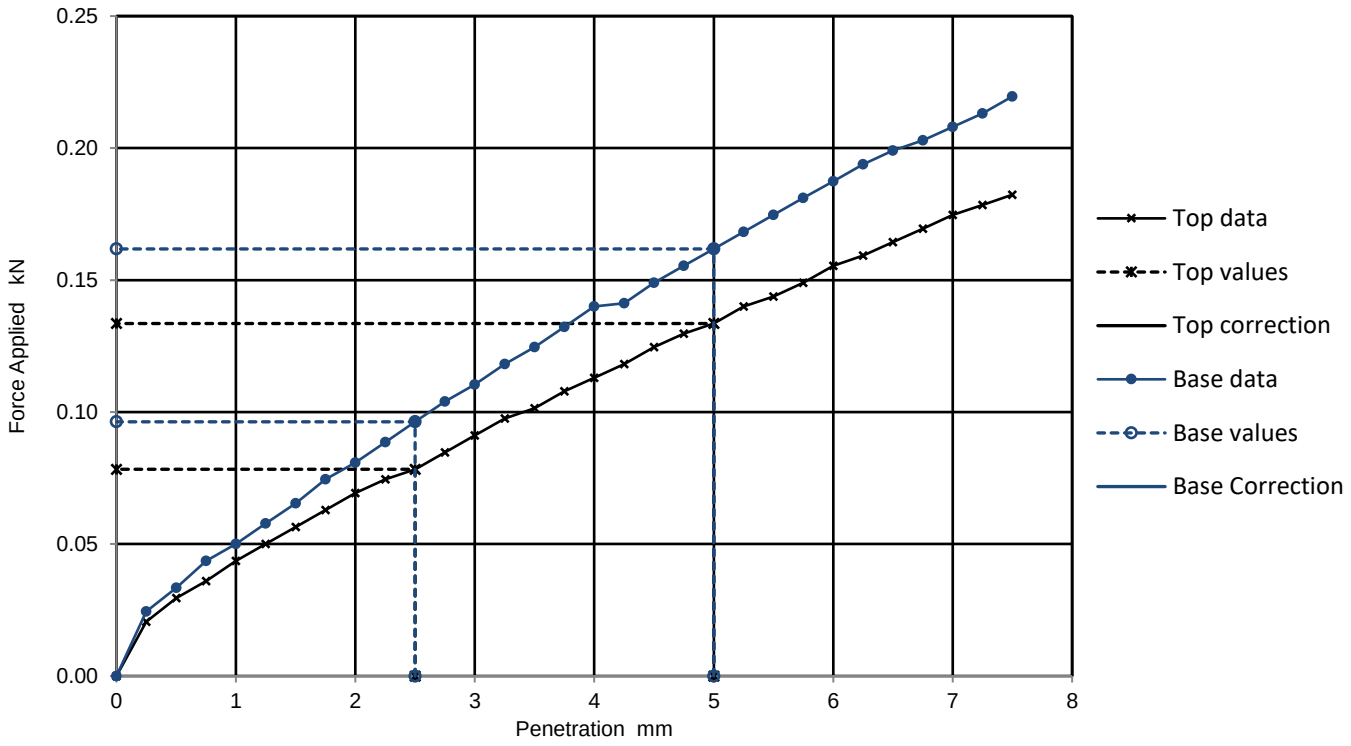
UKAS TESTING 10122

CAUSEWAY GEOTECH	**California Bearing Ratio (CBR)**			Job Ref	23-0881E
				Borehole/Pit No.	BH01
Site Name	NDFA Social Housing Lot 3 - Oldtown Mill			Sample No.	6
Soil Description	Brownish grey sandy gravelly silty CLAY.			Depth m	1.20
Specimen Reference		Specimen Depth	m	Sample Type	B
Specimen Description	Brownish grey sandy gravelly silty CLAY.			KeyLAB ID	Caus2023101622
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		32	%	Dry density after soaking		Mg/m3
Initial Specimen details	Bulk density	2.14	Mg/m3	Surcharge applied	4.5	kg
	Dry density	1.87	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	0.6	0.7	0.7	0.7	14
BASE	No	0.7	0.8	0.8		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

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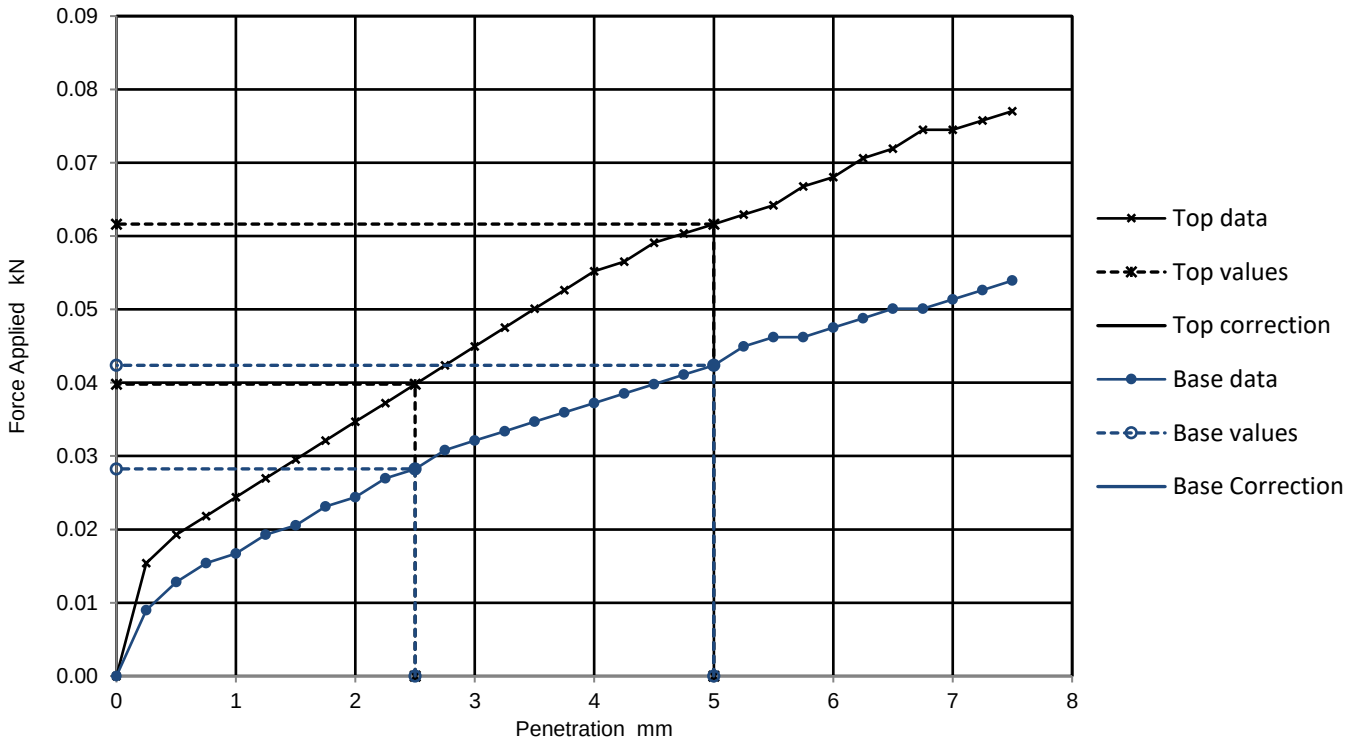
CAUSEWAY GEOTECH	**California Bearing Ratio (CBR)**			Job Ref	23-0881E
				Borehole/Pit No.	BH02
Site Name	NDFA Social Housing Lot 3 - Oldtown Mill			Sample No.	5
Soil Description	Brownish grey sandy slightly gravelly silty CLAY.			Depth m	0.80
Specimen Reference		Specimen Depth	m	Sample Type	B
Specimen Description	Brownish grey sandy slightly gravelly silty CLAY.			KeyLAB ID	Caus2023101623
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		3	%	Dry density after soaking		Mg/m3
Initial Specimen details	Bulk density	1.93	Mg/m3	Surcharge applied	4.5	kg
	Dry density	1.54	Mg/m3		3	kPa
	Moisture content	25	%			

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		25
BASE	No	0.2	0.2	0.2		25

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

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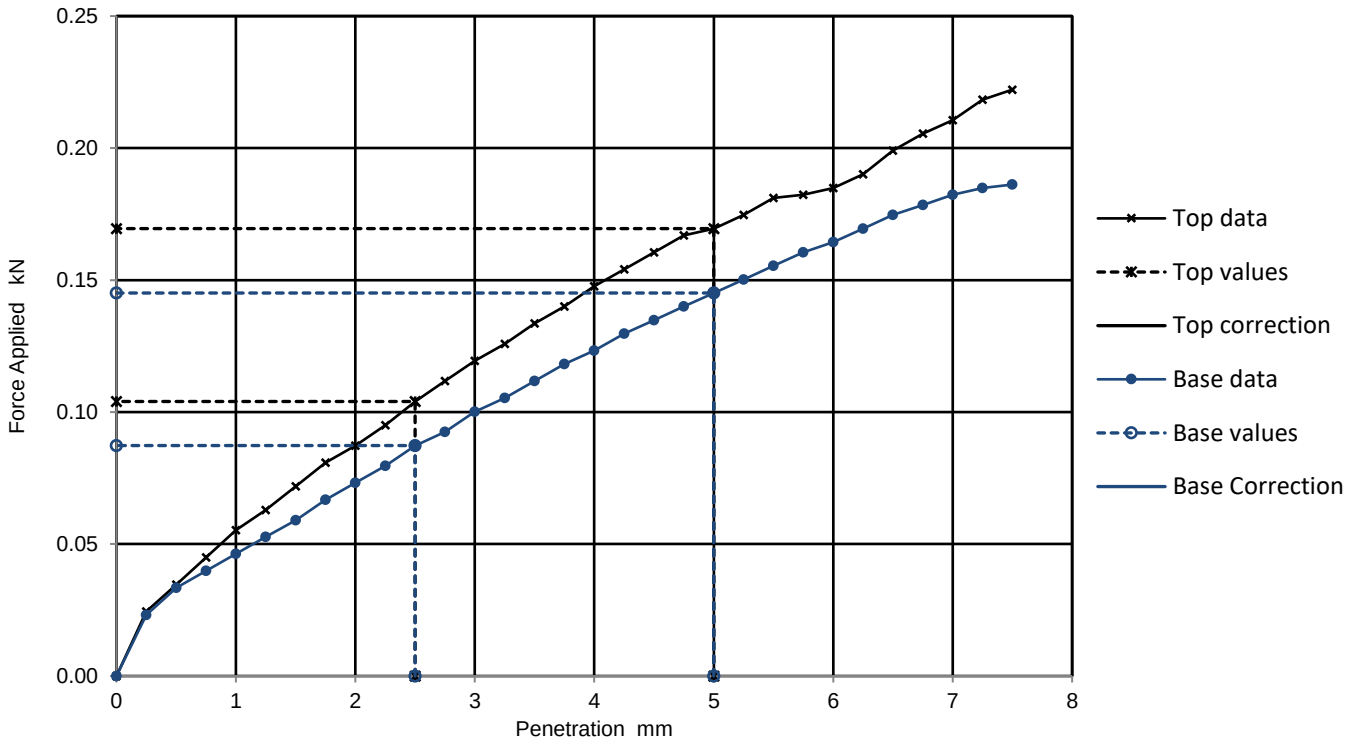
CAUSEWAY GEOTECH	**California Bearing Ratio (CBR)**			Job Ref	23-0881E
				Borehole/Pit No.	BH04
Site Name	NDFA Social Housing Lot 3 - Oldtown Mill			Sample No.	6
Soil Description	Grey sandy slightly gravelly silty CLAY.			Depth m	0.90
Specimen Reference		Specimen Depth	m	Sample Type	B
Specimen Description	Grey sandy slightly gravelly silty CLAY.			KeyLAB ID	Caus2023101624
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		13	%	Dry density after soaking		Mg/m3
Initial Specimen details	Bulk density	2.02	Mg/m3	Surcharge applied	4.5	kg
	Dry density	1.66	Mg/m3		3	kPa
	Moisture content	22	%			

Force v Penetration Plots



Results

	Curve correction applied	CBR Values, %				Moisture Content %
		2.5mm	5mm	Highest	Average	
TOP	No	0.8	0.9	0.9	0.8	22
BASE	No	0.7	0.7	0.7		19

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

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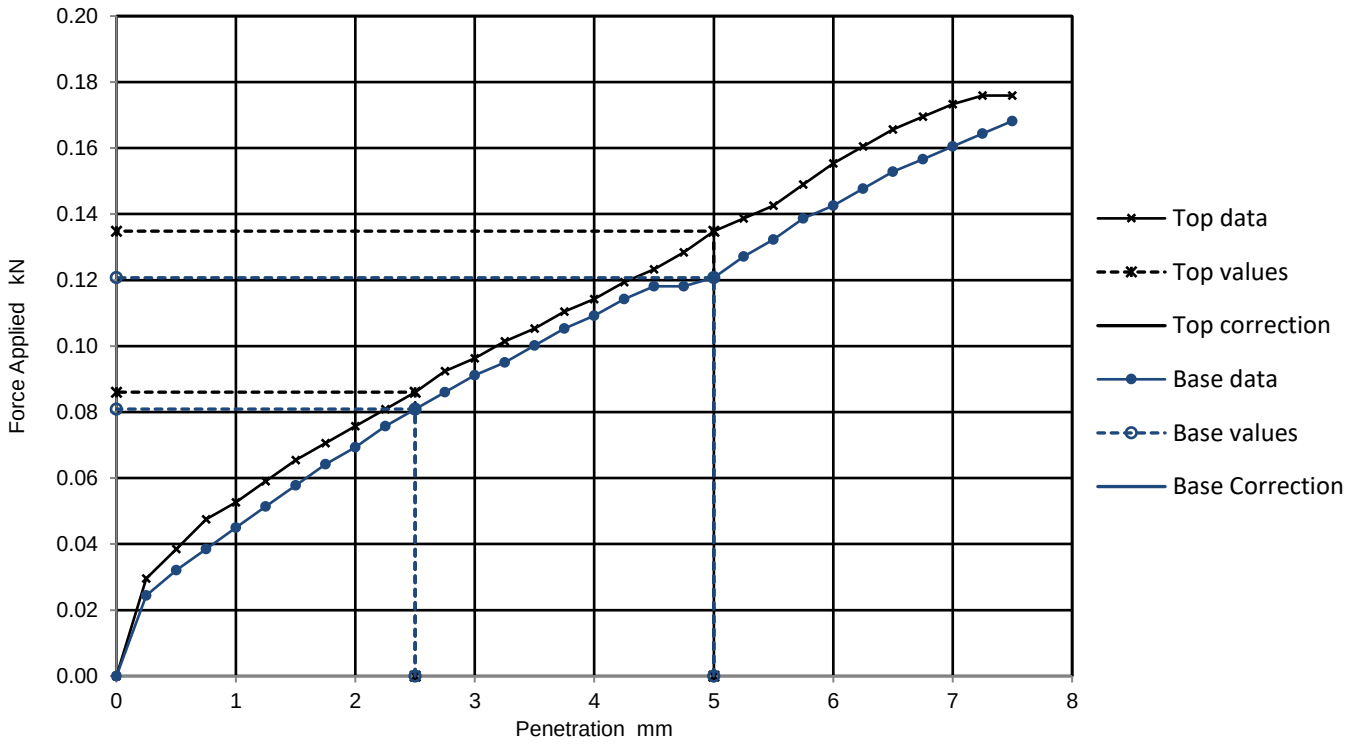
CAUSEWAY GEOTECH	**California Bearing Ratio (CBR)**			Job Ref	23-0881E
				Borehole/Pit No.	BH05
Site Name	NDFA Social Housing Lot 3 - Oldtown Mill			Sample No.	6
Soil Description	Brownish grey sandy slightly gravelly silty CLAY.			Depth m	1.20
Specimen Reference		Specimen Depth	m	Sample Type	B
Specimen Description	Brownish grey sandy slightly gravelly silty CLAY.			KeyLAB ID	Caus2023101625
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		10	%	Dry density after soaking		Mg/m3
Initial Specimen details	Bulk density	2.05	Mg/m3	Surcharge applied	4.5	kg
	Dry density	1.72	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	0.7	0.7	0.7	0.6	19
BASE	No	0.6	0.6	0.6		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

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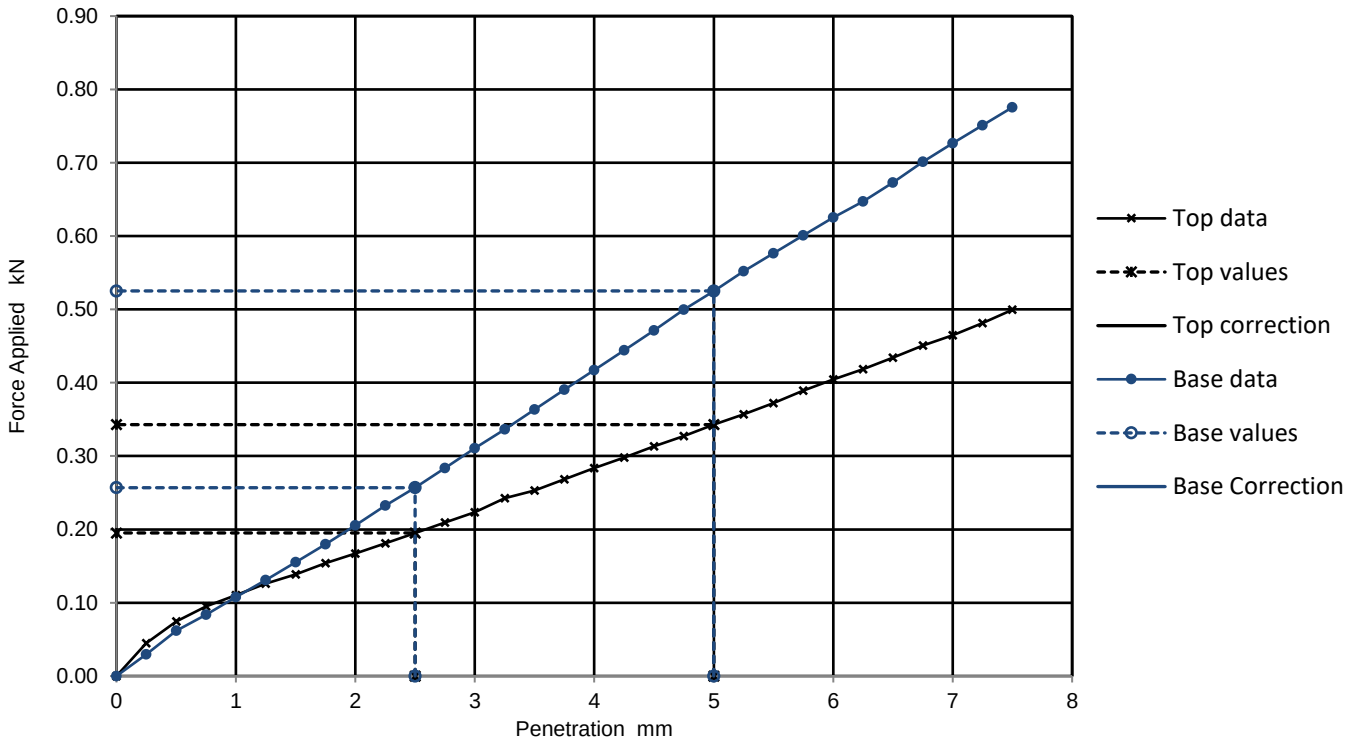
CAUSEWAY GEOTECH	**California Bearing Ratio (CBR)**			Job Ref	23-0881E
				Borehole/Pit No.	TP01
Site Name	NDFA Social Housing Lot 3 - Oldtown Mill			Sample No.	3
Soil Description	Brownish grey sandy slightly gravelly silty CLAY.			Depth m	1.00
Specimen Reference		Specimen Depth	m	Sample Type	B
Specimen Description	Brownish grey sandy slightly gravelly silty CLAY.			KeyLAB ID	Caus2023101626
Test Method	BS1377 : Part 4 : 1990, clause 7			CBR Test Number	1

Specimen Preparation

Condition				Soaking details	Not soaked	
Details				Period of soaking		days
				Time to surface		days
				Amount of swell recorded		mm
Material retained on 20mm sieve removed		14	%	Dry density after soaking		Mg/m3
Initial Specimen details	Bulk density	2.13	Mg/m3	Surcharge applied	4.5	kg
	Dry density	1.85	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	1.5	1.7	1.7		15
BASE	No	1.9	2.6	2.6		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

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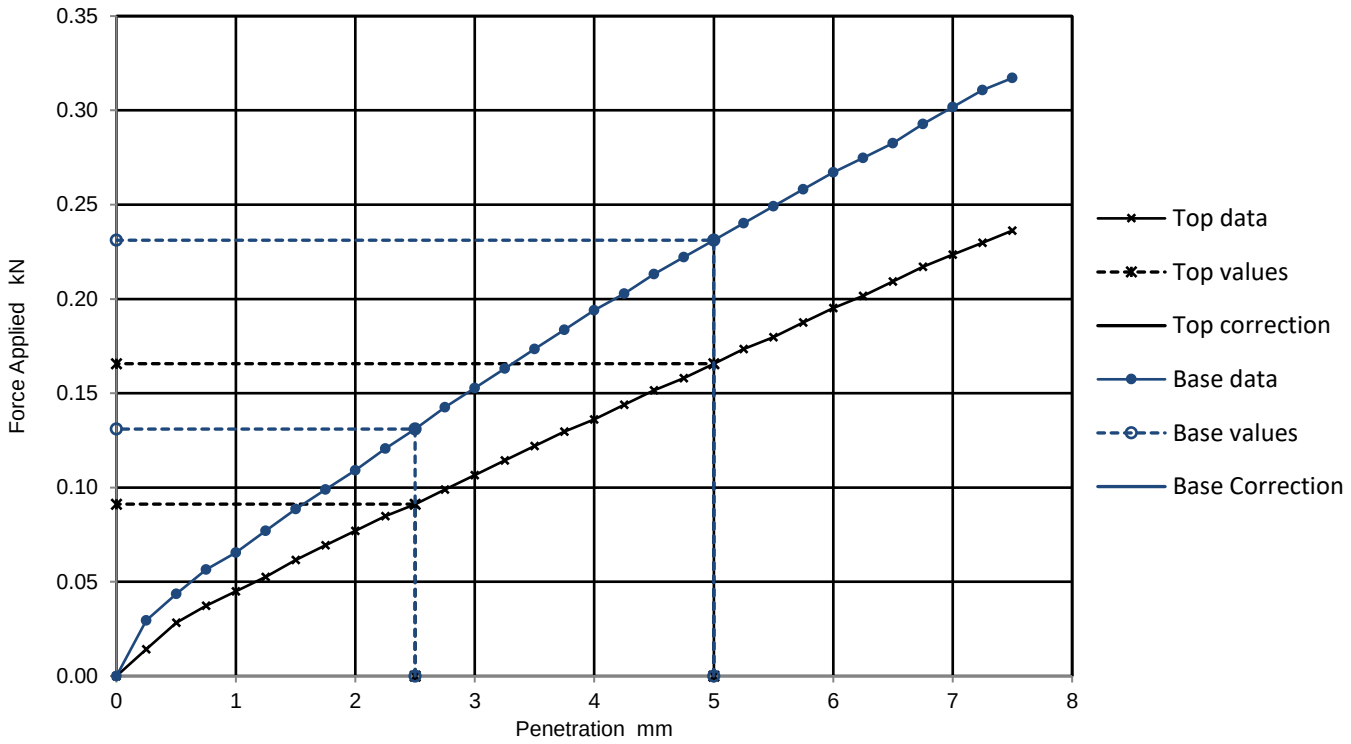
CAUSEWAY GEOTECH	**California Bearing Ratio (CBR)**			Job Ref	23-0881E
				Borehole/Pit No.	TP02
Site Name	NDFA Social Housing Lot 3 - Oldtown Mill			Sample No.	3
Soil Description	Brownish grey sandy slightly gravelly silty CLAY.			Depth m	1.00
Specimen Reference		Specimen Depth	m	Sample Type	B
Specimen Description	Brownish grey sandy slightly gravelly silty CLAY.			KeyLAB ID	Caus2023101627
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	2.11	Mg/m3	Surcharge applied	4.5	kg
	Dry density	1.80	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	0.7	0.8	0.8		17
BASE	No	1.0	1.2	1.2		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

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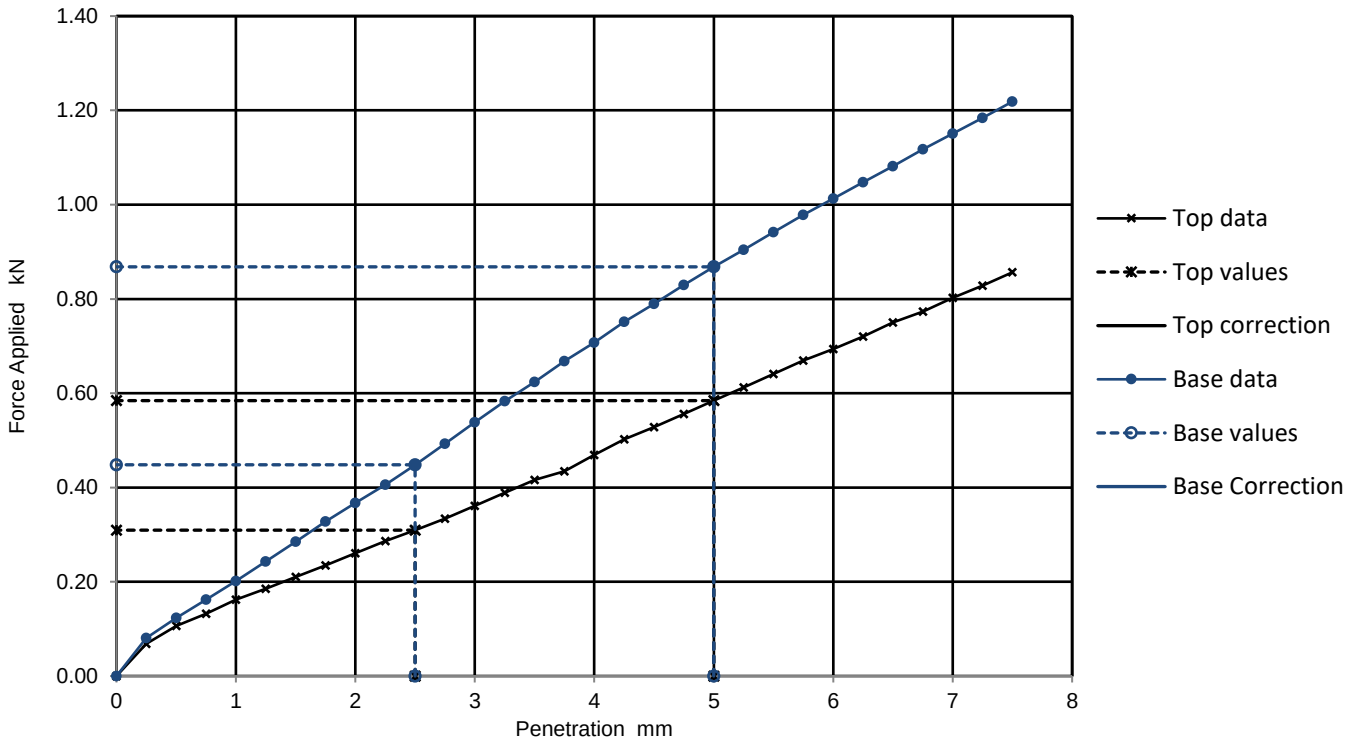
CAUSEWAY GEOTECH	**California Bearing Ratio (CBR)**			Job Ref	23-0881E
				Borehole/Pit No.	TP03
Site Name	NDFA Social Housing Lot 3 - Oldtown Mill			Sample No.	3
Soil Description	Brownish grey sandy slightly gravelly silty CLAY.			Depth m	1.00
Specimen Reference		Specimen Depth	m	Sample Type	B
Specimen Description	Brownish grey sandy slightly gravelly silty CLAY.			KeyLAB ID	Caus2023101628
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		15	%	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	17	%			

Force v Penetration Plots



Results

	Curve correction applied	CBR Values, %				Moisture Content %
		2.5mm	5mm	Highest	Average	
TOP	No	2.3	2.9	2.9		17
BASE	No	3.4	4.3	4.3		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

