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Ground Investigations Ireland

ATU Letterkenny

Tobins

Ground Investigation Report

March 2023





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



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1.0 Preamble

On the instructions of Tobin Consulting Engineers, a site investigation was carried out by Ground Investigations Ireland Ltd., between November 2022 and January 2023 at the site of the proposed development in Letterkenny.

2.0 Overview

2.1. Background

It is proposed to construct a new sports campus with associated services, access roads and car parking at the proposed site. The site is currently greenfield and is situated in the north eastern portion of Letterkenny Town. The proposed construction is envisaged to consist of conventional foundations and pavement make up with some local excavations for services and plant. An earthworks programme to cut and fill cross the site is proposed.

2.2. Purpose and Scope

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

- Visit project site to observe existing conditions
- Carry out 12 No. Trial Pits to a maximum depth of 3.0m BGL
- Carry out 7 No. Soakaways to determine a soil infiltration value to BRE digest 365
- Carry out CBR testing to determine pavement design parameters
- Carry out 10 No. Percussion Boreholes to recover soil samples.
- Carry out 10 No. Rotary Core Boreholes to a maximum depth of 16m BGL
- Installation of 5 No. Groundwater monitoring wells
- Geotechnical & Environmental Laboratory testing
- Report with recommendations

3.0 Subsurface Exploration

3.1. General

During the ground investigation a programme of intrusive investigation specified by the Consulting Engineer was undertaken to determine the sub surface conditions at the proposed site. Regular sampling and in-situ testing was undertaken in the exploratory holes to facilitate the geotechnical descriptions and to enable laboratory testing to be carried out on the soil samples recovered during excavation and drilling.

The procedures used in this site investigation are in accordance with Eurocode 7 Part 2: Ground Investigation and testing (ISEN 1997 – 2:2007) and B.S. 5930:2015.

3.2. Trial Pits

The trial pits were excavated using a 8T tracked excavator at the locations shown in the exploratory hole location plan in Appendix 1. The locations were checked using a CAT scan to minimise the potential for encountering services during the excavation. The trial pits were sampled, logged and photographed by a Geotechnical Engineer/Engineering Geologist prior to backfilling with arisings. Notes were made of any services, inclusions, pit stability, groundwater encountered and the characteristics of the strata encountered and are presented on the trial pit logs which are provided in Appendix 2 of this Report.

3.3. Soakaway Testing

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

3.4. Percussion Boreholes

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

Standard Penetration Tests were carried out in the boreholes. The results of these tests, together with the depths at which the tests were taken are shown on the accompanying borehole records. The test consists of a thick wall sampler tube, 50mm external diameter, being driven into the soil by a weight of 63.5kg and with a free drop of 760mm. For gravels and glacial till the driving shoe was replaced by a solid 60° cone. The Standard Penetration Test number referred to as the 'N' value is the number of blows required to drive the tube 300mm, after an initial penetration of 150mm. The number gives a guide to the consistency of the soil and can also be used to estimate the relative strength/density at the depth of the test and also to estimate the bearing capacity and compressibility of the soil. The percussion borehole records are provided in Appendix 4 of this Report.

3.5. Rotary Boreholes

The rotary coring was carried out by a track mounted T44 Beretta rig at the locations shown on the location plan in Appendix 1. The rotary boreholes were completed from the ground surface or alternatively, where noted on the individual borehole log, from the base of the cable percussion borehole where a temporary liner was installed to facilitate follow-on rotary coring.

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

3.6. Surveying

The exploratory hole locations have been recorded using a KQ GEO Technologies KQ-M8 System which records the coordinates and elevation of the locations to ITM or Irish National Grid as required by the project specification. The coordinates and elevations are provided on the exploratory hole logs in the appendices of this Report.

3.7. Groundwater/Gas Monitoring Installations

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

3.8. Laboratory Testing

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

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

Geotechnical testing consisting of moisture content, Atterberg limits, Particle Size Distribution (PSD), hydrometer, California Bearing Ratio (CBR), Moisture Condition Value (MCV) tests were carried out in NMTL's Geotechnical Laboratory in Carlow.

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

4.0 Ground Conditions

4.1. General

The ground conditions encountered during the investigation are summarised below with reference to insitu and laboratory test results. The full details of the strata encountered during the ground investigation are provided in the exploratory hole logs included in the appendices of this report.

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

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

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

COHESIVE DEPOSITS: Cohesive deposits were encountered beneath the Made Ground and were described typically as *reddish brown sandy gravelly CLAY/SILT with occasional cobbles and boulders* overlying a *blueish grey sandy gravelly CLAY/SILT with occasional cobbles and boulders*. In BH04, BH13 & TP09 a bluish grey sandy SILT was also encountered. The secondary sand and gravel constituents varied across the site and with depth, with granular lenses occasionally present in the glacial till matrix. The strength of the cohesive deposits was generally soft at shallow depths however typically increased with depth and was firm to stiff or stiff below 2.0m to 3.0m BGL in the majority of the exploratory holes. These deposits had some, occasional or frequent cobble and boulder content, where noted on the exploratory hole logs. The engineering description on the logs are SILT/CLAY as the Atterberg limits all plot on the side of the SILT however when logged and assessed in situ, the delineation between silt and clay was not obvious.

GRANULAR DEPOSITS: Granular deposits were encountered within the cohesive deposits and were typically described as *grey brown clayey sandy sub rounded to sub angular fine to coarse GRAVEL with*

occasional cobbles and rare boulders. The secondary sand/gravel and silt/clay constituents varied across the site and with depth while occasional or frequent cobble and boulder content also present where noted on the exploratory hole logs.

Based on the SPT N values the deposits are typically medium dense and become dense with depth. It should be noted that many of the trial pits where granular deposits or groundwater were encountered, experienced instability. This was described either as side wall spalling or as side wall collapse in the remarks section at the base of the trial pit logs.

WEATHERED BEDROCK: In the majority of exploratory holes weathered rock was encountered which was only digable with the excavator to a depth of less than to 0.1m below the top of the stratum. The trial pits were terminated upon encountering the more competent bedrock, in which further excavation became more difficult. This material was recovered typically as angular gravel and cobbles of shist however there was some variability in the fracture spacing and the ease at which the excavator could progress.

BEDROCK: The rotary core boreholes recovered Medium strong to very strong grey/dark grey to black mottled white micaceous SHIST at shallow depths on the higher elevations and at deeper depths at lower elevations (BH04). In BH13 a strong slightly foliated/interbedded (schist). Light grey to grey QUARTZITE with some pyrite veining.

4.2. Groundwater

Groundwater strikes are noted on the exploratory hole logs where they occurred and where possible drilling was suspended for twenty minutes to allow the subsequent rise in groundwater to be recorded. We would point out that these exploratory holes did not remain open for sufficiently long periods of time to establish the hydrogeological regime and groundwater levels would be expected to vary with the tide, time of year, rainfall, nearby construction and other factors. For this reason, standpipes were installed in BH2 and BH3 to allow the equilibrium groundwater level to be determined.

4.3. Laboratory Testing

4.3.1. Geotechnical Laboratory Testing

The geotechnical testing carried out on soil samples recovered generally confirm the descriptions on the logs with the primary constituent of the cohesive deposits found to be a SILT of low to intermediate plasticity. The Particle Size Distribution tests confirm that generally the cohesive deposits are well-graded with percentages of sands and gravels ranging between 20% and 40% generally with fines contents of 30 to 60%.

The Particle Size Distribution tests confirm that generally the granular deposits are well-graded/gap graded with percentages of silt/clay typically less than 17% with a sand content of typically 10% to 15%. The dominant gravel fraction was 60 to 75%.

4.3.2. CBR Laboratory Testing

The CBR testing on remoulded samples gave results ranging between < 1% and 4.3% for the cohesive deposits, and in the granular sample TP6 0.50m BGL gave a higher value of 24%.

4.3.3. Chemical Laboratory Testing

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

4.3.4. Environmental Laboratory Testing

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

The suite also includes those parameters specified in the EU Council Decision establishing criteria for the acceptance of waste at Landfills (Council Decision 2003/33/EC), which for the solid samples are total organic carbon (TOC), speciated aliphatic and aromatic petroleum hydrocarbons, BTEX, phenol, polychlorinated biphenyls (PCB) and PAH.

As part of the suite a leachate is generated from the solid sample which is analysed for antimony, arsenic, barium, cadmium, chromium, copper, lead, mercury, molybdenum, nickel, selenium, zinc, chloride, fluoride, soluble sulphate, sulphide, phenols, dissolved organic carbon (DOC) and total dissolved solids (TDS).

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

The results from the completed laboratory testing are included in Appendix 7 of this report.

5.0 Recommendations & Conclusions

5.1. General

The recommendations given and opinions expressed in this report are based on the findings as detailed in the exploratory hole records. Where an opinion is expressed on the material between exploratory hole locations, this is for guidance only and no liability can be accepted for its accuracy. No responsibility can be accepted for conditions which have not been revealed by the exploratory holes. Limited information has been provided at the ground investigation stage and any designs based on the recommendations or conclusions should be completed in accordance with the current design codes, taking into account the variation and the specific details contained within the exploratory hole logs.

5.2. Foundations

The site is very variable with soft deposits present at many of the boreholes and trial pit locations. An allowable bearing capacity of 80 kN/m² is recommended for conventional strip or pad foundations on the firm cohesive deposits at a depth of 1.5m to 2.0m BGL with the exception of where soft deposit are present, such as at the locations of TP09, & BH04 and BH05. Where the suitable cohesive deposits are deeper or where rock is shallow, lean mix trench fill bedrock is recommended to achieve the recommended allowable bearing capacity. A higher allowable bearing capacity of 600 kN/m² is recommended on the intact bedrock at these locations.

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

The presence of Silt lenses within the cohesive deposits is a possibility and this material can exhibit liquefaction and behave poorly when compacted or subject to vibration. Where soft silts are present below foundations, these are recommended to be removed and replaced with adequately compacted granular fill.

In any part of the site, should part of the foundation be on rock we would recommend that all the foundations of the unit in question be lowered to the competent rock stratum to avoid differential settlement.

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

5.3. External Pavements

The proposed pavements are recommended to be designed in accordance with the CBR test results included in the Appendices of this Report. The low CBR test results indicate that a capping layer or a sufficient depth of crushed stone fill may be required. Plate bearing tests are recommended at the time of

construction to verify the design assumptions for the proposed pavement make up and to verify adequate compaction has been achieved.

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

5.4. Excavations

Excavations in the Made Ground, Peat or soft Cohesive Deposits will require to be appropriately battered or the sides supported due to the low strength of these deposits.

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

Any excavations which penetrate the granular deposits will require to be appropriately battered or the sides supported and are likely to require dewatering due to the groundwater seepages noted in the exploratory hole logs in the Appendices of this Report.

The groundwater and stability noted on the trial pit logs should be consulted when determining the most appropriate construction methods for excavations. Generally, where significant excavations are required in water bearing granular deposits a cut-off wall may be more cost effective than extensive dewatering. An assessment by a specialist dewatering contractor is recommended to determine the most cost effective approach to the proposed excavation.

Excavations in the upper cohesive and weathered rock deposits are expected to be excavatable with conventional excavation equipment, with zones of more intact bedrock below this depth requiring rock breaking techniques. The 5T excavator was generally able to excavate to depths of 0.7m below the top of the weathered rock where very weathered however became difficult to excavate within the confines of the trial pit on encountering the more competent rock or where rock was competent at shallower depths the trial pit was unable to progress beyond 0.1m BGL below the top of the stratum.

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

5.5. Material Reuse

The results of the laboratory testing are shown in the table below and are representative of the cohesive and granular strata encountered on the site. The granular deposits should be generally good for reuse however the cohesive deposits, with one exception in the deeper stiffer deposits are not considered suitable for reuse at the current moisture contents. Typically, an MCV of between 7 and 8 is considered marginal, with 8 or greater considered suitable for reuse. The granular samples tested has an MCV of 10 and would be considered suitable for reuse in their current state, giving a remoulded CBR of typically 24% in the sample tested.

The cohesive deposits have MCV's typically less than 6.3, with one value of less than 1 in TP02 at 0.5m BGL and would be considered unsuitable for reuse in their current state, giving a remoulded CBR's of 2% or less. A single value of 7.8 was recorded in TP08 with a moisture content of 15.5%.

If material is proposed to be reused on site, further site control testing is recommended at the time of construction to verify the design assumptions for the proposed reuse. If a material required a minor treatment, this would restrict the earthworks programme and be subject to weather, making it difficult to quantify and control costs. If materials required significant treatment such as the addition of lime or cement, with the associated plant and equipment required, it may be feasible to progress with this approach provided there is a suitable cut fill balance from the proposed site levels. The quantities of each material encountered during the dig would be variable and dependent on the final formation level chosen.

The moisture content should be carefully monitored and control to be within +/- 2% of the OMC or to achieve an MCV of greater than 7 or 8. The compaction should be specified to achieve 95% relative compaction where construction is proposed, and settlement monitoring undertaken over an appropriate time period to confirm the formation level is suitable for pavement construction. A programme of regular compliance testing, including regular density testing should be undertaken during earthworks to confirm the final compaction achieved. Material outside of the acceptable moisture content can be used as landscaping fill or in areas where settlement can be tolerated without further treatment.

Exp. Hole No.	Sample Depth (m BGL)	MC (%)	MCV	CBR %	Stratum	Silt/Clay Content (%)	Material Reuse
TP01	0.5	19.3	-	< 1%	Cohesive	50	Unsuitable / requires treatment
TP01	1.3	17.8	5.1	< 1%	Cohesive	60	Unsuitable / requires treatment
TP01	2.0	16.8	6.3		Cohesive	60	Unsuitable / requires treatment
TP02	0.5	26.0	0.6	< 1%	Cohesive	36	Unsuitable / requires treatment
TP02	1.35	11.8	9.6	-	Granular	17	Class 1 General Fill
TP03	0.5	18.0	6.2	1.5 %	Cohesive	57	Unsuitable / requires treatment
TP04	0.5	17.8	5.1	3.3%	Cohesive	37	Unsuitable / requires treatment
TP05	0.5	18.6	3.9	1.4%	Cohesive	33-	Unsuitable / requires treatment
TP06	0.5	12.7	10	24%	Granular	7.4	Class 1 General Fill
TP08	0.5	15.5	7.8	2.3%	Cohesive	-	Class 2 General Fill
TP08	1.0	17.6	-	4.3%	Cohesive	27	
TP09	0.5	13.6	-	5%	Cohesive	-	
TP11	0.5	21	-	< 1%	Cohesive	-	

5.6. Soakaway Design

At the locations of SA01 to SA07 the water level dropped too slowly to allow calculation of 'f' the soil infiltration rate. These locations are therefore not recommended as suitable for soakaway design and construction.

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





APPENDIX 1 - Site Location Plan



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913600N
913400N
913200N



-  Trial Pits
-  Soakaway
-  RC Borehole
-  CP Borehole

Client:



Project Code:
12087-07-22

Project Title:
ATU Regional Sports Hub

Drawing Title:
Figure 1 Site Location Plan



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0 30 60 90 120 150 m

Drawn By:
SK

Date:
10/03/2023

APPENDIX 2 – Trial Pit Records





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Site
ATU Regional Sports HUB

Trial Pit
Number
TP01

Machine : 5t tracked Method : Trial Pit		Dimensions 1m x 2.5m	Ground Level (mOD) 98.52	Client	Job Number 12087-07-22
		Location 617487.7 E 913423.1 N	Dates 30/11/2022	Engineer Tobin	Sheet 1/1

Depth (m)	Sample / Tests	Water Depth (m)	Field Records	Level (mOD)	Depth (m) (Thickness)	Description	Legend	Water
0.50	B			98.22	(0.30) 0.30	Light brown slightly sandy slightly gravelly TOPSOIL with grass rootlets		
						Firm light brown slightly gravelly sandy CLAY		
1.10	B			97.52	(0.70) 1.00	Firm reddish brown sandy gravelly CLAY with occasional cobbles		
1.30	B			97.12	(0.30) 1.40	Firm light brown slightly sandy gravelly CLAY		
				96.82	(0.30) 1.70	Firm bluish grey slightly sandy gravelly CLAY with occasional cobbles		
2.00	B			96.12	(0.70) 2.40	Complete at 2.40m		

Plan					Remarks			
.	No groundwater encountered. Trial pit unstable. Trial pit backfilled when complete.			
.				
.				
.				
.				
.				
					Scale (approx)	Logged By	Figure No.	
					1:25	SML	12087-07-22.TP01	



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Site
ATU Regional Sports HUB

Trial Pit Number
TP02

Machine : 5t tracked Method : Trial Pit		Dimensions 1m x 2.5m	Ground Level (mOD) 85.06	Client	Job Number 12087-07-22
		Location 617635.6 E 913395.6 N	Dates 30/11/2022	Engineer Tobin	Sheet 1/1

Depth (m)	Sample / Tests	Water Depth (m)	Field Records	Level (mOD)	Depth (m) (Thickness)	Description	Legend	Water
0.50	B			84.76	(0.30) 0.30	Brown slightly sandy slightly gravelly TOPSOIL with grass rootlets		
					(0.60)	Firm reddish brown slightly sandy gravelly CLAY		
1.00	B			84.16	0.90 (0.40)	Firm bluish grey slightly sandy slightly gravelly CLAY		
1.35	B			83.76 83.71	1.30 1.35	Weathered rock - schist		
						Complete at 1.35m		

Plan					Remarks		
.	No groundwater encountered. Trial pit stable. Trial pit backfilled when complete.		
.			
.			
.			
.			
.			
					Scale (approx)	Logged By	Figure No.
					1:25	SML	12087-07-22.TP02



Site	ATU Regional Sports HUB
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**Trial Pit
Number
TP03**

Machine : 5t tracked
Method : Trial Pit

Dimensions
1m x 2.5m

Ground Level (mOD)	85.31
--------------------	-------

Client	
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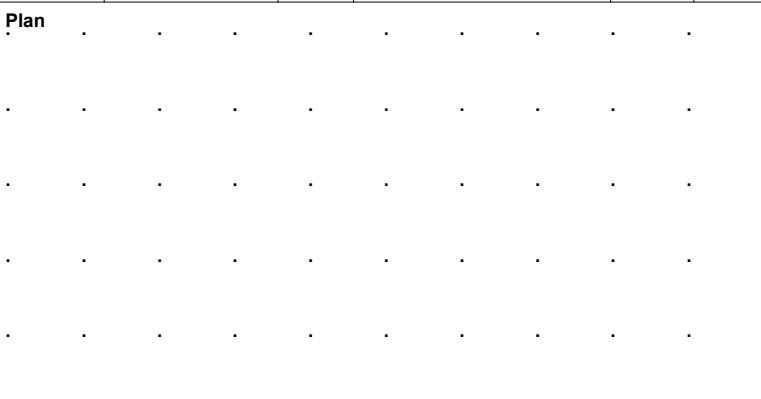
Job Number	12087-07-22
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Location
617672.9 E 913435.4 N

Dates	30/11/2022
--------------	------------

Engineer
Tobin

Sheet
1/1

<div>Plan</div> <div></div>	Remarks		
	No groundwater encountered. Trial pit unstable. Trial pit backfilled when complete.		
	Scale (approx)	Logged By	Figure No.
	1:25	SML	12087-07-22.TPD



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Site
ATU Regional Sports HUB

Trial Pit Number
TP04

Machine : 5t tracked
Method : Trial Pit

Dimensions
1m x 2.5m

Ground Level (mOD)
86.45

Client

Job Number
12087-07-22

Location
617783.7 E 913556.9 N

Dates
30/11/2022

Engineer
Tobin

Sheet
1/1

Depth (m)	Sample / Tests	Water Depth (m)	Field Records	Level (mOD)	Depth (m) (Thickness)	Description	Legend	Water
0.50	B			86.15	0.30	Brown slightly sandy slightly gravelly TOPSOIL with grass rootlets		
					(0.90)	Firm reddish brown sandy gravelly CLAY with occasional cobbles		
1.30	B			85.25	1.20	Firm bluish grey slightly sandy gravelly CLAY with occasional cobbles		
					(1.20)			
				84.05	2.40	Rock - Schist		
				84.05	2.40	Complete at 2.40m		

Plan

Remarks

No groundwater encountered.
Trial pit unstable.
Trial pit backfilled when complete.

Scale (approx)

1:25

Logged By

SML

Figure No.

12087-07-22.TP04



Site	ATU Regional Sports HUB
-------------	-------------------------

**Trial Pit
Number
TP05**

Machine : 5t tracked
Method : Trial Pit

Dimensions
1m x 2.5m

Ground Level (mOD)	85.47
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Client	
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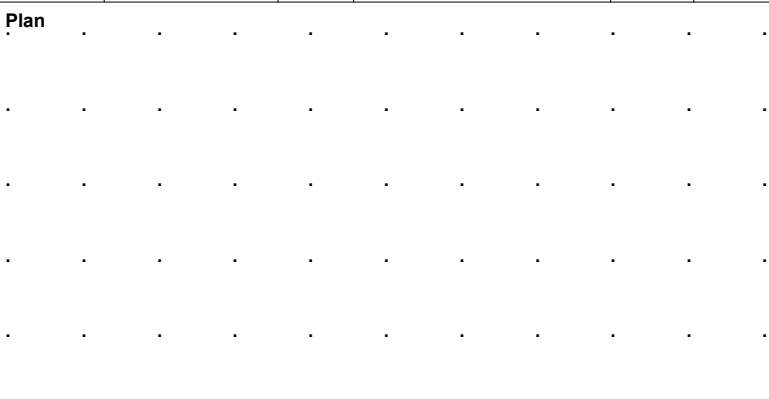
Job Number	12087-07-22
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Location	617924.8 E 913576.5 N
-----------------	-----------------------

Dates	30/11/2022
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Engineer
Tobin

Sheet
1/1

<div>Plan</div> 	Remarks		
	No groundwater encountered. Trial pit unstable. Trial pit backfilled when complete.		
Scale (approx)		Logged By	Figure No.
1:25		SML	12087-07-22.TP05



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Site
ATU Regional Sports HUB

Trial Pit Number
TP06

Machine : 5t tracked Method : Trial Pit		Dimensions 1m x 2.5m	Ground Level (mOD) 80.59	Client	Job Number 12087-07-22
		Location 617931.1 E 913495.9 N	Dates 30/11/2022	Engineer Tobin	Sheet 1/1

Depth (m)	Sample / Tests	Water Depth (m)	Field Records	Level (mOD)	Depth (m) (Thickness)	Description	Legend	Water
0.50	B			80.21	(0.38)	Brown slightly sandy slightly gravelly TOPSOIL with tree rootlets		
					0.38	Loose grey slightly clayey sandy GRAVEL with occasional cobbles		
					(0.52)			
				79.69	0.90	Firm black organic CLAY with occasional cobbles		
					(0.20)			
1.20	B			79.49	1.10	Firm reddish brown sandy gravelly CLAY with many cobbles		
					(0.70)			
				78.79	1.80	Weathered rock (fine grained metamorphic)		
				78.74	1.85	Complete at 1.85m		

Plan					Remarks		
.	.	.	.	.	Groundwater encountered.		
.	.	.	.	.	Trial pit stable.		
.	.	.	.	.	Trial pit backfilled when complete.		
.			
.			
.			
					Scale (approx)	Logged By	Figure No.
					1:25	SML	12087-07-22.TP06



Site	ATU Regional Sports HUB
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**Trial Pit
Number
TP07**

Machine : 5t tracked
Method : Trial Pit

Dimensions
1m x 2.5m

Ground Level (mOD)	78.15
--------------------	-------

Client	
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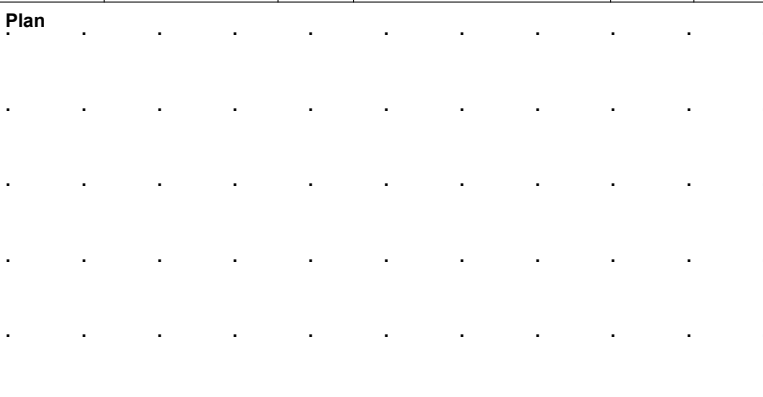
Job Number	12087-07-22
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Location	617799.7 E 913393.2 N
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Dates	30/11/2022
--------------	------------

Engineer
Tobin

Sheet
1/1

Plan 	Remarks		
	No groundwater encountered. Trial pit unstable. Trial pit backfilled when complete.		
	Scale (approx)	Logged By	Figure No.
	1:25	SML	12087-07-22.TPO



Site	ATU Regional Sports HUB
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**Trial Pit
Number
TP08**

Machine : 5t tracked
Method : Trial Pit

Dimensions
1m x 2.5m

Ground Level (mOD)	77.89
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Client	
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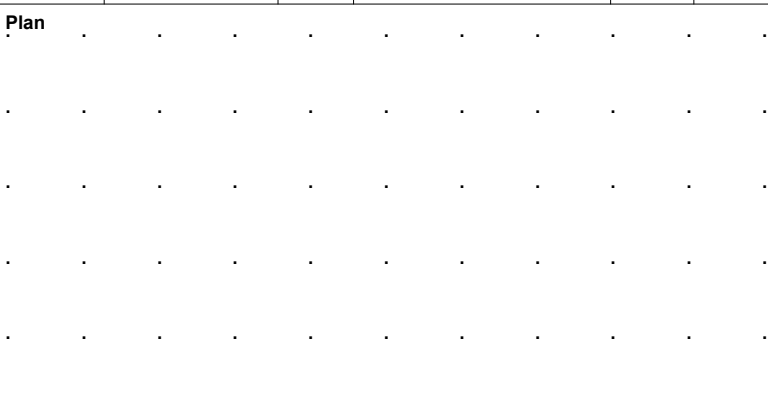
Job Number	12087-07-22
------------	-------------

Location	617689.6 E 913252.1 N
-----------------	-----------------------

Dates	30/11/2022
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Engineer
Tobin

Sheet
1/1

Plan 	Remarks No groundwater encountered. Trial pit unstable. Trial pit backfilled when complete.		
	Scale (approx) 1:25	Logged By SML	Figure No. 12087-07-22.TP08



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Site
ATU Regional Sports HUB

Trial Pit Number
TP09

Machine : 5t tracked
Method : Trial Pit

Dimensions
1m x 2.5m

Ground Level (mOD)
77.45

Client

Job Number
12087-07-22

Location
617756.9 E 913308.6 N

Dates
30/11/2022

Engineer
Tobin

Sheet
1/1

Depth (m)	Sample / Tests	Water Depth (m)	Field Records	Level (mOD)	Depth (m) (Thickness)	Description	Legend	Water
0.50	B			77.25	(0.20) 0.20	Brown slightly sandy slightly gravelly TOPSOIL with grass rootlets		
						Soft to firm bluish grey sandy SILT		
					(0.85)			
1.20	B			76.40	1.05 (0.25)	Soft to firm reddish brown sandy gravelly CLAY		
1.50	B			76.15	1.30	Soft bluish grey slightly sandy gravelly silty CLAY with cobbles and boulders		
					(0.60)			
				75.55	1.90	Complete at 2.60m		

Plan

Remarks

No groundwater encountered.
Trial pit stable.
Trial pit backfilled when complete.

Scale (approx)

1:25

Logged By

SML

Figure No.

12087-07-22.TP09



Site	ATU Regional Sports HUB
-------------	-------------------------

**Trial Pit
Number
TP10**

Machine : 5t tracked
Method : Trial Pit

Dimensions
1m x 2.5m

Ground Level (mOD)	77.11
--------------------	-------

Client	
---------------	--

Job Number	12087-07-22
------------	-------------

Location
617849.8 E 913337.8 N

Dates	30/11/2022
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Engineer
Tobin

Sheet
1/1

[illegible]



Site	ATU Regional Sports HUB
-------------	-------------------------

**Trial Pit
Number
TP11**

Machine : 5t tracked
Method : Trial Pit

Dimensions
1m x 2.5m

Ground Level (mOD)	76.19
--------------------	-------

Client	
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Job Number	12087-07-22
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Location	617750.6 E 913207.4 N
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Dates	30/11/2022
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Engineer
Tobin

Sheet
1/1

Plan 	Remarks No groundwater encountered. Trial pit unstable. Trial pit backfilled when complete.		
	Scale (approx) 1:25	Logged By SML	Figure No. 12087-07-22.TP1

ATU Regional Sports HUB – Trial Pit Photos

TP01



ATU Regional Sports HUB – Trial Pit Photos



ATU Regional Sports HUB – Trial Pit Photos



ATU Regional Sports HUB – Trial Pit Photos



TP02

ATU Regional Sports HUB – Trial Pit Photos



ATU Regional Sports HUB – Trial Pit Photos



ATU Regional Sports HUB – Trial Pit Photos



TP03

ATU Regional Sports HUB – Trial Pit Photos



ATU Regional Sports HUB – Trial Pit Photos



ATU Regional Sports HUB – Trial Pit Photos



TP04

ATU Regional Sports HUB – Trial Pit Photos



ATU Regional Sports HUB – Trial Pit Photos



ATU Regional Sports HUB – Trial Pit Photos



ATU Regional Sports HUB – Trial Pit Photos



TP05

ATU Regional Sports HUB – Trial Pit Photos



ATU Regional Sports HUB – Trial Pit Photos



ATU Regional Sports HUB – Trial Pit Photos



TP06

ATU Regional Sports HUB – Trial Pit Photos



ATU Regional Sports HUB – Trial Pit Photos



ATU Regional Sports HUB – Trial Pit Photos



ATU Regional Sports HUB – Trial Pit Photos



TP07

ATU Regional Sports HUB – Trial Pit Photos



ATU Regional Sports HUB – Trial Pit Photos



ATU Regional Sports HUB – Trial Pit Photos



TP08

ATU Regional Sports HUB – Trial Pit Photos



ATU Regional Sports HUB – Trial Pit Photos



ATU Regional Sports HUB – Trial Pit Photos



ATU Regional Sports HUB – Trial Pit Photos



ATU Regional Sports HUB – Trial Pit Photos



TP09

ATU Regional Sports HUB – Trial Pit Photos



ATU Regional Sports HUB – Trial Pit Photos



ATU Regional Sports HUB – Trial Pit Photos



ATU Regional Sports HUB – Trial Pit Photos



TP10

ATU Regional Sports HUB – Trial Pit Photos



ATU Regional Sports HUB – Trial Pit Photos



ATU Regional Sports HUB – Trial Pit Photos



ATU Regional Sports HUB – Trial Pit Photos



TP11

ATU Regional Sports HUB – Trial Pit Photos



ATU Regional Sports HUB – Trial Pit Photos



ATU Regional Sports HUB – Trial Pit Photos



ATU Regional Sports HUB – Trial Pit Photos



APPENDIX 3 – Soakaway Records





Site	ATU Regional Sports HUB
-------------	-------------------------

**Trial Pit
Number**
SA01

Machine : 5t tracked
Method : Trial Pit

Dimensions
0.40m x 1.80m x 1.60m

Ground Level (mOD)	80.84
--------------------	-------

Client	
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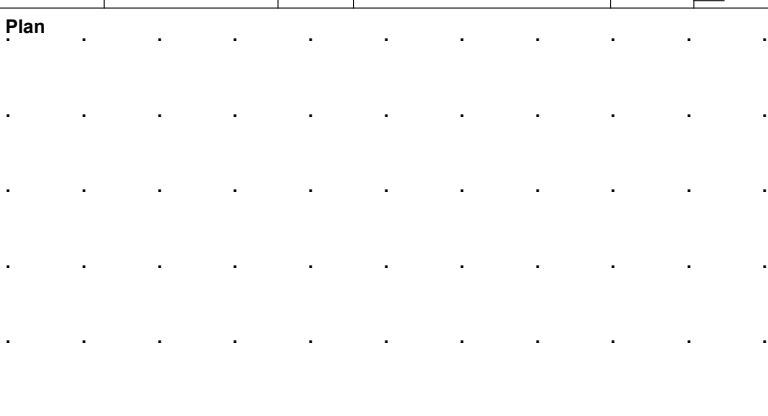
Job Number	12087-07-22
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Location
617630 E 913284 N

Dates	01/12/2022
--------------	------------

Engineer
Tobin

Sheet
1/1

Plan 	Remarks		
	Soakaway completed in TP01.		
	Scale (approx) 1:25	Logged By	Figure No. 12087-07-22.SA01



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Site
ATU Regional Sports HUB

Trial Pit Number
SA02

Machine : 5t tracked
Method : Trial Pit

Dimensions
0.40m x 1.70m x 1.20m

Ground Level (mOD)
78.30

Client

Job Number
12087-07-22

Location
617796.1 E 913396.1 N

Dates
01/12/2022

Engineer
Tobin

Sheet
1/1

Depth (m)	Sample / Tests	Water Depth (m)	Field Records	Level (mOD)	Depth (m) (Thickness)	Description	Legend	Water
						Dark brown slightly sandy slightly gravelly TOPSOIL with grass rootlets		
				77.90	0.40	Firm reddish brown slightly sandy gravelly CLAY		
					(0.70)			
				77.20	1.10	Loose grey brown sandy clayey GRAVEL		
				77.10	1.20			
				77.05	1.25	Rock		
						Complete at 1.60m		

Plan
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Remarks
Soakaway completed in TP02

Scale (approx) 1:25	Logged By SML	Figure No. 12087-07-22.SA02
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Site	ATU Regional Sports HUB
-------------	-------------------------

**Trial Pit
Number**
SA03

Machine : 5t tracked
Method : Trial Pit

Dimensions
0.40m x 1.80m x 1.60m

Ground Level (mOD)	80.75
--------------------	-------

Client	
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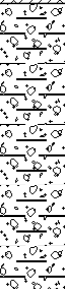

Job Number	12087-07-22
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Location	617797.3 E 913451.2 N
-----------------	-----------------------

Dates	30/11/2022
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Engineer
Tobin

Sheet
1/1

Depth (m)	Sample / Tests	Water Depth (m)	Field Records	Level (mOD)	Depth (m) (Thickness)	Description	Legend	Water
						Dark brown slightly sandy slightly gravelly TOPSOIL with grass rootlets		
				80.45	0.30	Firm reddish brown slightly sandy gravelly CLAY occasional cobbles		
					(0.95)			
				79.50	1.25	Firm bluish grey sandy gravelly silty CLAY with occasional cobble		
					(0.55)			
				78.95	1.80	Complete at 1.80m		

Plan

Remarks

Trial pit collapsed before it could be filled FAIL
Soakaway completed in TP03

Scale (approx)

1:25

Logged By

SML

Figure No.

12087-07-22.SA03



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Site
ATU Regional Sports HUB

Trial Pit
Number
SA04

Machine : 5t tracked
Method : Trial Pit

Dimensions
0.40m x 1.70m x 1.60m

Ground Level (mOD)
79.99

Client

Job
Number
12087-07-22

Location
617914.3 E 913462.4 N

Dates
30/11/2022

Engineer
Tobin

Sheet
1/1

Depth (m)	Sample / Tests	Water Depth (m)	Field Records	Level (mOD)	Depth (m) (Thickness)	Description	Legend	Water
				79.69	(0.30) 0.30	Dark brown slightly sandy slightly gravelly TOPSOIL with tree rootlets		
					(1.30)	Loose greyish brown slightly sandy clayey GRAVEL with occasional cobbles		
				78.39	1.60	Complete at 1.60m		

Plan

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Remarks

Groundwater seepage soakaway FAIL rose to 1.30mBGL
Soakaway completed in TP04

Scale (approx)

1:25

Logged By

SML

Figure No.

12087-07-22.SA03



Site	ATU Regional Sports HUB
-------------	-------------------------

**Trial Pit
Number**
SA05

Machine : 5t tracked
Method : Trial Pit

Dimensions
0.40m x 1.70m x 1.70m

Ground Level (mOD)	77.99
--------------------	-------

Client	
---------------	--

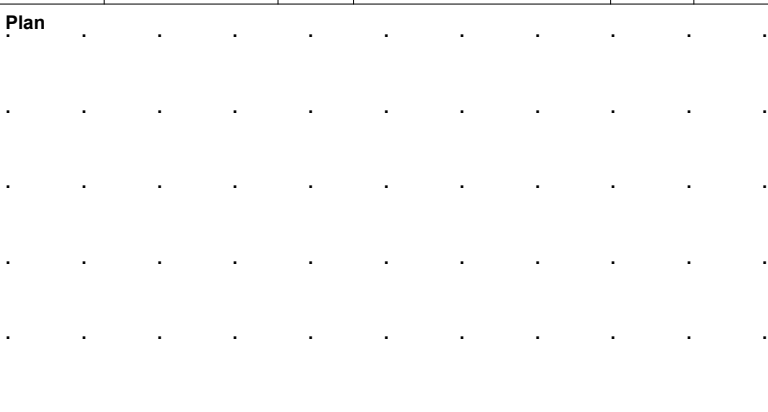
Job Number	12087-07-22
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Location	617687.8 E 913256.6 N
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Dates	01/12/2022
--------------	------------

Engineer
Tobin

Sheet
1/1

Plan 	Remarks Soakaway completed in TP05		
	Scale (approx) 1:25	Logged By SML	Figure No. 12087-07-22.SA05



**Trial Pit
Number
SA06**

Job Number
12087-07-22

Sheet
1/1

Plan 	Remarks Soakaway terminated due to location of services		
	Scale (approx) 1:25	Logged By SML	Figure No. 12087-07-22.SA06



Site	ATU Regional Sports HUB
-------------	-------------------------

**Trial Pit
Number**
SA06A

Machine : 5t tracked
Method : Trial Pit

Dimensions

Ground Level (mOD)	76.85
--------------------	-------

Client

Job Number	12087-07-22
------------	-------------

Location

617857.4 E 913331.4 N

Dates	01/12/2022
--------------	------------

Engineer
Tobin

Sheet
1/1

Depth
(m)

Sample / Tests

Water
Depth
(m)

Field Records

Level
(mOD)Depth
(m)
(Thickness)

Description

Legend

Water

76.75
76.70

(0.10)
0.10
0.15

Dark brown slightly sandy slightly gravelly TOPSOIL with grass rootlets

Grey sandy Crushed Rock Fill

Complete at 0.15m

Plan

Remarks

Soakaway terminated due to location of services

Scale (approx)

1:25

Logged By

SML

Figure No.

12087-07-22.SA06A



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Site
ATU Regional Sports HUB

Trial Pit
Number
SA07

Machine : 5t tracked
Method : Trial Pit

Dimensions
0.4m x 1.76m x 1.70m

Ground Level (mOD)
73.47

Client

Job
Number
12087-07-22

Location
617740.8 E 913129.8 N

Dates
01/12/2022

Engineer
Tobin

Sheet
1/1

Depth (m)	Sample / Tests	Water Depth (m)	Field Records	Level (mOD)	Depth (m) (Thickness)	Description	Legend	Water
				73.17	(0.30) 0.30	Dark brown slightly sandy slightly gravelly TOPSOIL with grass rootlets		
						Firm reddish sandy gravelly CLAY		
					(1.00)			
				72.17	1.30 (0.40)	Firm bluish grey slightly sandy slightly gravelly silty CLAY occasional cobbles		
				71.77	1.70	Complete at 1.70m		

Plan

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Remarks

Soakaway completed in TP07

Scale (approx)

1:25

Logged By

SML

Figure No.

12087-07-22.SA07



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Newcastle,
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D22 YD52

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Email: info@gii.ie
Web: www.gii.ie

SA01

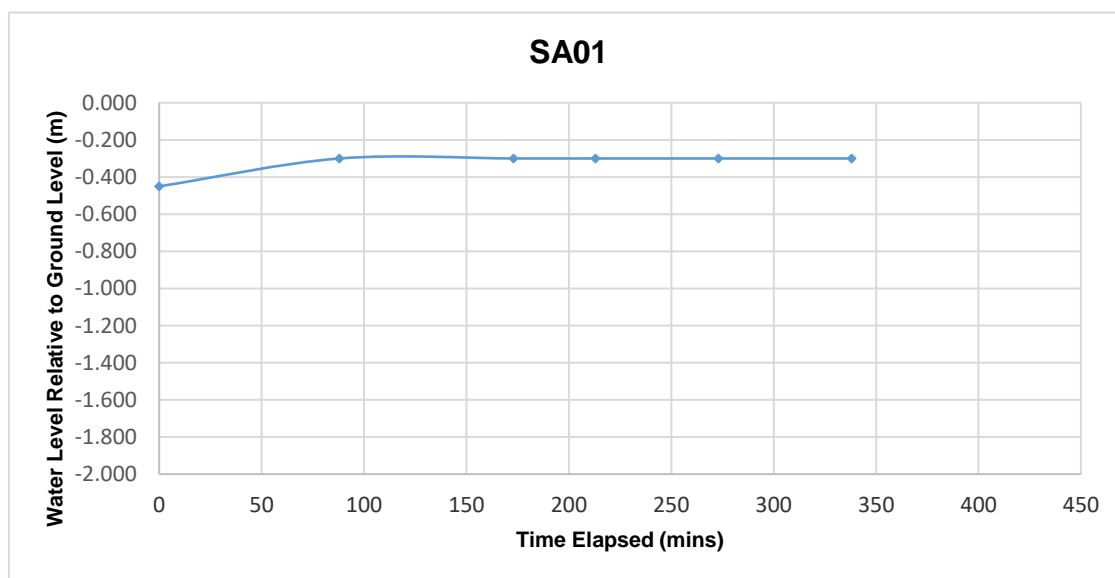
Soakaway Test to BRE Digest 365

Trial Pit Dimensions: 1.80m x 0.40m x 1.60m (L x W x D)

Date	Time	Water level (m bgl)
01/12/2022	0	-0.450
01/12/2022	88	-0.300
01/12/2022	173	-0.300
01/12/2022	213	-0.300
01/12/2022	273	-0.300
01/12/2022	338	-0.300

***Soakaway failed - Pit backfilled**

Start depth	Depth of Pit	Diff	75% full	25%full
0.45	1.600	1.150	0.7375	1.3125





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SA02

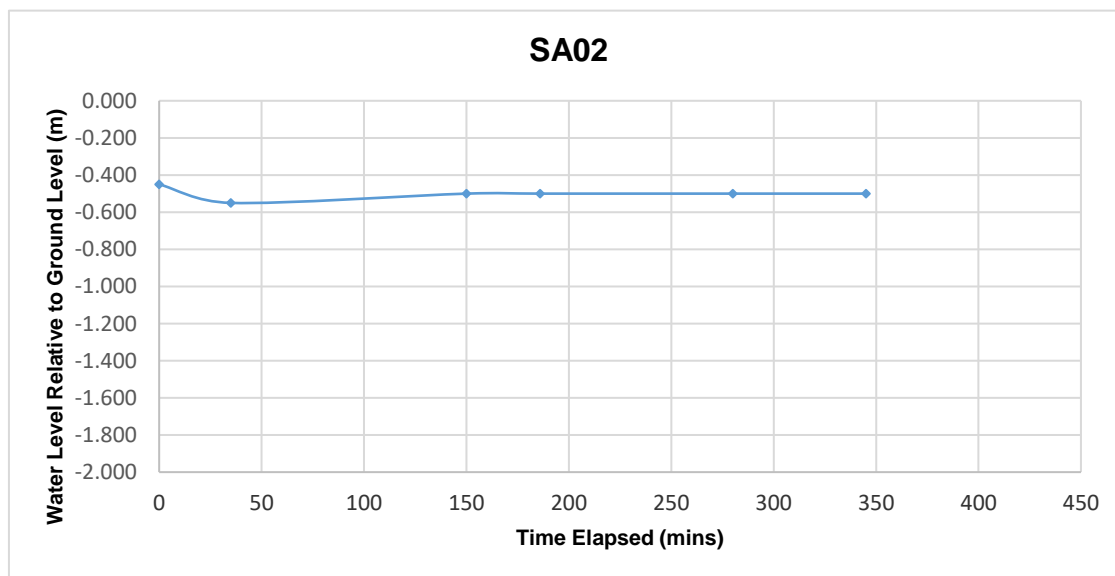
Soakaway Test to BRE Digest 365

Trial Pit Dimensions: 1.7m x 0.40m 1.20m (L x W x D)

Date	Time	Water level (m bgl)
01/12/2022	0	-0.450
01/12/2022	35	-0.550
01/12/2022	150	-0.500
01/12/2022	186	-0.500
01/12/2022	280	-0.500
01/12/2022	345	-0.500

***Soakaway failed - Pit backfilled**

Start depth	Depth of Pit	Diff	75% full	25%full
0.45	1.200	0.750	0.6375	1.0125





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SA03

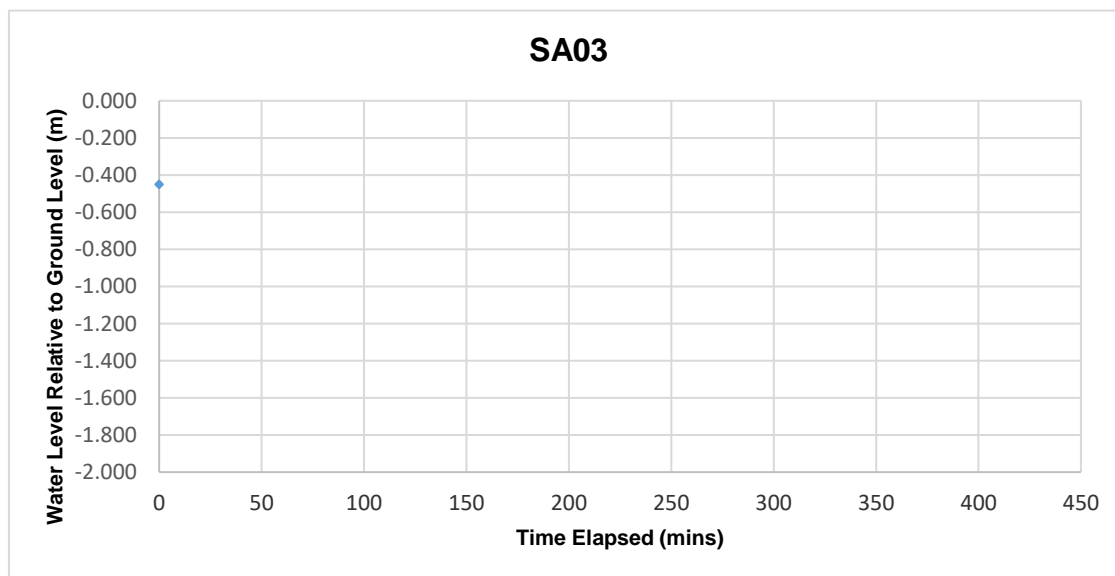
Soakaway Test to BRE Digest 365

Trial Pit Dimensions: 1.80m x 0.40m 1.60m (L x W x D)

Date	Time	Water level (m bgl)
01/12/2022	0	-0.450

*Trial pit collapsed before it could be filled - FAIL

Start depth	Depth of Pit	Diff	75% full	25%full
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SA04

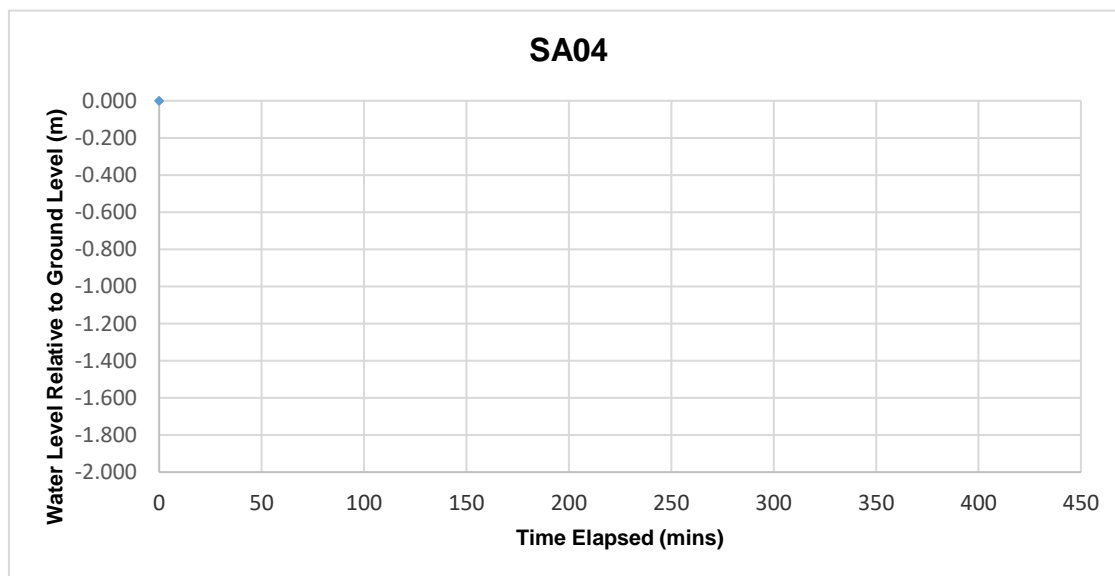
Soakaway Test to BRE Digest 365

Trial Pit Dimensions: 1.70m x 0.40m x 1.60m (L x W x D)

Date	Time	Water level (m bgl)
01/12/2022	0	0.000

*Groundwater seepage soakaway FAIL, rose to 1.30mBGL

Start depth	Depth of Pit	Diff	75% full	25%full
-------------	--------------	------	----------	---------





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SA05

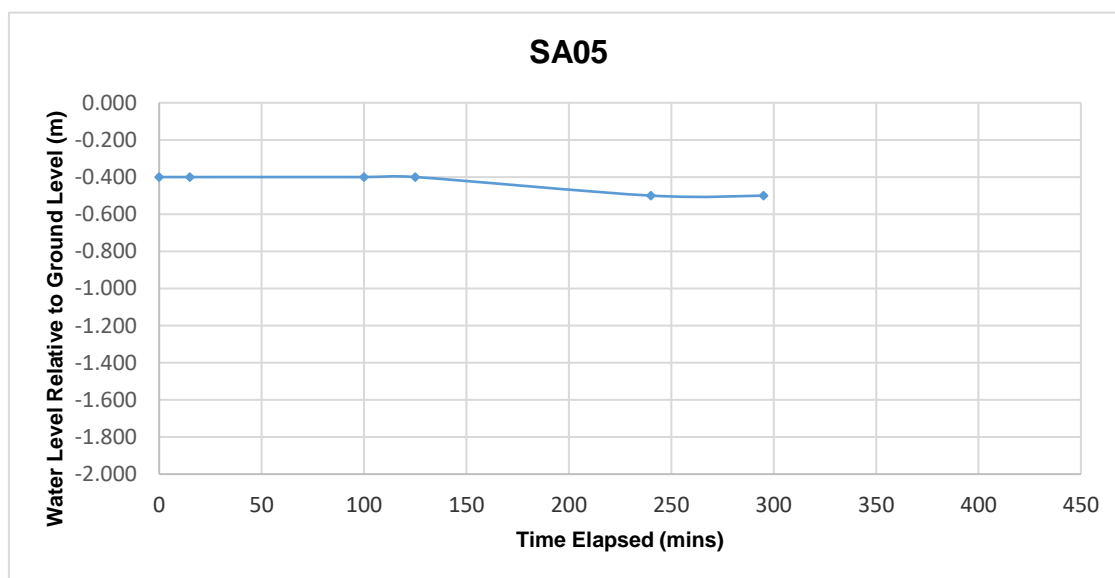
Soakaway Test to BRE Digest 365

Trial Pit Dimensions: 1.70m x 0.40m x 1.70m (L x W x D)

Date	Time	Water level (m bgl)
01/12/2022	0	-0.400
01/12/2022	15	-0.400
01/12/2022	100	-0.400
01/12/2022	125	-0.400
01/12/2022	240	-0.500
01/12/2022	295	-0.500

***Soakaway failed - Pit backfilled**

Start depth	Depth of Pit	Diff	75% full	25%full
0.40	1.700	1.300	0.725	1.375





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Web: www.gii.ie

SA06

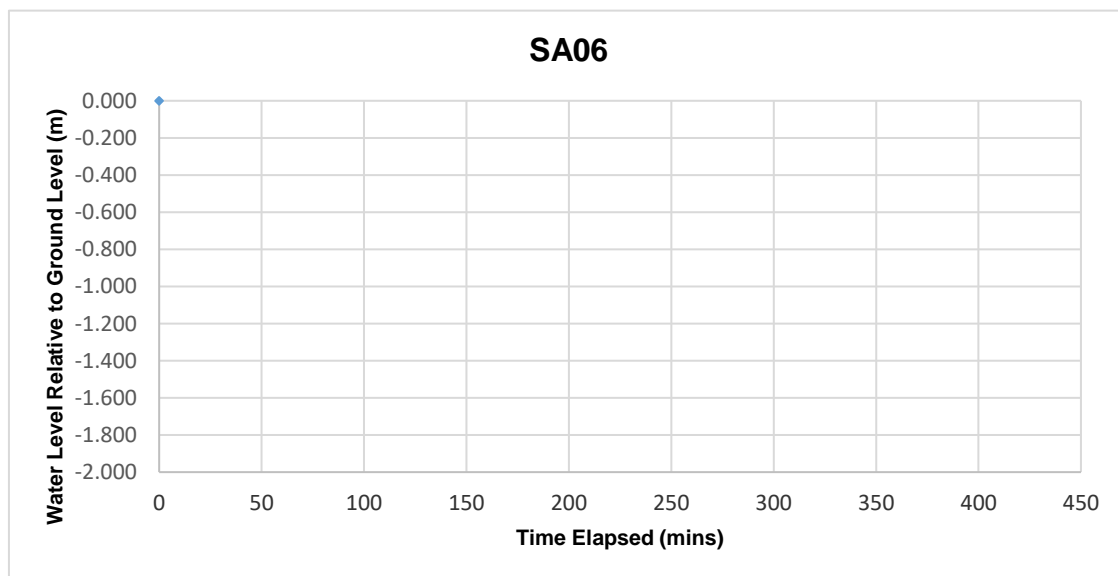
Soakaway Test to BRE Digest 365

Trial Pit Dimensions:

Date	Time	Water level (m bgl)
01/12/2022	0	0.000

*Terminated due to location of services

Start depth	Depth of Pit	Diff	75% full	25%full
-------------	--------------	------	----------	---------





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Tel: 01 601 5175 / 5176
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Web: www.gii.ie

SA06A

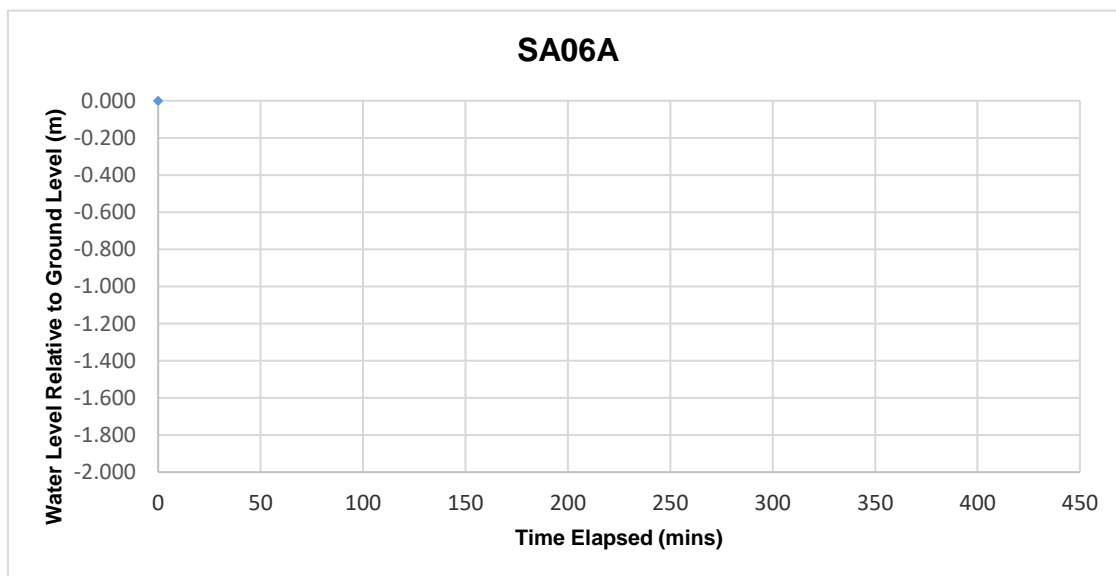
Soakaway Test to BRE Digest 365

Trial Pit Dimensions: (L x W x D)

Date	Time	Water level (m bgl)
01/12/2022	0	0.000

*Terminated due to location of services

Start depth	Depth of Pit	Diff	75% full	25%full
-------------	--------------	------	----------	---------





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Tel: 01 601 5175 / 5176
Email: info@gii.ie
Web: www.gii.ie

SA07

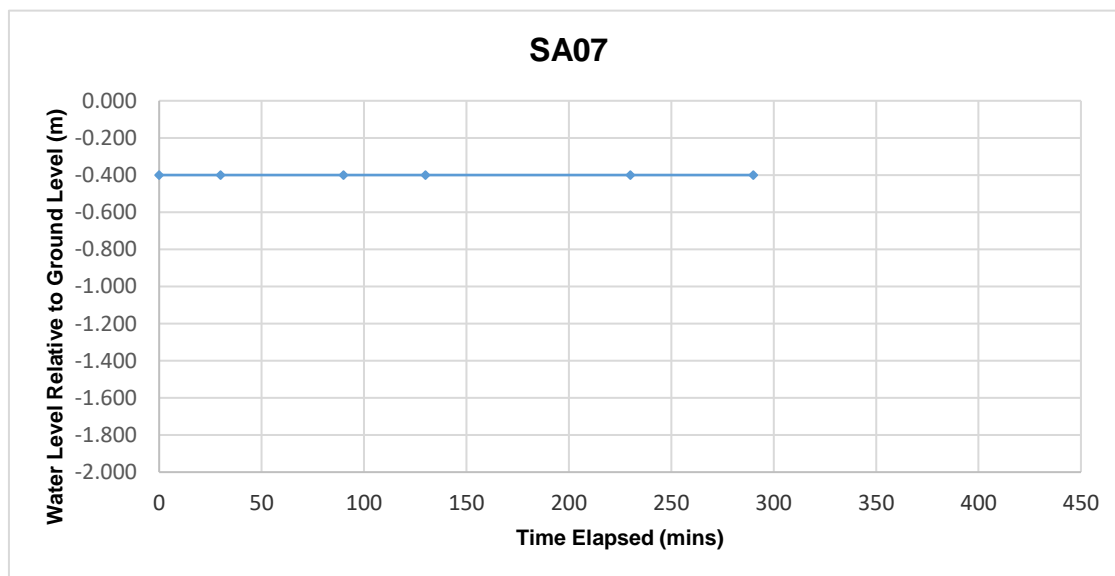
Soakaway Test to BRE Digest 365

Trial Pit Dimensions: 1.76m x 0.40m x 1.70m (L x W x D)

Date	Time	Water level (m bgl)
01/12/2022	0	-0.400
01/12/2022	30	-0.400
01/12/2022	90	-0.400
01/12/2022	130	-0.400
01/12/2022	230	-0.400
01/12/2022	290	-0.400

***Soakaway failed - Pit backfilled**

Start depth	Depth of Pit	Diff	75% full	25%full
0.40	1.700	1.300	0.725	1.375



ATU Regional Sports HUB – Soakaway Photos



SA01



ATU Regional Sports HUB – Soakaway Photos



ATU Regional Sports HUB – Soakaway Photos



SA02



ATU Regional Sports HUB – Soakaway Photos



ATU Regional Sports HUB – Soakaway Photos



SA03



ATU Regional Sports HUB – Soakaway Photos



ATU Regional Sports HUB – Soakaway Photos



SA04



ATU Regional Sports HUB – Soakaway Photos



ATU Regional Sports HUB – Soakaway Photos



SA05

ATU Regional Sports HUB – Soakaway Photos



ATU Regional Sports HUB – Soakaway Photos



ATU Regional Sports HUB – Soakaway Photos



SA06



ATU Regional Sports HUB – Soakaway Photos



ATU Regional Sports HUB – Soakaway Photos



ATU Regional Sports HUB – Soakaway Photos



ATU Regional Sports HUB – Soakaway Photos



SA07



ATU Regional Sports HUB – Soakaway Photos



ATU Regional Sports HUB – Soakaway Photos



APPENDIX 4 - Percussion Borehole Records





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Site ATU Regional Sports HUB	Number BH01
Client Tobin	Job Number 12087-07-22
Engineer Tobin	Sheet 1/1

Excavation Method Drive-in Windowless Sampler	Dimensions 88mm to 0.80m	Ground Level (mOD) 87.70
	Location 617603 E 913377.7 N	Dates 25/10/2022

Depth (m)	Sample / Tests	Water Depth (m)	Field Records	Level (mOD)	Depth (m) (Thickness)	Description	Legend	Water
0.00-0.10	B1			87.60	(0.10)	Dark brown slightly sandy slightly gravelly Clay TOPSOIL with rootlets		
0.10-0.80	B2				(0.70)	Soft to firm brown slightly sandy gravelly slightly silty CLAY		
0.80-1.25	SPT(C) N=50		25,25/50	86.90	0.80	Refusal at 0.80m		

Remarks 0.00m to 0.80m BGL: 80% Recovery No groundwater encountered Window sample refusal at 0.80m BGL Backfilled on completion	Scale (approx) 1:25	Logged By GGR
	Figure No. 12087-07-22.WS01	



Excavation Method Drive-in Windowless Sampler	Dimensions 88mm to 2.00m	Ground Level (mOD) 87.70	Client	Job Number 12087-07-22
	Location 617604 E 913378.7 N	Dates 25/10/2022	Engineer Tobin	Sheet 1/1

Depth (m)	Sample / Tests	Water Depth (m)	Field Records	Level (mOD)	Depth (m) (Thickness)	Description	Legend	Water
0.00-0.20	B1				(0.20)	Brown slightly sandy slightly gravelly Clay TOPSOIL with grass and rootlets		
0.20-0.80	B2			87.50	0.20	Firm greyish light brown mottled brown slightly sandy slightly silty slightly gravelly CLAY		
0.80-1.30	B3				(1.10)			
1.00-1.45	SPT(C) N=39		6,4/7,8,9,15					
1.30-2.00	B4			86.40	1.30	Weathered rock: dark grey clayey medium to coarse angular to sub rounded Gravel.		
					(0.70)			
2.00-2.45	SPT(C) N=50		18,20/25,25	85.70	2.00	Refusal at 2.00m		

Remarks 0.00m to 1.00m BGL: 85% Recovery 1.00m to 2.00m BGL: 90% Recovery No groundwater encountered Window sample refusal at 2.00m BGL Backfilled on completion	Scale (approx) 1:25	Logged By GGR
	Figure No. 12087-07-22.BH01A	



Number
BH02

Job Number
12087-07-22

Sheet
1/1

Depth (m)	Sample / Tests	Water Depth (m)	Field Records	Level (mOD)	Depth (m) (Thickness)	Description	Legend	Water		
0.00-0.20	B1		3,2/2,2,3,2	86.38	(0.20)	Brown slightly sandy slightly gravelly Clay TOPSOIL with grass and rootlets				
0.20-0.75	B2				0.20	Firm greyish brown slightly sandy slightly gravelly CLAY				
					(0.55)					
0.75-1.10	B3				85.83	0.75	Firm yellowish brown slightly sandy gravelly CLAY with organic matter			
					(0.35)					
1.00-1.45	SPT(C) N=9				1,1/1,2,6,13	85.48	1.10		Soft greyish brown slightly sandy gravelly silty CLAY. Gravel is fine to coarse angular to rounded. With occasional fragments of roots	
1.10-2.30	B4						(1.20)			
2.00-2.45	SPT(C) N=22									
2.30-2.50	B5	15,25/50	84.28	2.30	Weathered rock: dark grey silty fine to coarse angular to sub rounded Gravel					
				(0.20)						
2.50-2.95	SPT(C) N=50		84.08	2.50	Refusal at 2.50m					

Figure No.
12087-07-22.WS02



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Site ATU Regional Sports HUB	Number BH03
Excavation Method Drive-in Windowless Sampler	Job Number 12087-07-22
Dimensions 88mm to 1.50m 68mm to 2.10m	Sheet 1/1
Ground Level (mOD) 85.21	Engineer Tobin
Location 617787 E 913537.4 N	
Dates 25/10/2022	

Depth (m)	Sample / Tests	Water Depth (m)	Field Records	Level (mOD)	Depth (m) (Thickness)	Description	Legend	Water
0.00-0.20	B1				(0.20)	Brown mottled dark brown slightly sandy slightly gravelly Clay TOPSOIL with rootlets		
0.20-1.00	B2			85.01	0.20	Firm brownish grey slightly sandy gravelly CLAY		
0.50-0.95	SPT(C) N=18		4,4/4,5,4,5					
1.00-1.60	B3				(1.90)			
1.50-1.95	SPT(C) N=26		4,4/4,6,8,8					
1.60-2.10	B4							
2.10-2.55	SPT(C) N=50		12,15/20,25,5	83.11	2.10	Refusal at 2.10m		

Remarks 0.00m to 0.50m BGL: 60% Recovery 0.50m to 1.50m BGL: 85% Recovery 1.50m to 2.10m BGL: 95% Recovery No groundwater encountered Window sample refusal at 2.10m BGL Backfilled on completion	Scale (approx) 1:25	Logged By GGR
	Figure No. 12087-07-22.BH03	



Site ATU Regional Sports HUB	Number BH04
Client	Job Number 12087-07-22
Engineer Tobin	Sheet 1/1

Excavation Method Drive-in Windowless Sampler		Dimensions 88mm to 2.00m 68mm to 3.70m		Ground Level (mOD) 79.03	
Location 617726.3 E 913345.8 N		Dates 25/10/2022			
Depth (m)	Sample / Tests	Water Depth (m)	Field Records	Level (mOD)	Depth (m) (Thickness)
0.00-0.30	B1				(0.30)
0.30-1.30	B2			78.73	0.30
1.00-1.45	SPT(C) N=7		2,2/1,2,2,2		(1.00)
1.30-2.70	B3			77.73	1.30
2.00-2.45	SPT(C) N=4		0,0/1,1,1,1		(1.40)
2.70-3.70	B4			76.33	2.70
3.00-3.45	SPT(C) N=25		5,5/6,6,6,7		(1.00)
3.70-4.15	SPT(C) N=50		4,10/20,25,5	75.33	3.70

Remarks 0.00m to 1.00m BGL: 85% Recovery 1.00m to 2.00m BGL: 80% Recovery 2.00m to 3.00m BGL: 80% Recovery 3.00m to 3.70m BGL: 95% Recovery No groundwater encountered Window sample refusal at 3.70m BGL Backfilled on completion		Scale (approx) 1:25	Logged By GGR
		Figure No. 12087-07-22.BH04	



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Site ATU Regional Sports HUB	Number BH05
Client Tobin	Job Number 12087-07-22
Engineer Tobin	Sheet 1/1

Excavation Method Drive-in Windowless Sampler	Dimensions 88mm to 2.00m	Ground Level (mOD) 77.17
	Location 617759.1 E 913270.9 N	Dates 25/10/2022

Depth (m)	Sample / Tests	Water Depth (m)	Field Records	Level (mOD)	Depth (m) (Thickness)	Description	Legend	Water
0.00-0.20	B1				(0.20)	Brown slightly sandy slightly gravelly Clay TOPSOIL with rootlets		
0.20-1.00	B2			76.97	0.20	Soft brownish grey sandy slightly gravelly slightly clayey SILT with occasional fragments of rootlets		
					(0.80)			
1.00-1.45	SPT(C) N=5		0,1/1,2,1,1	76.17	1.00	Soft grey sandy slightly gravelly slightly clayey SILT		
1.00-2.00	B3				(1.00)			
2.00-2.45	SPT(C) N=50		1,25/50	75.17	2.00	Refusal at 2.00m		