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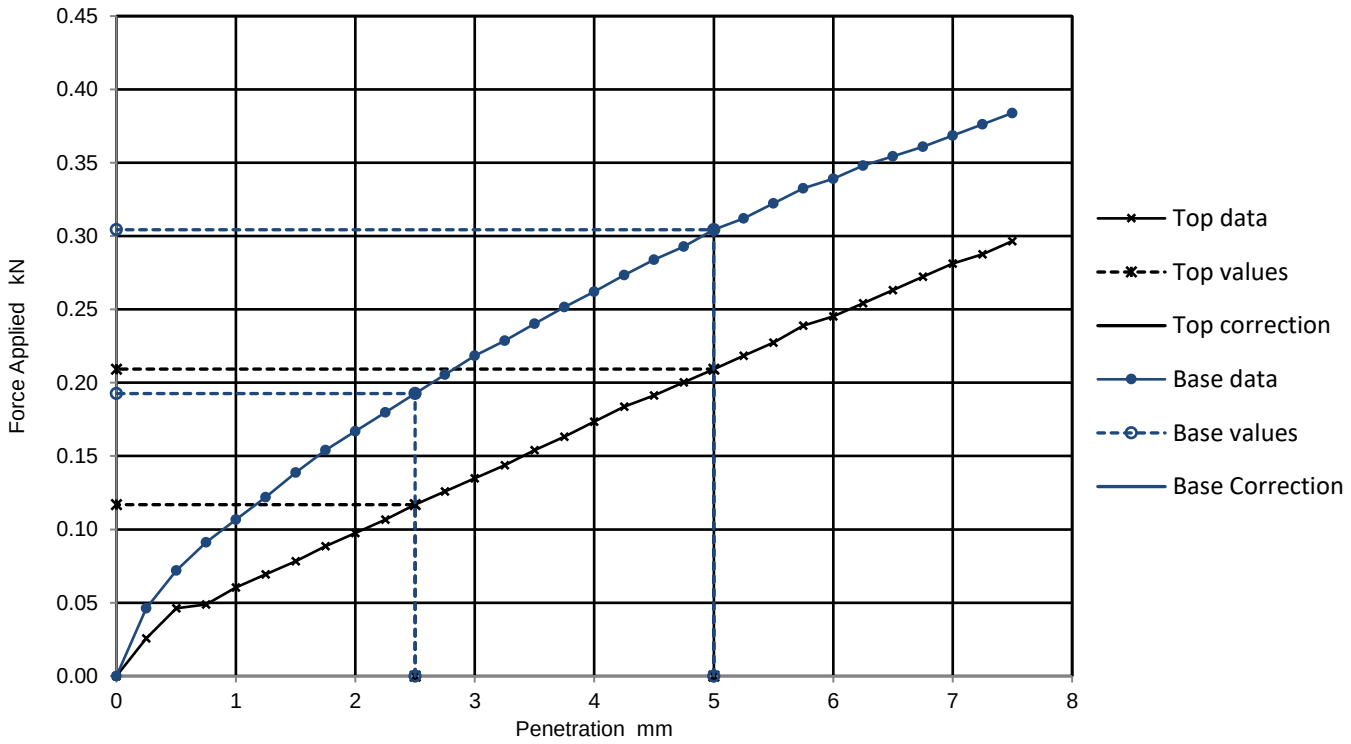
CAUSEWAY GEOTECH	**California Bearing Ratio (CBR)**			Job Ref	23-0881E
				Borehole/Pit No.	TP04
Site Name	NDFA Social Housing Lot 3 - Oldtown Mill			Sample No.	3
Soil Description	Brownish grey sandy slightly gravelly silty CLAY.			Depth m	1.00
Specimen Reference		Specimen Depth	m	Sample Type	B
Specimen Description				KeyLAB ID	Caus2023101629
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		6	%	Dry density after soaking		Mg/m3
Initial Specimen details	Bulk density	1.86	Mg/m3	Surcharge applied	4.5	kg
	Dry density	1.43	Mg/m3		3	kPa
	Moisture content	30	%			

Force v Penetration Plots



Results

	Curve correction applied	CBR Values, %				Moisture Content %
		2.5mm	5mm	Highest	Average	
TOP	No	0.9	1.0	1.0		30
BASE	No	1.5	1.5	1.5		30

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

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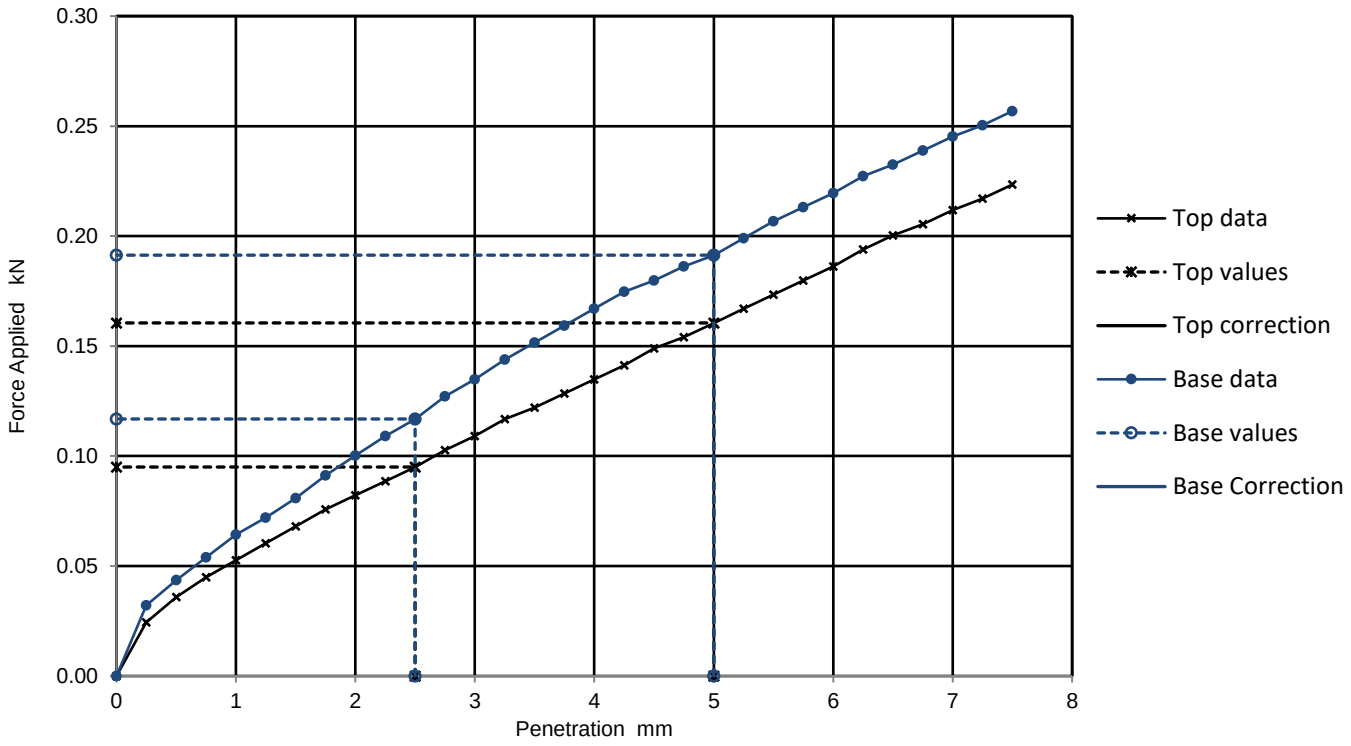
CAUSEWAY GEOTECH	**California Bearing Ratio (CBR)**			Job Ref	23-0881E
				Borehole/Pit No.	TP06
Site Name	NDFA Social Housing Lot 3 - Oldtown Mill			Sample No.	3
Soil Description	Brownish grey sandy slightly gravelly silty CLAY.			Depth m	1.00
Specimen Reference		Specimen Depth	m	Sample Type	B
Specimen Description				KeyLAB ID	Caus2023101630
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		14	%	Dry density after soaking		Mg/m3
Initial Specimen details	Bulk density	2.07	Mg/m3	Surcharge applied	4.5	kg
	Dry density	1.76	Mg/m3		3	kPa
	Moisture content	18	%			

Force v Penetration Plots



Results

	Curve correction applied	CBR Values, % 2.5mm	5mm	Highest	Average	Moisture Content %
TOP	No	0.7	0.8	0.8	0.9	18
BASE	No	0.9	1.0	1.0		19

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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LAB 11R - Version 6

Certificate of Analysis

Certificate Number	23-25461-1	*Issued:*	17-Nov-23

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

Our Reference	23-25461-1
Client Reference	23-0881E
Order No	(not supplied)
Contract Title	OLDTOWN MILL
Description	9 Soil samples.
Date Received	28-Oct-23
Date Started	30-Oct-23
Date Completed	17-Nov-23
Test Procedures	Identified by prefix DETSn (details on request).

Notes **This report supersedes 23-25461, amendments made.**
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 23-25461-1
Client Ref 23-0881E
Contract Title OLDTOWN MILL

			Lab No	2254340	2254341	2254343	2254344	2254345	2254346	2254347	2254348	2254349
			.Sample ID	BH01	BH02	BH04	BH05	TP01	TP02	TP03	TP04	TP06
			Depth	1.20	0.80	0.90	1.00	1.00	1.00	1.00	1.00	1.00
			Other ID									
			Sample Type	B	B	B	B	B	B	B	B	B
			Sampling Date	27/10/2023	27/10/2023	27/10/2023	27/10/2023	27/10/2023	27/10/2023	27/10/2023	27/10/2023	27/10/2023
			Sampling Time	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	7.8	7.5	7.9	8.2	8.2	7.5	8.0	7.9	8.2
Sulphate Aqueous Extract as SO4 (2:1)	DETSC 2076#	10	mg/l	610	610	310	18	120	57	180	75	13

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

Information in Support of the Analytical Results

Our Ref 23-25461-1
Client Ref 23-0881E
Contract OLDTOWN MILL

Containers Received & Deviating Samples

Lab No	Sample ID	Date Sampled	Containers Received	Holding time exceeded for tests	Inappropriate container for tests
2254340	BH01 1.20 SOIL	27/10/23	PT 500ml		
2254341	BH02 0.80 SOIL	27/10/23	PT 500ml		
2254342	BH03 0.90 SOIL	27/10/23	PT 500ml		
2254343	BH04 0.90 SOIL	27/10/23	PT 500ml		
2254344	BH05 1.00 SOIL	27/10/23	PT 500ml		
2254345	TP01 1.00 SOIL	27/10/23	PT 500ml		
2254346	TP02 1.00 SOIL	27/10/23	PT 500ml		
2254347	TP03 1.00 SOIL	27/10/23	PT 500ml		
2254348	TP04 1.00 SOIL	27/10/23	PT 500ml		
2254349	TP06 1.00 SOIL	27/10/23	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

HEAD OFFICE
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Registered in Ireland.
Company Number: 633786

www.causewaygeotech.com

SOIL AND ROCK SAMPLE ANALYSIS
LABORATORY TEST REPORT

21 November 2023

Project Name:	NDFA Social Housing Lot 3 - Oldtown Mill
Project No.:	23-0881E
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 24/10/2023 and 21/11/2023.

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 - Oldtown Mill

Report Reference: Schedule 2

The table below details the tests carried out, the specifications used, and the number of tests included in this report. The results contained in this report relate to the sample(s) as received.

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. Opinions and interpretations expressed herein are outside the scope of UKAS accreditation.

Material tested	Type of test/Properties measured/Range of measurement	Standard specifications	No. of results included in the report
SOIL	Moisture Content of Soil	BS 1377-2: 1990: Cl 3.2	5
SOIL	Liquid and Plastic Limits of soil-1 point cone penetrometer method	BS 1377-2: 1990: Cl 4.4, 5.3 & 5.4	5
SOIL	Particle size distribution - wet sieving	BS 1377-2: 1990: Cl 9.2	5
SOIL	Particle size distribution - sedimentation hydrometer method	BS 1377-2: 1990: Cl 9.5	5
SOIL	California Bearing Ratio (CBR)	BS 1377-4: 1990: Cl 7	4

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		5
SOIL – Subcontracted to Derwentside Environmental Testing Services Limited *(UKAS 2139)*	Sulphate Content water extract		5

Summary of Classification Test Results

Project No.	Project Name
23-0881E	NDFA Social Housing Lot 3 - Oldtown Mill

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										
BH06	7	1.20	2.00	B	Brownish grey sandy slightly gravelly silty CLAY.			17	62	32 -1pt	18	14		CL
BH08	5	0.00	1.20	B	Brownish grey sandy slightly gravelly silty CLAY.			18	90	48 -1pt	24	24		CI
BH08	6	1.20	1.70	B	Brownish grey sandy slightly gravelly silty CLAY.			34	69	34 -1pt	20	14		CL
BH11	5	0.00	1.30	B	Brownish grey sandy slightly gravelly silty CLAY.			31	86	47 -1pt	26	21		CI
BH11	8	1.20	1.90	B	Brownish grey sandy slightly gravelly clayey SILT.			16	92	58 -1pt	36	22		MH

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

21/11/2023

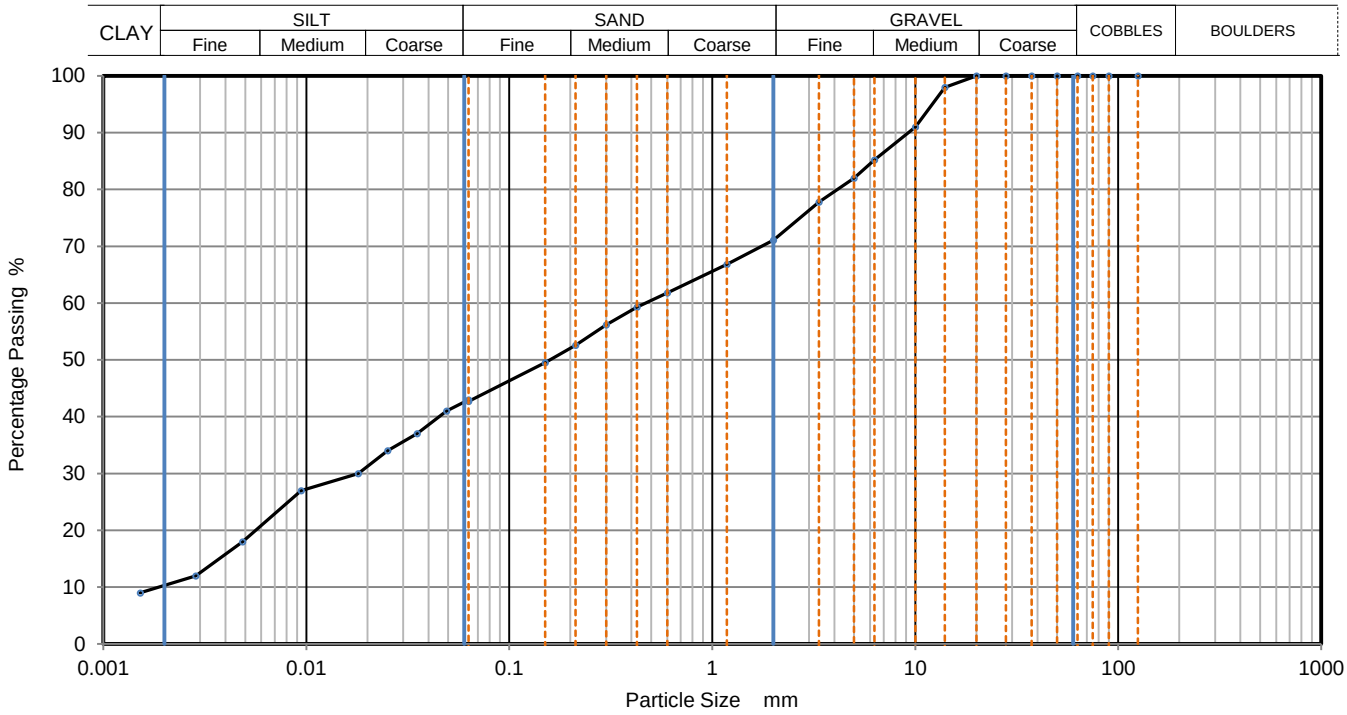
Approved By

Stephen Watson

UKAS TESTING

10122

CAUSEWAY GEOTECH	PARTICLE SIZE DISTRIBUTION				Job Ref		23-0881E
					Borehole/Pit No.		BH06
Site Name	NDFA Social Housing Lot 3 - Oldtown Mill				Sample No.		7
Specimen Description	Brownish grey 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		Caus20231024111



Sieving		Sedimentation	
Particle Size mm	% Passing	Particle Size mm	% Passing
125	100	0.06300	43
90	100	0.04912	41
75	100	0.03519	37
63	100	0.02521	34
50	100	0.01805	30
37.5	100	0.00944	27
28	100	0.00486	18
20	100	0.00285	12
14	98	0.00152	9
10	91		
6.3	85		
5	82		
3.35	78		
2	71		
1.18	67		
0.6	62	Particle density	(assumed)
0.425	59	2.65	Mg/m3
0.3	56		
0.212	53		
0.15	50		
0.063	43		

Dry Mass of sample, g	500

Sample Proportions	% dry mass
Cobbles	0.0
Gravel	28.9
Sand	28.4
Silt	32.2
Clay	10.5

Grading Analysis		
D100	mm	
D60	mm	0.466
D30	mm	0.0173
D10	mm	0.00185
Uniformity Coefficient		250
Curvature Coefficient		0.35

Remarks

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

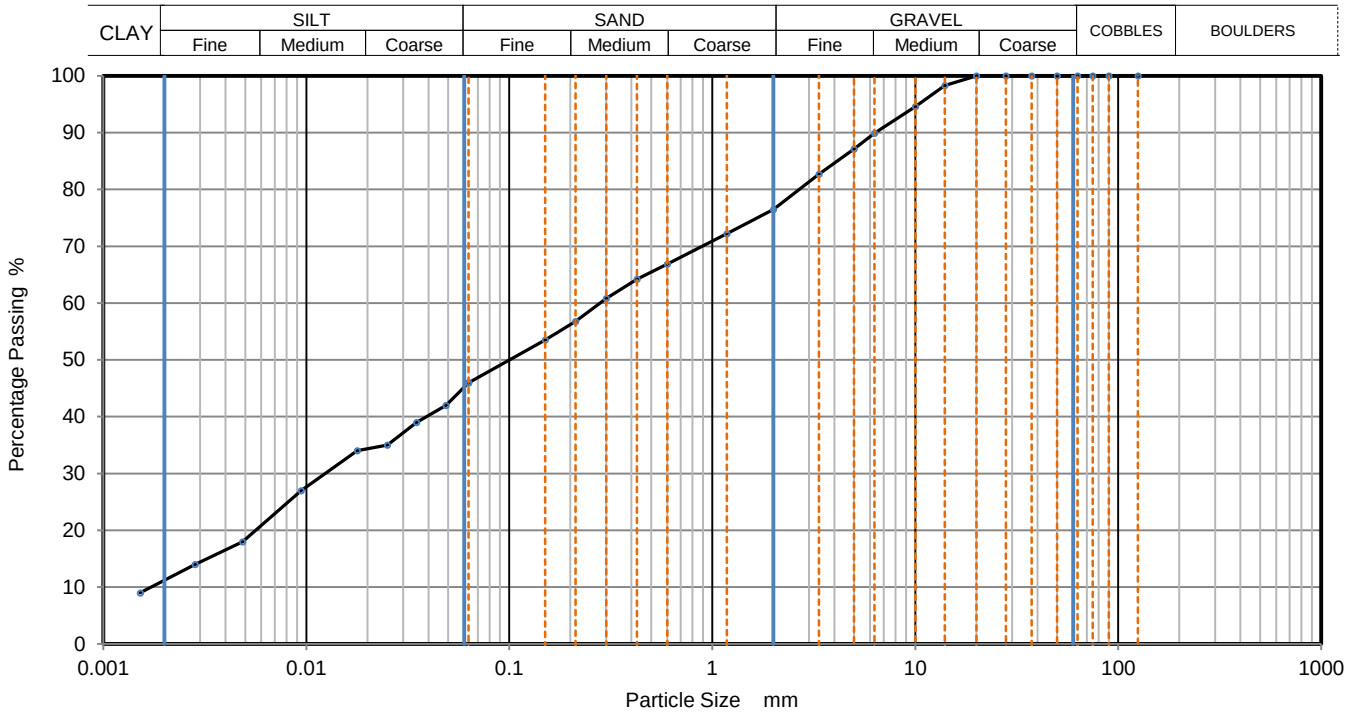
Approved
Stephen Watson

LAB 05R - Version 6

UKAS TESTING

10122

CAUSEWAY GEOTECH	PARTICLE SIZE DISTRIBUTION			Job Ref		23-0881E
				Borehole/Pit No.		BH08
Site Name	NDFA Social Housing Lot 3 - Oldtown Mill			Sample No.		5
Specimen Description	Brownish grey sandy slightly gravelly silty CLAY.			Sample Depth (m)	Top	0.00
					Base	1.20
Specimen Reference	8	Specimen Depth	0 m	Sample Type		B
Test Method	BS1377:Part 2:1990, clauses 9.2 and 9.5			KeyLAB ID		Caus20231024112



Sieving		Sedimentation	
Particle Size mm	% Passing	Particle Size mm	% Passing
125	100	0.06300	46
90	100	0.04879	42
75	100	0.03496	39
63	100	0.02505	35
50	100	0.01783	34
37.5	100	0.00944	27
28	100	0.00486	18
20	100	0.00284	14
14	98	0.00152	9
10	95		
6.3	90		
5	87		
3.35	83		
2	77		
1.18	72		
0.6	67	Particle density	(assumed)
0.425	64	2.65	Mg/m3
0.3	61		
0.212	57		
0.15	54		
0.063	46		

Dry Mass of sample, g	511

Sample Proportions	% dry mass
Cobbles	0.0
Gravel	23.5
Sand	30.5
Silt	34.8
Clay	11.2

Grading Analysis		
D100	mm	
D60	mm	0.28
D30	mm	0.0129
D10	mm	0.00174
Uniformity Coefficient		160
Curvature Coefficient		0.34

Remarks

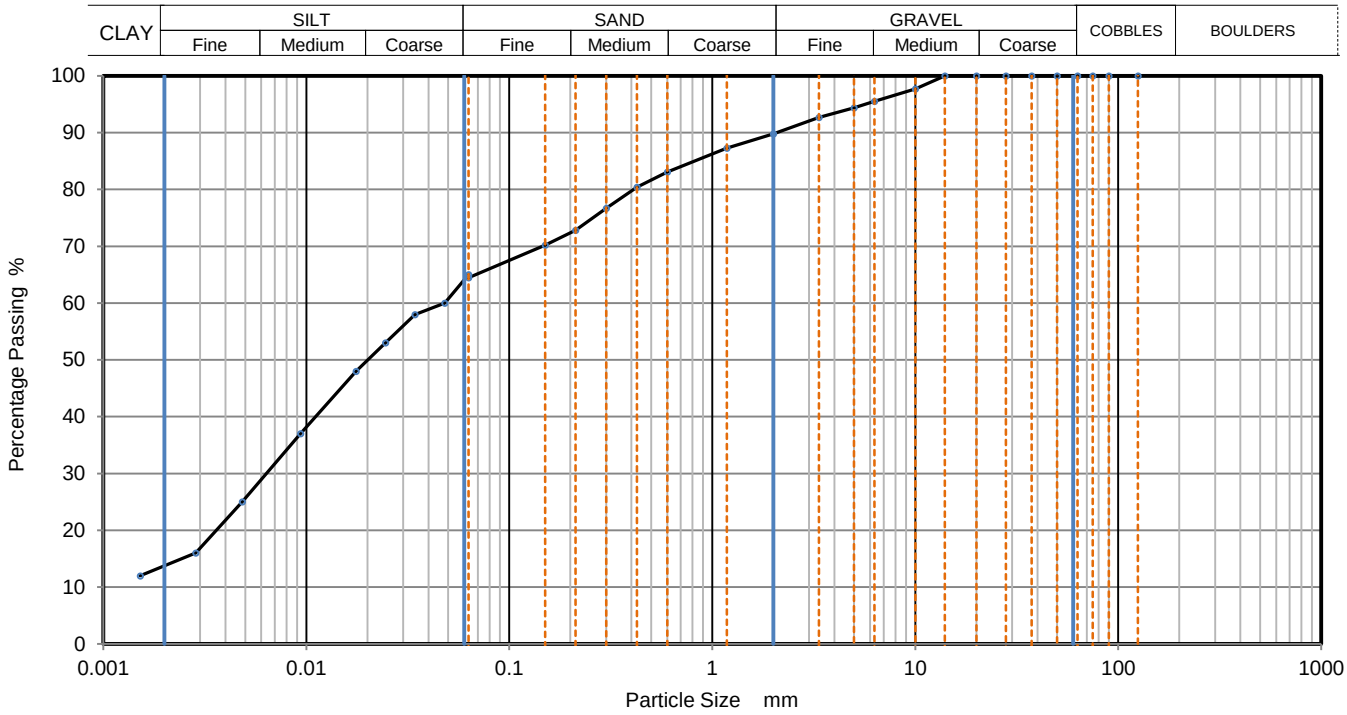
Preparation and testing in accordance with BS1377-2 :1990 unless noted below

Approved
Stephen Watson

LAB 05R - Version 6

UKAS TESTING 10122

CAUSEWAY GEOTECH	**PARTICLE SIZE DISTRIBUTION**			Job Ref	**23-0881E**
				Borehole/Pit No.	BH08
Site Name	NDFA Social Housing Lot 3 - Oldtown Mill			Sample No.	6
Specimen Description	Brownish grey sandy slightly gravelly silty CLAY.			Sample Depth (m) Top	1.20
				Base	1.70
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	Caus20231024113



Sieving		Sedimentation	
Particle Size mm	% Passing	Particle Size mm	% Passing
125	100	0.06300	65
90	100	0.04812	60
75	100	0.03426	58
63	100	0.02456	53
50	100	0.01760	48
37.5	100	0.00938	37
28	100	0.00483	25
20	100	0.00285	16
14	100	0.00152	12
10	98		
6.3	96		
5	94		
3.35	93		
2	90		
1.18	87		
0.6	83	Particle density	(assumed)
0.425	80	2.65	Mg/m3
0.3	77		
0.212	73		
0.15	70		
0.063	65		

Dry Mass of sample, g: 508

Sample Proportions	% dry mass
Cobbles	0.0
Gravel	10.2
Sand	25.3
Silt	51.0
Clay	13.5

Grading Analysis		
D100	mm	
D60	mm	0.0484
D30	mm	0.00632
D10	mm	
Uniformity Coefficient		
Curvature Coefficient		

Remarks

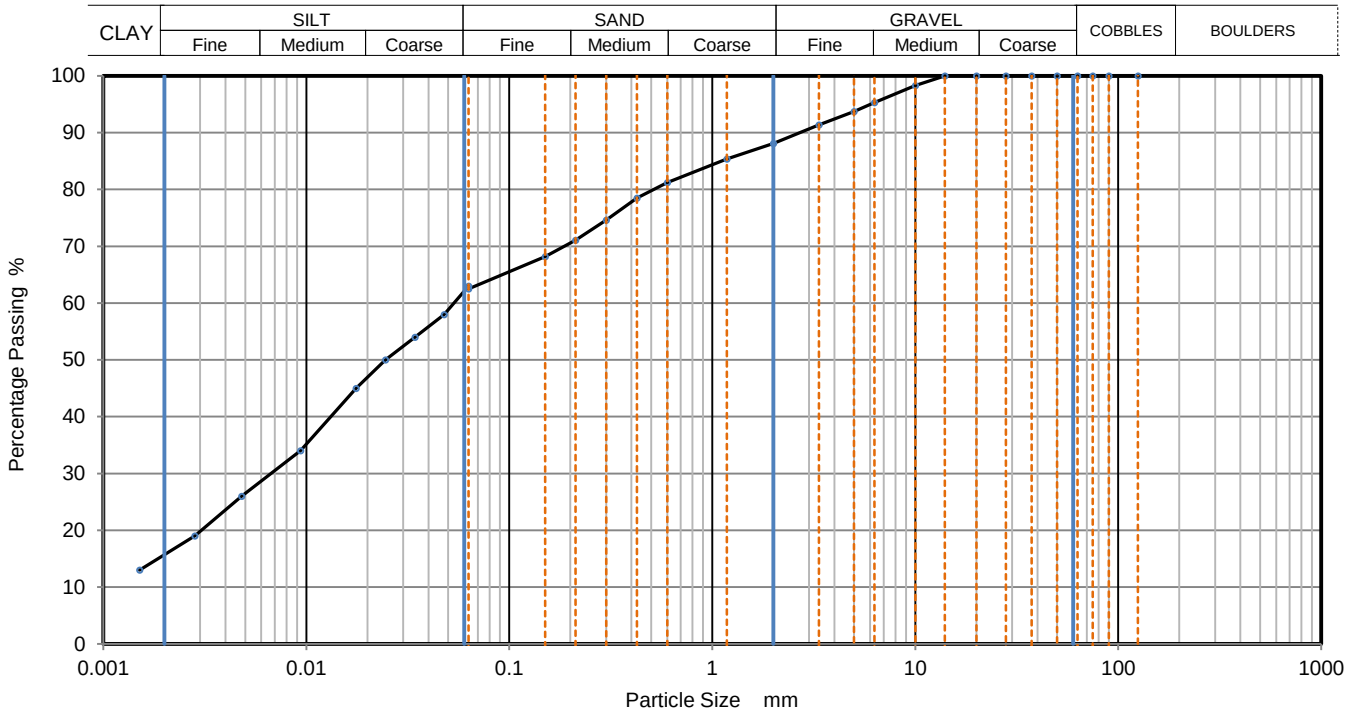
Preparation and testing in accordance with BS1377-2 :1990 unless noted below

Approved
Stephen Watson

LAB 05R - Version 6

UKAS TESTING 10122

CAUSEWAY GEOTECH	PARTICLE SIZE DISTRIBUTION			Job Ref		23-0881E
				Borehole/Pit No.		BH11
Site Name	NDFA Social Housing Lot 3 - Oldtown Mill			Sample No.		5
Specimen Description	Brownish grey sandy slightly gravelly silty CLAY.			Sample Depth (m)	Top	0.00
					Base	1.30
Specimen Reference	8	Specimen Depth	0 m	Sample Type		B
Test Method	BS1377:Part 2:1990, clauses 9.2 and 9.5			KeyLAB ID		Caus20231024114



Sieving		Sedimentation	
Particle Size mm	% Passing	Particle Size mm	% Passing
125	100	0.06300	63
90	100	0.04779	58
75	100	0.03426	54
63	100	0.02456	50
50	100	0.01760	45
37.5	100	0.00938	34
28	100	0.00480	26
20	100	0.00282	19
14	100	0.00151	13
10	98		
6.3	95		
5	94		
3.35	91		
2	88		
1.18	85		
0.6	81	Particle density	(assumed)
0.425	79	2.65	Mg/m3
0.3	75		
0.212	71		
0.15	68		
0.063	63		

Dry Mass of sample, g: 439

Sample Proportions	% dry mass
Cobbles	0.0
Gravel	11.9
Sand	25.6
Silt	46.7
Clay	15.8

Grading Analysis		
D100	mm	
D60	mm	0.0537
D30	mm	0.00662
D10	mm	
Uniformity Coefficient		
Curvature Coefficient		

Remarks

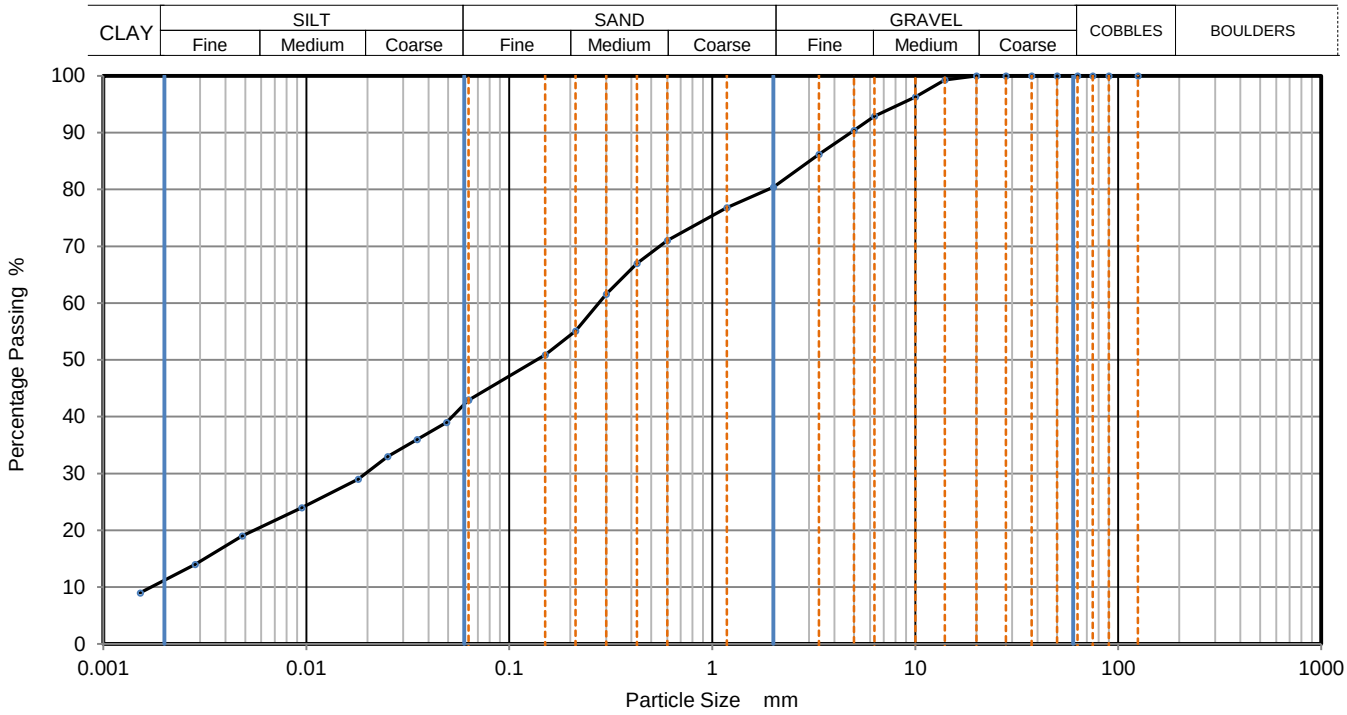
Preparation and testing in accordance with BS1377-2 :1990 unless noted below

Approved
Stephen Watson

LAB 05R - Version 6

UKAS TESTING 10122

CAUSEWAY GEOTECH	PARTICLE SIZE DISTRIBUTION				Job Ref		23-0881E
					Borehole/Pit No.		BH11
Site Name	NDFA Social Housing Lot 3 - Oldtown Mill				Sample No.		8
Specimen Description	Brownish grey sandy slightly gravelly clayey SILT.				Sample Depth (m)	Top	1.20
						Base	1.90
Specimen Reference	8	Specimen Depth	1.2	m	Sample Type		B
Test Method	BS1377:Part 2:1990, clauses 9.2 and 9.5				KeyLAB ID		Caus20231024115



Sieving		Sedimentation	
Particle Size mm	% Passing	Particle Size mm	% Passing
125	100	0.06300	43
90	100	0.04912	39
75	100	0.03519	36
63	100	0.02521	33
50	100	0.01805	29
37.5	100	0.00949	24
28	100	0.00483	19
20	100	0.00284	14
14	99	0.00152	9
10	96		
6.3	93		
5	90		
3.35	86		
2	80		
1.18	77		
0.6	71	Particle density	(assumed)
0.425	67	2.65	Mg/m3
0.3	62		
0.212	55		
0.15	51		
0.063	43		

Dry Mass of sample, g	508

Sample Proportions	% dry mass
Cobbles	0.0
Gravel	19.6
Sand	37.5
Silt	32.0
Clay	10.9

Grading Analysis		
D100	mm	
D60	mm	0.276
D30	mm	0.0196
D10	mm	0.0018
Uniformity Coefficient		150
Curvature Coefficient		0.77

Remarks

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

Approved
Stephen Watson

LAB 05R - Version 6

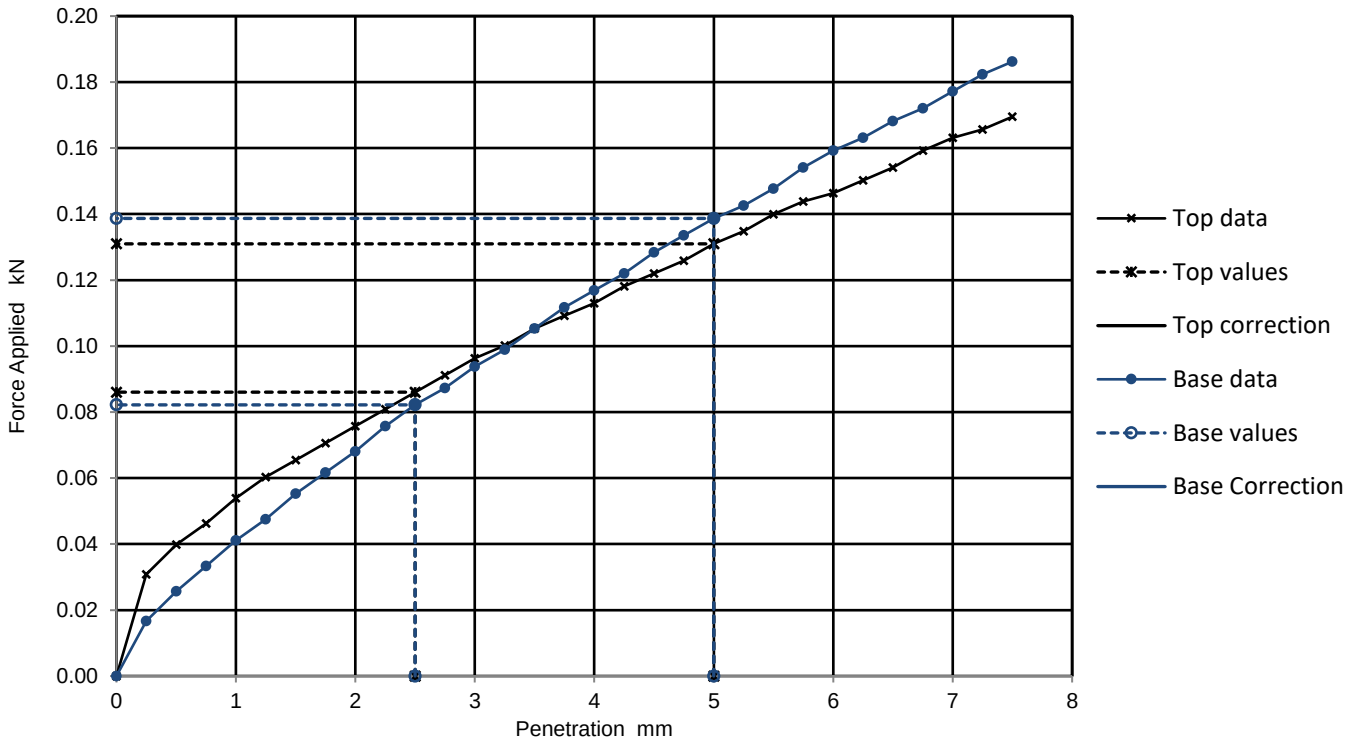
UKAS TESTING 10122

CAUSEWAY GEOTECH	**California Bearing Ratio (CBR)**			Job Ref	23-0881E
				Borehole/Pit No.	BH06
Site Name	NDFA Social Housing Lot 3 - Oldtown Mill			Sample No.	4
Soil Description	Brownish grey sandy slightly gravelly silty CLAY.			Depth m	0.00
Specimen Reference		Specimen Depth	m	Sample Type	B
Specimen Description	Brownish grey sandy slightly gravelly silty CLAY.			KeyLAB ID	Caus20231024110
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	1.97	Mg/m3	Surcharge applied	4.5	kg
	Dry density	1.59	Mg/m3		3	kPa
	Moisture content	24	%			

Force v Penetration Plots



Results

	Curve correction applied	CBR Values, %				Moisture Content %
		2.5mm	5mm	Highest	Average	
TOP	No	0.7	0.7	0.7	0.7	24
BASE	No	0.6	0.7	0.7		23

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.	

UKAS TESTING
10122

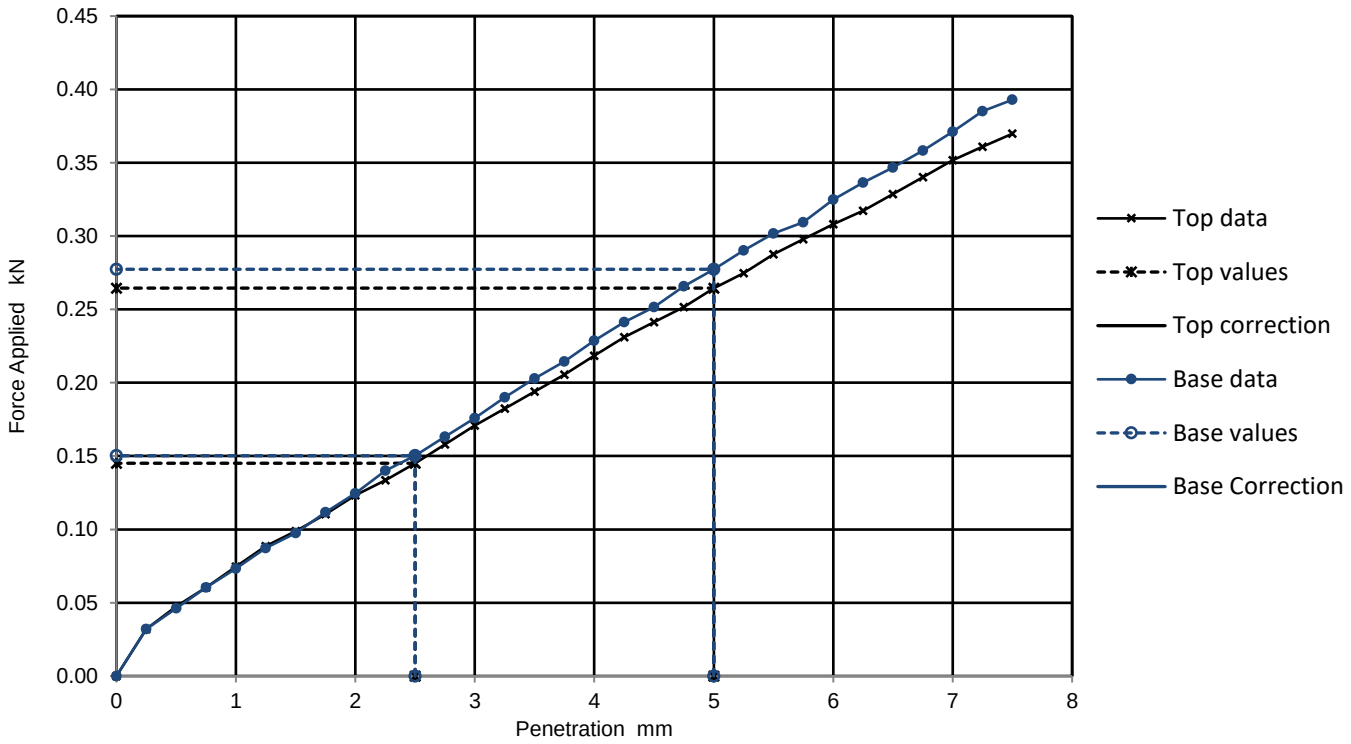
LAB 11R - Version 6

CAUSEWAY GEOTECH	**California Bearing Ratio (CBR)**			Job Ref	23-0881E
				Borehole/Pit No.	BH08
Site Name	NDFA Social Housing Lot 3 - Oldtown Mill			Sample No.	5
Soil Description	Brownish grey sandy slightly gravelly silty CLAY.			Depth m	0.00
Specimen Reference		Specimen Depth	m	Sample Type	B
Specimen Description	Brownish grey sandy slightly gravelly silty CLAY.			KeyLAB ID	Caus20231024112
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		10	%	Dry density after soaking		Mg/m3
Initial Specimen details	Bulk density	2.14	Mg/m3	Surcharge applied	4.5	kg
	Dry density	1.87	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	1.1	1.3	1.3	1.4	15
BASE	No	1.1	1.4	1.4		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.	

UKAS TESTING

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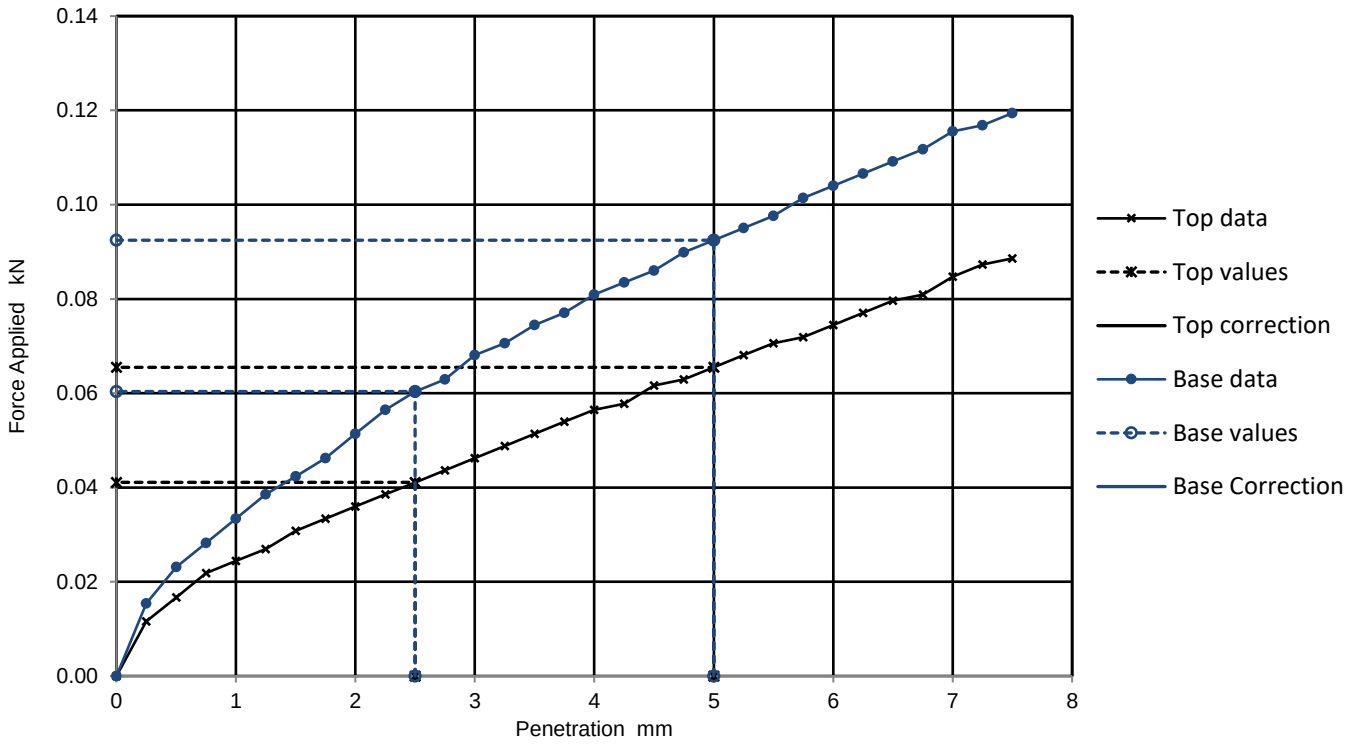
LAB 11R - Version 6

CAUSEWAY GEOTECH	**California Bearing Ratio (CBR)**			Job Ref	23-0881E
				Borehole/Pit No.	BH11
Site Name	NDFA Social Housing Lot 3 - Oldtown Mill			Sample No.	5
Soil Description	Brownish grey sandy slightly gravelly silty CLAY.			Depth m	0.00
Specimen Reference		Specimen Depth	m	Sample Type	B
Specimen Description	Brownish grey sandy slightly gravelly silty CLAY.			KeyLAB ID	Caus20231024114
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	1.80	Mg/m3	Surcharge applied	4.5	kg
	Dry density	1.35	Mg/m3		3	kPa
	Moisture content	34	%			

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		34
BASE	No	0.5	0.5	0.5		34

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.	

UKAS TESTING

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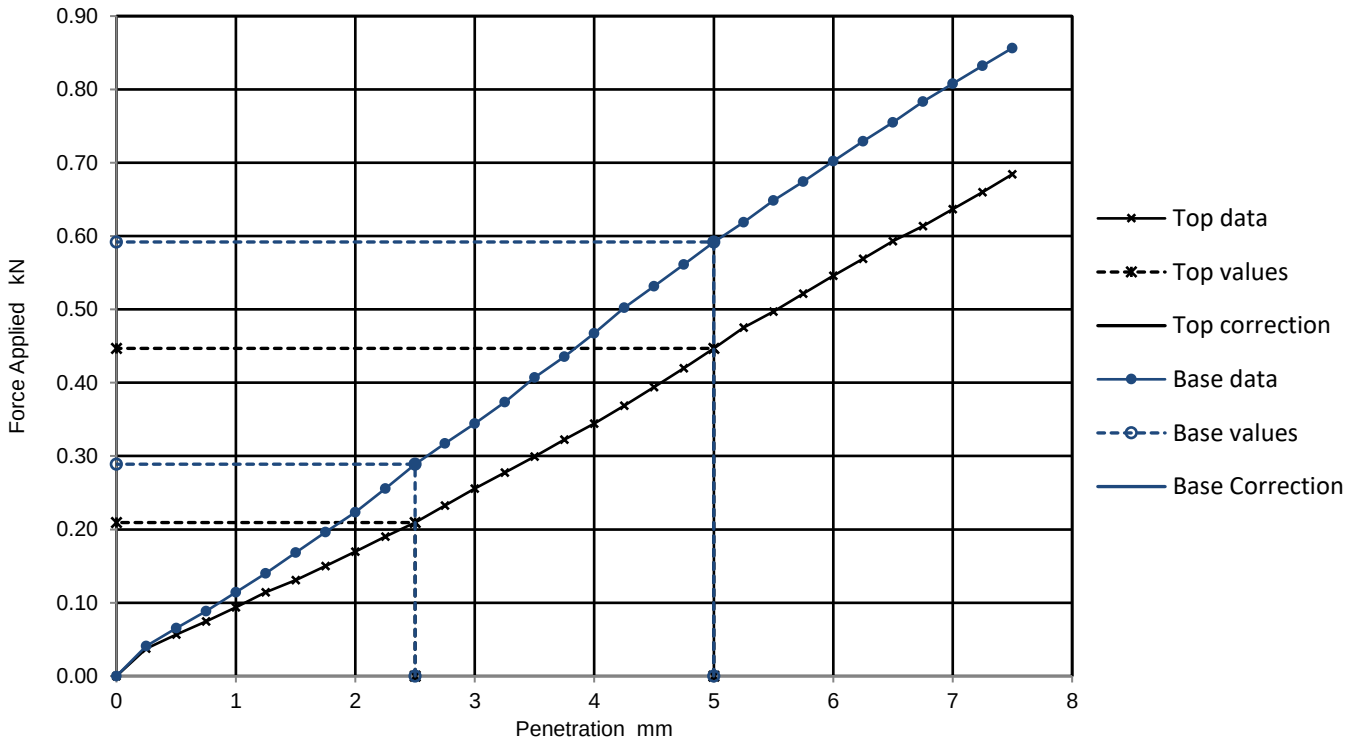
LAB 11R - Version 6

CAUSEWAY GEOTECH	**California Bearing Ratio (CBR)**			Job Ref	23-0881E
				Borehole/Pit No.	BH11
Site Name	NDFA Social Housing Lot 3 - Oldtown Mill			Sample No.	8
Soil Description	Brownish grey sandy slightly gravelly clayey SILT.			Depth m	1.20
Specimen Reference		Specimen Depth	m	Sample Type	B
Specimen Description	Brownish grey sandy slightly gravelly silty CLAY.			KeyLAB ID	Caus20231024115
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		3	%	Dry density after soaking		Mg/m3
Initial Specimen details	Bulk density	2.07	Mg/m3	Surcharge applied	4.5	kg
	Dry density	1.79	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	1.6	2.2	2.2		16
BASE	No	2.2	3.0	3.0		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.	

UKAS TESTING
10122

LAB 11R - Version 6

Certificate of Analysis

Certificate Number	23-26102	*Issued:*	13-Nov-23

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

Our Reference	23-26102
Client Reference	23-0881E
Order No	(not supplied)
Contract Title	OLDTOWN MILL
Description	5 Soil samples.
Date Received	04-Nov-23
Date Started	06-Nov-23
Date Completed	13-Nov-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 23-26102
Client Ref 23-0881E
Contract Title OLDTOWN MILL

			Lab No	2258374	2258375	2258376	2258377	2258378
			.Sample ID	BH06	BH08	BH08	BH11	BH11
			Depth	1.20	0.00	1.20	0.00	1.20
			Other ID	7	5	6	5	8
			Sample Type	B	B	B	B	B
			Sampling Date	31/10/2023	31/10/2023	31/10/2023	31/10/2023	31/10/2023
			Sampling Time	n/s	n/s	n/s	n/s	n/s
Test	**Method**	**LOD**	**Units**					
Inorganics								
pH	DETSC 2008#		pH	8.0	7.8	8.2	7.9	7.8
Sulphate Aqueous Extract as SO4 (2:1)	DETSC 2076#	10	mg/l	25	17	20	11	17

Information in Support of the Analytical Results

Our Ref 23-26102
Client Ref 23-0881E
Contract OLDTOWN MILL

Containers Received & Deviating Samples

Lab No	Sample ID	Date Sampled	Containers Received	Holding time exceeded for tests	Inappropriate container for tests
2258374	BH06 1.20 SOIL	31/10/23	PT 500ml		
2258375	BH08 0.00 SOIL	31/10/23	PT 500ml		
2258376	BH08 1.20 SOIL	31/10/23	PT 500ml		
2258377	BH11 0.00 SOIL	31/10/23	PT 500ml		
2258378	BH11 1.20 SOIL	31/10/23	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

HEAD OFFICE
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Registered in Northern Ireland.
Company Number: NI610766

REGIONAL OFFICE
Causeway Geotech (IRL) Ltd
Unit 1 Fingal House
Stephenstown Industrial Estate
Balbriggan, Co Dublin, Ireland, K32 VR66
ROI: +353 (0)1 526 7465
Registered in Ireland.
Company Number: 633786

www.causewaygeotech.com

SOIL AND ROCK SAMPLE ANALYSIS
LABORATORY TEST REPORT

20 December 2023

Project Name:	NDFA Social Housing Lot 3 - Oldtown Mill
Project No.:	23-0881E
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 05/12/2023 and 20/12/2023.

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 - Oldtown Mill

Report Reference: Schedule 3 - ROCK

The table below details the tests carried out, the specifications used, and the number of tests included in this report. The results contained in this report relate to the sample(s) as received.

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. Opinions and interpretations expressed herein are outside the scope of UKAS accreditation.