Remarks 0.00m to 1.00m BGL: 80% Recovery 1.00m to 2.00m BGL: 75% Recovery 2.00m to 2.10m BGL: No recovery No groundwater encountered Window sample refusal at 2.10m BGL Backfilled on completion	Scale (approx) 1:25	Logged By GGR
	Figure No. 12087-07-22.BH05	



Excavation Method Drive-in Windowless Sampler	Dimensions 88mm to 2.00m	Ground Level (mOD) 77.41	Client	Job Number 12087-07-22
	Location 617816.1 E 913345.4 N	Dates 25/10/2022	Engineer Tobin	Sheet 1/1

Depth (m)	Sample / Tests	Water Depth (m)	Field Records	Level (mOD)	Depth (m) (Thickness)	Description	Legend	Water
0.00-0.20	B1				(0.20)	Brown slightly sandy slightly gravelly Clay TOPSOIL with rootlets		
0.20-1.00	B2			77.21	0.20	Soft to firm brown mottled black slightly sandy gravelly CLAY		
1.00-1.45	SPT(C) N=9		1,0/1,2,3,3		(1.10)			
1.00-1.30	B3							
1.30-2.00	B4			76.11	1.30	Weathered rock: grey silty fine to coarse angular to sub rounded Gravel		
					(0.70)			
2.00-2.45	SPT(C) N=50		25,25/50	75.41	2.00	Refusal at 2.00m		

Remarks 0.00m to 1.00m BGL: 70% Recovery 1.00m to 2.00m BGL: 80% Recovery No groundwater encountered Window sample refusal at 2.00m BGL Backfilled on completion	Scale (approx) 1:25	Logged By GGR
	Figure No. 12087-07-22.BH06	



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Site ATU Regional Sports HUB	Number BH13
Excavation Method Drive-in Windowless Sampler	Job Number 12087-07-22
Dimensions 88mm to 1.50m	Sheet 1/1
Ground Level (mOD) 91.17	Engineer Tobin
Location 617374.9 E 913110.8 N	Dates 25/10/2022

Depth (m)	Sample / Tests	Water Depth (m)	Field Records	Level (mOD)	Depth (m) (Thickness)	Description	Legend	Water
0.00-0.20	B1				(0.20)	Brown slightly sandy slightly gravelly Clay TOPSOIL with grass and rootlets		
0.20-0.50	B2			90.97	0.20 (0.30)	Soft light brown slightly sandy slightly gravelly silty CLAY with occasional fragments of rootlets		
0.50-1.50	B3			90.67	0.50	Soft grey sandy gravelly clayey SILT. Gravel is fine to coarse angular to rounded		
1.00-1.45	SPT(C) N=20		2,1/1,1,3,15		(1.00)			
1.50-1.95	SPT(C) N=50		25,25/50	89.67	1.50	Refusal at 1.50m		

Remarks 0.00m to 1.00m BGL: 75% Recovery 1.00m to 1.50m BGL: 40% Recovery No groundwater encountered Window sample refusal at 1.50m BGL Backfilled on completion	Scale (approx)	Logged By
	1:25	GGR
	Figure No. 12087-07-22.BH13	



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Site ATU Regional Sports HUB	Number BH14
Client Tobin	Job Number 12087-07-22
Engineer Tobin	Sheet 1/1

Excavation Method Drive-in Windowless Sampler	Dimensions 88mm to 1.00m	Ground Level (mOD) 88.51
	Location 617470.4 E 913092.4 N	Dates 25/10/2022

Depth (m)	Sample / Tests	Water Depth (m)	Field Records	Level (mOD)	Depth (m) (Thickness)	Description	Legend	Water
0.00-0.20	B1				(0.20)	Dark brown slightly sandy s;lightly gravelly Clay TOPSOIL with grass and rootlets		
0.20-1.00	B2			88.31	0.20	Greyish brown slightly sandy clayey fine to coarse angular to sub rounded GRAVEL		
					(0.80)			
1.00-1.45	SPT(C) N=50		12,25/50	87.51	1.00	Refusal at 1.00m		

Remarks 0.00m to 1.00m BGL: 70% Recovery No groundwater encountered Window sample refusal at 1.00m BGL Backfilled on completion	Scale (approx) 1:25	Logged By GGR
	Figure No. 12087-07-22.BH14	



Site ATU Regional Sports HUB	Number BH15
Excavation Method Drive-in Windowless Sampler	Job Number 12087-07-22
Dimensions 88mm to 1.60m	Sheet 1/1
Ground Level (mOD) 83.18	Engineer Tobin
Location 617553.8 E 913098.4 N	
Dates 25/10/2022	

Depth (m)	Sample / Tests	Water Depth (m)	Field Records	Level (mOD)	Depth (m) (Thickness)	Description	Legend	Water
0.00-0.30	B1				(0.30)	Dark brown slightly sandy slightly gravelly Clay TOPSOIL with grass and rootlets		
0.30-1.00	B2			82.88	0.30	Greyish brown slightly sandy clayey fine to coarse GRAVEL		
					(0.70)			
1.00-1.45 1.00-1.60	SPT(C) N=22 B3		3,5/4,6,6,6	82.18	1.00	Soft brown mottled grey slightly sandy gravelly silty CLAY		
					(0.60)			
1.60-2.05	SPT(C) N=50		25,25/50	81.58	1.60	Refusal at 1.60m		

Remarks
0.00m to 1.00m BGL: 70% Recovery
1.00m to 1.60m BGL: 65% Recovery
No groundwater encountered
Window sample refusal at 1.60m BGL
Backfilled on completion

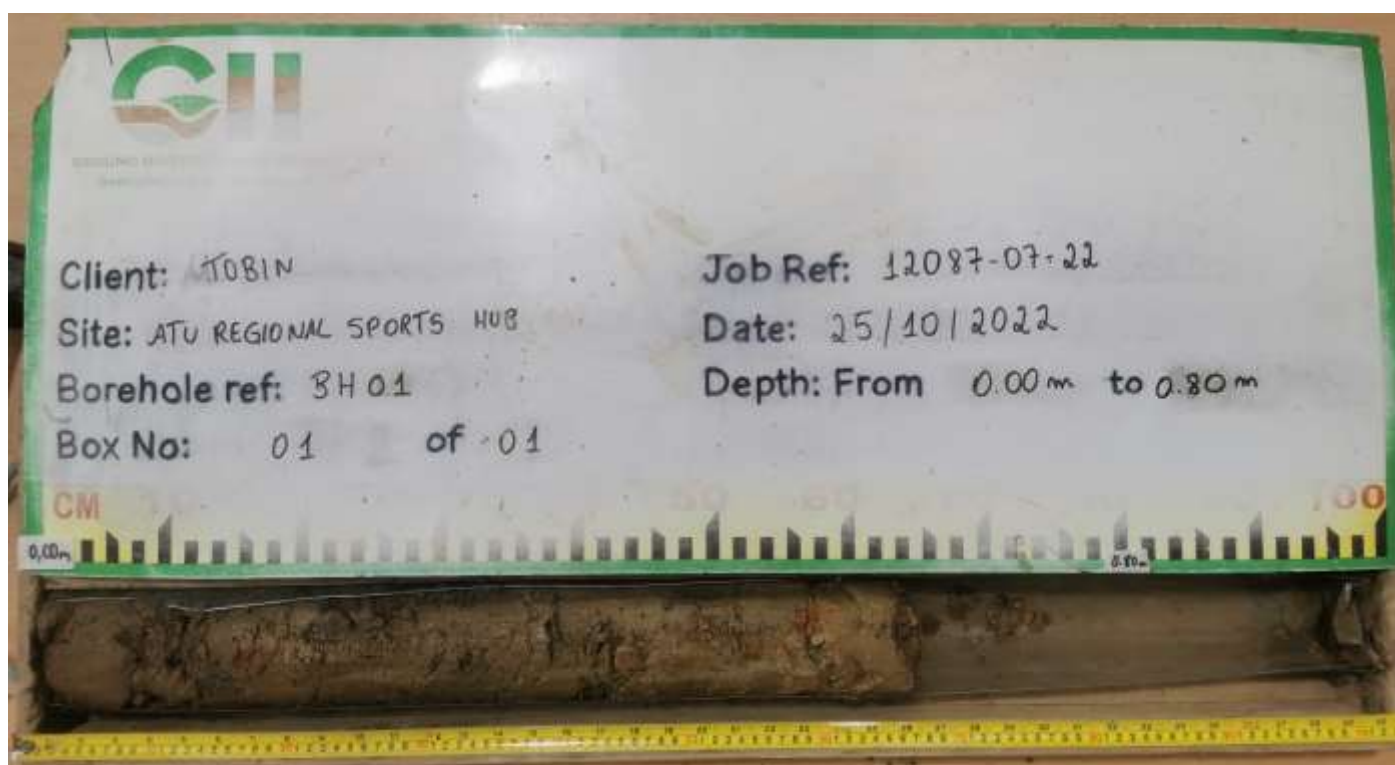
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Logged By
GGR

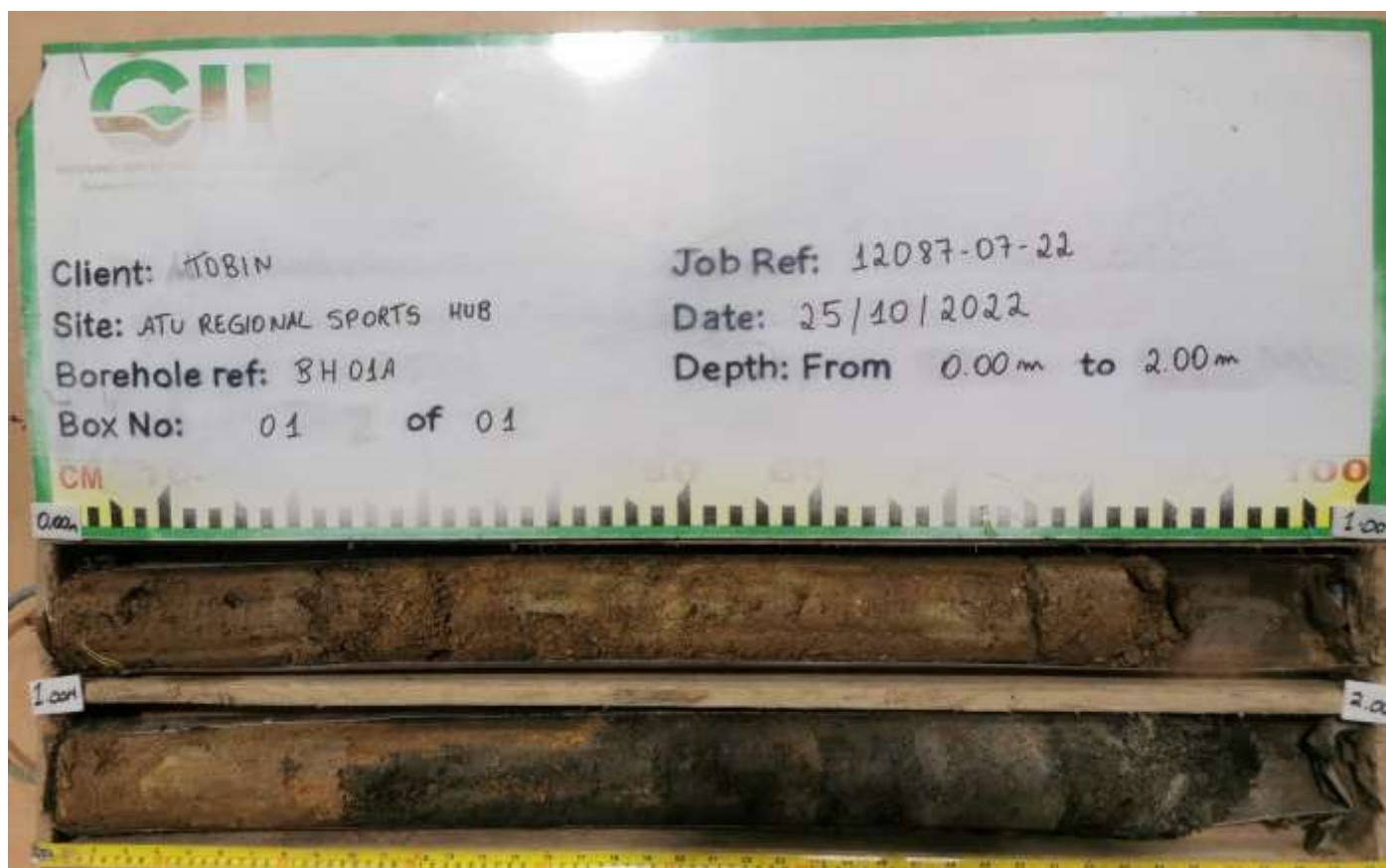
Figure No.
12087-07-22.WS15

ATU Regional Sports HUB – Window Samples Photos

BH01



BH01A

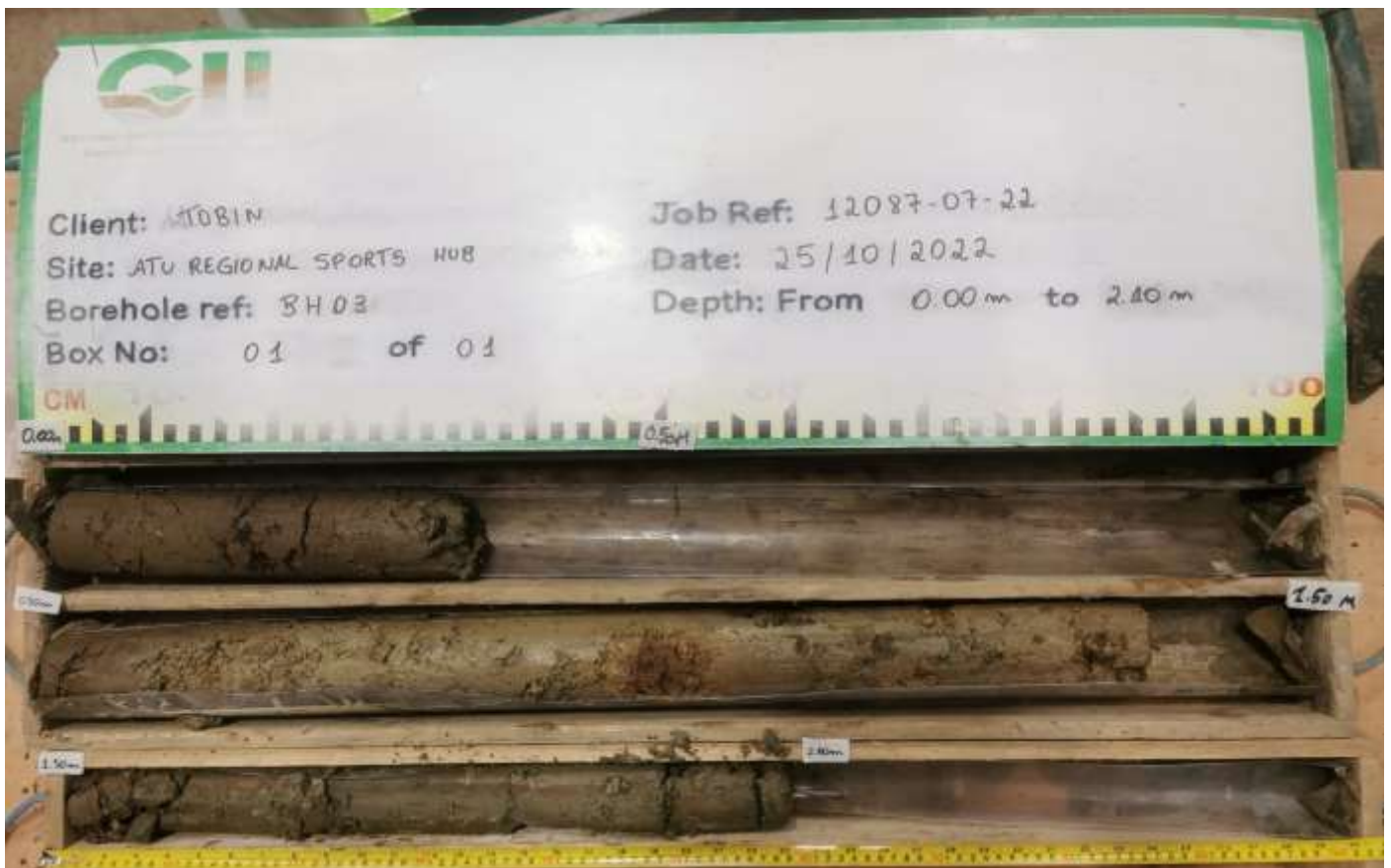


ATU Regional Sports HUB – Window Samples Photos

BH02



BH03

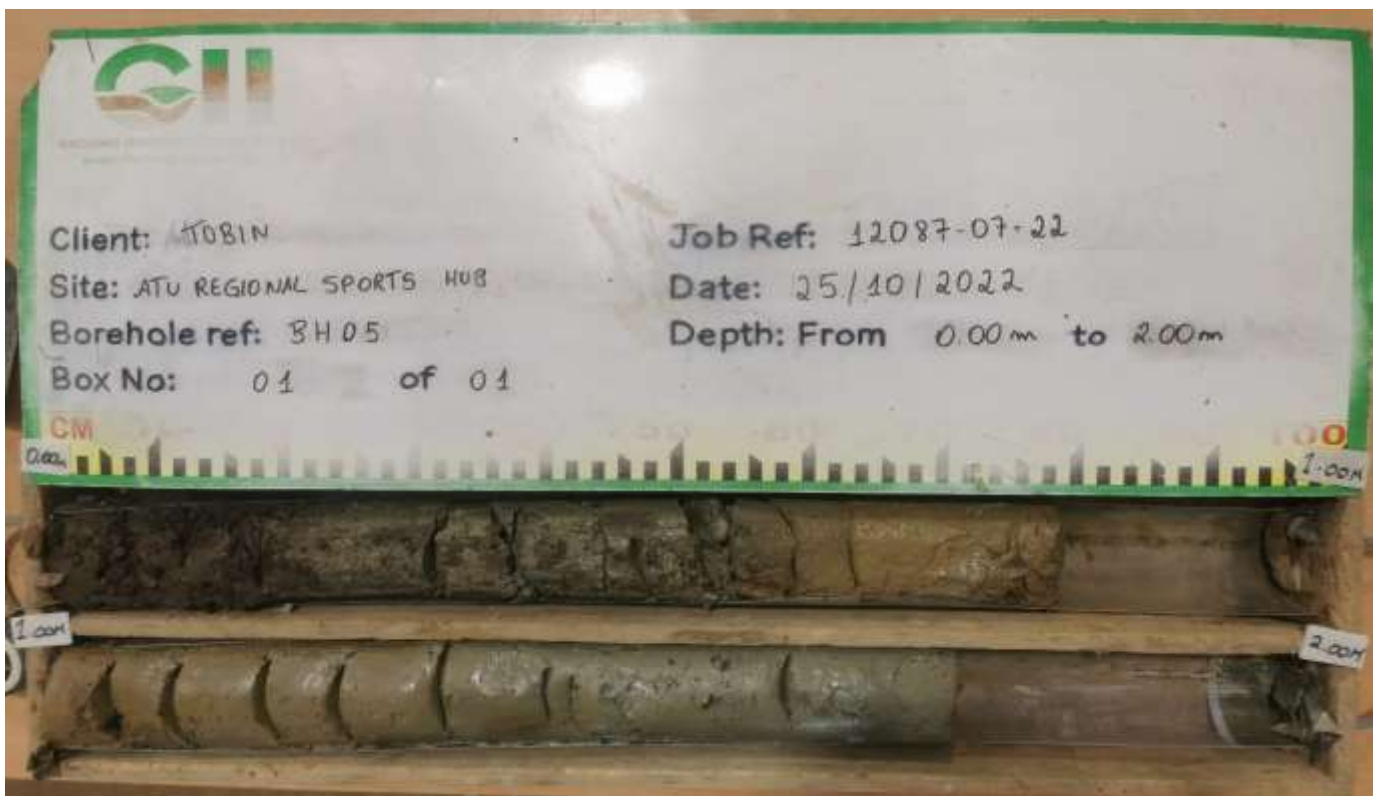


ATU Regional Sports HUB – Window Samples Photos

BH04



BH05



ATU Regional Sports HUB – Window Samples Photos

BH06

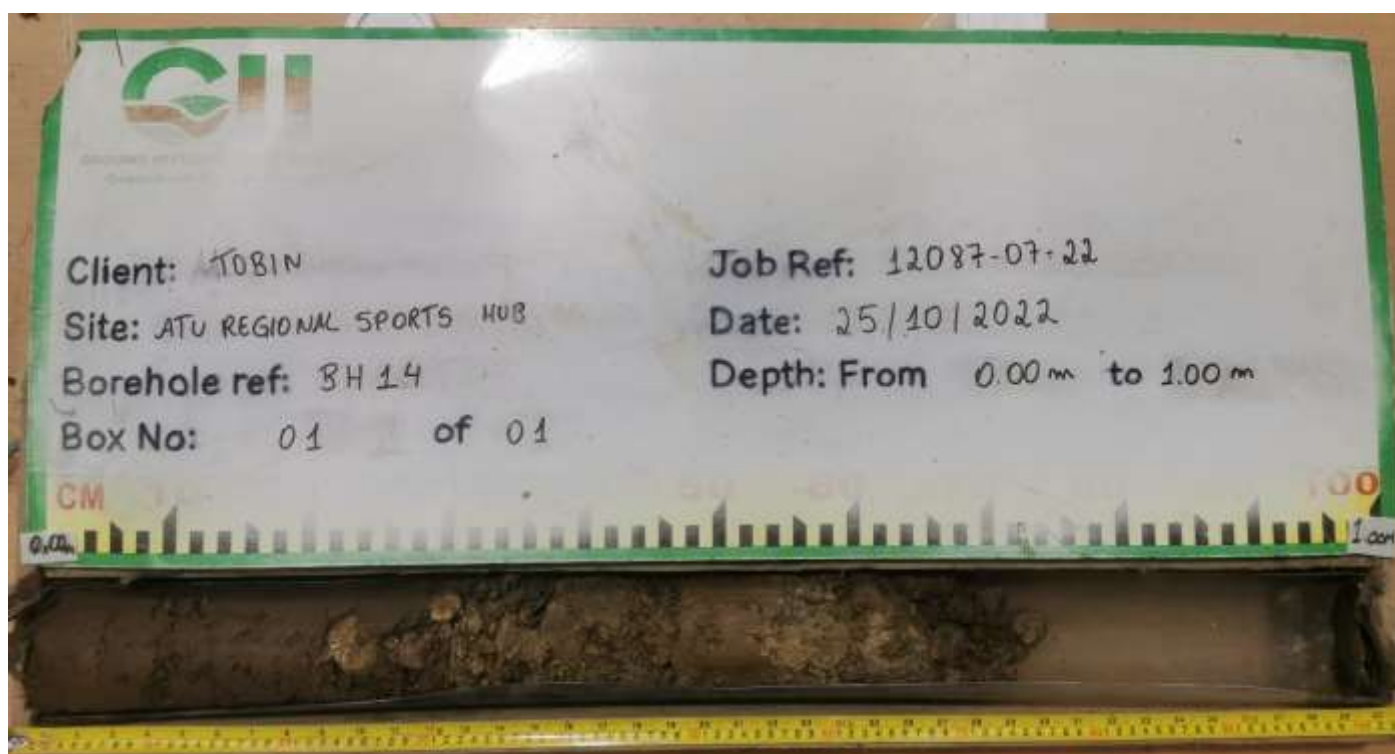


BH13



ATU Regional Sports HUB – Window Samples Photos

BH14



BH15



APPENDIX 5 - Rotary Borehole Records





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Site
ATU Regional Sports HUB
Borehole Number
RC01

Machine : Beretta T47	Casing Diameter 102mm cased to 10.00m	Ground Level (mOD) 103.92	Client	Job Number 12087-07-22
Flush : water				
Core Dia: 98 mm	Location 617414.1 E 913399.6 N	Dates 17/11/2022	Engineer Tobin	Sheet 1/1
Method : Rotary Cored				

Depth (m)	TCR (%)	SCR (%)	RQD (%)	FI	Field Records	Level (mOD)	Depth (m) (Thickness)	Description	Legend	Water	Instr
0.00						103.82	0.10	Brown slightly sandy slightly gravelly TOPSOIL with grass and rootlets.			
							(1.05)	Driller notes: Boulder onto rock. Recovery consists of black mottled reddish brown and greenish grey slightly sandy very gravelly CLAY with some subangular cobbles. Gravel is angular to subrounded fine to coarse.			
1.15	70	31	6	NI		102.77	1.15	Weak to medium strong foliated dark grey mottled brown micaceous (pelitic) SCHIST. Distinctly weathered with clay smearing and occasional bands of clay.			
1.65				25			(1.50)	1.15m - 1.65m BGL: Mostly non-intact 1.65m - 2.65m BGL: 2 Fracture sets - F1: Fractures are dipping 0-30 degrees, very closely to closely spaced, smooth planar to smooth undulating with slight clay smearing. F2: Fractures are dipping 70-85 degrees, closely to medium spaced, rough planar to rough undulating with some discoloration and slight clay/sand smearing			
2.50						101.27	2.65	Medium strong to strong foliated dark grey mottled light grey micaceous (psammitic) SCHIST. Unweathered to partially weathered.			
2.65	100	65	13	20				2.65m - 3.70m BGL: 2 Fracture sets - F1: Fractures are dipping 0-20 degrees, very closely to closely spaced, smooth planar to smooth stepped, with slight clay smearing. F2: Fractures are dipping 70-85 degrees, very closely to medium spaced, smooth undulating with slight clay smearing			
3.70				14			(2.85)	3.70m - 5.50m BGL: 2 Fracture sets - F1: Fractures are dipping 10-30 degrees, very closely to medium spaced, smooth planar to smooth undulating, with slight clay smearing. F2: Fractures are dipping 50-70 degrees, medium to widely spaced, smooth undulating to smooth stepped with slight clay and sand smearing			
4.00											
4.70	100	89	57	11							
5.50						98.42	5.50	Complete at 5.50m			

Remarks No groundwater encountered. Borehole carried out to 5.50m BGL. Standpipe installed in borehole upon completion. Slotted standpipe installed from 5.50m - 2.50m BGL with a pea gravel surround. Plain standpipe installed from 2.50m BGL to GL with a bentonite seal and a raised cover.	Scale (approx)	Logged By
	1:50	CE/AM
	Figure No. 12087-07-22.BH01	



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Site
ATU Regional Sports HUB

Borehole
Number
RC02

Machine : Beretta T47	Casing Diameter 102mm cased to 10.00m	Ground Level (mOD) 86.58	Client	Job Number 12087-07-22
Flush : water				
Core Dia: 98 mm	Location 617654.8 E 913443.8 N	Dates 17/11/2022	Engineer Tobin	Sheet 1/1
Method : Rotary Cored				

Depth (m)	TCR (%)	SCR (%)	RQD (%)	FI	Field Records	Level (mOD)	Depth (m) (Thickness)	Description	Legend	Water
0.00						86.48	0.10	Brown slightly sandy slightly gravelly TOPSOIL with grass and rootlets.		
							(1.95)	Driller notes: Grey clay onto rock. Recovery consists of light brown mottled grey and black slightly sandy gravelly CLAY. Gravel is angular to subrounded fine to coarse.		
2.05	34	16.8	4.8			84.53	2.05	Medium strong foliated light to dark grey mottled greenish grey and orange micaceous (psammitic) SCHIST. Partly to distinctly weathered.		
2.50				20			(0.85)	2.05m - 2.90m BGL: 2 Fracture sets - F1: Fractures are dipping 0-30 degrees, very closely to closely spaced, smooth planar to smooth undulating with discolouration. F2: Fractures are dipping 40-60 degrees, closely to widely spaced, rough undulating to rough stepped with slight clay smearing and discolouration (orange)		
2.90	81.33	81.33	33.33	10		83.68	2.90	Medium to strong foliated light to dark grey mottled white micaceous (psammitic) SCHIST. Unweathered to partly weathered.		
3.90							(2.60)	2.90m - 4.50m BGL: 2 Fracture sets - F1: Fractures are dipping 0-20 degrees, closely to medium spaced, smooth planar to smooth undulating, slight clay smear. F2: Fractures are dipping 40-60 degrees, closely to widely spaced, smooth undulating smooth stepped with slight clay smearing and discolouration (orange)		
4.00	90	90	67.33	9				4.50m - 5.00m BGL: 1 Fracture set - F1: Fractures are dipping 0-30 degrees, very closely to medium spaced, smooth planar to smooth undulating, clean		
5.00				14						
5.50						81.08	5.50	Complete at 5.50m		

Remarks No groundwater encountered. Borehole carried out to 5.50m BGL.								Scale (approx) 1:50	Logged By CE/AM
								Figure No. 12087-07-22.RC02	



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Site
ATU Regional Sports HUB

Borehole
Number
RC03

Machine : Beretta T47

Flush : water

Core Dia: 98 mm

Method : Rotary Cored

Casing Diameter
102mm cased to 10.00m

Ground Level (mOD)
85.21

Client

Job
Number
12087-07-22

Location
617787 E 913537.4 N

Dates
17/11/2022

Engineer
Tobin

Sheet
1/1

Depth (m)	TCR (%)	SCR (%)	RQD (%)	FI	Field Records	Level (mOD)	Depth (m) (Thickness)	Description	Legend	Water	Instr
0.00						85.11	0.10	Brown slightly sandy slightly gravelly TOPSOIL with grass and rootlets.			
	16	0	0				(2.40)	Poor recovery. Driller notes: Grey clay. Recovery consists of brown mottled grey to dark grey slightly sandy gravelly CLAY. Gravel is subangular to subrounded fine to coarse.			
2.50 2.50-2.95	46.66	0	0		7,6/8,7,9,11 SPT(C) N=35	82.71	2.50	Poor recovery. Driller notes: Grey clay. Recovery consists of light greenish grey mottled brown and dark grey slightly sandy slightly gravelly CLAY with occasional subangular cobbles. Gravel is angular to subrounded fine to coarse.			
4.00 4.00-4.38	83.33	88.8	22.66	9	8,12/15,25,10 SPT(C) 50/225	81.21	4.00	Medium strong foliated grey to black mottled white micaceous (semi-pelitic) SCHIST. Partially weathered.			
5.00											
5.50				15			(3.10)	4.00m - 7.10m BGL: 2 Fracture sets: F1: Fractures are dipping 0-30 degrees, very closely to closely spaced, subplanar to subundulating with slight clay smear. F2: Fractures are dipping 50-70 degrees, very closely to medium spaced smooth planar to smooth undulating with slight clay smearing.			
6.00	100	76.66	24	22							
7.00 7.10						78.11	7.10	Medium strong to strong massive grey-greenish grey mottled dark grey QUARTZITE with slight pyrite veining. Unweathered to partially weathered.			
	100	78.66	54	11			(1.40)	7.10m - 8.50m BGL: 1 Fracture set - F1: Fractures are dipping 40-70 degrees, very closely to medium spaced, smooth planar to smooth undulating with slight clay/sand smearing.			
8.50						76.71	8.50	Complete at 8.50m			

Remarks

No groundwater encountered.
Borehole carried out to 8.50m BGL.
Standpipe installed in borehole upon completion. Slotted standpipe installed from 8.50m - 2.50m BGL with a pea gravel surround.
Plain standpipe installed from 2.50m BGL to GL with a bentonite seal and a raised cover.

Scale (approx)

1:50

Logged By

CE

Figure No.

12087-07-22.RC03



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Site ATU Regional Sports HUB	Borehole Number RC04
Client Tobin	Job Number 12087-07-22
Engineer Tobin	Sheet 1/2

Machine : Beretta T47	Casing Diameter 102mm cased to 16.00m	Ground Level (mOD) 79.03
Flush : water		
Core Dia : 98 mm		
Method : Rotary Cored	Location 617726.3 E 913345.8 N	Dates 15/11/2022- 16/11/2022

Depth (m)	TCR (%)	SCR (%)	RQD (%)	FI	Field Records	Level (mOD)	Depth (m) (Thickness)	Description	Legend	Water	Instr
0.00						78.83	(0.20) 0.20	Brown slightly sandy slightly gravelly TOPSOIL with grass and rootlets.			
	16						(2.30)	Poor recovery. Driller notes gravelly clay. Recovery consists of greyish brown slightly sandy gravelly CLAY. Gravel is subangular to subrounded fine to coarse			
2.50 2.50-2.95					5,6/8,6,9,10 SPT(C) N=33	76.53	2.50	Poor recovery. Driller notes silty clay with cobbles onto sandy silty clay with cobbles. Recovery consists of brownish grey to dark grey slightly sandy gravelly silty CLAY. Gravel is subangular to subrounded fine to coarse.			
	7						(3.00)				
4.00 4.00-4.45					6,7/9,11,15,14 SPT(C) N=49						
	10										
5.50 5.50-5.95					7,8/6,9,10,12 SPT(C) N=37	73.53	5.50	Poor recovery. Driller notes sand onto sandy gravel. Recovery consists of grey silty slightly gravelly fine to coarse SAND with occasional subrounded cobbles. Gravel is angular to subrounded fine to coarse.			
	13										
7.00 7.00-7.45					6,8/5,7,6,8 SPT(C) N=26						
	13						(4.50)				
8.50 8.50-8.80					8,10/25,25 SPT(C) 50/150						
	50										
10.00											

Remarks

No groundwater encountered.
Borehole carried out to 16.0m BGL.
Standpipe installed in borehole upon completion. Slotted standpipe installed from 16.0m to 4.0m GBL with a pea gravel surround.
Plain standpipe installed from 4.0m BGL to GL with a bentonite seal and a raised cover.

Scale (approx) 1:50	Logged By CE
-------------------------------	------------------------

Figure No.
12087-07-22.RC04



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Site
ATU Regional Sports HUB

Borehole Number
RC04

Machine : Beretta T47	Casing Diameter 102mm cased to 16.00m	Ground Level (mOD) 79.03	Client	Job Number 12087-07-22
Flush : water				
Core Dia : 98 mm	Location 617726.3 E 913345.8 N	Dates 15/11/2022- 16/11/2022	Engineer Tobin	Sheet 2/2
Method : Rotary Cored				

Depth (m)	TCR (%)	SCR (%)	RQD (%)	FI	Field Records	Level (mOD)	Depth (m) (Thickness)	Description	Legend	Water	Instr
10.00-10.45	20				6,7/5,9,8,10 SPT(C) N=32	69.03	10.00	Poor recovery. Driller notes sandy gravel. Recovery consists of grey to dark grey slightly silty sandy angular to subrounded fine to coarse GRAVEL with occasional subrounded cobbles.			
11.50	37	11	0	NI		67.53	11.50	Poor recovery. Driller notes sand and rock. Recovery consists of POSSIBLE WEATHERED ROCK: Grey to dark grey very clayey slightly sandy angular to subrounded fine to coarse GRAVEL of schist. 11.50m - 13.0m BGL: Non-Intact			
13.00	53	37	20	14		66.03	13.00	Medium strong to strong foliated dark grey mottled white and light grey micaceous pelitic SCHIST with some quartz. Slightly weathered.			
14.50	100	86	58	10			(3.00)	13.0m - 14.50m BGL: 2 Fracture sets - F1: Fractures are dipping 10 - 30 degrees, very closely to medium spaced, smooth planar to smooth undulating, with some clay smearing. F2: Fractures are dipping 50 - 70 degrees, very closely to medium spaced, rough planar to rough undulating, with slight clay smearing 14.50m - 16.0m BGL: 2 Fracture sets - F1: Fractures are dipping 10 - 30 degrees, very closely to medium spaced, smooth planar to smooth undulating, clean. F2: Fractures are dipping 60 - 80 degrees, closely to widely spaced, rough undulating, clean			
16.00						63.03	16.00	Complete at 16.00m			

Remarks	Scale (approx)	Logged By
	1:50	CE
	Figure No. 12087-07-22.RC04	



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Site
ATU Regional Sports HUB

Borehole Number
RC05

Machine : Beretta T47	Casing Diameter 102mm cased to 10.00m	Ground Level (mOD) 77.17	Client	Job Number 12087-07-22
Flush : water				
Core Dia : 98 mm	Location 617759.1 E 913270.9 N	Dates 17/11/2022	Engineer Tobin	Sheet 1/2
Method : Rotary Cored				

Depth (m)	TCR (%)	SCR (%)	RQD (%)	FI	Field Records	Level (mOD)	Depth (m) (Thickness)	Description	Legend	Water	Instr
0.00						77.07	0.10	Brown slightly sandy slightly gravelly TOPSOIL with grass and rootlets.			
	22						(2.40)	Poor recovery. Driller notes gravelly clay onto boulder. Recovery consists of greenish grey mottled brown slightly sandy slightly gravelly silty CLAY with occasional subrounded cobbles. Gravel is subangular to subrounded fine to coarse.			
2.50 2.50-2.80					10,11/25,25 SPT(C) 50/150	74.67	2.50	Poor recovery. Driller notes gravel. Recovery consists of grey to black mottled white angular to subrounded fine to coarse GRAVEL with occasional subangular cobbles.			
	17						(2.20)				
4.00 4.00-4.38					9,10/15,25,10 SPT(C) 50/225						
4.70	50	15	0			72.47	4.70	Weak to medium strong foliated dark grey to black micaceous pelitic SCHIST with some clay smearing. Moderately weathered. 4.70m - 5.60m BGL: Non-Intact			
				NI			(0.90)				
5.50 5.60						71.57	5.60	Moderately weak to medium strong foliated light grey to dark grey mottled brown micaceous psammitic SCHIST with some clay banding and smearing and possible talc. 5.60m - 6.60m BGL: 2 Fracture sets - F1: Fractures are dipping 0 - 20 degrees, very closely to closely spaced, smooth planar to smooth undulating with some clay smearing. F2: Fractures are dipping 50 - 80 degrees, closely to medium spaced, smooth undulating to smooth stepped, with some clay smearing 6.60m - 7.70m BGL: Non-Intact			
6.60	87	38	0				(2.90)				
7.00					Mostly NI						
7.70	57	23	0								
				14							
8.50						68.67	8.50	Medium strong foliated light grey to dark grey mottled cream micaceous psammitic SCHIST with possible talc. Partially weathered.			
	100	67	7	22			(1.50)	7.70m - 10.0m BGL: 2 Fracture sets - F1: Fractures are dipping 0 - 20 degrees, very closely to closely spaced, smooth planar to smooth undulating, with slight clay smearing and brigh lustre. F2: Fractures are dipping 60 - 80 degrees, closely to medium spaced,			
10.00											

Remarks

No groundwater encountered.
Borehole carried out to 10.0m BGL.
Standpipe installed in borehole upon completion. Slotted standpipe installed from 10.0m to 1.0m GBL with a pea gravel surround.
Plain standpipe installed from 1.0m BGL to GL with a bentonite seal and a raised cover.

Scale (approx)
1:50

Logged By
CE

Figure No.
12087-07-22.RC05



**Borehole
Number
RC05**

Job Number
12087-07-22

Sheet
2/2

Depth (m)	TCR (%)	SCR (%)	RQD (%)	FI	Field Records	Level (mOD)	Depth (m) (Thickness)	Description	Legend	Water	Instr
						67.17	10.00	<div>smooth planar to smooth undulating, with slight clay smearing</div> <div>Complete at 10.00m</div>			

Scale (approx)	Logged By
1:50	CE

Figure No.
12087-07-22.RC05



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Site
ATU Regional Sports HUB

Borehole
Number
RC06

Machine : Beretta T47

Flush : water

Core Dia: 98 mm

Method : Rotary Cored

Casing Diameter
102mm cased to 7.00m

Ground Level (mOD)
77.41

Client

Job
Number
12087-07-22

Location
617816.1 E 913345.4 N

Dates
16/11/2022

Engineer
Tobin

Sheet
1/1

Depth (m)	TCR (%)	SCR (%)	RQD (%)	FI	Field Records	Level (mOD)	Depth (m) (Thickness)	Description	Legend	Water	Instr
0.00						77.21	(0.20) 0.20	Brown slightly sandy slightly gravelly TOPSOIL with grass and rootlets.			
	48	6	4				(2.00)	Poor recovery. Driller notes sand and clay onto rock. Recovery consists of greyish brown mottled dark grey slightly sandy gravelly CLAY with occasional subangular cobbles. Gravel is angular to subrounded fine to coarse.			
2.20						75.21	2.20	Weak to medium strong foliated grey to dark grey micaceous SCHIST with some quartz veining. Unweathered to moderately weathered.			
2.50				13			(1.90)	2.20m - 2.80m BGL: 2 Fracture sets - F1: Fractures are dipping 20 - 50 degrees, very closely to closely spaced, smooth planar to smooth undulating, with some clay smearing. F2: Fractures are dipping 60 - 85 degrees, closely spaced, smooth undulating, with slight clay smearing			
3.30	97	77	61					2.80m - 4.10m BGL: 1 Fracture set - F1: Fractures are dipping 40 - 60 degrees, very closely to widely spaced, smooth planar to smooth undulating, with slight clay smearing			
4.00				8		73.31	4.10	Strong foliated greenish grey to dark grey micaceous psammitic SCHIST with slight quartz and pyrite veining. Unweathered to partially weathered.			
4.30	100	81	55				(2.90)	4.10m - 7.0m BGL: 2 Fracture sets - F1: Fractures are dipping 40 - 60 degrees, very closely to widely spaced, smooth planar to smooth undulating, clean. F2: Fractures are dipping 70 - 90 degrees, closely to widely spaced, smooth undulating to rough stepped, with slight clay smearing			
5.50											
6.00	100	88	71								
7.00				7		70.41	7.00	Complete at 7.00m			

Remarks

No groundwater encountered.
Borehole carried out to 7.0m BGL.
Borehole backfilled upon completion.

Scale
(approx)

1:50

Logged
By

CE

Figure No.

12087-07-22.RC06



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Site ATU Regional Sports HUB	Borehole Number RC13
Client Tobin	Job Number 12087-07-22
Engineer Tobin	Sheet 1/1

Machine : Beretta T47	Casing Diameter 102mm cased to 10.00m	Ground Level (mOD) 91.17
Flush : water		
Core Dia : 98 mm	Location 617374.9 E 913110.8 N	Dates 17/11/2022
Method : Rotary Cored		

Depth (m)	TCR (%)	SCR (%)	RQD (%)	FI	Field Records	Level (mOD)	Depth (m) (Thickness)	Description	Legend	Water
0.00						91.07	0.10	Topsoil		
	20.00	0	0				(2.40)	Poor recovery. Driller notes: Sandy gravelly Clay. Recovery consists of light brown to brown mottled grey slightly sandy slightly gravelly CLAY. Gravel is angular to subrounded fine to coarse.		
2.50					7,6/8,9,9,12 SPT(C) N=38	88.67	2.50	Driller notes: Gray clay onto rock. Recovery consists of brown mottled grey to dark grey slightly sandy very gravelly CLAY with some subangular cobbles. Gravel is angular to subrounded fine to coarse.		
2.50-2.95	76.66						(1.00)			
3.50				17		87.67	3.50	Medium strong foliated dark grey mottled white micaceous semi-pelitic SCHIST with slight pyrite veining. Partly to distinctly weathered.		
4.00										
4.50	96.66			19			(2.40)	3.50m - 5.9mBGL: 3 Fracture sets - F1: Fractures dipping 0-20 degrees, very closely to medium spacing, smooth planar to smooth undulating with slight clay smearing. F2: Fractures dipping 40-60 degrees, very closely to closely spaced, smooth planar to smooth undulating with slight clay smearing. F3: Fractures dipping 70-85 degrees closely to medium spacing, smooth undulating to smooth stepped with slight clay smearing.		
5.50						85.27	5.90	Strong slightly foliated/interbedded (schist). Light grey to grey QUARTZITE with some pyrite veining. Unweathered to partially weathered.		
	100.00			14			(1.10)	5.90m - 7.00mBGL: 2 Fracture sets - F1: Fractures dipping at 0-30 degrees, smooth planar to smooth undulating, clean. F2: Fractures are dipping 50-80 degrees, very close to medium spaced, smooth planar to smooth undulating, clean.		
7.00						84.17	7.00	Complete at 7.00m		

Remarks No groundwater encountered. Borehole carried out to 8.50mBGL. Standpipe installed in borehole upon completion. Slotted standpipe installed from 8.50m - 2.50mBGL with a pea gravel surround. Plain standpipe installed from 2.50mBGL to GL with a bentonite seal and a raised cover.	Scale (approx) 1:50	Logged By CE
	Figure No. 12087-07-22.BH03	



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Site ATU Regional Sports HUB	Borehole Number RC14
Client Tobin	Job Number 12087-07-22
Engineer Tobin	Sheet 1/1

Machine : Beretta T47 Flush : water Core Dia : 98 mm Method : Rotary Cored	Casing Diameter 102mm cased to 10.00m	Ground Level (mOD) 88.51
	Location 617470.4 E 913092.4 N	Dates 17/11/2022

Depth (m)	TCR (%)	SCR (%)	RQD (%)	FI	Field Records	Level (mOD)	Depth (m) (Thickness)	Description	Legend	Water
0.00						88.41	0.10	Topsoil		
							(1.40)	Poor recovery. Driller notes: Gravelly clay onto rock. Recovery consists of greyish brown mottled dark grey slightly sandy slightly gravelly CLAY. Gravel is fine to coarse.		
1.50	64	18.40	4.80	20		87.01	1.50	Weak to medium strong foliated dark grey mottled orange to brown (pelitic) SCHIST. Distinctly weathered with frequent oxidation.		
2.40						86.11	2.40	1.50m - 2.40mBGL: 3 Fracture sets: F1: Fractures are dipping 0-20 degrees, very closely to medium spaced smooth planar to smooth undulating with slight clay smearing and orange oxidation. F2: Fractures are dipping 40-60 degrees, very closely to closely spaced, smooth planar to smooth undulating with some orange discoloration. F3: Fractures are dipping 70-85 degrees, very closely to medium spaced, smooth planar to smooth undulating with some orange discoloration.		
2.50	100	84	44.66	17				Strong to very strong foliated dark grey to black slightly micaceous SCHIST with some pyritic veins. Unweathered to partly weathered.		
3.50				8			(3.10)	2.40m - 4.00mBGL: 2 Fracture sets: F1: Fractures are dipping 0-20 degrees, very closely to medium spaced, smooth planar to smooth undulating with some slight orange discoloration (oxidisation). F2: Fractures are dipping 40-60 degrees, closely to widely spaced, smooth planar to smooth undulating with some slight orange discoloration.		
4.00								4.00m - 5.5mBGL: 1 Fracture set: F1: Fractures are dipping 30-60 degrees, very closely to medium spaced, smooth planar to smooth undulating, clean.		
4.50	100	96	85.33	6						
5.50						83.01	5.50	Complete at 5.50m		

Remarks No groundwater encountered. Borehole carried out to 5.50mBGL.	Scale (approx) 1:50	Logged By CE
	Figure No. 12087-07-22.BH14	



Ground Investigations Ireland Ltd

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Site ATU Regional Sports HUB	Borehole Number RC15
Client Tobin	Job Number 12087-07-22
Engineer Tobin	Sheet 1/1

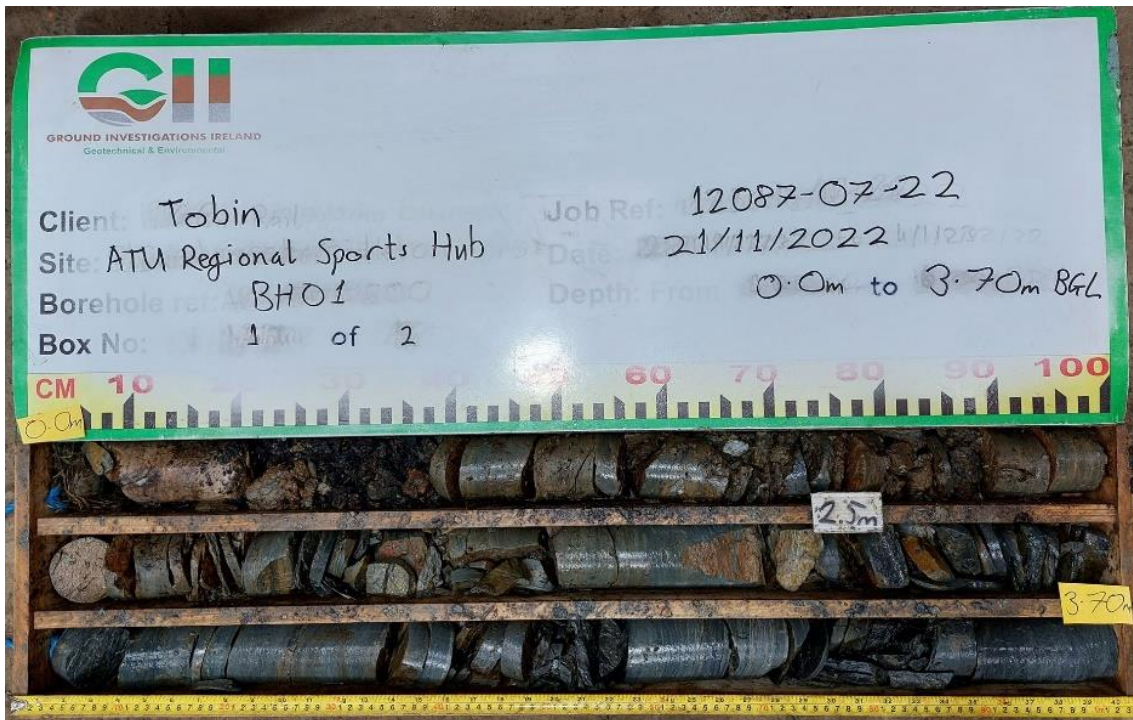
Machine : Beretta T47	Casing Diameter 102mm cased to 10.00m	Ground Level (mOD) 83.18
Flush : water		
Core Dia : 98 mm		
Method : Rotary Cored	Location 617553.8 E 913098.4 N	Dates 17/11/2022

Depth (m)	TCR (%)	SCR (%)	RQD (%)	FI	Field Records	Level (mOD)	Depth (m) (Thickness)	Description	Legend	Water	Instr
0.00						83.08	0.10	Topsoil			
				14			(1.70)	Poor recovery. Driller notes: Grey Clay. Recovery consists of brown slightly sandy slightly gravelly CLAY. Gravel fine to coarse.			
1.80	40.00	22.40	6.00			81.38	1.80	Weak to medium strong foliated light to dark grey slightly micaceous psammitic SCHIST with slight pyrrhotite veining. Partly weathered.			
2.50				14			(2.20)	1.80m - 4.00mBGL: 2 Fracture sets - F1: Fractures are dipping 0-30 degrees, very closely to closely spaced smooth planar to smooth undulating with slight clay smearing. F2: Fractures are dipping 50-70 degrees, medium to widely spaced smooth undulating with slight clay smearing and orange discolouration .			
4.00	100.00	90.66	64.00			79.18	4.00	Medium to strong to strong foliated grey to black mottled white micaceous psammitic SCHIST with some quartz veining. Unweathered to partly weathered.			
				12			(1.50)	4.00m - 5.50mBGL: 1 Fracture set - F1: Fractures are dipping 0-30 degrees, very closely to medium spaced, smooth planar to smooth undulating, clean.			
5.50						77.68	5.50	Complete at 5.50m			

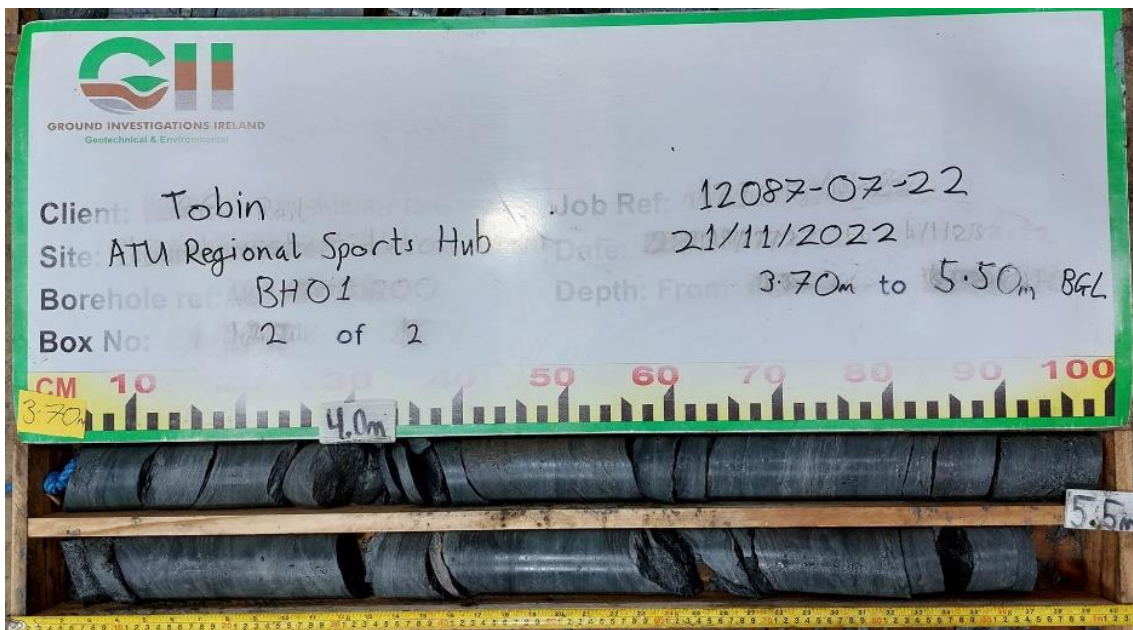
Remarks No groundwater encountered. Borehole carried out to 5.50mBGL. Standpipe installed in borehole upon completion. Slotted standpipe installed from 5.50m - 2.50mBGL with a pea gravel surround. Plain standpipe installed from 2.50mBGL to GL with a bentonite seal and a raised cover.	Scale (approx) 1:50	Logged By CE
Figure No. 12087-07-22.BH15		