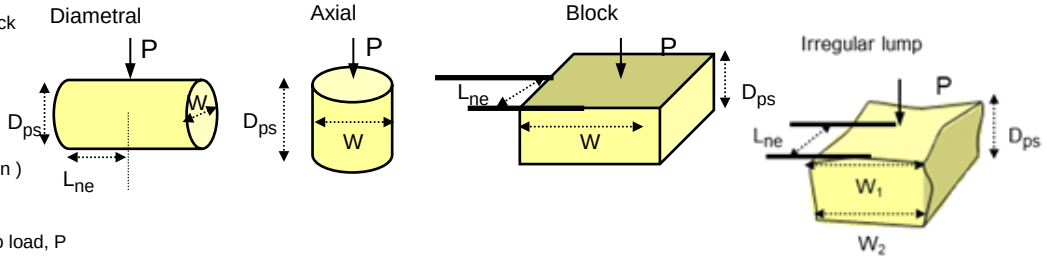
Material tested	Type of test/Properties measured/Range of measurement	Standard specifications	No. of results included in the report
ROCK	Point load index	ISRM Commission on Testing Methods. Suggested Method for Determining Point Load Strength 1985	6
ROCK	Uniaxial Compressive Strength (UCS)*	ISRM Suggested Methods -Rock Characterization Testing and Monitoring, Ed. E T Brown - 1981	2

Point Load Strength Index Tests
Summary of Results

Project No.	Project Name
23-0881E	NDFA Social Housing Lot 3 - Oldtown Mill

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	4.00		C	2	4.00	LIMESTONE	A	U	NO		100.1	101.0	90.0	26.5	107.1	2.3	3.3	
RC01	4.50		C	2	4.50	LIMESTONE	D	U	YES	74.9	100.6	100.6	98.0	14.3	99.3	1.5	2.0	
RC01	4.65		C	2	4.65	LIMESTONE	A	U	YES		100.9	75.0	73.0	7.4	96.8	0.8	1.1	
RC02	4.76		C	2	4.76	LIMESTONE	D	U	YES	68.7	100.1	100.1	97.0	15.6	98.5	1.6	2.2	
RC02	4.93		C	2	4.93	LIMESTONE	A	U	YES		100.2	105.0	100.0	11.4	113.0	0.9	1.3	
RC03	5.30		C	2	5.30	LIMESTONE	D	U	YES	66.8	99.5	99.5	91.0	5.0	95.2	0.6	0.7	

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: 20/12/2023

Approved By: Stephen Watson

UKAS TESTING
10122

UNIAXIAL COMPRESSION TEST ON ROCK - SUMMARY OF RESULTS

Project No.	Project Name
23-0881E	NDFA Social Housing Lot 3 - Oldtown Mill

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	
RC02		3.30		C	LIMESTONE	100.3	201.4	2.0	2.72	0.3	as received	F	81.6	
RC03		2.50		C	LIMESTONE	100.5	197.6	2.0	2.67	0.6	as received	MS	26.5	

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	20/12/2023	Stephen Watson	1 sheet 1

CAUSEWAY GEOTECH

APPENDIX J

ENVIRONMENTAL LABORATORY TEST RESULTS

Certificate of Analysis

Certificate Number	23-25557	*Issued:*	07-Nov-23

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

Our Reference	23-25557
Client Reference	23-0881E
Order No	(not supplied)
Contract Title	NDFA SOCIAL HOUSING
Description	13 Soil samples, 13 Leachate samples.
Date Received	30-Oct-23
Date Started	30-Oct-23
Date Completed	07-Nov-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 23-25557
Client Ref 23-0881E
Contract Title NDFA SOCIAL HOUSING

			Lab No	2254893	2254894	2254895	2254896	2254897	2254898	2254899
			.Sample ID	BH03A	BH04	TP05	TP05	BH01	BH03	TP01
			Depth	0.50	0.50	0.50	1.00	0.50	0.50	0.50
			Other ID							
			Sample Type	ES	ES	ES	ES	ES	ES	ES
			Sampling Date	10/10/2023	10/10/2023	10/10/2023	10/10/2023	10/10/2023	10/10/2023	11/10/2023
			Sampling Time	n/s	n/s	n/s	n/s	n/s	n/s	n/s
Test	**Method**	**LOD**	**Units**							
Preparation										
Moisture Content	DETSC 1004	0.1	%	8.7	21	12	8.7	10	10	5.7
Metals										
Antimony	DETSC 2301*	1	mg/kg	1.2	3.3	2.0	2.4	1.3	1.7	< 1.0
Arsenic	DETSC 2301#	0.2	mg/kg	5.8	22	11	11	7.0	8.8	7.5
Barium	DETSC 2301#	1.5	mg/kg	17	61	51	26	25	23	24
Boron, Water Soluble (2.5:1)	DETSC 2311#	0.2	mg/kg	< 0.2	< 0.2	< 0.2	< 0.2	0.2	< 0.2	0.3
Cadmium	DETSC 2301#	0.1	mg/kg	2.8	9.6	3.6	3.6	1.8	2.7	1.7
Chromium	DETSC 2301#	0.15	mg/kg	3.9	19	7.7	7.9	6.7	5.1	5.3
Chromium III	DETSC 2301*	0.15	mg/kg	3.9	19	7.7	7.9	6.7	5.1	5.3
Chromium, Hexavalent	DETSC 2204*	1	mg/kg	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0
Copper	DETSC 2301#	0.2	mg/kg	12	49	25	27	15	21	11
Lead	DETSC 2301#	0.3	mg/kg	9.8	23	14	15	6.2	12	4.7
Mercury	DETSC 2325#	0.05	mg/kg	< 0.05	0.08	< 0.05	< 0.05	< 0.05	< 0.05	< 0.05
Molybdenum	DETSC 2301#	0.4	mg/kg	4.3	16	5.3	6.4	4.6	4.4	3.6
Nickel	DETSC 2301#	1	mg/kg	23	91	41	45	25	32	19
Selenium	DETSC 2301#	0.5	mg/kg	< 0.5	7.0	0.8	0.8	1.9	0.7	1.6
Zinc	DETSC 2301#	1	mg/kg	68	150	110	120	62	89	48
Inorganics										
pH	DETSC 2008#		pH	8.2	7.1	8.0	8.1	7.8	8.1	8.0
Cyanide, Total	DETSC 2130#	0.1	mg/kg	< 0.1	< 0.1	< 0.1	< 0.1	< 0.1	< 0.1	< 0.1
Total Organic Carbon	DETSC 2084#	0.5	%	2.4	1.3	1.3	1.2	2.3	1.7	2.2
Sulphide	DETSC 2024*	10	mg/kg	24	< 10	51	91	83	91	130
Sulphur (free)	DETSC 3049#	0.75	mg/kg	< 0.75	1.1	< 0.75	< 0.75	< 0.75	< 0.75	0.92
Sulphate as SO4, Total	DETSC 2321#	0.01	%	0.04	0.32	0.04	0.05	0.22	0.04	0.21
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	< 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	< 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	< 0.01
Aliphatic C10-C12: EH_CU_1D_AL	DETSC 3072#	1.5	mg/kg	< 1.5	< 1.5	< 1.5	< 1.5	< 1.5	< 1.5	< 1.5
Aliphatic C12-C16: EH_CU_1D_AL	DETSC 3072#	1.2	mg/kg	< 1.2	< 1.2	< 1.2	< 1.2	< 1.2	< 1.2	< 1.2
Aliphatic C16-C21: EH_CU_1D_AL	DETSC 3072#	1.5	mg/kg	< 1.5	< 1.5	< 1.5	< 1.5	< 1.5	< 1.5	< 1.5
Aliphatic C21-C35: EH_CU_1D_AL	DETSC 3072#	3.4	mg/kg	< 3.4	< 3.4	< 3.4	< 3.4	< 3.4	< 3.4	< 3.4
Aliphatic C35-C44: EH_CU_1D_AL	DETSC 3072*	3.4	mg/kg	< 3.4	< 3.4	< 3.4	< 3.4	< 3.4	< 3.4	< 3.4
Aliphatic C10-C44: EH_CU_1D_AL	DETSC 3072*	10	mg/kg	< 10	< 10	< 10	< 10	< 10	< 10	< 10
Aromatic C5-C7: HS_1D_AR	DETSC 3321*	0.01	mg/kg	< 0.01	< 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	< 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	< 0.01
Aromatic C10-C12: EH_CU_1D_AR	DETSC 3072#	0.9	mg/kg	< 0.9	< 0.9	< 0.9	< 0.9	< 0.9	< 0.9	< 0.9
Aromatic C12-C16: EH_CU_1D_AR	DETSC 3072#	0.5	mg/kg	< 0.5	< 0.5	< 0.5	< 0.5	< 0.5	< 0.5	< 0.5
Aromatic C16-C21: EH_CU_1D_AR	DETSC 3072#	0.6	mg/kg	< 0.6	< 0.6	< 0.6	< 0.6	< 0.6	< 0.6	< 0.6
Aromatic C21-C35: EH_CU_1D_AR	DETSC 3072#	1.4	mg/kg	< 1.4	< 1.4	< 1.4	< 1.4	< 1.4	< 1.4	< 1.4

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 23-25557
Client Ref 23-0881E
Contract Title NDFA SOCIAL HOUSING

			Lab No	2254893	2254894	2254895	2254896	2254897	2254898	2254899
			.Sample ID	BH03A	BH04	TP05	TP05	BH01	BH03	TP01
			Depth	0.50	0.50	0.50	1.00	0.50	0.50	0.50
			Other ID							
			Sample Type	ES	ES	ES	ES	ES	ES	ES
			Sampling Date	10/10/2023	10/10/2023	10/10/2023	10/10/2023	10/10/2023	10/10/2023	11/10/2023
			Sampling Time	n/s	n/s	n/s	n/s	n/s	n/s	n/s
Test	**Method**	**LOD**	**Units**							
Aromatic C35-C44: EH_CU_1D_AR	DETSC 3072*	1.4	mg/kg	< 1.4	< 1.4	< 1.4	< 1.4	< 1.4	< 1.4	< 1.4
Aromatic C10-C44: EH_CU_1D_AR	DETSC 3072*	10	mg/kg	< 10	< 10	< 10	< 10	< 10	< 10	< 10
Ali/Aro C10-C44: EH_CU_1D_Total	DETSC 3072*	10	mg/kg	< 10	< 10	< 10	< 10	< 10	< 10	< 10
Benzene	DETSC 3321#	0.01	mg/kg	< 0.01	< 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	< 0.01
Toluene	DETSC 3321#	0.01	mg/kg	< 0.01	< 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	< 0.01
MTBE	DETSC 3321	0.01	mg/kg	< 0.01	< 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	< 10	< 10	< 10	< 10	< 10	< 10	< 10
PAHs										
Naphthalene	DETSC 3301	0.1	mg/kg	< 0.1	< 0.1	< 0.1	< 0.1	< 0.1	< 0.1	< 0.1
Acenaphthylene	DETSC 3301	0.1	mg/kg	< 0.1	< 0.1	< 0.1	< 0.1	< 0.1	< 0.1	0.1
Acenaphthene	DETSC 3301	0.1	mg/kg	< 0.1	< 0.1	< 0.1	< 0.1	< 0.1	< 0.1	< 0.1
Fluorene	DETSC 3301	0.1	mg/kg	< 0.1	< 0.1	< 0.1	< 0.1	< 0.1	< 0.1	< 0.1
Phenanthrene	DETSC 3301	0.1	mg/kg	< 0.1	< 0.1	< 0.1	< 0.1	< 0.1	< 0.1	< 0.1
Anthracene	DETSC 3301	0.1	mg/kg	< 0.1	< 0.1	< 0.1	< 0.1	< 0.1	< 0.1	< 0.1
Fluoranthene	DETSC 3301	0.1	mg/kg	< 0.1	< 0.1	< 0.1	< 0.1	< 0.1	< 0.1	< 0.1
Pyrene	DETSC 3301	0.1	mg/kg	< 0.1	< 0.1	< 0.1	< 0.1	< 0.1	< 0.1	< 0.1
Benzo(a)anthracene	DETSC 3301	0.1	mg/kg	< 0.1	< 0.1	< 0.1	< 0.1	< 0.1	< 0.1	< 0.1
Chrysene	DETSC 3301	0.1	mg/kg	< 0.1	< 0.1	< 0.1	< 0.1	< 0.1	< 0.1	< 0.1
Benzo(b)fluoranthene	DETSC 3301	0.1	mg/kg	< 0.1	< 0.1	< 0.1	< 0.1	< 0.1	< 0.1	< 0.1
Benzo(k)fluoranthene	DETSC 3301	0.1	mg/kg	< 0.1	< 0.1	< 0.1	< 0.1	< 0.1	< 0.1	< 0.1
Benzo(a)pyrene	DETSC 3301	0.1	mg/kg	< 0.1	< 0.1	< 0.1	< 0.1	< 0.1	< 0.1	< 0.1
Indeno(1,2,3-c,d)pyrene	DETSC 3301	0.1	mg/kg	< 0.1	< 0.1	< 0.1	< 0.1	< 0.1	< 0.1	< 0.1
Dibenzo(a,h)anthracene	DETSC 3301	0.1	mg/kg	< 0.1	< 0.1	< 0.1	< 0.1	< 0.1	< 0.1	< 0.1
Benzo(g,h,i)perylene	DETSC 3301	0.1	mg/kg	< 0.1	< 0.1	< 0.1	< 0.1	< 0.1	< 0.1	< 0.1
Coronene	DETSC 3301*	0.1	mg/kg	< 0.1	< 0.1	< 0.1	< 0.1	< 0.1	< 0.1	< 0.1
PAH 16 Total	DETSC 3301	1.6	mg/kg	< 1.6	< 1.6	< 1.6	< 1.6	< 1.6	< 1.6	< 1.6
PCBs										
PCB 28 + PCB 31	DETSC 3401#	0.01	mg/kg	< 0.01	< 0.01	< 0.01	< 0.01	< 0.01	< 0.01	< 0.01
PCB 52	DETSC 3401#	0.01	mg/kg	< 0.01	< 0.01	< 0.01	< 0.01	< 0.01	< 0.01	< 0.01
PCB 101	DETSC 3401#	0.01	mg/kg	< 0.01	< 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	< 0.01
PCB 153	DETSC 3401#	0.01	mg/kg	< 0.01	< 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	< 0.01
PCB 180	DETSC 3401#	0.01	mg/kg	< 0.01	< 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	< 0.01	< 0.01	< 0.01
Phenols										
Phenol - Monohydric	DETSC 2130#	0.3	mg/kg	< 0.3	< 0.3	< 0.3	< 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
Soil Samples

Our Ref 23-25557
Client Ref 23-0881E
Contract Title NDFA SOCIAL HOUSING

			Lab No	2254900	2254901	2254902	2254903	2254904	2254905
			.Sample ID	TP01	TP02	TP03	TP04	TP06	TP06
			Depth	1.00	0.50	0.50	0.50	0.50	1.00
			Other ID						
			Sample Type	ES	ES	ES	ES	ES	ES
			Sampling Date	11/10/2023	11/10/2023	11/10/2023	11/10/2023	11/10/2023	11/10/2023
			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	%	11	9.6	7.4	13	16	16
Metals									
Antimony	DETSC 2301*	1	mg/kg	1.8	1.5	1.9	2.0	2.5	1.8
Arsenic	DETSC 2301#	0.2	mg/kg	9.1	9.7	9.4	9.8	14	10
Barium	DETSC 2301#	1.5	mg/kg	17	28	19	29	49	37
Boron, Water Soluble (2.5:1)	DETSC 2311#	0.2	mg/kg	< 0.2	< 0.2	< 0.2	0.3	< 0.2	< 0.2
Cadmium	DETSC 2301#	0.1	mg/kg	3.6	2.7	2.4	3.6	3.8	3.1
Chromium	DETSC 2301#	0.15	mg/kg	7.1	7.8	6.2	8.8	14	10
Chromium III	DETSC 2301*	0.15	mg/kg	7.1	7.8	6.2	8.8	14	10
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	20	22	21	24	33	24
Lead	DETSC 2301#	0.3	mg/kg	6.0	9.9	11	9.1	21	15
Mercury	DETSC 2325#	0.05	mg/kg	< 0.05	< 0.05	< 0.05	< 0.05	0.06	< 0.05
Molybdenum	DETSC 2301#	0.4	mg/kg	6.4	4.2	6.5	5.9	5.5	4.7
Nickel	DETSC 2301#	1	mg/kg	37	37	40	38	51	40
Selenium	DETSC 2301#	0.5	mg/kg	0.9	0.8	3.1	1.1	1.4	1.0
Zinc	DETSC 2301#	1	mg/kg	81	99	76	100	130	100
Inorganics									
pH	DETSC 2008#		pH	8.1	8.2	7.7	8.0	7.9	8.0
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	%	1.8	1.2	1.6	1.1	1.0	1.1
Sulphide	DETSC 2024*	10	mg/kg	87	43	110	55	43	32
Sulphur (free)	DETSC 3049#	0.75	mg/kg	< 0.75	< 0.75	< 0.75	< 0.75	< 0.75	< 0.75
Sulphate as SO4, Total	DETSC 2321#	0.01	%	0.07	0.04	0.71	0.06	0.06	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 C10-C12: EH_CU_1D_AL	DETSC 3072#	1.5	mg/kg	< 1.5	< 1.5	< 1.5	< 1.5	< 1.5	< 1.5
Aliphatic C12-C16: EH_CU_1D_AL	DETSC 3072#	1.2	mg/kg	< 1.2	< 1.2	< 1.2	< 1.2	< 1.2	< 1.2
Aliphatic C16-C21: EH_CU_1D_AL	DETSC 3072#	1.5	mg/kg	< 1.5	< 1.5	< 1.5	< 1.5	< 1.5	< 1.5
Aliphatic C21-C35: EH_CU_1D_AL	DETSC 3072#	3.4	mg/kg	< 3.4	< 3.4	< 3.4	< 3.4	< 3.4	< 3.4
Aliphatic C35-C44: EH_CU_1D_AL	DETSC 3072*	3.4	mg/kg	< 3.4	< 3.4	< 3.4	< 3.4	< 3.4	< 3.4
Aliphatic C10-C44: EH_CU_1D_AL	DETSC 3072*	10	mg/kg	< 10	< 10	< 10	< 10	< 10	< 10
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 C10-C12: EH_CU_1D_AR	DETSC 3072#	0.9	mg/kg	< 0.9	< 0.9	< 0.9	< 0.9	< 0.9	< 0.9
Aromatic C12-C16: EH_CU_1D_AR	DETSC 3072#	0.5	mg/kg	< 0.5	< 0.5	< 0.5	< 0.5	< 0.5	< 0.5
Aromatic C16-C21: EH_CU_1D_AR	DETSC 3072#	0.6	mg/kg	< 0.6	< 0.6	< 0.6	< 0.6	< 0.6	< 0.6
Aromatic C21-C35: EH_CU_1D_AR	DETSC 3072#	1.4	mg/kg	< 1.4	< 1.4	< 1.4	< 1.4	< 1.4	< 1.4

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 23-25557
Client Ref 23-0881E
Contract Title NDFA SOCIAL HOUSING

			Lab No	2254900	2254901	2254902	2254903	2254904	2254905
			.Sample ID	TP01	TP02	TP03	TP04	TP06	TP06
			Depth	1.00	0.50	0.50	0.50	0.50	1.00
			Other ID						
			Sample Type	ES	ES	ES	ES	ES	ES
			Sampling Date	11/10/2023	11/10/2023	11/10/2023	11/10/2023	11/10/2023	11/10/2023
			Sampling Time	n/s	n/s	n/s	n/s	n/s	n/s
Test	**Method**	**LOD**	**Units**						
Aromatic C35-C44: EH_CU_1D_AR	DETSC 3072*	1.4	mg/kg	< 1.4	< 1.4	< 1.4	< 1.4	< 1.4	< 1.4
Aromatic C10-C44: EH_CU_1D_AR	DETSC 3072*	10	mg/kg	< 10	< 10	< 10	< 10	< 10	< 10
Ali/Aro C10-C44: EH_CU_1D_Total	DETSC 3072*	10	mg/kg	< 10	< 10	< 10	< 10	< 10	< 10
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	< 10	< 10	< 10	< 10	< 10	< 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	< 0.1	< 0.1	< 0.1	< 0.1	< 0.1	< 0.1
Acenaphthene	DETSC 3301	0.1	mg/kg	< 0.1	< 0.1	< 0.1	< 0.1	< 0.1	< 0.1
Fluorene	DETSC 3301	0.1	mg/kg	< 0.1	< 0.1	< 0.1	< 0.1	< 0.1	< 0.1
Phenanthrene	DETSC 3301	0.1	mg/kg	< 0.1	< 0.1	< 0.1	< 0.1	< 0.1	< 0.1
Anthracene	DETSC 3301	0.1	mg/kg	< 0.1	< 0.1	< 0.1	< 0.1	< 0.1	< 0.1
Fluoranthene	DETSC 3301	0.1	mg/kg	< 0.1	< 0.1	< 0.1	< 0.1	< 0.1	< 0.1
Pyrene	DETSC 3301	0.1	mg/kg	< 0.1	< 0.1	< 0.1	< 0.1	< 0.1	< 0.1
Benzo(a)anthracene	DETSC 3301	0.1	mg/kg	< 0.1	< 0.1	< 0.1	< 0.1	< 0.1	< 0.1
Chrysene	DETSC 3301	0.1	mg/kg	< 0.1	< 0.1	< 0.1	< 0.1	< 0.1	< 0.1
Benzo(b)fluoranthene	DETSC 3301	0.1	mg/kg	< 0.1	< 0.1	< 0.1	< 0.1	< 0.1	< 0.1
Benzo(k)fluoranthene	DETSC 3301	0.1	mg/kg	< 0.1	< 0.1	< 0.1	< 0.1	< 0.1	< 0.1
Benzo(a)pyrene	DETSC 3301	0.1	mg/kg	< 0.1	< 0.1	< 0.1	< 0.1	< 0.1	< 0.1
Indeno(1,2,3-c,d)pyrene	DETSC 3301	0.1	mg/kg	< 0.1	< 0.1	< 0.1	< 0.1	< 0.1	< 0.1
Dibenzo(a,h)anthracene	DETSC 3301	0.1	mg/kg	< 0.1	< 0.1	< 0.1	< 0.1	< 0.1	< 0.1
Benzo(g,h,i)perylene	DETSC 3301	0.1	mg/kg	< 0.1	< 0.1	< 0.1	< 0.1	< 0.1	< 0.1
Coronene	DETSC 3301*	0.1	mg/kg	< 0.1	< 0.1	< 0.1	< 0.1	< 0.1	< 0.1
PAH 16 Total	DETSC 3301	1.6	mg/kg	< 1.6	< 1.6	< 1.6	< 1.6	< 1.6	< 1.6
PCBs									
PCB 28 + PCB 31	DETSC 3401#	0.01	mg/kg	< 0.01	< 0.01	< 0.01	< 0.01	< 0.01	< 0.01
PCB 52	DETSC 3401#	0.01	mg/kg	< 0.01	< 0.01	< 0.01	< 0.01	< 0.01	< 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	< 0.01	< 0.01
Phenols									
Phenol - Monohydric	DETSC 2130#	0.3	mg/kg	< 0.3	< 0.3	< 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 23-25557
Client Ref 23-0881E
Contract Title NDFA SOCIAL HOUSING

			Lab No	2254906	2254907	2254908	2254909	2254910	2254911	2254912	2254913	2254914	2254915	2254916
			.Sample ID	BH03A	BH04	TP05	TP05	BH01	BH03	TP01	TP01	TP02	TP03	TP04
			Depth	0.50	0.50	0.50	1.00	0.50	0.50	0.50	1.00	0.50	0.50	0.50
			Other ID											
			Sample Type	ES	ES	ES	ES	ES	ES	ES	ES	ES	ES	ES
			Sampling Date	10/10/2023	10/10/2023	10/10/2023	10/10/2023	10/10/2023	10/10/2023	11/10/2023	11/10/2023	11/10/2023	11/10/2023	11/10/2023
			Sampling Time	n/s	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	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	< 0.02
Ammoniacal Nitrogen as NH4	DETSC 2207	0.0193	mg/l	< 0.02	< 0.02	< 0.02	0.03	0.02	< 0.02	< 0.02	0.02	< 0.02	< 0.02	< 0.02

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

Summary of Chemical Analysis
Leachate Samples

Our Ref 23-25557
Client Ref 23-0881E
Contract Title NDFA SOCIAL HOUSING

			Lab No	2254917	2254918
			.Sample ID	TP06	TP06
			Depth	0.50	1.00
			Other ID		
			Sample Type	ES	ES
			Sampling Date	11/10/2023	11/10/2023
			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	< 0.02	< 0.02
Ammoniacal Nitrogen as NH4	DETSC 2207	0.0193	mg/l	0.02	< 0.02

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

WASTE ACCEPTANCE CRITERIA TESTING ANALYTICAL REPORT

Our Ref 23-25557
Client Ref 23-0881E
Contract Title NDFA SOCIAL HOUSING
Sample Id BH03A 0.50

Sample Numbers 2254893 2254906
Date Analysed 07/11/2023

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	%	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	< 10	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	3.0	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	0.22	< 0.01	0.5	2	25
DETSC 2306 Barium as Ba	2.1	< 0.1	20	100	300
DETSC 2306 Cadmium as Cd	< 0.030	< 0.02	0.04	1	5
DETSC 2306 Chromium as Cr	0.52	< 0.1	0.5	10	70
DETSC 2306 Copper as Cu	0.71	< 0.02	2	50	100
DETSC 2306 Mercury as Hg	< 0.010	< 0.002	0.01	0.2	2
DETSC 2306 Molybdenum as Mo	1.2	< 0.1	0.5	10	30
DETSC 2306 Nickel as Ni	0.77	< 0.1	0.4	10	40
DETSC 2306 Lead as Pb	0.19	< 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	0.44	< 0.03	0.1	0.5	7
DETSC 2306 Zinc as Zn	2.8	0.028	4	50	200
DETSC 2055 Chloride as Cl	1400	< 100	800	15,000	25,000
DETSC 2055* Fluoride as F	< 100	< 0.1	10	150	500
DETSC 2055 Sulphate as SO4	6000	< 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	< 2000	< 50	500	800	1000

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

Additional Information

DETSC 2008 pH	8.1
DETSC 2009 Conductivity uS/cm	60.0
* Temperature*	18.0

Mass of Sample Kg*	0.110
Mass of dry Sample Kg*	0.100

Stage 1

Volume of Leachant L2*	0.995
Volume of Eluate VE1*	0.94

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 23-25557
Client Ref 23-0881E
Contract Title NDFA SOCIAL HOUSING
Sample Id BH04 0.50

Sample Numbers 2254894 2254907
Date Analysed 07/11/2023

Test Results On Waste

Determinand and Method Reference	Units	Result	WAC Limit Values: Inert Waste	SNRHW	Hazardous Waste
DETSC 2084# Total Organic Carbon	%	1.3	3	5	6
DETSC 2003# Loss On Ignition	%	4.8	n/a	n/a	10
DETSC 3321# BTEX	mg/kg	< 0.04	6	n/a	n/a
DETSC 3401# PCBs (7 congeners)	mg/kg	< 0.01	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	7.1	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	< 0.16	< 0.01	0.5	2	25
DETSC 2306 Barium as Ba	3.3	< 0.1	20	100	300
DETSC 2306 Cadmium as Cd	0.053	< 0.02	0.04	1	5
DETSC 2306 Chromium as Cr	< 0.25	< 0.1	0.5	10	70
DETSC 2306 Copper as Cu	0.5	< 0.02	2	50	100
DETSC 2306 Mercury as Hg	< 0.010	< 0.002	0.01	0.2	2
DETSC 2306 Molybdenum as Mo	1.7	< 0.1	0.5	10	30
DETSC 2306 Nickel as Ni	0.77	< 0.1	0.4	10	40
DETSC 2306 Lead as Pb	< 0.090	< 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	1.9	< 0.03	0.1	0.5	7
DETSC 2306 Zinc as Zn	< 1.3	< 0.01	4	50	200
DETSC 2055 Chloride as Cl	660	< 100	800	15,000	25,000
DETSC 2055* Fluoride as F	170	1.7	10	150	500
DETSC 2055 Sulphate as SO4	69000	690	1000	20,000	50,000
DETSC 2009* Total Dissolved Solids	160000	1600	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	7.4
DETSC 2009 Conductivity uS/cm	232.0
* Temperature*	18.0

Mass of Sample Kg*	0.130
Mass of dry Sample Kg*	0.103

Stage 1

Volume of Leachant L2*	1
Volume of Eluate VE1*	0.95

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WASTE ACCEPTANCE CRITERIA TESTING ANALYTICAL REPORT

Our Ref 23-25557
Client Ref 23-0881E
Contract Title NDFA SOCIAL HOUSING
Sample Id TP05 0.50

Sample Numbers 2254895 2254908
Date Analysed 07/11/2023

Test Results On Waste

Determinand and Method Reference	Units	Result	WAC Limit Values: Inert Waste	SNRHW	Hazardous Waste
DETSC 2084# Total Organic Carbon	%	1.3	3	5	6
DETSC 2003# Loss On Ignition	%	2.4	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	8.0	n/a	>6	n/a
DETSC 2073* Acid Neutralisation Capacity (pH4)	mol/kg	3.0	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	0.19	< 0.01	0.5	2	25
DETSC 2306 Barium as Ba	2.1	< 0.1	20	100	300
DETSC 2306 Cadmium as Cd	< 0.030	< 0.02	0.04	1	5
DETSC 2306 Chromium as Cr	< 0.25	< 0.1	0.5	10	70
DETSC 2306 Copper as Cu	0.77	< 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	0.57	< 0.1	0.4	10	40
DETSC 2306 Lead as Pb	< 0.090	< 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	< 0.25	< 0.03	0.1	0.5	7
DETSC 2306 Zinc as Zn	7.5	0.075	4	50	200
DETSC 2055 Chloride as Cl	910	< 100	800	15,000	25,000
DETSC 2055* Fluoride as F	< 100	< 0.1	10	150	500
DETSC 2055 Sulphate as SO4	2700	< 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	8.5
DETSC 2009 Conductivity uS/cm	51.2
* Temperature*	18.0

Mass of Sample Kg*	0.110
Mass of dry Sample Kg*	0.097

Stage 1

Volume of Leachant L2*	0.953
Volume of Eluate VE1*	0.9

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WASTE ACCEPTANCE CRITERIA TESTING ANALYTICAL REPORT

Our Ref 23-25557
Client Ref 23-0881E
Contract Title NDFA SOCIAL HOUSING
Sample Id TP05 1.00

Sample Numbers 2254896 2254909
Date Analysed 07/11/2023

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	%	2.6	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	< 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	2.0	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	< 0.16	< 0.01	0.5	2	25
DETSC 2306 Barium as Ba	2.3	< 0.1	20	100	300
DETSC 2306 Cadmium as Cd	< 0.030	< 0.02	0.04	1	5
DETSC 2306 Chromium as Cr	< 0.25	< 0.1	0.5	10	70
DETSC 2306 Copper as Cu	0.62	< 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	< 0.090	< 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	< 0.25	< 0.03	0.1	0.5	7
DETSC 2306 Zinc as Zn	< 1.3	< 0.01	4	50	200
DETSC 2055 Chloride as Cl	1400	< 100	800	15,000	25,000
DETSC 2055* Fluoride as F	110	1.1	10	150	500
DETSC 2055 Sulphate as SO4	3500	< 100	1000	20,000	50,000
DETSC 2009* Total Dissolved Solids	38000	380	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	8.6
DETSC 2009 Conductivity uS/cm	54.8
* Temperature*	18.0

Mass of Sample Kg*	0.110
Mass of dry Sample Kg*	0.100

Stage 1

Volume of Leachant L2*	0.994
Volume of Eluate VE1*	0.94

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WASTE ACCEPTANCE CRITERIA TESTING ANALYTICAL REPORT

Our Ref 23-25557
Client Ref 23-0881E
Contract Title NDFA SOCIAL HOUSING
Sample Id BH01 0.50