ATU Regional Sports HUB – Rotary Core Photographs

BH01

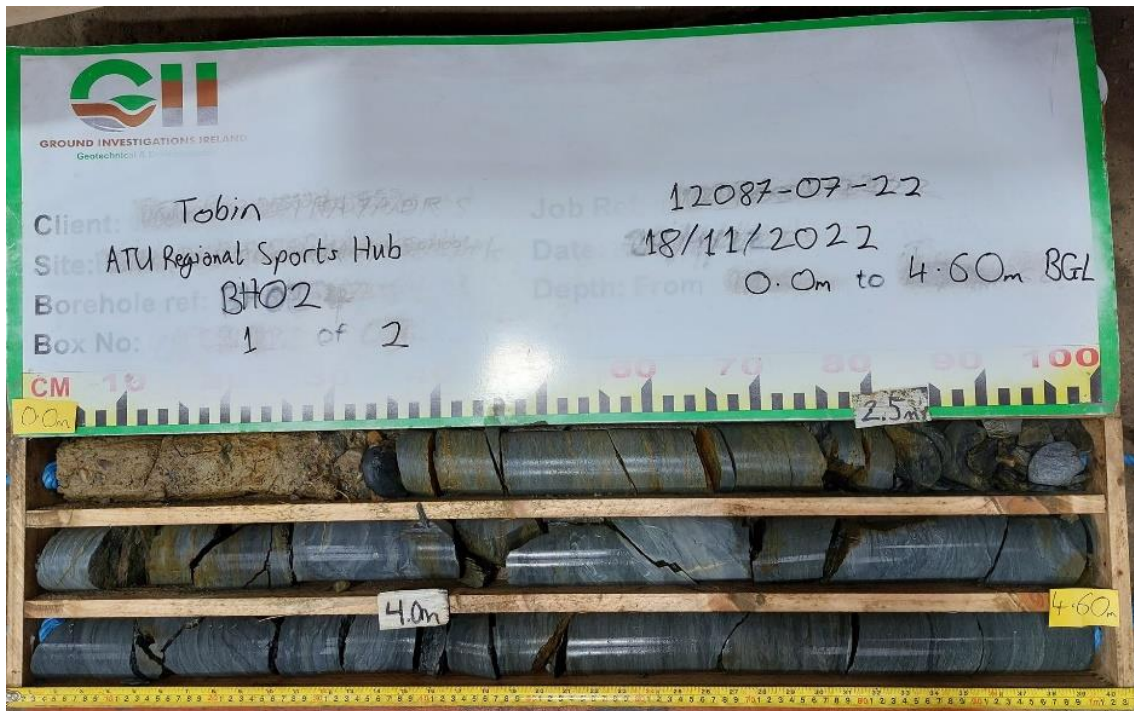


BH01

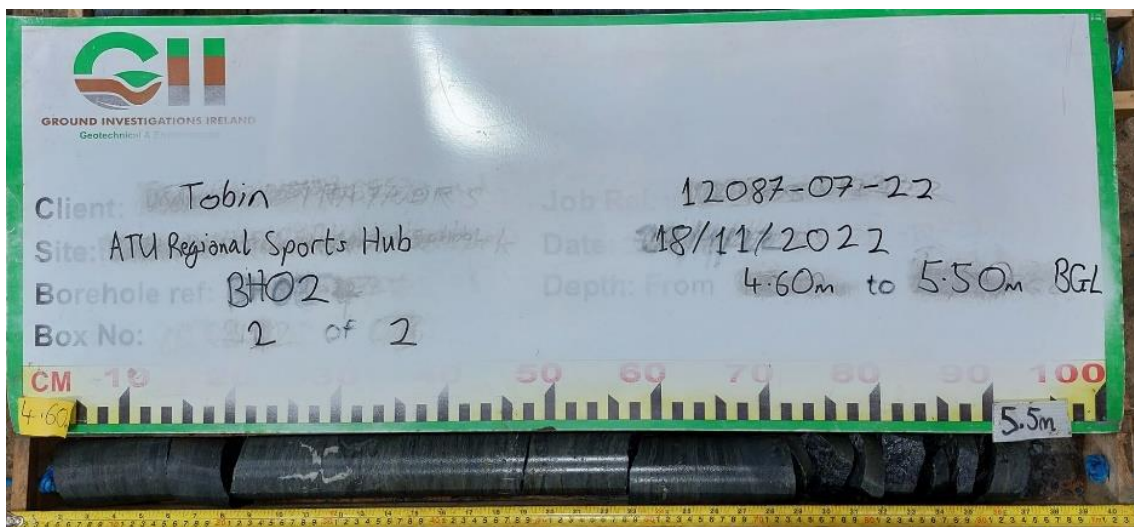


ATU Regional Sports HUB – Rotary Core Photographs

BH02

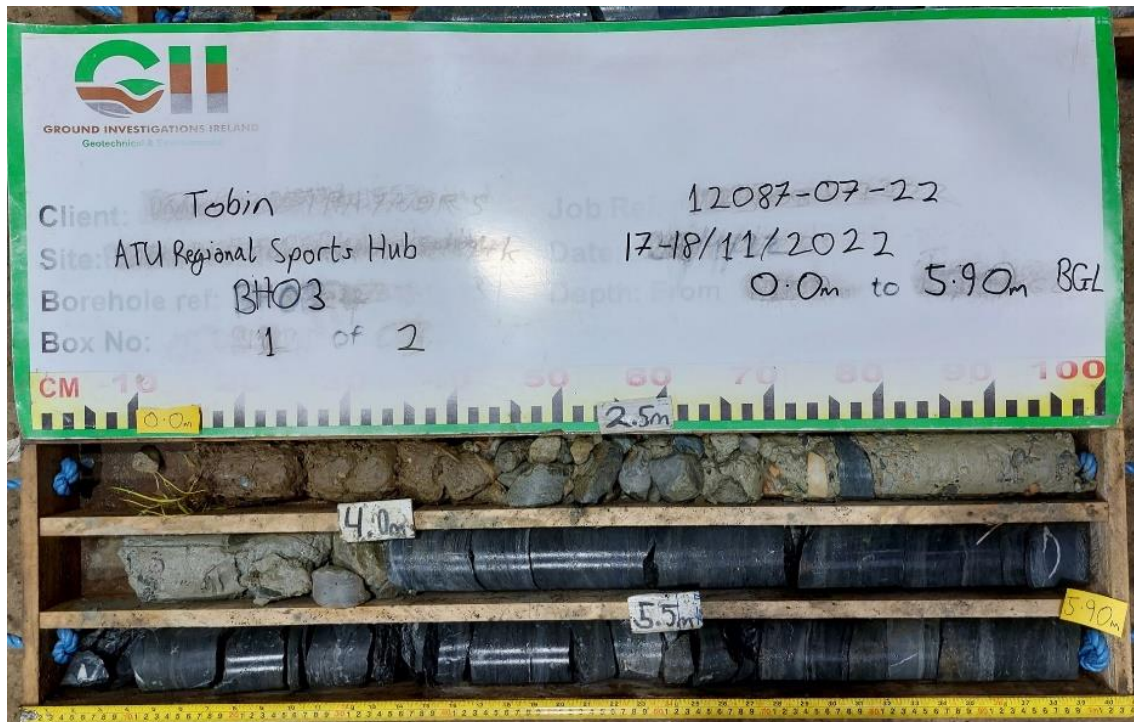


BH02

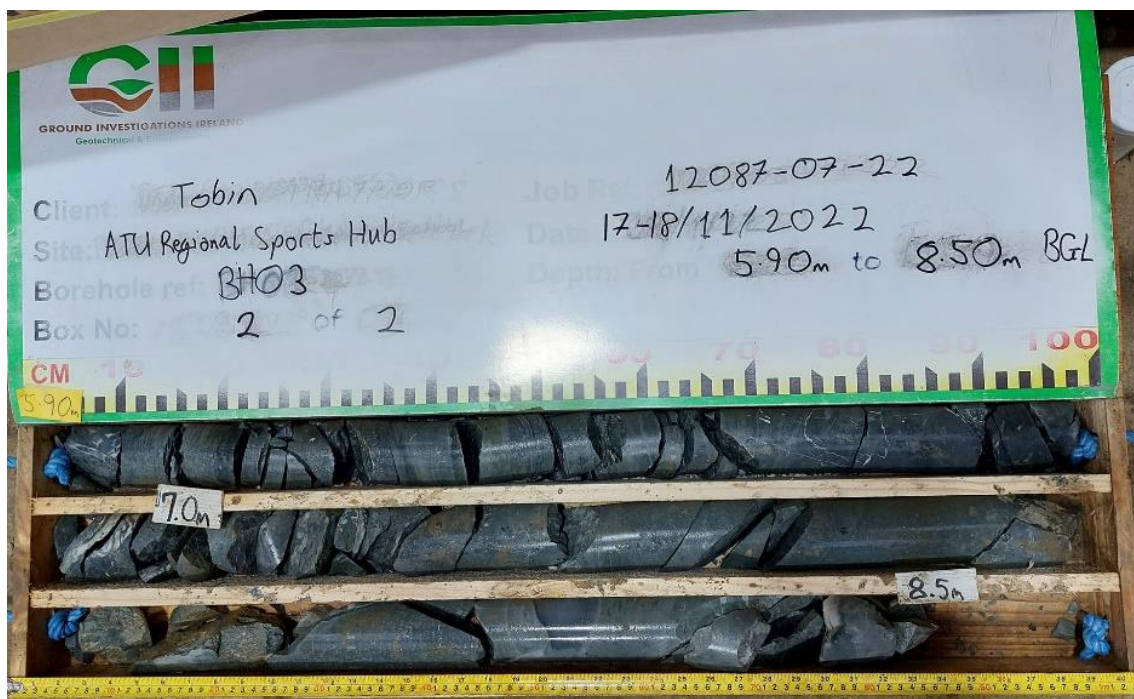


ATU Regional Sports HUB – Rotary Core Photographs

BH03

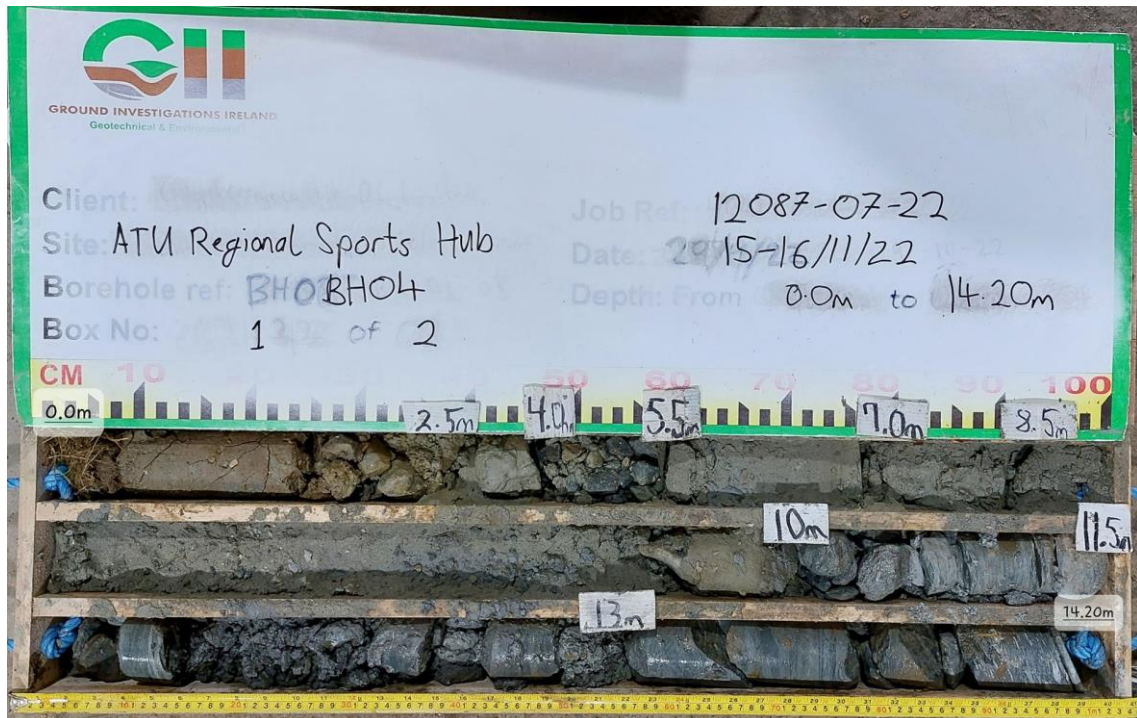


BH03

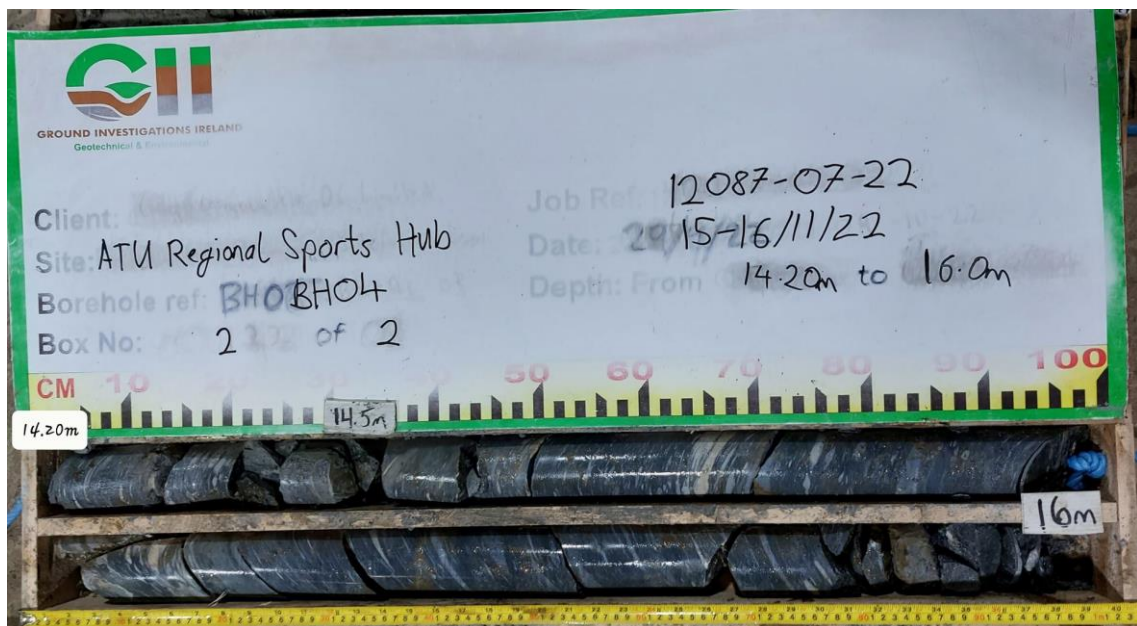


ATU Regional Sports HUB – Rotary Core Photographs

BH04

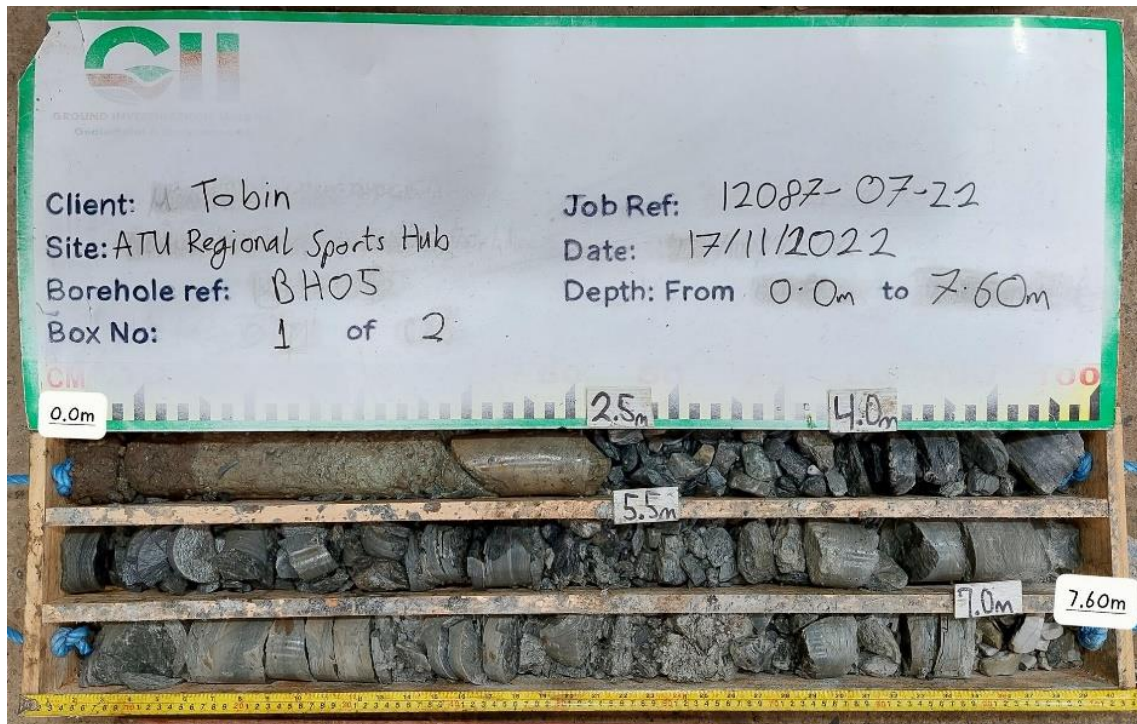


BH04

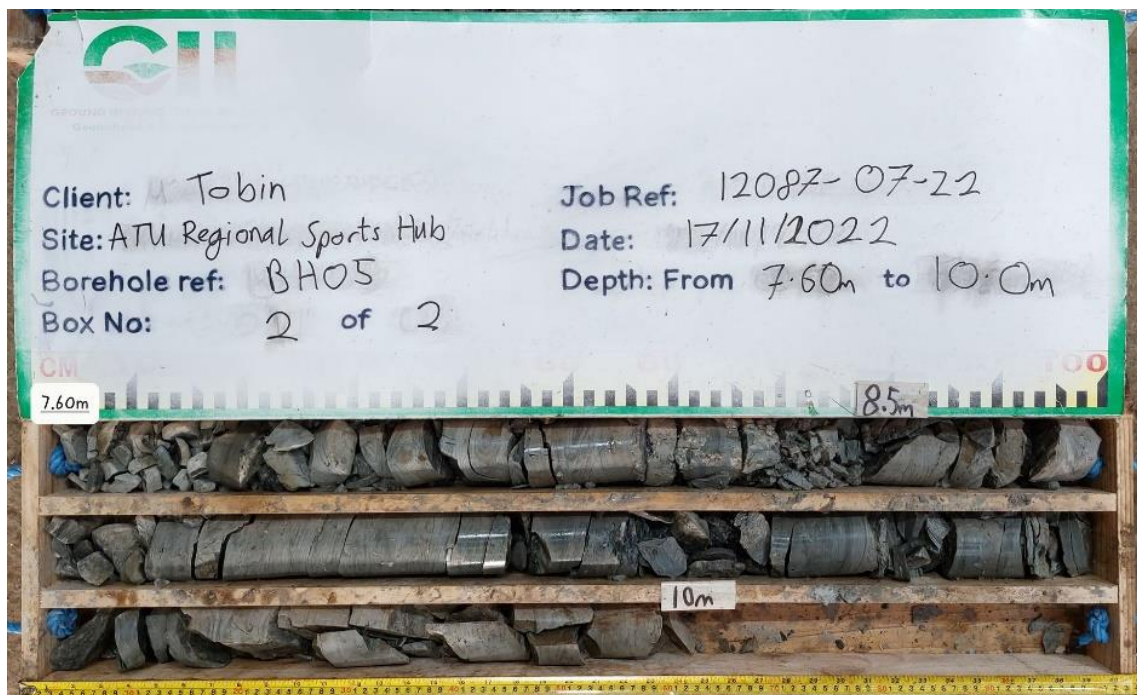


ATU Regional Sports HUB – Rotary Core Photographs

BH05

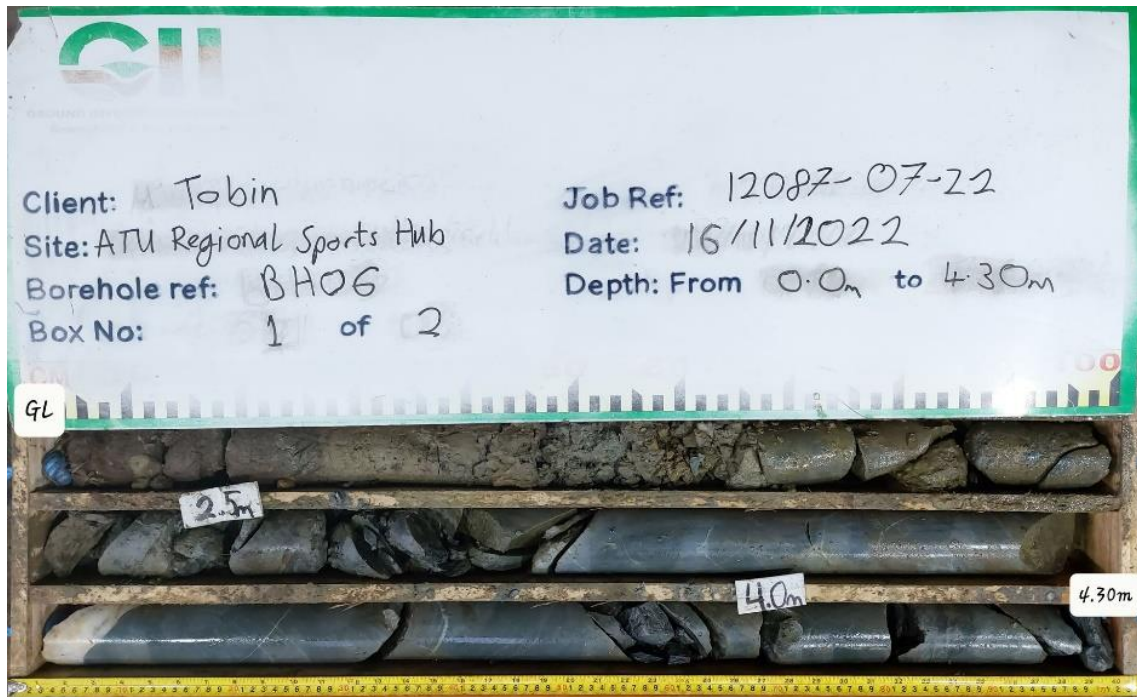


BH05

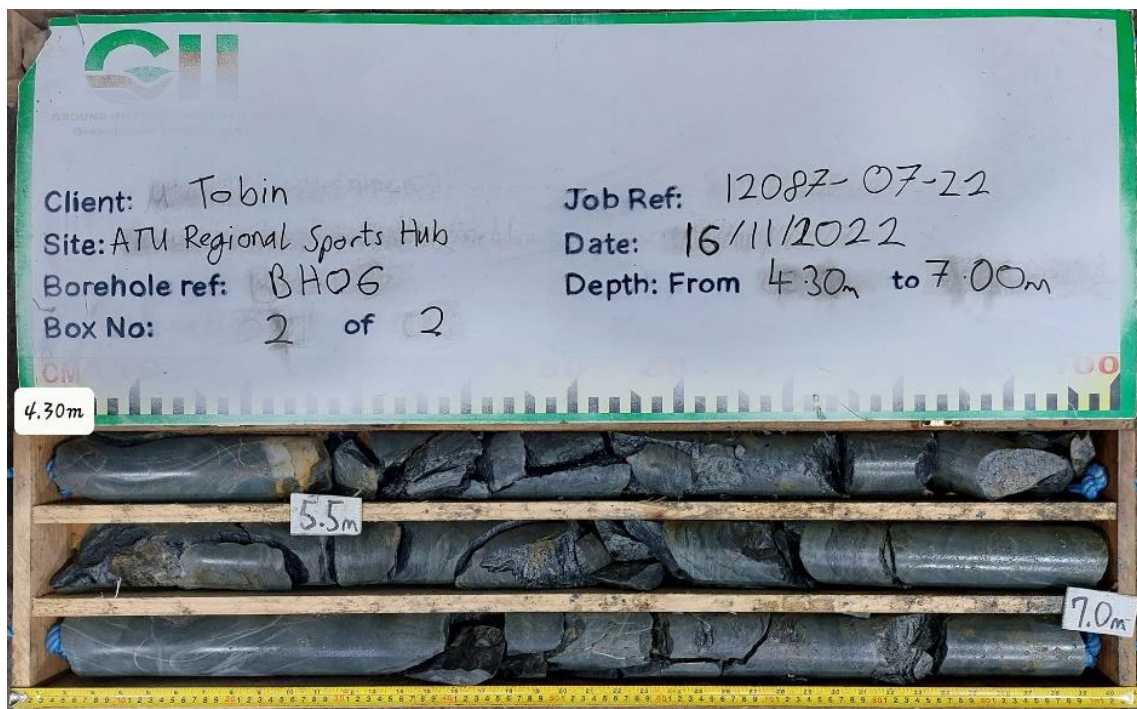


ATU Regional Sports HUB – Rotary Core Photographs

BH06

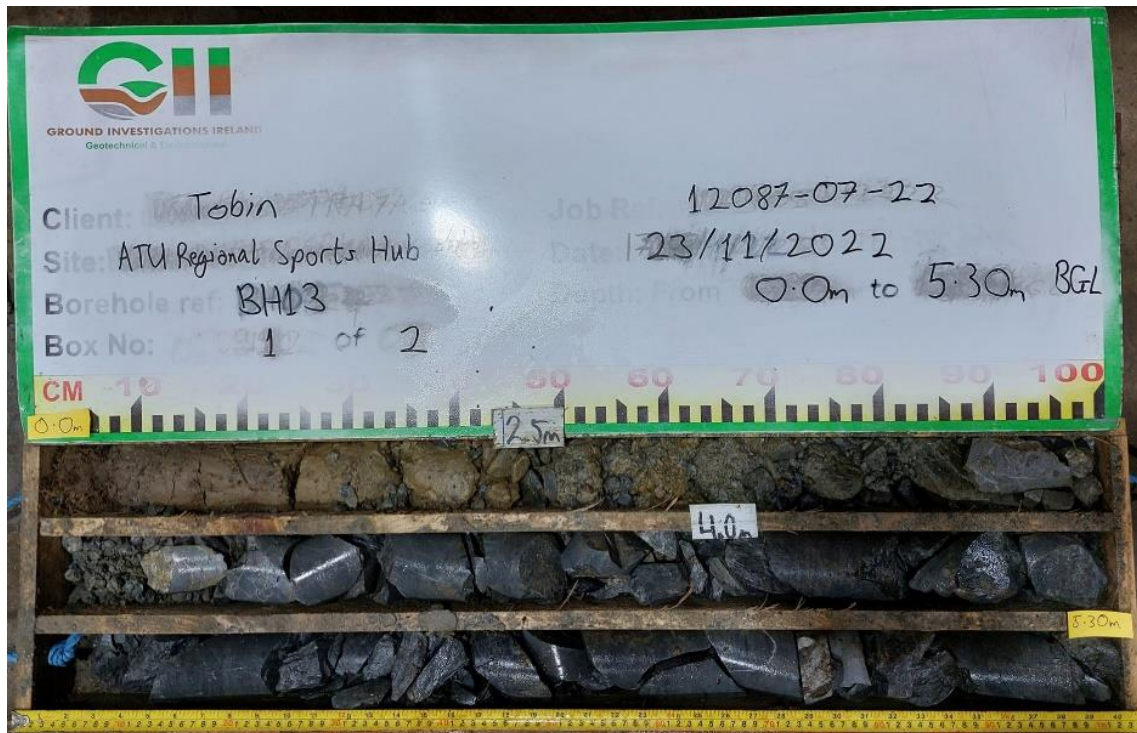


BH06

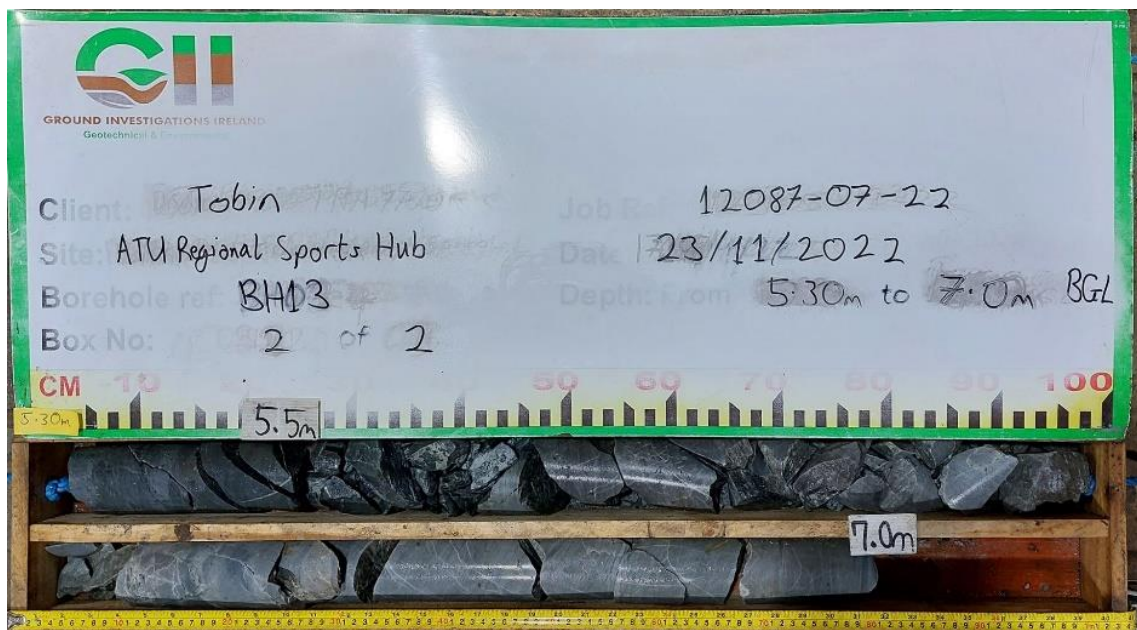


ATU Regional Sports HUB – Rotary Core Photographs

BH13



BH13

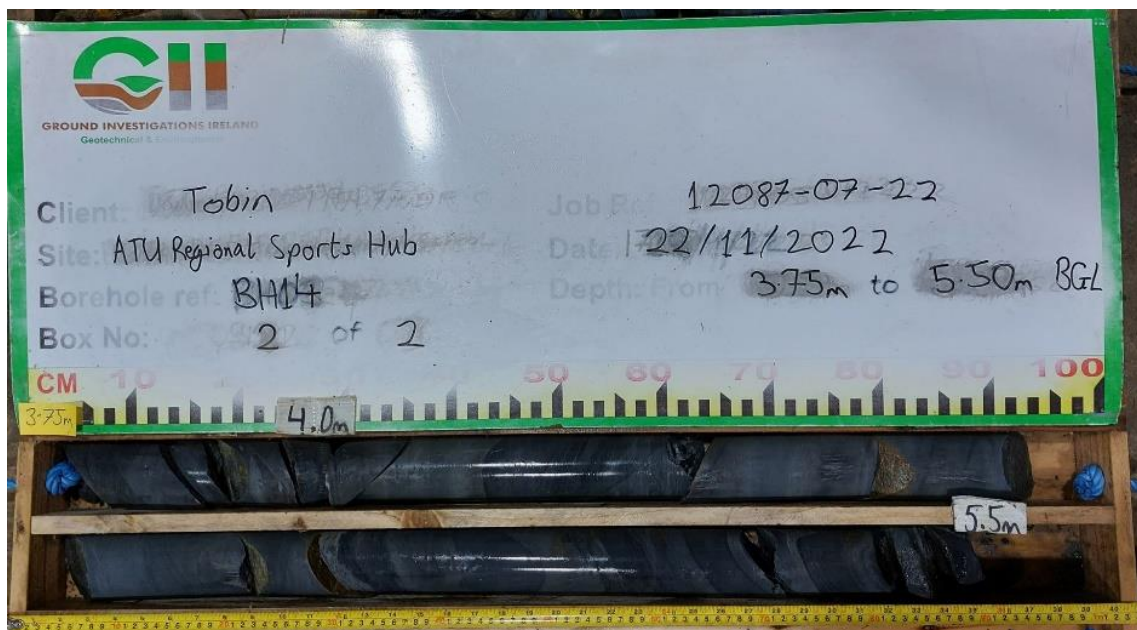


ATU Regional Sports HUB – Rotary Core Photographs

BH14

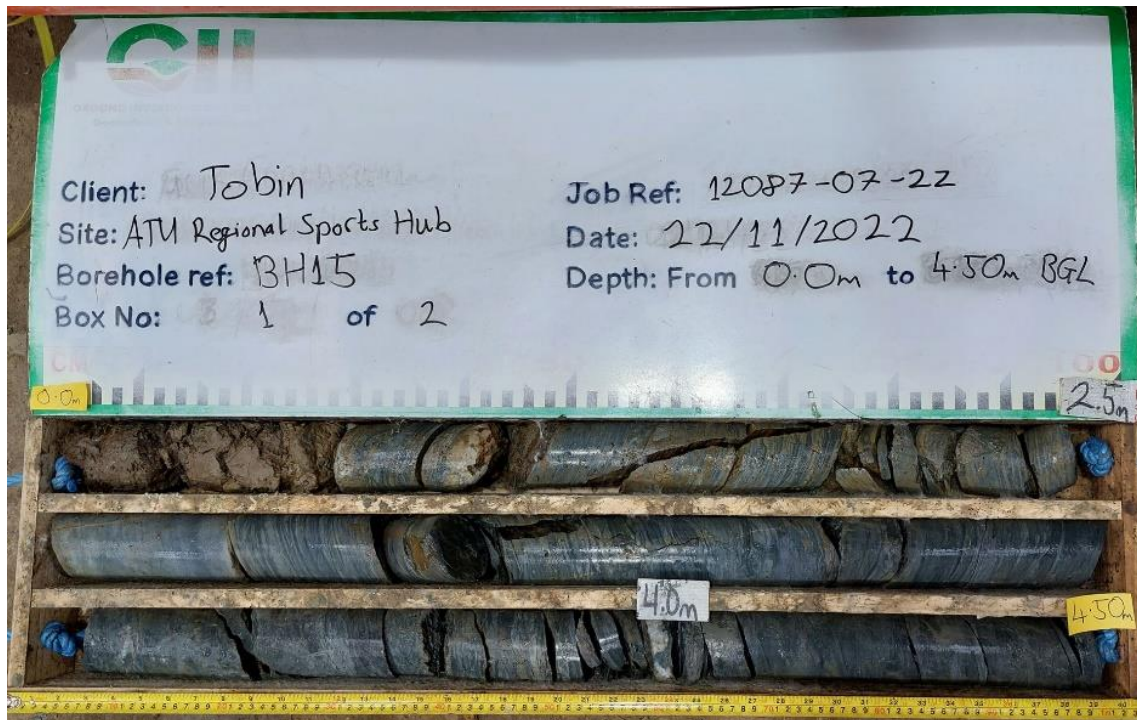


BH14

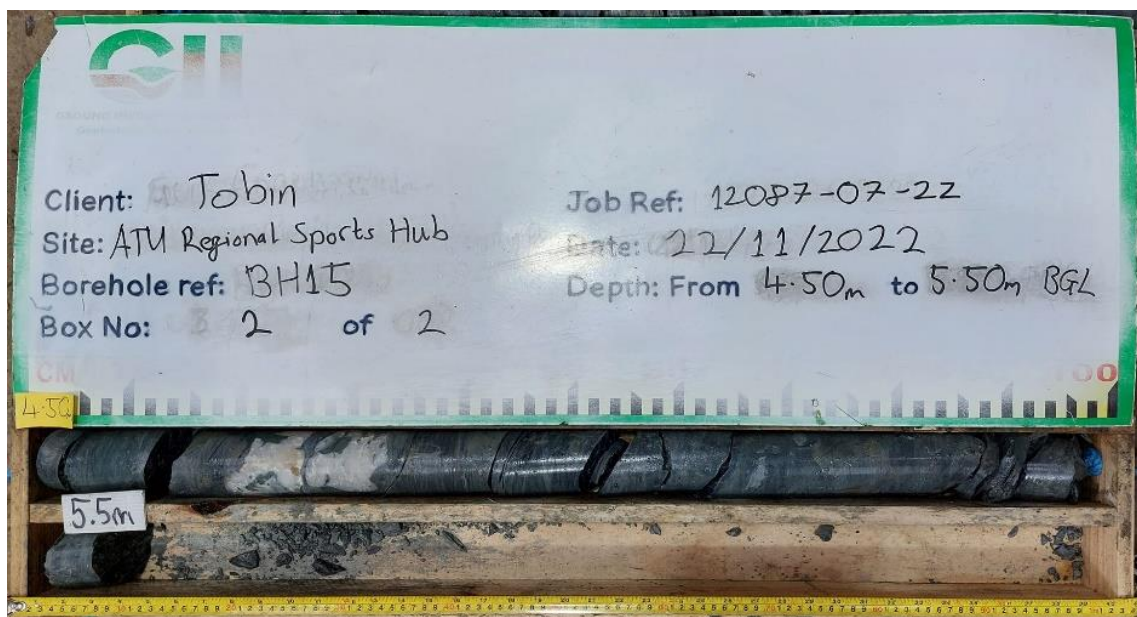


ATU Regional Sports HUB – Rotary Core Photographs

BH15



BH15



APPENDIX 6 – CBR Testing Results



DETERMINATION OF THE CALIFORNIA BEARING RATIO TEST
BS 1377 : PART 4 : CLAUSE 7 : 1990

Soil Description Grey brown slightly sandy slightly gravelly clayey SILT.

Date 22-Feb-23

Test Method BS 1377: Part 4 : 1990 :7.4

Force Measuring Device VJT 08211

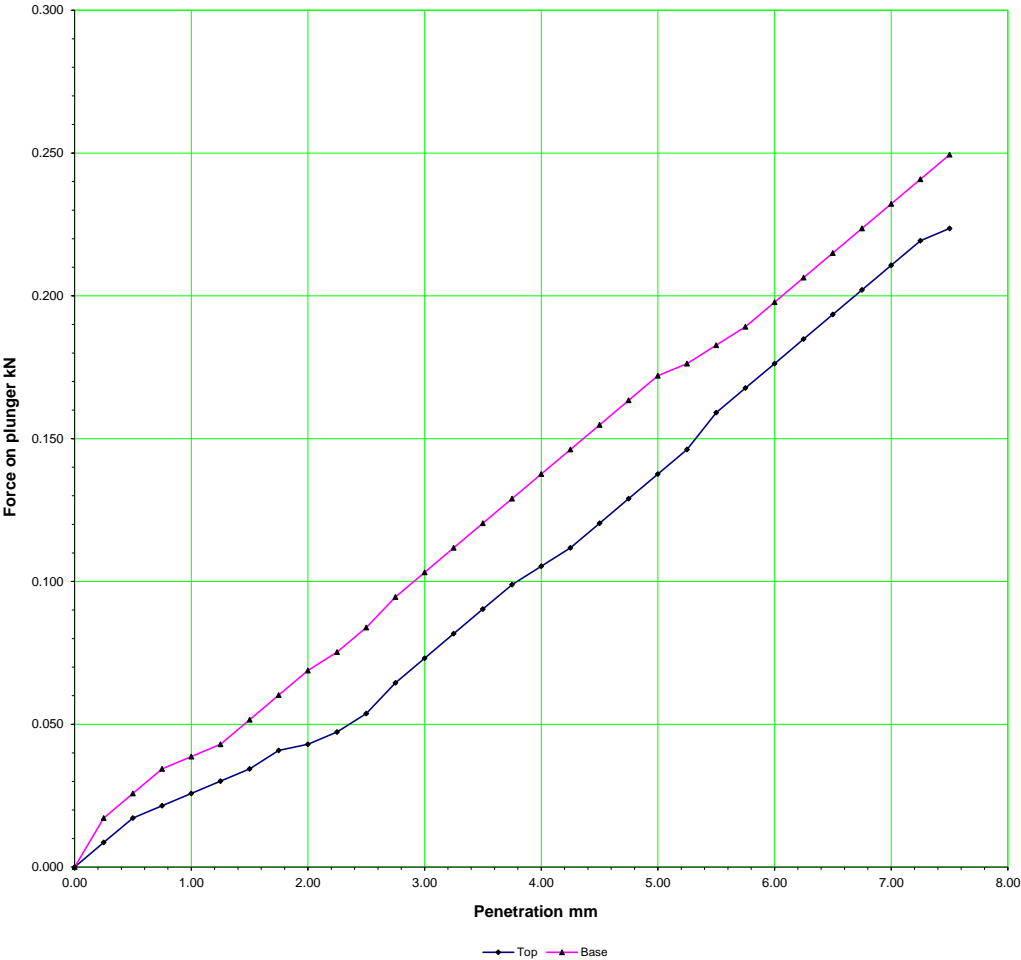
Test 1

Preparatic Remoulded with 2.5 kg rammer at natural moisture content

Surcharge	10 kPa	Mean Calibration	4.30	N/Div
Penetration	Force Gauge	Force on	4.30	N/Div
of plunger	reading	plunger	California Bearing Ratio	Results
mm	divisions	kN	%	
	Top	Bottom	Top	Base

0.00	0.0	0.0	0.000	0.000		
0.25	2.0	4.0	0.009	0.017		
0.50	4.0	6.0	0.017	0.026		
0.75	5.0	8.0	0.022	0.034		
1.00	6.0	9.0	0.026	0.039		
1.25	7.0	10.0	0.030	0.043		
1.50	8.0	12.0	0.034	0.052		
1.75	9.5	14.0	0.041	0.060		
2.00	10.0	16.0	0.043	0.069		
2.25	11.0	17.5	0.047	0.075		
2.50	12.5	19.5	0.054	0.084	0.41	0.64
2.75	15.0	22.0	0.065	0.095		
3.00	17.0	24.0	0.073	0.103		
3.25	19.0	26.0	0.082	0.112		
3.50	21.0	28.0	0.090	0.120		
3.75	23.0	30.0	0.099	0.129		
4.00	24.5	32.0	0.105	0.138		
4.25	26.0	34.0	0.112	0.146		
4.50	28.0	36.0	0.120	0.155		
4.75	30.0	38.0	0.129	0.163		
5.00	32.0	40.0	0.138	0.172	0.69	0.86
5.25	34.0	41.0	0.146	0.176		
5.50	37.0	42.5	0.159	0.183		
5.75	39.0	44.0	0.168	0.189		
6.00	41.0	46.0	0.176	0.198		
6.25	43.0	48.0	0.185	0.206		
6.50	45.0	50.0	0.194	0.215		
6.75	47.0	52.0	0.202	0.224		
7.00	49.0	54.0	0.211	0.232		
7.25	51.0	56.0	0.219	0.241		
7.50	52.0	58.0	0.224	0.249		

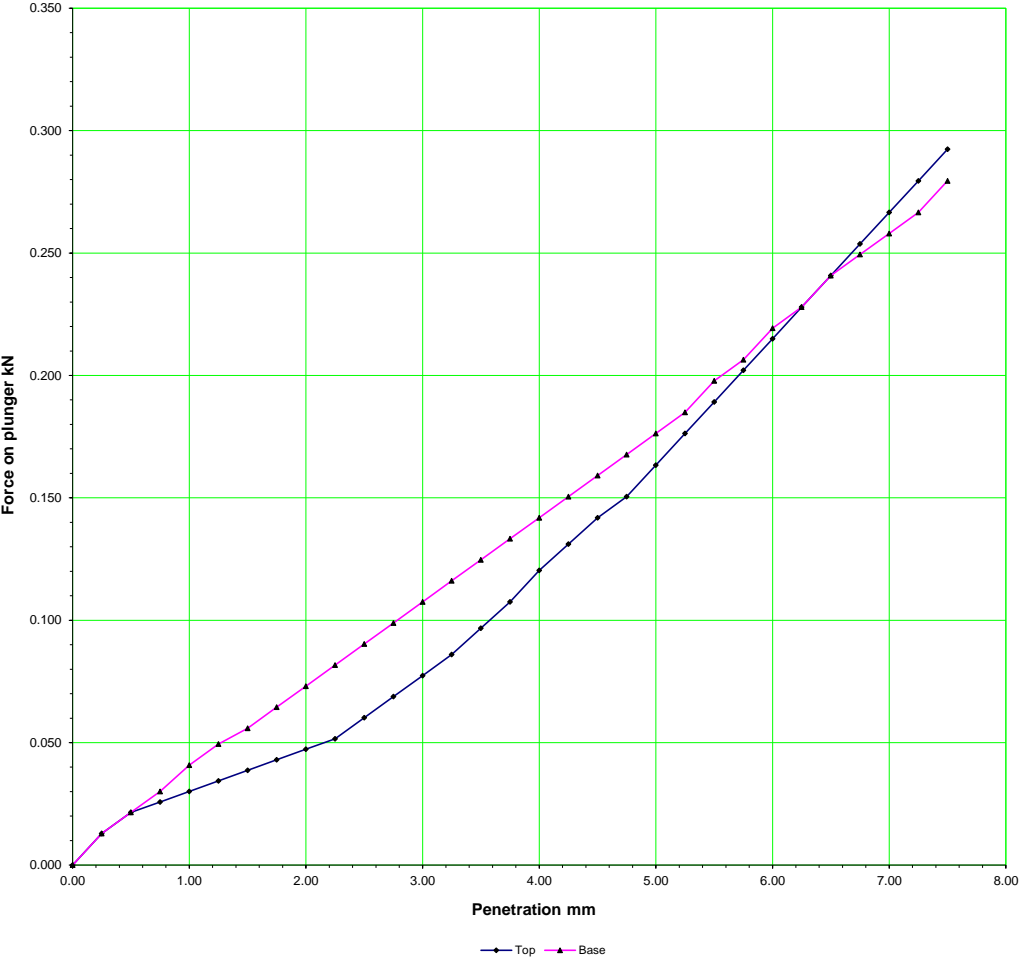
Moisture content after test		Top	Middle	Base	Specimen wt g	4927
Container No.		Tray	Tray	Tray	Diameter mm	152
Mass of wet soil + container	g	921.00	834.00	892.00	Length mm	127.0
Mass of dry soil + container	g	794.80	729.10	778.10		
Weight of container	g	146.00	188.00	189.00		
Mass of moisture	g	126.20	104.90	113.90	Average MC %	19.39
Dry weight	g	648.80	541.10	589.10	Density Mg/m3	2.14
Moisture content	%	19.45	19.39	19.33	Dry Density Mg/m3	1.79



NM TL Ltd	Project: ATU Regional Sports Hubb		Date	Project No.	NMTL3607
		Operator	Tch 22-Feb-23	Trial Pit No.	TP01
		Checked	Nc	Sample No.	B
		Approved	Bc	Depth	0.50m

DETERMINATION OF THE CALIFORNIA BEARING RATIO TEST
BS 1377 : PART 4 : CLAUSE 7 : 1990

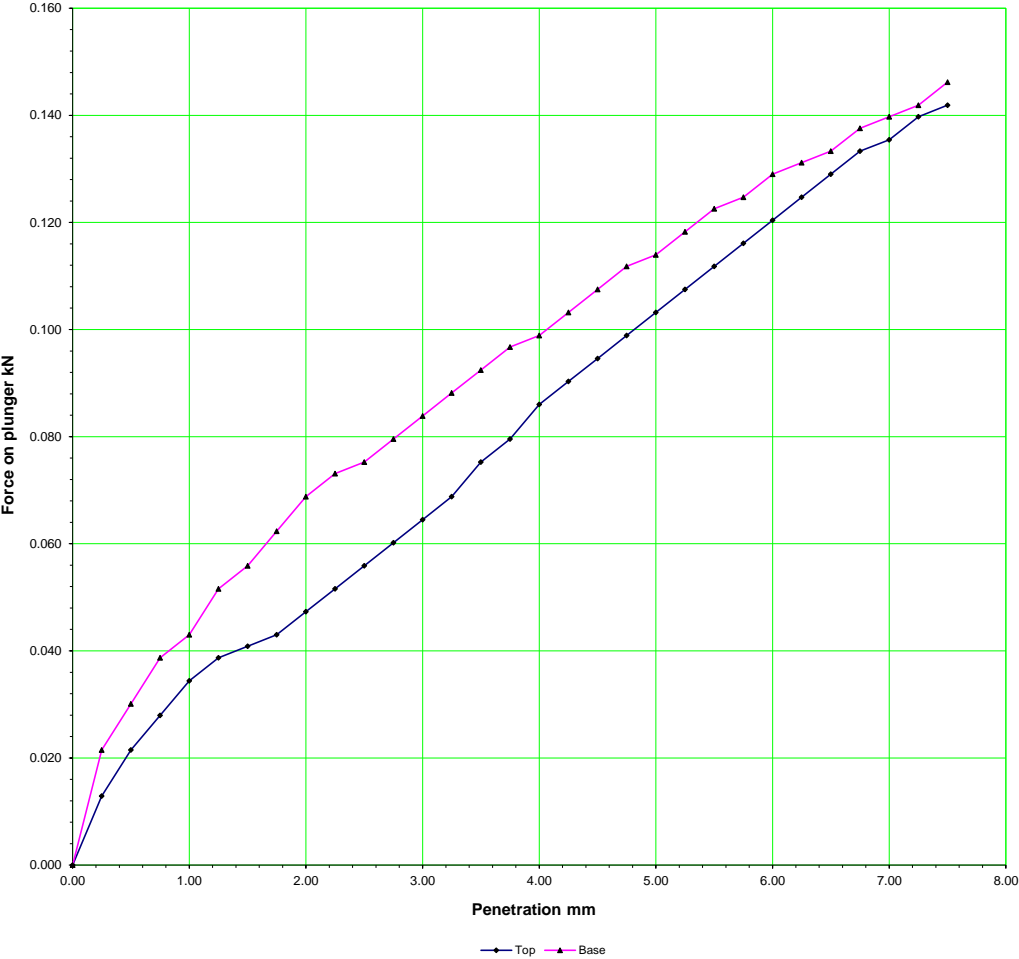
Soil Description	Grey brown slightly gravelly slightly sandy clayey SILT.				Date	22-Feb-23	
Test Method	BS 1377: Part 4 : 1990 :7.4						
Force Measuring Device	VJT 08211					Test 1	
Preparatic Remoulded with 2.5 kg rammer at natural moisture content							
Surcharge	10 kPa		Mean Calibration		4.30	N/Div	
Penetration	Force Gauge		Force on		4.30	N/Div	
of plunger	reading		plunger		California Bearing Ratio Results		
mm	divisions		kN			%	
	Top	Bottom	Top	Bottom	Top	Base	
0.00	0.0	0.0	0.000	0.000			
0.25	3.0	3.0	0.013	0.013			
0.50	5.0	5.0	0.022	0.022			
0.75	6.0	7.0	0.026	0.030			
1.00	7.0	9.5	0.030	0.041			
1.25	8.0	11.5	0.034	0.049			
1.50	9.0	13.0	0.039	0.056			
1.75	10.0	15.0	0.043	0.065			
2.00	11.0	17.0	0.047	0.073			
2.25	12.0	19.0	0.052	0.082			
2.50	14.0	21.0	0.060	0.090	0.46	0.68	
2.75	16.0	23.0	0.069	0.099			
3.00	18.0	25.0	0.077	0.108			
3.25	20.0	27.0	0.086	0.116			
3.50	22.5	29.0	0.097	0.125			
3.75	25.0	31.0	0.108	0.133			
4.00	28.0	33.0	0.120	0.142			
4.25	30.5	35.0	0.131	0.151			
4.50	33.0	37.0	0.142	0.159			
4.75	35.0	39.0	0.151	0.168			
5.00	38.0	41.0	0.163	0.176	0.82	0.88	
5.25	41.0	43.0	0.176	0.185			
5.50	44.0	46.0	0.189	0.198			
5.75	47.0	48.0	0.202	0.206			
6.00	50.0	51.0	0.215	0.219			
6.25	53.0	53.0	0.228	0.228			
6.50	56.0	56.0	0.241	0.241			
6.75	59.0	58.0	0.254	0.249			
7.00	62.0	60.0	0.267	0.258			
7.25	65.0	62.0	0.280	0.267			
7.50	68.0	65.0	0.292	0.280			
Moisture content after test		Top	Middle	Base	Specimen wt g	4945	
Container No.		Tray	Tray	Tray	Diameter mm	152	
Mass of wet soil + container	g	898.00	936.00	831.00	Length mm	127.0	
Mass of dry soil + container	g	784.50	823.10	733.80			
Weight of container	g	146.00	191.00	185.00			
Mass of moisture	g	113.50	112.90	97.20	Average MC %	17.78	
Dry weight	g	638.50	632.10	548.80	Density Mg/m3	2.15	
Moisture content	%	17.78	17.86	17.71	Dry Density Mg/m3	1.82	



NM TL Ltd	Project: ATU Regional Sports Hubb		Date	Project No.	NMTL3607
		Operator	Tch 22-Feb-23	Trial Pit No.	TP01
		Checked	Nc	Sample No.	B
		Approved	Bc	Depth	1.30m

DETERMINATION OF THE CALIFORNIA BEARING RATIO TEST
BS 1377 : PART 4 : CLAUSE 7 : 1990

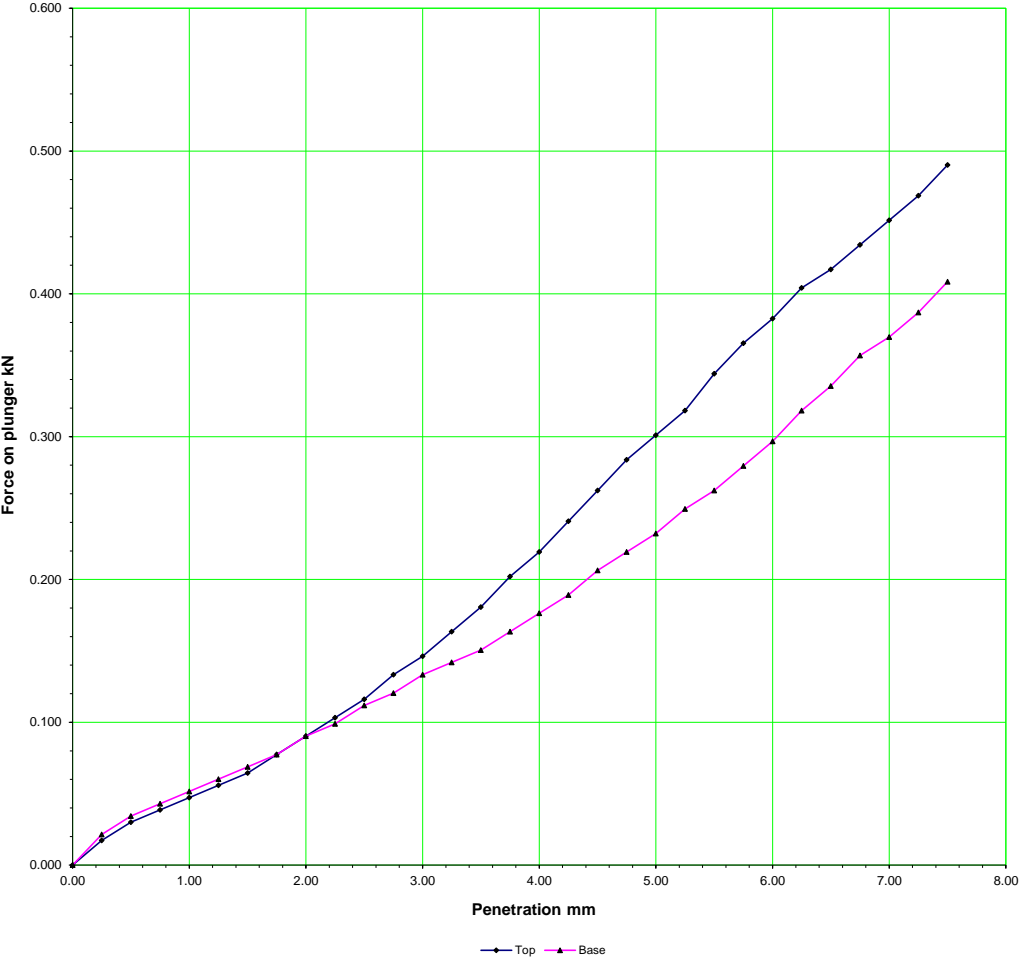
Soil Description	Dark brown/grey slightly gravelly slightly sandy clayey SILT.					Date	22-Feb-23
Test Method	BS 1377: Part 4 : 1990 :7.4						
Force Measuring Device	VJT 08211						Test 1
Preparatic Remoulded with 2.5 kg rammer at natural moisture content							
Surcharge	10 kPa		Mean Calibration		4.30		N/Div
Penetration	Force Gauge		Force on		4.30		N/Div
of plunger	reading		plunger		California Bearing Ratio Results		
mm	divisions		kN			%	
	Top	Bottom	Top	Bottom	Top		Base
0.00	0.0	0.0	0.000	0.000			
0.25	3.0	5.0	0.013	0.022			
0.50	5.0	7.0	0.022	0.030			
0.75	6.5	9.0	0.028	0.039			
1.00	8.0	10.0	0.034	0.043			
1.25	9.0	12.0	0.039	0.052			
1.50	9.5	13.0	0.041	0.056			
1.75	10.0	14.5	0.043	0.062			
2.00	11.0	16.0	0.047	0.069			
2.25	12.0	17.0	0.052	0.073			
2.50	13.0	17.5	0.056	0.075	0.42		0.57
2.75	14.0	18.5	0.060	0.080			
3.00	15.0	19.5	0.065	0.084			
3.25	16.0	20.5	0.069	0.088			
3.50	17.5	21.5	0.075	0.092			
3.75	18.5	22.5	0.080	0.097			
4.00	20.0	23.0	0.086	0.099			
4.25	21.0	24.0	0.090	0.103			
4.50	22.0	25.0	0.095	0.108			
4.75	23.0	26.0	0.099	0.112			
5.00	24.0	26.5	0.103	0.114	0.52		0.57
5.25	25.0	27.5	0.108	0.118			
5.50	26.0	28.5	0.112	0.123			
5.75	27.0	29.0	0.116	0.125			
6.00	28.0	30.0	0.120	0.129			
6.25	29.0	30.5	0.125	0.131			
6.50	30.0	31.0	0.129	0.133			
6.75	31.0	32.0	0.133	0.138			
7.00	31.5	32.5	0.135	0.140			
7.25	32.5	33.0	0.140	0.142			
7.50	33.0	34.0	0.142	0.146			
Moisture content after test		Top	Middle	Base	Specimen wt g		4550
Container No.		Tray	Tray	Tray	Diameter mm		152
Mass of wet soil + container	g	866.00	829.00	716.00	Length mm		127.0
Mass of dry soil + container	g	720.30	687.20	603.00			
Weight of container	g	156.00	145.00	147.00			
Mass of moisture	g	145.70	141.80	113.00	Average MC %		25.58
Dry weight	g	564.30	542.20	456.00	Density Mg/m3		1.97
Moisture content	%	25.82	26.15	24.78	Dry Density Mg/m3		1.57



NM TL Ltd	Project: ATU Regional Sports Hubb		Date	Project No.	NMTL3607
		Operator	Tch 22-Feb-23	Trial Pit No.	TP02
		Checked	Nc	Sample No.	B
		Approved	Bc	Depth	0.50m

DETERMINATION OF THE CALIFORNIA BEARING RATIO TEST
BS 1377 : PART 4 : CLAUSE 7 : 1990

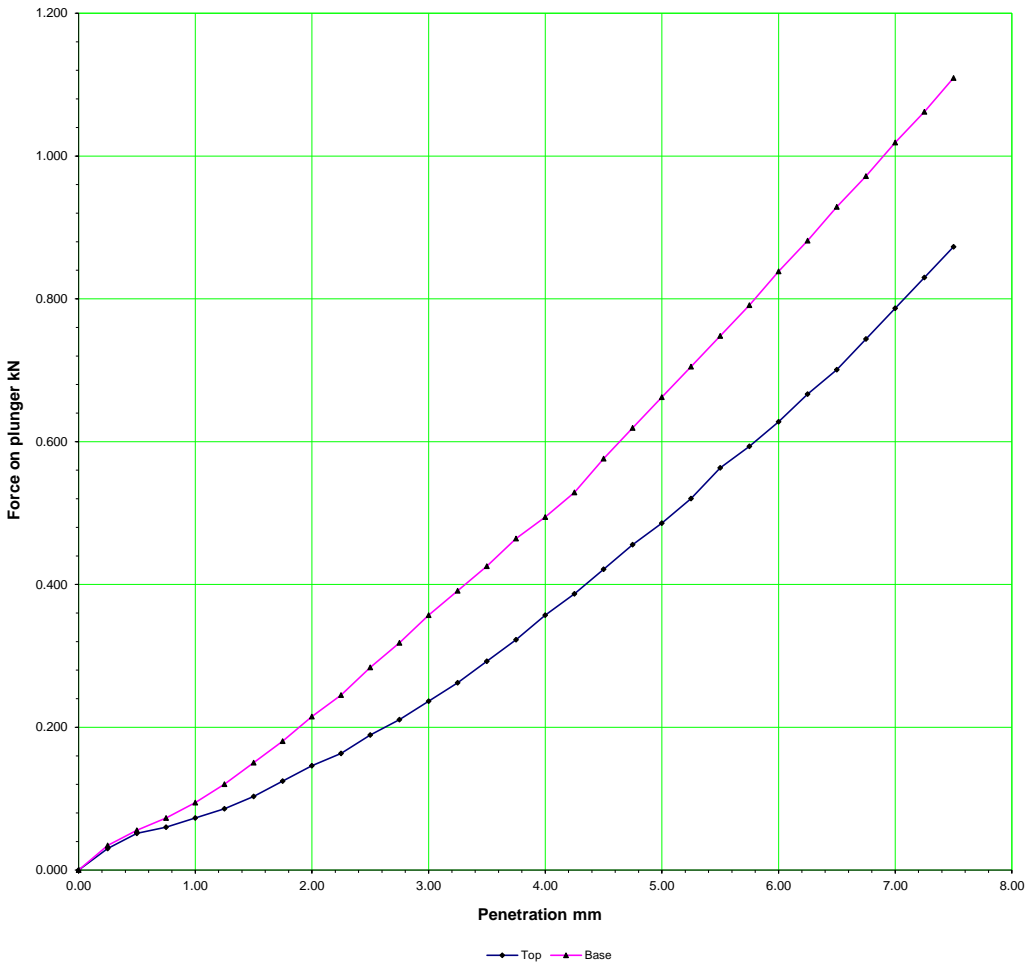
Soil Description	Brown grey slightly gravelly slightly sandy silty CLAY.				Date	22-Feb-23	
Test Method	BS 1377: Part 4 : 1990 :7.4						
Force Measuring Device	VJT 08211					Test 1	
Preparatic Remoulded with 2.5 kg rammer at natural moisture content							
Surcharge	10 kPa		Mean Calibration		4.30	N/Div	
Penetration	Force Gauge		Force on		4.30	N/Div	
of plunger	reading		plunger		California Bearing Ratio Results		
mm	divisions		kN			%	
	Top	Bottom	Top	Bottom	Top	Base	
0.00	0.0	0.0	0.000	0.000			
0.25	4.0	5.0	0.017	0.022			
0.50	7.0	8.0	0.030	0.034			
0.75	9.0	10.0	0.039	0.043			
1.00	11.0	12.0	0.047	0.052			
1.25	13.0	14.0	0.056	0.060			
1.50	15.0	16.0	0.065	0.069			
1.75	18.0	18.0	0.077	0.077			
2.00	21.0	21.0	0.090	0.090			
2.25	24.0	23.0	0.103	0.099			
2.50	27.0	26.0	0.116	0.112	0.88	0.85	
2.75	31.0	28.0	0.133	0.120			
3.00	34.0	31.0	0.146	0.133			
3.25	38.0	33.0	0.163	0.142			
3.50	42.0	35.0	0.181	0.151			
3.75	47.0	38.0	0.202	0.163			
4.00	51.0	41.0	0.219	0.176			
4.25	56.0	44.0	0.241	0.189			
4.50	61.0	48.0	0.262	0.206			
4.75	66.0	51.0	0.284	0.219			
5.00	70.0	54.0	0.301	0.232	1.51	1.16	
5.25	74.0	58.0	0.318	0.249			
5.50	80.0	61.0	0.344	0.262			
5.75	85.0	65.0	0.366	0.280			
6.00	89.0	69.0	0.383	0.297			
6.25	94.0	74.0	0.404	0.318			
6.50	97.0	78.0	0.417	0.335			
6.75	101.0	83.0	0.434	0.357			
7.00	105.0	86.0	0.452	0.370			
7.25	109.0	90.0	0.469	0.387			
7.50	114.0	95.0	0.490	0.409			
Moisture content after test		Top	Middle	Base	Specimen wt g	4857	
Container No.		Tray	Tray	Tray	Diameter mm	152	
Mass of wet soil + container	g	946.00	800.00	798.00	Length mm	127.0	
Mass of dry soil + container	g	820.00	701.80	696.60			
Weight of container	g	145.00	163.00	146.00			
Mass of moisture	g	126.00	98.20	101.40	Average MC %	18.44	
Dry weight	g	675.00	538.80	550.60	Density Mg/m3	2.11	
Moisture content	%	18.67	18.23	18.42	Dry Density Mg/m3	1.78	



NM TL Ltd	Project: ATU Regional Sports Hubb		Date	Project No.	NMTL3607
		Operator	Tch 22-Feb-23	Trial Pit No.	TP03
		Checked	Nc	Sample No.	B
		Approved	Bc	Depth	0.50m

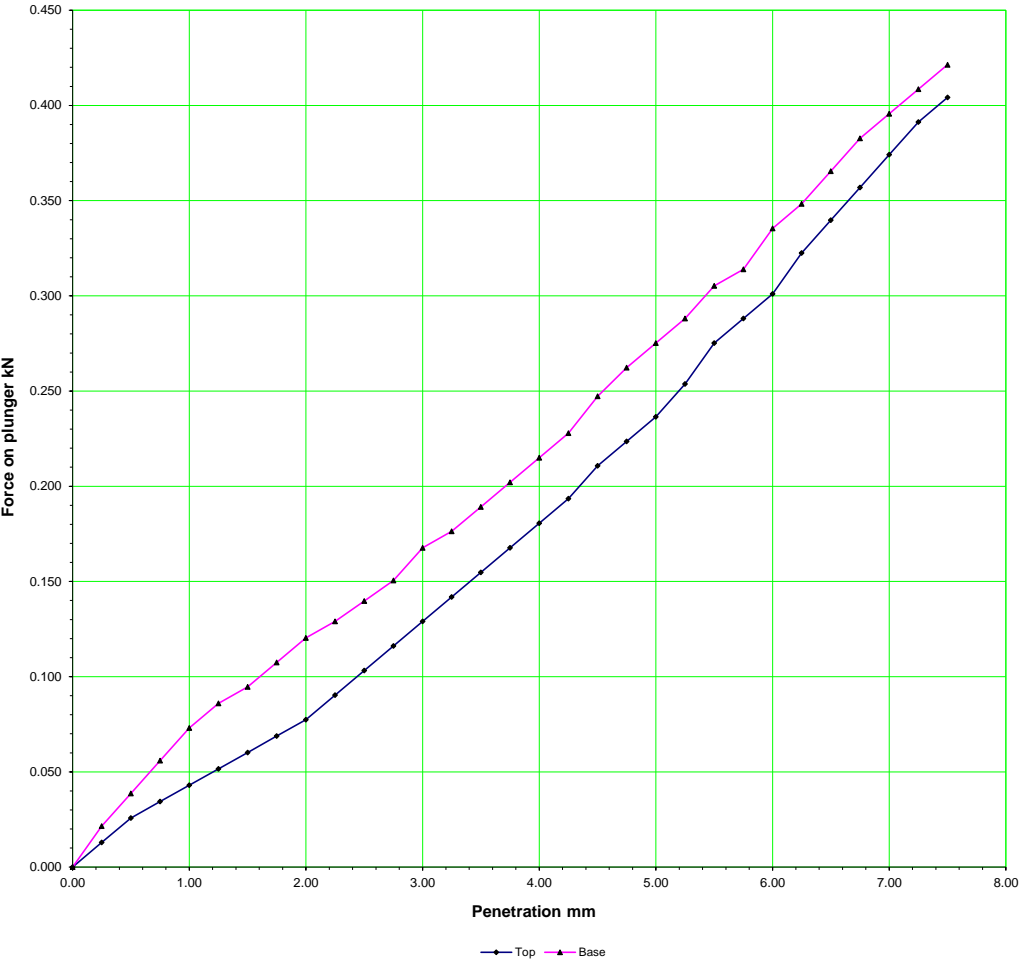
DETERMINATION OF THE CALIFORNIA BEARING RATIO TEST
BS 1377 : PART 4 : CLAUSE 7 : 1990

Soil Description	Brown grey slightly gravelly slightly sandy clayey SILT				Date	22-Feb-23	
Test Method	BS 1377: Part 4 : 1990 :7.4						
Force Measuring Device	VJT 08211					Test 1	
Preparatic Remoulded with 2.5 kg rammer at natural moisture content							
Surcharge	10 kPa		Mean Calibration		4.30	N/Div	
Penetration	Force Gauge		Force on		4.30	N/Div	
of plunger	reading		plunger		California Bearing Ratio Results		
mm	divisions		kN		%		
	Top	Bottom	Top	Bottom	Top	Base	
0.00	0.0	0.0	0.000	0.000			
0.25	7.0	8.0	0.030	0.034			
0.50	12.0	13.0	0.052	0.056			
0.75	14.0	17.0	0.060	0.073			
1.00	17.0	22.0	0.073	0.095			
1.25	20.0	28.0	0.086	0.120			
1.50	24.0	35.0	0.103	0.151			
1.75	29.0	42.0	0.125	0.181			
2.00	34.0	50.0	0.146	0.215			
2.25	38.0	57.0	0.163	0.245			
2.50	44.0	66.0	0.189	0.284	1.43	2.15	
2.75	49.0	74.0	0.211	0.318			
3.00	55.0	83.0	0.237	0.357			
3.25	61.0	91.0	0.262	0.391			
3.50	68.0	99.0	0.292	0.426			
3.75	75.0	108.0	0.323	0.464			
4.00	83.0	115.0	0.357	0.495			
4.25	90.0	123.0	0.387	0.529			
4.50	98.0	134.0	0.421	0.576			
4.75	106.0	144.0	0.456	0.619			
5.00	113.0	154.0	0.486	0.662	2.43	3.31	
5.25	121.0	164.0	0.520	0.705			
5.50	131.0	174.0	0.563	0.748			
5.75	138.0	184.0	0.593	0.791			
6.00	146.0	195.0	0.628	0.839			
6.25	155.0	205.0	0.667	0.882			
6.50	163.0	216.0	0.701	0.929			
6.75	173.0	226.0	0.744	0.972			
7.00	183.0	237.0	0.787	1.019			
7.25	193.0	247.0	0.830	1.062			
7.50	203.0	258.0	0.873	1.109			
Moisture content after test		Top	Middle	Base	Specimen wt g	4877	
Container No.		Tray	Tray	Tray	Diameter mm	152	
Mass of wet soil + container		g	867.00	865.00	836.00	Length mm	127.0
Mass of dry soil + container		g	757.90	757.30	739.60		
Weight of container		g	145.00	148.00	192.00		
Mass of moisture		g	109.10	107.70	96.40	Average MC %	17.69
Dry weight		g	612.90	609.30	547.60	Density Mg/m3	2.12
Moisture content		%	17.80	17.68	17.60	Dry Density Mg/m3	1.80



DETERMINATION OF THE CALIFORNIA BEARING RATIO TEST
BS 1377 : PART 4 : CLAUSE 7 : 1990

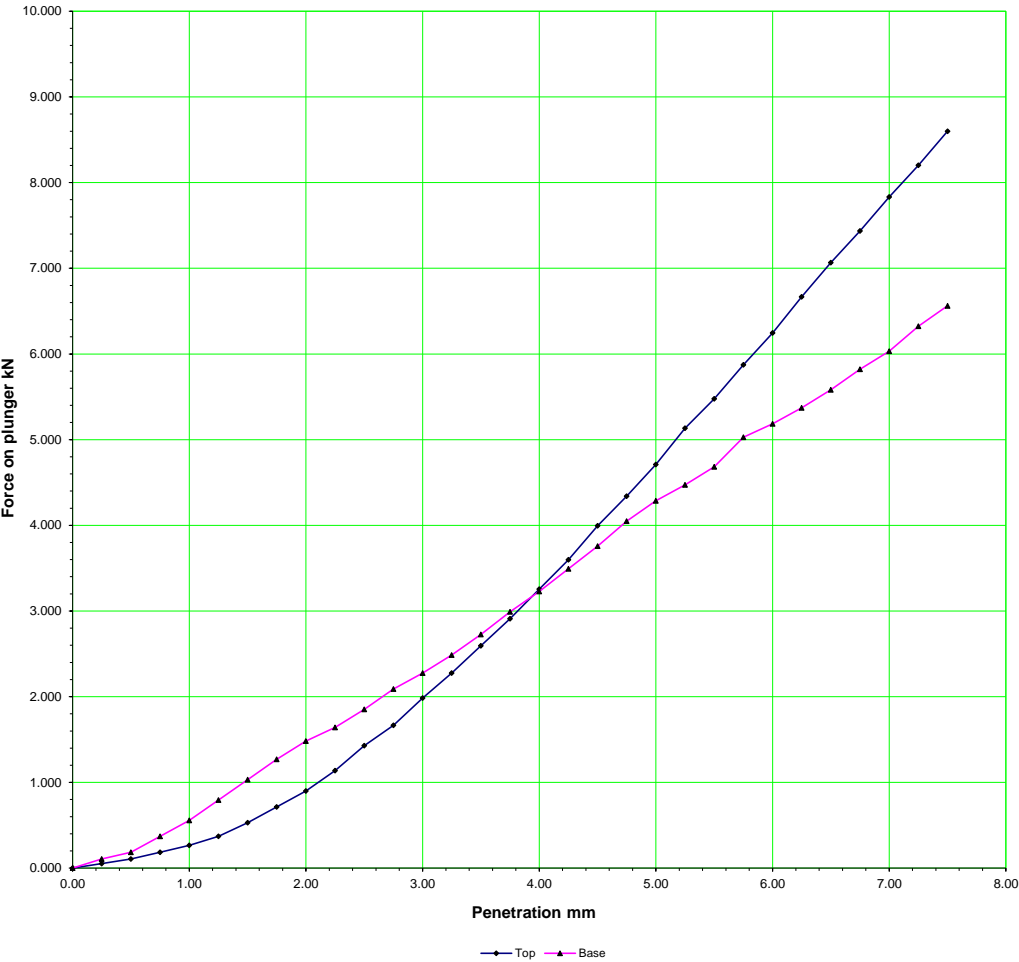
Soil Description	Brown grey slightly sandy slightly gravelly silty CLAY.				Date	22-Feb-23	
Test Method	BS 1377: Part 4 : 1990 :7.4						
Force Measuring Device	VJT 08211					Test 1	
Preparatic Remoulded with 2.5 kg rammer at natural moisture content							
Surcharge	10 kPa		Mean Calibration		4.30	N/Div	
Penetration	Force Gauge		Force on		4.30	N/Div	
of plunger	reading		plunger		California Bearing Ratio Results		
mm	divisions		kN			%	
	Top	Bottom	Top	Bottom	Top	Base	
0.00	0.0	0.0	0.000	0.000			
0.25	3.0	5.0	0.013	0.022			
0.50	6.0	9.0	0.026	0.039			
0.75	8.0	13.0	0.034	0.056			
1.00	10.0	17.0	0.043	0.073			
1.25	12.0	20.0	0.052	0.086			
1.50	14.0	22.0	0.060	0.095			
1.75	16.0	25.0	0.069	0.108			
2.00	18.0	28.0	0.077	0.120			
2.25	21.0	30.0	0.090	0.129			
2.50	24.0	32.5	0.103	0.140	0.78	1.06	
2.75	27.0	35.0	0.116	0.151			
3.00	30.0	39.0	0.129	0.168			
3.25	33.0	41.0	0.142	0.176			
3.50	36.0	44.0	0.155	0.189			
3.75	39.0	47.0	0.168	0.202			
4.00	42.0	50.0	0.181	0.215			
4.25	45.0	53.0	0.194	0.228			
4.50	49.0	57.5	0.211	0.247			
4.75	52.0	61.0	0.224	0.262			
5.00	55.0	64.0	0.237	0.275	1.18	1.38	
5.25	59.0	67.0	0.254	0.288			
5.50	64.0	71.0	0.275	0.305			
5.75	67.0	73.0	0.288	0.314			
6.00	70.0	78.0	0.301	0.335			
6.25	75.0	81.0	0.323	0.348			
6.50	79.0	85.0	0.340	0.366			
6.75	83.0	89.0	0.357	0.383			
7.00	87.0	92.0	0.374	0.396			
7.25	91.0	95.0	0.391	0.409			
7.50	94.0	98.0	0.404	0.421			
Moisture content after test		Top	Middle	Base	Specimen wt g	4807	
Container No.		Tray	Tray	Tray	Diameter mm	152	
Mass of wet soil + container	g	813.00	842.00	878.00	Length mm	127.0	
Mass of dry soil + container	g	716.10	733.80	764.30			
Weight of container	g	184.00	146.00	145.00			
Mass of moisture	g	96.90	108.20	113.70	Average MC %	18.33	
Dry weight	g	532.10	587.80	619.30	Density Mg/m3	2.09	
Moisture content	%	18.21	18.41	18.36	Dry Density Mg/m3	1.76	



NM TL Ltd	Project: ATU Regional Sports Hubb		Date	Project No.	NMTL3607
		Operator	Tch 22-Feb-23	Trial Pit No.	TP05
		Checked	Nc	Sample No.	B
		Approved	Bc	Depth	0.50m

DETERMINATION OF THE CALIFORNIA BEARING RATIO TEST
BS 1377 : PART 4 : CLAUSE 7 : 1990

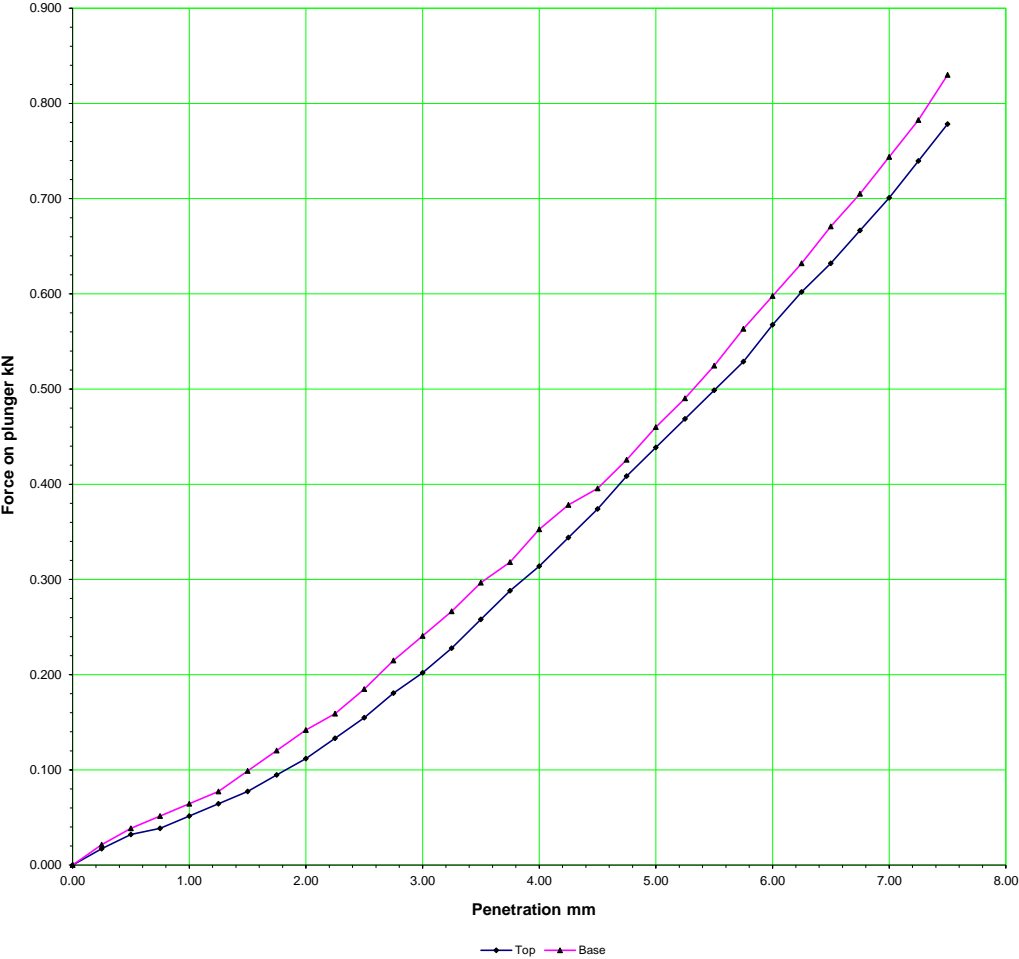
Soil Description	Grey brown clayey silty sandy fine to coarse GRAVEL.					Date	22-Feb-23
Test Method	BS 1377: Part 4 : 1990 :7.4						
Force Measuring Device	S86-010304						Test 1
Preparatic Remoulded with 2.5 kg rammer at natural moisture content							
Surcharge	10 kPa		Mean Calibration		26.46		N/Div
Penetration	Force Gauge		Force on		26.46		N/Div
of plunger	reading		plunger		California Bearing Ratio Results	%	Results
mm	divisions		kN				
	Top	Bottom	Top	Bottom	Top		Base
0.00	0.0	0.0	0.000	0.000			
0.25	2.0	4.0	0.053	0.106			
0.50	4.0	7.0	0.106	0.185			
0.75	7.0	14.0	0.185	0.370			
1.00	10.0	21.0	0.265	0.556			
1.25	14.0	30.0	0.370	0.794			
1.50	20.0	39.0	0.529	1.032			
1.75	27.0	48.0	0.714	1.270			
2.00	34.0	56.0	0.900	1.482			
2.25	43.0	62.0	1.138	1.641			
2.50	54.0	70.0	1.429	1.852	10.82		14.03
2.75	63.0	79.0	1.667	2.090			
3.00	75.0	86.0	1.985	2.276			
3.25	86.0	94.0	2.276	2.487			
3.50	98.0	103.0	2.593	2.725			
3.75	110.0	113.0	2.911	2.990			
4.00	123.0	122.0	3.255	3.228			
4.25	136.0	132.0	3.599	3.493			
4.50	151.0	142.0	3.995	3.757			
4.75	164.0	153.0	4.339	4.048			
5.00	178.0	162.0	4.710	4.287	23.55		21.43
5.25	194.0	169.0	5.133	4.472			
5.50	207.0	177.0	5.477	4.683			
5.75	222.0	190.0	5.874	5.027			
6.00	236.0	196.0	6.245	5.186			
6.25	252.0	203.0	6.668	5.371			
6.50	267.0	211.0	7.065	5.583			
6.75	281.0	220.0	7.435	5.821			
7.00	296.0	228.0	7.832	6.033			
7.25	310.0	239.0	8.203	6.324			
7.50	325.0	248.0	8.600	6.562			
Moisture content after test		Top	Middle	Base	Specimen wt g		5098
Container No.		Tray	Tray	Tray	Diameter mm		152
Mass of wet soil + container	g	946.00	897.00	859.00	Length mm		127.0
Mass of dry soil + container	g	864.70	814.50	780.50			
Weight of container	g	189.00	142.00	148.00			
Mass of moisture	g	81.30	82.50	78.50	Average MC %		12.24
Dry weight	g	675.70	672.50	632.50	Density Mg/m3		2.21
Moisture content	%	12.03	12.27	12.41	Dry Density Mg/m3		1.97



NM TL Ltd	Project: ATU Regional Sports Hubb		Date	Project No.	NMTL3607
		Operator	Tch 22-Feb-23	Trial Pit No.	TP06
		Checked	Nc	Sample No.	B
		Approved	Bc	Depth	0.50m

DETERMINATION OF THE CALIFORNIA BEARING RATIO TEST
BS 1377 : PART 4 : CLAUSE 7 : 1990

Soil Description	Grey brown slightly sandy slightly gravelly clayey SILT.				Date	22-Feb-23	
Test Method	BS 1377: Part 4 : 1990 :7.4						
Force Measuring Device	VJT-008211					Test 1	
Preparatic Remoulded with 2.5 kg rammer at natural moisture content							
Surcharge	10 kPa		Mean Calibration		4.30	N/Div	
Penetration	Force Gauge		Force on		4.30	N/Div	
of plunger	reading		plunger		California Bearing Ratio Results		
mm	divisions		kN			%	
	Top	Bottom	Top	Bottom	Top	Base	
0.00	0.0	0.0	0.000	0.000			
0.25	4.0	5.0	0.017	0.022			
0.50	7.5	9.0	0.032	0.039			
0.75	9.0	12.0	0.039	0.052			
1.00	12.0	15.0	0.052	0.065			
1.25	15.0	18.0	0.065	0.077			
1.50	18.0	23.0	0.077	0.099			
1.75	22.0	28.0	0.095	0.120			
2.00	26.0	33.0	0.112	0.142			
2.25	31.0	37.0	0.133	0.159			
2.50	36.0	43.0	0.155	0.185	1.17	1.40	
2.75	42.0	50.0	0.181	0.215			
3.00	47.0	56.0	0.202	0.241			
3.25	53.0	62.0	0.228	0.267			
3.50	60.0	69.0	0.258	0.297			
3.75	67.0	74.0	0.288	0.318			
4.00	73.0	82.0	0.314	0.353			
4.25	80.0	88.0	0.344	0.378			
4.50	87.0	92.0	0.374	0.396			
4.75	95.0	99.0	0.409	0.426			
5.00	102.0	107.0	0.439	0.460	2.19	2.30	
5.25	109.0	114.0	0.469	0.490			
5.50	116.0	122.0	0.499	0.525			
5.75	123.0	131.0	0.529	0.563			
6.00	132.0	139.0	0.568	0.598			
6.25	140.0	147.0	0.602	0.632			
6.50	147.0	156.0	0.632	0.671			
6.75	155.0	164.0	0.667	0.705			
7.00	163.0	173.0	0.701	0.744			
7.25	172.0	182.0	0.740	0.783			
7.50	181.0	193.0	0.778	0.830			
Moisture content after test		Top	Middle	Base	Specimen wt g	4896	
Container No.		Tray	Tray	Tray	Diameter mm	152	
Mass of wet soil + container	g	929.00	810.00	876.00	Length mm	127.0	
Mass of dry soil + container	g	810.00	716.00	774.00			
Weight of container	g	146.00	181.00	191.00			
Mass of moisture	g	119.00	94.00	102.00	Average MC %	17.66	
Dry weight	g	664.00	535.00	583.00	Density Mg/m3	2.12	
Moisture content	%	17.92	17.57	17.50	Dry Density Mg/m3	1.81	



NM TL Ltd	Project: ATU Regional Sports Hubb		Date	Project No.	NMTL3607
		Operator	Tch 22-Feb-23	Trial Pit No.	TP08
		Checked	Nc	Sample No.	B
		Approved	Bc	Depth	0.50m

DETERMINATION OF THE CALIFORNIA BEARING RATIO TEST
BS 1377 : PART 4 : CLAUSE 7 : 1990

Soil Description Dark grey slightly sandy gravelly clayey SILT.

Date 22-Feb-23

Test Method BS 1377: Part 4 : 1990 :7.4

Force Measuring Device VJT-008211

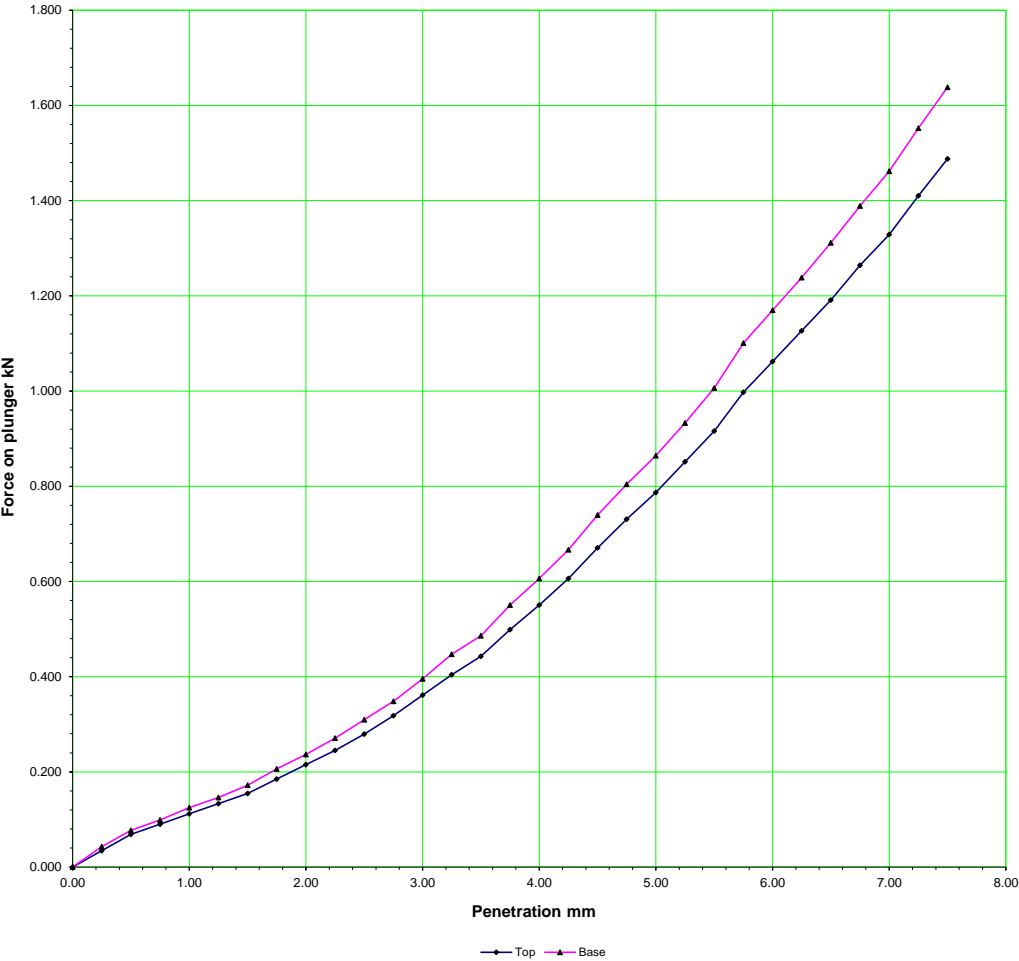
Test 1

Preparatic Remoulded with 2.5 kg rammer at natural moisture content

Surcharge	10 kPa	Mean Calibration	4.30	N/Div
Penetration	Force Gauge	Force on	4.30	N/Div
of plunger	reading	plunger	California Bearing Ratio	Results
mm	divisions	kN	%	

	Top	Bottom	Top	Bottom	Top	Base
0.00	0.0	0.0	0.000	0.000		
0.25	8.0	10.0	0.034	0.043		
0.50	16.0	18.0	0.069	0.077		
0.75	21.0	23.0	0.090	0.099		
1.00	26.0	29.0	0.112	0.125		
1.25	31.0	34.0	0.133	0.146		
1.50	36.0	40.0	0.155	0.172		
1.75	43.0	48.0	0.185	0.206		
2.00	50.0	55.0	0.215	0.237		
2.25	57.0	63.0	0.245	0.271		
2.50	65.0	72.0	0.280	0.310	2.12	2.35
2.75	74.0	81.0	0.318	0.348		
3.00	84.0	92.0	0.361	0.396		
3.25	94.0	104.0	0.404	0.447		
3.50	103.0	113.0	0.443	0.486		
3.75	116.0	128.0	0.499	0.550		
4.00	128.0	141.0	0.550	0.606		
4.25	141.0	155.0	0.606	0.667		
4.50	156.0	172.0	0.671	0.740		
4.75	170.0	187.0	0.731	0.804		
5.00	183.0	201.0	0.787	0.864	3.93	4.32
5.25	198.0	217.0	0.851	0.933		
5.50	213.0	234.0	0.916	1.006		
5.75	232.0	256.0	0.998	1.101		
6.00	247.0	272.0	1.062	1.170		
6.25	262.0	288.0	1.127	1.238		
6.50	277.0	305.0	1.191	1.312		
6.75	294.0	323.0	1.264	1.389		
7.00	309.0	340.0	1.329	1.462		
7.25	328.0	361.0	1.410	1.552		
7.50	346.0	381.0	1.488	1.638		

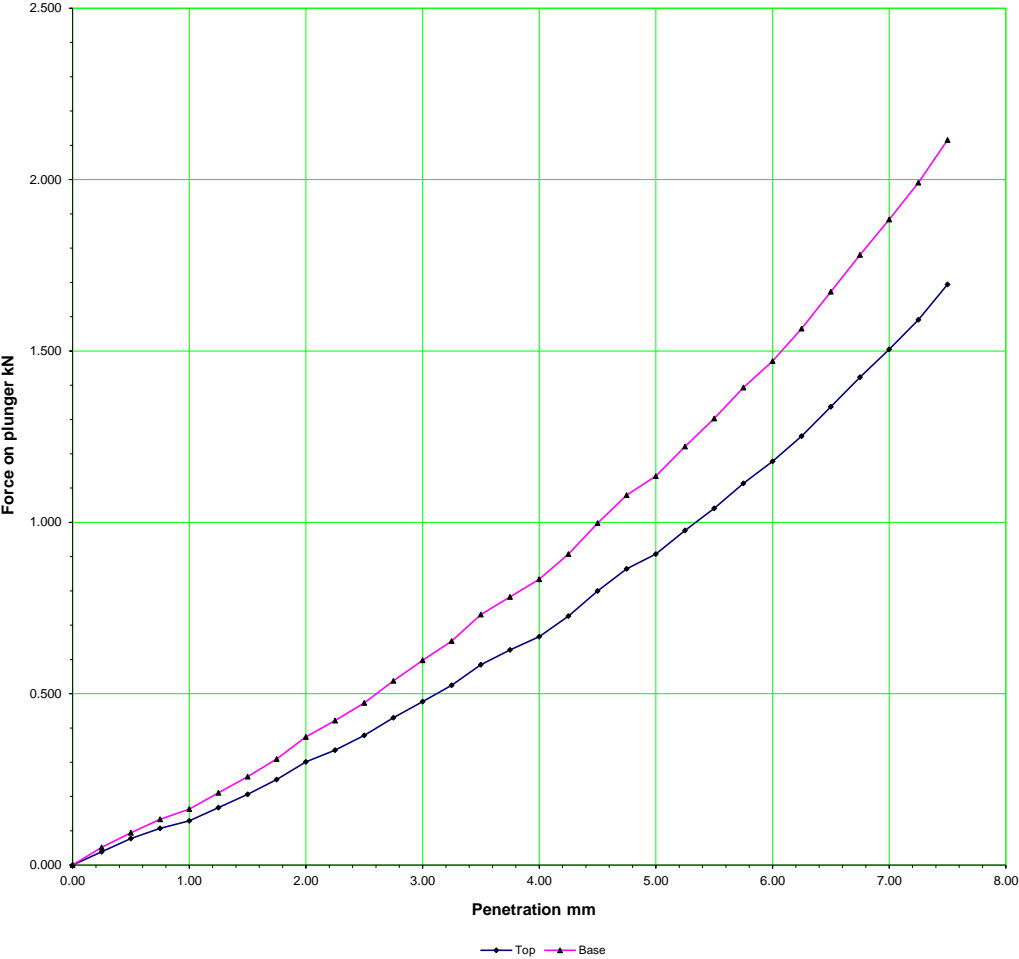
Moisture content after test		Top	Middle	Base	Specimen wt g	4910
Container No.		Tray	Tray	Tray	Diameter mm	152
Mass of wet soil + container	g	901.00	878.00	776.00	Length mm	127.0
Mass of dry soil + container	g	806.00	780.00	691.30		
Weight of container	g	192.00	149.00	147.00		
Mass of moisture	g	95.00	98.00	84.70	Average MC %	15.52
Dry weight	g	614.00	631.00	544.30	Density Mg/m3	2.13
Moisture content	%	15.47	15.53	15.56	Dry Density Mg/m3	1.84



NM TL Ltd	Project: ATU Regional Sports Hubb		Date	Project No.	NMTL3607
		Operator	Tch 22-Feb-23	Trial Pit No.	TP08
		Checked	Nc	Sample No.	B
		Approved	Bc	Depth	1.00m

DETERMINATION OF THE CALIFORNIA BEARING RATIO TEST
BS 1377 : PART 4 : CLAUSE 7 : 1990

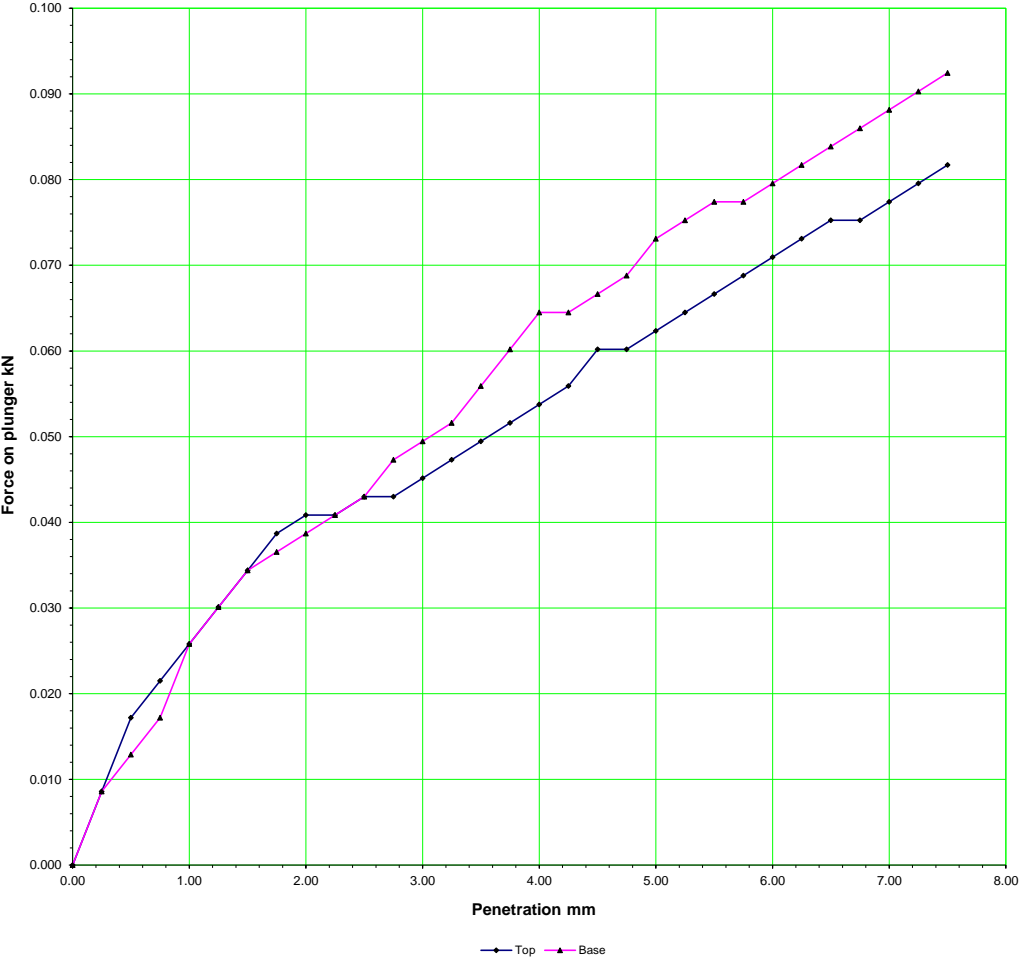
Soil Description	Grey brown slightly sandy gravelly clayey SILT					Date	22-Feb-23	
Test Method	BS 1377: Part 4 : 1990 :7.4							
Force Measuring Device	VJT-008211						Test 1	
Preparatic Remoulded with 2.5 kg rammer at natural moisture content								
Surcharge	10 kPa		Mean Calibration		4.30	N/Div		
Penetration	Force Gauge		Force on		4.30	N/Div		
of plunger	reading		plunger		California Bearing Ratio Results			
mm	divisions		kN			%		
	Top	Bottom	Top	Bottom	Top	Base		
0.00	0.0	0.0	0.000	0.000				
0.25	9.0	12.0	0.039	0.052				
0.50	18.0	22.0	0.077	0.095				
0.75	25.0	31.0	0.108	0.133				
1.00	30.0	38.0	0.129	0.163				
1.25	39.0	49.0	0.168	0.211				
1.50	48.0	60.0	0.206	0.258				
1.75	58.0	72.0	0.249	0.310				
2.00	70.0	87.0	0.301	0.374				
2.25	78.0	98.0	0.335	0.421				
2.50	88.0	110.0	0.378	0.473	2.87	3.58		
2.75	100.0	125.0	0.430	0.538				
3.00	111.0	139.0	0.477	0.598				
3.25	122.0	152.0	0.525	0.654				
3.50	136.0	170.0	0.585	0.731				
3.75	146.0	182.0	0.628	0.783				
4.00	155.0	194.0	0.667	0.834				
4.25	169.0	211.0	0.727	0.907				
4.50	186.0	232.0	0.800	0.998				
4.75	201.0	251.0	0.864	1.079				
5.00	211.0	264.0	0.907	1.135	4.54	5.68		
5.25	227.0	284.0	0.976	1.221				
5.50	242.0	303.0	1.041	1.303				
5.75	259.0	324.0	1.114	1.393				
6.00	274.0	342.0	1.178	1.471				
6.25	291.0	364.0	1.251	1.565				
6.50	311.0	389.0	1.337	1.673				
6.75	331.0	414.0	1.423	1.780				
7.00	350.0	438.0	1.505	1.883				
7.25	370.0	463.0	1.591	1.991				
7.50	394.0	492.0	1.694	2.116				
Moisture content after test		Top	Middle	Base	Specimen wt g	4999		
Container No.		Tray	Tray	Tray	Diameter mm	152		
Mass of wet soil + container	g	962.00	738.00	863.00	Length mm	127.0		
Mass of dry soil + container	g	870.40	671.30	777.30				
Weight of container	g	189.00	188.00	145.00				
Mass of moisture	g	91.60	66.70	85.70	Average MC %	13.60		
Dry weight	g	681.40	483.30	632.30	Density Mg/m3	2.17		
Moisture content	%	13.44	13.80	13.55	Dry Density Mg/m3	1.91		



NM TL Ltd	Project: ATU Regional Sports Hubb		Date	Project No.	NMTL3607
		Operator	Tch 22-Feb-23	Trial Pit No.	TP09
		Checked	Nc	Sample No.	B
		Approved	Bc	Depth	0.50m

DETERMINATION OF THE CALIFORNIA BEARING RATIO TEST
BS 1377 : PART 4 : CLAUSE 7 : 1990

Soil Description	Grey brown slightly sandy gravelly SILT/CLAY				Date	22-Feb-23
Test Method	BS 1377: Part 4 : 1990 :7.4					
Force Measuring Device	VJT-008211					Test 1
Preparatic Remoulded with 2.5 kg rammer at natural moisture content						
Surcharge	10 kPa		Mean Calibration		4.30	N/Div
Penetration	Force Gauge		Force on		4.30	N/Div
of plunger	reading		plunger		California Bearing Ratio Results	
mm	divisions		kN			
	Top	Bottom	Top	Bottom	Top	Base
0.00	0.0	0.0	0.000	0.000		
0.25	2.0	2.0	0.009	0.009		
0.50	4.0	3.0	0.017	0.013		
0.75	5.0	4.0	0.022	0.017		
1.00	6.0	6.0	0.026	0.026		
1.25	7.0	7.0	0.030	0.030		
1.50	8.0	8.0	0.034	0.034		
1.75	9.0	8.5	0.039	0.037		
2.00	9.5	9.0	0.041	0.039		
2.25	9.5	9.5	0.041	0.041		
2.50	10.0	10.0	0.043	0.043	0.33	0.33
2.75	10.0	11.0	0.043	0.047		
3.00	10.5	11.5	0.045	0.049		
3.25	11.0	12.0	0.047	0.052		
3.50	11.5	13.0	0.049	0.056		
3.75	12.0	14.0	0.052	0.060		
4.00	12.5	15.0	0.054	0.065		
4.25	13.0	15.0	0.056	0.065		
4.50	14.0	15.5	0.060	0.067		
4.75	14.0	16.0	0.060	0.069		
5.00	14.5	17.0	0.062	0.073	0.31	0.37
5.25	15.0	17.5	0.065	0.075		
5.50	15.5	18.0	0.067	0.077		
5.75	16.0	18.0	0.069	0.077		
6.00	16.5	18.5	0.071	0.080		
6.25	17.0	19.0	0.073	0.082		
6.50	17.5	19.5	0.075	0.084		
6.75	17.5	20.0	0.075	0.086		
7.00	18.0	20.5	0.077	0.088		
7.25	18.5	21.0	0.080	0.090		
7.50	19.0	21.5	0.082	0.092		
Moisture content after test		Top	Middle	Base	Specimen wt g	4822
Container No.		Tray	Tray	Tray	Diameter mm	152
Mass of wet soil + container	g	926.00	901.00	816.00	Length mm	127.0
Mass of dry soil + container	g	796.60	768.10	698.50		
Weight of container	g	191.00	146.00	145.00		
Mass of moisture	g	129.40	132.90	117.50	Average MC %	21.32
Dry weight	g	605.60	622.10	553.50	Density Mg/m3	2.09
Moisture content	%	21.37	21.36	21.23	Dry Density Mg/m3	1.72



NM TL Ltd	Project: ATU Regional Sports Hubb		Date	22-Feb-23	Project No.	NMTL3607
		Operator	Tch		Trial Pit No.	TP11
		Checked	Nc		Sample No.	B
		Approved	Bc		Depth	0.50m

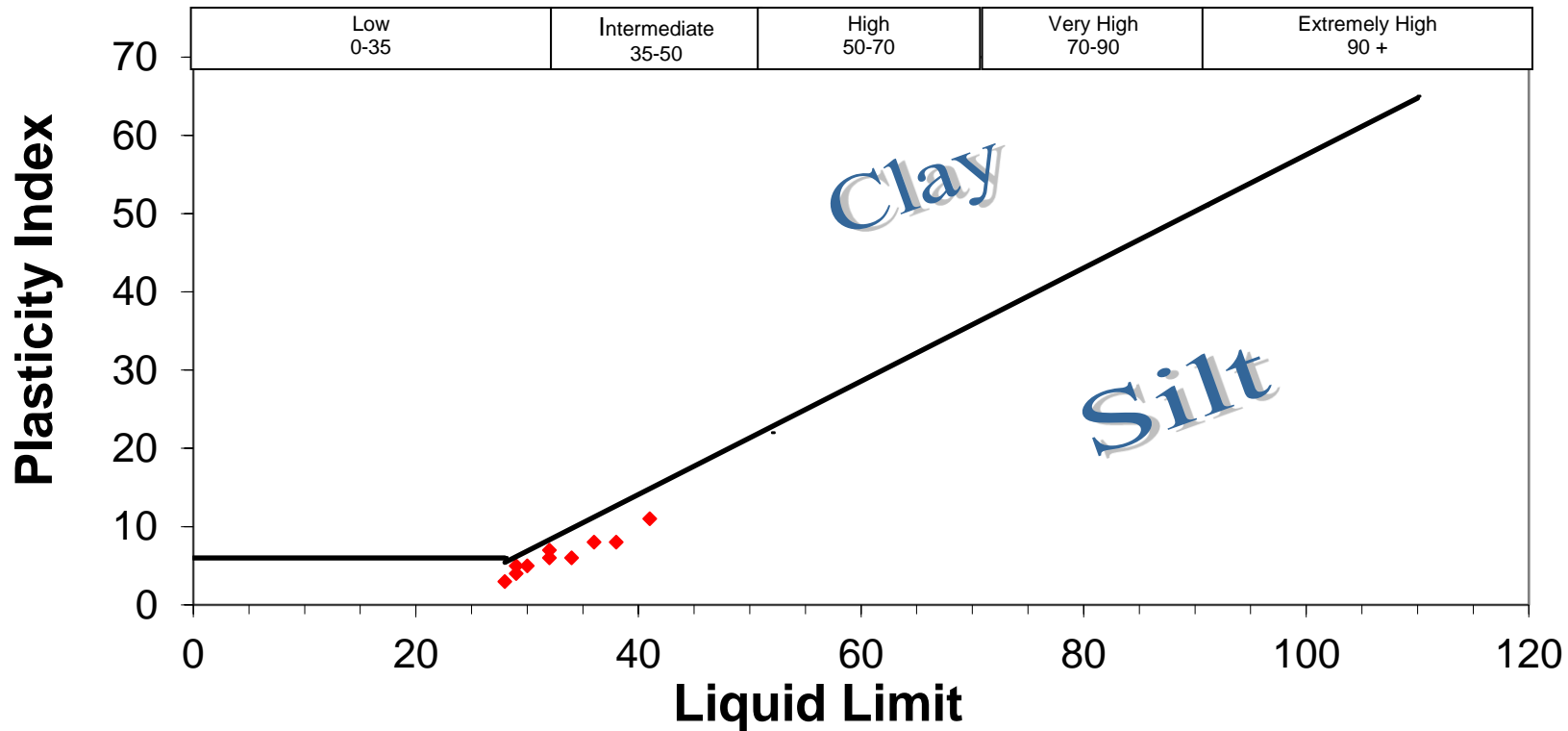
APPENDIX 7 – Laboratory Testing



National Materials Testing Laboratory Ltd.															
SUMMARY OF TEST RESULTS															
				Particle			Index Properties		Bulk	Cell	Undrained Triaxial Tests		Lab		
BH/TP	Depth	sample	Moisture	Density	<425um	LL	PL	PI	Density	Presssure	Compressive	Strain at	Vane	Remarks	
No	m	No.	%	Mg/m3	%	%	%	%	Mg/m3	kPa	Stress kPa	Failure %	kPa		
TP01	0.50	B	19.3		66.1	32	25	7							
TP01	1.30	B	17.8		77.4	29	25	4							
TP01	2.00	B	16.8		73.3	28	25	3							
TP02	0.50	B	26.0		52.4	38	30	8							
TP02	1.35	B	11.8		25.1	30	25	5							
TP03	0.50	B	18.0		81.5	29	24	5							
TP04	0.50	B	17.8		58.3	34	28	6							
TP05	0.50	B	18.6		52.5	32	26	6							
TP06	5.00	B	12.7		11.1	41	30	11							
TP08	1.00	B	17.6		42.1	36	28	8							
NMTL		Notes :									Job ref No.	NMTL 3607	GII Project ID:	12087-07-22	
		1. All BS tests carried out using preferred (definitive) method unless otherwise stated.									Location	ATU Regional Sports Hubb			

NMTL LTD
Unit 18c, Tullow Industrial Estate
Tullow
County Carlow
Tel: 00353 59 9180822
Mob: 00353 872575508
billa@nmtl.ie

Contract: ATU Regional Sports Hubb
Client: Ground Investigations Ireland Ltd
Engineer: Conor Finnerty
GII Project ID 12087-07-22
Date: 27/02/2023
Tested By: Sb **Checked:** Bc
Job ref No. NMTL 3607

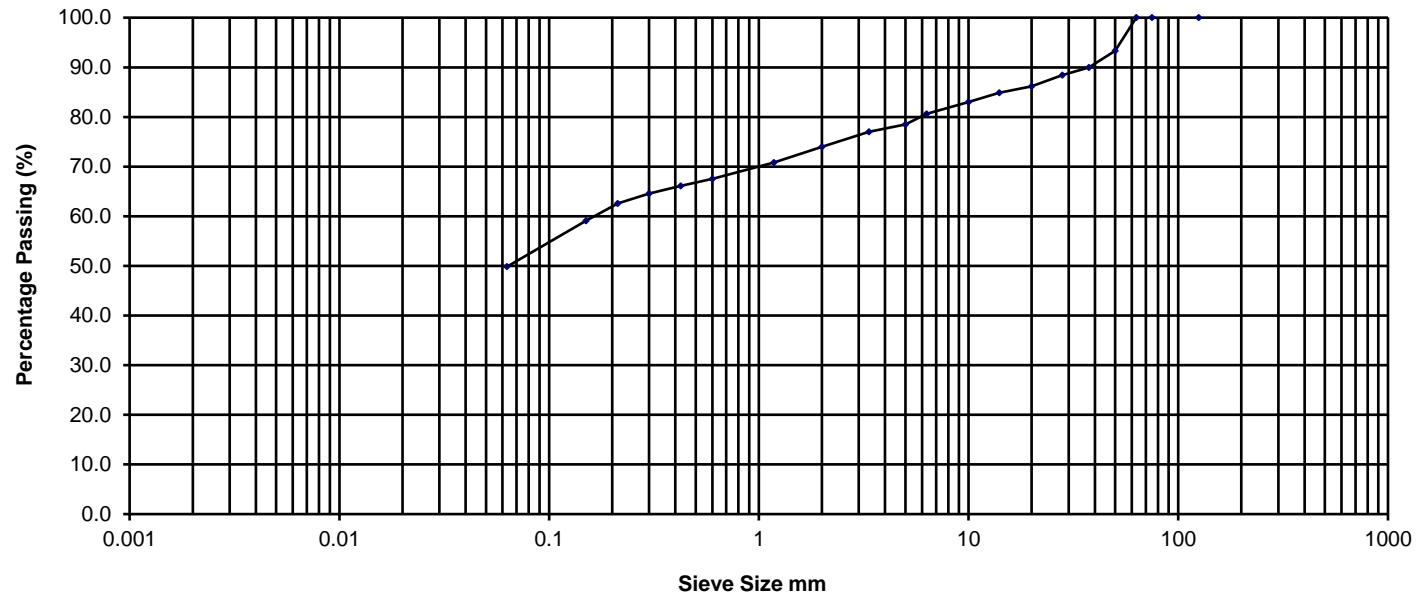


NMTL Ltd

Sieve	%
Size mm	Passing
125.000	100.0
75.000	100.0
63.000	100.0
50.000	93.3
37.500	90.0
28.000	88.4
20.000	86.2
14.000	84.9
10.000	83.0
6.300	80.6
5.000	78.5
3.350	77.0
2.000	74.0
1.180	70.8
0.600	67.5
0.425	66.1
0.300	64.6
0.212	62.6
0.150	59.1
0.063	49.8

Determination of Particle Size Distribution

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



Percentage Particle Size

Clay	Fine	Medium	Coarse	Fine	Medium	Coarse	Fine	Medium	Coarse	Cobbles	Boulder
	Silt			Sand			Gravel				
	49.8			24.2			26.0				
										0.0	0.0

Sample Description Grey brown slightly sandy slightly gravelly clayey SILT.

Project No. NMTL 3607

BH/TP No. TP01

Project ATU Regional Sports Hubb

GII PROJECT ID:12087-07-22

Sample No. B

NM

TL

Ltd

Operator

Sb

Checked

Nc

Approved

Bc

Date sample tested

22/02/2023

Depth

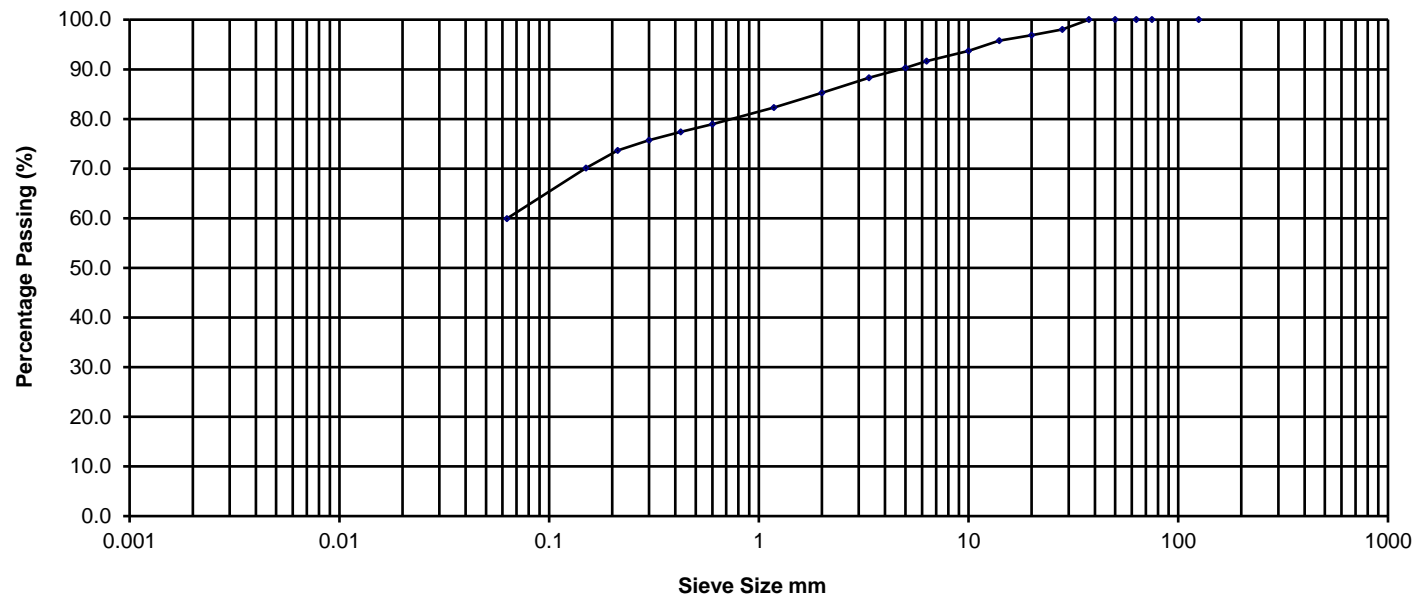
0.50m

NMTL Ltd

Sieve	%
Size mm	Passing
125.000	100.0
75.000	100.0
63.000	100.0
50.000	100.0
37.500	100.0
28.000	98.1
20.000	96.9
14.000	95.8
10.000	93.7
6.300	91.7
5.000	90.3
3.350	88.3
2.000	85.3
1.180	82.3
0.600	78.9
0.425	77.4
0.300	75.7
0.212	73.7
0.150	70.1
0.063	59.9

Determination of Particle Size Distribution

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



Percentage Particle Size

Clay	Fine	Medium	Coarse	Fine	Medium	Coarse	Fine	Medium	Coarse	Cobbles	Boulder
	Silt			Sand			Gravel			0.0	0.0
	59.9			25.3			14.7				

Sample Description Grey brown slightly gravelly slightly sandy clayey SILT.

Project No. NMTL 3607

BH/TP No. TP01

Project ATU Regional Sports Hubb

GII PROJECT ID:12087-07-22

Sample No. B

NM

TL

Ltd

Operator

Sb

Checked

Nc

Approved

Bc

Date sample tested

22/02/2023

Depth

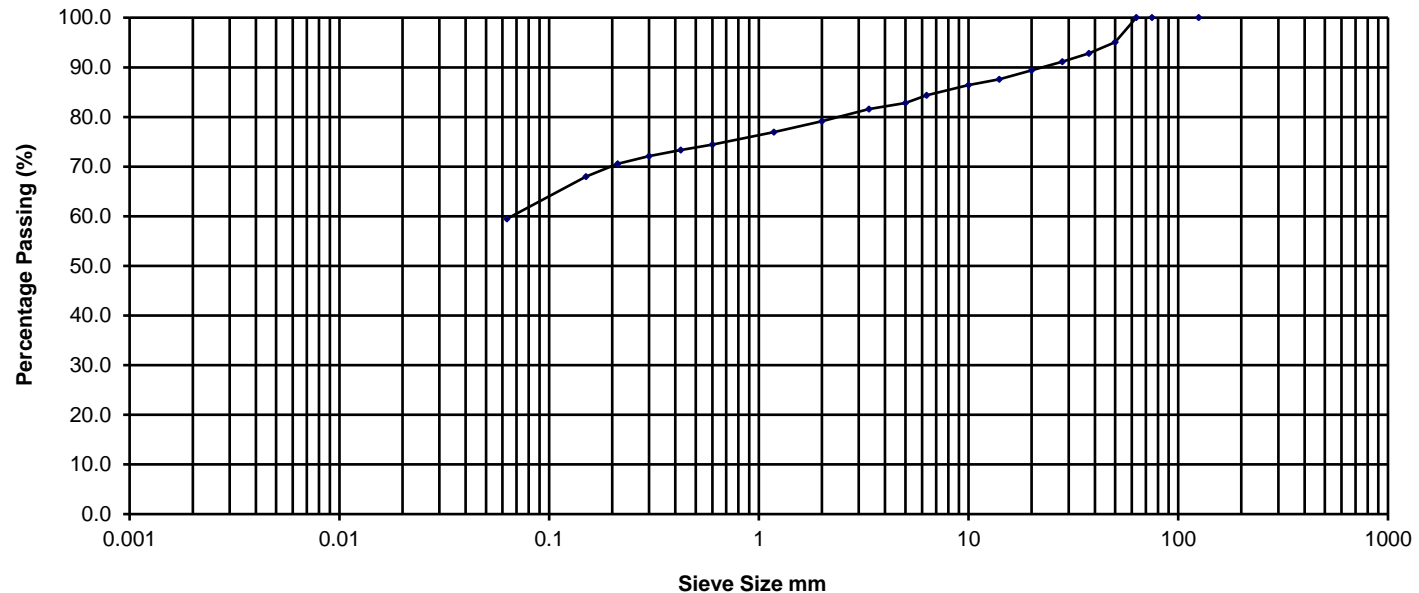
1.30m

NMTL Ltd

Sieve	%
Size mm	Passing
125.000	100.0
75.000	100.0
63.000	100.0
50.000	95.1
37.500	92.8
28.000	91.1
20.000	89.4
14.000	87.6
10.000	86.4
6.300	84.3
5.000	82.8
3.350	81.6
2.000	79.1
1.180	77.0
0.600	74.5
0.425	73.3
0.300	72.1
0.212	70.6
0.150	68.0
0.063	59.5

Determination of Particle Size Distribution

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



Percentage Particle Size

Clay	Fine	Medium	Coarse	Fine	Medium	Coarse	Fine	Medium	Coarse	Cobbles	Boulder
	Silt			Sand			Gravel			0.0	0.0
	59.5			19.6			20.9				

Sample Description Grey brown slightly sandy slightly gravelly clayey SILT.

Project No. NMTL 3607

BH/TP No. TP01

Project ATU Regional Sports Hubb

GII PROJECT ID:12087-07-22

Sample No. B

NMTL Ltd

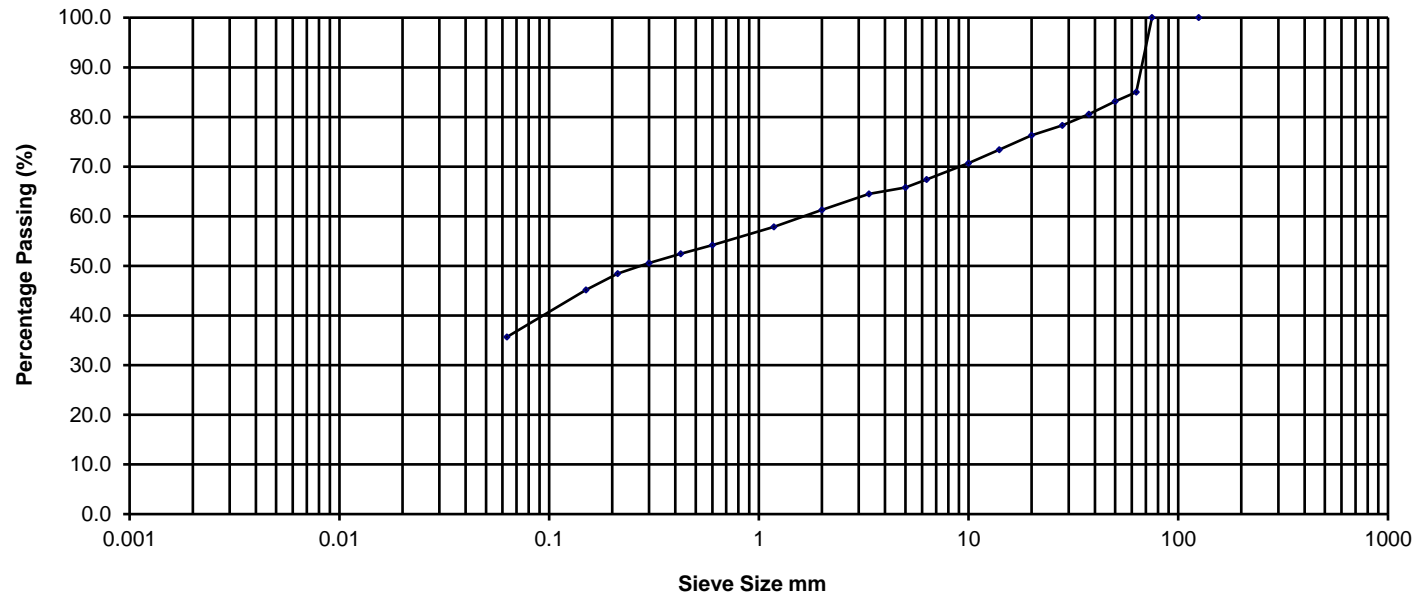
Operator	Sb	Checked	Nc	Approved	Bc	Date sample tested	22/02/2023	Depth	2.00m
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NMTL Ltd

Sieve	%
Size mm	Passing
125.000	100.0
75.000	100.0
63.000	85.0
50.000	83.1
37.500	80.5
28.000	78.3
20.000	76.3
14.000	73.4
10.000	70.7
6.300	67.4
5.000	65.8
3.350	64.5
2.000	61.3
1.180	57.9
0.600	54.2
0.425	52.4
0.300	50.6
0.212	48.5
0.150	45.1
0.063	35.7

Determination of Particle Size Distribution

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



Percentage Particle Size

Clay	Fine	Medium	Coarse	Fine	Medium	Coarse	Fine	Medium	Coarse	Cobbles	Boulder
	Silt			Sand			Gravel			15.0	0.0
	35.7			25.6			23.7				

Sample Description Dark brown/grey slightly gravelly slightly sandy clayey SILT.

Project No. NMTL 3607

BH/TP No. TP02

Project ATU Regional Sports Hubb

GII PROJECT ID:12087-07-22

Sample No. B

NM

TL

Ltd

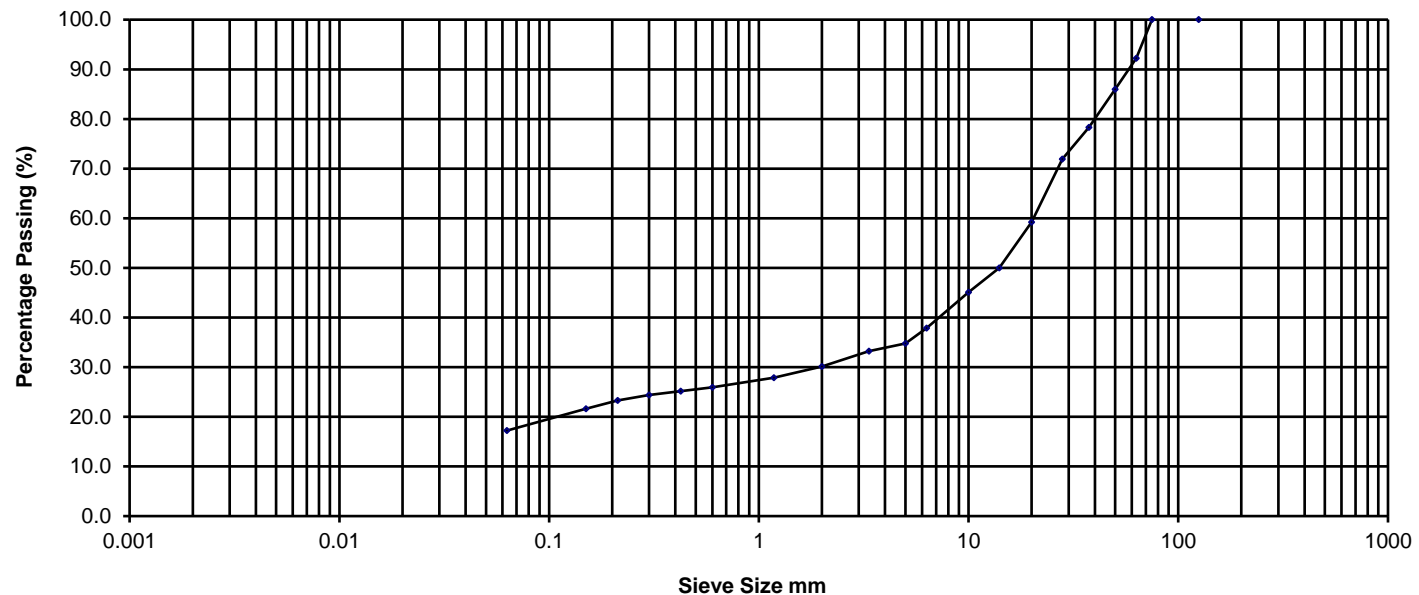
Operator	Sb	Checked	Nc	Approved	Bc	Date sample tested	22/02/2023	Depth	0.50m
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NMTL Ltd

Sieve	%
Size mm	Passing
125.000	100.0
75.000	100.0
63.000	92.2
50.000	86.0
37.500	78.3
28.000	71.9
20.000	59.2
14.000	50.0
10.000	45.1
6.300	37.9
5.000	34.8
3.350	33.2
2.000	30.1
1.180	27.9
0.600	25.9
0.425	25.1
0.300	24.4
0.212	23.3
0.150	21.6
0.063	17.2

Determination of Particle Size Distribution

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



Percentage Particle Size

Clay	Fine	Medium	Coarse	Fine	Medium	Coarse	Fine	Medium	Coarse	Cobbles	Boulder
	Silt			Sand			Gravel				
	17.2			12.9			62.1			7.8	0.0

Sample Description Grey brown slightly sandy gravelly clayey SILT.

Project No. NMTL 3607

BH/TP No. TP02

Project ATU Regional Sports Hubb

GII PROJECT ID:12087-07-22

Sample No. B

NM

TL

Ltd

Operator

Sb

Checked

Nc

Approved

Bc

Date sample tested

22/02/2023

Depth

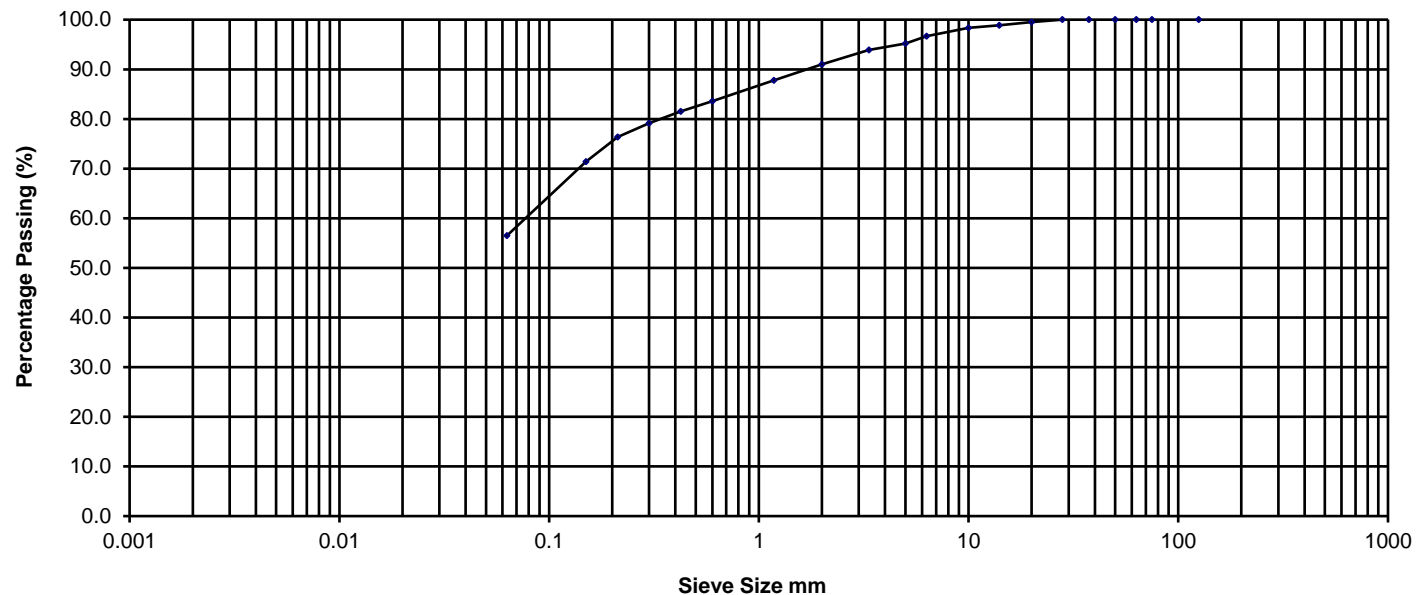
1.35m

NMTL Ltd

Sieve	%
Size mm	Passing
125.000	100.0
75.000	100.0
63.000	100.0
50.000	100.0
37.500	100.0
28.000	100.0
20.000	99.5
14.000	98.9
10.000	98.4
6.300	96.7
5.000	95.2
3.350	93.9
2.000	91.0
1.180	87.7
0.600	83.6
0.425	81.5
0.300	79.2
0.212	76.4
0.150	71.4
0.063	56.5

Determination of Particle Size Distribution

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



Percentage Particle Size

Clay	Fine	Medium	Coarse	Fine	Medium	Coarse	Fine	Medium	Coarse	Cobbles	Boulder
	Silt			Sand			Gravel			0.0	0.0
	56.5			34.5			9.0				

Sample Description Brown grey slightly gravelly slightly sandy clayey SILT

Project No. NMTL 3607

BH/TP No. TP03

Project ATU Regional Sports Hubb

GII PROJECT ID:12087-07-22

Sample No. B

NM

TL

Ltd

Operator

Sb

Checked

Nc

Approved

Bc

Date sample tested

22/02/2023

Depth

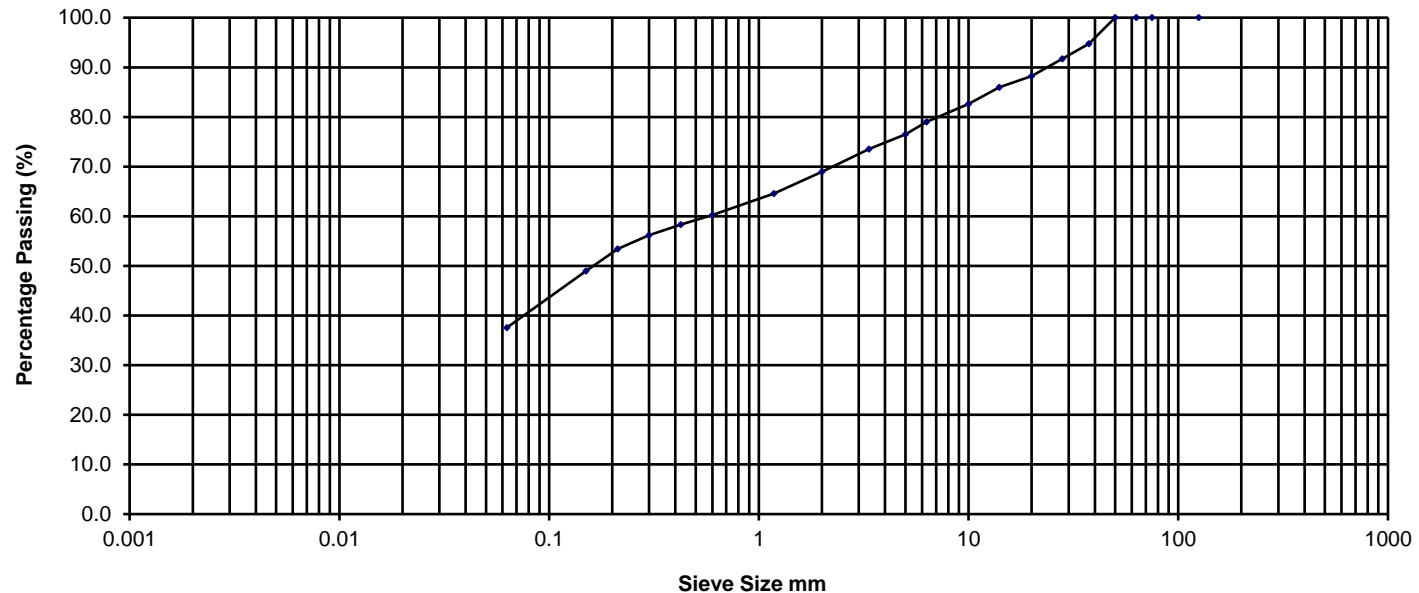
0.50m

NMTL Ltd

Sieve	%
Size mm	Passing
125.000	100.0
75.000	100.0
63.000	100.0
50.000	100.0
37.500	94.7
28.000	91.7
20.000	88.2
14.000	86.0
10.000	82.6
6.300	79.0
5.000	76.5
3.350	73.5
2.000	68.9
1.180	64.6
0.600	60.2
0.425	58.3
0.300	56.2
0.212	53.4
0.150	49.0
0.063	37.6

Determination of Particle Size Distribution

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



Percentage Particle Size

Clay	Fine	Medium	Coarse	Fine	Medium	Coarse	Fine	Medium	Coarse	Cobbles	Boulder
	Silt			Sand			Gravel			0.0	0.0
	37.6			31.3			31.1				

Sample Description Brown grey slightly gravelly slightly sandy clayey SILT

Project No. NMTL 3607

BH/TP No. TP04

Project ATU Regional Sports Hubb

GII PROJECT ID:12087-07-22

Sample No. B

NM

TL

Ltd

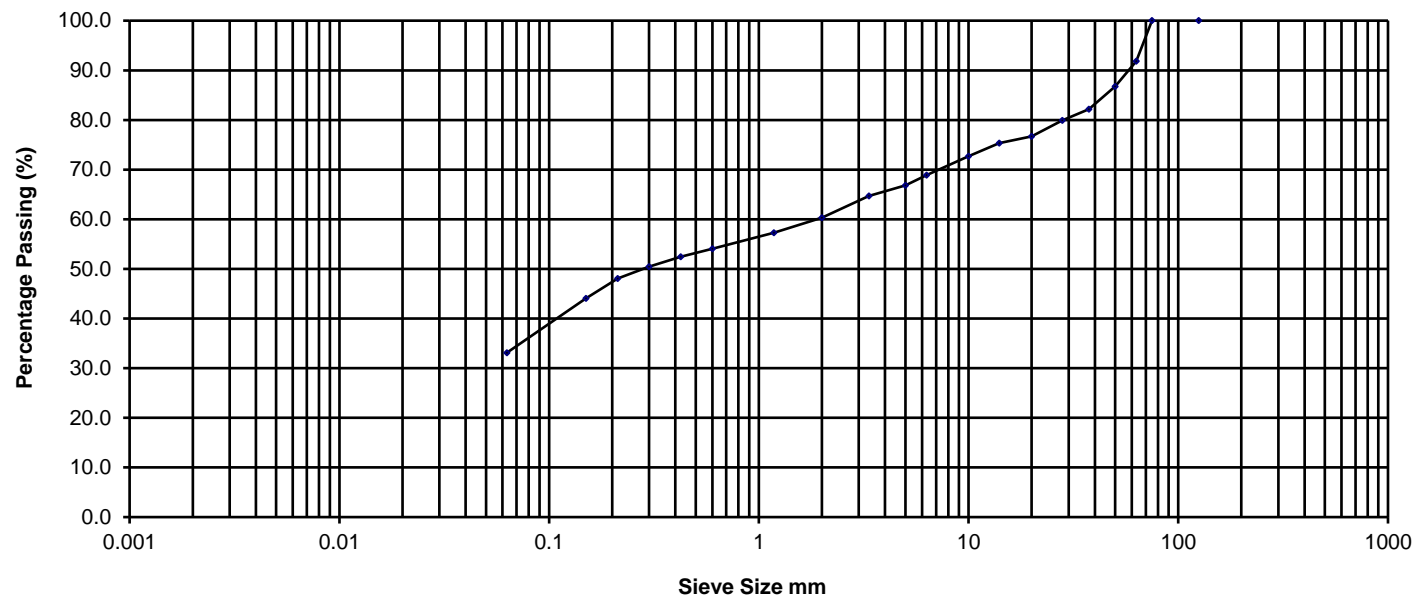
Operator	Sb	Checked	Nc	Approved	Bc	Date sample tested	22/02/2023	Depth	0.50m
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NMTL Ltd

Sieve	%
Size mm	Passing
125.000	100.0
75.000	100.0
63.000	91.9
50.000	86.7
37.500	82.2
28.000	79.9
20.000	76.7
14.000	75.3
10.000	72.7
6.300	68.9
5.000	66.8
3.350	64.7
2.000	60.3
1.180	57.3
0.600	54.1
0.425	52.5
0.300	50.5
0.212	48.0
0.150	44.1
0.063	33.1

Determination of Particle Size Distribution

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



Percentage Particle Size

Clay	Fine	Medium	Coarse	Fine	Medium	Coarse	Fine	Medium	Coarse	Cobbles	Boulder
	Silt			Sand			Gravel				
	33.1			27.2			31.5			8.1	0.0

Sample Description Brown grey slightly sandy slightly gravelly clayey SILT

Project No. NMTL 3607

BH/TP No. TP05

Project ATU Regional Sports Hubb

GII PROJECT ID:12087-07-22

Sample No. B

NM

TL

Ltd

Operator

Sb

Checked

Nc

Approved

Bc

Date sample tested

22/02/2023

Depth

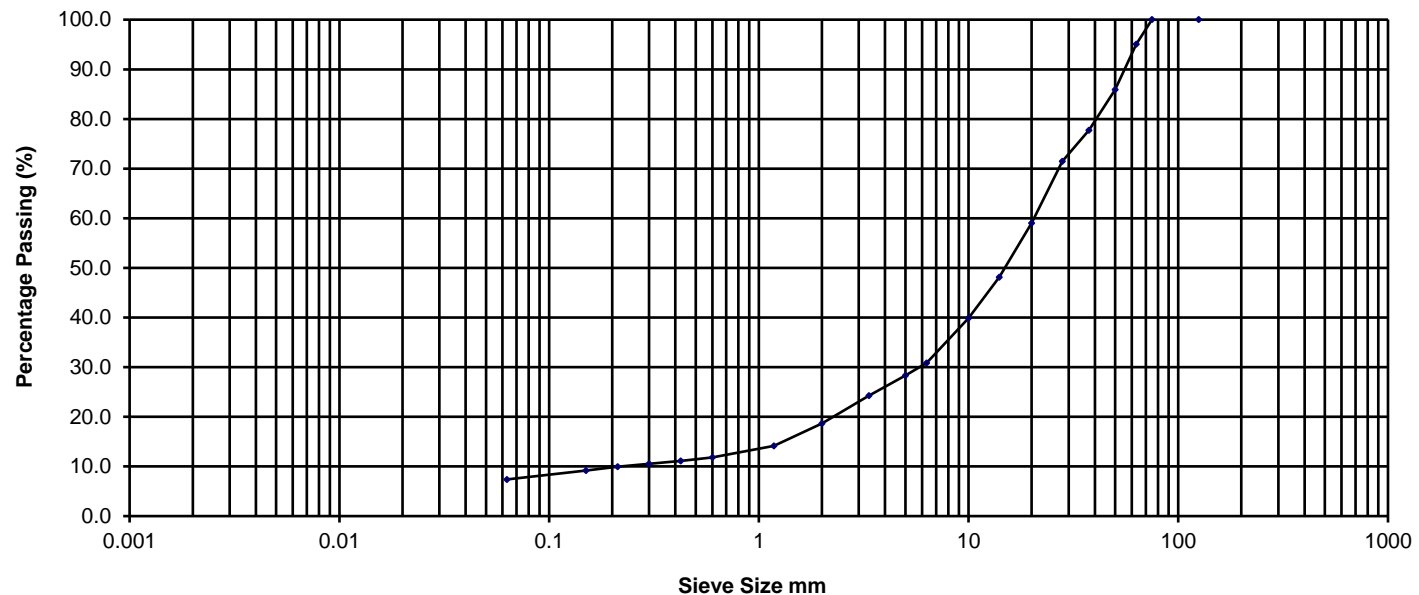
0.50m

NMTL Ltd

Sieve	%
Size mm	Passing
125.000	100.0
75.000	100.0
63.000	95.0
50.000	85.9
37.500	77.8
28.000	71.5
20.000	59.0
14.000	48.1
10.000	39.9
6.300	30.8
5.000	28.3
3.350	24.3
2.000	18.6
1.180	14.2
0.600	11.8
0.425	11.1
0.300	10.6
0.212	9.9
0.150	9.2
0.063	7.4

Determination of Particle Size Distribution

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



Percentage Particle Size

Clay	Fine	Medium	Coarse	Fine	Medium	Coarse	Fine	Medium	Coarse	Cobbles	Boulder
	Silt			Sand			Gravel			5.0	0.0
	7.4			11.2			76.4				

Sample Description Grey brown silty sandy fine to coarse GRAVEL.

Project No. NMTL 3607

BH/TP No. TP06

Project ATU Regional Sports Hubb

GII PROJECT ID:12087-07-22

Sample No. B

NM

TL

Ltd

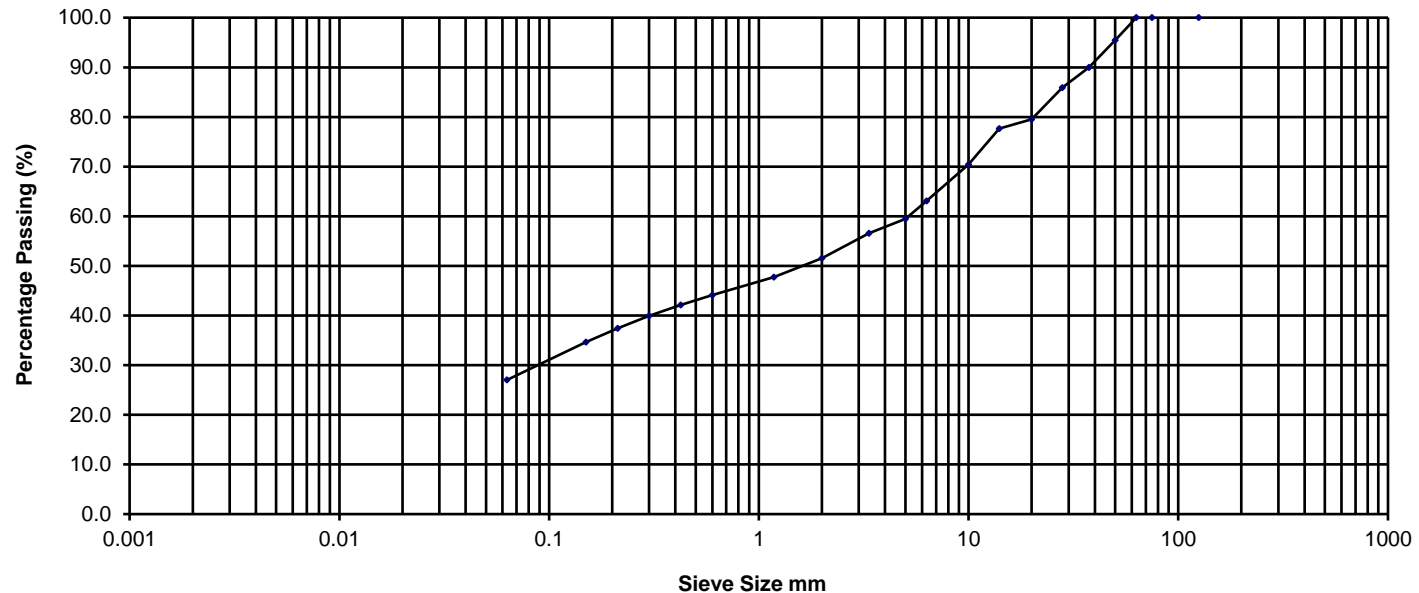
Operator	Sb	Checked	Nc	Approved	Bc	Date sample tested	22/02/2023	Depth	0.50m
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NMTL Ltd

Sieve	%
Size mm	Passing
125.000	100.0
75.000	100.0
63.000	100.0
50.000	95.5
37.500	90.0
28.000	85.9
20.000	79.5
14.000	77.6
10.000	70.5
6.300	63.1
5.000	59.5
3.350	56.6
2.000	51.6
1.180	47.8
0.600	44.1
0.425	42.1
0.300	40.0
0.212	37.4
0.150	34.6
0.063	27.0

Determination of Particle Size Distribution

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



Percentage Particle Size

Clay	Fine	Medium	Coarse	Fine	Medium	Coarse	Fine	Medium	Coarse	Cobbles	Boulder
	Silt			Sand			Gravel			0.0	0.0
	27.0			24.5			48.4				

Sample Description Dark grey slightly sandy gravelly clayey SILT.