Sample Numbers 2254897 2254910
Date Analysed 07/11/2023

Test Results On Waste

Determinand and Method Reference	Units	Result	WAC Limit Values: Inert Waste	SNRHW	Hazardous Waste
DETSC 2084# Total Organic Carbon	%	2.3	3	5	6
DETSC 2003# Loss On Ignition	%	2.0	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	< 10	500	n/a	n/a
DETSC 3301 PAHs	mg/kg	< 1.6	100	n/a	n/a
DETSC 2008# pH	pH Units	7.8	n/a	>6	n/a
DETSC 2073* Acid Neutralisation Capacity (pH4)	mol/kg	4.0	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	0.22	< 0.01	0.5	2	25
DETSC 2306 Barium as Ba	15	0.15	20	100	300
DETSC 2306 Cadmium as Cd	< 0.030	< 0.02	0.04	1	5
DETSC 2306 Chromium as Cr	5.6	< 0.1	0.5	10	70
DETSC 2306 Copper as Cu	0.67	< 0.02	2	50	100
DETSC 2306 Mercury as Hg	< 0.010	< 0.002	0.01	0.2	2
DETSC 2306 Molybdenum as Mo	2.1	< 0.1	0.5	10	30
DETSC 2306 Nickel as Ni	< 0.50	< 0.1	0.4	10	40
DETSC 2306 Lead as Pb	< 0.090	< 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	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	690	< 100	800	15,000	25,000
DETSC 2055* Fluoride as F	< 100	< 0.1	10	150	500
DETSC 2055 Sulphate as SO4	110000	1100	1000	20,000	50,000
DETSC 2009* Total Dissolved Solids	230000	2300	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	7.6
DETSC 2009 Conductivity uS/cm	322.0
* Temperature*	18.0

Mass of Sample Kg*	0.110
Mass of dry Sample Kg*	0.099

Stage 1

Volume of Leachant L2*	0.976
Volume of Eluate VE1*	0.92

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WASTE ACCEPTANCE CRITERIA TESTING ANALYTICAL REPORT

Our Ref 23-25557
Client Ref 23-0881E
Contract Title NDFA SOCIAL HOUSING
Sample Id BH03 0.50

Sample Numbers 2254898 2254911
Date Analysed 07/11/2023

Test Results On Waste

Determinand and Method Reference	Units	Result	WAC Limit Values: Inert Waste	SNRHW	Hazardous Waste
DETSC 2084# Total Organic Carbon	%	1.7	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	< 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	3.6	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	0.22	< 0.01	0.5	2	25
DETSC 2306 Barium as Ba	2.6	< 0.1	20	100	300
DETSC 2306 Cadmium as Cd	< 0.030	< 0.02	0.04	1	5
DETSC 2306 Chromium as Cr	0.34	< 0.1	0.5	10	70
DETSC 2306 Copper as Cu	0.67	< 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	0.35	< 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	< 0.25	< 0.03	0.1	0.5	7
DETSC 2306 Zinc as Zn	3	0.03	4	50	200
DETSC 2055 Chloride as Cl	700	< 100	800	15,000	25,000
DETSC 2055* Fluoride as F	< 100	< 0.1	10	150	500
DETSC 2055 Sulphate as SO4	3100	< 100	1000	20,000	50,000
DETSC 2009* Total Dissolved Solids	33000	330	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	8.8
DETSC 2009 Conductivity uS/cm	46.6
* Temperature*	18.0

Mass of Sample Kg*	0.110
Mass of dry Sample Kg*	0.099

Stage 1

Volume of Leachant L2*	0.978
Volume of Eluate VE1*	0.92

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WASTE ACCEPTANCE CRITERIA TESTING ANALYTICAL REPORT

Our Ref 23-25557
Client Ref 23-0881E
Contract Title NDFA SOCIAL HOUSING
Sample Id TP01 0.50

Sample Numbers 2254899 2254912
Date Analysed 07/11/2023

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	%	1.3	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	< 10	500	n/a	n/a
DETSC 3301 PAHs	mg/kg	< 1.6	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	3.6	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	< 0.16	< 0.01	0.5	2	25
DETSC 2306 Barium as Ba	12	0.12	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	0.63	< 0.02	2	50	100
DETSC 2306 Mercury as Hg	< 0.010	< 0.002	0.01	0.2	2
DETSC 2306 Molybdenum as Mo	2.3	< 0.1	0.5	10	30
DETSC 2306 Nickel as Ni	< 0.50	< 0.1	0.4	10	40
DETSC 2306 Lead as Pb	< 0.090	< 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	0.76	< 0.03	0.1	0.5	7
DETSC 2306 Zinc as Zn	< 1.3	< 0.01	4	50	200
DETSC 2055 Chloride as Cl	610	< 100	800	15,000	25,000
DETSC 2055* Fluoride as F	140	1.4	10	150	500
DETSC 2055 Sulphate as SO4	74000	740	1000	20,000	50,000
DETSC 2009* Total Dissolved Solids	240000	2400	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	7.6
DETSC 2009 Conductivity uS/cm	348.0
* Temperature*	18.0

Mass of Sample Kg*	0.100
Mass of dry Sample Kg*	0.094

Stage 1

Volume of Leachant L2*	0.938
Volume of Eluate VE1*	0.88

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WASTE ACCEPTANCE CRITERIA TESTING ANALYTICAL REPORT

Our Ref 23-25557
Client Ref 23-0881E
Contract Title NDFA SOCIAL HOUSING
Sample Id TP01 1.00

Sample Numbers 2254900 2254913
Date Analysed 07/11/2023

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	%	2.0	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	< 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	4.2	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	0.32	< 0.01	0.5	2	25
DETSC 2306 Barium as Ba	6.3	< 0.1	20	100	300
DETSC 2306 Cadmium as Cd	< 0.030	< 0.02	0.04	1	5
DETSC 2306 Chromium as Cr	< 0.25	< 0.1	0.5	10	70
DETSC 2306 Copper as Cu	0.45	< 0.02	2	50	100
DETSC 2306 Mercury as Hg	< 0.010	< 0.002	0.01	0.2	2
DETSC 2306 Molybdenum as Mo	1.2	< 0.1	0.5	10	30
DETSC 2306 Nickel as Ni	< 0.50	< 0.1	0.4	10	40
DETSC 2306 Lead as Pb	< 0.090	< 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	0.66	< 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	140	1.4	10	150	500
DETSC 2055 Sulphate as SO4	23000	230	1000	20,000	50,000
DETSC 2009* Total Dissolved Solids	78000	780	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	8.2
DETSC 2009 Conductivity uS/cm	111.0
* Temperature*	18.0

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*	0.91

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WASTE ACCEPTANCE CRITERIA TESTING ANALYTICAL REPORT

Our Ref 23-25557
Client Ref 23-0881E
Contract Title NDFA SOCIAL HOUSING
Sample Id TP02 0.50

Sample Numbers 2254901 2254914
Date Analysed 07/11/2023

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	%	1.8	n/a	n/a	10
DETSC 3321# BTEX	mg/kg	< 0.04	6	n/a	n/a
DETSC 3401# PCBs (7 congeners)	mg/kg	< 0.01	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	8.2	n/a	>6	n/a
DETSC 2073* Acid Neutralisation Capacity (pH4)	mol/kg	3.2	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	< 0.16	< 0.01	0.5	2	25
DETSC 2306 Barium as Ba	2.6	< 0.1	20	100	300
DETSC 2306 Cadmium as Cd	< 0.030	< 0.02	0.04	1	5
DETSC 2306 Chromium as Cr	< 0.25	< 0.1	0.5	10	70
DETSC 2306 Copper as Cu	0.66	< 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	< 0.090	< 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	0.29	< 0.03	0.1	0.5	7
DETSC 2306 Zinc as Zn	< 1.3	< 0.01	4	50	200
DETSC 2055 Chloride as Cl	830	< 100	800	15,000	25,000
DETSC 2055* Fluoride as F	150	1.5	10	150	500
DETSC 2055 Sulphate as SO4	7800	< 100	1000	20,000	50,000
DETSC 2009* Total Dissolved Solids	32000	320	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	8.3
DETSC 2009 Conductivity uS/cm	46.2
* Temperature*	18.0

Mass of Sample Kg*	0.110
Mass of dry Sample Kg*	0.099

Stage 1

Volume of Leachant L2*	0.984
Volume of Eluate VE1*	0.93

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WASTE ACCEPTANCE CRITERIA TESTING ANALYTICAL REPORT

Our Ref 23-25557
Client Ref 23-0881E
Contract Title NDFA SOCIAL HOUSING
Sample Id TP03 0.50

Sample Numbers 2254902 2254915
Date Analysed 07/11/2023

Test Results On Waste

Determinand and Method Reference	Units	Result	WAC Limit Values: Inert Waste	SNRHW	Hazardous Waste
DETSC 2084# Total Organic Carbon	%	1.6	3	5	6
DETSC 2003# Loss On Ignition	%	3.1	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	7.7	n/a	>6	n/a
DETSC 2073* Acid Neutralisation Capacity (pH4)	mol/kg	2.0	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	0.43	< 0.01	0.5	2	25
DETSC 2306 Barium as Ba	24	0.24	20	100	300
DETSC 2306 Cadmium as Cd	0.098	< 0.02	0.04	1	5
DETSC 2306 Chromium as Cr	0.69	< 0.1	0.5	10	70
DETSC 2306 Copper as Cu	1.2	< 0.02	2	50	100
DETSC 2306 Mercury as Hg	0.018	< 0.002	0.01	0.2	2
DETSC 2306 Molybdenum as Mo	6.2	< 0.1	0.5	10	30
DETSC 2306 Nickel as Ni	0.81	< 0.1	0.4	10	40
DETSC 2306 Lead as Pb	0.8	< 0.05	0.5	10	50
DETSC 2306 Antimony as Sb	0.25	< 0.05	0.06	0.7	5
DETSC 2306 Selenium as Se	2.4	< 0.03	0.1	0.5	7
DETSC 2306 Zinc as Zn	1.5	0.015	4	50	200
DETSC 2055 Chloride as Cl	730	< 100	800	15,000	25,000
DETSC 2055* Fluoride as F	< 100	< 0.1	10	150	500
DETSC 2055 Sulphate as SO4	230000	2300	1000	20,000	50,000
DETSC 2009* Total Dissolved Solids	340000	3400	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	7.3
DETSC 2009 Conductivity uS/cm	481.0
* Temperature*	18.0

Mass of Sample Kg*	0.100
Mass of dry Sample Kg*	0.093

Stage 1

Volume of Leachant L2*	0.918
Volume of Eluate VE1*	0.86

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WASTE ACCEPTANCE CRITERIA TESTING ANALYTICAL REPORT

Our Ref 23-25557
Client Ref 23-0881E
Contract Title NDFA SOCIAL HOUSING
Sample Id TP04 0.50

Sample Numbers 2254903 2254916
Date Analysed 07/11/2023

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	%	2.7	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	< 10	500	n/a	n/a
DETSC 3301 PAHs	mg/kg	< 1.6	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	2.0	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	0.17	< 0.01	0.5	2	25
DETSC 2306 Barium as Ba	4.2	< 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	0.6	< 0.02	2	50	100
DETSC 2306 Mercury as Hg	< 0.010	< 0.002	0.01	0.2	2
DETSC 2306 Molybdenum as Mo	2.1	< 0.1	0.5	10	30
DETSC 2306 Nickel as Ni	< 0.50	< 0.1	0.4	10	40
DETSC 2306 Lead as Pb	0.1	< 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	0.6	< 0.03	0.1	0.5	7
DETSC 2306 Zinc as Zn	< 1.3	< 0.01	4	50	200
DETSC 2055 Chloride as Cl	780	< 100	800	15,000	25,000
DETSC 2055* Fluoride as F	< 100	< 0.1	10	150	500
DETSC 2055 Sulphate as SO4	8300	< 100	1000	20,000	50,000
DETSC 2009* Total Dissolved Solids	68000	680	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	7.8
DETSC 2009 Conductivity uS/cm	97.6
* Temperature*	18.0

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

Stage 1

Volume of Leachant L2*	0.941
Volume of Eluate VE1*	0.89

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WASTE ACCEPTANCE CRITERIA TESTING ANALYTICAL REPORT

Our Ref 23-25557
Client Ref 23-0881E
Contract Title NDFA SOCIAL HOUSING
Sample Id TP06 0.50

Sample Numbers 2254904 2254917
Date Analysed 07/11/2023

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	%	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	< 10	500	n/a	n/a
DETSC 3301 PAHs	mg/kg	< 1.6	100	n/a	n/a
DETSC 2008# pH	pH Units	7.9	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	0.21	< 0.01	0.5	2	25
DETSC 2306 Barium as Ba	2.7	< 0.1	20	100	300
DETSC 2306 Cadmium as Cd	< 0.030	< 0.02	0.04	1	5
DETSC 2306 Chromium as Cr	< 0.25	< 0.1	0.5	10	70
DETSC 2306 Copper as Cu	0.63	< 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	< 0.090	< 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	0.3	< 0.03	0.1	0.5	7
DETSC 2306 Zinc as Zn	< 1.3	< 0.01	4	50	200
DETSC 2055 Chloride as Cl	1000	< 100	800	15,000	25,000
DETSC 2055* Fluoride as F	< 100	< 0.1	10	150	500
DETSC 2055 Sulphate as SO4	4200	< 100	1000	20,000	50,000
DETSC 2009* Total Dissolved Solids	40000	400	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	7.6
DETSC 2009 Conductivity uS/cm	56.8
* Temperature*	18.0

Mass of Sample Kg*	0.120
Mass of dry Sample Kg*	0.100

Stage 1

Volume of Leachant L2*	0.984
Volume of Eluate VE1*	0.93

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WASTE ACCEPTANCE CRITERIA TESTING ANALYTICAL REPORT

Our Ref 23-25557
Client Ref 23-0881E
Contract Title NDFA SOCIAL HOUSING
Sample Id TP06 1.00

Sample Numbers 2254905 2254918
Date Analysed 07/11/2023

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	%	3.4	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	8.0	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	0.27	< 0.01	0.5	2	25
DETSC 2306 Barium as Ba	3.4	< 0.1	20	100	300
DETSC 2306 Cadmium as Cd	< 0.030	< 0.02	0.04	1	5
DETSC 2306 Chromium as Cr	< 0.25	< 0.1	0.5	10	70
DETSC 2306 Copper as Cu	0.78	< 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	0.58	< 0.1	0.4	10	40
DETSC 2306 Lead as Pb	0.13	< 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	< 0.25	< 0.03	0.1	0.5	7
DETSC 2306 Zinc as Zn	1.4	0.014	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	2900	< 100	1000	20,000	50,000
DETSC 2009* Total Dissolved Solids	40000	400	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	7.5
DETSC 2009 Conductivity uS/cm	57.7
* Temperature*	18.0

Mass of Sample Kg*	0.120
Mass of dry Sample Kg*	0.101

Stage 1

Volume of Leachant L2*	0.992
Volume of Eluate VE1*	0.94

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Summary of Asbestos Analysis
Soil Samples

Our Ref 23-25557
Client Ref 23-0881E
Contract Title NDFA SOCIAL HOUSING

Lab No	Sample ID	Material Type	Result	Comment*	Analyst
2254893	BH03A 0.50	SOIL	NAD	none	Lee Kerridge
2254894	BH04 0.50	SOIL	NAD	none	Lee Kerridge
2254895	TP05 0.50	SOIL	NAD	none	Lee Kerridge
2254896	TP05 1.00	SOIL	NAD	none	Lee Kerridge
2254897	BH01 0.50	SOIL	NAD	none	Lee Kerridge
2254898	BH03 0.50	SOIL	NAD	none	Lee Kerridge
2254899	TP01 0.50	SOIL	NAD	none	Lee Kerridge
2254900	TP01 1.00	SOIL	NAD	none	Lee Kerridge
2254901	TP02 0.50	SOIL	NAD	none	Lee Kerridge
2254902	TP03 0.50	SOIL	NAD	none	Lee Kerridge
2254903	TP04 0.50	SOIL	NAD	none	Lee Kerridge
2254904	TP06 0.50	SOIL	NAD	none	Lee Kerridge
2254905	TP06 1.00	SOIL	NAD	none	Lee Kerridge

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 23-25557
Client Ref 23-0881E
Contract NDFA SOCIAL HOUSING

Containers Received & Deviating Samples

Lab No	Sample ID	Date Sampled	Containers Received	Holding time exceeded for tests	Inappropriate container for tests
2254893	BH03A 0.50 SOIL	10/10/23	GJ 250ml x2, GJ 60ml x2, PT 1L x2	Aliphatics/Aromatics (14 days), BTEX / C5-C10 (14 days), Sulphur (free) (7 days), Naphthalene (14 days), PAH FID (14 days), pH + Conductivity (7 days), Cyanide/Mono pHoh (14 days), EPH/TPH (14 days)	
2254894	BH04 0.50 SOIL	10/10/23	GJ 250ml x2, GJ 60ml x2, PT 1L x2	Aliphatics/Aromatics (14 days), BTEX / C5-C10 (14 days), Sulphur (free) (7 days), Naphthalene (14 days), PAH FID (14 days), pH + Conductivity (7 days), Cyanide/Mono pHoh (14 days), EPH/TPH (14 days)	
2254895	TP05 0.50 SOIL	10/10/23	GJ 250ml, GJ 60ml, PT 1L	Aliphatics/Aromatics (14 days), BTEX / C5-C10 (14 days), Sulphur (free) (7 days), Naphthalene (14 days), PAH FID (14 days), pH + Conductivity (7 days), Cyanide/Mono pHoh (14 days), EPH/TPH (14 days)	
2254896	TP05 1.00 SOIL	10/10/23	GJ 250ml, GJ 60ml, PT 1L	Aliphatics/Aromatics (14 days), BTEX / C5-C10 (14 days), Sulphur (free) (7 days), Naphthalene (14 days), PAH FID (14 days), pH + Conductivity (7 days), Cyanide/Mono pHoh (14 days), EPH/TPH (14 days)	
2254897	BH01 0.50 SOIL	10/10/23	GJ 250ml, GJ 60ml, PT 1L	Aliphatics/Aromatics (14 days), BTEX / C5-C10 (14 days), Sulphur (free) (7 days), Naphthalene (14 days), PAH FID (14 days), pH + Conductivity (7 days), Cyanide/Mono pHoh (14 days), EPH/TPH (14 days)	
2254898	BH03 0.50 SOIL	10/10/23	GJ 250ml x4, GJ 60ml x4, PT 1L x4	Aliphatics/Aromatics (14 days), BTEX / C5-C10 (14 days), Sulphur (free) (7 days), Naphthalene (14 days), PAH FID (14 days), pH + Conductivity (7 days), Cyanide/Mono pHoh (14 days), EPH/TPH (14 days)	
2254899	TP01 0.50 SOIL	11/10/23	GJ 250ml, GJ 60ml, PT 1L	Aliphatics/Aromatics (14 days), BTEX / C5-C10 (14 days), Sulphur (free) (7 days), Naphthalene (14 days), PAH FID (14 days), pH + Conductivity (7 days), Cyanide/Mono pHoh (14 days), EPH/TPH (14 days)	
2254900	TP01 1.00 SOIL	11/10/23	GJ 250ml, GJ 60ml, PT 1L	Aliphatics/Aromatics (14 days), BTEX / C5-C10 (14 days), Sulphur (free) (7 days), Naphthalene (14 days), PAH FID (14 days), pH + Conductivity (7 days), Cyanide/Mono pHoh (14 days), EPH/TPH (14 days)	
2254901	TP02 0.50 SOIL	11/10/23	GJ 250ml, GJ 60ml, PT 1L	Aliphatics/Aromatics (14 days), BTEX / C5-C10 (14 days), Sulphur (free) (7 days), Naphthalene (14 days), PAH FID (14 days), pH + Conductivity (7 days), Cyanide/Mono pHoh (14 days), EPH/TPH (14 days)	
2254902	TP03 0.50 SOIL	11/10/23	GJ 250ml, GJ 60ml, PT 1L	Aliphatics/Aromatics (14 days), BTEX / C5-C10 (14 days), Sulphur (free) (7 days), Naphthalene (14 days), PAH FID (14 days), pH + Conductivity (7 days), Cyanide/Mono pHoh (14 days), EPH/TPH (14 days)	

Information in Support of the Analytical Results

Our Ref 23-25557
Client Ref 23-0881E
Contract NDFA SOCIAL HOUSING

Lab No	Sample ID	Date Sampled	Containers Received	Holding time exceeded for tests	Inappropriate container for tests
2254903	TP04 0.50 SOIL	11/10/23	GJ 250ml, GJ 60ml, PT 1L	Aliphatics/Aromatics (14 days), BTEX / C5-C10 (14 days), Sulphur (free) (7 days), Naphthalene (14 days), PAH FID (14 days), pH + Conductivity (7 days), Cyanide/Mono pHoh (14 days), EPH/TPH (14 days)	
2254904	TP06 0.50 SOIL	11/10/23	GJ 250ml, GJ 60ml, PT 1L	Aliphatics/Aromatics (14 days), BTEX / C5-C10 (14 days), Sulphur (free) (7 days), Naphthalene (14 days), PAH FID (14 days), pH + Conductivity (7 days), Cyanide/Mono pHoh (14 days), EPH/TPH (14 days)	
2254905	TP06 1.00 SOIL	11/10/23	GJ 250ml, GJ 60ml, PT 1L	Aliphatics/Aromatics (14 days), BTEX / C5-C10 (14 days), Sulphur (free) (7 days), Naphthalene (14 days), PAH FID (14 days), pH + Conductivity (7 days), Cyanide/Mono pHoh (14 days), EPH/TPH (14 days)	
2254906	BH03A 0.50 LEACHATE	10/10/23	GJ 250ml x2, GJ 60ml x2, PT 1L x2		
2254907	BH04 0.50 LEACHATE	10/10/23	GJ 250ml x2, GJ 60ml x2, PT 1L x2		
2254908	TP05 0.50 LEACHATE	10/10/23	GJ 250ml, GJ 60ml, PT 1L		
2254909	TP05 1.00 LEACHATE	10/10/23	GJ 250ml, GJ 60ml, PT 1L		
2254910	BH01 0.50 LEACHATE	10/10/23	GJ 250ml, GJ 60ml, PT 1L		
2254911	BH03 0.50 LEACHATE	10/10/23	GJ 250ml x4, GJ 60ml x4, PT 1L x4		
2254912	TP01 0.50 LEACHATE	11/10/23	GJ 250ml, GJ 60ml, PT 1L		
2254913	TP01 1.00 LEACHATE	11/10/23	GJ 250ml, GJ 60ml, PT 1L		
2254914	TP02 0.50 LEACHATE	11/10/23	GJ 250ml, GJ 60ml, PT 1L		
2254915	TP03 0.50 LEACHATE	11/10/23	GJ 250ml, GJ 60ml, PT 1L		
2254916	TP04 0.50 LEACHATE	11/10/23	GJ 250ml, GJ 60ml, PT 1L		
2254917	TP06 0.50 LEACHATE	11/10/23	GJ 250ml, GJ 60ml, PT 1L		
2254918	TP06 1.00 LEACHATE	11/10/23	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 C10-C12	EH_CU_1D_AL
Aliphatic C12-C16	EH_CU_1D_AL
Aliphatic C16-C21	EH_CU_1D_AL
Aliphatic C21-C35	EH_CU_1D_AL
Aliphatic C35-C44	EH_CU_1D_AL
Aliphatic C10-C44	EH_CU_1D_AL
Aromatic C5-C7	HS_1D_AR
Aromatic C7-C8	HS_1D_AR
Aromatic C8-C10	HS_1D_AR
Aromatic C10-C12	EH_CU_1D_AR
Aromatic C12-C16	EH_CU_1D_AR
Aromatic C16-C21	EH_CU_1D_AR
Aromatic C21-C35	EH_CU_1D_AR
Aromatic C35-C44	EH_CU_1D_AR
Aromatic C10-C44	EH_CU_1D_AR
Ali/Aro C10-C44	EH_CU_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	23-28023	*Issued:*	18-Dec-23

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

Our Reference	23-28023
Client Reference	23-0881E
Order No	(not supplied)
Contract Title	NDFA - Oldtown Mill
Description	3 Soil samples, 3 Leachate prepared by DETS samples.
Date Received	29-Nov-23
Date Started	29-Nov-23
Date Completed	18-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 23-28023
Client Ref 23-0881E
Contract Title NDFA - Oldtown Mill

			Lab No	2269017	2269018	2269019
			.Sample ID	BH08	BH11	BH06
			Depth	0.50	1.00	0.50
			Other ID	1	2	1
			Sample Type	ES	ES	ES
			Sampling Date	19/10/2023	19/10/2023	17/10/2023
			Sampling Time	n/s	n/s	n/s
Test	**Method**	**LOD**	**Units**			
Preparation						
Moisture Content	DETSC 1004	0.1	%	25	29	20
Metals						
Antimony	DETSC 2301*	1	mg/kg	1.7	2.0	1.9
Arsenic	DETSC 2301#	0.2	mg/kg	14	13	13
Barium	DETSC 2301#	1.5	mg/kg	47	47	43
Boron, Water Soluble (2.5:1)	DETSC 2311#	0.2	mg/kg	< 0.2	< 0.2	< 0.2
Cadmium	DETSC 2301#	0.1	mg/kg	3.6	3.4	2.7
Chromium	DETSC 2301#	0.15	mg/kg	12	16	17
Chromium III	DETSC 2301*	0.15	mg/kg	12	16	17
Chromium, Hexavalent	DETSC 2204*	1	mg/kg	< 1.0	< 1.0	< 1.0
Copper	DETSC 2301#	0.2	mg/kg	26	30	28
Lead	DETSC 2301#	0.3	mg/kg	22	24	21
Mercury	DETSC 2325#	0.05	mg/kg	0.08	0.08	0.07
Molybdenum	DETSC 2301#	0.4	mg/kg	5.1	4.7	3.9
Nickel	DETSC 2301#	1	mg/kg	40	42	46
Selenium	DETSC 2301#	0.5	mg/kg	1.3	1.5	1.1
Zinc	DETSC 2301#	1	mg/kg	100	110	110
Inorganics						
pH	DETSC 2008#		pH	7.9	7.5	7.8
Cyanide, Total	DETSC 2130#	0.1	mg/kg	0.2	0.2	0.1
Total Organic Carbon	DETSC 2084#	0.5	%	1.6	2.1	0.6
Sulphide	DETSC 2024*	10	mg/kg	24	28	24
Sulphur (free)	DETSC 3049#	0.75	mg/kg	< 0.75	< 0.75	< 0.75
Sulphate as SO4, Total	DETSC 2321#	0.01	%	0.07	0.07	0.05
Petroleum Hydrocarbons						
Aliphatic C5-C6: HS_1D_AL	DETSC 3321*	0.01	mg/kg	< 0.01	< 0.01	< 0.01
Aliphatic C6-C8: HS_1D_AL	DETSC 3321*	0.01	mg/kg	< 0.01	< 0.01	< 0.01
Aliphatic C8-C10: HS_1D_AL	DETSC 3321*	0.01	mg/kg	< 0.01	< 0.01	< 0.01
Aliphatic >EC10-EC12: EH_2D_AL	DETSC 3521#	1.5	mg/kg	< 1.50	< 1.50	< 1.50
Aliphatic >EC12-EC16: EH_2D_AL	DETSC 3521#	1.2	mg/kg	< 1.20	< 1.20	< 1.20
Aliphatic >EC16-EC21: EH_2D_AL	DETSC 3521#	1.5	mg/kg	< 1.50	< 1.50	< 1.50
Aliphatic >EC21-EC35: EH_2D_AL	DETSC 3521#	3.4	mg/kg	< 3.40	< 3.40	< 3.40
Aliphatic >EC35-EC40: EH_2D_AL	DETSC 3521*	3.4	mg/kg	< 3.40	< 3.40	< 3.40
Aliphatic >EC40-EC44: EH_2D_AL	DETSC 3521*	3.4	mg/kg	< 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
Aromatic C5-C7: HS_1D_AR	DETSC 3321*	0.01	mg/kg	< 0.01	< 0.01	< 0.01
Aromatic C7-C8: HS_1D_AR	DETSC 3321*	0.01	mg/kg	< 0.01	< 0.01	< 0.01
Aromatic C8-C10: HS_1D_AR	DETSC 3321*	0.01	mg/kg	< 0.01	< 0.01	< 0.01
Aromatic >EC10-EC12: EH_2D_AR	DETSC 3521#	0.9	mg/kg	< 0.90	< 0.90	< 0.90
Aromatic >EC12-EC16: EH_2D_AR	DETSC 3521#	0.5	mg/kg	< 0.50	< 0.50	< 0.50
Aromatic >EC16-EC21: EH_2D_AR	DETSC 3521#	0.6	mg/kg	< 0.60	< 0.60	< 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 23-28023
Client Ref 23-0881E
Contract Title NDFA - Oldtown Mill

			Lab No	2269017	2269018	2269019
			.Sample ID	BH08	BH11	BH06
			Depth	0.50	1.00	0.50
			Other ID	1	2	1
			Sample Type	ES	ES	ES
			Sampling Date	19/10/2023	19/10/2023	17/10/2023
			Sampling Time	n/s	n/s	n/s
Test	**Method**	**LOD**	**Units**			
Aromatic >EC21-EC35: EH_2D_AR	DETSC 3521#	1.4	mg/kg	< 1.40	< 1.40	< 1.40
Aromatic >EC35-EC40: EH_2D_AR	DETSC 3521*	1.4	mg/kg	< 1.40	< 1.40	< 1.40
Aromatic >EC40-EC44: EH_2D_AR	DETSC 3521*	1.4	mg/kg	< 1.40	< 1.40	< 1.40
Aromatic C5-C44: EH_2D+HS_1D_AR	DETSC 3521*	10	mg/kg	< 10.00	< 10.00	< 10.00
TPH Ali/Aro C5-C44: EH_2D+HS_1D_Total	DETSC 3521*	10	mg/kg	< 10.00	< 10.00	< 10.00
Benzene	DETSC 3321#	0.01	mg/kg	< 0.01	< 0.01	< 0.01
Ethylbenzene	DETSC 3321#	0.01	mg/kg	< 0.01	< 0.01	< 0.01
Toluene	DETSC 3321#	0.01	mg/kg	< 0.01	< 0.01	< 0.01
Xylene	DETSC 3321#	0.01	mg/kg	< 0.01	< 0.01	< 0.01
MTBE	DETSC 3321	0.01	mg/kg	< 0.01	< 0.01	< 0.01
C24-C40 Lube Oil Range Organics (LORO): EH_1D_Total	DETSC 3311#	10	mg/kg	< 10	< 10	< 10
PAHs						
Naphthalene	DETSC 3301	0.1	mg/kg	< 0.1	< 0.1	< 0.1
Acenaphthylene	DETSC 3301	0.1	mg/kg	< 0.1	< 0.1	< 0.1
Acenaphthene	DETSC 3301	0.1	mg/kg	< 0.1	< 0.1	< 0.1
Fluorene	DETSC 3301	0.1	mg/kg	< 0.1	< 0.1	< 0.1
Phenanthrene	DETSC 3301	0.1	mg/kg	< 0.1	< 0.1	< 0.1
Anthracene	DETSC 3301	0.1	mg/kg	< 0.1	< 0.1	< 0.1
Fluoranthene	DETSC 3301	0.1	mg/kg	< 0.1	< 0.1	< 0.1
Pyrene	DETSC 3301	0.1	mg/kg	< 0.1	< 0.1	< 0.1
Benzo(a)anthracene	DETSC 3301	0.1	mg/kg	< 0.1	< 0.1	< 0.1
Chrysene	DETSC 3301	0.1	mg/kg	< 0.1	< 0.1	< 0.1
Benzo(b)fluoranthene	DETSC 3301	0.1	mg/kg	< 0.1	< 0.1	< 0.1
Benzo(k)fluoranthene	DETSC 3301	0.1	mg/kg	< 0.1	< 0.1	< 0.1
Benzo(a)pyrene	DETSC 3301	0.1	mg/kg	< 0.1	< 0.1	< 0.1
Indeno(1,2,3-c,d)pyrene	DETSC 3301	0.1	mg/kg	< 0.1	< 0.1	< 0.1
Dibenzo(a,h)anthracene	DETSC 3301	0.1	mg/kg	< 0.1	< 0.1	< 0.1
Benzo(g,h,i)perylene	DETSC 3301	0.1	mg/kg	< 0.1	< 0.1	< 0.1
Coronene	DETSC 3301*	0.1	mg/kg	< 0.1	< 0.1	< 0.1
PAH 16 Total	DETSC 3301	1.6	mg/kg	< 1.6	< 1.6	< 1.6
PCBs						
PCB 28 + PCB 31	DETSC 3401#	0.01	mg/kg	< 0.01	< 0.01	< 0.01
PCB 52	DETSC 3401#	0.01	mg/kg	< 0.01	< 0.01	< 0.01
PCB 101	DETSC 3401#	0.01	mg/kg	< 0.01	< 0.01	< 0.01
PCB 118	DETSC 3401#	0.01	mg/kg	< 0.01	< 0.01	< 0.01
PCB 153	DETSC 3401#	0.01	mg/kg	< 0.01	< 0.01	< 0.01
PCB 138	DETSC 3401#	0.01	mg/kg	< 0.01	< 0.01	< 0.01
PCB 180	DETSC 3401#	0.01	mg/kg	< 0.01	< 0.01	< 0.01
PCB 7 Total	DETSC 3401#	0.01	mg/kg	< 0.01	< 0.01	< 0.01

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 23-28023
Client Ref 23-0881E
Contract Title NDFA - Oldtown Mill

			Lab No	2269017	2269018	2269019
			.Sample ID	BH08	BH11	BH06
			Depth	0.50	1.00	0.50
			Other ID	1	2	1
			Sample Type	ES	ES	ES
			Sampling Date	19/10/2023	19/10/2023	17/10/2023
			Sampling Time	n/s	n/s	n/s
Test	**Method**	**LOD**	**Units**			
Phenols						
Phenol - Monohydric	DETSC 2130#	0.3	mg/kg	0.9	3.7	0.5

Summary of Chemical Analysis
Leachate Samples

Our Ref 23-28023
Client Ref 23-0881E
Contract Title NDFA - Oldtown Mill

			Lab No	2269020	2269021	2269022
			.Sample ID	BH08	BH11	BH06
			Depth	0.50	1.00	0.50
			Other ID	1	2	1
			Sample Type	ES	ES	ES
			Sampling Date	19/10/2023	19/10/2023	17/10/2023
			Sampling Time	n/s	n/s	n/s
Test	**Method**	**LOD**	**Units**			
Preparation						
BS EN 12457 10:1	DETSC 1009*			Y	Y	Y
Inorganics						
Un-Ionised Ammonia	*	0.02	mg/l	< 0.02	< 0.02	< 0.02
Ammoniacal Nitrogen as NH4	DETSC 2207	0.0193	mg/l	0.08	0.03	0.02

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

WASTE ACCEPTANCE CRITERIA TESTING ANALYTICAL REPORT

Our Ref 23-28023
Client Ref 23-0881E
Contract Title NDFA - Oldtown Mill
Sample Id BH08 1 0.50

Sample Numbers 2269017 2269020
Date Analysed 15/12/2023

Test Results On Waste

Determinand and Method Reference	Units	Result	WAC Limit Values: Inert Waste	SNRHW	Hazardous Waste
DETSC 2084# Total Organic Carbon	%	1.6	3	5	6
DETSC 2003# Loss On Ignition	%	5.2	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	7.9	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	0.87	< 0.01	0.5	2	25
DETSC 2306 Barium as Ba	20	0.2	20	100	300
DETSC 2306 Cadmium as Cd	< 0.030	< 0.02	0.04	1	5
DETSC 2306 Chromium as Cr	0.3	< 0.1	0.5	10	70
DETSC 2306 Copper as Cu	0.67	< 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	0.23	< 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	1.5	< 0.03	0.1	0.5	7
DETSC 2306 Zinc as Zn	2.7	0.027	4	50	200
DETSC 2055 Chloride as Cl	720	< 100	800	15,000	25,000
DETSC 2055* Fluoride as F	110	1.1	10	150	500
DETSC 2055 Sulphate as SO4	1600	< 100	1000	20,000	50,000
DETSC 2009* Total Dissolved Solids	24000	240	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	7.4
DETSC 2009 Conductivity uS/cm	34.7
* Temperature*	16.0

Mass of Sample Kg*	0.130
Mass of dry Sample Kg*	0.098

Stage 1

Volume of Leachant L2*	0.947
Volume of Eluate VE1*	0.895

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 23-28023
Client Ref 23-0881E
Contract Title NDFA - Oldtown Mill
Sample Id BH11 2 1.00

Sample Numbers 2269018 2269021
Date Analysed 15/12/2023

Test Results On Waste

Determinand and Method Reference	Units	Result	WAC Limit Values: Inert Waste	SNRHW	Hazardous Waste
DETSC 2084# Total Organic Carbon	%	2.1	3	5	6
DETSC 2003# Loss On Ignition	%	6.8	n/a	n/a	10
DETSC 3321# BTEX	mg/kg	< 0.04	6	n/a	n/a
DETSC 3401# PCBs (7 congeners)	mg/kg	< 0.01	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	7.5	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	0.95	< 0.01	0.5	2	25
DETSC 2306 Barium as Ba	5.3	< 0.1	20	100	300
DETSC 2306 Cadmium as Cd	0.034	< 0.02	0.04	1	5
DETSC 2306 Chromium as Cr	0.28	< 0.1	0.5	10	70
DETSC 2306 Copper as Cu	0.62	< 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	0.18	< 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	1.4	0.014	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	890	< 100	1000	20,000	50,000
DETSC 2009* Total Dissolved Solids	13000	130	4000	60,000	100,000
DETSC 2130 Phenol Index	< 100	< 1	1	n/a	n/a
DETSC 2085 Dissolved Organic Carbon	2400	< 50	500	800	1000

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

Additional Information

DETSC 2008 pH	7.2
DETSC 2009 Conductivity uS/cm	17.9
* Temperature*	16.0

Mass of Sample Kg*	0.140
Mass of dry Sample Kg*	0.100

Stage 1

Volume of Leachant L2*	0.955
Volume of Eluate VE1*	0.903

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 23-28023
Client Ref 23-0881E
Contract Title NDFA - Oldtown Mill
Sample Id BH06 1 0.50

Sample Numbers 2269019 2269022
Date Analysed 15/12/2023

Test Results On Waste

Determinand and Method Reference	Units	Result	WAC Limit Values: Inert Waste	SNRHW	Hazardous Waste
DETSC 2084# Total Organic Carbon	%	0.6	3	5	6
DETSC 2003# Loss On Ignition	%	3.4	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	7.8	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	1	0.01	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	0.3	< 0.1	0.5	10	70
DETSC 2306 Copper as Cu	0.46	< 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	< 0.090	< 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	1.9	< 0.03	0.1	0.5	7
DETSC 2306 Zinc as Zn	< 1.3	< 0.01	4	50	200
DETSC 2055 Chloride as Cl	450	< 100	800	15,000	25,000
DETSC 2055* Fluoride as F	< 100	< 0.1	10	150	500
DETSC 2055 Sulphate as SO4	2000	< 100	1000	20,000	50,000
DETSC 2009* Total Dissolved Solids	27000	270	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	38.8
* Temperature*	17.0

Mass of Sample Kg*	0.120
Mass of dry Sample Kg*	0.096

Stage 1

Volume of Leachant L2*	0.933
Volume of Eluate VE1*	0.88

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 23-28023
Client Ref 23-0881E
Contract Title NDFA - Oldtown Mill

Lab No	Sample ID	Material Type	Result	Comment*	Analyst
2269017	BH08 1 0.50	SOIL	NAD	none	Barry Kelly
2269018	BH11 2 1.00	SOIL	NAD	none	Barry Kelly
2269019	BH06 1 0.50	SOIL	NAD	none	Barry Kelly

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 23-28023
Client Ref 23-0881E
Contract NDFA - Oldtown Mill

Containers Received & Deviating Samples

Lab No	Sample ID	Date Sampled	Containers Received	Holding time exceeded for tests	Inappropriate container for tests
2269017	BH08 0.50 SOIL	19/10/23	GJ 250ml, GJ 60ml, PT 1L x2	BTEX / C5-C10 (14 days), Sulphur (free) (7 days), EPH/Aliphatic/Aromatic (14 days), Mercury (28 days), Total Sulphate ICP (30 days), Kone Cr6 (30 days), Naphthalene (14 days), Organic Matter (Auto) (28 days), PAH FID (14 days), PCB (30 days), pH + Conductivity (7 days), Cyanide/Mono pHoh (14	
2269018	BH11 1.00 SOIL	19/10/23	GJ 250ml, GJ 60ml, PT 1L x2	BTEX / C5-C10 (14 days), Sulphur (free) (7 days), EPH/Aliphatic/Aromatic (14 days), Mercury (28 days), Total Sulphate ICP (30 days), Kone Cr6 (30 days), Naphthalene (14 days), Organic Matter (Auto) (28 days), PAH FID (14 days), PCB (30 days), pH + Conductivity (7 days), Cyanide/Mono pHoh (14	
2269019	BH06 0.50 SOIL	17/10/23	GJ 250ml, GJ 60ml, PT 1L x2	BTEX / C5-C10 (14 days), Sulphur (free) (7 days), EPH/Aliphatic/Aromatic (14 days), Mercury (28 days), Total Sulphate ICP (30 days), Kone Cr6 (30 days), Naphthalene (14 days), Organic Matter (Auto) (28 days), PAH FID (14 days), PCB (30 days), pH + Conductivity (7 days), Cyanide/Mono pHoh (14	
2269020	BH08 0.50 LEACHATE	19/10/23	GJ 250ml, GJ 60ml, PT 1L x2		
2269021	BH11 1.00 LEACHATE	19/10/23	GJ 250ml, GJ 60ml, PT 1L x2		
2269022	BH06 0.50 LEACHATE	17/10/23	GJ 250ml, GJ 60ml, PT 1L x2		

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 J

ENVIRONMENTAL LABORATORY TEST RESULTS

Certificate of Analysis

Certificate Number	23-25557	*Issued:*	07-Nov-23

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

Our Reference	23-25557
Client Reference	23-0881E
Order No	(not supplied)
Contract Title	NDFA SOCIAL HOUSING
Description	13 Soil samples, 13 Leachate samples.
Date Received	30-Oct-23
Date Started	30-Oct-23
Date Completed	07-Nov-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 23-25557
Client Ref 23-0881E
Contract Title NDFA SOCIAL HOUSING

			Lab No	2254893	2254894	2254895	2254896	2254897	2254898	2254899
			.Sample ID	BH03A	BH04	TP05	TP05	BH01	BH03	TP01
			Depth	0.50	0.50	0.50	1.00	0.50	0.50	0.50
			Other ID							
			Sample Type	ES	ES	ES	ES	ES	ES	ES
			Sampling Date	10/10/2023	10/10/2023	10/10/2023	10/10/2023	10/10/2023	10/10/2023	11/10/2023
			Sampling Time	n/s	n/s	n/s	n/s	n/s	n/s	n/s
Test	**Method**	**LOD**	**Units**							
Preparation										
Moisture Content	DETSC 1004	0.1	%	8.7	21	12	8.7	10	10	5.7
Metals										
Antimony	DETSC 2301*	1	mg/kg	1.2	3.3	2.0	2.4	1.3	1.7	< 1.0
Arsenic	DETSC 2301#	0.2	mg/kg	5.8	22	11	11	7.0	8.8	7.5
Barium	DETSC 2301#	1.5	mg/kg	17	61	51	26	25	23	24
Boron, Water Soluble (2.5:1)	DETSC 2311#	0.2	mg/kg	< 0.2	< 0.2	< 0.2	< 0.2	0.2	< 0.2	0.3
Cadmium	DETSC 2301#	0.1	mg/kg	2.8	9.6	3.6	3.6	1.8	2.7	1.7
Chromium	DETSC 2301#	0.15	mg/kg	3.9	19	7.7	7.9	6.7	5.1	5.3
Chromium III	DETSC 2301*	0.15	mg/kg	3.9	19	7.7	7.9	6.7	5.1	5.3
Chromium, Hexavalent	DETSC 2204*	1	mg/kg	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0
Copper	DETSC 2301#	0.2	mg/kg	12	49	25	27	15	21	11
Lead	DETSC 2301#	0.3	mg/kg	9.8	23	14	15	6.2	12	4.7
Mercury	DETSC 2325#	0.05	mg/kg	< 0.05	0.08	< 0.05	< 0.05	< 0.05	< 0.05	< 0.05
Molybdenum	DETSC 2301#	0.4	mg/kg	4.3	16	5.3	6.4	4.6	4.4	3.6
Nickel	DETSC 2301#	1	mg/kg	23	91	41	45	25	32	19
Selenium	DETSC 2301#	0.5	mg/kg	< 0.5	7.0	0.8	0.8	1.9	0.7	1.6
Zinc	DETSC 2301#	1	mg/kg	68	150	110	120	62	89	48
Inorganics										
pH	DETSC 2008#		pH	8.2	7.1	8.0	8.1	7.8	8.1	8.0
Cyanide, Total	DETSC 2130#	0.1	mg/kg	< 0.1	< 0.1	< 0.1	< 0.1	< 0.1	< 0.1	< 0.1
Total Organic Carbon	DETSC 2084#	0.5	%	2.4	1.3	1.3	1.2	2.3	1.7	2.2
Sulphide	DETSC 2024*	10	mg/kg	24	< 10	51	91	83	91	130
Sulphur (free)	DETSC 3049#	0.75	mg/kg	< 0.75	1.1	< 0.75	< 0.75	< 0.75	< 0.75	0.92
Sulphate as SO4, Total	DETSC 2321#	0.01	%	0.04	0.32	0.04	0.05	0.22	0.04	0.21
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	< 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	< 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	< 0.01
Aliphatic C10-C12: EH_CU_1D_AL	DETSC 3072#	1.5	mg/kg	< 1.5	< 1.5	< 1.5	< 1.5	< 1.5	< 1.5	< 1.5
Aliphatic C12-C16: EH_CU_1D_AL	DETSC 3072#	1.2	mg/kg	< 1.2	< 1.2	< 1.2	< 1.2	< 1.2	< 1.2	< 1.2
Aliphatic C16-C21: EH_CU_1D_AL	DETSC 3072#	1.5	mg/kg	< 1.5	< 1.5	< 1.5	< 1.5	< 1.5	< 1.5	< 1.5
Aliphatic C21-C35: EH_CU_1D_AL	DETSC 3072#	3.4	mg/kg	< 3.4	< 3.4	< 3.4	< 3.4	< 3.4	< 3.4	< 3.4
Aliphatic C35-C44: EH_CU_1D_AL	DETSC 3072*	3.4	mg/kg	< 3.4	< 3.4	< 3.4	< 3.4	< 3.4	< 3.4	< 3.4
Aliphatic C10-C44: EH_CU_1D_AL	DETSC 3072*	10	mg/kg	< 10	< 10	< 10	< 10	< 10	< 10	< 10
Aromatic C5-C7: HS_1D_AR	DETSC 3321*	0.01	mg/kg	< 0.01	< 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	< 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	< 0.01
Aromatic C10-C12: EH_CU_1D_AR	DETSC 3072#	0.9	mg/kg	< 0.9	< 0.9	< 0.9	< 0.9	< 0.9	< 0.9	< 0.9
Aromatic C12-C16: EH_CU_1D_AR	DETSC 3072#	0.5	mg/kg	< 0.5	< 0.5	< 0.5	< 0.5	< 0.5	< 0.5	< 0.5
Aromatic C16-C21: EH_CU_1D_AR	DETSC 3072#	0.6	mg/kg	< 0.6	< 0.6	< 0.6	< 0.6	< 0.6	< 0.6	< 0.6
Aromatic C21-C35: EH_CU_1D_AR	DETSC 3072#	1.4	mg/kg	< 1.4	< 1.4	< 1.4	< 1.4	< 1.4	< 1.4	< 1.4

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 23-25557
Client Ref 23-0881E
Contract Title NDFA SOCIAL HOUSING

			Lab No	2254893	2254894	2254895	2254896	2254897	2254898	2254899
			.Sample ID	BH03A	BH04	TP05	TP05	BH01	BH03	TP01
			Depth	0.50	0.50	0.50	1.00	0.50	0.50	0.50
			Other ID							
			Sample Type	ES	ES	ES	ES	ES	ES	ES
			Sampling Date	10/10/2023	10/10/2023	10/10/2023	10/10/2023	10/10/2023	10/10/2023	11/10/2023
			Sampling Time	n/s	n/s	n/s	n/s	n/s	n/s	n/s
Test	**Method**	**LOD**	**Units**							
Aromatic C35-C44: EH_CU_1D_AR	DETSC 3072*	1.4	mg/kg	< 1.4	< 1.4	< 1.4	< 1.4	< 1.4	< 1.4	< 1.4
Aromatic C10-C44: EH_CU_1D_AR	DETSC 3072*	10	mg/kg	< 10	< 10	< 10	< 10	< 10	< 10	< 10
Ali/Aro C10-C44: EH_CU_1D_Total	DETSC 3072*	10	mg/kg	< 10	< 10	< 10	< 10	< 10	< 10	< 10
Benzene	DETSC 3321#	0.01	mg/kg	< 0.01	< 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	< 0.01
Toluene	DETSC 3321#	0.01	mg/kg	< 0.01	< 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	< 0.01
MTBE	DETSC 3321	0.01	mg/kg	< 0.01	< 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	< 10	< 10	< 10	< 10	< 10	< 10	< 10
PAHs										
Naphthalene	DETSC 3301	0.1	mg/kg	< 0.1	< 0.1	< 0.1	< 0.1	< 0.1	< 0.1	< 0.1
Acenaphthylene	DETSC 3301	0.1	mg/kg	< 0.1	< 0.1	< 0.1	< 0.1	< 0.1	< 0.1	0.1
Acenaphthene	DETSC 3301	0.1	mg/kg	< 0.1	< 0.1	< 0.1	< 0.1	< 0.1	< 0.1	< 0.1
Fluorene	DETSC 3301	0.1	mg/kg	< 0.1	< 0.1	< 0.1	< 0.1	< 0.1	< 0.1	< 0.1
Phenanthrene	DETSC 3301	0.1	mg/kg	< 0.1	< 0.1	< 0.1	< 0.1	< 0.1	< 0.1	< 0.1
Anthracene	DETSC 3301	0.1	mg/kg	< 0.1	< 0.1	< 0.1	< 0.1	< 0.1	< 0.1	< 0.1
Fluoranthene	DETSC 3301	0.1	mg/kg	< 0.1	< 0.1	< 0.1	< 0.1	< 0.1	< 0.1	< 0.1
Pyrene	DETSC 3301	0.1	mg/kg	< 0.1	< 0.1	< 0.1	< 0.1	< 0.1	< 0.1	< 0.1
Benzo(a)anthracene	DETSC 3301	0.1	mg/kg	< 0.1	< 0.1	< 0.1	< 0.1	< 0.1	< 0.1	< 0.1
Chrysene	DETSC 3301	0.1	mg/kg	< 0.1	< 0.1	< 0.1	< 0.1	< 0.1	< 0.1	< 0.1
Benzo(b)fluoranthene	DETSC 3301	0.1	mg/kg	< 0.1	< 0.1	< 0.1	< 0.1	< 0.1	< 0.1	< 0.1
Benzo(k)fluoranthene	DETSC 3301	0.1	mg/kg	< 0.1	< 0.1	< 0.1	< 0.1	< 0.1	< 0.1	< 0.1
Benzo(a)pyrene	DETSC 3301	0.1	mg/kg	< 0.1	< 0.1	< 0.1	< 0.1	< 0.1	< 0.1	< 0.1
Indeno(1,2,3-c,d)pyrene	DETSC 3301	0.1	mg/kg	< 0.1	< 0.1	< 0.1	< 0.1	< 0.1	< 0.1	< 0.1
Dibenzo(a,h)anthracene	DETSC 3301	0.1	mg/kg	< 0.1	< 0.1	< 0.1	< 0.1	< 0.1	< 0.1	< 0.1
Benzo(g,h,i)perylene	DETSC 3301	0.1	mg/kg	< 0.1	< 0.1	< 0.1	< 0.1	< 0.1	< 0.1	< 0.1
Coronene	DETSC 3301*	0.1	mg/kg	< 0.1	< 0.1	< 0.1	< 0.1	< 0.1	< 0.1	< 0.1
PAH 16 Total	DETSC 3301	1.6	mg/kg	< 1.6	< 1.6	< 1.6	< 1.6	< 1.6	< 1.6	< 1.6
PCBs										
PCB 28 + PCB 31	DETSC 3401#	0.01	mg/kg	< 0.01	< 0.01	< 0.01	< 0.01	< 0.01	< 0.01	< 0.01
PCB 52	DETSC 3401#	0.01	mg/kg	< 0.01	< 0.01	< 0.01	< 0.01	< 0.01	< 0.01	< 0.01
PCB 101	DETSC 3401#	0.01	mg/kg	< 0.01	< 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	< 0.01
PCB 153	DETSC 3401#	0.01	mg/kg	< 0.01	< 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	< 0.01
PCB 180	DETSC 3401#	0.01	mg/kg	< 0.01	< 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	< 0.01	< 0.01	< 0.01
Phenols										
Phenol - Monohydric	DETSC 2130#	0.3	mg/kg	< 0.3	< 0.3	< 0.3	< 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
Soil Samples

Our Ref 23-25557
Client Ref 23-0881E
Contract Title NDFA SOCIAL HOUSING

			Lab No	2254900	2254901	2254902	2254903	2254904	2254905
			.Sample ID	TP01	TP02	TP03	TP04	TP06	TP06
			Depth	1.00	0.50	0.50	0.50	0.50	1.00
			Other ID						
			Sample Type	ES	ES	ES	ES	ES	ES
			Sampling Date	11/10/2023	11/10/2023	11/10/2023	11/10/2023	11/10/2023	11/10/2023
			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	%	11	9.6	7.4	13	16	16
Metals									
Antimony	DETSC 2301*	1	mg/kg	1.8	1.5	1.9	2.0	2.5	1.8
Arsenic	DETSC 2301#	0.2	mg/kg	9.1	9.7	9.4	9.8	14	10
Barium	DETSC 2301#	1.5	mg/kg	17	28	19	29	49	37
Boron, Water Soluble (2.5:1)	DETSC 2311#	0.2	mg/kg	< 0.2	< 0.2	< 0.2	0.3	< 0.2	< 0.2
Cadmium	DETSC 2301#	0.1	mg/kg	3.6	2.7	2.4	3.6	3.8	3.1
Chromium	DETSC 2301#	0.15	mg/kg	7.1	7.8	6.2	8.8	14	10
Chromium III	DETSC 2301*	0.15	mg/kg	7.1	7.8	6.2	8.8	14	10
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	20	22	21	24	33	24
Lead	DETSC 2301#	0.3	mg/kg	6.0	9.9	11	9.1	21	15
Mercury	DETSC 2325#	0.05	mg/kg	< 0.05	< 0.05	< 0.05	< 0.05	0.06	< 0.05
Molybdenum	DETSC 2301#	0.4	mg/kg	6.4	4.2	6.5	5.9	5.5	4.7
Nickel	DETSC 2301#	1	mg/kg	37	37	40	38	51	40
Selenium	DETSC 2301#	0.5	mg/kg	0.9	0.8	3.1	1.1	1.4	1.0
Zinc	DETSC 2301#	1	mg/kg	81	99	76	100	130	100
Inorganics									
pH	DETSC 2008#		pH	8.1	8.2	7.7	8.0	7.9	8.0
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	%	1.8	1.2	1.6	1.1	1.0	1.1
Sulphide	DETSC 2024*	10	mg/kg	87	43	110	55	43	32
Sulphur (free)	DETSC 3049#	0.75	mg/kg	< 0.75	< 0.75	< 0.75	< 0.75	< 0.75	< 0.75
Sulphate as SO4, Total	DETSC 2321#	0.01	%	0.07	0.04	0.71	0.06	0.06	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 C10-C12: EH_CU_1D_AL	DETSC 3072#	1.5	mg/kg	< 1.5	< 1.5	< 1.5	< 1.5	< 1.5	< 1.5
Aliphatic C12-C16: EH_CU_1D_AL	DETSC 3072#	1.2	mg/kg	< 1.2	< 1.2	< 1.2	< 1.2	< 1.2	< 1.2
Aliphatic C16-C21: EH_CU_1D_AL	DETSC 3072#	1.5	mg/kg	< 1.5	< 1.5	< 1.5	< 1.5	< 1.5	< 1.5
Aliphatic C21-C35: EH_CU_1D_AL	DETSC 3072#	3.4	mg/kg	< 3.4	< 3.4	< 3.4	< 3.4	< 3.4	< 3.4
Aliphatic C35-C44: EH_CU_1D_AL	DETSC 3072*	3.4	mg/kg	< 3.4	< 3.4	< 3.4	< 3.4	< 3.4	< 3.4
Aliphatic C10-C44: EH_CU_1D_AL	DETSC 3072*	10	mg/kg	< 10	< 10	< 10	< 10	< 10	< 10
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 C10-C12: EH_CU_1D_AR	DETSC 3072#	0.9	mg/kg	< 0.9	< 0.9	< 0.9	< 0.9	< 0.9	< 0.9
Aromatic C12-C16: EH_CU_1D_AR	DETSC 3072#	0.5	mg/kg	< 0.5	< 0.5	< 0.5	< 0.5	< 0.5	< 0.5
Aromatic C16-C21: EH_CU_1D_AR	DETSC 3072#	0.6	mg/kg	< 0.6	< 0.6	< 0.6	< 0.6	< 0.6	< 0.6
Aromatic C21-C35: EH_CU_1D_AR	DETSC 3072#	1.4	mg/kg	< 1.4	< 1.4	< 1.4	< 1.4	< 1.4	< 1.4

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Summary of Chemical Analysis
Soil Samples