Project No. NMTL 3607

BH/TP No. TP08

Project ATU Regional Sports Hubb

GII PROJECT ID:12087-07-22

Sample No. B

NM

TL

Ltd

Operator	Sb	Checked	Nc	Approved	Bc	Date sample tested	22/02/2023	Depth	1.00m
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SINGLE POINT MOISTURE CONDITION VALUE TEST

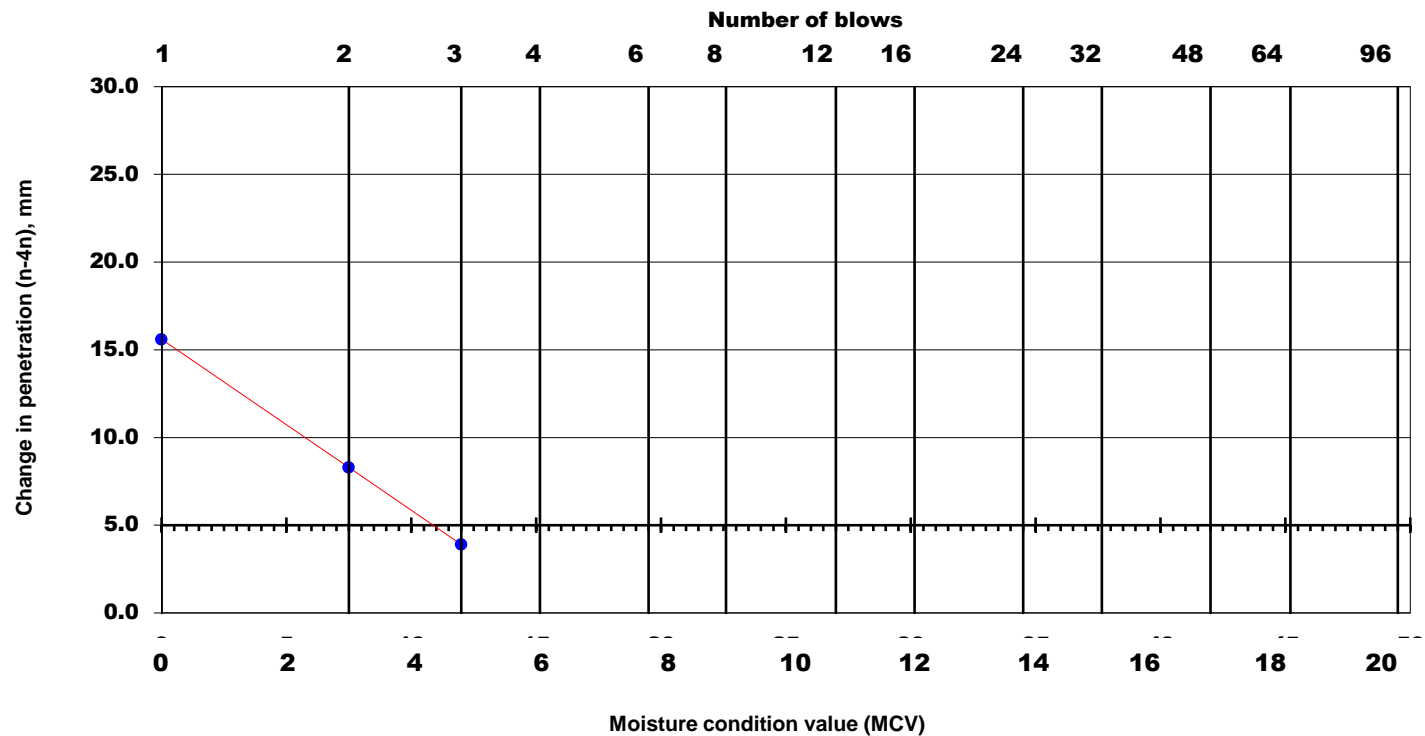
Single sample mass	
Initial sample mass	1448 g
Moisture content	19.4 %
Dry mass	1212.7 g
Mass retained on 20mm sieve	g 13.8 %

* Delete as appropriate

Project Name:	Job ref.	NMTL_3607
ATU Regional Sports Hubb	GII Project ID	12087-07-22
	BH/TP	TP01
Soil description:	Sample no.	B
Grey brown slightly sandy slightly gravelly clayey SILT.	Depth	0.50m
Test method	Date Tested	22/02/2023
BS 1377 : Part 4 : 1990 : 5	Date Sampled	N/A
	Date Received	03/02/2023

MCV 4.3 Natural

Total number of blows n	Penetration or protrusion mm	Change in penetration n to 4n mm
1	55.5	15.6
2	47.0	8.3
3	42.5	3.9
4	39.9	
6	38.7	
8	38.7	
12	38.6	
16		
24		
32		
48		
64		
96		
128		
192		
256		



NMTL Ltd

Operator	Checked	Approved
Tch	Nc	Bc

SINGLE POINT MOISTURE CONDITION VALUE TEST

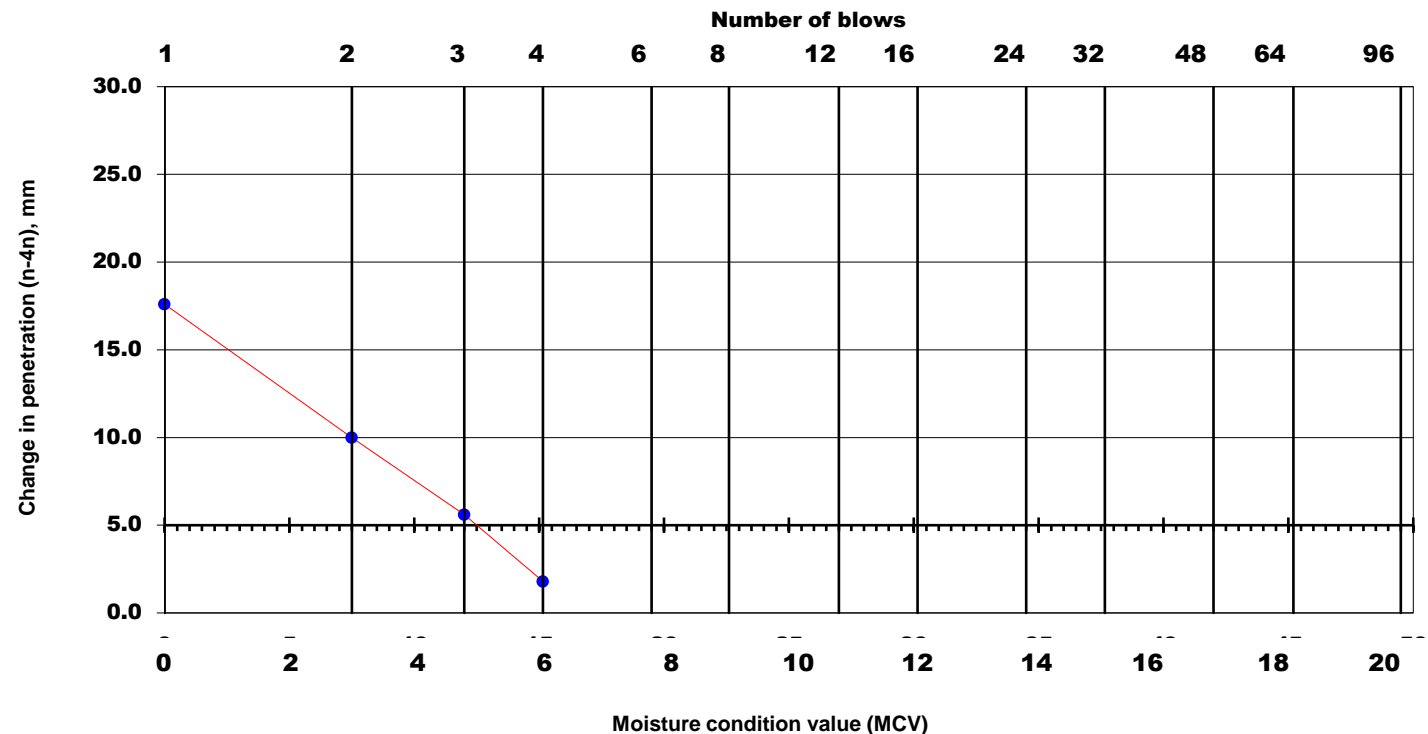
Single sample mass	
Initial sample mass	1493 g
Moisture content	17.9 %
Dry mass	1266.0 g
Mass retained on 20mm sieve	g 3.1 %

* Delete as appropriate

Project Name:	Job ref.	NMTL_3607
ATU Regional Sports Hubb	GII Project ID	12087-07-22
	BH/TP	TP01
Soil description:	Sample no.	B
Grey brown slightly gravelly slightly sandy clayey SILT.	Depth	1.30m
Test method	Date Tested	22/02/2023
BS 1377 : Part 4 : 1990 : 5	Date Sampled	N/A
	Date Received	03/02/2023

MCV 5.2 Natural

Total number of blows n	Penetration or protrusion mm	Change in penetration n to 4n mm
1	59.4	17.6
2	50.2	10.0
3	45.6	5.6
4	41.8	1.8
6	40.6	
8	40.2	
12	40.0	
16	40.0	
24		
32		
48		
64		
96		
128		
192		
256		



NMTL Ltd

Operator	Checked	Approved
Tch	Nc	Bc

SINGLE POINT MOISTURE CONDITION VALUE TEST

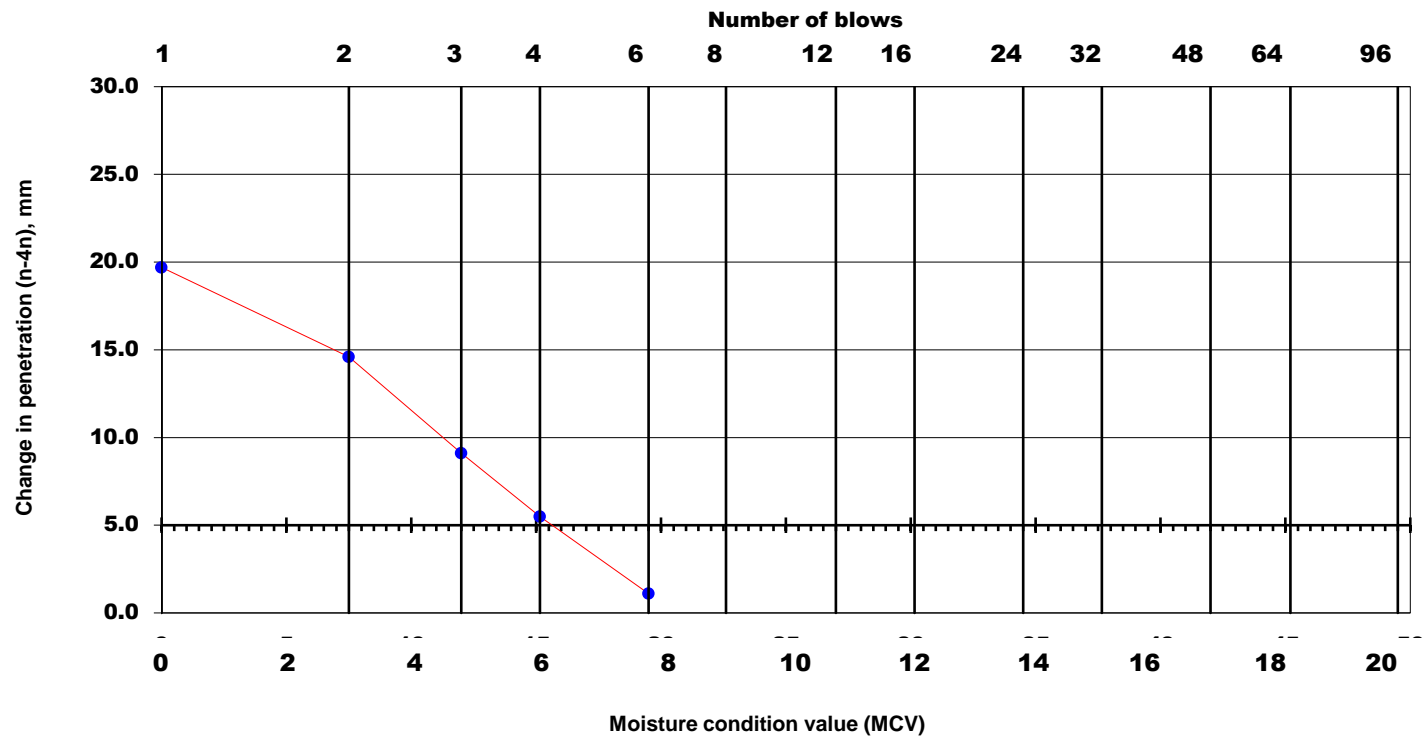
Single sample mass	
Initial sample mass	1513 g
Moisture content	16.9 %
Dry mass	1294.0 g
Mass retained on 20mm sieve	g 10.6 %

* Delete as appropriate

Project Name:	Job ref.	NMTL_3607
ATU Regional Sports Hubb	GII Project ID	12087-07-22
	BH/TP	TP01
Soil description:	Sample no.	B
Grey brown slightly sandy slightly gravelly clayey SILT.	Depth	2.00m
Test method	Date Tested	22/02/2023
BS 1377 : Part 4 : 1990 : 5	Date Sampled	N/A
	Date Received	03/02/2023

MCV 6.3 Natural

Total number of blows n	Penetration or protrusion mm	Change in penetration n to 4n mm
1	64.9	19.7
2	54.5	14.6
3	48.9	9.1
4	45.2	5.5
6	40.7	1.1
8	39.9	
12	39.8	
16	39.7	
24	39.6	
32		
48		
64		
96		
128		
192		
256		



NMTL Ltd

Operator	Checked	Approved
Tch	Nc	Bc

SINGLE POINT MOISTURE CONDITION VALUE TEST

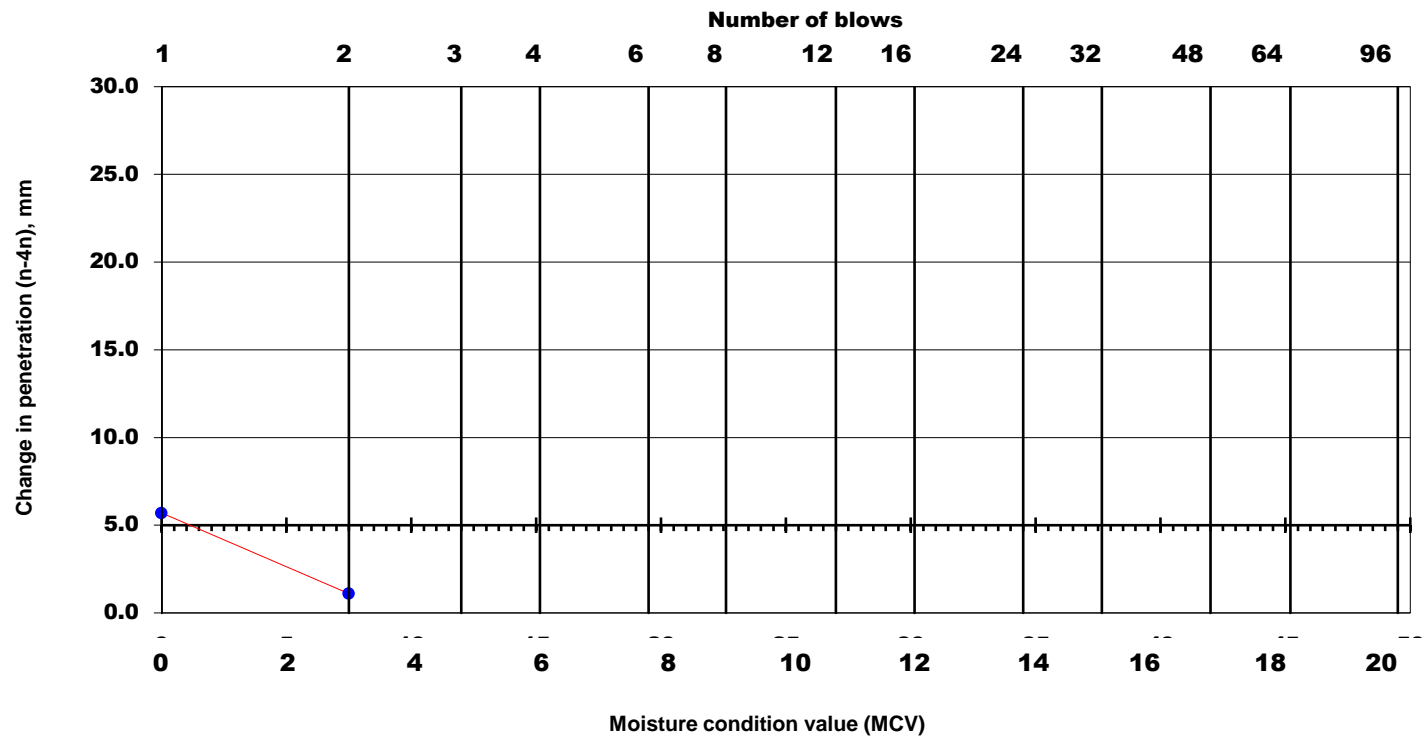
Single sample mass	
Initial sample mass	1467 g
Moisture content	27.7 %
Dry mass	1149.0 g
Mass retained on 20mm sieve	g 23.7 %

* Delete as appropriate

Project Name:	Job ref.	NMTL_3607
ATU Regional Sports Hubb	GII Project ID	12087-07-22
	BH/TP	TP02
Soil description:	Sample no.	B
Dark brown/grey slightly gravelly slightly sandy clayey SILT.	Depth	0.50m
Test method	Date Tested	22/02/2023
BS 1377 : Part 4 : 1990 : 5	Date Sampled	N/A
	Date Received	03/02/2023

MCV 0.5 Natural

Total number of blows n	Penetration or protrusion mm	Change in penetration n to 4n mm
1	53.6	5.7
2	48.8	1.1
3	48.3	
4	47.9	
6	47.8	
8	47.7	
12		
16		
24		
32		
48		
64		
96		
128		
192		
256		



NMTL Ltd

Operator	Checked	Approved
Tch	Nc	Bc

SINGLE POINT MOISTURE CONDITION VALUE TEST

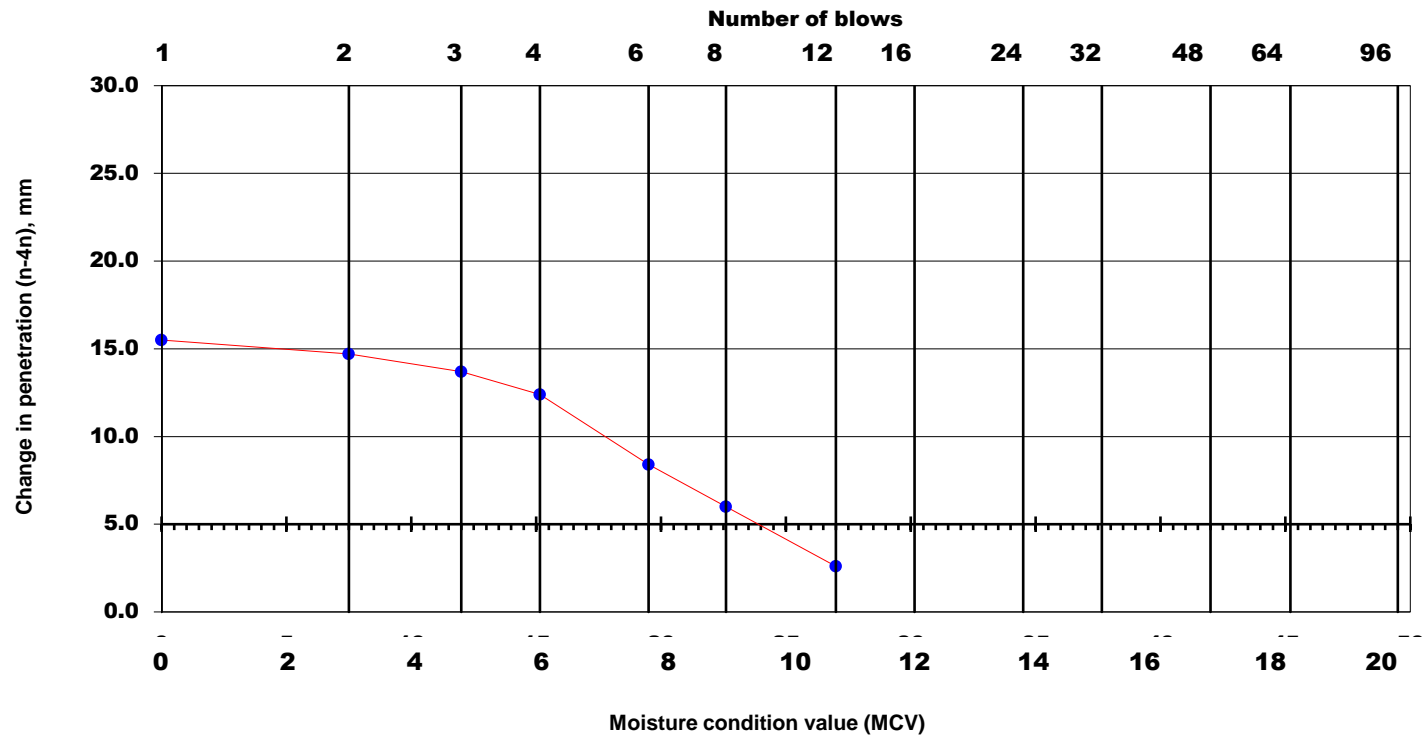
Single sample mass	
Initial sample mass	1406 g
Moisture content	11.4 %
Dry mass	1262.5 g
Mass retained on 20mm sieve	g 40.8 %

* Delete as appropriate

Project Name:	Job ref.	NMTL_3607
ATU Regional Sports Hubb	GII Project ID	12087-07-22
	BH/TP	TP02
Soil description:	Sample no.	B
Grey brown slightly sandy gravelly clayey SILT.	Depth	1.35m
Test method	Date Tested	22/02/2023
BS 1377 : Part 4 : 1990 : 5	Date Sampled	N/A
	Date Received	03/02/2023

MCV 9.6 Natural

Total number of blows n	Penetration or protrusion mm	Change in penetration n to 4n mm
1	57.6	15.5
2	49.7	14.7
3	45.1	13.7
4	42.1	12.4
6	37.6	8.4
8	35.0	6.0
12	31.4	2.6
16	29.7	
24	29.2	
32	29.0	
48	28.8	
64		
96		
128		
192		
256		



NMTL Ltd

Operator	Checked	Approved
Tch	Nc	Bc

SINGLE POINT MOISTURE CONDITION VALUE TEST

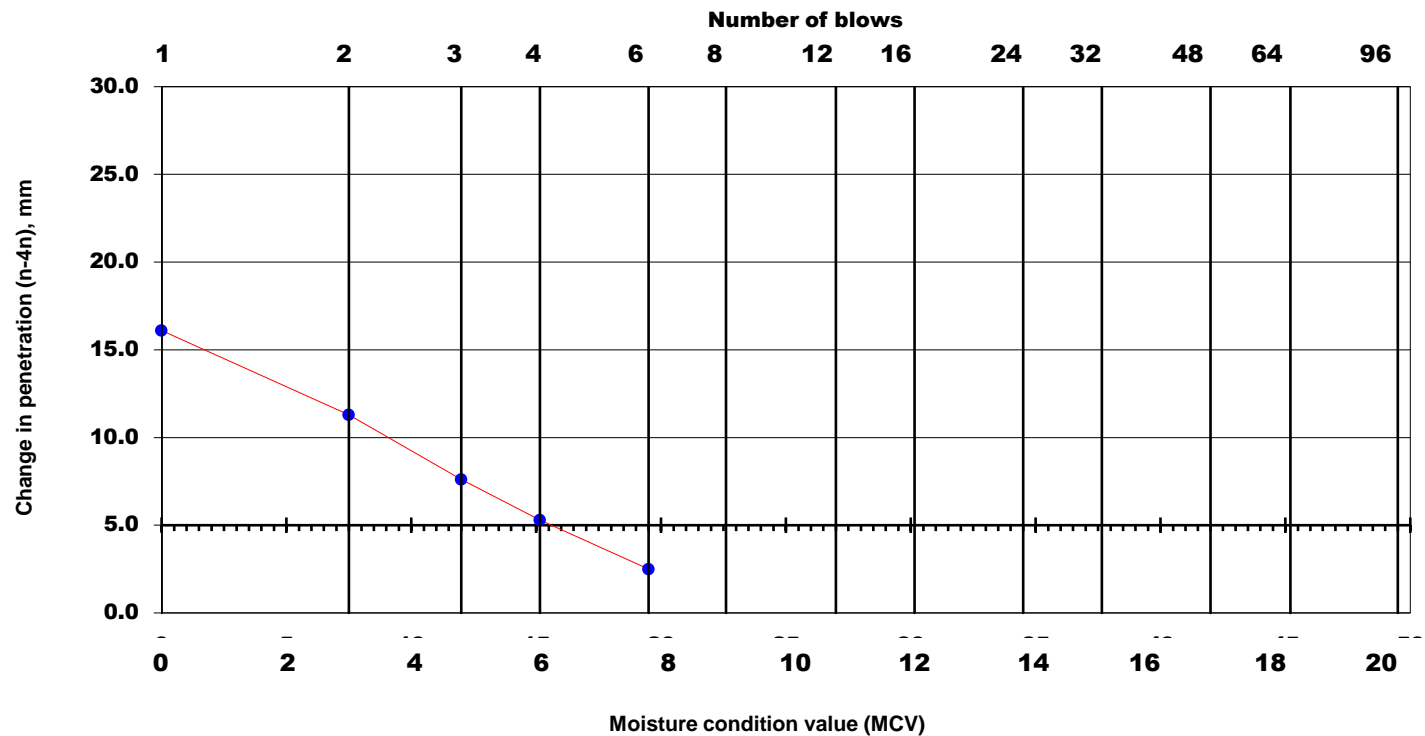
Single sample mass	
Initial sample mass	1536 g
Moisture content	18.3 %
Dry mass	1298.4 g
Mass retained on 20mm sieve	g 0.5 %

* Delete as appropriate

Project Name:	Job ref.	NMTL_3607
ATU Regional Sports Hubb	GII Project ID	12087-07-22
	BH/TP	TP03
Soil description:	Sample no.	B
Brown grey slightly gravelly slightly sandy clayey SILT	Depth	0.50m
Test method	Date Tested	22/02/2023
BS 1377 : Part 4 : 1990 : 5	Date Sampled	N/A
	Date Received	03/02/2023

MCV 6.2 Natural

Total number of blows n	Penetration or protrusion mm	Change in penetration n to 4n mm
1	63.5	16.1
2	54.8	11.3
3	49.8	7.6
4	47.4	5.3
6	44.6	2.5
8	43.5	
12	42.2	
16	42.1	
24	42.1	
32		
48		
64		
96		
128		
192		
256		



NMTL Ltd

Operator	Checked	Approved
Tch	Nc	Bc

SINGLE POINT MOISTURE CONDITION VALUE TEST

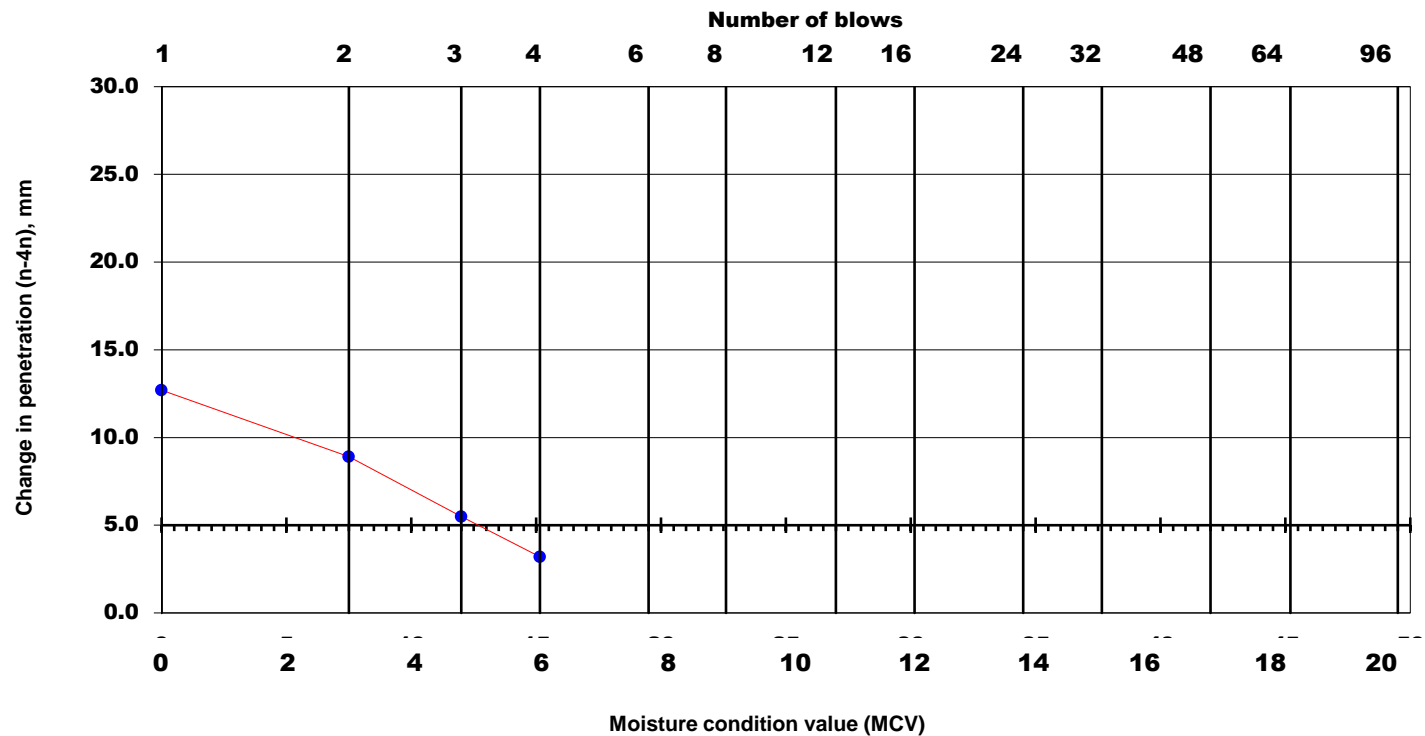
Single sample mass	
Initial sample mass	1434 g
Moisture content	17.9 %
Dry mass	1216.0 g
Mass retained on 20mm sieve	g 11 %

* Delete as appropriate

Project Name:	Job ref.	NMTL_3607
ATU Regional Sports Hubb	GII Project ID	12087-07-22
	BH/TP	TP04
Soil description:	Sample no.	B
Brown grey slightly gravelly slightly sandy clayey SILT	Depth	0.50m
Test method	Date Tested	22/02/2023
BS 1377 : Part 4 : 1990 : 5	Date Sampled	N/A
	Date Received	03/02/2023

MCV 5.1 Natural

Total number of blows n	Penetration or protrusion mm	Change in penetration n to 4n mm
1	48.6	12.7
2	41.7	8.9
3	38.3	5.5
4	35.9	3.2
6	33.9	
8	32.8	
12	32.8	
16	32.7	
24		
32		
48		
64		
96		
128		
192		
256		



NMTL Ltd

Operator	Checked	Approved
Tch	Nc	Bc

SINGLE POINT MOISTURE CONDITION VALUE TEST

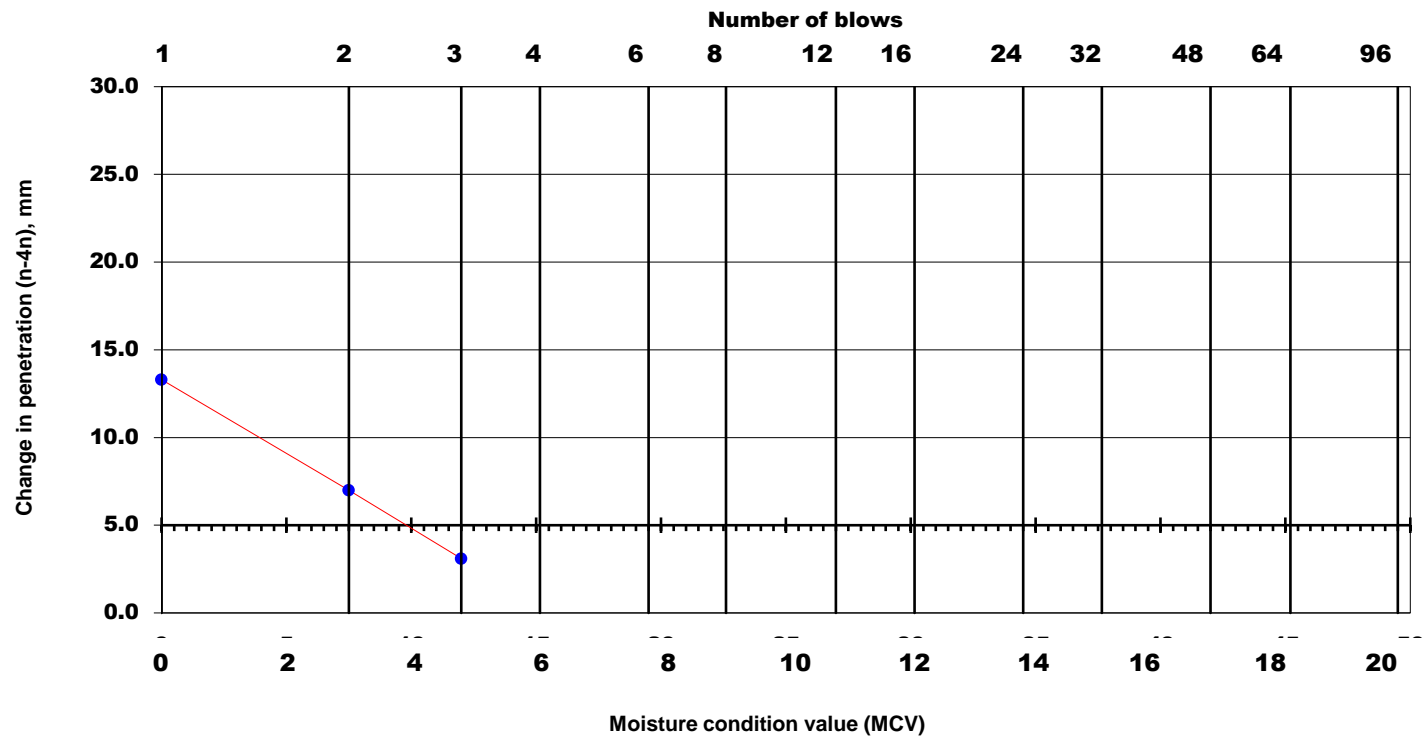
Single sample mass	
Initial sample mass	1438 g
Moisture content	18.5 %
Dry mass	1213.8 g
Mass retained on 20mm sieve	g 23.3 %

* Delete as appropriate

Project Name:	Job ref.	NMTL_3607
ATU Regional Sports Hubb	GII Project ID	12087-07-22
	BH/TP	TP05
Soil description:	Sample no.	B
Brown grey slightly sandy slightly gravelly clayey SILT	Depth	0.50m
Test method	Date Tested	22/02/2023
BS 1377 : Part 4 : 1990 : 5	Date Sampled	N/A
	Date Received	03/02/2023

MCV 3.9 Natural

Total number of blows n	Penetration or protrusion mm	Change in penetration n to 4n mm
1	48.0	13.3
2	40.6	7.0
3	36.6	3.1
4	34.7	
6	33.7	
8	33.6	
12	33.5	
16		
24		
32		
48		
64		
96		
128		
192		
256		



NMTL Ltd

Operator	Checked	Approved
Tch	Nc	Bc

SINGLE POINT MOISTURE CONDITION VALUE TEST

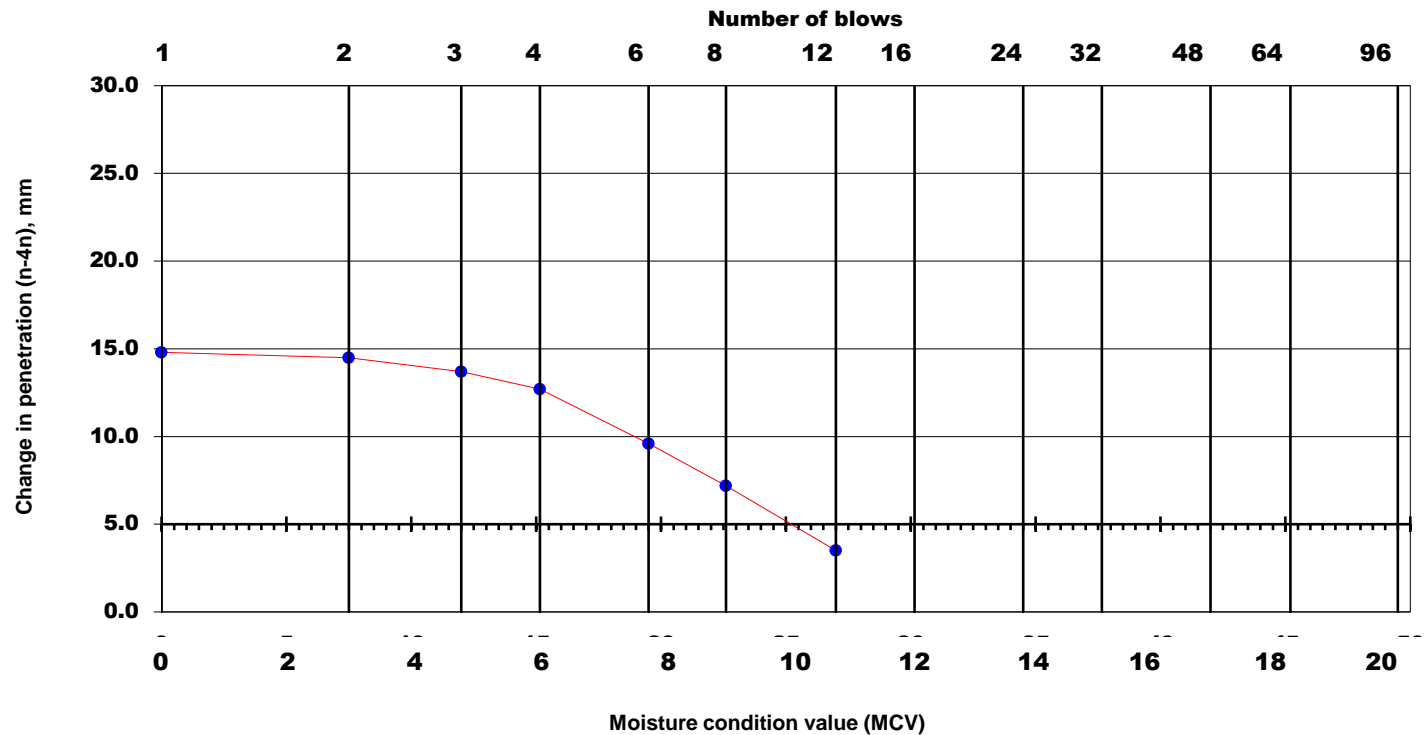
Single sample mass	
Initial sample mass	1397 g
Moisture content	13.1 %
Dry mass	1235.0 g
Mass retained on 20mm sieve	g 41 %

* Delete as appropriate

Project Name:	Job ref.	NMTL_3607
ATU Regional Sports Hubb	GII Project ID	12087-07-22
	BH/TP	TP06
Soil description:	Sample no.	B
Grey brown silty sandy fine to coarse GRAVEL.	Depth	0.50m
Test method	Date Tested	22/02/2023
BS 1377 : Part 4 : 1990 : 5	Date Sampled	N/A
	Date Received	03/02/2023

MCV 10 Natural

Total number of blows n	Penetration or protrusion mm	Change in penetration n to 4n mm
1	47.8	14.8
2	41.0	14.5
3	36.2	13.7
4	33.0	12.7
6	29.4	9.6
8	26.5	7.2
12	22.5	3.5
16	20.3	
24	19.8	
32	19.3	
48	19.0	
64		
96		
128		
192		
256		



NMTL Ltd

Operator	Checked	Approved
Tch	Nc	Bc

SINGLE POINT MOISTURE CONDITION VALUE TEST

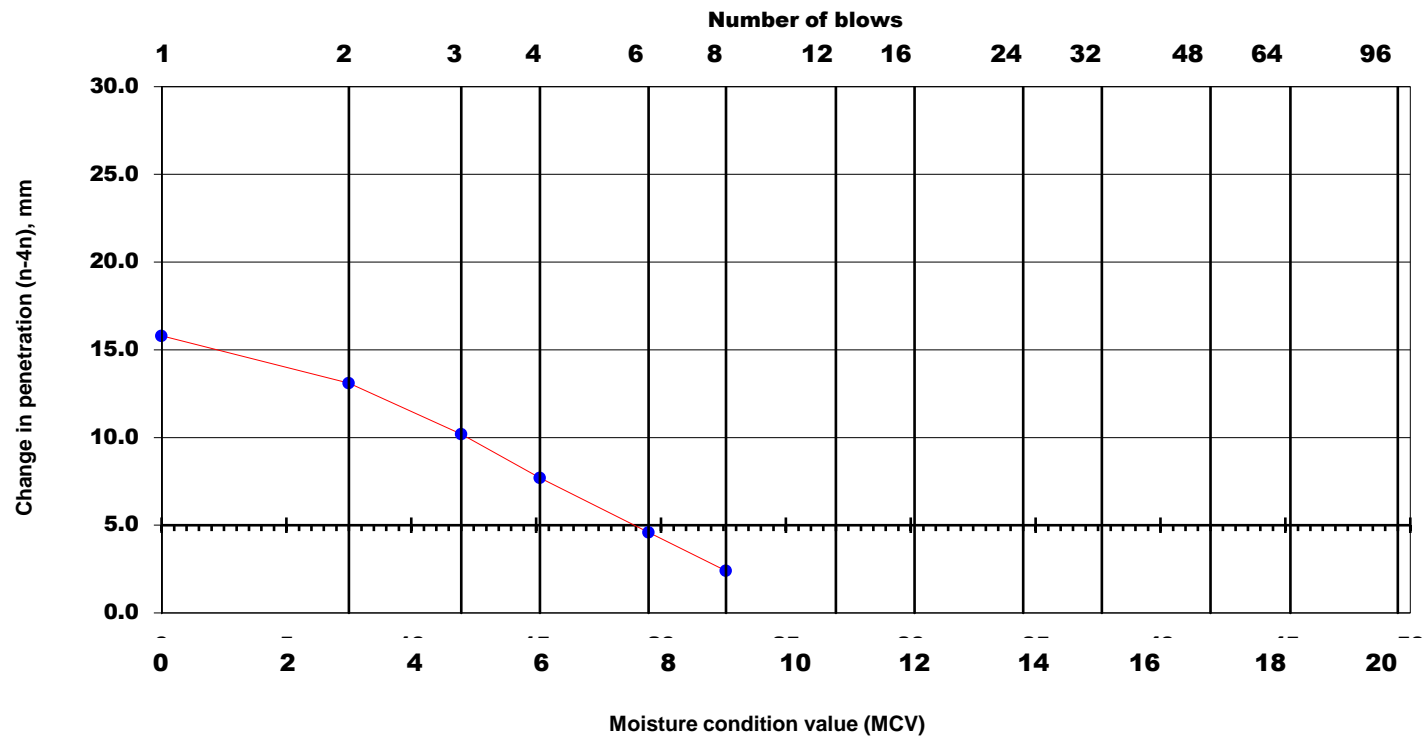
Single sample mass	
Initial sample mass	1498 g
Moisture content	18.0 %
Dry mass	1269.0 g
Mass retained on 20mm sieve	g 20.5 %

* Delete as appropriate

Project Name:	Job ref.	NMTL_3607
ATU Regional Sports Hubb	GII Project ID	12087-07-22
	BH/TP	TP08
Soil description:	Sample no.	B
Dark grey slightly sandy gravelly clayey SILT.	Depth	0.50m
Test method	Date Tested	22/02/2023
BS 1377 : Part 4 : 1990 : 5	Date Sampled	N/A
	Date Received	03/02/2023

MCV 7.8 Natural

Total number of blows n	Penetration or protrusion mm	Change in penetration n to 4n mm
1	54.5	15.8
2	46.3	13.1
3	41.9	10.2
4	38.7	7.7
6	35.5	4.6
8	33.2	2.4
12	31.7	
16	31.0	
24	30.9	
32	30.8	
48		
64		
96		
128		
192		
256		



NMTL Ltd

Operator	Checked	Approved
Tch	Nc	Bc

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



4225

Attention : Conor Finnerty
Date : 6th February, 2023
Your reference : 12087-07-22
Our reference : Test Report 23/1129 Batch 1
Location : ATU Regional Sports HUB Letterkenny Donegal
Date samples received : 25th January, 2023
Status : Final Report
Issue : 1

Fourteen samples were received for analysis on 25th January, 2023 of which thirteen were scheduled for analysis. Please find attached our Test Report which should be read with notes at the end of the report and should include all sections if reproduced. Interpretations and opinions are outside the scope of any accreditation, and all results relate only to samples supplied.

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

Authorised By:



Bruce Leslie
Project Manager

Please include all sections of this report if it is reproduced

Element Materials Technology

Client Name: Ground Investigations Ireland
Reference: 12087-07-22
Location: ATU Regional Sports HUB Letterkenny Donegal
Contact: Conor Finnerty
EMT Job No: 23/1129

Report : Solid

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

[illegible]

Element Materials Technology

Client Name: Ground Investigations Ireland
Reference: 12087-07-22
Location: ATU Regional Sports HUB Letterkenny Donegal
Contact: Conor Finnerty
EMT Job No: 23/1129

Report : Solid

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

EMT Sample No.	1-4	5-8	9-12	13-16	17-20	21-24	25-28	29-32	33-36	37-40	Please see attached notes for all abbreviations and acronyms		
Sample ID	TP01	TP01	TP02	TP02	TP03	TP03	TP04	TP04	TP05	TP05			
Depth	0.50	2.00	0.50	1.35	0.50	1.80	0.50	1.30	0.50	2.00			
COC No / misc													
Containers	V J T	V J T	V J T	V J T	V J T	V J T	V J T	V J T	V J T	V J T			
Sample Date	19/01/2023	19/01/2023	19/01/2023	19/01/2023	19/01/2023	19/01/2023	19/01/2023	19/01/2023	19/01/2023	19/01/2023			
Sample Type	Soil	Soil	Soil	Soil	Soil	Soil	Soil	Soil	Soil	Soil			
Batch Number	1	1	1	1	1	1	1	1	1	1			
Date of Receipt	25/01/2023	25/01/2023	25/01/2023	25/01/2023	25/01/2023	25/01/2023	25/01/2023	25/01/2023	25/01/2023	25/01/2023	LOD/LOR	Units	Method No.
TPH CWG													
Aliphatics													
>C5-C6 (HS_1D_AL) #	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	mg/kg	TM36/PM12
>C6-C8 (HS_1D_AL) #	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	mg/kg	TM36/PM12
>C8-C10 (HS_1D_AL)	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	mg/kg	TM36/PM12
>C10-C12 (EH_CU_1D_AL) #	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2	mg/kg	TM5/PM8/PM16
>C12-C16 (EH_CU_1D_AL) #	<4	<4	<4	<4	<4	<4	<4	<4	<4	<4	<4	mg/kg	TM5/PM8/PM16
>C16-C21 (EH_CU_1D_AL) #	<7	<7	<7	<7	<7	<7	<7	<7	<7	<7	<7	mg/kg	TM5/PM8/PM16
>C21-C35 (EH_CU_1D_AL) #	<7	<7	<7	<7	<7	<7	<7	<7	<7	<7	<7	mg/kg	TM5/PM8/PM16
>C35-C40 (EH_1D_AL)	<7	<7	<7	<7	<7	<7	<7	<7	<7	<7	<7	mg/kg	TM5/PM8/PM16
Total aliphatics C5-40 (EH+HS_1D_AL)	<26	<26	<26	<26	<26	<26	<26	<26	<26	<26	<26	mg/kg	TM5/PM8/PM16/PM12/PM18
>C6-C10 (HS_1D_AL)	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	mg/kg	TM36/PM12
>C10-C25 (EH_1D_AL)	<10	<10	<10	<10	<10	<10	<10	<10	<10	<10	<10	mg/kg	TM5/PM8/PM16
>C25-C35 (EH_1D_AL)	<10	<10	<10	<10	<10	<10	<10	<10	<10	<10	<10	mg/kg	TM5/PM8/PM16
Aromatics													
>C5-EC7 (HS_1D_AR) #	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	mg/kg	TM36/PM12
>EC7-EC8 (HS_1D_AR) #	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	mg/kg	TM36/PM12
>EC8-EC10 (HS_1D_AR) #	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	mg/kg	TM36/PM12
>EC10-EC12 (EH_CU_1D_AR) #	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2	mg/kg	TM5/PM8/PM16
>EC12-EC16 (EH_CU_1D_AR) #	<4	<4	<4	<4	<4	<4	<4	<4	<4	<4	<4	mg/kg	TM5/PM8/PM16
>EC16-EC21 (EH_CU_1D_AR) #	<7	<7	<7	<7	<7	<7	<7	<7	<7	<7	<7	mg/kg	TM5/PM8/PM16
>EC21-EC35 (EH_CU_1D_AR) #	<7	<7	<7	<7	<7	<7	<7	<7	<7	<7	<7	mg/kg	TM5/PM8/PM16
>EC35-EC40 (EH_1D_AR)	<7	<7	<7	<7	<7	<7	<7	<7	<7	<7	<7	mg/kg	TM5/PM8/PM16
Total aromatics C5-40 (EH+HS_1D_AR)	<26	<26	<26	<26	<26	<26	<26	<26	<26	<26	<26	mg/kg	TM5/PM8/PM16/PM12/PM18
Total aliphatics and aromatics(C5-40) (EH+HS_CU_1D_Total)	<52	<52	<52	<52	<52	<52	<52	<52	<52	<52	<52	mg/kg	TM5/PM8/PM16/PM12/PM18
>EC6-EC10 (HS_1D_AR) #	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	mg/kg	TM36/PM12
>EC10-EC25 (EH_1D_AR)	<10	<10	<10	<10	<10	<10	<10	<10	<10	<10	<10	mg/kg	TM5/PM8/PM16
>EC25-EC35 (EH_1D_AR)	<10	<10	<10	<10	<10	<10	<10	<10	<10	<10	<10	mg/kg	TM5/PM8/PM16
MTBE #	<5	<5	<5	<5	<5	<5	<5	<5	<5	<5	<5	ug/kg	TM36/PM12
Benzene #	<5	<5	<5	<5	<5	<5	<5	<5	<5	<5	<5	ug/kg	TM36/PM12
Toluene #	<5	<5	<5	<5	<5	<5	<5	<5	<5	<5	<5	ug/kg	TM36/PM12
Ethylbenzene #	<5	<5	<5	<5	<5	<5	<5	<5	<5	<5	<5	ug/kg	TM36/PM12
m/p-Xylene #	<5	<5	<5	<5	<5	<5	<5	<5	<5	<5	<5	ug/kg	TM36/PM12
o-Xylene #	<5	<5	<5	<5	<5	<5	<5	<5	<5	<5	<5	ug/kg	TM36/PM12
PCB 28 #	<5	<5	<5	<5	<5	<5	<5	<5	<5	<5	<5	ug/kg	TM17/PM8
PCB 52 #	<5	<5	<5	<5	<5	<5	<5	<5	<5	<5	<5	ug/kg	TM17/PM8
PCB 101 #	<5	<5	<5	<5	<5	<5	<5	<5	<5	<5	<5	ug/kg	TM17/PM8
PCB 118 #	<5	<5	<5	<5	<5	<5	<5	<5	<5	<5	<5	ug/kg	TM17/PM8
PCB 138 #	<5	<5	<5	<5	<5	<5	<5	<5	<5	<5	<5	ug/kg	TM17/PM8
PCB 153 #	<5	<5	<5	<5	<5	<5	<5	<5	<5	<5	<5	ug/kg	TM17/PM8
PCB 180 #	<5	<5	<5	<5	<5	<5	<5	<5	<5	<5	<5	ug/kg	TM17/PM8
Total 7 PCBs #	<35	<35	<35	<35	<35	<35	<35	<35	<35	<35	<35	ug/kg	TM17/PM8

Element Materials Technology

Client Name: Ground Investigations Ireland
Reference: 12087-07-22
Location: ATU Regional Sports HUB Letterkenny Donegal
Contact: Conor Finnerty
EMT Job No: 23/1129

Report : Solid

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

[illegible]

Element Materials Technology

Client Name: Ground Investigations Ireland
Reference: 12087-07-22
Location: ATU Regional Sports HUB Letterkenny Donegal
Contact: Conor Finnerty
EMT Job No: 23/1129

Report : Solid

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

EMT Sample No.	41	42	43								Please see attached notes for all abbreviations and acronyms		
Sample ID	TP08	TP09	TP11										
Depth	1.00	0.50	0.50										
COC No / misc													
Containers	T	T	T										
Sample Date	19/01/2023	19/01/2023	19/01/2023										
Sample Type	Soil	Soil	Soil										
Batch Number	1	1	1										
Date of Receipt	25/01/2023	25/01/2023	25/01/2023								LOD/LOR	Units	Method No.
Antimony	-	-	-								<1	mg/kg	TM30/PM15
Arsenic #	-	-	-								<0.5	mg/kg	TM30/PM15
Barium #	-	-	-								<1	mg/kg	TM30/PM15
Cadmium #	-	-	-								<0.1	mg/kg	TM30/PM15
Chromium #	-	-	-								<0.5	mg/kg	TM30/PM15
Copper #	-	-	-								<1	mg/kg	TM30/PM15
Lead #	-	-	-								<5	mg/kg	TM30/PM15
Mercury #	-	-	-								<0.1	mg/kg	TM30/PM15
Molybdenum #	-	-	-								<0.1	mg/kg	TM30/PM15
Nickel #	-	-	-								<0.7	mg/kg	TM30/PM15
Selenium #	-	-	-								<1	mg/kg	TM30/PM15
Zinc #	-	-	-								<5	mg/kg	TM30/PM15
PAH MS													
Naphthalene #	-	-	-								<0.04	mg/kg	TM4/PM8
Acenaphthylene	-	-	-								<0.03	mg/kg	TM4/PM8
Acenaphthene #	-	-	-								<0.05	mg/kg	TM4/PM8
Fluorene #	-	-	-								<0.04	mg/kg	TM4/PM8
Phenanthrene #	-	-	-								<0.03	mg/kg	TM4/PM8
Anthracene #	-	-	-								<0.04	mg/kg	TM4/PM8
Fluoranthene #	-	-	-								<0.03	mg/kg	TM4/PM8
Pyrene #	-	-	-								<0.03	mg/kg	TM4/PM8
Benzo(a)anthracene #	-	-	-								<0.06	mg/kg	TM4/PM8
Chrysene #	-	-	-								<0.02	mg/kg	TM4/PM8
Benzo(bk)fluoranthene #	-	-	-								<0.07	mg/kg	TM4/PM8
Benzo(a)pyrene #	-	-	-								<0.04	mg/kg	TM4/PM8
Indeno(123cd)pyrene #	-	-	-								<0.04	mg/kg	TM4/PM8
Dibenzo(ah)anthracene #	-	-	-								<0.04	mg/kg	TM4/PM8
Benzo(ghi)perylene #	-	-	-								<0.04	mg/kg	TM4/PM8
Coronene	-	-	-								<0.04	mg/kg	TM4/PM8
PAH 6 Total #	-	-	-								<0.22	mg/kg	TM4/PM8
PAH 17 Total	-	-	-								<0.64	mg/kg	TM4/PM8
Benzo(b)fluoranthene	-	-	-								<0.05	mg/kg	TM4/PM8
Benzo(k)fluoranthene	-	-	-								<0.02	mg/kg	TM4/PM8
Benzo(j)fluoranthene	-	-	-								<1	mg/kg	TM4/PM8
PAH Surrogate % Recovery	-	-	-								<0	%	TM4/PM8
Mineral Oil (C10-C40) (EH_CU_1D_AL)	-	-	-								<30	mg/kg	TM5/PM8/PM16

Element Materials Technology

Client Name: Ground Investigations Ireland
Reference: 12087-07-22
Location: ATU Regional Sports HUB Letterkenny Donegal
Contact: Conor Finnerty
EMT Job No: 23/1129

Report : Solid

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

EMT Sample No.	41	42	43								Please see attached notes for all abbreviations and acronyms		
Sample ID	TP08	TP09	TP11										
Depth	1.00	0.50	0.50										
COC No / misc													
Containers	T	T	T										
Sample Date	19/01/2023	19/01/2023	19/01/2023										
Sample Type	Soil	Soil	Soil										
Batch Number	1	1	1										
Date of Receipt	25/01/2023	25/01/2023	25/01/2023								LOD/LOR	Units	Method No.
TPH CWG													
Aliphatics													
>C5-C6 (HS_1D_AL) #	-	-	-								<0.1	mg/kg	TM36/PM12
>C6-C8 (HS_1D_AL) #	-	-	-								<0.1	mg/kg	TM36/PM12
>C8-C10 (HS_1D_AL)	-	-	-								<0.1	mg/kg	TM36/PM12
>C10-C12 (EH_CU_1D_AL) #	-	-	-								<0.2	mg/kg	TM5/PM8/PM16
>C12-C16 (EH_CU_1D_AL) #	-	-	-								<4	mg/kg	TM5/PM8/PM16
>C16-C21 (EH_CU_1D_AL) #	-	-	-								<7	mg/kg	TM5/PM8/PM16
>C21-C35 (EH_CU_1D_AL) #	-	-	-								<7	mg/kg	TM5/PM8/PM16
>C35-C40 (EH_1D_AL)	-	-	-								<7	mg/kg	TM5/PM8/PM16
Total aliphatics C5-40 (EH+HS_1D_AL)	-	-	-								<26	mg/kg	TM5/PM8/PM16/PM12/PM10
>C6-C10 (HS_1D_AL)	-	-	-								<0.1	mg/kg	TM36/PM12
>C10-C25 (EH_1D_AL)	-	-	-								<10	mg/kg	TM5/PM8/PM16
>C25-C35 (EH_1D_AL)	-	-	-								<10	mg/kg	TM5/PM8/PM16
Aromatics													
>C5-EC7 (HS_1D_AR) #	-	-	-								<0.1	mg/kg	TM36/PM12
>EC7-EC8 (HS_1D_AR) #	-	-	-								<0.1	mg/kg	TM36/PM12
>EC8-EC10 (HS_1D_AR) #	-	-	-								<0.1	mg/kg	TM36/PM12
>EC10-EC12 (EH_CU_1D_AR) #	-	-	-								<0.2	mg/kg	TM5/PM8/PM16
>EC12-EC16 (EH_CU_1D_AR) #	-	-	-								<4	mg/kg	TM5/PM8/PM16
>EC16-EC21 (EH_CU_1D_AR) #	-	-	-								<7	mg/kg	TM5/PM8/PM16
>EC21-EC35 (EH_CU_1D_AR) #	-	-	-								<7	mg/kg	TM5/PM8/PM16
>EC35-EC40 (EH_1D_AR)	-	-	-								<7	mg/kg	TM5/PM8/PM16
Total aromatics C5-40 (EH+HS_1D_AR)	-	-	-								<26	mg/kg	TM5/PM8/PM16/PM12/PM10
Total aliphatics and aromatics(C5-40) (EH+HS_CU_1D_Total)	-	-	-								<52	mg/kg	TM5/PM8/PM16/PM12/PM10
>EC6-EC10 (HS_1D_AR) #	-	-	-								<0.1	mg/kg	TM36/PM12
>EC10-EC25 (EH_1D_AR)	-	-	-								<10	mg/kg	TM5/PM8/PM16
>EC25-EC35 (EH_1D_AR)	-	-	-								<10	mg/kg	TM5/PM8/PM16
MTBE #	-	-	-								<5	ug/kg	TM36/PM12
Benzene #	-	-	-								<5	ug/kg	TM36/PM12
Toluene #	-	-	-								<5	ug/kg	TM36/PM12
Ethylbenzene #	-	-	-								<5	ug/kg	TM36/PM12
m/p-Xylene #	-	-	-								<5	ug/kg	TM36/PM12
o-Xylene #	-	-	-								<5	ug/kg	TM36/PM12
PCB 28 #	-	-	-								<5	ug/kg	TM17/PM8
PCB 52 #	-	-	-								<5	ug/kg	TM17/PM8
PCB 101 #	-	-	-								<5	ug/kg	TM17/PM8
PCB 118 #	-	-	-								<5	ug/kg	TM17/PM8
PCB 138 #	-	-	-								<5	ug/kg	TM17/PM8
PCB 153 #	-	-	-								<5	ug/kg	TM17/PM8
PCB 180 #	-	-	-								<5	ug/kg	TM17/PM8
Total 7 PCBs #	-	-	-								<35	ug/kg	TM17/PM8

Element Materials Technology

Client Name:	Ground Investigations Ireland	Report :	Solid
Reference:	12087-07-22		
Location:	ATU Regional Sports HUB Letterkenny Donegal	Solids:	V=60g VOC jar, J=250g glass jar, T=plastic tub
Contact:	Conor Finnerty		
EMT Job No:	23/1129		

Report : Solid

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

[illegible]

Element Materials Technology

Client Name: Ground Investigations Ireland
Reference: 12087-07-22
Location: ATU Regional Sports HUB Letterkenny Donegal
Contact: Conor Finnerty
EMT Job No: 23/1129

Report : CEN 10:1 1 Batch

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

EMT Sample No.	1-4	5-8	9-12	13-16	17-20	21-24	25-28	29-32	33-36	37-40	Please see attached notes for all abbreviations and acronyms		
Sample ID	TP01	TP01	TP02	TP02	TP03	TP03	TP04	TP04	TP05	TP05			
Depth	0.50	2.00	0.50	1.35	0.50	1.80	0.50	1.30	0.50	2.00			
COC No / misc													
Containers	V J T	V J T	V J T	V J T	V J T	V J T	V J T	V J T	V J T	V J T			
Sample Date	19/01/2023	19/01/2023	19/01/2023	19/01/2023	19/01/2023	19/01/2023	19/01/2023	19/01/2023	19/01/2023	19/01/2023			
Sample Type	Soil	Soil	Soil	Soil	Soil	Soil	Soil	Soil	Soil	Soil			
Batch Number	1	1	1	1	1	1	1	1	1	1			
Date of Receipt	25/01/2023	25/01/2023	25/01/2023	25/01/2023	25/01/2023	25/01/2023	25/01/2023	25/01/2023	25/01/2023	25/01/2023	LOD/LOR	Units	Method No.
Dissolved Antimony [#]	<0.002	<0.002	<0.002	<0.002	<0.002	<0.002	<0.002	<0.002	<0.002	<0.002	<0.002	mg/l	TM30/PM17
Dissolved Antimony (A10) [#]	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	mg/kg	TM30/PM17
Dissolved Arsenic [#]	<0.0025	<0.0025	0.0028	<0.0025	<0.0025	<0.0025	<0.0025	<0.0025	<0.0025	<0.0025	<0.0025	mg/l	TM30/PM17
Dissolved Arsenic (A10) [#]	<0.025	<0.025	0.028	<0.025	<0.025	<0.025	<0.025	<0.025	<0.025	<0.025	<0.025	mg/kg	TM30/PM17
Dissolved Barium [#]	0.008	0.034	0.006	0.018	0.007	0.003	0.006	0.035	0.004	0.016	<0.003	mg/l	TM30/PM17
Dissolved Barium (A10) [#]	0.08	0.34	0.06	0.18	0.07	0.03	0.06	0.35	0.04	0.16	<0.03	mg/kg	TM30/PM17
Dissolved Cadmium [#]	<0.0005	<0.0005	<0.0005	<0.0005	<0.0005	<0.0005	<0.0005	<0.0005	<0.0005	<0.0005	<0.0005	mg/l	TM30/PM17
Dissolved Cadmium (A10) [#]	<0.005	<0.005	<0.005	<0.005	<0.005	<0.005	<0.005	<0.005	<0.005	<0.005	<0.005	mg/kg	TM30/PM17
Dissolved Chromium [#]	<0.0015	<0.0015	<0.0015	<0.0015	<0.0015	<0.0015	<0.0015	<0.0015	<0.0015	<0.0015	<0.0015	mg/l	TM30/PM17
Dissolved Chromium (A10) [#]	<0.015	<0.015	<0.015	<0.015	<0.015	<0.015	<0.015	<0.015	<0.015	<0.015	<0.015	mg/kg	TM30/PM17
Dissolved Copper [#]	<0.007	0.010	0.010	<0.007	<0.007	<0.007	<0.007	0.009	<0.007	<0.007	<0.007	mg/l	TM30/PM17
Dissolved Copper (A10) [#]	<0.07	0.10	0.10	<0.07	<0.07	<0.07	<0.07	0.09	<0.07	<0.07	<0.07	mg/kg	TM30/PM17
Dissolved Lead [#]	<0.005	<0.005	<0.005	<0.005	<0.005	<0.005	<0.005	0.006	<0.005	<0.005	<0.005	mg/l	TM30/PM17
Dissolved Lead (A10) [#]	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	0.06	<0.05	<0.05	<0.05	mg/kg	TM30/PM17
Dissolved Molybdenum [#]	<0.002	<0.002	<0.002	<0.002	<0.002	<0.002	<0.002	<0.002	<0.002	<0.002	<0.002	mg/l	TM30/PM17
Dissolved Molybdenum (A10) [#]	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	mg/kg	TM30/PM17
Dissolved Nickel [#]	<0.002	0.002	<0.002	0.003	<0.002	<0.002	<0.002	0.003	<0.002	<0.002	<0.002	mg/l	TM30/PM17
Dissolved Nickel (A10) [#]	<0.02	0.02	<0.02	0.03	<0.02	<0.02	<0.02	0.03	<0.02	<0.02	<0.02	mg/kg	TM30/PM17
Dissolved Selenium [#]	<0.003	<0.003	<0.003	<0.003	<0.003	<0.003	<0.003	<0.003	<0.003	<0.003	<0.003	mg/l	TM30/PM17
Dissolved Selenium (A10) [#]	<0.03	<0.03	<0.03	<0.03	<0.03	<0.03	<0.03	<0.03	<0.03	<0.03	<0.03	mg/kg	TM30/PM17
Dissolved Zinc [#]	0.004	0.009	0.003	0.005	0.003	<0.003	<0.003	0.097	0.003	<0.003	<0.003	mg/l	TM30/PM17
Dissolved Zinc (A10) [#]	0.04	0.09	0.03	0.05	0.03	<0.03	<0.03	0.97	<0.03	<0.03	<0.03	mg/kg	TM30/PM17
Mercury Dissolved by CVA [#]	<0.00001	<0.00001	<0.00001	<0.00001	<0.00001	<0.00001	<0.00001	<0.00001	<0.00001	<0.00001	<0.00001	mg/l	TM61/PM0
Mercury Dissolved by CVA [#]	<0.0001	<0.0001	<0.0001	<0.0001	<0.0001	<0.0001	<0.0001	<0.0001	<0.0001	<0.0001	<0.0001	mg/kg	TM61/PM0
Phenol	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	mg/l	TM26/PM0
Phenol	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	mg/kg	TM26/PM0
Fluoride	<0.3	<0.3	<0.3	<0.3	<0.3	<0.3	<0.3	<0.3	<0.3	<0.3	<0.3	mg/l	TM173/PM0
Fluoride	<3	<3	<3	<3	<3	<3	<3	<3	<3	<3	<3	mg/kg	TM173/PM0
Sulphate as SO ₄ [#]	<0.5	2.4	2.8	2.3	<0.5	7.5	<0.5	3.1	<0.5	2.6	<0.5	mg/l	TM38/PM0
Sulphate as SO ₄ [#]	<5	24	28	23	<5	75	<5	31	<5	26	<5	mg/kg	TM38/PM0
Chloride [#]	0.3	0.8	0.4	0.3	<0.3	<0.3	0.3	1.4	<0.3	0.3	<0.3	mg/l	TM38/PM0
Chloride [#]	<3	8	4	<3	<3	<3	<3	14	<3	3	<3	mg/kg	TM38/PM0
Dissolved Organic Carbon	2	4	4	<2	<2	<2	2	4	<2	2	<2	mg/l	TM60/PM0
Dissolved Organic Carbon	<20	40	40	<20	<20	<20	<20	40	<20	20	<20	mg/kg	TM60/PM0
pH	6.87	7.38	6.07	6.61	6.73	6.66	6.94	7.10	7.14	7.93	<0.01	pH units	TM73/PM0
Total Dissolved Solids [#]	<35	70	<35	<35	<35	<35	<35	71	<35	49	<35	mg/l	TM20/PM0
Total Dissolved Solids [#]	<350	700	<350	<350	<350	<350	<350	710	<350	490	<350	mg/kg	TM20/PM0

Client Name:	Ground Investigations Ireland	Report :	EN12457_2
Reference:	12087-07-22		
Location:	ATU Regional Sports HUB Letterkenny Donegal	Solids:	V=60g VOC jar, J=250g glass jar, T=plastic tub
Contact:	Conor Finnerty		
EMT Job No:	23/1129		

Please see attached notes for all abbreviations and acronyms

Matrix : Solid

10 of 20

Client Name: Ground Investigations Ireland
Reference: 12087-07-22
Location: ATU Regional Sports HUB Letterkenny Donegal
Contact: Conor Finnerty

Note:

Asbestos Screen analysis is carried out in accordance with our documented in-house methods PM042 and TM065 and HSG 248 by Stereo and Polarised Light Microscopy using Dispersion Staining Techniques and is covered by our UKAS accreditation. Detailed Gravimetric Quantification and PCOM Fibre Analysis is carried out in accordance with our documented in-house methods PM042 and TM131 and HSG 248 using Stereo and Polarised Light Microscopy and Phase Contrast Optical Microscopy (PCOM). Asbestos sub-samples are retained for not less than 6 months from the date of analysis unless specifically requested.