Our Ref 23-25557
Client Ref 23-0881E
Contract Title NDFA SOCIAL HOUSING

			Lab No	2254900	2254901	2254902	2254903	2254904	2254905
			.Sample ID	TP01	TP02	TP03	TP04	TP06	TP06
			Depth	1.00	0.50	0.50	0.50	0.50	1.00
			Other ID						
			Sample Type	ES	ES	ES	ES	ES	ES
			Sampling Date	11/10/2023	11/10/2023	11/10/2023	11/10/2023	11/10/2023	11/10/2023
			Sampling Time	n/s	n/s	n/s	n/s	n/s	n/s
Test	**Method**	**LOD**	**Units**						
Aromatic C35-C44: EH_CU_1D_AR	DETSC 3072*	1.4	mg/kg	< 1.4	< 1.4	< 1.4	< 1.4	< 1.4	< 1.4
Aromatic C10-C44: EH_CU_1D_AR	DETSC 3072*	10	mg/kg	< 10	< 10	< 10	< 10	< 10	< 10
Ali/Aro C10-C44: EH_CU_1D_Total	DETSC 3072*	10	mg/kg	< 10	< 10	< 10	< 10	< 10	< 10
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	< 10	< 10	< 10	< 10	< 10	< 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	< 0.1	< 0.1	< 0.1	< 0.1	< 0.1	< 0.1
Acenaphthene	DETSC 3301	0.1	mg/kg	< 0.1	< 0.1	< 0.1	< 0.1	< 0.1	< 0.1
Fluorene	DETSC 3301	0.1	mg/kg	< 0.1	< 0.1	< 0.1	< 0.1	< 0.1	< 0.1
Phenanthrene	DETSC 3301	0.1	mg/kg	< 0.1	< 0.1	< 0.1	< 0.1	< 0.1	< 0.1
Anthracene	DETSC 3301	0.1	mg/kg	< 0.1	< 0.1	< 0.1	< 0.1	< 0.1	< 0.1
Fluoranthene	DETSC 3301	0.1	mg/kg	< 0.1	< 0.1	< 0.1	< 0.1	< 0.1	< 0.1
Pyrene	DETSC 3301	0.1	mg/kg	< 0.1	< 0.1	< 0.1	< 0.1	< 0.1	< 0.1
Benzo(a)anthracene	DETSC 3301	0.1	mg/kg	< 0.1	< 0.1	< 0.1	< 0.1	< 0.1	< 0.1
Chrysene	DETSC 3301	0.1	mg/kg	< 0.1	< 0.1	< 0.1	< 0.1	< 0.1	< 0.1
Benzo(b)fluoranthene	DETSC 3301	0.1	mg/kg	< 0.1	< 0.1	< 0.1	< 0.1	< 0.1	< 0.1
Benzo(k)fluoranthene	DETSC 3301	0.1	mg/kg	< 0.1	< 0.1	< 0.1	< 0.1	< 0.1	< 0.1
Benzo(a)pyrene	DETSC 3301	0.1	mg/kg	< 0.1	< 0.1	< 0.1	< 0.1	< 0.1	< 0.1
Indeno(1,2,3-c,d)pyrene	DETSC 3301	0.1	mg/kg	< 0.1	< 0.1	< 0.1	< 0.1	< 0.1	< 0.1
Dibenzo(a,h)anthracene	DETSC 3301	0.1	mg/kg	< 0.1	< 0.1	< 0.1	< 0.1	< 0.1	< 0.1
Benzo(g,h,i)perylene	DETSC 3301	0.1	mg/kg	< 0.1	< 0.1	< 0.1	< 0.1	< 0.1	< 0.1
Coronene	DETSC 3301*	0.1	mg/kg	< 0.1	< 0.1	< 0.1	< 0.1	< 0.1	< 0.1
PAH 16 Total	DETSC 3301	1.6	mg/kg	< 1.6	< 1.6	< 1.6	< 1.6	< 1.6	< 1.6
PCBs									
PCB 28 + PCB 31	DETSC 3401#	0.01	mg/kg	< 0.01	< 0.01	< 0.01	< 0.01	< 0.01	< 0.01
PCB 52	DETSC 3401#	0.01	mg/kg	< 0.01	< 0.01	< 0.01	< 0.01	< 0.01	< 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	< 0.01	< 0.01
Phenols									
Phenol - Monohydric	DETSC 2130#	0.3	mg/kg	< 0.3	< 0.3	< 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 23-25557
Client Ref 23-0881E
Contract Title NDFA SOCIAL HOUSING

			Lab No	2254906	2254907	2254908	2254909	2254910	2254911	2254912	2254913	2254914	2254915	2254916
			.Sample ID	BH03A	BH04	TP05	TP05	BH01	BH03	TP01	TP01	TP02	TP03	TP04
			Depth	0.50	0.50	0.50	1.00	0.50	0.50	0.50	1.00	0.50	0.50	0.50
			Other ID											
			Sample Type	ES	ES	ES	ES	ES	ES	ES	ES	ES	ES	ES
			Sampling Date	10/10/2023	10/10/2023	10/10/2023	10/10/2023	10/10/2023	10/10/2023	11/10/2023	11/10/2023	11/10/2023	11/10/2023	11/10/2023
			Sampling Time	n/s	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	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	< 0.02
Ammoniacal Nitrogen as NH4	DETSC 2207	0.0193	mg/l	< 0.02	< 0.02	< 0.02	0.03	0.02	< 0.02	< 0.02	0.02	< 0.02	< 0.02	< 0.02

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

Summary of Chemical Analysis
Leachate Samples

Our Ref 23-25557
Client Ref 23-0881E
Contract Title NDFA SOCIAL HOUSING

			Lab No	2254917	2254918
			.Sample ID	TP06	TP06
			Depth	0.50	1.00
			Other ID		
			Sample Type	ES	ES
			Sampling Date	11/10/2023	11/10/2023
			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	< 0.02	< 0.02
Ammoniacal Nitrogen as NH4	DETSC 2207	0.0193	mg/l	0.02	< 0.02

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

WASTE ACCEPTANCE CRITERIA TESTING ANALYTICAL REPORT

Our Ref 23-25557
Client Ref 23-0881E
Contract Title NDFA SOCIAL HOUSING
Sample Id BH03A 0.50

Sample Numbers 2254893 2254906
Date Analysed 07/11/2023

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	%	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	< 10	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	3.0	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	0.22	< 0.01	0.5	2	25
DETSC 2306 Barium as Ba	2.1	< 0.1	20	100	300
DETSC 2306 Cadmium as Cd	< 0.030	< 0.02	0.04	1	5
DETSC 2306 Chromium as Cr	0.52	< 0.1	0.5	10	70
DETSC 2306 Copper as Cu	0.71	< 0.02	2	50	100
DETSC 2306 Mercury as Hg	< 0.010	< 0.002	0.01	0.2	2
DETSC 2306 Molybdenum as Mo	1.2	< 0.1	0.5	10	30
DETSC 2306 Nickel as Ni	0.77	< 0.1	0.4	10	40
DETSC 2306 Lead as Pb	0.19	< 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	0.44	< 0.03	0.1	0.5	7
DETSC 2306 Zinc as Zn	2.8	0.028	4	50	200
DETSC 2055 Chloride as Cl	1400	< 100	800	15,000	25,000
DETSC 2055* Fluoride as F	< 100	< 0.1	10	150	500
DETSC 2055 Sulphate as SO4	6000	< 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	< 2000	< 50	500	800	1000

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

Additional Information

DETSC 2008 pH	8.1
DETSC 2009 Conductivity uS/cm	60.0
* Temperature*	18.0

Mass of Sample Kg*	0.110
Mass of dry Sample Kg*	0.100

Stage 1

Volume of Leachant L2*	0.995
Volume of Eluate VE1*	0.94

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 23-25557
Client Ref 23-0881E
Contract Title NDFA SOCIAL HOUSING
Sample Id BH04 0.50

Sample Numbers 2254894 2254907
Date Analysed 07/11/2023

Test Results On Waste

Determinand and Method Reference	Units	Result	WAC Limit Values: Inert Waste	SNRHW	Hazardous Waste
DETSC 2084# Total Organic Carbon	%	1.3	3	5	6
DETSC 2003# Loss On Ignition	%	4.8	n/a	n/a	10
DETSC 3321# BTEX	mg/kg	< 0.04	6	n/a	n/a
DETSC 3401# PCBs (7 congeners)	mg/kg	< 0.01	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	7.1	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	< 0.16	< 0.01	0.5	2	25
DETSC 2306 Barium as Ba	3.3	< 0.1	20	100	300
DETSC 2306 Cadmium as Cd	0.053	< 0.02	0.04	1	5
DETSC 2306 Chromium as Cr	< 0.25	< 0.1	0.5	10	70
DETSC 2306 Copper as Cu	0.5	< 0.02	2	50	100
DETSC 2306 Mercury as Hg	< 0.010	< 0.002	0.01	0.2	2
DETSC 2306 Molybdenum as Mo	1.7	< 0.1	0.5	10	30
DETSC 2306 Nickel as Ni	0.77	< 0.1	0.4	10	40
DETSC 2306 Lead as Pb	< 0.090	< 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	1.9	< 0.03	0.1	0.5	7
DETSC 2306 Zinc as Zn	< 1.3	< 0.01	4	50	200
DETSC 2055 Chloride as Cl	660	< 100	800	15,000	25,000
DETSC 2055* Fluoride as F	170	1.7	10	150	500
DETSC 2055 Sulphate as SO4	69000	690	1000	20,000	50,000
DETSC 2009* Total Dissolved Solids	160000	1600	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	7.4
DETSC 2009 Conductivity uS/cm	232.0
* Temperature*	18.0

Mass of Sample Kg*	0.130
Mass of dry Sample Kg*	0.103

Stage 1

Volume of Leachant L2*	1
Volume of Eluate VE1*	0.95

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.*

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WASTE ACCEPTANCE CRITERIA TESTING ANALYTICAL REPORT

Our Ref 23-25557
Client Ref 23-0881E
Contract Title NDFA SOCIAL HOUSING
Sample Id TP05 0.50

Sample Numbers 2254895 2254908
Date Analysed 07/11/2023

Test Results On Waste

Determinand and Method Reference	Units	Result	WAC Limit Values: Inert Waste	SNRHW	Hazardous Waste
DETSC 2084# Total Organic Carbon	%	1.3	3	5	6
DETSC 2003# Loss On Ignition	%	2.4	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	8.0	n/a	>6	n/a
DETSC 2073* Acid Neutralisation Capacity (pH4)	mol/kg	3.0	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	0.19	< 0.01	0.5	2	25
DETSC 2306 Barium as Ba	2.1	< 0.1	20	100	300
DETSC 2306 Cadmium as Cd	< 0.030	< 0.02	0.04	1	5
DETSC 2306 Chromium as Cr	< 0.25	< 0.1	0.5	10	70
DETSC 2306 Copper as Cu	0.77	< 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	0.57	< 0.1	0.4	10	40
DETSC 2306 Lead as Pb	< 0.090	< 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	< 0.25	< 0.03	0.1	0.5	7
DETSC 2306 Zinc as Zn	7.5	0.075	4	50	200
DETSC 2055 Chloride as Cl	910	< 100	800	15,000	25,000
DETSC 2055* Fluoride as F	< 100	< 0.1	10	150	500
DETSC 2055 Sulphate as SO4	2700	< 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	8.5
DETSC 2009 Conductivity uS/cm	51.2
* Temperature*	18.0

Mass of Sample Kg*	0.110
Mass of dry Sample Kg*	0.097

Stage 1

Volume of Leachant L2*	0.953
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.*

WASTE ACCEPTANCE CRITERIA TESTING ANALYTICAL REPORT

Our Ref 23-25557
Client Ref 23-0881E
Contract Title NDFA SOCIAL HOUSING
Sample Id TP05 1.00

Sample Numbers 2254896 2254909
Date Analysed 07/11/2023

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	%	2.6	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	< 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	2.0	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	< 0.16	< 0.01	0.5	2	25
DETSC 2306 Barium as Ba	2.3	< 0.1	20	100	300
DETSC 2306 Cadmium as Cd	< 0.030	< 0.02	0.04	1	5
DETSC 2306 Chromium as Cr	< 0.25	< 0.1	0.5	10	70
DETSC 2306 Copper as Cu	0.62	< 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	< 0.090	< 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	< 0.25	< 0.03	0.1	0.5	7
DETSC 2306 Zinc as Zn	< 1.3	< 0.01	4	50	200
DETSC 2055 Chloride as Cl	1400	< 100	800	15,000	25,000
DETSC 2055* Fluoride as F	110	1.1	10	150	500
DETSC 2055 Sulphate as SO4	3500	< 100	1000	20,000	50,000
DETSC 2009* Total Dissolved Solids	38000	380	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	8.6
DETSC 2009 Conductivity uS/cm	54.8
* Temperature*	18.0

Mass of Sample Kg*	0.110
Mass of dry Sample Kg*	0.100

Stage 1

Volume of Leachant L2*	0.994
Volume of Eluate VE1*	0.94

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 23-25557
Client Ref 23-0881E
Contract Title NDFA SOCIAL HOUSING
Sample Id BH01 0.50

Sample Numbers 2254897 2254910
Date Analysed 07/11/2023

Test Results On Waste

Determinand and Method Reference	Units	Result	WAC Limit Values: Inert Waste	SNRHW	Hazardous Waste
DETSC 2084# Total Organic Carbon	%	2.3	3	5	6
DETSC 2003# Loss On Ignition	%	2.0	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	< 10	500	n/a	n/a
DETSC 3301 PAHs	mg/kg	< 1.6	100	n/a	n/a
DETSC 2008# pH	pH Units	7.8	n/a	>6	n/a
DETSC 2073* Acid Neutralisation Capacity (pH4)	mol/kg	4.0	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	0.22	< 0.01	0.5	2	25
DETSC 2306 Barium as Ba	15	0.15	20	100	300
DETSC 2306 Cadmium as Cd	< 0.030	< 0.02	0.04	1	5
DETSC 2306 Chromium as Cr	5.6	< 0.1	0.5	10	70
DETSC 2306 Copper as Cu	0.67	< 0.02	2	50	100
DETSC 2306 Mercury as Hg	< 0.010	< 0.002	0.01	0.2	2
DETSC 2306 Molybdenum as Mo	2.1	< 0.1	0.5	10	30
DETSC 2306 Nickel as Ni	< 0.50	< 0.1	0.4	10	40
DETSC 2306 Lead as Pb	< 0.090	< 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	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	690	< 100	800	15,000	25,000
DETSC 2055* Fluoride as F	< 100	< 0.1	10	150	500
DETSC 2055 Sulphate as SO4	110000	1100	1000	20,000	50,000
DETSC 2009* Total Dissolved Solids	230000	2300	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	7.6
DETSC 2009 Conductivity uS/cm	322.0
* Temperature*	18.0

Mass of Sample Kg*	0.110
Mass of dry Sample Kg*	0.099

Stage 1

Volume of Leachant L2*	0.976
Volume of Eluate VE1*	0.92

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WASTE ACCEPTANCE CRITERIA TESTING ANALYTICAL REPORT

Our Ref 23-25557
Client Ref 23-0881E
Contract Title NDFA SOCIAL HOUSING
Sample Id BH03 0.50

Sample Numbers 2254898 2254911
Date Analysed 07/11/2023

Test Results On Waste

Determinand and Method Reference	Units	Result	WAC Limit Values: Inert Waste	SNRHW	Hazardous Waste
DETSC 2084# Total Organic Carbon	%	1.7	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	< 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	3.6	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	0.22	< 0.01	0.5	2	25
DETSC 2306 Barium as Ba	2.6	< 0.1	20	100	300
DETSC 2306 Cadmium as Cd	< 0.030	< 0.02	0.04	1	5
DETSC 2306 Chromium as Cr	0.34	< 0.1	0.5	10	70
DETSC 2306 Copper as Cu	0.67	< 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	0.35	< 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	< 0.25	< 0.03	0.1	0.5	7
DETSC 2306 Zinc as Zn	3	0.03	4	50	200
DETSC 2055 Chloride as Cl	700	< 100	800	15,000	25,000
DETSC 2055* Fluoride as F	< 100	< 0.1	10	150	500
DETSC 2055 Sulphate as SO4	3100	< 100	1000	20,000	50,000
DETSC 2009* Total Dissolved Solids	33000	330	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	8.8
DETSC 2009 Conductivity uS/cm	46.6
* Temperature*	18.0

Mass of Sample Kg*	0.110
Mass of dry Sample Kg*	0.099

Stage 1

Volume of Leachant L2*	0.978
Volume of Eluate VE1*	0.92

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WASTE ACCEPTANCE CRITERIA TESTING ANALYTICAL REPORT

Our Ref 23-25557
Client Ref 23-0881E
Contract Title NDFA SOCIAL HOUSING
Sample Id TP01 0.50

Sample Numbers 2254899 2254912
Date Analysed 07/11/2023

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	%	1.3	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	< 10	500	n/a	n/a
DETSC 3301 PAHs	mg/kg	< 1.6	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	3.6	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	< 0.16	< 0.01	0.5	2	25
DETSC 2306 Barium as Ba	12	0.12	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	0.63	< 0.02	2	50	100
DETSC 2306 Mercury as Hg	< 0.010	< 0.002	0.01	0.2	2
DETSC 2306 Molybdenum as Mo	2.3	< 0.1	0.5	10	30
DETSC 2306 Nickel as Ni	< 0.50	< 0.1	0.4	10	40
DETSC 2306 Lead as Pb	< 0.090	< 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	0.76	< 0.03	0.1	0.5	7
DETSC 2306 Zinc as Zn	< 1.3	< 0.01	4	50	200
DETSC 2055 Chloride as Cl	610	< 100	800	15,000	25,000
DETSC 2055* Fluoride as F	140	1.4	10	150	500
DETSC 2055 Sulphate as SO4	74000	740	1000	20,000	50,000
DETSC 2009* Total Dissolved Solids	240000	2400	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	7.6
DETSC 2009 Conductivity uS/cm	348.0
* Temperature*	18.0

Mass of Sample Kg*	0.100
Mass of dry Sample Kg*	0.094

Stage 1

Volume of Leachant L2*	0.938
Volume of Eluate VE1*	0.88

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 23-25557
Client Ref 23-0881E
Contract Title NDFA SOCIAL HOUSING
Sample Id TP01 1.00

Sample Numbers 2254900 2254913
Date Analysed 07/11/2023

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	%	2.0	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	< 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	4.2	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	0.32	< 0.01	0.5	2	25
DETSC 2306 Barium as Ba	6.3	< 0.1	20	100	300
DETSC 2306 Cadmium as Cd	< 0.030	< 0.02	0.04	1	5
DETSC 2306 Chromium as Cr	< 0.25	< 0.1	0.5	10	70
DETSC 2306 Copper as Cu	0.45	< 0.02	2	50	100
DETSC 2306 Mercury as Hg	< 0.010	< 0.002	0.01	0.2	2
DETSC 2306 Molybdenum as Mo	1.2	< 0.1	0.5	10	30
DETSC 2306 Nickel as Ni	< 0.50	< 0.1	0.4	10	40
DETSC 2306 Lead as Pb	< 0.090	< 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	0.66	< 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	140	1.4	10	150	500
DETSC 2055 Sulphate as SO4	23000	230	1000	20,000	50,000
DETSC 2009* Total Dissolved Solids	78000	780	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	8.2
DETSC 2009 Conductivity uS/cm	111.0
* Temperature*	18.0

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*	0.91

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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 23-25557
Client Ref 23-0881E
Contract Title NDFA SOCIAL HOUSING
Sample Id TP02 0.50

Sample Numbers 2254901 2254914
Date Analysed 07/11/2023

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	%	1.8	n/a	n/a	10
DETSC 3321# BTEX	mg/kg	< 0.04	6	n/a	n/a
DETSC 3401# PCBs (7 congeners)	mg/kg	< 0.01	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	8.2	n/a	>6	n/a
DETSC 2073* Acid Neutralisation Capacity (pH4)	mol/kg	3.2	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	< 0.16	< 0.01	0.5	2	25
DETSC 2306 Barium as Ba	2.6	< 0.1	20	100	300
DETSC 2306 Cadmium as Cd	< 0.030	< 0.02	0.04	1	5
DETSC 2306 Chromium as Cr	< 0.25	< 0.1	0.5	10	70
DETSC 2306 Copper as Cu	0.66	< 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	< 0.090	< 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	0.29	< 0.03	0.1	0.5	7
DETSC 2306 Zinc as Zn	< 1.3	< 0.01	4	50	200
DETSC 2055 Chloride as Cl	830	< 100	800	15,000	25,000
DETSC 2055* Fluoride as F	150	1.5	10	150	500
DETSC 2055 Sulphate as SO4	7800	< 100	1000	20,000	50,000
DETSC 2009* Total Dissolved Solids	32000	320	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	8.3
DETSC 2009 Conductivity uS/cm	46.2
* Temperature*	18.0

Mass of Sample Kg*	0.110
Mass of dry Sample Kg*	0.099

Stage 1

Volume of Leachant L2*	0.984
Volume of Eluate VE1*	0.93

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 23-25557
Client Ref 23-0881E
Contract Title NDFA SOCIAL HOUSING
Sample Id TP03 0.50

Sample Numbers 2254902 2254915
Date Analysed 07/11/2023

Test Results On Waste

Determinand and Method Reference	Units	Result	WAC Limit Values: Inert Waste	SNRHW	Hazardous Waste
DETSC 2084# Total Organic Carbon	%	1.6	3	5	6
DETSC 2003# Loss On Ignition	%	3.1	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	7.7	n/a	>6	n/a
DETSC 2073* Acid Neutralisation Capacity (pH4)	mol/kg	2.0	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	0.43	< 0.01	0.5	2	25
DETSC 2306 Barium as Ba	24	0.24	20	100	300
DETSC 2306 Cadmium as Cd	0.098	< 0.02	0.04	1	5
DETSC 2306 Chromium as Cr	0.69	< 0.1	0.5	10	70
DETSC 2306 Copper as Cu	1.2	< 0.02	2	50	100
DETSC 2306 Mercury as Hg	0.018	< 0.002	0.01	0.2	2
DETSC 2306 Molybdenum as Mo	6.2	< 0.1	0.5	10	30
DETSC 2306 Nickel as Ni	0.81	< 0.1	0.4	10	40
DETSC 2306 Lead as Pb	0.8	< 0.05	0.5	10	50
DETSC 2306 Antimony as Sb	0.25	< 0.05	0.06	0.7	5
DETSC 2306 Selenium as Se	2.4	< 0.03	0.1	0.5	7
DETSC 2306 Zinc as Zn	1.5	0.015	4	50	200
DETSC 2055 Chloride as Cl	730	< 100	800	15,000	25,000
DETSC 2055* Fluoride as F	< 100	< 0.1	10	150	500
DETSC 2055 Sulphate as SO4	230000	2300	1000	20,000	50,000
DETSC 2009* Total Dissolved Solids	340000	3400	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	7.3
DETSC 2009 Conductivity uS/cm	481.0
* Temperature*	18.0

Mass of Sample Kg*	0.100
Mass of dry Sample Kg*	0.093

Stage 1

Volume of Leachant L2*	0.918
Volume of Eluate VE1*	0.86

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 23-25557
Client Ref 23-0881E
Contract Title NDFA SOCIAL HOUSING
Sample Id TP04 0.50

Sample Numbers 2254903 2254916
Date Analysed 07/11/2023

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	%	2.7	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	< 10	500	n/a	n/a
DETSC 3301 PAHs	mg/kg	< 1.6	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	2.0	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	0.17	< 0.01	0.5	2	25
DETSC 2306 Barium as Ba	4.2	< 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	0.6	< 0.02	2	50	100
DETSC 2306 Mercury as Hg	< 0.010	< 0.002	0.01	0.2	2
DETSC 2306 Molybdenum as Mo	2.1	< 0.1	0.5	10	30
DETSC 2306 Nickel as Ni	< 0.50	< 0.1	0.4	10	40
DETSC 2306 Lead as Pb	0.1	< 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	0.6	< 0.03	0.1	0.5	7
DETSC 2306 Zinc as Zn	< 1.3	< 0.01	4	50	200
DETSC 2055 Chloride as Cl	780	< 100	800	15,000	25,000
DETSC 2055* Fluoride as F	< 100	< 0.1	10	150	500
DETSC 2055 Sulphate as SO4	8300	< 100	1000	20,000	50,000
DETSC 2009* Total Dissolved Solids	68000	680	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	7.8
DETSC 2009 Conductivity uS/cm	97.6
* Temperature*	18.0

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

Stage 1

Volume of Leachant L2*	0.941
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.*

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WASTE ACCEPTANCE CRITERIA TESTING ANALYTICAL REPORT

Our Ref 23-25557
Client Ref 23-0881E
Contract Title NDFA SOCIAL HOUSING
Sample Id TP06 0.50

Sample Numbers 2254904 2254917
Date Analysed 07/11/2023

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	%	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	< 10	500	n/a	n/a
DETSC 3301 PAHs	mg/kg	< 1.6	100	n/a	n/a
DETSC 2008# pH	pH Units	7.9	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	0.21	< 0.01	0.5	2	25
DETSC 2306 Barium as Ba	2.7	< 0.1	20	100	300
DETSC 2306 Cadmium as Cd	< 0.030	< 0.02	0.04	1	5
DETSC 2306 Chromium as Cr	< 0.25	< 0.1	0.5	10	70
DETSC 2306 Copper as Cu	0.63	< 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	< 0.090	< 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	0.3	< 0.03	0.1	0.5	7
DETSC 2306 Zinc as Zn	< 1.3	< 0.01	4	50	200
DETSC 2055 Chloride as Cl	1000	< 100	800	15,000	25,000
DETSC 2055* Fluoride as F	< 100	< 0.1	10	150	500
DETSC 2055 Sulphate as SO4	4200	< 100	1000	20,000	50,000
DETSC 2009* Total Dissolved Solids	40000	400	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	7.6
DETSC 2009 Conductivity uS/cm	56.8
* Temperature*	18.0

Mass of Sample Kg*	0.120
Mass of dry Sample Kg*	0.100

Stage 1

Volume of Leachant L2*	0.984
Volume of Eluate VE1*	0.93

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WASTE ACCEPTANCE CRITERIA TESTING ANALYTICAL REPORT

Our Ref 23-25557
Client Ref 23-0881E
Contract Title NDFA SOCIAL HOUSING
Sample Id TP06 1.00

Sample Numbers 2254905 2254918
Date Analysed 07/11/2023

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	%	3.4	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	8.0	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	0.27	< 0.01	0.5	2	25
DETSC 2306 Barium as Ba	3.4	< 0.1	20	100	300
DETSC 2306 Cadmium as Cd	< 0.030	< 0.02	0.04	1	5
DETSC 2306 Chromium as Cr	< 0.25	< 0.1	0.5	10	70
DETSC 2306 Copper as Cu	0.78	< 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	0.58	< 0.1	0.4	10	40
DETSC 2306 Lead as Pb	0.13	< 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	< 0.25	< 0.03	0.1	0.5	7
DETSC 2306 Zinc as Zn	1.4	0.014	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	2900	< 100	1000	20,000	50,000
DETSC 2009* Total Dissolved Solids	40000	400	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	7.5
DETSC 2009 Conductivity uS/cm	57.7
* Temperature*	18.0

Mass of Sample Kg*	0.120
Mass of dry Sample Kg*	0.101

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.*

Summary of Asbestos Analysis
Soil Samples

Our Ref 23-25557
Client Ref 23-0881E
Contract Title NDFA SOCIAL HOUSING

Lab No	Sample ID	Material Type	Result	Comment*	Analyst
2254893	BH03A 0.50	SOIL	NAD	none	Lee Kerridge
2254894	BH04 0.50	SOIL	NAD	none	Lee Kerridge
2254895	TP05 0.50	SOIL	NAD	none	Lee Kerridge
2254896	TP05 1.00	SOIL	NAD	none	Lee Kerridge
2254897	BH01 0.50	SOIL	NAD	none	Lee Kerridge
2254898	BH03 0.50	SOIL	NAD	none	Lee Kerridge
2254899	TP01 0.50	SOIL	NAD	none	Lee Kerridge
2254900	TP01 1.00	SOIL	NAD	none	Lee Kerridge
2254901	TP02 0.50	SOIL	NAD	none	Lee Kerridge
2254902	TP03 0.50	SOIL	NAD	none	Lee Kerridge
2254903	TP04 0.50	SOIL	NAD	none	Lee Kerridge
2254904	TP06 0.50	SOIL	NAD	none	Lee Kerridge
2254905	TP06 1.00	SOIL	NAD	none	Lee Kerridge

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 23-25557
Client Ref 23-0881E
Contract NDFA SOCIAL HOUSING

Containers Received & Deviating Samples

Lab No	Sample ID	Date Sampled	Containers Received	Holding time exceeded for tests	Inappropriate container for tests
2254893	BH03A 0.50 SOIL	10/10/23	GJ 250ml x2, GJ 60ml x2, PT 1L x2	Aliphatics/Aromatics (14 days), BTEX / C5-C10 (14 days), Sulphur (free) (7 days), Naphthalene (14 days), PAH FID (14 days), pH + Conductivity (7 days), Cyanide/Mono pHoh (14 days), EPH/TPH (14 days)	
2254894	BH04 0.50 SOIL	10/10/23	GJ 250ml x2, GJ 60ml x2, PT 1L x2	Aliphatics/Aromatics (14 days), BTEX / C5-C10 (14 days), Sulphur (free) (7 days), Naphthalene (14 days), PAH FID (14 days), pH + Conductivity (7 days), Cyanide/Mono pHoh (14 days), EPH/TPH (14 days)	
2254895	TP05 0.50 SOIL	10/10/23	GJ 250ml, GJ 60ml, PT 1L	Aliphatics/Aromatics (14 days), BTEX / C5-C10 (14 days), Sulphur (free) (7 days), Naphthalene (14 days), PAH FID (14 days), pH + Conductivity (7 days), Cyanide/Mono pHoh (14 days), EPH/TPH (14 days)	
2254896	TP05 1.00 SOIL	10/10/23	GJ 250ml, GJ 60ml, PT 1L	Aliphatics/Aromatics (14 days), BTEX / C5-C10 (14 days), Sulphur (free) (7 days), Naphthalene (14 days), PAH FID (14 days), pH + Conductivity (7 days), Cyanide/Mono pHoh (14 days), EPH/TPH (14 days)	
2254897	BH01 0.50 SOIL	10/10/23	GJ 250ml, GJ 60ml, PT 1L	Aliphatics/Aromatics (14 days), BTEX / C5-C10 (14 days), Sulphur (free) (7 days), Naphthalene (14 days), PAH FID (14 days), pH + Conductivity (7 days), Cyanide/Mono pHoh (14 days), EPH/TPH (14 days)	
2254898	BH03 0.50 SOIL	10/10/23	GJ 250ml x4, GJ 60ml x4, PT 1L x4	Aliphatics/Aromatics (14 days), BTEX / C5-C10 (14 days), Sulphur (free) (7 days), Naphthalene (14 days), PAH FID (14 days), pH + Conductivity (7 days), Cyanide/Mono pHoh (14 days), EPH/TPH (14 days)	
2254899	TP01 0.50 SOIL	11/10/23	GJ 250ml, GJ 60ml, PT 1L	Aliphatics/Aromatics (14 days), BTEX / C5-C10 (14 days), Sulphur (free) (7 days), Naphthalene (14 days), PAH FID (14 days), pH + Conductivity (7 days), Cyanide/Mono pHoh (14 days), EPH/TPH (14 days)	
2254900	TP01 1.00 SOIL	11/10/23	GJ 250ml, GJ 60ml, PT 1L	Aliphatics/Aromatics (14 days), BTEX / C5-C10 (14 days), Sulphur (free) (7 days), Naphthalene (14 days), PAH FID (14 days), pH + Conductivity (7 days), Cyanide/Mono pHoh (14 days), EPH/TPH (14 days)	
2254901	TP02 0.50 SOIL	11/10/23	GJ 250ml, GJ 60ml, PT 1L	Aliphatics/Aromatics (14 days), BTEX / C5-C10 (14 days), Sulphur (free) (7 days), Naphthalene (14 days), PAH FID (14 days), pH + Conductivity (7 days), Cyanide/Mono pHoh (14 days), EPH/TPH (14 days)	
2254902	TP03 0.50 SOIL	11/10/23	GJ 250ml, GJ 60ml, PT 1L	Aliphatics/Aromatics (14 days), BTEX / C5-C10 (14 days), Sulphur (free) (7 days), Naphthalene (14 days), PAH FID (14 days), pH + Conductivity (7 days), Cyanide/Mono pHoh (14 days), EPH/TPH (14 days)	

Information in Support of the Analytical Results

Our Ref 23-25557
Client Ref 23-0881E
Contract NDFA SOCIAL HOUSING

Lab No	Sample ID	Date Sampled	Containers Received	Holding time exceeded for tests	Inappropriate container for tests
2254903	TP04 0.50 SOIL	11/10/23	GJ 250ml, GJ 60ml, PT 1L	Aliphatics/Aromatics (14 days), BTEX / C5-C10 (14 days), Sulphur (free) (7 days), Naphthalene (14 days), PAH FID (14 days), pH + Conductivity (7 days), Cyanide/Mono pHoh (14 days), EPH/TPH (14 days)	
2254904	TP06 0.50 SOIL	11/10/23	GJ 250ml, GJ 60ml, PT 1L	Aliphatics/Aromatics (14 days), BTEX / C5-C10 (14 days), Sulphur (free) (7 days), Naphthalene (14 days), PAH FID (14 days), pH + Conductivity (7 days), Cyanide/Mono pHoh (14 days), EPH/TPH (14 days)	
2254905	TP06 1.00 SOIL	11/10/23	GJ 250ml, GJ 60ml, PT 1L	Aliphatics/Aromatics (14 days), BTEX / C5-C10 (14 days), Sulphur (free) (7 days), Naphthalene (14 days), PAH FID (14 days), pH + Conductivity (7 days), Cyanide/Mono pHoh (14 days), EPH/TPH (14 days)	
2254906	BH03A 0.50 LEACHATE	10/10/23	GJ 250ml x2, GJ 60ml x2, PT 1L x2		
2254907	BH04 0.50 LEACHATE	10/10/23	GJ 250ml x2, GJ 60ml x2, PT 1L x2		
2254908	TP05 0.50 LEACHATE	10/10/23	GJ 250ml, GJ 60ml, PT 1L		
2254909	TP05 1.00 LEACHATE	10/10/23	GJ 250ml, GJ 60ml, PT 1L		
2254910	BH01 0.50 LEACHATE	10/10/23	GJ 250ml, GJ 60ml, PT 1L		
2254911	BH03 0.50 LEACHATE	10/10/23	GJ 250ml x4, GJ 60ml x4, PT 1L x4		
2254912	TP01 0.50 LEACHATE	11/10/23	GJ 250ml, GJ 60ml, PT 1L		
2254913	TP01 1.00 LEACHATE	11/10/23	GJ 250ml, GJ 60ml, PT 1L		
2254914	TP02 0.50 LEACHATE	11/10/23	GJ 250ml, GJ 60ml, PT 1L		
2254915	TP03 0.50 LEACHATE	11/10/23	GJ 250ml, GJ 60ml, PT 1L		
2254916	TP04 0.50 LEACHATE	11/10/23	GJ 250ml, GJ 60ml, PT 1L		
2254917	TP06 0.50 LEACHATE	11/10/23	GJ 250ml, GJ 60ml, PT 1L		
2254918	TP06 1.00 LEACHATE	11/10/23	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 C10-C12	EH_CU_1D_AL
Aliphatic C12-C16	EH_CU_1D_AL
Aliphatic C16-C21	EH_CU_1D_AL
Aliphatic C21-C35	EH_CU_1D_AL
Aliphatic C35-C44	EH_CU_1D_AL
Aliphatic C10-C44	EH_CU_1D_AL
Aromatic C5-C7	HS_1D_AR
Aromatic C7-C8	HS_1D_AR
Aromatic C8-C10	HS_1D_AR
Aromatic C10-C12	EH_CU_1D_AR
Aromatic C12-C16	EH_CU_1D_AR
Aromatic C16-C21	EH_CU_1D_AR
Aromatic C21-C35	EH_CU_1D_AR
Aromatic C35-C44	EH_CU_1D_AR
Aromatic C10-C44	EH_CU_1D_AR
Ali/Aro C10-C44	EH_CU_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	23-28023	*Issued:*	18-Dec-23

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

Our Reference	23-28023
Client Reference	23-0881E
Order No	(not supplied)
Contract Title	NDFA - Oldtown Mill
Description	3 Soil samples, 3 Leachate prepared by DETS samples.
Date Received	29-Nov-23
Date Started	29-Nov-23
Date Completed	18-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 23-28023
Client Ref 23-0881E
Contract Title NDFA - Oldtown Mill

			Lab No	2269017	2269018	2269019
			.Sample ID	BH08	BH11	BH06
			Depth	0.50	1.00	0.50
			Other ID	1	2	1
			Sample Type	ES	ES	ES
			Sampling Date	19/10/2023	19/10/2023	17/10/2023
			Sampling Time	n/s	n/s	n/s
Test	**Method**	**LOD**	**Units**			
Preparation						
Moisture Content	DETSC 1004	0.1	%	25	29	20
Metals						
Antimony	DETSC 2301*	1	mg/kg	1.7	2.0	1.9
Arsenic	DETSC 2301#	0.2	mg/kg	14	13	13
Barium	DETSC 2301#	1.5	mg/kg	47	47	43
Boron, Water Soluble (2.5:1)	DETSC 2311#	0.2	mg/kg	< 0.2	< 0.2	< 0.2
Cadmium	DETSC 2301#	0.1	mg/kg	3.6	3.4	2.7
Chromium	DETSC 2301#	0.15	mg/kg	12	16	17
Chromium III	DETSC 2301*	0.15	mg/kg	12	16	17
Chromium, Hexavalent	DETSC 2204*	1	mg/kg	< 1.0	< 1.0	< 1.0
Copper	DETSC 2301#	0.2	mg/kg	26	30	28
Lead	DETSC 2301#	0.3	mg/kg	22	24	21
Mercury	DETSC 2325#	0.05	mg/kg	0.08	0.08	0.07
Molybdenum	DETSC 2301#	0.4	mg/kg	5.1	4.7	3.9
Nickel	DETSC 2301#	1	mg/kg	40	42	46
Selenium	DETSC 2301#	0.5	mg/kg	1.3	1.5	1.1
Zinc	DETSC 2301#	1	mg/kg	100	110	110
Inorganics						
pH	DETSC 2008#		pH	7.9	7.5	7.8
Cyanide, Total	DETSC 2130#	0.1	mg/kg	0.2	0.2	0.1
Total Organic Carbon	DETSC 2084#	0.5	%	1.6	2.1	0.6
Sulphide	DETSC 2024*	10	mg/kg	24	28	24
Sulphur (free)	DETSC 3049#	0.75	mg/kg	< 0.75	< 0.75	< 0.75
Sulphate as SO4, Total	DETSC 2321#	0.01	%	0.07	0.07	0.05
Petroleum Hydrocarbons						
Aliphatic C5-C6: HS_1D_AL	DETSC 3321*	0.01	mg/kg	< 0.01	< 0.01	< 0.01
Aliphatic C6-C8: HS_1D_AL	DETSC 3321*	0.01	mg/kg	< 0.01	< 0.01	< 0.01
Aliphatic C8-C10: HS_1D_AL	DETSC 3321*	0.01	mg/kg	< 0.01	< 0.01	< 0.01
Aliphatic >EC10-EC12: EH_2D_AL	DETSC 3521#	1.5	mg/kg	< 1.50	< 1.50	< 1.50
Aliphatic >EC12-EC16: EH_2D_AL	DETSC 3521#	1.2	mg/kg	< 1.20	< 1.20	< 1.20
Aliphatic >EC16-EC21: EH_2D_AL	DETSC 3521#	1.5	mg/kg	< 1.50	< 1.50	< 1.50
Aliphatic >EC21-EC35: EH_2D_AL	DETSC 3521#	3.4	mg/kg	< 3.40	< 3.40	< 3.40
Aliphatic >EC35-EC40: EH_2D_AL	DETSC 3521*	3.4	mg/kg	< 3.40	< 3.40	< 3.40
Aliphatic >EC40-EC44: EH_2D_AL	DETSC 3521*	3.4	mg/kg	< 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
Aromatic C5-C7: HS_1D_AR	DETSC 3321*	0.01	mg/kg	< 0.01	< 0.01	< 0.01
Aromatic C7-C8: HS_1D_AR	DETSC 3321*	0.01	mg/kg	< 0.01	< 0.01	< 0.01
Aromatic C8-C10: HS_1D_AR	DETSC 3321*	0.01	mg/kg	< 0.01	< 0.01	< 0.01
Aromatic >EC10-EC12: EH_2D_AR	DETSC 3521#	0.9	mg/kg	< 0.90	< 0.90	< 0.90
Aromatic >EC12-EC16: EH_2D_AR	DETSC 3521#	0.5	mg/kg	< 0.50	< 0.50	< 0.50
Aromatic >EC16-EC21: EH_2D_AR	DETSC 3521#	0.6	mg/kg	< 0.60	< 0.60	< 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 23-28023
Client Ref 23-0881E
Contract Title NDFA - Oldtown Mill

			Lab No	2269017	2269018	2269019
			.Sample ID	BH08	BH11	BH06
			Depth	0.50	1.00	0.50
			Other ID	1	2	1
			Sample Type	ES	ES	ES
			Sampling Date	19/10/2023	19/10/2023	17/10/2023
			Sampling Time	n/s	n/s	n/s
Test	**Method**	**LOD**	**Units**			
Aromatic >EC21-EC35: EH_2D_AR	DETSC 3521#	1.4	mg/kg	< 1.40	< 1.40	< 1.40
Aromatic >EC35-EC40: EH_2D_AR	DETSC 3521*	1.4	mg/kg	< 1.40	< 1.40	< 1.40
Aromatic >EC40-EC44: EH_2D_AR	DETSC 3521*	1.4	mg/kg	< 1.40	< 1.40	< 1.40
Aromatic C5-C44: EH_2D+HS_1D_AR	DETSC 3521*	10	mg/kg	< 10.00	< 10.00	< 10.00
TPH Ali/Aro C5-C44: EH_2D+HS_1D_Total	DETSC 3521*	10	mg/kg	< 10.00	< 10.00	< 10.00
Benzene	DETSC 3321#	0.01	mg/kg	< 0.01	< 0.01	< 0.01
Ethylbenzene	DETSC 3321#	0.01	mg/kg	< 0.01	< 0.01	< 0.01
Toluene	DETSC 3321#	0.01	mg/kg	< 0.01	< 0.01	< 0.01
Xylene	DETSC 3321#	0.01	mg/kg	< 0.01	< 0.01	< 0.01
MTBE	DETSC 3321	0.01	mg/kg	< 0.01	< 0.01	< 0.01
C24-C40 Lube Oil Range Organics (LORO): EH_1D_Total	DETSC 3311#	10	mg/kg	< 10	< 10	< 10
PAHs						
Naphthalene	DETSC 3301	0.1	mg/kg	< 0.1	< 0.1	< 0.1
Acenaphthylene	DETSC 3301	0.1	mg/kg	< 0.1	< 0.1	< 0.1
Acenaphthene	DETSC 3301	0.1	mg/kg	< 0.1	< 0.1	< 0.1
Fluorene	DETSC 3301	0.1	mg/kg	< 0.1	< 0.1	< 0.1
Phenanthrene	DETSC 3301	0.1	mg/kg	< 0.1	< 0.1	< 0.1
Anthracene	DETSC 3301	0.1	mg/kg	< 0.1	< 0.1	< 0.1
Fluoranthene	DETSC 3301	0.1	mg/kg	< 0.1	< 0.1	< 0.1
Pyrene	DETSC 3301	0.1	mg/kg	< 0.1	< 0.1	< 0.1
Benzo(a)anthracene	DETSC 3301	0.1	mg/kg	< 0.1	< 0.1	< 0.1
Chrysene	DETSC 3301	0.1	mg/kg	< 0.1	< 0.1	< 0.1
Benzo(b)fluoranthene	DETSC 3301	0.1	mg/kg	< 0.1	< 0.1	< 0.1
Benzo(k)fluoranthene	DETSC 3301	0.1	mg/kg	< 0.1	< 0.1	< 0.1
Benzo(a)pyrene	DETSC 3301	0.1	mg/kg	< 0.1	< 0.1	< 0.1
Indeno(1,2,3-c,d)pyrene	DETSC 3301	0.1	mg/kg	< 0.1	< 0.1	< 0.1
Dibenzo(a,h)anthracene	DETSC 3301	0.1	mg/kg	< 0.1	< 0.1	< 0.1
Benzo(g,h,i)perylene	DETSC 3301	0.1	mg/kg	< 0.1	< 0.1	< 0.1
Coronene	DETSC 3301*	0.1	mg/kg	< 0.1	< 0.1	< 0.1
PAH 16 Total	DETSC 3301	1.6	mg/kg	< 1.6	< 1.6	< 1.6
PCBs						
PCB 28 + PCB 31	DETSC 3401#	0.01	mg/kg	< 0.01	< 0.01	< 0.01
PCB 52	DETSC 3401#	0.01	mg/kg	< 0.01	< 0.01	< 0.01
PCB 101	DETSC 3401#	0.01	mg/kg	< 0.01	< 0.01	< 0.01
PCB 118	DETSC 3401#	0.01	mg/kg	< 0.01	< 0.01	< 0.01
PCB 153	DETSC 3401#	0.01	mg/kg	< 0.01	< 0.01	< 0.01
PCB 138	DETSC 3401#	0.01	mg/kg	< 0.01	< 0.01	< 0.01
PCB 180	DETSC 3401#	0.01	mg/kg	< 0.01	< 0.01	< 0.01
PCB 7 Total	DETSC 3401#	0.01	mg/kg	< 0.01	< 0.01	< 0.01

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 23-28023
Client Ref 23-0881E
Contract Title NDFA - Oldtown Mill

			Lab No	2269017	2269018	2269019
			.Sample ID	BH08	BH11	BH06
			Depth	0.50	1.00	0.50
			Other ID	1	2	1
			Sample Type	ES	ES	ES
			Sampling Date	19/10/2023	19/10/2023	17/10/2023
			Sampling Time	n/s	n/s	n/s
Test	**Method**	**LOD**	**Units**			
Phenols						
Phenol - Monohydric	DETSC 2130#	0.3	mg/kg	0.9	3.7	0.5

Summary of Chemical Analysis
Leachate Samples

Our Ref 23-28023
Client Ref 23-0881E
Contract Title NDFA - Oldtown Mill

			Lab No	2269020	2269021	2269022
			.Sample ID	BH08	BH11	BH06
			Depth	0.50	1.00	0.50
			Other ID	1	2	1
			Sample Type	ES	ES	ES
			Sampling Date	19/10/2023	19/10/2023	17/10/2023
			Sampling Time	n/s	n/s	n/s
Test	**Method**	**LOD**	**Units**			
Preparation						
BS EN 12457 10:1	DETSC 1009*			Y	Y	Y
Inorganics						
Un-Ionised Ammonia	*	0.02	mg/l	< 0.02	< 0.02	< 0.02
Ammoniacal Nitrogen as NH4	DETSC 2207	0.0193	mg/l	0.08	0.03	0.02

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

WASTE ACCEPTANCE CRITERIA TESTING ANALYTICAL REPORT

Our Ref 23-28023
Client Ref 23-0881E
Contract Title NDFA - Oldtown Mill
Sample Id BH08 1 0.50

Sample Numbers 2269017 2269020
Date Analysed 15/12/2023

Test Results On Waste

Determinand and Method Reference	Units	Result	WAC Limit Values: Inert Waste	SNRHW	Hazardous Waste
DETSC 2084# Total Organic Carbon	%	1.6	3	5	6
DETSC 2003# Loss On Ignition	%	5.2	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	7.9	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	0.87	< 0.01	0.5	2	25
DETSC 2306 Barium as Ba	20	0.2	20	100	300
DETSC 2306 Cadmium as Cd	< 0.030	< 0.02	0.04	1	5
DETSC 2306 Chromium as Cr	0.3	< 0.1	0.5	10	70
DETSC 2306 Copper as Cu	0.67	< 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	0.23	< 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	1.5	< 0.03	0.1	0.5	7
DETSC 2306 Zinc as Zn	2.7	0.027	4	50	200
DETSC 2055 Chloride as Cl	720	< 100	800	15,000	25,000
DETSC 2055* Fluoride as F	110	1.1	10	150	500
DETSC 2055 Sulphate as SO4	1600	< 100	1000	20,000	50,000
DETSC 2009* Total Dissolved Solids	24000	240	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	7.4
DETSC 2009 Conductivity uS/cm	34.7
* Temperature*	16.0

Mass of Sample Kg*	0.130
Mass of dry Sample Kg*	0.098

Stage 1

Volume of Leachant L2*	0.947
Volume of Eluate VE1*	0.895

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 23-28023
Client Ref 23-0881E
Contract Title NDFA - Oldtown Mill
Sample Id BH11 2 1.00

Sample Numbers 2269018 2269021
Date Analysed 15/12/2023

Test Results On Waste

Determinand and Method Reference	Units	Result	WAC Limit Values: Inert Waste	SNRHW	Hazardous Waste
DETSC 2084# Total Organic Carbon	%	2.1	3	5	6
DETSC 2003# Loss On Ignition	%	6.8	n/a	n/a	10
DETSC 3321# BTEX	mg/kg	< 0.04	6	n/a	n/a
DETSC 3401# PCBs (7 congeners)	mg/kg	< 0.01	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	7.5	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	0.95	< 0.01	0.5	2	25
DETSC 2306 Barium as Ba	5.3	< 0.1	20	100	300
DETSC 2306 Cadmium as Cd	0.034	< 0.02	0.04	1	5
DETSC 2306 Chromium as Cr	0.28	< 0.1	0.5	10	70
DETSC 2306 Copper as Cu	0.62	< 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	0.18	< 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	1.4	0.014	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	890	< 100	1000	20,000	50,000
DETSC 2009* Total Dissolved Solids	13000	130	4000	60,000	100,000
DETSC 2130 Phenol Index	< 100	< 1	1	n/a	n/a
DETSC 2085 Dissolved Organic Carbon	2400	< 50	500	800	1000

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

Additional Information

DETSC 2008 pH	7.2
DETSC 2009 Conductivity uS/cm	17.9
* Temperature*	16.0

Mass of Sample Kg*	0.140
Mass of dry Sample Kg*	0.100

Stage 1

Volume of Leachant L2*	0.955
Volume of Eluate VE1*	0.903

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.*

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WASTE ACCEPTANCE CRITERIA TESTING ANALYTICAL REPORT

Our Ref 23-28023
Client Ref 23-0881E
Contract Title NDFA - Oldtown Mill
Sample Id BH06 1 0.50

Sample Numbers 2269019 2269022
Date Analysed 15/12/2023

Test Results On Waste

Determinand and Method Reference	Units	Result	WAC Limit Values: Inert Waste	SNRHW	Hazardous Waste
DETSC 2084# Total Organic Carbon	%	0.6	3	5	6
DETSC 2003# Loss On Ignition	%	3.4	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	7.8	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	1	0.01	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	0.3	< 0.1	0.5	10	70
DETSC 2306 Copper as Cu	0.46	< 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	< 0.090	< 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	1.9	< 0.03	0.1	0.5	7
DETSC 2306 Zinc as Zn	< 1.3	< 0.01	4	50	200
DETSC 2055 Chloride as Cl	450	< 100	800	15,000	25,000
DETSC 2055* Fluoride as F	< 100	< 0.1	10	150	500
DETSC 2055 Sulphate as SO4	2000	< 100	1000	20,000	50,000
DETSC 2009* Total Dissolved Solids	27000	270	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	38.8
* Temperature*	17.0

Mass of Sample Kg*	0.120
Mass of dry Sample Kg*	0.096

Stage 1

Volume of Leachant L2*	0.933
Volume of Eluate VE1*	0.88

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Summary of Asbestos Analysis
Soil Samples

Our Ref 23-28023
Client Ref 23-0881E
Contract Title NDFA - Oldtown Mill

Lab No	Sample ID	Material Type	Result	Comment*	Analyst
2269017	BH08 1 0.50	SOIL	NAD	none	Barry Kelly
2269018	BH11 2 1.00	SOIL	NAD	none	Barry Kelly
2269019	BH06 1 0.50	SOIL	NAD	none	Barry Kelly

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 23-28023
Client Ref 23-0881E
Contract NDFA - Oldtown Mill

Containers Received & Deviating Samples

Lab No	Sample ID	Date Sampled	Containers Received	Holding time exceeded for tests	Inappropriate container for tests
2269017	BH08 0.50 SOIL	19/10/23	GJ 250ml, GJ 60ml, PT 1L x2	BTEX / C5-C10 (14 days), Sulphur (free) (7 days), EPH/Aliphatic/Aromatic (14 days), Mercury (28 days), Total Sulphate ICP (30 days), Kone Cr6 (30 days), Naphthalene (14 days), Organic Matter (Auto) (28 days), PAH FID (14 days), PCB (30 days), pH + Conductivity (7 days), Cyanide/Mono pHoh (14	
2269018	BH11 1.00 SOIL	19/10/23	GJ 250ml, GJ 60ml, PT 1L x2	BTEX / C5-C10 (14 days), Sulphur (free) (7 days), EPH/Aliphatic/Aromatic (14 days), Mercury (28 days), Total Sulphate ICP (30 days), Kone Cr6 (30 days), Naphthalene (14 days), Organic Matter (Auto) (28 days), PAH FID (14 days), PCB (30 days), pH + Conductivity (7 days), Cyanide/Mono pHoh (14	
2269019	BH06 0.50 SOIL	17/10/23	GJ 250ml, GJ 60ml, PT 1L x2	BTEX / C5-C10 (14 days), Sulphur (free) (7 days), EPH/Aliphatic/Aromatic (14 days), Mercury (28 days), Total Sulphate ICP (30 days), Kone Cr6 (30 days), Naphthalene (14 days), Organic Matter (Auto) (28 days), PAH FID (14 days), PCB (30 days), pH + Conductivity (7 days), Cyanide/Mono pHoh (14	
2269020	BH08 0.50 LEACHATE	19/10/23	GJ 250ml, GJ 60ml, PT 1L x2		
2269021	BH11 1.00 LEACHATE	19/10/23	GJ 250ml, GJ 60ml, PT 1L x2		
2269022	BH06 0.50 LEACHATE	17/10/23	GJ 250ml, GJ 60ml, PT 1L x2		

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 K

SPT HAMMER ENERGY MEASUREMENT REPORT

SPT Hammer Energy Test Report

in accordance with BSEN ISO 22476-3:2005

Southern Testing
Unit 11
Charlwoods Road
East Grinstead
West Sussex
RH19 2HU

SPT Hammer Ref: 0895.
Test Date: 18/02/2023
Report Date: 20/02/2023
File Name: 0895..spt
Test Operator: RWS

Instrumented Rod Data

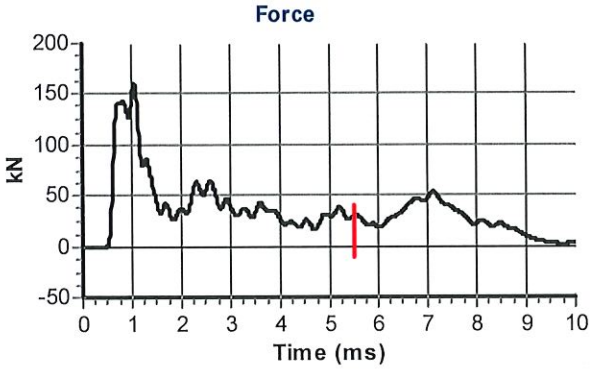
Diameter d_r (mm): 54
Wall Thickness t_r (mm): 6.7
Assumed Modulus E_a (GPa): 208
Accelerometer No.1: 64786
Accelerometer No.2: 64789

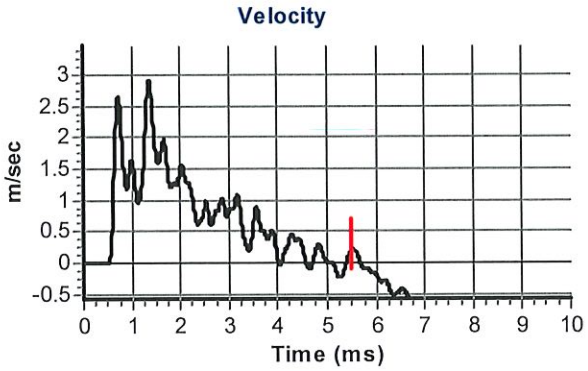
SPT Hammer Information

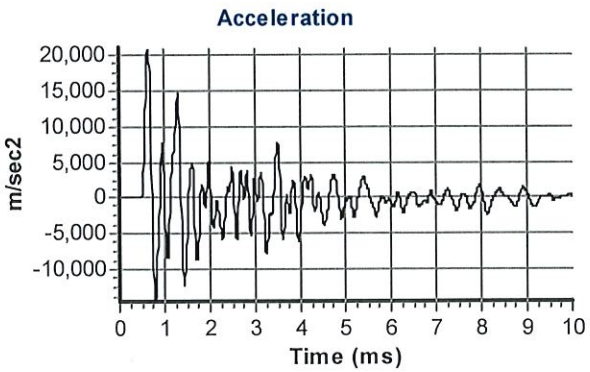
Hammer Mass m (kg): 63.5
Falling Height h (mm): 760
SPT String Length L (m): 10.0

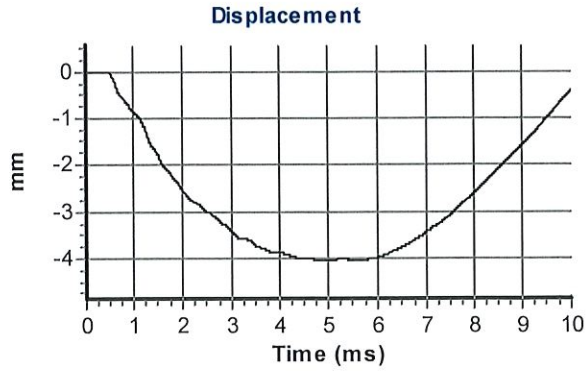
Comments / Location

CAUSEWAY









Calculations

Area of Rod A (mm2): 996
Theoretical Energy E_{theor} (J): 473
Measured Energy E_{meas} (J): 309

Energy Ratio E_r (%): 65

Signed: Bob Stewart
Title: Technician

The recommended calibration interval is 12 months