The LOQ of the Asbestos Quantification is 0.001% dry fibre of dry mass of sample.

Where the sample is not taken by a Element Materials Technology consultant, Element Materials Technology cannot be responsible for inaccurate or unrepresentative sampling.

Where trace asbestos is reported the amount of asbestos will be <0.1%.

EMT Job No.	Batch	Sample ID	Depth	EMT Sample No.	Analyst Name	Date Of Analysis	Analysis	Result
23/1129	1	TP01	0.50	4	Matthew Turner	06/02/2023	General Description (Bulk Analysis)	Brown soil/Stone
					Matthew Turner	06/02/2023	Asbestos Fibres	NAD
					Matthew Turner	06/02/2023	Asbestos ACM	NAD
					Matthew Turner	06/02/2023	Asbestos Type	NAD
23/1129	1	TP01	2.00	8	Matthew Turner	06/02/2023	General Description (Bulk Analysis)	Brown soil/Stone
					Matthew Turner	06/02/2023	Asbestos Fibres	NAD
					Matthew Turner	06/02/2023	Asbestos ACM	NAD
					Matthew Turner	06/02/2023	Asbestos Type	NAD
23/1129	1	TP02	0.50	12	Matthew Turner	06/02/2023	General Description (Bulk Analysis)	Brown soil/Stone
					Matthew Turner	06/02/2023	Asbestos Fibres	NAD
					Matthew Turner	06/02/2023	Asbestos ACM	NAD
					Matthew Turner	06/02/2023	Asbestos Type	NAD
23/1129	1	TP02	1.35	16	Matthew Turner	06/02/2023	General Description (Bulk Analysis)	Brown soil/Stone
					Matthew Turner	06/02/2023	Asbestos Fibres	NAD
					Matthew Turner	06/02/2023	Asbestos ACM	NAD
					Matthew Turner	06/02/2023	Asbestos Type	NAD
23/1129	1	TP03	0.50	20	Matthew Turner	06/02/2023	General Description (Bulk Analysis)	Brown soil/Stone
					Matthew Turner	06/02/2023	Asbestos Fibres	NAD
					Matthew Turner	06/02/2023	Asbestos ACM	NAD
					Matthew Turner	06/02/2023	Asbestos Type	NAD
23/1129	1	TP03	1.80	24	Matthew Turner	06/02/2023	General Description (Bulk Analysis)	Brown soil/Stone
					Matthew Turner	06/02/2023	Asbestos Fibres	NAD
					Matthew Turner	06/02/2023	Asbestos ACM	NAD
					Matthew Turner	06/02/2023	Asbestos Type	NAD
23/1129	1	TP04	0.50	28	Matthew Turner	06/02/2023	General Description (Bulk Analysis)	Brown soil/Stone
					Matthew Turner	06/02/2023	Asbestos Fibres	NAD
					Matthew Turner	06/02/2023	Asbestos ACM	NAD
					Matthew Turner	06/02/2023	Asbestos Type	NAD
23/1129	1	TP04	1.30	32	Matthew Turner	06/02/2023	General Description (Bulk Analysis)	Brown soil/Stone
					Matthew Turner	06/02/2023	Asbestos Fibres	NAD
					Matthew Turner	06/02/2023	Asbestos ACM	NAD
					Matthew Turner	06/02/2023	Asbestos Type	NAD

Asbestos Analysis

Asbestos Analysis

Client Name: Ground Investigations Ireland

Reference: 12087-07-22

Location: ATU Regional Sports HUB Letterkenny Donegal

Contact: Conor Finnerty

[illegible]

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

NOTES TO ACCOMPANY ALL SCHEDULES AND REPORTS

EMT Job No.: 23/1129

SOILS and ASH

Please note we are only MCERTS accredited (UK soils only) for sand, loam and clay and any other matrix is outside our scope of accreditation.

Where an MCERTS report has been requested, you will be notified within 48 hours of any samples that have been identified as being outside our MCERTS scope. As validation has been performed on clay, sand and loam, only samples that are predominantly these matrices, or combinations of them will be within our MCERTS scope. If samples are not one of a combination of the above matrices they will not be marked as MCERTS accredited.

It is assumed that you have taken representative samples on site and require analysis on a representative subsample. Stones will generally be included unless we are requested to remove them.

All samples will be discarded one month after the date of reporting, unless we are instructed to the contrary. Asbestos samples are retained for 6 months.

If you have not already done so, please send us a purchase order if this is required by your company.

Where appropriate please make sure that our detection limits are suitable for your needs, if they are not, please notify us immediately.

All analysis is reported on a dry weight basis unless stated otherwise. Limits of detection for analyses carried out on as received samples are not moisture content corrected. Results are not surrogate corrected. Samples are dried at 35°C ±5°C unless otherwise stated. Moisture content for CEN Leachate tests are dried at 105°C ±5°C. Ash samples are dried at 37°C ±5°C.

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

Where a CEN 10:1 ZERO Headspace VOC test has been carried out, a 10:1 ratio of water to wet (as received) soil has been used.

% Asbestos in Asbestos Containing Materials (ACMs) is determined by reference to HSG 264 The Survey Guide - Appendix 2 : ACMs in buildings listed in order of ease of fibre release.

Sufficient amount of sample must be received to carry out the testing specified. Where an insufficient amount of sample has been received the testing may not meet the requirements of our accredited methods, as such accreditation may be removed.

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

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

WATERS

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

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

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

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

STACK EMISSIONS

Where an MCERTS report has been requested, you will be notified within 48 hours of any samples that have been identified as being outside our MCERTS scope. As validation for Dioxins and Furans and Dioxin like PCBs has been performed on XAD-2 Resin, only samples which use this resin will be within our MCERTS scope.

Where appropriate please make sure that our detection limits are suitable for your needs, if they are not, please notify us immediately.

DEVIATING SAMPLES

All samples should be submitted to the laboratory in suitable containers with sufficient ice packs to sustain an appropriate temperature for the requested analysis. The temperature of sample receipt is recorded on the confirmation schedules in order that the client can make an informed decision as to whether testing should still be undertaken.

SURROGATES

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

DILUTIONS

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

BLANKS

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

NOTE

Data is only reported if the laboratory is confident that the data is a true reflection of the samples analysed. Data is only reported as accredited when all the requirements of our Quality System have been met. In certain circumstances where all the requirements of the Quality System have not been met, for instance if the associated AQC has failed, the reason is fully investigated and documented. The sample data is then evaluated alongside the other quality control checks performed during analysis to determine its suitability. Following this evaluation, provided the sample results have not been effected, the data is reported but accreditation is removed. It is a UKAS requirement for data not reported as accredited to be considered indicative only, but this does not mean the data is not valid.

Where possible, and if requested, samples will be re-extracted and a revised report issued with accredited results. Please do not hesitate to contact the laboratory if further details are required of the circumstances which have led to the removal of accreditation.

Laboratory records are kept for a period of no less than 6 years.

REPORTS FROM THE SOUTH AFRICA LABORATORY

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

Measurement Uncertainty

Measurement uncertainty defines the range of values that could reasonably be attributed to the measured quantity. This range of values has not been included within the reported results. Uncertainty expressed as a percentage can be provided upon request.

Customer Provided Information

Sample ID and depth is information provided by the customer.

ABBREVIATIONS and ACRONYMS USED

#	ISO17025 (UKAS Ref No. 4225) accredited - UK.
SA	ISO17025 (SANAS Ref No.T0729) accredited - South Africa
B	Indicates analyte found in associated method blank.
DR	Dilution required.
M	MCERTS accredited.
NA	Not applicable
NAD	No Asbestos Detected.
ND	None Detected (usually refers to VOC and/SVOC TICs).
NDP	No Determination Possible
SS	Calibrated against a single substance
SV	Surrogate recovery outside performance criteria. This may be due to a matrix effect.
W	Results expressed on as received basis.
+	AQC failure, accreditation has been removed from this result, if appropriate, see 'Note' on previous page.
>>	Results above calibration range, the result should be considered the minimum value. The actual result could be significantly higher.
*	Analysis subcontracted to an Element Materials Technology approved laboratory.
AD	Samples are dried at 35°C ±5°C
CO	Suspected carry over
LOD/LOR	Limit of Detection (Limit of Reporting) in line with ISO 17025 and MCERTS
ME	Matrix Effect
NFD	No Fibres Detected
BS	AQC Sample
LB	Blank Sample
N	Client Sample
TB	Trip Blank Sample
OC	Outside Calibration Range

HWOL ACRONYMS AND OPERATORS USED

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.
Total	Aliphatics & Aromatics.
AL	Aliphatics only.
AR	Aromatics only.
2D	GC-GC - Double coil gas chromatography.
#1	EH_Total but with humics mathematically subtracted
#2	EU_Total but with fatty acids mathematically subtracted
_	Operator - underscore to separate acronyms (exception for +).
+	Operator to indicate cumulative e.g. EH+HS_Total or EH_CU+HS_Total
MS	Mass Spectrometry.

EMT Job No: 23/1129

Test Method No.	Description	Prep Method No. (if appropriate)	Description	ISO 17025 (UKAS/ANAS)	MCERTS (UK soils only)	Analysis done on As Received (AR) or Dried (AD)	Reported on dry weight basis
PM4	Gravimetric measurement of Natural Moisture Content and % Moisture Content at either 35°C or 105°C. Calculation based on ISO 11465:1993(E) and BS1377-2:1990.	PM0	No preparation is required.			AR	
TM4	Modified USEPA 8270D v5:2014 method for the solvent extraction and determination of PAHs by GC-MS.	PM8	End over end extraction of solid samples for organic analysis. The solvent mix varies depending on analysis required.			AR	Yes
TM4	Modified USEPA 8270D v5:2014 method for the solvent extraction and determination of PAHs by GC-MS.	PM8	End over end extraction of solid samples for organic analysis. The solvent mix varies depending on analysis required.	Yes		AR	Yes
TM5	Modified 8015B v2:1996 method for the determination of solvent Extractable Petroleum Hydrocarbons (EPH) within the range C8-C40 by GCFID. For waters the solvent extracts dissolved phase plus a sheen if present.	PM16	Fractionation into aliphatic and aromatic fractions using a Rapid Trace SPE.			AR	
TM5	Modified 8015B v2:1996 method for the determination of solvent Extractable Petroleum Hydrocarbons (EPH) within the range C8-C40 by GCFID. For waters the solvent extracts dissolved phase plus a sheen if present.	PM8/PM16	End over end extraction of solid samples for organic analysis. The solvent mix varies depending on analysis required/Fractionation into aliphatic and aromatic fractions using a Rapid Trace SPE.			AR	Yes
TM5	Modified 8015B v2:1996 method for the determination of solvent Extractable Petroleum Hydrocarbons (EPH) within the range C8-C40 by GCFID. For waters the solvent extracts dissolved phase plus a sheen if present.	PM8/PM16	End over end extraction of solid samples for organic analysis. The solvent mix varies depending on analysis required/Fractionation into aliphatic and aromatic fractions using a Rapid Trace SPE.	Yes		AR	Yes
TM5/TM36	please refer to TM5 and TM36 for method details	PM8/PM12/PM16	please refer to PM8/PM16 and PM12 for method details			AR	Yes
TM17	Modified US EPA method 8270D v5:2014. Determination of specific Polychlorinated Biphenyl congeners by GC-MS.	PM8	End over end extraction of solid samples for organic analysis. The solvent mix varies depending on analysis required.	Yes		AR	Yes
TM20	Modified BS 1377-3:1990/USEPA 160.1/3 (TDS/TS: 1971) Gravimetric determination of Total Dissolved Solids/Total Solids	PM0	No preparation is required.	Yes		AR	Yes
TM21	Modified BS 7755-3:1995, ISO10694:1995 Determination of Total Organic Carbon or Total Carbon by combustion in an Eltra TOC furnace/analyser in the presence of oxygen. The CO ₂ generated is quantified using infra-red detection. Organic Matter (SOM) calculated as per EA MCERTS Chemical Testing of Soil, March 2012 v4.	PM24	Preparation of Soil and Marine Sediment Samples for Total Organic Carbon.	Yes		AD	Yes

EMT Job No: 23/1129

Test Method No.	Description	Prep Method No. (if appropriate)	Description	ISO 17025 (UKAS/ANAS)	MCERTS (UK soils only)	Analysis done on As Received (AR) or Dried (AD)	Reported on dry weight basis
TM26	Determination of phenols by Reversed Phased High Performance Liquid Chromatography and Electro-Chemical Detection.	PM0	No preparation is required.			AR	Yes
TM30	Determination of Trace Metals by ICP-OES (Inductively Coupled Plasma – Optical Emission Spectrometry): WATERS by Modified USEPA Method 200.7, Rev. 4.4, 1994; Modified EPA Method 6010B, Rev.2, Dec 1996; Modified BS EN ISO 11885:2009: SOILS by Modified USEP 6010B, Rev.2, Dec.1996; Modified EPA Method 3050B, Rev.2, Dec.1996	PM15	Acid digestion of dried and ground solid samples using Aqua Regia refluxed at 112.5 °C. Samples containing asbestos are not dried and ground.			AD	Yes
TM30	Determination of Trace Metals by ICP-OES (Inductively Coupled Plasma – Optical Emission Spectrometry): WATERS by Modified USEPA Method 200.7, Rev. 4.4, 1994; Modified EPA Method 6010B, Rev.2, Dec 1996; Modified BS EN ISO 11885:2009: SOILS by Modified USEP 6010B, Rev.2, Dec.1996; Modified EPA Method 3050B, Rev.2, Dec.1996	PM15	Acid digestion of dried and ground solid samples using Aqua Regia refluxed at 112.5 °C. Samples containing asbestos are not dried and ground.	Yes		AD	Yes
TM30	Determination of Trace Metals by ICP-OES (Inductively Coupled Plasma – Optical Emission Spectrometry): WATERS by Modified USEPA Method 200.7, Rev. 4.4, 1994; Modified EPA Method 6010B, Rev.2, Dec 1996; Modified BS EN ISO 11885:2009: SOILS by Modified USEP 6010B, Rev.2, Dec.1996; Modified EPA Method 3050B, Rev.2, Dec.1996	PM17	Modified method BS EN12457-2:2002 As received solid samples are leached with water in a 10:1 water to soil ratio for 24 hours, the moisture content of the sample is included in the ratio.	Yes		AR	Yes
TM36	Modified US EPA method 8015B v2:1996. Determination of Gasoline Range Organics (GRO) in the carbon chain range of C4-12 by headspace GC-FID. MTBE by GC/FID co-elutes with 3-methylpentane if present and therefore can give a false positive. Positive MTBE results will be re-run using GC-MS to double check, when requested.	PM12	Modified US EPA method 5021A v2:2014. Preparation of solid and liquid samples for GC headspace analysis.			AR	Yes
TM36	Modified US EPA method 8015B v2:1996. Determination of Gasoline Range Organics (GRO) in the carbon chain range of C4-12 by headspace GC-FID. MTBE by GC/FID co-elutes with 3-methylpentane if present and therefore can give a false positive. Positive MTBE results will be re-run using GC-MS to double check, when requested.	PM12	Modified US EPA method 5021A v2:2014. Preparation of solid and liquid samples for GC headspace analysis.	Yes		AR	Yes
TM38	Soluble Ion analysis using Discrete Analyser. Modified US EPA methods: Chloride 325.2 (1978), Sulphate 375.4 (Rev.2 1993), o-Phosphate 365.2 (Rev.2 1993), TON 353.1 (Rev.2 1993), Nitrite 354.1 (1971), Hex Cr 7196A (1992), NH4+ 350.1 (Rev.2 1993) – All anions comparable to BS ISO 15923-1: 2013I	PM0	No preparation is required.	Yes		AR	Yes
TM38	Soluble Ion analysis using Discrete Analyser. Modified US EPA methods: Chloride 325.2 (1978), Sulphate 375.4 (Rev.2 1993), o-Phosphate 365.2 (Rev.2 1993), TON 353.1 (Rev.2 1993), Nitrite 354.1 (1971), Hex Cr 7196A (1992), NH4+ 350.1 (Rev.2 1993) – All anions comparable to BS ISO 15923-1: 2013I	PM20	Extraction of dried and ground or as received samples with deionised water in a 2:1 water to solid ratio using a reciprocal shaker for all analytes except hexavalent chromium. Extraction of as received sample using 10:1 ratio of 0.2M sodium hydroxide to soil for hexavalent chromium using a reciprocal shaker.	Yes		AD	Yes
TM38	Soluble Ion analysis using Discrete Analyser. Modified US EPA methods: Chloride 325.2 (1978), Sulphate 375.4 (Rev.2 1993), o-Phosphate 365.2 (Rev.2 1993), TON 353.1 (Rev.2 1993), Nitrite 354.1 (1971), Hex Cr 7196A (1992), NH4+ 350.1 (Rev.2 1993) – All anions comparable to BS ISO 15923-1: 2013I	PM20	Extraction of dried and ground or as received samples with deionised water in a 2:1 water to solid ratio using a reciprocal shaker for all analytes except hexavalent chromium. Extraction of as received sample using 10:1 ratio of 0.2M sodium hydroxide to soil for hexavalent chromium using a reciprocal shaker.	Yes		AR	Yes
TM60	TC/TOC analysis of Waters by High Temperature Combustion followed by NDIR detection. Based on the following modified standard methods: USEPA 9060A (2002), APHA SMEWW 5310B:1999 22nd Edition, ASTM D 7573, and USEPA 415.1.	PM0	No preparation is required.			AR	Yes

EMT Job No: 23/1129

Test Method No.	Description	Prep Method No. (if appropriate)	Description	ISO 17025 (UKAS/ANAS)	MCERTS (UK soils only)	Analysis done on As Received (AR) or Dried (AD)	Reported on dry weight basis
TM61	Determination of Mercury by Cold Vapour Atomic Fluorescence - WATERS: Modified USEPA Method 245.7, Rev 2, Feb 2005. SOILS: Modified USEPA Method 7471B, Rev.2, Feb 2007	PM0	No preparation is required.	Yes		AR	Yes
TM65	Asbestos Bulk Identification method based on HSG 248 Second edition (2021)	PM42	Modified SCA Blue Book V.12 draft 2017 and WM3 1st Edition v1.1:2018. Solid samples undergo a thorough visual inspection for asbestos fibres prior to asbestos identification using TM065.	Yes		AR	
TM73	Modified US EPA methods 150.1 (1982) and 9045D Rev. 4 - 2004) and BS1377-3:1990. Determination of pH by Metrohm automated probe analyser.	PM0	No preparation is required.			AR	Yes
TM73	Modified US EPA methods 150.1 (1982) and 9045D Rev. 4 - 2004) and BS1377-3:1990. Determination of pH by Metrohm automated probe analyser.	PM11	Extraction of as received solid samples using one part solid to 2.5 parts deionised water.	Yes		AR	No
TM173	Analysis of fluoride by ISE (Ion Selective Electrode) using modified ISE method 9214 - 340.2 (EPA 1998)	PM0	No preparation is required.			AR	Yes
NONE	No Method Code	NONE	No Method Code			AD	Yes
NONE	No Method Code	PM17	Modified method BS EN12457-2:2002 As received solid samples are leached with water in a 10:1 water to soil ratio for 24 hours, the moisture content of the sample is included in the ratio.			AR	
NONE	No Method Code	PM4	Gravimetric measurement of Natural Moisture Content and % Moisture Content at either 35°C or 105°C. Calculation based on ISO 11465:1993(E) and BS1377-2:1990.			AR	

APPENDIX 8 – Groundwater Monitoring





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Geotechnical & Environmental

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D22 YD52

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GROUNDWATER MONITORING

ATU Letterkenny

BOREHOLE	DATE	TIME	GROUNDWATER (m BGL)	Comments
RC01	09/02/2023	14.00	0.90	
BH03	09/02/2023	14.00	1.50	
BH04	09/02/2023	14.00	1.20	
BH06	09/02/2023	14.00	0.30	
BH15	09/02/2023	14.00	0.70	



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Ground Investigations Ireland

ATU Letterkenny

Tobins

Waste Classification Report

March 2023





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DOCUMENT CONTROL SHEET

Project Title	ATU Letterkenny
Engineer	Tobins
Project No	12087-07-22
Document Title	Waste Classification Report

Rev.	Status	Author(s)	Reviewed By	Approved By	Office of Origin	Issue Date
A	Final	B Sexton	C Finnerty	B Sexton	Dublin	14 March 2023

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



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1.0 Preamble

Ground Investigations Ireland (GII) was appointed by Tobins Consulting Engineers on behalf of Atlantic Technological University (Donegal) to carry out a Waste Classification Assessment for a proposed development in Letterkenny, Co. Donegal. All site investigation works were carried out under the supervision of a GII Geo-Environmental Engineer. The site investigation works undertaken to facilitate the waste classification were completed in November 2022.

2.0 Purpose & Scope

It is understood that as part of the proposed development there may be an excavation to accommodate foundations, services, pavements and carparking and as such the material which may be excavated and removed from site needs to be assessed in terms of waste disposal outlets. The waste classification was carried out in parallel with a wider geotechnical site investigation.

The purpose of the waste classification exercise was as follows.

- Assess the site in terms of historical use; and
- Classification, in terms of waste management and final disposal outlets, of material that may require disposal following excavation during the construction phase.

The scope of the work undertaken to facilitate the waste classification exercise included the following:

- Site walkover;
- Historical desk study;
- Excavation of eleven (11 No.) trial pits;
- Collection of subsoil samples for chemical analysis;
- Environmental laboratory testing; and
- Waste classification.

The additional scope of the geotechnical investigation included the following:

- Carry out 7 No. Soakaways to determine a soil infiltration value to BRE digest 365
- Carry out. CBR testing to determine pavement design parameters
- Carry out 10 No. Percussion Boreholes to recover soil samples.
- Carry out 10 No. Rotary Core Boreholes to a maximum depth of 16.00m BGL
- Installation of 5 No. Groundwater monitoring wells; and
- Geotechnical Laboratory testing.

The geotechnical site investigation is discussed in the GII Ground Investigation Report Dated March 2023.¹

¹ Ground Investigations Ireland, ATU Letterkenny, Ground Investigation Report, March 2023.

3.0 Limitations

GII has prepared this report for the sole use of Atlantic Technological University (Donegal). No other warranty, express or implied, is made as to the professional advice included in this report or other services provided by GII.

The conclusions and recommendations contained in this report are based upon information provided by others and the assumption that all relevant information has been provided by those bodies from whom it has been requested. Information obtained from third parties has not been independently verified by GII, unless otherwise stated in this report.

This report has been prepared in line with best industry standards and within the project's budgetary and time constraints. The methodology adopted and the sources of information used by GII in providing its services are outlined in this report.

The site investigation works undertaken to facilitate the waste classification were completed in November 2022. This report is based on the conditions encountered and the information available during that period. The scope of this Report and the services are accordingly factually limited by these circumstances.

Site investigation locations were selected by the consultant engineer.

GII disclaim any undertaking or obligation to advise any person of any change in any matter affecting the Report, which may come or be brought to GII's attention after the date of the Report.

The conclusions presented in this report represent GII's best professional judgement based on review of site conditions observed during any site visit and the relevant information available at the time of writing. The opinions and conclusions presented are valid only to the extent that the information provided was accurate and complete.

The investigation was focused on a broad assessment of the subsoil quality across the site. The assessment did not extend to the identification of asbestos containing materials associated with any on-site structures, ground gases or groundwater.

The waste classification exercise is reflective of and applicable to the ground conditions on site at the time of the site investigation and sampling. Alterations to the ground conditions or any further excavations carried out on site following the investigation are not reflected in this report.

4.0 Site Location and Layout

The site is located in the north eastern portion of Letterkenny Town, County Donegal (Figure 1 Appendix 1). At the time of the assessment the site was comprised of farmland. The surrounding land use was a mix of agricultural and residential.

5.0 Site History

GII reviewed the aerial photographs and historical maps maintained by the Ordnance Survey of Ireland (OSI) and the google imagery records. These included the 6-inch maps that were produced between 1829

and 1842, the 25-inch maps that were produced between 1888 and 1913 and the 6-inch Cassini Maps that were produced between the 1830's and 1930's. The site is undeveloped on the 6-Inch map with the exception of the presence of a Mill Pond in the northern section of the site. The pond is associated with a Flour Mill located to the south of the site on the 6-Inch map. The Mill Pond is not present on the 25-Inch or Cassini maps. It is assumed that the pond was backfilled.

Based on a review of the OSI and Google Imagery aerial photograph records the site has been in its current state of development since at least 1995.

6.0 Subsurface Exploration

6.1. General

During the ground investigation a programme of intrusive investigation specified by the Consulting Engineer was undertaken to determine the sub surface conditions at the proposed site. Regular sampling and in-situ testing was undertaken in the exploratory holes to facilitate the geotechnical descriptions and to enable laboratory testing to be carried out on the soil samples recovered during excavation and drilling.

The procedures used in this site investigation are in accordance with Eurocode 7 Part 2: Ground Investigation and testing (ISEN 1997 – 2:2007) and B.S. 5930:2015.

6.2. Trial Pits

The trial pits were excavated using an 8T tracked excavator at the locations shown in Figure 1. The locations were checked using a CAT scan to minimise the potential for encountering services during the excavation. The trial pits were sampled, logged and photographed by a Geotechnical Engineer/Engineering Geologist prior to backfilling with arisings. Notes were made of any services, inclusions, pit stability, groundwater encountered and the characteristics of the strata encountered and are presented on the trial pit logs which are provided in Appendix 2 of this Report.

6.3. Surveying

The exploratory hole locations have been recorded using a KQGeo M8 GNSS System which records the coordinates and elevation of the locations to ITM or Irish National Grid as required by the project specification. The coordinates and elevations are provided on the exploratory hole logs in the appendices of this Report.

7.0 Ground Conditions

7.1. General

The ground conditions encountered during the investigation are summarised below with reference to insitu and laboratory test results. The full details of the strata encountered during the ground investigation are provided in the exploratory hole logs included in the appendices of this report. For full geotechnical

descriptions of the ground conditions refer to the geotechnical site investigation report referenced in Section 2.0.

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

- Topsoil
- Cohesive Deposits
- Granular Deposits
- Bedrock

TOPSOIL: Topsoil was encountered in all the exploratory holes and was present to a maximum depth of 0.30m BGL.

COHESIVE DEPOSITS: Cohesive deposits were encountered beneath the Made Ground and were described typically as *reddish brown sandy gravelly CLAY/SILT with occasional cobbles and boulders* overlying a *blueish grey sandy gravelly CLAY/SILT with occasional cobbles and boulders*. In BH04, BH13 & TP09 a bluish grey sandy SILT was also encountered. The secondary sand and gravel constituents varied across the site and with depth, with granular lenses occasionally present in the glacial till matrix. The strength of the cohesive deposits was generally soft at shallow depths however typically increased with depth and was firm to stiff or stiff below 2.00m to 3.00m BGL in the majority of the exploratory holes. These deposits had some, occasional or frequent cobble and boulder content, where noted on the exploratory hole logs.

GRANULAR DEPOSITS: Granular deposits were encountered within the cohesive deposits and were typically described as *grey brown clayey sandy sub rounded to sub angular fine to coarse GRAVEL with occasional cobbles and rare boulders*. The secondary sand/gravel and silt/clay constituents varied across the site and with depth while occasional or frequent cobble and boulder content also present where noted on the exploratory hole logs. It should be noted that many of the trial pits where granular deposits or groundwater were encountered, experienced instability. This was described either as side wall spalling or as side wall collapse in the remarks section at the base of the trial pit logs.

WEATHERED BEDROCK: In the majority of exploratory holes weathered rock was encountered which was only diggable with the excavator to a depth of less than to 0.10m below the top of the stratum. The trial pits were terminated upon encountering the more competent bedrock, in which further excavation became more difficult. This material was recovered typically as angular gravel and cobbles of shist however there was some variability in the fracture spacing and the ease at which the excavator could progress.

8.0 Laboratory Analysis

8.1. Analysis Suite

In order to assess materials, which may be excavated and removed from site, in terms of waste classification, a selection of samples collected were analysed for a suite of parameters which allows for the assessment of the soils in terms of total pollutant content for classification of materials as *hazardous* or *non-hazardous* (RILTA Suite). The suite also allows for the assessment of the soils in terms of suitability for placement at various categories of landfill. The parameter list for the RILTA suite includes analysis of the solid samples for arsenic, barium, cadmium, chromium, copper, cyanide, lead, nickel, mercury, zinc, speciated aliphatic and aromatic petroleum hydrocarbons, pH, sulphate, sulphide, moisture content, soil organic matter and an asbestos screen.

The RILTA suite also includes those parameters specified in the EU Council Decision establishing criteria for the acceptance of waste at Landfills (Council Decision 2003/33/EC), which for the solid samples are pH, total organic carbon (TOC), speciated aliphatic and aromatic petroleum hydrocarbons, BTEX, phenol, polychlorinated biphenyls (PCB) and PAH.

In line with the requirement of Council Decision 2003/33/EC a leachate was generated from the solid samples which was in turn analysed for antimony, arsenic, barium, cadmium, chromium, copper, lead, mercury, molybdenum, nickel, selenium, zinc, chloride, fluoride, soluble sulphate, sulphide, phenols, dissolved organic carbon (DOC) and total dissolved solids (TDS).

The laboratory testing was completed by Element Materials Technology (EMT) in the UK; EMT is a UKAS accredited laboratory. The full laboratory report is included in Appendix 3.

8.2. Asbestos

Asbestos fibres were not detected in the samples. The laboratory did not identify asbestos containing materials (ACMs) in the samples.

9.0 Waste Classification

GII understands that any materials which may be excavated and removed from site would meet the definition of waste under the Waste Framework Directive. Due to the varying levels of anthropogenic materials encountered in the made ground there are potentially two sets of List of Waste (LoW)² codes with “mirror” entries which may be applied to excavated materials to be removed from site.

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

² Formerly European Waste Catalogue Codes (EWC Codes)

2. 17-09-03* (other construction and demolition wastes (including mixed wastes) containing hazardous substances) or 17-09-04 (mixed construction and demolition wastes other than those mentioned in 17 09 01, 17 09 02 and 17 09 03).

Where waste is a mirror entry in the LoW, it can be classified via a process of analysis against standard criteria set out in the Waste Framework Directive. The assessment process is described in detail in guidance published by the Irish (EPA Waste Classification, List of Waste & Determining if Waste is Hazardous or Non-Hazardous, June 2015) and UK regulatory authorities (Guidance on the Classification and Assessment of Waste: Technical Guidance WM3, 2015). The assessment involves comparison of the concentration of various parameters against defined threshold values.

The specific LoW code which should be applied to the material at each sample location is summarised in Table 2 below. These codes are only applicable where the material is being removed from a site as a waste.

GII use HazWasteOnline™, a web-based commercial waste classification software tool which assists in the classification of potentially hazardous materials. This tool was used to determine whether the materials sampled are classified as hazardous or non-hazardous. The use of the online tool is accepted by the EPA (EPA 2014).

The conclusions presented in the report are based on GII's professional opinion. **It should be noted that the environmental regulator (in this case the EPA) and the waste acceptor (in this case a landfill operator) shall decide whether a waste is hazardous or non-hazardous and suitable for disposal at their facility.**

9.1. HazWasteOnLine™ Results

In total, ten (10 No.) samples were assessed using the HazWasteOnLine™ Tool. All samples were classified as being non-hazardous. The complete HazWasteOnLine™ report for all samples is included in Appendix 4. The specific LoW code which should be applied to the material at each SI location is summarised in Table 2 below. The assigning of the LoW code is based on observations recorded in the trial pits, an estimation of the % of anthropogenic material present and the results of the HazWasteOnline™ output. The final LoW codes applied at the time of disposal may vary due to variations in % of anthropogenic material observed in the excavation phase. Where there is in excess of 2%³ anthropogenic material observed the LoW code 17 09 04 may be applied.

9.2. Landfill Waste Acceptance Criteria

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

³ EPA (2020) - Guidance on Waste Acceptance Criteria at Authorised Soil Recovery Facilities.

hazardous. The data have been compared to the WAC limits set out in Council Decision 2003/33/EC as well as the specific WAC which the EPA have applied to the Walshestown and Integrated Materials Solutions (IMS) Landfills. The Walshestown and IMS landfills have higher limits for a range of parameters while still operating under an inert landfill licence. The WAC data considered in combination with the waste classification outlined in Section 9.0 allows the most suitable waste category to be applied to the material tested. The potentially applicable waste categories are summarised in Table 1. A summary of the WAC data is presented in Appendix 5. The waste category assigned to each sample is summarised in Table 2.

Table 1 Potential Waste Categories for Disposal/Recovery

Waste Category	Classification Criteria
Category A Unlined Soil Recovery Facilities	Soil and Stone only which are free from ⁴ anthropogenic materials such as concrete, brick, timber. Soil must be free from “contamination” e.g. PAHs, Hydrocarbons ⁵ .
Category B1 Inert Landfill	Reported concentrations within inert waste limits, which are set out by the adopted EU Council Decision 2003/33/EC establishing criteria and procedures for the acceptance of waste at landfills pursuant to Article 16 and Annex II of Directive 1999/31/EC (2002). Results also found to be non-hazardous using the HWOL ⁶ application.
Category B2 Inert Landfill	Reported concentrations greater than Category B1 criteria but less than IMS Hollywood Landfill acceptance criteria, as set out in their Waste Licence W0129-02. Results also found to be non-hazardous using the HWOL application.
Category C Non-Haz Landfill	Reported concentrations greater than Category B2 criteria but within non-haz landfill waste acceptance limits set out by the adopted EU Council Decision 2003/33/EC establishing criteria and procedures for the acceptance of waste at landfills pursuant to Article 16 and Annex II of Directive 1999/31/EC (2002). Results also found to be non-hazardous using the HWOL application.
Category C 1 Non-Haz Landfill	As Category C but containing < 0.001% w/w asbestos fibres.
Category C 2 Non-Haz Landfill	As Category C but containing >0.001% and <0.01% w/w asbestos fibres
Category C 3 Non-Haz Landfill	As Category C but containing >0.01% and <0.1% w/w asbestos fibres.
Category D Hazardous Treatment	Results found to be hazardous using HWOL Application.

⁴ Free from equates to less than 2%.

⁵ Total BTEX 0.05mg/kg, Mineral Oil 50mg/kg, Total PAHs 1mg/kg, Total PCBs 0.05mg/kg and Asbestos No Asbestos Detected – EPA Guidance on Waste Acceptance Criteria at Authorised Soil Recovery Facilities, 2020.

⁶ HazWasteOnLine™ Tool.

Waste Category	Classification Criteria
Category D 1 Hazardous Disposal	Results found to be hazardous due to the presence of asbestos (>0.1%).

9.3. Final Waste Categorisation

All samples were assessed in terms of waste classification using the HazWasteOnLine™ tool and also the WAC set out in Council Decision 2003/33/EC and the Walshestown/IMS specific WAC to give a final waste categorisation to determine the most appropriate disposal route for any waste generated. The final and most applicable waste category for each sample is summarised in Table 2.

Table 2 Individual Sample Waste Category

Sample ID	Sample Depth (m)	Material Type	Sample Date	LoW Code	Waste Category
TP01	0.50	Clay	19/01/2023	17 05 04	Category A
TP01	2.00	Clay	19/01/2023	17 05 04	Category A
TP02	0.50	Clay	19/01/2023	17 05 04	Category A
TP02	1.35	Clay	19/01/2023	17 05 04	Category A
TP03	0.50	Clay	19/01/2023	17 05 04	Category A
TP03	1.80	Clay	19/01/2023	17 05 04	Category A
TP04	0.50	Clay	19/01/2023	17 05 04	Category A
TP04	1.30	Clay	19/01/2023	17 05 04	Category A
TP05	0.50	Clay	19/01/2023	17 05 04	Category A
TP05	2.00	Clay	19/01/2023	17 05 04	Category A

10.0 Conclusions & Recommendations

The conclusions and recommendations given and opinions expressed in this report are based on the findings of the site investigation works and laboratory testing undertaken. Where any opinion is expressed on the classification of material between site investigation locations, this is for guidance only and no liability can be accepted for its accuracy. No responsibility can be accepted for conditions which have not been revealed by the findings at the site investigation locations.

10.1. Conclusions

10.1.1. Waste Classification

Based on the results of the HazWasteOnLine™ tool the material sampled across the site if being considered a waste can be classified as non-hazardous.

10.1.2. Asbestos

Asbestos was not detected in the soil samples.

10.1.3. Waste Categories

The most applicable waste categories for each of the samples if being considered a waste have been presented in Table 2.

10.2. Recommendations

10.2.1. Waste Transfer

In the event that material is excavated for removal from site, any firm engaged to transport waste material from site and the operator of any waste facility that will accept subsoils excavated from this site should be furnished with, at a minimum, copies of the **full unabridged** laboratory reports and HazWasteOnLine™ report for all samples presented in this report.

The material on site if excavated should be removed to the most appropriate facility under the waste categories and LoW codes identified in Table 2.

The non-hazardous material across the site if excavated should be removed from site to an appropriate facility under either the LoW codes 17 05 04 or 17 09 04. Where during excavation there is noted to be in excess of 2% anthropogenic material the appropriate LoW code which should be applied is 17 09 04.

11.0 References

Environment Agency (2013). *Waste Sampling and Testing for Disposal to Landfill*.

Environment Agency (2015). *Technical Guidance WM3 - Guidance on the classification and assessment of waste (1st edition 2015) Technical Guidance WM3*.

Environmental Protection Agency (EPA) (2014). Letter to Licences *Re: Waste Classification & Haz Waste On-Line™*.

Environmental Protection Agency (EPA) (2015). *Waste Classification List of Waste & Determining if Waste is Hazardous or Non-hazardous*.

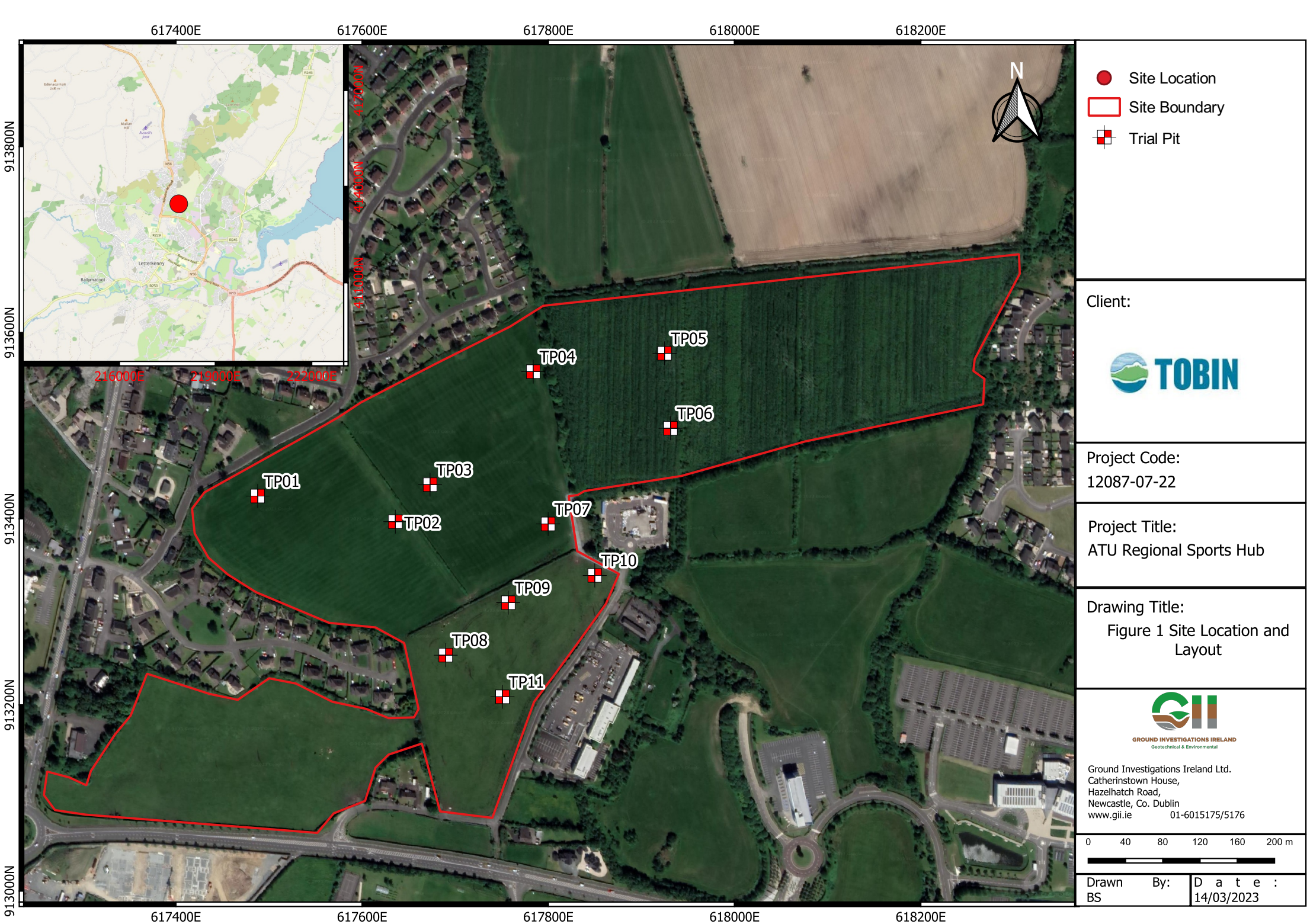
Environmental Protection Agency (EPA) (2020). *Guidance on Waste Acceptance Criteria at Authorised Soil Recovery Facilities*.

Environmental Protection Agency (EPA) (June 2019). *Guidance on Soil and Stone By-products in the context of article 27 of the European Communities (Waste Directive) Regulations 2011 Version 3*.

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

APPENDIX 1 - Figures





- Site Location
- Site Boundary
- ⊕ Trial Pit

Client:



Project Code:

12087-07-22

Project Title:

ATU Regional Sports Hub

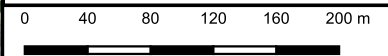
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Figure 1 Site Location and Layout



GROUND INVESTIGATIONS IRELAND
Geotechnical & Environmental

Ground Investigations Ireland Ltd.
Catherinstown House,
Hazelhatch Road,
Newcastle, Co. Dublin
www.gii.ie 01-6015175/5176



Drawn By:
BS

Date:
14/03/2023

APPENDIX 2 – Trial Pit Records





Ground Investigations Ireland Ltd

www.gii.ie

Site
ATU Regional Sports HUB

Trial Pit Number
TP01

Machine : 5t tracked Method : Trial Pit		Dimensions 1m x 2.5m	Ground Level (mOD) 98.52	Client	Job Number 12087-07-22
		Location 617487.7 E 913423.1 N	Dates 30/11/2022	Engineer Tobin	Sheet 1/1

Depth (m)	Sample / Tests	Water Depth (m)	Field Records	Level (mOD)	Depth (m) (Thickness)	Description	Legend	Water
0.50	B			98.22	(0.30) 0.30	Light brown slightly sandy slightly gravelly TOPSOIL with grass rootlets		
						Firm light brown slightly gravelly sandy CLAY		
1.10	B			97.52	(0.70) 1.00	Firm reddish brown sandy gravelly CLAY with occasional cobbles		
1.30	B			97.12	(0.30) 1.40	Firm light brown slightly sandy gravelly CLAY		
				96.82	(0.30) 1.70	Firm bluish grey slightly sandy gravelly CLAY with occasional cobbles		
2.00	B			96.12	(0.70) 2.40	Complete at 2.40m		

Plan					Remarks			
.	No groundwater encountered. Trial pit unstable. Trial pit backfilled when complete.			
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					Scale (approx)	Logged By	Figure No.	
					1:25	SML	12087-07-22.TP01	



Site	ATU Regional Sports HUB
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**Trial Pit
Number
TP02**

Machine : 5t tracked
Method : Trial Pit

Dimensions
1m x 2.5m

Ground Level (mOD)	85.06
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Client	
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




Job Number	12087-07-22
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Location	617635.6 E 913395.6 N
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Dates	30/11/2022
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Engineer
Tobin

Sheet
1/1

Depth (m)	Sample / Tests	Water Depth (m)	Field Records	Level (mOD)	Depth (m) (Thickness)	Description	Legend	Water
0.50	B			84.76	(0.30)	Brown slightly sandy slightly gravelly TOPSOIL with grass rootlets		
					0.30	Firm reddish brown slightly sandy gravelly CLAY		
1.00	B			84.16	(0.60)			
					0.90	Firm bluish grey slightly sandy slightly gravelly CLAY		
1.35	B			83.76 83.71	1.30			
					1.35	Weathered rock - schist		
						Complete at 1.35m		

Plan

Remarks

No groundwater encountered.
Trial pit stable.
Trial pit backfilled when complete.

Scale (approx)

1:25

Logged By

SML

Figure No.

12087-07-22.TP02



Site	ATU Regional Sports HUB
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**Trial Pit
Number
TP03**

Machine : 5t tracked
Method : Trial Pit

Dimensions
1m x 2.5m

Ground Level (mOD)	85.31
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Client	
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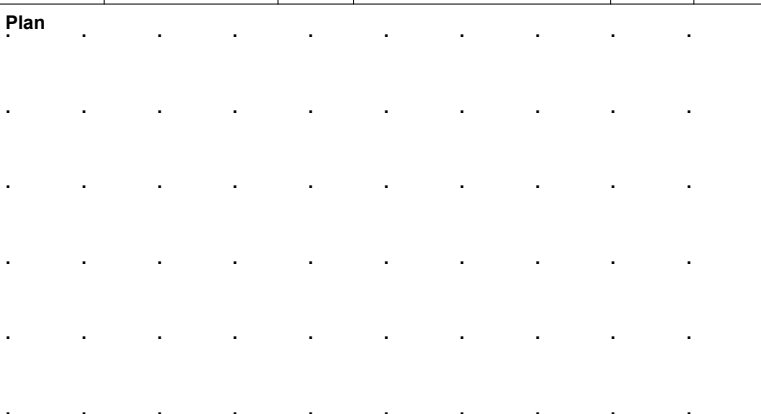
Job Number	12087-07-22
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Location
617672.9 E 913435.4 N

Dates	30/11/2022
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Engineer
Tobin

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1/1

Plan 	Remarks		
	No groundwater encountered. Trial pit unstable. Trial pit backfilled when complete.		
	Scale (approx) 1:25	Logged By SML	Figure No. 12087-07-22.TPD



Site	ATU Regional Sports HUB
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**Trial Pit
Number
TP04**

Machine : 5t tracked
Method : Trial Pit

Dimensions
1m x 2.5m

Ground Level (mOD)	86.45
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Client	
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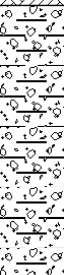
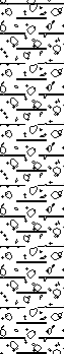


Job Number	12087-07-22
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Location
617783.7 E 913556.9 N

Dates	30/11/2022
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Engineer
Tobin

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1/1

Depth (m)	Sample / Tests	Water Depth (m)	Field Records	Level (mOD)	Depth (m) (Thickness)	Description	Legend	Water
0.50	B			86.15	0.30	Brown slightly sandy slightly gravelly TOPSOIL with grass rootlets		
					(0.90)	Firm reddish brown sandy gravelly CLAY with occasional cobbles		
1.30	B			85.25	1.20	Firm bluish grey slightly sandy gravelly CLAY with occasional cobbles		
					(1.20)			
				84.05	2.40	Rock - Schist		
				84.05	2.40	Complete at 2.40m		

Plan

Remarks

No groundwater encountered.
Trial pit unstable.
Trial pit backfilled when complete.

Scale (approx)

1:25

Logged By

SML

Figure No.

12087-07-22.TP04



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Site
ATU Regional Sports HUB

Trial Pit
Number
TP05

Machine : 5t tracked Method : Trial Pit		Dimensions 1m x 2.5m	Ground Level (mOD) 85.47	Client	Job Number 12087-07-22
		Location 617924.8 E 913576.5 N	Dates 30/11/2022	Engineer Tobin	Sheet 1/1

Depth (m)	Sample / Tests	Water Depth (m)	Field Records	Level (mOD)	Depth (m) (Thickness)	Description	Legend	Water
0.50	B			85.17	(0.30)	Greyish brown slightly sandy gravelly TOPSOIL with tree rootlets		
					0.30	Firm reddish brown sandy gravelly CLAY		
1.60	B			83.97	(1.20)			
					1.50	Firm bluish grey slightly gravelly sandy CLAY with occasional cobbles		
2.00	B			83.47	(0.50)			
					2.00	Firm bluish grey slightly sandy silty CLAY with many cobbles		
				83.27	(0.20)			
					2.20	Complete at 2.20m		

Plan					Remarks		
.	No groundwater encountered. Trial pit unstable. Trial pit backfilled when complete.		
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					Scale (approx)	Logged By	Figure No.
					1:25	SML	12087-07-22.TP05



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Site
ATU Regional Sports HUB

Trial Pit Number
TP06

Machine : 5t tracked
Method : Trial Pit

Dimensions
1m x 2.5m

Ground Level (mOD)
80.59

Client

Job Number
12087-07-22

Location
617931.1 E 913495.9 N

Dates
30/11/2022

Engineer
Tobin

Sheet
1/1

Depth (m)	Sample / Tests	Water Depth (m)	Field Records	Level (mOD)	Depth (m) (Thickness)	Description	Legend	Water
0.50	B			80.21	(0.38)	Brown slightly sandy slightly gravelly TOPSOIL with tree rootlets		
					0.38			
					(0.52)	Loose grey slightly clayey sandy GRAVEL with occasional cobbles		
				79.69	0.90	Firm black organic CLAY with occasional cobbles		
					(0.20)			
1.20	B			79.49	1.10	Firm reddish brown sandy gravelly CLAY with many cobbles		
					(0.70)			
				78.79	1.80	Weathered rock (fine grained metamorphic)		
				78.74	1.85	Complete at 1.85m		

Plan

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Remarks

Groundwater encountered.
Trial pit stable.
Trial pit backfilled when complete.

Scale (approx)

1:25

Logged By

SML

Figure No.

12087-07-22.TP06



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Site
ATU Regional Sports HUB

Trial Pit
Number
TP07

Machine : 5t tracked
Method : Trial Pit

Dimensions
1m x 2.5m

Ground Level (mOD)
78.15

Client

Job
Number
12087-07-22

Location
617799.7 E 913393.2 N

Dates
30/11/2022

Engineer
Tobin

Sheet
1/1

Depth (m)	Sample / Tests	Water Depth (m)	Field Records	Level (mOD)	Depth (m) (Thickness)	Description	Legend	Water
1.00	B			77.75	(0.40) 0.40	Brown slightly sandy slightly gravelly TOPSOIL with grass rootlets		
					(0.90)	Loose grey slightly clayey sandy GRAVEL (weathered rock)		
				76.85	1.30	Complete at 1.30m		

Plan

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Remarks

No groundwater encountered.
Trial pit unstable.
Trial pit backfilled when complete.

Scale (approx)

1:25

Logged By

SML

Figure No.

12087-07-22.TP07



Site	ATU Regional Sports HUB
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**Trial Pit
Number
TP08**

Machine : 5t tracked
Method : Trial Pit

Dimensions
1m x 2.5m

Ground Level (mOD)	77.89
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Client	
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
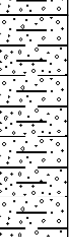

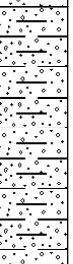
Job Number	12087-07-22
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Location	617689.6 E 913252.1 N
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Dates	30/11/2022
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Engineer
Tobin

Sheet
1/1

Depth (m)	Sample / Tests	Water Depth (m)	Field Records	Level (mOD)	Depth (m) (Thickness)	Description	Legend	Water
0.50	B			77.54	0.35 (0.35)	Brown slightly sandy slightly gravelly TOPSOIL with grass rootlets		
					0.35 (0.30)	Firm light brown slightly gravelly sandy CLAY		
1.00	B			77.24	0.65 (0.75)	Firm bluish grey slightly sandy gravelly CLAY		
					1.40 (0.30)	Loose grey blue slightly sandy clayey GRAVEL		
1.80	B			76.19	1.70 (0.90)	Firm light brown slightly sandy gravelly CLAY		
					2.60	Complete at 2.60m		
2.50	B			75.29				

Plan

Remarks

No groundwater encountered.
Trial pit unstable.
Trial pit backfilled when complete.

Scale (approx)

1:25

Logged By

SML

Figure No.

12087-07-22.TP08



Ground Investigations Ireland Ltd

www.gii.ie

Site
ATU Regional Sports HUB

Trial Pit Number
TP09

Machine : 5t tracked
Method : Trial Pit

Dimensions
1m x 2.5m

Ground Level (mOD)
77.45

Client

Job Number
12087-07-22

Location
617756.9 E 913308.6 N

Dates
30/11/2022

Engineer
Tobin

Sheet
1/1

Depth (m)	Sample / Tests	Water Depth (m)	Field Records	Level (mOD)	Depth (m) (Thickness)	Description	Legend	Water
0.50	B			77.25	(0.20) 0.20	Brown slightly sandy slightly gravelly TOPSOIL with grass rootlets		
						Soft to firm bluish grey sandy SILT		
					(0.85)			
1.20	B			76.40	1.05 (0.25)	Soft to firm reddish brown sandy gravelly CLAY		
1.50	B			76.15	1.30	Soft bluish grey slightly sandy gravelly silty CLAY with cobbles and boulders		
					(0.60)			
				75.55	1.90	Complete at 2.60m		

Plan

Remarks

No groundwater encountered.
Trial pit stable.
Trial pit backfilled when complete.

Scale (approx)

1:25

Logged By

SML

Figure No.

12087-07-22.TP09



Site	ATU Regional Sports HUB
-------------	-------------------------

**Trial Pit
Number
TP10**

Machine : 5t tracked
Method : Trial Pit

Dimensions
1m x 2.5m

Ground Level (mOD)	77.11
--------------------	-------

Client	
---------------	--

Job Number	12087-07-22
------------	-------------

Location
617849.8 E 913337.8 N

Dates	30/11/2022
--------------	------------

Engineer
Tobin

Sheet
1/1

<div>Plan</div>	<div>Remarks</div> <div>No groundwater encountered. Trial pit unstable. Trial pit backfilled when complete.</div>				
	<div>Scale (approx)</div> <div>1:25</div>		<div>Logged By</div> <div>SML</div>	<div>Figure No.</div> <div>12087-07-22.TP1</div>	



Ground Investigations Ireland Ltd

www.gii.ie

Site
ATU Regional Sports HUB

Trial Pit Number
TP11

Machine : 5t tracked Method : Trial Pit		Dimensions 1m x 2.5m	Ground Level (mOD) 76.19	Client	Job Number 12087-07-22
		Location 617750.6 E 913207.4 N	Dates 30/11/2022	Engineer Tobin	Sheet 1/1

Depth (m)	Sample / Tests	Water Depth (m)	Field Records	Level (mOD)	Depth (m) (Thickness)	Description	Legend	Water
0.50	B			75.99	(0.20) 0.20	Brown slightly sandy slightly gravelly TOPSOIL with grass rootlets		
						Firm brown grey slightly sandy gravelly CLAY with occasional cobbles		
1.50	B				(1.80)			
2.00	B			74.19	2.00	Firm bluish grey gravelly CLAY with occasional cobbles		
					(0.40)			
				73.79	2.40	Complete at 2.40m		

Plan					Remarks		
.	No groundwater encountered. Trial pit unstable. Trial pit backfilled when complete.		
.			
.			
.			
.			
.			
					Scale (approx)	Logged By	Figure No.
					1:25	SML	12087-07-22.TP11

ATU Regional Sports HUB – Trial Pit Photos

TP01



ATU Regional Sports HUB – Trial Pit Photos



ATU Regional Sports HUB – Trial Pit Photos



ATU Regional Sports HUB – Trial Pit Photos



TP02

ATU Regional Sports HUB – Trial Pit Photos



ATU Regional Sports HUB – Trial Pit Photos



ATU Regional Sports HUB – Trial Pit Photos



TP03

ATU Regional Sports HUB – Trial Pit Photos



ATU Regional Sports HUB – Trial Pit Photos



ATU Regional Sports HUB – Trial Pit Photos



TP04

ATU Regional Sports HUB – Trial Pit Photos



ATU Regional Sports HUB – Trial Pit Photos



ATU Regional Sports HUB – Trial Pit Photos



ATU Regional Sports HUB – Trial Pit Photos



TP05

ATU Regional Sports HUB – Trial Pit Photos



ATU Regional Sports HUB – Trial Pit Photos



ATU Regional Sports HUB – Trial Pit Photos



TP06

ATU Regional Sports HUB – Trial Pit Photos



ATU Regional Sports HUB – Trial Pit Photos



ATU Regional Sports HUB – Trial Pit Photos



ATU Regional Sports HUB – Trial Pit Photos



TP07

ATU Regional Sports HUB – Trial Pit Photos



ATU Regional Sports HUB – Trial Pit Photos



ATU Regional Sports HUB – Trial Pit Photos



TP08

ATU Regional Sports HUB – Trial Pit Photos



ATU Regional Sports HUB – Trial Pit Photos



ATU Regional Sports HUB – Trial Pit Photos



ATU Regional Sports HUB – Trial Pit Photos



ATU Regional Sports HUB – Trial Pit Photos



TP09

ATU Regional Sports HUB – Trial Pit Photos



ATU Regional Sports HUB – Trial Pit Photos



ATU Regional Sports HUB – Trial Pit Photos



ATU Regional Sports HUB – Trial Pit Photos



TP10

ATU Regional Sports HUB – Trial Pit Photos



ATU Regional Sports HUB – Trial Pit Photos



ATU Regional Sports HUB – Trial Pit Photos



ATU Regional Sports HUB – Trial Pit Photos



TP11

ATU Regional Sports HUB – Trial Pit Photos



ATU Regional Sports HUB – Trial Pit Photos



ATU Regional Sports HUB – Trial Pit Photos



ATU Regional Sports HUB – Trial Pit Photos



APPENDIX 3 – Laboratory Testing



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



4225

Attention : Conor Finnerty
Date : 6th February, 2023
Your reference : 12087-07-22
Our reference : Test Report 23/1129 Batch 1
Location : ATU Regional Sports HUB Letterkenny Donegal
Date samples received : 25th January, 2023
Status : Final Report
Issue : 1

Fourteen samples were received for analysis on 25th January, 2023 of which thirteen were scheduled for analysis. Please find attached our Test Report which should be read with notes at the end of the report and should include all sections if reproduced. Interpretations and opinions are outside the scope of any accreditation, and all results relate only to samples supplied.

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

Authorised By:



Bruce Leslie
Project Manager

Please include all sections of this report if it is reproduced

Element Materials Technology

Client Name: Ground Investigations Ireland
Reference: 12087-07-22
Location: ATU Regional Sports HUB Letterkenny Donegal
Contact: Conor Finnerty
EMT Job No: 23/1129

Report : Solid

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

[illegible]

Element Materials Technology

Client Name: Ground Investigations Ireland
Reference: 12087-07-22
Location: ATU Regional Sports HUB Letterkenny Donegal
Contact: Conor Finnerty
EMT Job No: 23/1129

Report : Solid

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

EMT Sample No.	1-4	5-8	9-12	13-16	17-20	21-24	25-28	29-32	33-36	37-40	Please see attached notes for all abbreviations and acronyms		
Sample ID	TP01	TP01	TP02	TP02	TP03	TP03	TP04	TP04	TP05	TP05			
Depth	0.50	2.00	0.50	1.35	0.50	1.80	0.50	1.30	0.50	2.00			
COC No / misc													
Containers	V J T	V J T	V J T	V J T	V J T	V J T	V J T	V J T	V J T	V J T			
Sample Date	19/01/2023	19/01/2023	19/01/2023	19/01/2023	19/01/2023	19/01/2023	19/01/2023	19/01/2023	19/01/2023	19/01/2023			
Sample Type	Soil	Soil	Soil	Soil	Soil	Soil	Soil	Soil	Soil	Soil			
Batch Number	1	1	1	1	1	1	1	1	1	1			
Date of Receipt	25/01/2023	25/01/2023	25/01/2023	25/01/2023	25/01/2023	25/01/2023	25/01/2023	25/01/2023	25/01/2023	25/01/2023	LOD/LOR	Units	Method No.
TPH CWG													
Aliphatics													
>C5-C6 (HS_1D_AL) #	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	mg/kg	TM36/PM12
>C6-C8 (HS_1D_AL) #	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	mg/kg	TM36/PM12
>C8-C10 (HS_1D_AL)	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	mg/kg	TM36/PM12
>C10-C12 (EH_CU_1D_AL) #	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2	mg/kg	TM5/PM8/PM16
>C12-C16 (EH_CU_1D_AL) #	<4	<4	<4	<4	<4	<4	<4	<4	<4	<4	<4	mg/kg	TM5/PM8/PM16
>C16-C21 (EH_CU_1D_AL) #	<7	<7	<7	<7	<7	<7	<7	<7	<7	<7	<7	mg/kg	TM5/PM8/PM16
>C21-C35 (EH_CU_1D_AL) #	<7	<7	<7	<7	<7	<7	<7	<7	<7	<7	<7	mg/kg	TM5/PM8/PM16
>C35-C40 (EH_1D_AL)	<7	<7	<7	<7	<7	<7	<7	<7	<7	<7	<7	mg/kg	TM5/PM8/PM16
Total aliphatics C5-40 (EH+HS_1D_AL)	<26	<26	<26	<26	<26	<26	<26	<26	<26	<26	<26	mg/kg	TM5/PM8/PM16/PM12/PM18
>C6-C10 (HS_1D_AL)	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	mg/kg	TM36/PM12
>C10-C25 (EH_1D_AL)	<10	<10	<10	<10	<10	<10	<10	<10	<10	<10	<10	mg/kg	TM5/PM8/PM16
>C25-C35 (EH_1D_AL)	<10	<10	<10	<10	<10	<10	<10	<10	<10	<10	<10	mg/kg	TM5/PM8/PM16
Aromatics													
>C5-EC7 (HS_1D_AR) #	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	mg/kg	TM36/PM12
>EC7-EC8 (HS_1D_AR) #	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	mg/kg	TM36/PM12
>EC8-EC10 (HS_1D_AR) #	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	mg/kg	TM36/PM12
>EC10-EC12 (EH_CU_1D_AR) #	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2	mg/kg	TM5/PM8/PM16
>EC12-EC16 (EH_CU_1D_AR) #	<4	<4	<4	<4	<4	<4	<4	<4	<4	<4	<4	mg/kg	TM5/PM8/PM16
>EC16-EC21 (EH_CU_1D_AR) #	<7	<7	<7	<7	<7	<7	<7	<7	<7	<7	<7	mg/kg	TM5/PM8/PM16
>EC21-EC35 (EH_CU_1D_AR) #	<7	<7	<7	<7	<7	<7	<7	<7	<7	<7	<7	mg/kg	TM5/PM8/PM16
>EC35-EC40 (EH_1D_AR)	<7	<7	<7	<7	<7	<7	<7	<7	<7	<7	<7	mg/kg	TM5/PM8/PM16
Total aromatics C5-40 (EH+HS_1D_AR)	<26	<26	<26	<26	<26	<26	<26	<26	<26	<26	<26	mg/kg	TM5/PM8/PM16/PM12/PM18
Total aliphatics and aromatics(C5-40) (EH+HS_CU_1D_Total)	<52	<52	<52	<52	<52	<52	<52	<52	<52	<52	<52	mg/kg	TM5/PM8/PM16/PM12/PM18
>EC6-EC10 (HS_1D_AR) #	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	mg/kg	TM36/PM12
>EC10-EC25 (EH_1D_AR)	<10	<10	<10	<10	<10	<10	<10	<10	<10	<10	<10	mg/kg	TM5/PM8/PM16
>EC25-EC35 (EH_1D_AR)	<10	<10	<10	<10	<10	<10	<10	<10	<10	<10	<10	mg/kg	TM5/PM8/PM16
MTBE #	<5	<5	<5	<5	<5	<5	<5	<5	<5	<5	<5	ug/kg	TM36/PM12
Benzene #	<5	<5	<5	<5	<5	<5	<5	<5	<5	<5	<5	ug/kg	TM36/PM12
Toluene #	<5	<5	<5	<5	<5	<5	<5	<5	<5	<5	<5	ug/kg	TM36/PM12
Ethylbenzene #	<5	<5	<5	<5	<5	<5	<5	<5	<5	<5	<5	ug/kg	TM36/PM12
m/p-Xylene #	<5	<5	<5	<5	<5	<5	<5	<5	<5	<5	<5	ug/kg	TM36/PM12
o-Xylene #	<5	<5	<5	<5	<5	<5	<5	<5	<5	<5	<5	ug/kg	TM36/PM12
PCB 28 #	<5	<5	<5	<5	<5	<5	<5	<5	<5	<5	<5	ug/kg	TM17/PM8
PCB 52 #	<5	<5	<5	<5	<5	<5	<5	<5	<5	<5	<5	ug/kg	TM17/PM8
PCB 101 #	<5	<5	<5	<5	<5	<5	<5	<5	<5	<5	<5	ug/kg	TM17/PM8
PCB 118 #	<5	<5	<5	<5	<5	<5	<5	<5	<5	<5	<5	ug/kg	TM17/PM8
PCB 138 #	<5	<5	<5	<5	<5	<5	<5	<5	<5	<5	<5	ug/kg	TM17/PM8
PCB 153 #	<5	<5	<5	<5	<5	<5	<5	<5	<5	<5	<5	ug/kg	TM17/PM8
PCB 180 #	<5	<5	<5	<5	<5	<5	<5	<5	<5	<5	<5	ug/kg	TM17/PM8
Total 7 PCBs #	<35	<35	<35	<35	<35	<35	<35	<35	<35	<35	<35	ug/kg	TM17/PM8

Element Materials Technology

Client Name: Ground Investigations Ireland
Reference: 12087-07-22
Location: ATU Regional Sports HUB Letterkenny Donegal
Contact: Conor Finnerty
EMT Job No: 23/1129

Report : Solid

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

[illegible]

Element Materials Technology

Client Name: Ground Investigations Ireland
Reference: 12087-07-22
Location: ATU Regional Sports HUB Letterkenny Donegal
Contact: Conor Finnerty
EMT Job No: 23/1129

Report : Solid

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

EMT Sample No.	41	42	43								Please see attached notes for all abbreviations and acronyms		
Sample ID	TP08	TP09	TP11										
Depth	1.00	0.50	0.50										
COC No / misc													
Containers	T	T	T										
Sample Date	19/01/2023	19/01/2023	19/01/2023										
Sample Type	Soil	Soil	Soil										
Batch Number	1	1	1										
Date of Receipt	25/01/2023	25/01/2023	25/01/2023								LOD/LOR	Units	Method No.
Antimony	-	-	-								<1	mg/kg	TM30/PM15
Arsenic #	-	-	-								<0.5	mg/kg	TM30/PM15
Barium #	-	-	-								<1	mg/kg	TM30/PM15
Cadmium #	-	-	-								<0.1	mg/kg	TM30/PM15
Chromium #	-	-	-								<0.5	mg/kg	TM30/PM15
Copper #	-	-	-								<1	mg/kg	TM30/PM15
Lead #	-	-	-								<5	mg/kg	TM30/PM15
Mercury #	-	-	-								<0.1	mg/kg	TM30/PM15
Molybdenum #	-	-	-								<0.1	mg/kg	TM30/PM15
Nickel #	-	-	-								<0.7	mg/kg	TM30/PM15
Selenium #	-	-	-								<1	mg/kg	TM30/PM15
Zinc #	-	-	-								<5	mg/kg	TM30/PM15
PAH MS													
Naphthalene #	-	-	-								<0.04	mg/kg	TM4/PM8
Acenaphthylene	-	-	-								<0.03	mg/kg	TM4/PM8
Acenaphthene #	-	-	-								<0.05	mg/kg	TM4/PM8
Fluorene #	-	-	-								<0.04	mg/kg	TM4/PM8
Phenanthrene #	-	-	-								<0.03	mg/kg	TM4/PM8
Anthracene #	-	-	-								<0.04	mg/kg	TM4/PM8
Fluoranthene #	-	-	-								<0.03	mg/kg	TM4/PM8
Pyrene #	-	-	-								<0.03	mg/kg	TM4/PM8
Benzo(a)anthracene #	-	-	-								<0.06	mg/kg	TM4/PM8
Chrysene #	-	-	-								<0.02	mg/kg	TM4/PM8
Benzo(bk)fluoranthene #	-	-	-								<0.07	mg/kg	TM4/PM8
Benzo(a)pyrene #	-	-	-								<0.04	mg/kg	TM4/PM8
Indeno(123cd)pyrene #	-	-	-								<0.04	mg/kg	TM4/PM8
Dibenzo(ah)anthracene #	-	-	-								<0.04	mg/kg	TM4/PM8
Benzo(ghi)perylene #	-	-	-								<0.04	mg/kg	TM4/PM8
Coronene	-	-	-								<0.04	mg/kg	TM4/PM8
PAH 6 Total #	-	-	-								<0.22	mg/kg	TM4/PM8
PAH 17 Total	-	-	-								<0.64	mg/kg	TM4/PM8
Benzo(b)fluoranthene	-	-	-								<0.05	mg/kg	TM4/PM8
Benzo(k)fluoranthene	-	-	-								<0.02	mg/kg	TM4/PM8
Benzo(j)fluoranthene	-	-	-								<1	mg/kg	TM4/PM8
PAH Surrogate % Recovery	-	-	-								<0	%	TM4/PM8
Mineral Oil (C10-C40) (EH_CU_1D_AL)	-	-	-								<30	mg/kg	TM5/PM8/PM16

Element Materials Technology

Client Name: Ground Investigations Ireland
Reference: 12087-07-22
Location: ATU Regional Sports HUB Letterkenny Donegal
Contact: Conor Finnerty
EMT Job No: 23/1129

Report : Solid

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

EMT Sample No.	41	42	43								Please see attached notes for all abbreviations and acronyms		
Sample ID	TP08	TP09	TP11										
Depth	1.00	0.50	0.50										
COC No / misc													
Containers	T	T	T										
Sample Date	19/01/2023	19/01/2023	19/01/2023										
Sample Type	Soil	Soil	Soil										
Batch Number	1	1	1										
Date of Receipt	25/01/2023	25/01/2023	25/01/2023								LOD/LOR	Units	Method No.
TPH CWG													
Aliphatics													
>C5-C6 (HS_1D_AL) #	-	-	-								<0.1	mg/kg	TM36/PM12
>C6-C8 (HS_1D_AL) #	-	-	-								<0.1	mg/kg	TM36/PM12
>C8-C10 (HS_1D_AL)	-	-	-								<0.1	mg/kg	TM36/PM12
>C10-C12 (EH_CU_1D_AL) #	-	-	-								<0.2	mg/kg	TM5/PM8/PM16
>C12-C16 (EH_CU_1D_AL) #	-	-	-								<4	mg/kg	TM5/PM8/PM16
>C16-C21 (EH_CU_1D_AL) #	-	-	-								<7	mg/kg	TM5/PM8/PM16
>C21-C35 (EH_CU_1D_AL) #	-	-	-								<7	mg/kg	TM5/PM8/PM16
>C35-C40 (EH_1D_AL)	-	-	-								<7	mg/kg	TM5/PM8/PM16
Total aliphatics C5-40 (EH+HS_1D_AL)	-	-	-								<26	mg/kg	TM5/PM8/PM16/PM12/PM10
>C6-C10 (HS_1D_AL)	-	-	-								<0.1	mg/kg	TM36/PM12
>C10-C25 (EH_1D_AL)	-	-	-								<10	mg/kg	TM5/PM8/PM16
>C25-C35 (EH_1D_AL)	-	-	-								<10	mg/kg	TM5/PM8/PM16
Aromatics													
>C5-EC7 (HS_1D_AR) #	-	-	-								<0.1	mg/kg	TM36/PM12
>EC7-EC8 (HS_1D_AR) #	-	-	-								<0.1	mg/kg	TM36/PM12
>EC8-EC10 (HS_1D_AR) #	-	-	-								<0.1	mg/kg	TM36/PM12
>EC10-EC12 (EH_CU_1D_AR) #	-	-	-								<0.2	mg/kg	TM5/PM8/PM16
>EC12-EC16 (EH_CU_1D_AR) #	-	-	-								<4	mg/kg	TM5/PM8/PM16
>EC16-EC21 (EH_CU_1D_AR) #	-	-	-								<7	mg/kg	TM5/PM8/PM16
>EC21-EC35 (EH_CU_1D_AR) #	-	-	-								<7	mg/kg	TM5/PM8/PM16
>EC35-EC40 (EH_1D_AR)	-	-	-								<7	mg/kg	TM5/PM8/PM16
Total aromatics C5-40 (EH+HS_1D_AR)	-	-	-								<26	mg/kg	TM5/PM8/PM16/PM12/PM10
Total aliphatics and aromatics(C5-40) (EH+HS_CU_1D_Total)	-	-	-								<52	mg/kg	TM5/PM8/PM16/PM12/PM10
>EC6-EC10 (HS_1D_AR) #	-	-	-								<0.1	mg/kg	TM36/PM12
>EC10-EC25 (EH_1D_AR)	-	-	-								<10	mg/kg	TM5/PM8/PM16
>EC25-EC35 (EH_1D_AR)	-	-	-								<10	mg/kg	TM5/PM8/PM16
MTBE #	-	-	-								<5	ug/kg	TM36/PM12
Benzene #	-	-	-								<5	ug/kg	TM36/PM12
Toluene #	-	-	-								<5	ug/kg	TM36/PM12
Ethylbenzene #	-	-	-								<5	ug/kg	TM36/PM12
m/p-Xylene #	-	-	-								<5	ug/kg	TM36/PM12
o-Xylene #	-	-	-								<5	ug/kg	TM36/PM12
PCB 28 #	-	-	-								<5	ug/kg	TM17/PM8
PCB 52 #	-	-	-								<5	ug/kg	TM17/PM8
PCB 101 #	-	-	-								<5	ug/kg	TM17/PM8
PCB 118 #	-	-	-								<5	ug/kg	TM17/PM8
PCB 138 #	-	-	-								<5	ug/kg	TM17/PM8
PCB 153 #	-	-	-								<5	ug/kg	TM17/PM8
PCB 180 #	-	-	-								<5	ug/kg	TM17/PM8
Total 7 PCBs #	-	-	-								<35	ug/kg	TM17/PM8

Element Materials Technology

Client Name: Ground Investigations Ireland
Reference: 12087-07-22
Location: ATU Regional Sports HUB Letterkenny Donegal
Contact: Conor Finnerty
EMT Job No: 23/1129

Report : Solid

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

[illegible]

Element Materials Technology

Client Name: Ground Investigations Ireland
Reference: 12087-07-22
Location: ATU Regional Sports HUB Letterkenny Donegal
Contact: Conor Finnerty
EMT Job No: 23/1129

Report : CEN 10:1 1 Batch

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

EMT Sample No.	1-4	5-8	9-12	13-16	17-20	21-24	25-28	29-32	33-36	37-40	Please see attached notes for all abbreviations and acronyms		
Sample ID	TP01	TP01	TP02	TP02	TP03	TP03	TP04	TP04	TP05	TP05			
Depth	0.50	2.00	0.50	1.35	0.50	1.80	0.50	1.30	0.50	2.00			
COC No / misc													
Containers	V J T	V J T	V J T	V J T	V J T	V J T	V J T	V J T	V J T	V J T			
Sample Date	19/01/2023	19/01/2023	19/01/2023	19/01/2023	19/01/2023	19/01/2023	19/01/2023	19/01/2023	19/01/2023	19/01/2023			
Sample Type	Soil	Soil	Soil	Soil	Soil	Soil	Soil	Soil	Soil	Soil			
Batch Number	1	1	1	1	1	1	1	1	1	1			
Date of Receipt	25/01/2023	25/01/2023	25/01/2023	25/01/2023	25/01/2023	25/01/2023	25/01/2023	25/01/2023	25/01/2023	25/01/2023	LOD/LOR	Units	Method No.
Dissolved Antimony [#]	<0.002	<0.002	<0.002	<0.002	<0.002	<0.002	<0.002	<0.002	<0.002	<0.002	<0.002	mg/l	TM30/PM17
Dissolved Antimony (A10) [#]	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	mg/kg	TM30/PM17
Dissolved Arsenic [#]	<0.0025	<0.0025	0.0028	<0.0025	<0.0025	<0.0025	<0.0025	<0.0025	<0.0025	<0.0025	<0.0025	mg/l	TM30/PM17
Dissolved Arsenic (A10) [#]	<0.025	<0.025	0.028	<0.025	<0.025	<0.025	<0.025	<0.025	<0.025	<0.025	<0.025	mg/kg	TM30/PM17
Dissolved Barium [#]	0.008	0.034	0.006	0.018	0.007	0.003	0.006	0.035	0.004	0.016	<0.003	mg/l	TM30/PM17
Dissolved Barium (A10) [#]	0.08	0.34	0.06	0.18	0.07	0.03	0.06	0.35	0.04	0.16	<0.03	mg/kg	TM30/PM17
Dissolved Cadmium [#]	<0.0005	<0.0005	<0.0005	<0.0005	<0.0005	<0.0005	<0.0005	<0.0005	<0.0005	<0.0005	<0.0005	mg/l	TM30/PM17
Dissolved Cadmium (A10) [#]	<0.005	<0.005	<0.005	<0.005	<0.005	<0.005	<0.005	<0.005	<0.005	<0.005	<0.005	mg/kg	TM30/PM17
Dissolved Chromium [#]	<0.0015	<0.0015	<0.0015	<0.0015	<0.0015	<0.0015	<0.0015	<0.0015	<0.0015	<0.0015	<0.0015	mg/l	TM30/PM17
Dissolved Chromium (A10) [#]	<0.015	<0.015	<0.015	<0.015	<0.015	<0.015	<0.015	<0.015	<0.015	<0.015	<0.015	mg/kg	TM30/PM17
Dissolved Copper [#]	<0.007	0.010	0.010	<0.007	<0.007	<0.007	<0.007	0.009	<0.007	<0.007	<0.007	mg/l	TM30/PM17
Dissolved Copper (A10) [#]	<0.07	0.10	0.10	<0.07	<0.07	<0.07	<0.07	0.09	<0.07	<0.07	<0.07	mg/kg	TM30/PM17
Dissolved Lead [#]	<0.005	<0.005	<0.005	<0.005	<0.005	<0.005	<0.005	0.006	<0.005	<0.005	<0.005	mg/l	TM30/PM17
Dissolved Lead (A10) [#]	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	0.06	<0.05	<0.05	<0.05	mg/kg	TM30/PM17
Dissolved Molybdenum [#]	<0.002	<0.002	<0.002	<0.002	<0.002	<0.002	<0.002	<0.002	<0.002	<0.002	<0.002	mg/l	TM30/PM17
Dissolved Molybdenum (A10) [#]	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	mg/kg	TM30/PM17
Dissolved Nickel [#]	<0.002	0.002	<0.002	0.003	<0.002	<0.002	<0.002	0.003	<0.002	<0.002	<0.002	mg/l	TM30/PM17
Dissolved Nickel (A10) [#]	<0.02	0.02	<0.02	0.03	<0.02	<0.02	<0.02	0.03	<0.02	<0.02	<0.02	mg/kg	TM30/PM17
Dissolved Selenium [#]	<0.003	<0.003	<0.003	<0.003	<0.003	<0.003	<0.003	<0.003	<0.003	<0.003	<0.003	mg/l	TM30/PM17
Dissolved Selenium (A10) [#]	<0.03	<0.03	<0.03	<0.03	<0.03	<0.03	<0.03	<0.03	<0.03	<0.03	<0.03	mg/kg	TM30/PM17
Dissolved Zinc [#]	0.004	0.009	0.003	0.005	0.003	<0.003	<0.003	0.097	0.003	<0.003	<0.003	mg/l	TM30/PM17
Dissolved Zinc (A10) [#]	0.04	0.09	0.03	0.05	0.03	<0.03	<0.03	0.97	<0.03	<0.03	<0.03	mg/kg	TM30/PM17
Mercury Dissolved by CVA [#]	<0.00001	<0.00001	<0.00001	<0.00001	<0.00001	<0.00001	<0.00001	<0.00001	<0.00001	<0.00001	<0.00001	mg/l	TM61/PM0
Mercury Dissolved by CVA [#]	<0.0001	<0.0001	<0.0001	<0.0001	<0.0001	<0.0001	<0.0001	<0.0001	<0.0001	<0.0001	<0.0001	mg/kg	TM61/PM0
Phenol	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	mg/l	TM26/PM0
Phenol	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	mg/kg	TM26/PM0
Fluoride	<0.3	<0.3	<0.3	<0.3	<0.3	<0.3	<0.3	<0.3	<0.3	<0.3	<0.3	mg/l	TM173/PM0
Fluoride	<3	<3	<3	<3	<3	<3	<3	<3	<3	<3	<3	mg/kg	TM173/PM0
Sulphate as SO ₄ [#]	<0.5	2.4	2.8	2.3	<0.5	7.5	<0.5	3.1	<0.5	2.6	<0.5	mg/l	TM38/PM0
Sulphate as SO ₄ [#]	<5	24	28	23	<5	75	<5	31	<5	26	<5	mg/kg	TM38/PM0
Chloride [#]	0.3	0.8	0.4	0.3	<0.3	<0.3	0.3	1.4	<0.3	0.3	<0.3	mg/l	TM38/PM0
Chloride [#]	<3	8	4	<3	<3	<3	<3	14	<3	3	<3	mg/kg	TM38/PM0
Dissolved Organic Carbon	2	4	4	<2	<2	<2	2	4	<2	2	<2	mg/l	TM60/PM0
Dissolved Organic Carbon	<20	40	40	<20	<20	<20	<20	40	<20	20	<20	mg/kg	TM60/PM0
pH	6.87	7.38	6.07	6.61	6.73	6.66	6.94	7.10	7.14	7.93	<0.01	pH units	TM73/PM0
Total Dissolved Solids [#]	<35	70	<35	<35	<35	<35	<35	71	<35	49	<35	mg/l	TM20/PM0
Total Dissolved Solids [#]	<350	700	<350	<350	<350	<350	<350	710	<350	490	<350	mg/kg	TM20/PM0

Client Name:	Ground Investigations Ireland	Report :	EN12457_2
Reference:	12087-07-22		
Location:	ATU Regional Sports HUB Letterkenny Donegal	Solids:	V=60g VOC:jar, J=250g glass jar, T=plastic tub
Contact:	Conor Finnerty		
EMT Job No:	23/1129		

Please see attached notes for all abbreviations and acronyms

Matrix : Solid

10 of 20

Client Name: Ground Investigations Ireland
Reference: 12087-07-22
Location: ATU Regional Sports HUB Letterkenny Donegal
Contact: Conor Finnerty

Note:

Asbestos Screen analysis is carried out in accordance with our documented in-house methods PM042 and TM065 and HSG 248 by Stereo and Polarised Light Microscopy using Dispersion Staining Techniques and is covered by our UKAS accreditation. Detailed Gravimetric Quantification and PCOM Fibre Analysis is carried out in accordance with our documented in-house methods PM042 and TM131 and HSG 248 using Stereo and Polarised Light Microscopy and Phase Contrast Optical Microscopy (PCOM). Asbestos sub-samples are retained for not less than 6 months from the date of analysis unless specifically requested.

The LOQ of the Asbestos Quantification is 0.001% dry fibre of dry mass of sample.

Where the sample is not taken by a Element Materials Technology consultant, Element Materials Technology cannot be responsible for inaccurate or unrepresentative sampling.

Where trace asbestos is reported the amount of asbestos will be <0.1%.

EMT Job No.	Batch	Sample ID	Depth	EMT Sample No.	Analyst Name	Date Of Analysis	Analysis	Result
23/1129	1	TP01	0.50	4	Matthew Turner	06/02/2023	General Description (Bulk Analysis)	Brown soil/Stone
					Matthew Turner	06/02/2023	Asbestos Fibres	NAD
					Matthew Turner	06/02/2023	Asbestos ACM	NAD
					Matthew Turner	06/02/2023	Asbestos Type	NAD
23/1129	1	TP01	2.00	8	Matthew Turner	06/02/2023	General Description (Bulk Analysis)	Brown soil/Stone
					Matthew Turner	06/02/2023	Asbestos Fibres	NAD
					Matthew Turner	06/02/2023	Asbestos ACM	NAD
					Matthew Turner	06/02/2023	Asbestos Type	NAD
23/1129	1	TP02	0.50	12	Matthew Turner	06/02/2023	General Description (Bulk Analysis)	Brown soil/Stone
					Matthew Turner	06/02/2023	Asbestos Fibres	NAD
					Matthew Turner	06/02/2023	Asbestos ACM	NAD
					Matthew Turner	06/02/2023	Asbestos Type	NAD
23/1129	1	TP02	1.35	16	Matthew Turner	06/02/2023	General Description (Bulk Analysis)	Brown soil/Stone
					Matthew Turner	06/02/2023	Asbestos Fibres	NAD
					Matthew Turner	06/02/2023	Asbestos ACM	NAD
					Matthew Turner	06/02/2023	Asbestos Type	NAD
23/1129	1	TP03	0.50	20	Matthew Turner	06/02/2023	General Description (Bulk Analysis)	Brown soil/Stone
					Matthew Turner	06/02/2023	Asbestos Fibres	NAD
					Matthew Turner	06/02/2023	Asbestos ACM	NAD
					Matthew Turner	06/02/2023	Asbestos Type	NAD
23/1129	1	TP03	1.80	24	Matthew Turner	06/02/2023	General Description (Bulk Analysis)	Brown soil/Stone
					Matthew Turner	06/02/2023	Asbestos Fibres	NAD
					Matthew Turner	06/02/2023	Asbestos ACM	NAD
					Matthew Turner	06/02/2023	Asbestos Type	NAD
23/1129	1	TP04	0.50	28	Matthew Turner	06/02/2023	General Description (Bulk Analysis)	Brown soil/Stone
					Matthew Turner	06/02/2023	Asbestos Fibres	NAD
					Matthew Turner	06/02/2023	Asbestos ACM	NAD
					Matthew Turner	06/02/2023	Asbestos Type	NAD
23/1129	1	TP04	1.30	32	Matthew Turner	06/02/2023	General Description (Bulk Analysis)	Brown soil/Stone
					Matthew Turner	06/02/2023	Asbestos Fibres	NAD
					Matthew Turner	06/02/2023	Asbestos ACM	NAD
					Matthew Turner	06/02/2023	Asbestos Type	NAD

Asbestos Analysis

Asbestos Analysis

Client Name: Ground Investigations Ireland

Reference: 12087-07-22

Location: ATU Regional Sports HUB Letterkenny Donegal

Contact: Conor Finnerty

[illegible]

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

NOTES TO ACCOMPANY ALL SCHEDULES AND REPORTS

EMT Job No.: 23/1129

SOILS and ASH

Please note we are only MCERTS accredited (UK soils only) for sand, loam and clay and any other matrix is outside our scope of accreditation.

Where an MCERTS report has been requested, you will be notified within 48 hours of any samples that have been identified as being outside our MCERTS scope. As validation has been performed on clay, sand and loam, only samples that are predominantly these matrices, or combinations of them will be within our MCERTS scope. If samples are not one of a combination of the above matrices they will not be marked as MCERTS accredited.

It is assumed that you have taken representative samples on site and require analysis on a representative subsample. Stones will generally be included unless we are requested to remove them.

All samples will be discarded one month after the date of reporting, unless we are instructed to the contrary. Asbestos samples are retained for 6 months.

If you have not already done so, please send us a purchase order if this is required by your company.

Where appropriate please make sure that our detection limits are suitable for your needs, if they are not, please notify us immediately.

All analysis is reported on a dry weight basis unless stated otherwise. Limits of detection for analyses carried out on as received samples are not moisture content corrected. Results are not surrogate corrected. Samples are dried at 35°C ±5°C unless otherwise stated. Moisture content for CEN Leachate tests are dried at 105°C ±5°C. Ash samples are dried at 37°C ±5°C.

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

Where a CEN 10:1 ZERO Headspace VOC test has been carried out, a 10:1 ratio of water to wet (as received) soil has been used.

% Asbestos in Asbestos Containing Materials (ACMs) is determined by reference to HSG 264 The Survey Guide - Appendix 2 : ACMs in buildings listed in order of ease of fibre release.

Sufficient amount of sample must be received to carry out the testing specified. Where an insufficient amount of sample has been received the testing may not meet the requirements of our accredited methods, as such accreditation may be removed.

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

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

WATERS

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

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

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

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

STACK EMISSIONS

Where an MCERTS report has been requested, you will be notified within 48 hours of any samples that have been identified as being outside our MCERTS scope. As validation for Dioxins and Furans and Dioxin like PCBs has been performed on XAD-2 Resin, only samples which use this resin will be within our MCERTS scope.

Where appropriate please make sure that our detection limits are suitable for your needs, if they are not, please notify us immediately.

DEVIATING SAMPLES

All samples should be submitted to the laboratory in suitable containers with sufficient ice packs to sustain an appropriate temperature for the requested analysis. The temperature of sample receipt is recorded on the confirmation schedules in order that the client can make an informed decision as to whether testing should still be undertaken.

SURROGATES

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

DILUTIONS

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

BLANKS

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

NOTE

Data is only reported if the laboratory is confident that the data is a true reflection of the samples analysed. Data is only reported as accredited when all the requirements of our Quality System have been met. In certain circumstances where all the requirements of the Quality System have not been met, for instance if the associated AQC has failed, the reason is fully investigated and documented. The sample data is then evaluated alongside the other quality control checks performed during analysis to determine its suitability. Following this evaluation, provided the sample results have not been effected, the data is reported but accreditation is removed. It is a UKAS requirement for data not reported as accredited to be considered indicative only, but this does not mean the data is not valid.

Where possible, and if requested, samples will be re-extracted and a revised report issued with accredited results. Please do not hesitate to contact the laboratory if further details are required of the circumstances which have led to the removal of accreditation.

Laboratory records are kept for a period of no less than 6 years.

REPORTS FROM THE SOUTH AFRICA LABORATORY

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

Measurement Uncertainty

Measurement uncertainty defines the range of values that could reasonably be attributed to the measured quantity. This range of values has not been included within the reported results. Uncertainty expressed as a percentage can be provided upon request.

Customer Provided Information

Sample ID and depth is information provided by the customer.

ABBREVIATIONS and ACRONYMS USED

#	ISO17025 (UKAS Ref No. 4225) accredited - UK.
SA	ISO17025 (SANAS Ref No.T0729) accredited - South Africa
B	Indicates analyte found in associated method blank.
DR	Dilution required.
M	MCERTS accredited.
NA	Not applicable
NAD	No Asbestos Detected.
ND	None Detected (usually refers to VOC and/SVOC TICs).
NDP	No Determination Possible
SS	Calibrated against a single substance
SV	Surrogate recovery outside performance criteria. This may be due to a matrix effect.
W	Results expressed on as received basis.
+	AQC failure, accreditation has been removed from this result, if appropriate, see 'Note' on previous page.
>>	Results above calibration range, the result should be considered the minimum value. The actual result could be significantly higher.
*	Analysis subcontracted to an Element Materials Technology approved laboratory.
AD	Samples are dried at 35°C ±5°C
CO	Suspected carry over
LOD/LOR	Limit of Detection (Limit of Reporting) in line with ISO 17025 and MCERTS
ME	Matrix Effect
NFD	No Fibres Detected
BS	AQC Sample
LB	Blank Sample
N	Client Sample
TB	Trip Blank Sample
OC	Outside Calibration Range

HWOL ACRONYMS AND OPERATORS USED

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.
Total	Aliphatics & Aromatics.
AL	Aliphatics only.
AR	Aromatics only.
2D	GC-GC - Double coil gas chromatography.
#1	EH_Total but with humics mathematically subtracted
#2	EU_Total but with fatty acids mathematically subtracted
_	Operator - underscore to separate acronyms (exception for +).
+	Operator to indicate cumulative e.g. EH+HS_Total or EH_CU+HS_Total
MS	Mass Spectrometry.

EMT Job No: 23/1129

Test Method No.	Description	Prep Method No. (if appropriate)	Description	ISO 17025 (UKAS/ANAS)	MCERTS (UK soils only)	Analysis done on As Received (AR) or Dried (AD)	Reported on dry weight basis
PM4	Gravimetric measurement of Natural Moisture Content and % Moisture Content at either 35°C or 105°C. Calculation based on ISO 11465:1993(E) and BS1377-2:1990.	PM0	No preparation is required.			AR	
TM4	Modified USEPA 8270D v5:2014 method for the solvent extraction and determination of PAHs by GC-MS.	PM8	End over end extraction of solid samples for organic analysis. The solvent mix varies depending on analysis required.			AR	Yes
TM4	Modified USEPA 8270D v5:2014 method for the solvent extraction and determination of PAHs by GC-MS.	PM8	End over end extraction of solid samples for organic analysis. The solvent mix varies depending on analysis required.	Yes		AR	Yes
TM5	Modified 8015B v2:1996 method for the determination of solvent Extractable Petroleum Hydrocarbons (EPH) within the range C8-C40 by GCFID. For waters the solvent extracts dissolved phase plus a sheen if present.	PM16	Fractionation into aliphatic and aromatic fractions using a Rapid Trace SPE.			AR	
TM5	Modified 8015B v2:1996 method for the determination of solvent Extractable Petroleum Hydrocarbons (EPH) within the range C8-C40 by GCFID. For waters the solvent extracts dissolved phase plus a sheen if present.	PM8/PM16	End over end extraction of solid samples for organic analysis. The solvent mix varies depending on analysis required/Fractionation into aliphatic and aromatic fractions using a Rapid Trace SPE.			AR	Yes
TM5	Modified 8015B v2:1996 method for the determination of solvent Extractable Petroleum Hydrocarbons (EPH) within the range C8-C40 by GCFID. For waters the solvent extracts dissolved phase plus a sheen if present.	PM8/PM16	End over end extraction of solid samples for organic analysis. The solvent mix varies depending on analysis required/Fractionation into aliphatic and aromatic fractions using a Rapid Trace SPE.	Yes		AR	Yes
TM5/TM36	please refer to TM5 and TM36 for method details	PM8/PM12/PM16	please refer to PM8/PM16 and PM12 for method details			AR	Yes
TM17	Modified US EPA method 8270D v5:2014. Determination of specific Polychlorinated Biphenyl congeners by GC-MS.	PM8	End over end extraction of solid samples for organic analysis. The solvent mix varies depending on analysis required.	Yes		AR	Yes
TM20	Modified BS 1377-3:1990/USEPA 160.1/3 (TDS/TS: 1971) Gravimetric determination of Total Dissolved Solids/Total Solids	PM0	No preparation is required.	Yes		AR	Yes
TM21	Modified BS 7755-3:1995, ISO10694:1995 Determination of Total Organic Carbon or Total Carbon by combustion in an Eltra TOC furnace/analyser in the presence of oxygen. The CO2 generated is quantified using infra-red detection. Organic Matter (SOM) calculated as per EA MCERTS Chemical Testing of Soil, March 2012 v4.	PM24	Preparation of Soil and Marine Sediment Samples for Total Organic Carbon.	Yes		AD	Yes

EMT Job No: 23/1129

Test Method No.	Description	Prep Method No. (if appropriate)	Description	ISO 17025 (UKAS/ANAS)	MCERTS (UK soils only)	Analysis done on As Received (AR) or Dried (AD)	Reported on dry weight basis
TM26	Determination of phenols by Reversed Phased High Performance Liquid Chromatography and Electro-Chemical Detection.	PM0	No preparation is required.			AR	Yes
TM30	Determination of Trace Metals by ICP-OES (Inductively Coupled Plasma – Optical Emission Spectrometry): WATERS by Modified USEPA Method 200.7, Rev. 4.4, 1994; Modified EPA Method 6010B, Rev.2, Dec 1996; Modified BS EN ISO 11885:2009: SOILS by Modified USEP 6010B, Rev.2, Dec.1996; Modified EPA Method 3050B, Rev.2, Dec.1996	PM15	Acid digestion of dried and ground solid samples using Aqua Regia refluxed at 112.5 °C. Samples containing asbestos are not dried and ground.			AD	Yes
TM30	Determination of Trace Metals by ICP-OES (Inductively Coupled Plasma – Optical Emission Spectrometry): WATERS by Modified USEPA Method 200.7, Rev. 4.4, 1994; Modified EPA Method 6010B, Rev.2, Dec 1996; Modified BS EN ISO 11885:2009: SOILS by Modified USEP 6010B, Rev.2, Dec.1996; Modified EPA Method 3050B, Rev.2, Dec.1996	PM15	Acid digestion of dried and ground solid samples using Aqua Regia refluxed at 112.5 °C. Samples containing asbestos are not dried and ground.	Yes		AD	Yes
TM30	Determination of Trace Metals by ICP-OES (Inductively Coupled Plasma – Optical Emission Spectrometry): WATERS by Modified USEPA Method 200.7, Rev. 4.4, 1994; Modified EPA Method 6010B, Rev.2, Dec 1996; Modified BS EN ISO 11885:2009: SOILS by Modified USEP 6010B, Rev.2, Dec.1996; Modified EPA Method 3050B, Rev.2, Dec.1996	PM17	Modified method BS EN12457-2:2002 As received solid samples are leached with water in a 10:1 water to soil ratio for 24 hours, the moisture content of the sample is included in the ratio.	Yes		AR	Yes
TM36	Modified US EPA method 8015B v2:1996. Determination of Gasoline Range Organics (GRO) in the carbon chain range of C4-12 by headspace GC-FID. MTBE by GC/FID co-elutes with 3-methylpentane if present and therefore can give a false positive. Positive MTBE results will be re-run using GC-MS to double check, when requested.	PM12	Modified US EPA method 5021A v2:2014. Preparation of solid and liquid samples for GC headspace analysis.			AR	Yes
TM36	Modified US EPA method 8015B v2:1996. Determination of Gasoline Range Organics (GRO) in the carbon chain range of C4-12 by headspace GC-FID. MTBE by GC/FID co-elutes with 3-methylpentane if present and therefore can give a false positive. Positive MTBE results will be re-run using GC-MS to double check, when requested.	PM12	Modified US EPA method 5021A v2:2014. Preparation of solid and liquid samples for GC headspace analysis.	Yes		AR	Yes
TM38	Soluble Ion analysis using Discrete Analyser. Modified US EPA methods: Chloride 325.2 (1978), Sulphate 375.4 (Rev.2 1993), o-Phosphate 365.2 (Rev.2 1993), TON 353.1 (Rev.2 1993), Nitrite 354.1 (1971), Hex Cr 7196A (1992), NH4+ 350.1 (Rev.2 1993) – All anions comparable to BS ISO 15923-1: 2013I	PM0	No preparation is required.	Yes		AR	Yes
TM38	Soluble Ion analysis using Discrete Analyser. Modified US EPA methods: Chloride 325.2 (1978), Sulphate 375.4 (Rev.2 1993), o-Phosphate 365.2 (Rev.2 1993), TON 353.1 (Rev.2 1993), Nitrite 354.1 (1971), Hex Cr 7196A (1992), NH4+ 350.1 (Rev.2 1993) – All anions comparable to BS ISO 15923-1: 2013I	PM20	Extraction of dried and ground or as received samples with deionised water in a 2:1 water to solid ratio using a reciprocal shaker for all analytes except hexavalent chromium. Extraction of as received sample using 10:1 ratio of 0.2M sodium hydroxide to soil for hexavalent chromium using a reciprocal shaker.	Yes		AD	Yes
TM38	Soluble Ion analysis using Discrete Analyser. Modified US EPA methods: Chloride 325.2 (1978), Sulphate 375.4 (Rev.2 1993), o-Phosphate 365.2 (Rev.2 1993), TON 353.1 (Rev.2 1993), Nitrite 354.1 (1971), Hex Cr 7196A (1992), NH4+ 350.1 (Rev.2 1993) – All anions comparable to BS ISO 15923-1: 2013I	PM20	Extraction of dried and ground or as received samples with deionised water in a 2:1 water to solid ratio using a reciprocal shaker for all analytes except hexavalent chromium. Extraction of as received sample using 10:1 ratio of 0.2M sodium hydroxide to soil for hexavalent chromium using a reciprocal shaker.	Yes		AR	Yes
TM60	TC/TOC analysis of Waters by High Temperature Combustion followed by NDIR detection. Based on the following modified standard methods: USEPA 9060A (2002), APHA SMEWW 5310B:1999 22nd Edition, ASTM D 7573, and USEPA 415.1.	PM0	No preparation is required.			AR	Yes

EMT Job No: 23/1129

Test Method No.	Description	Prep Method No. (if appropriate)	Description	ISO 17025 (UKAS/ANAS)	MCERTS (UK soils only)	Analysis done on As Received (AR) or Dried (AD)	Reported on dry weight basis
TM61	Determination of Mercury by Cold Vapour Atomic Fluorescence - WATERS: Modified USEPA Method 245.7, Rev 2, Feb 2005. SOILS: Modified USEPA Method 7471B, Rev.2, Feb 2007	PM0	No preparation is required.	Yes		AR	Yes
TM65	Asbestos Bulk Identification method based on HSG 248 Second edition (2021)	PM42	Modified SCA Blue Book V.12 draft 2017 and WM3 1st Edition v1.1:2018. Solid samples undergo a thorough visual inspection for asbestos fibres prior to asbestos identification using TM065.	Yes		AR	
TM73	Modified US EPA methods 150.1 (1982) and 9045D Rev. 4 - 2004) and BS1377-3:1990. Determination of pH by Metrohm automated probe analyser.	PM0	No preparation is required.			AR	Yes
TM73	Modified US EPA methods 150.1 (1982) and 9045D Rev. 4 - 2004) and BS1377-3:1990. Determination of pH by Metrohm automated probe analyser.	PM11	Extraction of as received solid samples using one part solid to 2.5 parts deionised water.	Yes		AR	No
TM173	Analysis of fluoride by ISE (Ion Selective Electrode) using modified ISE method 9214 - 340.2 (EPA 1998)	PM0	No preparation is required.			AR	Yes
NONE	No Method Code	NONE	No Method Code			AD	Yes
NONE	No Method Code	PM17	Modified method BS EN12457-2:2002 As received solid samples are leached with water in a 10:1 water to soil ratio for 24 hours, the moisture content of the sample is included in the ratio.			AR	
NONE	No Method Code	PM4	Gravimetric measurement of Natural Moisture Content and % Moisture Content at either 35°C or 105°C. Calculation based on ISO 11465:1993(E) and BS1377-2:1990.			AR	

APPENDIX 4 – HazWasteOnLine™ Report



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Waste Classification Report

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

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



G9746-6HDGV-NE4VP

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

Job name

ATU Regional Sports Hub

Description/Comments

Project

12087-07-22

Site

ATU Letterkenny

Classified by

Name: **Barry Sexton**
Date: **14 Mar 2023 07:32 GMT**
Telephone: **353 (01) 601 5175 / 5176**
Company: **Ground Investigations Ireland Ltd**
Catherinstown House, Hazelhatch Road,
Newcastle, Co. Dublin.

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

HazWasteOnline™ Certification:

CERTIFIED

Course

Hazardous Waste Classification
Most recent 3 year Refresher

Date

10 Apr 2019
19 Apr 2022

Next 3 year Refresher due by Apr 2025

Purpose of classification

7 - Disposal of Waste

Address of the waste

Letterkenny ATU

Post Code **N/A**

Description of industry/producer giving rise to the waste

University Development

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

Construction

Description of the waste

Soil and Stone

Job summary

#	Sample name	Depth [m]	Classification Result	Hazard properties	Page
1	TP01-19/01/2023-0.50m		Non Hazardous		3
2	TP01-19/01/2023-2.00m		Non Hazardous		5
3	TP02-19/01/2023-0.50m		Non Hazardous		7
4	TP02-19/01/2023-1.35m		Non Hazardous		9
5	TP03-19/01/2023-0.50m		Non Hazardous		11
6	TP03-19/01/2023-1.80m		Non Hazardous		13
7	TP04-19/01/2023-0.50m		Non Hazardous		15
8	TP04-19/01/2023-1.30m		Non Hazardous		17
9	TP05-19/01/2023-0.50m		Non Hazardous		19
10	TP05-19/01/2023-2.00m		Non Hazardous		21

Related documents

#	Name	Description
1	ATU Regional Sports Hub.HWOL	Element .hwol file used to populate the Job
2	Example waste stream template for contaminated soils	waste stream template used to create this Job

Report

Created by: Barry Sexton

Created date: 14 Mar 2023 07:32 GMT

Appendices	Page
Appendix A: Classifier defined and non EU CLP determinands	23
Appendix B: Rationale for selection of metal species	24
Appendix C: Version	25

Classification of sample: TP01-19/01/2023-0.50m

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

Sample details

Sample name:	LoW Code:
TP01-19/01/2023-0.50m	Chapter:
Moisture content:	17: Construction and Demolition Wastes (including excavated soil from contaminated sites)
17.3% (wet weight correction)	Entry:
	17 05 04 (Soil and stones other than those mentioned in 17 05 03)

Hazard properties

None identified

Determinands

Moisture content: 17.3% Wet Weight Moisture Correction applied (MC)

#	Determinand			CLP Note	User entered data	Conv. Factor	Compound conc.		Classification value	MC Applied	Conc. Not Used
	EU CLP index number	EC Number	CAS Number								
1	antimony { antimony trioxide }				2 mg/kg	1.197	1.98	mg/kg	0.000198 %	✓	
	051-005-00-X	215-175-0	1309-64-4								
2	arsenic { arsenic trioxide }				8.4 mg/kg	1.32	9.172	mg/kg	0.000917 %	✓	
	033-003-00-0	215-481-4	1327-53-3								
3	cadmium { cadmium oxide }				<0.1 mg/kg	1.142	<0.114	mg/kg	<0.0000114 %		<LOD
	048-002-00-0	215-146-2	1306-19-0								
4	chromium in chromium(III) compounds { chromium(III) oxide (worst case) }				25.4 mg/kg	1.462	30.701	mg/kg	0.00307 %	✓	
		215-160-9	1308-38-9								
5	chromium in chromium(VI) compounds { chromium (VI) compounds, with the exception of barium chromate and of compounds specified elsewhere in this Annex }				<0.3 mg/kg	2.27	<0.681	mg/kg	<0.0000681 %		<LOD
	024-017-00-8										
6	copper { dicopper oxide; copper (I) oxide }				26 mg/kg	1.126	24.209	mg/kg	0.00242 %	✓	
	029-002-00-X	215-270-7	1317-39-1								
7	lead { lead chromate }			1	17 mg/kg	1.56	21.929	mg/kg	0.00141 %	✓	
	082-004-00-2	231-846-0	7758-97-6								
8	mercury { mercury dichloride }				<0.1 mg/kg	1.353	<0.135	mg/kg	<0.0000135 %		<LOD
	080-010-00-X	231-299-8	7487-94-7								
9	molybdenum { molybdenum(VI) oxide }				0.9 mg/kg	1.5	1.117	mg/kg	0.000112 %	✓	
	042-001-00-9	215-204-7	1313-27-5								
10	nickel { nickel chromate }				24.7 mg/kg	2.976	60.796	mg/kg	0.00608 %	✓	
	028-035-00-7	238-766-5	14721-18-7								
11	selenium { nickel selenate }				1 mg/kg	2.554	2.112	mg/kg	0.000211 %	✓	
	028-031-00-5	239-125-2	15060-62-5								
12	zinc { zinc chromate }				79 mg/kg	2.774	181.243	mg/kg	0.0181 %	✓	
	024-007-00-3	236-878-9	13530-65-9								
13	TPH (C6 to C40) petroleum group				<52 mg/kg		<52	mg/kg	<0.0052 %		<LOD
			TPH								
14	tert-butyl methyl ether; MTBE; 2-methoxy-2-methylpropane				<0.005 mg/kg		<0.005	mg/kg	<0.0000005 %		<LOD
	603-181-00-X	216-653-1	1634-04-4								
15	benzene				<0.005 mg/kg		<0.005	mg/kg	<0.0000005 %		<LOD
	601-020-00-8	200-753-7	71-43-2								
16	toluene				<0.005 mg/kg		<0.005	mg/kg	<0.0000005 %		<LOD
	601-021-00-3	203-625-9	108-88-3								




#	Determinand			CLP Note	User entered data	Conv. Factor	Compound conc.		Classification value	MC Applied	Conc. Not Used
	EU CLP index number	EC Number	CAS Number								
17	ethylbenzene 601-023-00-4	202-849-4	100-41-4		<0.005 mg/kg		<0.005 mg/kg	<0.0000005 %			<LOD
18	xylene 601-022-00-9	202-422-2 [1] 203-396-5 [2] 203-576-3 [3] 215-535-7 [4]	95-47-6 [1] 106-42-3 [2] 108-38-3 [3] 1330-20-7 [4]		<0.01 mg/kg		<0.01 mg/kg	<0.000001 %			<LOD
19	pH		PH		6.94 pH		6.94 pH	6.94 pH			
20	naphthalene 601-052-00-2	202-049-5	91-20-3		<0.04 mg/kg		<0.04 mg/kg	<0.000004 %			<LOD
21	acenaphthylene 205-917-1		208-96-8		<0.03 mg/kg		<0.03 mg/kg	<0.000003 %			<LOD
22	acenaphthene 201-469-6		83-32-9		<0.05 mg/kg		<0.05 mg/kg	<0.000005 %			<LOD
23	fluorene 201-695-5		86-73-7		<0.04 mg/kg		<0.04 mg/kg	<0.000004 %			<LOD
24	phenanthrene 201-581-5		85-01-8		<0.03 mg/kg		<0.03 mg/kg	<0.000003 %			<LOD
25	anthracene 204-371-1		120-12-7		<0.04 mg/kg		<0.04 mg/kg	<0.000004 %			<LOD
26	fluoranthene 205-912-4		206-44-0		<0.03 mg/kg		<0.03 mg/kg	<0.000003 %			<LOD
27	pyrene 204-927-3		129-00-0		<0.03 mg/kg		<0.03 mg/kg	<0.000003 %			<LOD
28	benzo[a]anthracene 601-033-00-9	200-280-6	56-55-3		<0.06 mg/kg		<0.06 mg/kg	<0.000006 %			<LOD
29	chrysene 601-048-00-0	205-923-4	218-01-9		<0.02 mg/kg		<0.02 mg/kg	<0.000002 %			<LOD
30	benzo[b]fluoranthene 601-034-00-4	205-911-9	205-99-2		<0.05 mg/kg		<0.05 mg/kg	<0.000005 %			<LOD
31	benzo[k]fluoranthene 601-036-00-5	205-916-6	207-08-9		<0.02 mg/kg		<0.02 mg/kg	<0.000002 %			<LOD
32	benzo[a]pyrene; benzo[def]chrysene 601-032-00-3	200-028-5	50-32-8		<0.04 mg/kg		<0.04 mg/kg	<0.000004 %			<LOD
33	indeno[123-cd]pyrene 205-893-2		193-39-5		<0.04 mg/kg		<0.04 mg/kg	<0.000004 %			<LOD
34	dibenz[a,h]anthracene 601-041-00-2	200-181-8	53-70-3		<0.04 mg/kg		<0.04 mg/kg	<0.000004 %			<LOD
35	benzo[ghi]perylene 205-883-8		191-24-2		<0.04 mg/kg		<0.04 mg/kg	<0.000004 %			<LOD
36	polychlorobiphenyls; PCB 602-039-00-4	215-648-1	1336-36-3		<0.035 mg/kg		<0.035 mg/kg	<0.0000035 %			<LOD
37	barium { barium oxide } 215-127-9		1304-28-5		90 mg/kg	1.117	83.102 mg/kg	0.00831 %		✓	
38	coronene 205-881-7		191-07-1		<0.04 mg/kg		<0.04 mg/kg	<0.000004 %			<LOD
39	benzo[j]fluoranthene 601-035-00-X	205-910-3	205-82-3		<1 mg/kg		<1 mg/kg	<0.0001 %			<LOD
Total:									0.0463 %		

Key

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

Classification of sample: TP01-19/01/2023-2.00m

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

Sample details

Sample name:	LoW Code:
TP01-19/01/2023-2.00m	Chapter:
Moisture content:	17: Construction and Demolition Wastes (including excavated soil from contaminated sites)
13.5% (wet weight correction)	Entry:
	17 05 04 (Soil and stones other than those mentioned in 17 05 03)

Hazard properties

None identified

Determinands

Moisture content: 13.5% Wet Weight Moisture Correction applied (MC)

#	Determinand			CLP Note	User entered data	Conv. Factor	Compound conc.		Classification value	MC Applied	Conc. Not Used
	EU CLP index number	EC Number	CAS Number								
1	antimony { antimony trioxide }				<1 mg/kg	1.197	<1.197	mg/kg	<0.00012 %		<LOD
	051-005-00-X	215-175-0	1309-64-4								
2	arsenic { arsenic trioxide }				6.2 mg/kg	1.32	7.081	mg/kg	0.000708 %	✓	
	033-003-00-0	215-481-4	1327-53-3								
3	cadmium { cadmium oxide }				<0.1 mg/kg	1.142	<0.114	mg/kg	<0.0000114 %		<LOD
	048-002-00-0	215-146-2	1306-19-0								
4	chromium in chromium(III) compounds { chromium(III) oxide (worst case) }				36.4 mg/kg	1.462	46.019	mg/kg	0.0046 %	✓	
		215-160-9	1308-38-9								
5	chromium in chromium(VI) compounds { chromium (VI) compounds, with the exception of barium chromate and of compounds specified elsewhere in this Annex }				<0.3 mg/kg	2.27	<0.681	mg/kg	<0.0000681 %		<LOD
	024-017-00-8										
6	copper { dicopper oxide; copper (I) oxide }				31 mg/kg	1.126	30.191	mg/kg	0.00302 %	✓	
	029-002-00-X	215-270-7	1317-39-1								
7	lead { lead chromate }			1	15 mg/kg	1.56	20.239	mg/kg	0.0013 %	✓	
	082-004-00-2	231-846-0	7758-97-6								
8	mercury { mercury dichloride }				<0.1 mg/kg	1.353	<0.135	mg/kg	<0.0000135 %		<LOD
	080-010-00-X	231-299-8	7487-94-7								
9	molybdenum { molybdenum(VI) oxide }				1.2 mg/kg	1.5	1.557	mg/kg	0.000156 %	✓	
	042-001-00-9	215-204-7	1313-27-5								
10	nickel { nickel chromate }				26.8 mg/kg	2.976	68.996	mg/kg	0.0069 %	✓	
	028-035-00-7	238-766-5	14721-18-7								
11	selenium { nickel selenate }				<1 mg/kg	2.554	<2.554	mg/kg	<0.000255 %		<LOD
	028-031-00-5	239-125-2	15060-62-5								
12	zinc { zinc chromate }				82 mg/kg	2.774	196.77	mg/kg	0.0197 %	✓	
	024-007-00-3	236-878-9	13530-65-9								
13	TPH (C6 to C40) petroleum group				<52 mg/kg		<52	mg/kg	<0.0052 %		<LOD
			TPH								
14	tert-butyl methyl ether; MTBE; 2-methoxy-2-methylpropane				<0.005 mg/kg		<0.005	mg/kg	<0.0000005 %		<LOD
	603-181-00-X	216-653-1	1634-04-4								
15	benzene				<0.005 mg/kg		<0.005	mg/kg	<0.0000005 %		<LOD
	601-020-00-8	200-753-7	71-43-2								
16	toluene				<0.005 mg/kg		<0.005	mg/kg	<0.0000005 %		<LOD
	601-021-00-3	203-625-9	108-88-3								




#	Determinand			CLP Note	User entered data	Conv. Factor	Compound conc.		Classification value	MC Applied	Conc. Not Used
	EU CLP index number	EC Number	CAS Number								
17	ethylbenzene 601-023-00-4	202-849-4	100-41-4		<0.005 mg/kg		<0.005 mg/kg	<0.0000005 %			<LOD
18	xylene 601-022-00-9	202-422-2 [1] 203-396-5 [2] 203-576-3 [3] 215-535-7 [4]	95-47-6 [1] 106-42-3 [2] 108-38-3 [3] 1330-20-7 [4]		<0.01 mg/kg		<0.01 mg/kg	<0.000001 %			<LOD
19	pH		PH		6.01 pH		6.01 pH	6.01 pH			
20	naphthalene 601-052-00-2	202-049-5	91-20-3		<0.04 mg/kg		<0.04 mg/kg	<0.000004 %			<LOD
21	acenaphthylene 205-917-1		208-96-8		<0.03 mg/kg		<0.03 mg/kg	<0.000003 %			<LOD
22	acenaphthene 201-469-6		83-32-9		<0.05 mg/kg		<0.05 mg/kg	<0.000005 %			<LOD
23	fluorene 201-695-5		86-73-7		<0.04 mg/kg		<0.04 mg/kg	<0.000004 %			<LOD
24	phenanthrene 201-581-5		85-01-8		<0.03 mg/kg		<0.03 mg/kg	<0.000003 %			<LOD
25	anthracene 204-371-1		120-12-7		<0.04 mg/kg		<0.04 mg/kg	<0.000004 %			<LOD
26	fluoranthene 205-912-4		206-44-0		<0.03 mg/kg		<0.03 mg/kg	<0.000003 %			<LOD
27	pyrene 204-927-3		129-00-0		<0.03 mg/kg		<0.03 mg/kg	<0.000003 %			<LOD
28	benzo[a]anthracene 601-033-00-9	200-280-6	56-55-3		<0.06 mg/kg		<0.06 mg/kg	<0.000006 %			<LOD
29	chrysene 601-048-00-0	205-923-4	218-01-9		<0.02 mg/kg		<0.02 mg/kg	<0.000002 %			<LOD
30	benzo[b]fluoranthene 601-034-00-4	205-911-9	205-99-2		<0.05 mg/kg		<0.05 mg/kg	<0.000005 %			<LOD
31	benzo[k]fluoranthene 601-036-00-5	205-916-6	207-08-9		<0.02 mg/kg		<0.02 mg/kg	<0.000002 %			<LOD
32	benzo[a]pyrene; benzo[def]chrysene 601-032-00-3	200-028-5	50-32-8		<0.04 mg/kg		<0.04 mg/kg	<0.000004 %			<LOD
33	indeno[123-cd]pyrene 205-893-2		193-39-5		<0.04 mg/kg		<0.04 mg/kg	<0.000004 %			<LOD
34	dibenz[a,h]anthracene 601-041-00-2	200-181-8	53-70-3		<0.04 mg/kg		<0.04 mg/kg	<0.000004 %			<LOD
35	benzo[ghi]perylene 205-883-8		191-24-2		<0.04 mg/kg		<0.04 mg/kg	<0.000004 %			<LOD
36	polychlorobiphenyls; PCB 602-039-00-4	215-648-1	1336-36-3		<0.035 mg/kg		<0.035 mg/kg	<0.0000035 %			<LOD
37	barium { barium oxide } 215-127-9		1304-28-5		117 mg/kg	1.117	112.996 mg/kg	0.0113 %		✓	
38	coronene 205-881-7		191-07-1		<0.04 mg/kg		<0.04 mg/kg	<0.000004 %			<LOD
39	benzo[j]fluoranthene 601-035-00-X	205-910-3	205-82-3		<1 mg/kg		<1 mg/kg	<0.0001 %			<LOD
Total:									0.0535 %		

Key

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

Classification of sample: TP02-19/01/2023-0.50m

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

Sample details

















Sample name:	LoW Code:
TP02-19/01/2023-0.50m	Chapter:
Moisture content:	17: Construction and Demolition Wastes (including excavated soil from contaminated sites)
20.1% (wet weight correction)	Entry:
	17 05 04 (Soil and stones other than those mentioned in 17 05 03)

Hazard properties

None identified

Determinands

Moisture content: 20.1% Wet Weight Moisture Correction applied (MC)

#	Determinand			CLP Note	User entered data	Conv. Factor	Compound conc.		Classification value	MC Applied	Conc. Not Used
	EU CLP index number	EC Number	CAS Number								
1	 antimony { antimony trioxide }				2 mg/kg	1.197	1.913	mg/kg	0.000191 %	✓	
	051-005-00-X	215-175-0	1309-64-4								
2	 arsenic { arsenic trioxide }				15.2 mg/kg	1.32	16.035	mg/kg	0.0016 %	✓	
	033-003-00-0	215-481-4	1327-53-3								
3	 cadmium { cadmium oxide }				<0.1 mg/kg	1.142	<0.114	mg/kg	<0.0000114 %		<LOD
	048-002-00-0	215-146-2	1306-19-0								
4	 chromium in chromium(III) compounds { chromium(III) oxide (worst case) }				131.6 mg/kg	1.462	153.68	mg/kg	0.0154 %	✓	
		215-160-9	1308-38-9								
5	 chromium in chromium(VI) compounds { chromium (VI) compounds, with the exception of barium chromate and of compounds specified elsewhere in this Annex }				<0.3 mg/kg	2.27	<0.681	mg/kg	<0.0000681 %		<LOD
	024-017-00-8										
6	 copper { dicopper oxide; copper (I) oxide }				38 mg/kg	1.126	34.184	mg/kg	0.00342 %	✓	
	029-002-00-X	215-270-7	1317-39-1								
7	 lead { lead chromate }			1	21 mg/kg	1.56	26.172	mg/kg	0.00168 %	✓	
	082-004-00-2	231-846-0	7758-97-6								
8	 mercury { mercury dichloride }				<0.1 mg/kg	1.353	<0.135	mg/kg	<0.0000135 %		<LOD
	080-010-00-X	231-299-8	7487-94-7								
9	 molybdenum { molybdenum(VI) oxide }				4 mg/kg	1.5	4.795	mg/kg	0.000479 %	✓	
	042-001-00-9	215-204-7	1313-27-5								
10	 nickel { nickel chromate }				38 mg/kg	2.976	90.365	mg/kg	0.00904 %	✓	
	028-035-00-7	238-766-5	14721-18-7								
11	 selenium { nickel selenate }				2 mg/kg	2.554	4.081	mg/kg	0.000408 %	✓	
	028-031-00-5	239-125-2	15060-62-5								
12	 zinc { zinc chromate }				63 mg/kg	2.774	139.642	mg/kg	0.014 %	✓	
	024-007-00-3	236-878-9	13530-65-9								
13	 TPH (C6 to C40) petroleum group				<52 mg/kg		<52	mg/kg	<0.0052 %		<LOD
			TPH								
14	 tert-butyl methyl ether; MTBE; 2-methoxy-2-methylpropane				<0.005 mg/kg		<0.005	mg/kg	<0.0000005 %		<LOD
	603-181-00-X	216-653-1	1634-04-4								
15	 benzene				<0.005 mg/kg		<0.005	mg/kg	<0.0000005 %		<LOD
	601-020-00-8	200-753-7	71-43-2								
16	 toluene				<0.005 mg/kg		<0.005	mg/kg	<0.0000005 %		<LOD
	601-021-00-3	203-625-9	108-88-3								



#	Determinand			CLP Note	User entered data	Conv. Factor	Compound conc.		Classification value	MC Applied	Conc. Not Used
	EU CLP index number	EC Number	CAS Number								
17	ethylbenzene 601-023-00-4	202-849-4	100-41-4		<0.005 mg/kg		<0.005 mg/kg	<0.0000005 %			<LOD
18	xylene 601-022-00-9	202-422-2 [1] 203-396-5 [2] 203-576-3 [3] 215-535-7 [4]	95-47-6 [1] 106-42-3 [2] 108-38-3 [3] 1330-20-7 [4]		<0.01 mg/kg		<0.01 mg/kg	<0.000001 %			<LOD
19	pH		PH		6.08 pH		6.08 pH	6.08 pH			
20	naphthalene 601-052-00-2	202-049-5	91-20-3		<0.04 mg/kg		<0.04 mg/kg	<0.000004 %			<LOD
21	acenaphthylene 205-917-1		208-96-8		<0.03 mg/kg		<0.03 mg/kg	<0.000003 %			<LOD
22	acenaphthene 201-469-6		83-32-9		<0.05 mg/kg		<0.05 mg/kg	<0.000005 %			<LOD
23	fluorene 201-695-5		86-73-7		<0.04 mg/kg		<0.04 mg/kg	<0.000004 %			<LOD
24	phenanthrene 201-581-5		85-01-8		<0.03 mg/kg		<0.03 mg/kg	<0.000003 %			<LOD
25	anthracene 204-371-1		120-12-7		<0.04 mg/kg		<0.04 mg/kg	<0.000004 %			<LOD
26	fluoranthene 205-912-4		206-44-0		<0.03 mg/kg		<0.03 mg/kg	<0.000003 %			<LOD
27	pyrene 204-927-3		129-00-0		<0.03 mg/kg		<0.03 mg/kg	<0.000003 %			<LOD
28	benzo[a]anthracene 601-033-00-9	200-280-6	56-55-3		<0.06 mg/kg		<0.06 mg/kg	<0.000006 %			<LOD
29	chrysene 601-048-00-0	205-923-4	218-01-9		<0.02 mg/kg		<0.02 mg/kg	<0.000002 %			<LOD
30	benzo[b]fluoranthene 601-034-00-4	205-911-9	205-99-2		<0.05 mg/kg		<0.05 mg/kg	<0.000005 %			<LOD
31	benzo[k]fluoranthene 601-036-00-5	205-916-6	207-08-9		<0.02 mg/kg		<0.02 mg/kg	<0.000002 %			<LOD
32	benzo[a]pyrene; benzo[def]chrysene 601-032-00-3	200-028-5	50-32-8		<0.04 mg/kg		<0.04 mg/kg	<0.000004 %			<LOD
33	indeno[123-cd]pyrene 205-893-2		193-39-5		<0.04 mg/kg		<0.04 mg/kg	<0.000004 %			<LOD
34	dibenz[a,h]anthracene 601-041-00-2	200-181-8	53-70-3		<0.04 mg/kg		<0.04 mg/kg	<0.000004 %			<LOD
35	benzo[ghi]perylene 205-883-8		191-24-2		<0.04 mg/kg		<0.04 mg/kg	<0.000004 %			<LOD
36	polychlorobiphenyls; PCB 602-039-00-4	215-648-1	1336-36-3		<0.035 mg/kg		<0.035 mg/kg	<0.0000035 %			<LOD
37	barium { barium oxide } 215-127-9		1304-28-5		71 mg/kg	1.117	63.338 mg/kg	0.00633 %		✓	
38	coronene 205-881-7		191-07-1		<0.04 mg/kg		<0.04 mg/kg	<0.000004 %			<LOD
39	benzo[j]fluoranthene 601-035-00-X	205-910-3	205-82-3		<1 mg/kg		<1 mg/kg	<0.0001 %			<LOD
Total:									0.0579 %		

Key

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

Classification of sample: TP02-19/01/2023-1.35m

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

Sample details

Sample name:	LoW Code:
TP02-19/01/2023-1.35m	Chapter:
Moisture content:	17: Construction and Demolition Wastes (including excavated soil from contaminated sites)
12.1% (wet weight correction)	Entry:
	17 05 04 (Soil and stones other than those mentioned in 17 05 03)

Hazard properties

None identified

Determinands

Moisture content: 12.1% Wet Weight Moisture Correction applied (MC)

#	Determinand			CLP Note	User entered data	Conv. Factor	Compound conc.		Classification value	MC Applied	Conc. Not Used
	EU CLP index number	EC Number	CAS Number								
1	antimony { antimony trioxide }				1 mg/kg	1.197	1.052	mg/kg	0.000105 %	✓	
	051-005-00-X	215-175-0	1309-64-4								
2	arsenic { arsenic trioxide }				9.7 mg/kg	1.32	11.257	mg/kg	0.00113 %	✓	
	033-003-00-0	215-481-4	1327-53-3								
3	cadmium { cadmium oxide }				<0.1 mg/kg	1.142	<0.114	mg/kg	<0.0000114 %		<LOD
	048-002-00-0	215-146-2	1306-19-0								
4	chromium in chromium(III) compounds { chromium(III) oxide (worst case) }				26.3 mg/kg	1.462	33.788	mg/kg	0.00338 %	✓	
		215-160-9	1308-38-9								
5	chromium in chromium(VI) compounds { chromium (VI) compounds, with the exception of barium chromate and of compounds specified elsewhere in this Annex }				<0.3 mg/kg	2.27	<0.681	mg/kg	<0.0000681 %		<LOD
	024-017-00-8										
6	copper { dicopper oxide; copper (I) oxide }				46 mg/kg	1.126	45.524	mg/kg	0.00455 %	✓	
	029-002-00-X	215-270-7	1317-39-1								
7	lead { lead chromate }			1	30 mg/kg	1.56	41.132	mg/kg	0.00264 %	✓	
	082-004-00-2	231-846-0	7758-97-6								
8	mercury { mercury dichloride }				<0.1 mg/kg	1.353	<0.135	mg/kg	<0.0000135 %		<LOD
	080-010-00-X	231-299-8	7487-94-7								
9	molybdenum { molybdenum(VI) oxide }				0.8 mg/kg	1.5	1.055	mg/kg	0.000105 %	✓	
	042-001-00-9	215-204-7	1313-27-5								
10	nickel { nickel chromate }				58.6 mg/kg	2.976	153.306	mg/kg	0.0153 %	✓	
	028-035-00-7	238-766-5	14721-18-7								
11	selenium { nickel selenate }				<1 mg/kg	2.554	<2.554	mg/kg	<0.000255 %		<LOD
	028-031-00-5	239-125-2	15060-62-5								
12	zinc { zinc chromate }				86 mg/kg	2.774	209.709	mg/kg	0.021 %	✓	
	024-007-00-3	236-878-9	13530-65-9								
13	TPH (C6 to C40) petroleum group				<52 mg/kg		<52	mg/kg	<0.0052 %		<LOD
			TPH								
14	tert-butyl methyl ether; MTBE; 2-methoxy-2-methylpropane				<0.005 mg/kg		<0.005	mg/kg	<0.0000005 %		<LOD
	603-181-00-X	216-653-1	1634-04-4								
15	benzene				<0.005 mg/kg		<0.005	mg/kg	<0.0000005 %		<LOD
	601-020-00-8	200-753-7	71-43-2								
16	toluene				<0.005 mg/kg		<0.005	mg/kg	<0.0000005 %		<LOD
	601-021-00-3	203-625-9	108-88-3								



#	Determinand			CLP Note	User entered data	Conv. Factor	Compound conc.		Classification value	MC Applied	Conc. Not Used
	EU CLP index number	EC Number	CAS Number								
17	ethylbenzene 601-023-00-4	202-849-4	100-41-4		<0.005 mg/kg		<0.005 mg/kg	<0.0000005 %			<LOD
18	xylene 601-022-00-9	202-422-2 [1] 203-396-5 [2] 203-576-3 [3] 215-535-7 [4]	95-47-6 [1] 106-42-3 [2] 108-38-3 [3] 1330-20-7 [4]		<0.01 mg/kg		<0.01 mg/kg	<0.000001 %			<LOD
19	pH		PH		6.93 pH		6.93 pH	6.93 pH			
20	naphthalene 601-052-00-2	202-049-5	91-20-3		<0.04 mg/kg		<0.04 mg/kg	<0.000004 %			<LOD
21	acenaphthylene 205-917-1		208-96-8		<0.03 mg/kg		<0.03 mg/kg	<0.000003 %			<LOD
22	acenaphthene 201-469-6		83-32-9		<0.05 mg/kg		<0.05 mg/kg	<0.000005 %			<LOD
23	fluorene 201-695-5		86-73-7		<0.04 mg/kg		<0.04 mg/kg	<0.000004 %			<LOD
24	phenanthrene 201-581-5		85-01-8		<0.03 mg/kg		<0.03 mg/kg	<0.000003 %			<LOD
25	anthracene 204-371-1		120-12-7		<0.04 mg/kg		<0.04 mg/kg	<0.000004 %			<LOD
26	fluoranthene 205-912-4		206-44-0		<0.03 mg/kg		<0.03 mg/kg	<0.000003 %			<LOD
27	pyrene 204-927-3		129-00-0		<0.03 mg/kg		<0.03 mg/kg	<0.000003 %			<LOD
28	benzo[a]anthracene 601-033-00-9	200-280-6	56-55-3		<0.06 mg/kg		<0.06 mg/kg	<0.000006 %			<LOD
29	chrysene 601-048-00-0	205-923-4	218-01-9		<0.02 mg/kg		<0.02 mg/kg	<0.000002 %			<LOD
30	benzo[b]fluoranthene 601-034-00-4	205-911-9	205-99-2		<0.05 mg/kg		<0.05 mg/kg	<0.000005 %			<LOD
31	benzo[k]fluoranthene 601-036-00-5	205-916-6	207-08-9		<0.02 mg/kg		<0.02 mg/kg	<0.000002 %			<LOD
32	benzo[a]pyrene; benzo[def]chrysene 601-032-00-3	200-028-5	50-32-8		<0.04 mg/kg		<0.04 mg/kg	<0.000004 %			<LOD
33	indeno[123-cd]pyrene 205-893-2		193-39-5		<0.04 mg/kg		<0.04 mg/kg	<0.000004 %			<LOD
34	dibenz[a,h]anthracene 601-041-00-2	200-181-8	53-70-3		<0.04 mg/kg		<0.04 mg/kg	<0.000004 %			<LOD
35	benzo[ghi]perylene 205-883-8		191-24-2		<0.04 mg/kg		<0.04 mg/kg	<0.000004 %			<LOD
36	polychlorobiphenyls; PCB 602-039-00-4	215-648-1	1336-36-3		<0.035 mg/kg		<0.035 mg/kg	<0.0000035 %			<LOD
37	barium { barium oxide } 215-127-9		1304-28-5		52 mg/kg	1.117	51.033 mg/kg	0.0051 %		✓	
38	coronene 205-881-7		191-07-1		<0.04 mg/kg		<0.04 mg/kg	<0.000004 %			<LOD
39	benzo[j]fluoranthene 601-035-00-X	205-910-3	205-82-3		<1 mg/kg		<1 mg/kg	<0.0001 %			<LOD
Total:									0.059 %		

Key

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

Classification of sample: TP03-19/01/2023-0.50m

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

Sample details

Sample name:	LoW Code:
TP03-19/01/2023-0.50m	Chapter:
Moisture content:	17: Construction and Demolition Wastes (including excavated soil from contaminated sites)
15.2% (wet weight correction)	Entry:
	17 05 04 (Soil and stones other than those mentioned in 17 05 03)

Hazard properties

None identified

Determinands

Moisture content: 15.2% Wet Weight Moisture Correction applied (MC)

#	Determinand			CLP Note	User entered data	Conv. Factor	Compound conc.		Classification value	MC Applied	Conc. Not Used
	EU CLP index number	EC Number	CAS Number								
1	antimony { antimony trioxide }				1 mg/kg	1.197	1.015	mg/kg	0.000102 %	✓	
	051-005-00-X	215-175-0	1309-64-4								
2	arsenic { arsenic trioxide }				4.9 mg/kg	1.32	5.486	mg/kg	0.000549 %	✓	
	033-003-00-0	215-481-4	1327-53-3								
3	cadmium { cadmium oxide }				<0.1 mg/kg	1.142	<0.114	mg/kg	<0.0000114 %		<LOD
	048-002-00-0	215-146-2	1306-19-0								
4	chromium in chromium(III) compounds { chromium(III) oxide (worst case) }				64.5 mg/kg	1.462	79.941	mg/kg	0.00799 %	✓	
		215-160-9	1308-38-9								
5	chromium in chromium(VI) compounds { chromium (VI) compounds, with the exception of barium chromate and of compounds specified elsewhere in this Annex }				<0.3 mg/kg	2.27	<0.681	mg/kg	<0.0000681 %		<LOD
	024-017-00-8										
6	copper { dicopper oxide; copper (I) oxide }				28 mg/kg	1.126	26.733	mg/kg	0.00267 %	✓	
	029-002-00-X	215-270-7	1317-39-1								
7	lead { lead chromate }			1	17 mg/kg	1.56	22.486	mg/kg	0.00144 %	✓	
	082-004-00-2	231-846-0	7758-97-6								
8	mercury { mercury dichloride }				<0.1 mg/kg	1.353	<0.135	mg/kg	<0.0000135 %		<LOD
	080-010-00-X	231-299-8	7487-94-7								
9	molybdenum { molybdenum(VI) oxide }				1.4 mg/kg	1.5	1.781	mg/kg	0.000178 %	✓	
	042-001-00-9	215-204-7	1313-27-5								
10	nickel { nickel chromate }				24.5 mg/kg	2.976	61.835	mg/kg	0.00618 %	✓	
	028-035-00-7	238-766-5	14721-18-7								
11	selenium { nickel selenate }				<1 mg/kg	2.554	<2.554	mg/kg	<0.000255 %		<LOD
	028-031-00-5	239-125-2	15060-62-5								
12	zinc { zinc chromate }				71 mg/kg	2.774	167.026	mg/kg	0.0167 %	✓	
	024-007-00-3	236-878-9	13530-65-9								
13	TPH (C6 to C40) petroleum group				<52 mg/kg		<52	mg/kg	<0.0052 %		<LOD
			TPH								
14	tert-butyl methyl ether; MTBE; 2-methoxy-2-methylpropane				<0.005 mg/kg		<0.005	mg/kg	<0.0000005 %		<LOD
	603-181-00-X	216-653-1	1634-04-4								
15	benzene				<0.005 mg/kg		<0.005	mg/kg	<0.0000005 %		<LOD
	601-020-00-8	200-753-7	71-43-2								
16	toluene				<0.005 mg/kg		<0.005	mg/kg	<0.0000005 %		<LOD
	601-021-00-3	203-625-9	108-88-3								



#	Determinand			CLP Note	User entered data	Conv. Factor	Compound conc.		Classification value	MC Applied	Conc. Not Used
	EU CLP index number	EC Number	CAS Number								
17	ethylbenzene 601-023-00-4	202-849-4	100-41-4		<0.005 mg/kg		<0.005 mg/kg	<0.0000005 %			<LOD
18	xylene 601-022-00-9	202-422-2 [1] 203-396-5 [2] 203-576-3 [3] 215-535-7 [4]	95-47-6 [1] 106-42-3 [2] 108-38-3 [3] 1330-20-7 [4]		<0.01 mg/kg		<0.01 mg/kg	<0.000001 %			<LOD
19	pH		PH		6.72 pH		6.72 pH	6.72 pH			
20	naphthalene 601-052-00-2	202-049-5	91-20-3		<0.04 mg/kg		<0.04 mg/kg	<0.000004 %			<LOD
21	acenaphthylene 205-917-1		208-96-8		<0.03 mg/kg		<0.03 mg/kg	<0.000003 %			<LOD
22	acenaphthene 201-469-6		83-32-9		<0.05 mg/kg		<0.05 mg/kg	<0.000005 %			<LOD
23	fluorene 201-695-5		86-73-7		<0.04 mg/kg		<0.04 mg/kg	<0.000004 %			<LOD
24	phenanthrene 201-581-5		85-01-8		<0.03 mg/kg		<0.03 mg/kg	<0.000003 %			<LOD
25	anthracene 204-371-1		120-12-7		<0.04 mg/kg		<0.04 mg/kg	<0.000004 %			<LOD
26	fluoranthene 205-912-4		206-44-0		<0.03 mg/kg		<0.03 mg/kg	<0.000003 %			<LOD
27	pyrene 204-927-3		129-00-0		<0.03 mg/kg		<0.03 mg/kg	<0.000003 %			<LOD
28	benzo[a]anthracene 601-033-00-9	200-280-6	56-55-3		<0.06 mg/kg		<0.06 mg/kg	<0.000006 %			<LOD
29	chrysene 601-048-00-0	205-923-4	218-01-9		<0.02 mg/kg		<0.02 mg/kg	<0.000002 %			<LOD
30	benzo[b]fluoranthene 601-034-00-4	205-911-9	205-99-2		<0.05 mg/kg		<0.05 mg/kg	<0.000005 %			<LOD
31	benzo[k]fluoranthene 601-036-00-5	205-916-6	207-08-9		<0.02 mg/kg		<0.02 mg/kg	<0.000002 %			<LOD
32	benzo[a]pyrene; benzo[def]chrysene 601-032-00-3	200-028-5	50-32-8		<0.04 mg/kg		<0.04 mg/kg	<0.000004 %			<LOD
33	indeno[123-cd]pyrene 205-893-2		193-39-5		<0.04 mg/kg		<0.04 mg/kg	<0.000004 %			<LOD
34	dibenz[a,h]anthracene 601-041-00-2	200-181-8	53-70-3		<0.04 mg/kg		<0.04 mg/kg	<0.000004 %			<LOD
35	benzo[ghi]perylene 205-883-8		191-24-2		<0.04 mg/kg		<0.04 mg/kg	<0.000004 %			<LOD
36	polychlorobiphenyls; PCB 602-039-00-4	215-648-1	1336-36-3		<0.035 mg/kg		<0.035 mg/kg	<0.0000035 %			<LOD
37	barium { barium oxide } 215-127-9		1304-28-5		71 mg/kg	1.117	67.223 mg/kg	0.00672 %		✓	
38	coronene 205-881-7		191-07-1		<0.04 mg/kg		<0.04 mg/kg	<0.000004 %			<LOD
39	benzo[j]fluoranthene 601-035-00-X	205-910-3	205-82-3		<1 mg/kg		<1 mg/kg	<0.0001 %			<LOD
Total:									0.0483 %		

Key

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

Classification of sample: TP03-19/01/2023-1.80m

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

Sample details

Sample name:	LoW Code:
TP03-19/01/2023-1.80m	Chapter:
Moisture content:	17: Construction and Demolition Wastes (including excavated soil from contaminated sites)
15.1% (wet weight correction)	Entry:
	17 05 04 (Soil and stones other than those mentioned in 17 05 03)

Hazard properties

None identified

Determinands

Moisture content: 15.1% Wet Weight Moisture Correction applied (MC)

#	Determinand			CLP Note	User entered data	Conv. Factor	Compound conc.		Classification value	MC Applied	Conc. Not Used
	EU CLP index number	EC Number	CAS Number								
1	antimony { antimony trioxide }				1 mg/kg	1.197	1.016	mg/kg	0.000102 %	✓	
	051-005-00-X	215-175-0	1309-64-4								
2	arsenic { arsenic trioxide }				6.2 mg/kg	1.32	6.95	mg/kg	0.000695 %	✓	
	033-003-00-0	215-481-4	1327-53-3								
3	cadmium { cadmium oxide }				<0.1 mg/kg	1.142	<0.114	mg/kg	<0.0000114 %		<LOD
	048-002-00-0	215-146-2	1306-19-0								
4	chromium in chromium(III) compounds { chromium(III) oxide (worst case) }				56.4 mg/kg	1.462	69.985	mg/kg	0.007 %	✓	
		215-160-9	1308-38-9								
5	chromium in chromium(VI) compounds { chromium (VI) compounds, with the exception of barium chromate and of compounds specified elsewhere in this Annex }				<0.3 mg/kg	2.27	<0.681	mg/kg	<0.0000681 %		<LOD
	024-017-00-8										
6	copper { dicopper oxide; copper (I) oxide }				30 mg/kg	1.126	28.676	mg/kg	0.00287 %	✓	
	029-002-00-X	215-270-7	1317-39-1								
7	lead { lead chromate }			1	14 mg/kg	1.56	18.54	mg/kg	0.00119 %	✓	
	082-004-00-2	231-846-0	7758-97-6								
8	mercury { mercury dichloride }				<0.1 mg/kg	1.353	<0.135	mg/kg	<0.0000135 %		<LOD
	080-010-00-X	231-299-8	7487-94-7								
9	molybdenum { molybdenum(VI) oxide }				1.2 mg/kg	1.5	1.528	mg/kg	0.000153 %	✓	
	042-001-00-9	215-204-7	1313-27-5								
10	nickel { nickel chromate }				28.8 mg/kg	2.976	72.773	mg/kg	0.00728 %	✓	
	028-035-00-7	238-766-5	14721-18-7								
11	selenium { nickel selenate }				1 mg/kg	2.554	2.168	mg/kg	0.000217 %	✓	
	028-031-00-5	239-125-2	15060-62-5								
12	zinc { zinc chromate }				84 mg/kg	2.774	197.841	mg/kg	0.0198 %	✓	
	024-007-00-3	236-878-9	13530-65-9								
13	TPH (C6 to C40) petroleum group				<52 mg/kg		<52	mg/kg	<0.0052 %		<LOD
			TPH								
14	tert-butyl methyl ether; MTBE; 2-methoxy-2-methylpropane				<0.005 mg/kg		<0.005	mg/kg	<0.0000005 %		<LOD
	603-181-00-X	216-653-1	1634-04-4								
15	benzene				<0.005 mg/kg		<0.005	mg/kg	<0.0000005 %		<LOD
	601-020-00-8	200-753-7	71-43-2								
16	toluene				<0.005 mg/kg		<0.005	mg/kg	<0.0000005 %		<LOD
	601-021-00-3	203-625-9	108-88-3								



#	Determinand			CLP Note	User entered data	Conv. Factor	Compound conc.		Classification value	MC Applied	Conc. Not Used
	EU CLP index number	EC Number	CAS Number								
17	ethylbenzene 601-023-00-4	202-849-4	100-41-4		<0.005 mg/kg		<0.005 mg/kg	<0.0000005 %			<LOD
18	xylene 601-022-00-9	202-422-2 [1] 203-396-5 [2] 203-576-3 [3] 215-535-7 [4]	95-47-6 [1] 106-42-3 [2] 108-38-3 [3] 1330-20-7 [4]		<0.01 mg/kg		<0.01 mg/kg	<0.000001 %			<LOD
19	pH		PH		6.95 pH		6.95 pH	6.95 pH			
20	naphthalene 601-052-00-2	202-049-5	91-20-3		<0.04 mg/kg		<0.04 mg/kg	<0.000004 %			<LOD
21	acenaphthylene 205-917-1		208-96-8		<0.03 mg/kg		<0.03 mg/kg	<0.000003 %			<LOD
22	acenaphthene 201-469-6		83-32-9		<0.05 mg/kg		<0.05 mg/kg	<0.000005 %			<LOD
23	fluorene 201-695-5		86-73-7		<0.04 mg/kg		<0.04 mg/kg	<0.000004 %			<LOD
24	phenanthrene 201-581-5		85-01-8		<0.03 mg/kg		<0.03 mg/kg	<0.000003 %			<LOD
25	anthracene 204-371-1		120-12-7		<0.04 mg/kg		<0.04 mg/kg	<0.000004 %			<LOD
26	fluoranthene 205-912-4		206-44-0		<0.03 mg/kg		<0.03 mg/kg	<0.000003 %			<LOD
27	pyrene 204-927-3		129-00-0		<0.03 mg/kg		<0.03 mg/kg	<0.000003 %			<LOD
28	benzo[a]anthracene 601-033-00-9	200-280-6	56-55-3		<0.06 mg/kg		<0.06 mg/kg	<0.000006 %			<LOD
29	chrysene 601-048-00-0	205-923-4	218-01-9		<0.02 mg/kg		<0.02 mg/kg	<0.000002 %			<LOD
30	benzo[b]fluoranthene 601-034-00-4	205-911-9	205-99-2		<0.05 mg/kg		<0.05 mg/kg	<0.000005 %			<LOD
31	benzo[k]fluoranthene 601-036-00-5	205-916-6	207-08-9		<0.02 mg/kg		<0.02 mg/kg	<0.000002 %			<LOD
32	benzo[a]pyrene; benzo[def]chrysene 601-032-00-3	200-028-5	50-32-8		<0.04 mg/kg		<0.04 mg/kg	<0.000004 %			<LOD
33	indeno[123-cd]pyrene 205-893-2		193-39-5		<0.04 mg/kg		<0.04 mg/kg	<0.000004 %			<LOD
34	dibenz[a,h]anthracene 601-041-00-2	200-181-8	53-70-3		<0.04 mg/kg		<0.04 mg/kg	<0.000004 %			<LOD
35	benzo[ghi]perylene 205-883-8		191-24-2		<0.04 mg/kg		<0.04 mg/kg	<0.000004 %			<LOD
36	polychlorobiphenyls; PCB 602-039-00-4	215-648-1	1336-36-3		<0.035 mg/kg		<0.035 mg/kg	<0.0000035 %			<LOD
37	barium { barium oxide } 215-127-9		1304-28-5		95 mg/kg	1.117	90.052 mg/kg	0.00901 %		✓	
38	coronene 205-881-7		191-07-1		<0.04 mg/kg		<0.04 mg/kg	<0.000004 %			<LOD
39	benzo[j]fluoranthene 601-035-00-X	205-910-3	205-82-3		<1 mg/kg		<1 mg/kg	<0.0001 %			<LOD
Total:									0.0538 %		

Key

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

Classification of sample: TP04-19/01/2023-0.50m

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

Sample details

Sample name:	LoW Code:
TP04-19/01/2023-0.50m	Chapter:
Moisture content:	17: Construction and Demolition Wastes (including excavated soil from contaminated sites)
14.9% (wet weight correction)	Entry:
	17 05 04 (Soil and stones other than those mentioned in 17 05 03)

Hazard properties

None identified

Determinands

Moisture content: 14.9% Wet Weight Moisture Correction applied (MC)

#	Determinand			CLP Note	User entered data	Conv. Factor	Compound conc.		Classification value	MC Applied	Conc. Not Used
	EU CLP index number	EC Number	CAS Number								
1	antimony { antimony trioxide }				2 mg/kg	1.197	2.037	mg/kg	0.000204 %	✓	
	051-005-00-X	215-175-0	1309-64-4								
2	arsenic { arsenic trioxide }				11.9 mg/kg	1.32	13.371	mg/kg	0.00134 %	✓	
	033-003-00-0	215-481-4	1327-53-3								
3	cadmium { cadmium oxide }				<0.1 mg/kg	1.142	<0.114	mg/kg	<0.0000114 %		<LOD
	048-002-00-0	215-146-2	1306-19-0								
4	chromium in chromium(III) compounds { chromium(III) oxide (worst case) }				43 mg/kg	1.462	53.483	mg/kg	0.00535 %	✓	
		215-160-9	1308-38-9								
5	chromium in chromium(VI) compounds { chromium (VI) compounds, with the exception of barium chromate and of compounds specified elsewhere in this Annex }				<0.3 mg/kg	2.27	<0.681	mg/kg	<0.0000681 %		<LOD
	024-017-00-8										
6	copper { dicopper oxide; copper (I) oxide }				27 mg/kg	1.126	25.87	mg/kg	0.00259 %	✓	
	029-002-00-X	215-270-7	1317-39-1								
7	lead { lead chromate }			1	21 mg/kg	1.56	27.875	mg/kg	0.00179 %	✓	
	082-004-00-2	231-846-0	7758-97-6								
8	mercury { mercury dichloride }				<0.1 mg/kg	1.353	<0.135	mg/kg	<0.0000135 %		<LOD
	080-010-00-X	231-299-8	7487-94-7								
9	molybdenum { molybdenum(VI) oxide }				1.5 mg/kg	1.5	1.915	mg/kg	0.000191 %	✓	
	042-001-00-9	215-204-7	1313-27-5								
10	nickel { nickel chromate }				29.1 mg/kg	2.976	73.705	mg/kg	0.00737 %	✓	
	028-035-00-7	238-766-5	14721-18-7								
11	selenium { nickel selenate }				<1 mg/kg	2.554	<2.554	mg/kg	<0.000255 %		<LOD
	028-031-00-5	239-125-2	15060-62-5								
12	zinc { zinc chromate }				86 mg/kg	2.774	203.029	mg/kg	0.0203 %	✓	
	024-007-00-3	236-878-9	13530-65-9								
13	TPH (C6 to C40) petroleum group				<52 mg/kg		<52	mg/kg	<0.0052 %		<LOD
			TPH								
14	tert-butyl methyl ether; MTBE; 2-methoxy-2-methylpropane				<0.005 mg/kg		<0.005	mg/kg	<0.0000005 %		<LOD
	603-181-00-X	216-653-1	1634-04-4								
15	benzene				<0.005 mg/kg		<0.005	mg/kg	<0.0000005 %		<LOD
	601-020-00-8	200-753-7	71-43-2								
16	toluene				<0.005 mg/kg		<0.005	mg/kg	<0.0000005 %		<LOD
	601-021-00-3	203-625-9	108-88-3								



#	Determinand			CLP Note	User entered data	Conv. Factor	Compound conc.		Classification value	MC Applied	Conc. Not Used
	EU CLP index number	EC Number	CAS Number								
17	ethylbenzene 601-023-00-4	202-849-4	100-41-4		<0.005 mg/kg		<0.005 mg/kg	<0.0000005 %			<LOD
18	xylene 601-022-00-9	202-422-2 [1] 203-396-5 [2] 203-576-3 [3] 215-535-7 [4]	95-47-6 [1] 106-42-3 [2] 108-38-3 [3] 1330-20-7 [4]		<0.01 mg/kg		<0.01 mg/kg	<0.000001 %			<LOD
19	pH		PH		6.93 pH		6.93 pH	6.93 pH			
20	naphthalene 601-052-00-2	202-049-5	91-20-3		<0.04 mg/kg		<0.04 mg/kg	<0.000004 %			<LOD
21	acenaphthylene 205-917-1		208-96-8		<0.03 mg/kg		<0.03 mg/kg	<0.000003 %			<LOD
22	acenaphthene 201-469-6		83-32-9		<0.05 mg/kg		<0.05 mg/kg	<0.000005 %			<LOD
23	fluorene 201-695-5		86-73-7		<0.04 mg/kg		<0.04 mg/kg	<0.000004 %			<LOD
24	phenanthrene 201-581-5		85-01-8		<0.03 mg/kg		<0.03 mg/kg	<0.000003 %			<LOD
25	anthracene 204-371-1		120-12-7		<0.04 mg/kg		<0.04 mg/kg	<0.000004 %			<LOD
26	fluoranthene 205-912-4		206-44-0		<0.03 mg/kg		<0.03 mg/kg	<0.000003 %			<LOD
27	pyrene 204-927-3		129-00-0		<0.03 mg/kg		<0.03 mg/kg	<0.000003 %			<LOD
28	benzo[a]anthracene 601-033-00-9	200-280-6	56-55-3		<0.06 mg/kg		<0.06 mg/kg	<0.000006 %			<LOD
29	chrysene 601-048-00-0	205-923-4	218-01-9		<0.02 mg/kg		<0.02 mg/kg	<0.000002 %			<LOD
30	benzo[b]fluoranthene 601-034-00-4	205-911-9	205-99-2		<0.05 mg/kg		<0.05 mg/kg	<0.000005 %			<LOD
31	benzo[k]fluoranthene 601-036-00-5	205-916-6	207-08-9		<0.02 mg/kg		<0.02 mg/kg	<0.000002 %			<LOD
32	benzo[a]pyrene; benzo[def]chrysene 601-032-00-3	200-028-5	50-32-8		<0.04 mg/kg		<0.04 mg/kg	<0.000004 %			<LOD
33	indeno[123-cd]pyrene 205-893-2		193-39-5		<0.04 mg/kg		<0.04 mg/kg	<0.000004 %			<LOD
34	dibenz[a,h]anthracene 601-041-00-2	200-181-8	53-70-3		<0.04 mg/kg		<0.04 mg/kg	<0.000004 %			<LOD
35	benzo[ghi]perylene 205-883-8		191-24-2		<0.04 mg/kg		<0.04 mg/kg	<0.000004 %			<LOD
36	polychlorobiphenyls; PCB 602-039-00-4	215-648-1	1336-36-3		<0.035 mg/kg		<0.035 mg/kg	<0.0000035 %			<LOD
37	barium { barium oxide } 215-127-9		1304-28-5		76 mg/kg	1.117	72.211 mg/kg	0.00722 %		✓	
38	coronene 205-881-7		191-07-1		<0.04 mg/kg		<0.04 mg/kg	<0.000004 %			<LOD
39	benzo[j]fluoranthene 601-035-00-X	205-910-3	205-82-3		<1 mg/kg		<1 mg/kg	<0.0001 %			<LOD
Total:									0.0521 %		

Key

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

Classification of sample: TP04-19/01/2023-1.30m

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

Sample details

Sample name:	LoW Code:
TP04-19/01/2023-1.30m	Chapter:
Moisture content:	17: Construction and Demolition Wastes (including excavated soil from contaminated sites)
12.9% (wet weight correction)	Entry:
	17 05 04 (Soil and stones other than those mentioned in 17 05 03)

Hazard properties

None identified

Determinands

Moisture content: 12.9% Wet Weight Moisture Correction applied (MC)

#	Determinand			CLP Note	User entered data	Conv. Factor	Compound conc.	Classification value	MC Applied	Conc. Not Used
	EU CLP index number	EC Number	CAS Number							
1	antimony { antimony trioxide }				<1 mg/kg	1.197	<1.197 mg/kg	<0.00012 %		<LOD
	051-005-00-X	215-175-0	1309-64-4							
2	arsenic { arsenic trioxide }				10.4 mg/kg	1.32	11.96 mg/kg	0.0012 %	✓	
	033-003-00-0	215-481-4	1327-53-3							
3	cadmium { cadmium oxide }				<0.1 mg/kg	1.142	<0.114 mg/kg	<0.0000114 %		<LOD
	048-002-00-0	215-146-2	1306-19-0							
4	chromium in chromium(III) compounds { chromium(III) oxide (worst case) }				27.5 mg/kg	1.462	35.008 mg/kg	0.0035 %	✓	
		215-160-9	1308-38-9							
5	chromium in chromium(VI) compounds { chromium (VI) compounds, with the exception of barium chromate and of compounds specified elsewhere in this Annex }				<0.3 mg/kg	2.27	<0.681 mg/kg	<0.0000681 %		<LOD
	024-017-00-8									
6	copper { dicopper oxide; copper (I) oxide }				29 mg/kg	1.126	28.439 mg/kg	0.00284 %	✓	
	029-002-00-X	215-270-7	1317-39-1							
7	lead { lead chromate }			1	17 mg/kg	1.56	23.096 mg/kg	0.00148 %	✓	
	082-004-00-2	231-846-0	7758-97-6							
8	mercury { mercury dichloride }				<0.1 mg/kg	1.353	<0.135 mg/kg	<0.0000135 %		<LOD
	080-010-00-X	231-299-8	7487-94-7							
9	molybdenum { molybdenum(VI) oxide }				0.8 mg/kg	1.5	1.045 mg/kg	0.000105 %	✓	
	042-001-00-9	215-204-7	1313-27-5							
10	nickel { nickel chromate }				25.8 mg/kg	2.976	66.882 mg/kg	0.00669 %	✓	
	028-035-00-7	238-766-5	14721-18-7							
11	selenium { nickel selenate }				<1 mg/kg	2.554	<2.554 mg/kg	<0.000255 %		<LOD
	028-031-00-5	239-125-2	15060-62-5							
12	zinc { zinc chromate }				82 mg/kg	2.774	198.135 mg/kg	0.0198 %	✓	
	024-007-00-3	236-878-9	13530-65-9							
13	TPH (C6 to C40) petroleum group				<52 mg/kg		<52 mg/kg	<0.0052 %		<LOD
			TPH							
14	tert-butyl methyl ether; MTBE; 2-methoxy-2-methylpropane				<0.005 mg/kg		<0.005 mg/kg	<0.0000005 %		<LOD
	603-181-00-X	216-653-1	1634-04-4							
15	benzene				<0.005 mg/kg		<0.005 mg/kg	<0.0000005 %		<LOD
	601-020-00-8	200-753-7	71-43-2							
16	toluene				<0.005 mg/kg		<0.005 mg/kg	<0.0000005 %		<LOD
	601-021-00-3	203-625-9	108-88-3							




#	Determinand			CLP Note	User entered data	Conv. Factor	Compound conc.		Classification value	MC Applied	Conc. Not Used
	EU CLP index number	EC Number	CAS Number								
17	ethylbenzene 601-023-00-4	202-849-4	100-41-4		<0.005 mg/kg		<0.005 mg/kg	<0.0000005 %			<LOD
18	xylene 601-022-00-9	202-422-2 [1] 203-396-5 [2] 203-576-3 [3] 215-535-7 [4]	95-47-6 [1] 106-42-3 [2] 108-38-3 [3] 1330-20-7 [4]		<0.01 mg/kg		<0.01 mg/kg	<0.000001 %			<LOD
19	pH		PH		7.15 pH		7.15 pH	7.15 pH			
20	naphthalene 601-052-00-2	202-049-5	91-20-3		<0.04 mg/kg		<0.04 mg/kg	<0.000004 %			<LOD
21	acenaphthylene 205-917-1		208-96-8		<0.03 mg/kg		<0.03 mg/kg	<0.000003 %			<LOD
22	acenaphthene 201-469-6		83-32-9		<0.05 mg/kg		<0.05 mg/kg	<0.000005 %			<LOD
23	fluorene 201-695-5		86-73-7		<0.04 mg/kg		<0.04 mg/kg	<0.000004 %			<LOD
24	phenanthrene 201-581-5		85-01-8		<0.03 mg/kg		<0.03 mg/kg	<0.000003 %			<LOD
25	anthracene 204-371-1		120-12-7		<0.04 mg/kg		<0.04 mg/kg	<0.000004 %			<LOD
26	fluoranthene 205-912-4		206-44-0		<0.03 mg/kg		<0.03 mg/kg	<0.000003 %			<LOD
27	pyrene 204-927-3		129-00-0		<0.03 mg/kg		<0.03 mg/kg	<0.000003 %			<LOD
28	benzo[a]anthracene 601-033-00-9	200-280-6	56-55-3		<0.06 mg/kg		<0.06 mg/kg	<0.000006 %			<LOD
29	chrysene 601-048-00-0	205-923-4	218-01-9		<0.02 mg/kg		<0.02 mg/kg	<0.000002 %			<LOD
30	benzo[b]fluoranthene 601-034-00-4	205-911-9	205-99-2		<0.05 mg/kg		<0.05 mg/kg	<0.000005 %			<LOD
31	benzo[k]fluoranthene 601-036-00-5	205-916-6	207-08-9		<0.02 mg/kg		<0.02 mg/kg	<0.000002 %			<LOD
32	benzo[a]pyrene; benzo[def]chrysene 601-032-00-3	200-028-5	50-32-8		<0.04 mg/kg		<0.04 mg/kg	<0.000004 %			<LOD
33	indeno[123-cd]pyrene 205-893-2		193-39-5		<0.04 mg/kg		<0.04 mg/kg	<0.000004 %			<LOD
34	dibenz[a,h]anthracene 601-041-00-2	200-181-8	53-70-3		<0.04 mg/kg		<0.04 mg/kg	<0.000004 %			<LOD
35	benzo[ghi]perylene 205-883-8		191-24-2		<0.04 mg/kg		<0.04 mg/kg	<0.000004 %			<LOD
36	polychlorobiphenyls; PCB 602-039-00-4	215-648-1	1336-36-3		<0.035 mg/kg		<0.035 mg/kg	<0.0000035 %			<LOD
37	barium { barium oxide } 215-127-9		1304-28-5		101 mg/kg	1.117	98.22 mg/kg	0.00982 %	✓		
38	coronene 205-881-7		191-07-1		<0.04 mg/kg		<0.04 mg/kg	<0.000004 %			<LOD
39	benzo[j]fluoranthene 601-035-00-X	205-910-3	205-82-3		<1 mg/kg		<1 mg/kg	<0.0001 %			<LOD
Total:									0.0513 %		

Key

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

Classification of sample: TP05-19/01/2023-0.50m

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

Sample details














Sample name:	LoW Code:
TP05-19/01/2023-0.50m	Chapter:
Moisture content:	17: Construction and Demolition Wastes (including excavated soil from contaminated sites)
17.2% (wet weight correction)	Entry:
	17 05 04 (Soil and stones other than those mentioned in 17 05 03)

Hazard properties

None identified

Determinands

Moisture content: 17.2% Wet Weight Moisture Correction applied (MC)

#		Determinand			CLP Note	User entered data	Conv. Factor	Compound conc.	Classification value	MC Applied	Conc. Not Used
		EU CLP index number	EC Number	CAS Number							
1		antimony { antimony trioxide }				1 mg/kg	1.197	0.991 mg/kg	0.0000991 %	✓	
		051-005-00-X	215-175-0	1309-64-4							
2		arsenic { arsenic trioxide }					10.9 mg/kg	1.32	11.916 mg/kg	0.00119 %	✓
		033-003-00-0	215-481-4	1327-53-3							
3		cadmium { cadmium oxide }					<0.1 mg/kg	1.142	<0.114 mg/kg	<0.0000114 %		<LOD
		048-002-00-0	215-146-2	1306-19-0							
4		chromium in chromium(III) compounds { chromium(III) oxide (worst case) }					38.9 mg/kg	1.462	47.076 mg/kg	0.00471 %	✓
			215-160-9	1308-38-9							
5		chromium in chromium(VI) compounds { chromium (VI) compounds, with the exception of barium chromate and of compounds specified elsewhere in this Annex }					<0.3 mg/kg	2.27	<0.681 mg/kg	<0.0000681 %		<LOD
		024-017-00-8									
6		copper { dicopper oxide; copper (I) oxide }				1	16 mg/kg	1.126	14.916 mg/kg	0.00149 %	✓
		029-002-00-X	215-270-7	1317-39-1							
7		lead { lead chromate }					18 mg/kg	1.56	23.247 mg/kg	0.00149 %	✓
		082-004-00-2	231-846-0	7758-97-6							
8		mercury { mercury dichloride }					<0.1 mg/kg	1.353	<0.135 mg/kg	<0.0000135 %		<LOD
		080-010-00-X	231-299-8	7487-94-7							
9		molybdenum { molybdenum(VI) oxide }					1.7 mg/kg	1.5	2.112 mg/kg	0.000211 %	✓
		042-001-00-9	215-204-7	1313-27-5							
10		nickel { nickel chromate }					23.5 mg/kg	2.976	57.912 mg/kg	0.00579 %	✓
		028-035-00-7	238-766-5	14721-18-7							
11		selenium { nickel selenate }					1 mg/kg	2.554	2.115 mg/kg	0.000211 %	✓
		028-031-00-5	239-125-2	15060-62-5							
12		zinc { zinc chromate }					59 mg/kg	2.774	135.523 mg/kg	0.0136 %	✓
		024-007-00-3	236-878-9	13530-65-9							
13		TPH (C6 to C40) petroleum group					<52 mg/kg		<52 mg/kg	<0.0052 %		<LOD
				TPH							
14		tert-butyl methyl ether; MTBE; 2-methoxy-2-methylpropane					<0.005 mg/kg		<0.005 mg/kg	<0.0000005 %		<LOD
		603-181-00-X	216-653-1	1634-04-4							
15		benzene					<0.005 mg/kg		<0.005 mg/kg	<0.0000005 %		<LOD
		601-020-00-8	200-753-7	71-43-2							
16		toluene					<0.005 mg/kg		<0.005 mg/kg	<0.0000005 %		<LOD
		601-021-00-3	203-625-9	108-88-3							



#	Determinand			CLP Note	User entered data	Conv. Factor	Compound conc.		Classification value	MC Applied	Conc. Not Used
	EU CLP index number	EC Number	CAS Number								
17	ethylbenzene 601-023-00-4	202-849-4	100-41-4		<0.005 mg/kg		<0.005 mg/kg	<0.0000005 %			<LOD
18	xylene 601-022-00-9	202-422-2 [1] 203-396-5 [2] 203-576-3 [3] 215-535-7 [4]	95-47-6 [1] 106-42-3 [2] 108-38-3 [3] 1330-20-7 [4]		<0.01 mg/kg		<0.01 mg/kg	<0.000001 %			<LOD
19	pH		PH		6.72 pH		6.72 pH	6.72 pH			
20	naphthalene 601-052-00-2	202-049-5	91-20-3		<0.04 mg/kg		<0.04 mg/kg	<0.000004 %			<LOD
21	acenaphthylene 205-917-1		208-96-8		<0.03 mg/kg		<0.03 mg/kg	<0.000003 %			<LOD
22	acenaphthene 201-469-6		83-32-9		<0.05 mg/kg		<0.05 mg/kg	<0.000005 %			<LOD
23	fluorene 201-695-5		86-73-7		<0.04 mg/kg		<0.04 mg/kg	<0.000004 %			<LOD
24	phenanthrene 201-581-5		85-01-8		<0.03 mg/kg		<0.03 mg/kg	<0.000003 %			<LOD
25	anthracene 204-371-1		120-12-7		<0.04 mg/kg		<0.04 mg/kg	<0.000004 %			<LOD
26	fluoranthene 205-912-4		206-44-0		<0.03 mg/kg		<0.03 mg/kg	<0.000003 %			<LOD
27	pyrene 204-927-3		129-00-0		<0.03 mg/kg		<0.03 mg/kg	<0.000003 %			<LOD
28	benzo[a]anthracene 601-033-00-9	200-280-6	56-55-3		<0.06 mg/kg		<0.06 mg/kg	<0.000006 %			<LOD
29	chrysene 601-048-00-0	205-923-4	218-01-9		<0.02 mg/kg		<0.02 mg/kg	<0.000002 %			<LOD
30	benzo[b]fluoranthene 601-034-00-4	205-911-9	205-99-2		<0.05 mg/kg		<0.05 mg/kg	<0.000005 %			<LOD
31	benzo[k]fluoranthene 601-036-00-5	205-916-6	207-08-9		<0.02 mg/kg		<0.02 mg/kg	<0.000002 %			<LOD
32	benzo[a]pyrene; benzo[def]chrysene 601-032-00-3	200-028-5	50-32-8		<0.04 mg/kg		<0.04 mg/kg	<0.000004 %			<LOD
33	indeno[123-cd]pyrene 205-893-2		193-39-5		<0.04 mg/kg		<0.04 mg/kg	<0.000004 %			<LOD
34	dibenz[a,h]anthracene 601-041-00-2	200-181-8	53-70-3		<0.04 mg/kg		<0.04 mg/kg	<0.000004 %			<LOD
35	benzo[ghi]perylene 205-883-8		191-24-2		<0.04 mg/kg		<0.04 mg/kg	<0.000004 %			<LOD
36	polychlorobiphenyls; PCB 602-039-00-4	215-648-1	1336-36-3		<0.035 mg/kg		<0.035 mg/kg	<0.0000035 %			<LOD
37	barium { barium oxide } 215-127-9		1304-28-5		72 mg/kg	1.117	66.562 mg/kg	0.00666 %	✓		
38	coronene 205-881-7		191-07-1		<0.04 mg/kg		<0.04 mg/kg	<0.000004 %			<LOD
39	benzo[j]fluoranthene 601-035-00-X	205-910-3	205-82-3		<1 mg/kg		<1 mg/kg	<0.0001 %			<LOD
Total:									0.0409 %		

Key

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

Classification of sample: TP05-19/01/2023-2.00m

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

Sample details

Sample name: **TP05-19/01/2023-2.00m** LoW Code: **17: Construction and Demolition Wastes (including excavated soil from contaminated sites)**
Moisture content: **13.5%** Chapter: **17 05 04 (Soil and stones other than those mentioned in 17 05 03)**
(wet weight correction) Entry:

Hazard properties

None identified

Determinands

Moisture content: 13.5% Wet Weight Moisture Correction applied (MC)

#	Determinand			CLP Note	User entered data	Conv. Factor	Compound conc.		Classification value	MC Applied	Conc. Not Used
	EU CLP index number	EC Number	CAS Number								
1	antimony { antimony trioxide }				1 mg/kg	1.197	1.035	mg/kg	0.000104 %	✓	
	051-005-00-X	215-175-0	1309-64-4								
2	arsenic { arsenic trioxide }				13.6 mg/kg	1.32	15.532	mg/kg	0.00155 %	✓	
	033-003-00-0	215-481-4	1327-53-3								
3	cadmium { cadmium oxide }				<0.1 mg/kg	1.142	<0.114	mg/kg	<0.0000114 %		<LOD
	048-002-00-0	215-146-2	1306-19-0								
4	chromium in chromium(III) compounds { chromium(III) oxide (worst case) }				44.2 mg/kg	1.462	55.88	mg/kg	0.00559 %	✓	
		215-160-9	1308-38-9								
5	chromium in chromium(VI) compounds { chromium (VI) compounds, with the exception of barium chromate and of compounds specified elsewhere in this Annex }				<0.3 mg/kg	2.27	<0.681	mg/kg	<0.0000681 %		<LOD
	024-017-00-8										
6	copper { dicopper oxide; copper (I) oxide }				25 mg/kg	1.126	24.347	mg/kg	0.00243 %	✓	
	029-002-00-X	215-270-7	1317-39-1								
7	lead { lead chromate }			1	15 mg/kg	1.56	20.239	mg/kg	0.0013 %	✓	
	082-004-00-2	231-846-0	7758-97-6								
8	mercury { mercury dichloride }				<0.1 mg/kg	1.353	<0.135	mg/kg	<0.0000135 %		<LOD
	080-010-00-X	231-299-8	7487-94-7								
9	molybdenum { molybdenum(VI) oxide }				1.1 mg/kg	1.5	1.427	mg/kg	0.000143 %	✓	
	042-001-00-9	215-204-7	1313-27-5								
10	nickel { nickel chromate }				24.6 mg/kg	2.976	63.332	mg/kg	0.00633 %	✓	
	028-035-00-7	238-766-5	14721-18-7								
11	selenium { nickel selenate }				<1 mg/kg	2.554	<2.554	mg/kg	<0.000255 %		<LOD
	028-031-00-5	239-125-2	15060-62-5								
12	zinc { zinc chromate }				80 mg/kg	2.774	191.971	mg/kg	0.0192 %	✓	
	024-007-00-3	236-878-9	13530-65-9								
13	TPH (C6 to C40) petroleum group				<52 mg/kg		<52	mg/kg	<0.0052 %		<LOD
			TPH								
14	tert-butyl methyl ether; MTBE; 2-methoxy-2-methylpropane				<0.005 mg/kg		<0.005	mg/kg	<0.0000005 %		<LOD
	603-181-00-X	216-653-1	1634-04-4								
15	benzene				<0.005 mg/kg		<0.005	mg/kg	<0.0000005 %		<LOD
	601-020-00-8	200-753-7	71-43-2								
16	toluene				<0.005 mg/kg		<0.005	mg/kg	<0.0000005 %		<LOD
	601-021-00-3	203-625-9	108-88-3								



#	Determinand			CLP Note	User entered data	Conv. Factor	Compound conc.		Classification value	MC Applied	Conc. Not Used
	EU CLP index number	EC Number	CAS Number								
17	ethylbenzene 601-023-00-4	202-849-4	100-41-4		<0.005 mg/kg		<0.005 mg/kg	<0.0000005 %			<LOD
18	xylene 601-022-00-9	202-422-2 [1] 203-396-5 [2] 203-576-3 [3] 215-535-7 [4]	95-47-6 [1] 106-42-3 [2] 108-38-3 [3] 1330-20-7 [4]		<0.01 mg/kg		<0.01 mg/kg	<0.000001 %			<LOD
19	pH		PH		8.05 pH		8.05 pH	8.05 pH			
20	naphthalene 601-052-00-2	202-049-5	91-20-3		<0.04 mg/kg		<0.04 mg/kg	<0.000004 %			<LOD
21	acenaphthylene 205-917-1		208-96-8		<0.03 mg/kg		<0.03 mg/kg	<0.000003 %			<LOD
22	acenaphthene 201-469-6		83-32-9		<0.05 mg/kg		<0.05 mg/kg	<0.000005 %			<LOD
23	fluorene 201-695-5		86-73-7		<0.04 mg/kg		<0.04 mg/kg	<0.000004 %			<LOD
24	phenanthrene 201-581-5		85-01-8		<0.03 mg/kg		<0.03 mg/kg	<0.000003 %			<LOD
25	anthracene 204-371-1		120-12-7		<0.04 mg/kg		<0.04 mg/kg	<0.000004 %			<LOD
26	fluoranthene 205-912-4		206-44-0		<0.03 mg/kg		<0.03 mg/kg	<0.000003 %			<LOD
27	pyrene 204-927-3		129-00-0		<0.03 mg/kg		<0.03 mg/kg	<0.000003 %			<LOD
28	benzo[a]anthracene 601-033-00-9	200-280-6	56-55-3		<0.06 mg/kg		<0.06 mg/kg	<0.000006 %			<LOD
29	chrysene 601-048-00-0	205-923-4	218-01-9		<0.02 mg/kg		<0.02 mg/kg	<0.000002 %			<LOD
30	benzo[b]fluoranthene 601-034-00-4	205-911-9	205-99-2		<0.05 mg/kg		<0.05 mg/kg	<0.000005 %			<LOD
31	benzo[k]fluoranthene 601-036-00-5	205-916-6	207-08-9		<0.02 mg/kg		<0.02 mg/kg	<0.000002 %			<LOD
32	benzo[a]pyrene; benzo[def]chrysene 601-032-00-3	200-028-5	50-32-8		<0.04 mg/kg		<0.04 mg/kg	<0.000004 %			<LOD
33	indeno[123-cd]pyrene 205-893-2		193-39-5		<0.04 mg/kg		<0.04 mg/kg	<0.000004 %			<LOD
34	dibenz[a,h]anthracene 601-041-00-2	200-181-8	53-70-3		<0.04 mg/kg		<0.04 mg/kg	<0.000004 %			<LOD
35	benzo[ghi]perylene 205-883-8		191-24-2		<0.04 mg/kg		<0.04 mg/kg	<0.000004 %			<LOD
36	polychlorobiphenyls; PCB 602-039-00-4	215-648-1	1336-36-3		<0.035 mg/kg		<0.035 mg/kg	<0.0000035 %			<LOD
37	barium { barium oxide } 215-127-9		1304-28-5		91 mg/kg	1.117	87.886 mg/kg	0.00879 %		✓	
38	coronene 205-881-7		191-07-1		<0.04 mg/kg		<0.04 mg/kg	<0.000004 %			<LOD
39	benzo[j]fluoranthene 601-035-00-X	205-910-3	205-82-3		<1 mg/kg		<1 mg/kg	<0.0001 %			<LOD
Total:									0.0512 %		

Key

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

Appendix A: Classifier defined and non EU CLP determinands

■ **chromium(III) oxide (worst case)** (EC Number: 215-160-9, CAS Number: 1308-38-9)

Description/Comments: Data from C&L Inventory Database

Data source: <https://echa.europa.eu/information-on-chemicals/cl-inventory-database/-/discli/details/33806>

Data source date: 17 Jul 2015

Hazard Statements: Acute Tox. 4; H332 , Acute Tox. 4; H302 , Eye Irrit. 2; H319 , STOT SE 3; H335 , Skin Irrit. 2; H315 , Resp. Sens. 1; H334 , Skin Sens. 1; H317 , Repr. 1B; H360FD , Aquatic Acute 1; H400 , Aquatic Chronic 1; H410

■ **TPH (C6 to C40) petroleum group** (CAS Number: TPH)

Description/Comments: Hazard statements taken from WM3 1st Edition 2015; Risk phrases: WM2 3rd Edition 2013

Data source: WM3 1st Edition 2015

Data source date: 25 May 2015

Hazard Statements: Flam. Liq. 3; H226 , Asp. Tox. 1; H304 , STOT RE 2; H373 , Muta. 1B; H340 , Carc. 1B; H350 , Repr. 2; H361d , Aquatic Chronic 2; H411

■ **ethylbenzene** (EC Number: 202-849-4, CAS Number: 100-41-4)

EU CLP index number: 601-023-00-4

Description/Comments:

Additional Hazard Statement(s): Carc. 2; H351

Reason for additional Hazards Statement(s):

03 Jun 2015 - Carc. 2; H351 hazard statement sourced from: IARC Group 2B (77) 2000

■ **pH** (CAS Number: PH)

Description/Comments: Appendix C4

Data source: WM3 1st Edition 2015

Data source date: 25 May 2015

Hazard Statements: None.

■ **acenaphthylene** (EC Number: 205-917-1, CAS Number: 208-96-8)

Description/Comments: Data from C&L Inventory Database

Data source: <http://echa.europa.eu/web/guest/information-on-chemicals/cl-inventory-database>

Data source date: 17 Jul 2015

Hazard Statements: Acute Tox. 4; H302 , Acute Tox. 1; H330 , Acute Tox. 1; H310 , Eye Irrit. 2; H319 , STOT SE 3; H335 , Skin Irrit. 2; H315

■ **acenaphthene** (EC Number: 201-469-6, CAS Number: 83-32-9)

Description/Comments: Data from C&L Inventory Database

Data source: <http://echa.europa.eu/web/guest/information-on-chemicals/cl-inventory-database>

Data source date: 17 Jul 2015

Hazard Statements: Eye Irrit. 2; H319 , STOT SE 3; H335 , Skin Irrit. 2; H315 , Aquatic Acute 1; H400 , Aquatic Chronic 1; H410 , Aquatic Chronic 2; H411

■ **fluorene** (EC Number: 201-695-5, CAS Number: 86-73-7)

Description/Comments: Data from C&L Inventory Database

Data source: <http://echa.europa.eu/web/guest/information-on-chemicals/cl-inventory-database>

Data source date: 06 Aug 2015

Hazard Statements: Aquatic Acute 1; H400 , Aquatic Chronic 1; H410

■ **phenanthrene** (EC Number: 201-581-5, CAS Number: 85-01-8)

Description/Comments: Data from C&L Inventory Database

Data source: <http://echa.europa.eu/web/guest/information-on-chemicals/cl-inventory-database>

Data source date: 06 Aug 2015

Hazard Statements: Acute Tox. 4; H302 , Eye Irrit. 2; H319 , STOT SE 3; H335 , Carc. 2; H351 , Skin Sens. 1; H317 , Aquatic Acute 1; H400 , Aquatic Chronic 1; H410 , Skin Irrit. 2; H315

■ **anthracene** (EC Number: 204-371-1, CAS Number: 120-12-7)

Description/Comments: Data from C&L Inventory Database

Data source: <http://echa.europa.eu/web/guest/information-on-chemicals/cl-inventory-database>

Data source date: 17 Jul 2015

Hazard Statements: Eye Irrit. 2; H319 , STOT SE 3; H335 , Skin Irrit. 2; H315 , Skin Sens. 1; H317 , Aquatic Acute 1; H400 , Aquatic Chronic 1; H410

■ **fluoranthene** (EC Number: 205-912-4, CAS Number: 206-44-0)

Description/Comments: Data from C&L Inventory Database

Data source: <http://echa.europa.eu/web/guest/information-on-chemicals/cl-inventory-database>

Data source date: 21 Aug 2015

Hazard Statements: Acute Tox. 4; H302 , Aquatic Acute 1; H400 , Aquatic Chronic 1; H410

■ **pyrene** (EC Number: 204-927-3, CAS Number: 129-00-0)

Description/Comments: Data from C&L Inventory Database; SDS Sigma Aldrich 2014

Data source: <http://echa.europa.eu/web/guest/information-on-chemicals/cl-inventory-database>

Data source date: 21 Aug 2015

Hazard Statements: Skin Irrit. 2; H315, Eye Irrit. 2; H319, STOT SE 3; H335, Aquatic Acute 1; H400, Aquatic Chronic 1; H410

■ **indeno[123-cd]pyrene** (EC Number: 205-893-2, CAS Number: 193-39-5)

Description/Comments: Data from C&L Inventory Database

Data source: <http://echa.europa.eu/web/guest/information-on-chemicals/cl-inventory-database>

Data source date: 06 Aug 2015

Hazard Statements: Carc. 2; H351

■ **benzo[ghi]perylene** (EC Number: 205-883-8, CAS Number: 191-24-2)

Description/Comments: Data from C&L Inventory Database; SDS Sigma Aldrich 28/02/2015

Data source: <http://echa.europa.eu/web/guest/information-on-chemicals/cl-inventory-database>

Data source date: 23 Jul 2015

Hazard Statements: Aquatic Acute 1; H400, Aquatic Chronic 1; H410

■ **polychlorobiphenyls; PCB** (EC Number: 215-648-1, CAS Number: 1336-36-3)

EU CLP index number: 602-039-00-4

Description/Comments: Worst Case: IARC considers PCB Group 1; Carcinogenic to humans;

POP specific threshold from ATP1 (Regulation 756/2010/EU) to POPs Regulation (Regulation 850/2004/EC). Where applicable, the calculation method laid down in European standards EN 12766-1 and EN 12766-2 shall be applied.

Additional Hazard Statement(s): Carc. 1A; H350

Reason for additional Hazards Statement(s):

29 Sep 2015 - Carc. 1A; H350 hazard statement sourced from: IARC Group 1 (23, Sup 7, 100C) 2012

■ **barium oxide** (EC Number: 215-127-9, CAS Number: 1304-28-5)

Description/Comments: Data from ECHA's C&L Inventory Database, Sigma Aldrich SDS dated 6/2/20

Data source: <https://echa.europa.eu/information-on-chemicals/cl-inventory-database/-/discli/details/88825>

Data source date: 02 Apr 2020

Hazard Statements: Acute Tox. 3; H301, Skin Corr. 1B; H314, Eye Dam. 1; H318, Acute Tox. 1; H332

■ **coronene** (EC Number: 205-881-7, CAS Number: 191-07-1)

Description/Comments: Data from C&L Inventory Database; no entries in Registered Substances or Pesticides Properties databases; SDS: Sigma Aldrich, 1907/2006 compliant, dated 2012 - no entries; IARC – Group 3, not carcinogenic.

Data source: <http://clp-inventory.echa.europa.eu/SummaryOfClassAndLabelling.aspx?SubstanceID=17010&HarmOnly=no?fc=true&lang=en>

Data source date: 16 Jun 2014

Hazard Statements: STOT SE 2; H371

Appendix B: Rationale for selection of metal species

antimony {antimony trioxide}

Worst case CLP species based on hazard statements/molecular weight and low solubility. Industrial sources include: flame retardants in electrical apparatus, textiles and coatings (edit as required)

arsenic {arsenic trioxide}

Reasonable case CLP species based on hazard statements/molecular weight and most common (stable) oxide of arsenic. Industrial sources include: smelting; main precursor to other arsenic compounds (edit as required)

cadmium {cadmium oxide}

Reasonable case CLP species based on hazard statements/molecular weight, very low solubility in water. Industrial sources include: electroplating baths, electrodes for storage batteries, catalysts, ceramic glazes, phosphors, pigments and nematocides. (edit as required) Worst case compounds in CLP: cadmium sulphate, chloride, fluoride & iodide not expected as either very soluble and/or compound's industrial usage not related to site history (edit as required)

chromium in chromium(III) compounds {chromium(III) oxide (worst case)}

Reasonable case species based on hazard statements/molecular weight. Industrial sources include: tanning, pigment in paint, inks and glass (edit as required)

chromium in chromium(VI) compounds {chromium(VI) compounds, with the exception of barium chromate and of compounds specified elsewhere in this Annex}

Worst case species based on hazard statements/molecular weight (edit as required)

copper {dicopper oxide; copper (I) oxide}

Reasonable case CLP species based on hazard statements/molecular weight and insolubility in water. Industrial sources include: oxidised copper metal, brake pads, pigments, antifouling paints, fungicide. (edit as required) Worse case copper sulphate is very soluble and likely to have been leached away if ever present and/or not enough soluble sulphate detected. (edit as required)

lead {lead chromate}

Worst case CLP species based on hazard statements/molecular weight (edit as required)

mercury {mercury dichloride}

Worst case CLP species based on hazard statements/molecular weight (edit as required)

molybdenum {molybdenum(VI) oxide}

Worst case CLP species based on hazard statements/molecular weight (edit as required)

nickel {nickel chromate}

Worst case CLP species based on hazard statements/molecular weight (edit as required)

selenium {nickel selenate}

Worst case CLP species based on hazard statements/molecular weight (edit as required)

zinc {zinc chromate}

Worst case CLP species based on hazard statements/molecular weight (edit as required)

barium {barium oxide}

Cr VI not detected

Appendix C: Version

HazWasteOnline Classification Engine: EU WM3 1st Edition v1.1.NI using the EU LoW

HazWasteOnline Classification Engine Version: 2023.72.5542.10253 (13 Mar 2023)

HazWasteOnline Database: 2023.72.5542.10253 (13 Mar 2023)

This classification utilises the following guidance and legislation:

WM3 v1.1.NI - Waste Classification - 1st Edition v1.1.NI - Jan 2021

CLP Regulation - Regulation 1272/2008/EC of 16 December 2008

1st ATP - Regulation 790/2009/EC of 10 August 2009

2nd ATP - Regulation 286/2011/EC of 10 March 2011

3rd ATP - Regulation 618/2012/EU of 10 July 2012

4th ATP - Regulation 487/2013/EU of 8 May 2013

Correction to 1st ATP - Regulation 758/2013/EU of 7 August 2013

5th ATP - Regulation 944/2013/EU of 2 October 2013

6th ATP - Regulation 605/2014/EU of 5 June 2014

WFD Annex III replacement - Regulation 1357/2014/EU of 18 December 2014

Revised List of Waste 2014 - Decision 2014/955/EU of 18 December 2014

7th ATP - Regulation 2015/1221/EU of 24 July 2015

8th ATP - Regulation (EU) 2016/918 of 19 May 2016

9th ATP - Regulation (EU) 2016/1179 of 19 July 2016

10th ATP - Regulation (EU) 2017/776 of 4 May 2017

HP14 amendment - Regulation (EU) 2017/997 of 8 June 2017

13th ATP - Regulation (EU) 2018/1480 of 4 October 2018

14th ATP - Regulation (EU) 2020/217 of 4 October 2019

15th ATP - Regulation (EU) 2020/1182 of 19 May 2020

The Chemicals (Health and Safety) and Genetically Modified Organisms (Contained Use)(Amendment etc.) (EU Exit)

Regulations 2020 - UK: 2020 No. 1567 of 16th December 2020

The Waste and Environmental Permitting etc. (Legislative Functions and Amendment etc.) (EU Exit) Regulations 2020 - UK: 2020 No. 1540 of 16th December 2020

17th ATP - Regulation (EU) 2021/849 of 11 March 2021

18th ATP - Regulation (EU) 2022/692 of 16 February 2022

APPENDIX 5 – WAC Summary Data



Waste Categorisation Summary Table
ATU Letterkenny

Sample ID	TP01	TP01	TP02	TP02	TP03	TP03	TP04	TP04	TP05	TP05	Inert Criteria	Waleshestown / IMS* Criteria	Hazardous Criteria	LOD LOR	Units
Sample Depth (m)	0.50	2.00	0.50	1.35	0.50	1.80	0.50	1.30	0.50	2.00					
Material Description	Clay	Clay	Clay	Clay	Clay	Clay	Clay	Clay	Clay	Clay					
Sample Date	19/01/2023	19/01/2023	19/01/2023	19/01/2023	19/01/2023	19/01/2023	19/01/2023	19/01/2023	19/01/2023	19/01/2023					
LoW Code	17 05 04	17 05 04	17 05 04	17 05 04	17 05 04	17 05 04	17 05 04	17 05 04	17 05 04	17 05 04	Category A	Category A	Category A	Category A	Category A
Waste Category	Category A	Category A	Category A	Category A	Category A	Category A	Category A	Category A	Category A	Category A					
Metals															
Antimony	2	<1	2	1	1	1	2	<1	1	1	-	-	HazWaste	<1	mg/kg
Arsenic	8.4	6.2	15.2	9.7	4.9	6.2	11.9	10.4	10.9	13.6	-	-	HazWaste	<0.5	mg/kg
Barium	90	117	71	52	71	95	76	101	72	91	-	-	HazWaste	<1	mg/kg
Cadmium	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	-	-	HazWaste	<0.1	mg/kg
Chromium	25.4	36.4	131.6	26.3	64.5	56.4	43	27.5	38.9	44.2	-	-	HazWaste	<0.5	mg/kg
Copper	26	31	38	46	28	30	27	29	16	25	-	-	HazWaste	<1	mg/kg
Lead	17	15	21	30	17	14	21	17	18	15	-	-	HazWaste	<5	mg/kg
Mercury	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	-	-	HazWaste	<0.1	mg/kg
Molybdenum	0.9	1.2	4	0.8	1.4	1.2	1.5	0.8	1.7	1.1	-	-	HazWaste	<0.1	mg/kg
Nickel	24.7	26.8	38	58.6	24.5	28.8	29.1	25.8	23.5	24.6	-	-	HazWaste	<0.7	mg/kg
Selenium	1	<1	2	<1	<1	1	<1	<1	1	<1	-	-	HazWaste	<1	mg/kg
Zinc	79	82	63	86	71	84	86	82	59	80	-	-	HazWaste	<5	mg/kg
Hexavalent Chromium	<0.3	<0.3	<0.3	<0.3	<0.3	<0.3	<0.3	<0.3	<0.3	<0.3	-	-	HazWaste	<0.3	mg/kg
pH (solid sample)	6.94	6.01	6.08	6.93	6.72	6.95	6.93	7.15	6.72	8.05	-	-	HazWaste	<0.01	pH units
alkali reserve	-	-	-	-	-	-	-	-	-	-	-	-	-	<0.000	gNaOH/100g
Asbestos															
Asbestos (Dry Weight)	NAD	NAD	NAD	NAD	NAD	NAD	NAD	NAD	NAD	NAD	-	-	-	-	%
Asbestos (Moisture Corrected Weight)	-	-	-	-	-	-	-	-	-	-	-	-	0.1	<0.001	%
ACM Detected	-	-	-	-	-	-	-	-	-	-	-	-	-	Presence	Presence
PAHs															
Naphthalene	<0.04	<0.04	<0.04	<0.04	<0.04	<0.04	<0.04	<0.04	<0.04	<0.04	-	-	HazWaste	<0.04	mg/kg
Acenaphthylene	<0.03	<0.03	<0.03	<0.03	<0.03	<0.03	<0.03	<0.03	<0.03	<0.03	-	-	HazWaste	<0.03	mg/kg
Acenaphthene	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	-	-	HazWaste	<0.05	mg/kg
Fluorene	<0.04	<0.04	<0.04	<0.04	<0.04	<0.04	<0.04	<0.04	<0.04	<0.04	-	-	HazWaste	<0.04	mg/kg
Phenanthrene	<0.03	<0.03	<0.03	<0.03	<0.03	<0.03	<0.03	<0.03	<0.03	<0.03	-	-	HazWaste	<0.03	mg/kg
Anthracene	<0.04	<0.04	<0.04	<0.04	<0.04	<0.04	<0.04	<0.04	<0.04	<0.04	-	-	HazWaste	<0.04	mg/kg
Fluoranthene	<0.03	<0.03	<0.03	<0.03	<0.03	<0.03	<0.03	<0.03	<0.03	<0.03	-	-	HazWaste	<0.03	mg/kg
Pyrene	<0.03	<0.03	<0.03	<0.03	<0.03	<0.03	<0.03	<0.03	<0.03	<0.03	-	-	HazWaste	<0.03	mg/kg
Benzo(a)anthracene	<0.06	<0.06	<0.06	<0.06	<0.06	<0.06	<0.06	<0.06	<0.06	<0.06	-	-	HazWaste	<0.06	mg/kg
Chrysene	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	-	-	HazWaste	<0.02	mg/kg
Benzo(k)fluoranthene	<0.07	<0.07	<0.07	<0.07	<0.07	<0.07	<0.07	<0.07	<0.07	<0.07	-	-	HazWaste	<0.07	mg/kg
Benzo(a)pyrene	<0.04	<0.04	<0.04	<0.04	<0.04	<0.04	<0.04	<0.04	<0.04	<0.04	-	-	HazWaste	<0.04	mg/kg
Indeno(123cd)pyrene	<0.04	<0.04	<0.04	<0.04	<0.04	<0.04	<0.04	<0.04	<0.04	<0.04	-	-	HazWaste	<0.04	mg/kg
Dibenzo(a,h)anthracene	<0.04	<0.04	<0.04	<0.04	<0.04	<0.04	<0.04	<0.04	<0.04	<0.04	-	-	HazWaste	<0.04	mg/kg
Benzo(ghi)perylene	<0.04	<0.04	<0.04	<0.04	<0.04	<0.04	<0.04	<0.04	<0.04	<0.04	-	-	HazWaste	<0.04	mg/kg
Coronene	<0.04	<0.04	<0.04	<0.04	<0.04	<0.04	<0.04	<0.04	<0.04	<0.04	-	-	HazWaste	<0.04	mg/kg
PAH 6 Total	<0.22	<0.22	<0.22	<0.22	<0.22	<0.22	<0.22	<0.22	<0.22	<0.22	-	-	-	<0.22	mg/kg
PAH 17 Total	<0.64	<0.64	<0.64	<0.64	<0.64	<0.64	<0.64	<0.64	<0.64	<0.64	100	100	-	<0.64	mg/kg
Benzo(b)fluoranthene	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	-	-	HazWaste	<0.05	mg/kg
Benzo(k)fluoranthene	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	-	-	HazWaste	<0.02	mg/kg
Benzo(j)fluoranthene	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	-	-	HazWaste	<1	mg/kg
Hydrocarbons															
TPH (C5-40)	<52	<52	<52	<52	<52	<52	<52	<52	<52	<52	-	-	HazWaste	<52	ug/kg
MTBE	<5	<5	<5	<5	<5	<5	<5	<5	<5	<5	-	-	HazWaste	<5	ug/kg
Benzene	<5	<5	<5	<5	<5	<5	<5	<5	<5	<5	-	-	HazWaste	<5	ug/kg
Toluene	<5	<5	<5	<5	<5	<5	<5	<5	<5	<5	-	-	HazWaste	<5	ug/kg
Ethylbenzene	<5	<5	<5	<5	<5	<5	<5	<5	<5	<5	-	-	HazWaste	<5	ug/kg
m,p-Xylene	<5	<5	<5	<5	<5	<5	<5	<5	<5	<5	-	-	HazWaste	<5	ug/kg
o-Xylene	<5	<5	<5	<5	<5	<5	<5	<5	<5	<5	-	-	HazWaste	<5	ug/kg
Total 7 PCBs	<35	<35	<35	<35	<35	<35	<35	<35	<35	<35	1,000	1,000	HazWaste	<35	ug/kg
WAC** Solid Sample Summary															
Total Organic Carbon *	0.11	0.05	0.85	0.11	0.12	0.09	0.10	0.05	0.11	0.03	3	6	-	<0.02	%
Sum of BTEX	<0.025	<0.025	<0.025	<0.025	<0.025	<0.025	<0.025	<0.025	<0.025	<0.025	6	6	-	<0.025	mg/kg
Sum of 7 PCBs	<0.035	<0.035	<0.035	<0.035	<0.035	<0.035	<0.035	<0.035	<0.035	<0.035	1	1	-	<0.035	mg/kg
Mineral Oil	<30	<30	<30	<30	<30	<30	<30	<30	<30	<30	500	500	-	<30	mg/kg
PAH Sum of 6	<0.22	<0.22	<0.22	<0.22	<0.22	<0.22	<0.22	<0.22	<0.22	<0.22	-	-	-	<0.22	mg/kg
PAH Sum of 17	<0.64	<0.64	<0.64	<0.64	<0.64	<0.64	<0.64	<0.64	<0.64	<0.64	100	100	-	<0.64	mg/kg
WAC** Leachate Data															
Arsenic	<0.025	<0.025	0.028	<0.025	<0.025	<0.025	<0.025	<0.025	<0.025	<0.025	0.5	1.5	-	<0.025	mg/kg
Barium	0.08	0.34	0.06	0.18	0.07	0.03	0.06	0.35	0.04	0.16	20	20	-	<0.03	mg/kg
Cadmium	<0.005	<0.005	<0.005	<0.005	<0.005	<0.005	<0.005	<0.005	<0.005	<0.005	0.04	0.04	-	<0.005	mg/kg
Chromium	<0.015	<0.015	<0.015	<0.015	<0.015	<0.015	<0.015	<0.015	<0.015	<0.015	0.5	0.5	-	<0.015	mg/kg
Copper	<0.07	0.10	<0.07	<0.07	<0.07	<0.07	0.09	<0.07	<0.07	<0.07	2	2	-	<0.07	mg/kg
Mercury	<0.0001	<0.0001	<0.0001	<0.0001	<0.0001	<0.0001	<0.0001	<0.0001	<0.0001	<0.0001	0.01	0.01	-	<0.0001	mg/kg
Molybdenum	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	0.5	1.5	-	<0.02	mg/kg
Nickel	<0.02	0.02	<0.02	0.03	<0.02	<0.02	<0.02	0.03	<0.02	<0.02	0.4	0.4	-	<0.02	mg/kg
Lead	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	0.06	<0.05	<0.05	0.5	0.5	-	<0.05	mg/kg
Antimony	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	0.06	0.18	-	<0.02	mg/kg
Selenium	<0.03	<0.03	<0.03	<0.03	<0.03	<0.03	<0.03	<0.03	<0.03	<0.03	0.1	0.3	-	<0.03	mg/kg
Zinc	0.04	0.09	0.03	0.05	0.03	<0.03	0.97	<0.03	<0.03	<0.03	4	4	-	<0.03	mg/kg
Total Dissolved Solids	<350	700	<350	<350	<350	<350	<350	710	<350	490	4000	12,000	-	<350	mg/kg
Dissolved Organic Carbon	<20	40	40	<20	<20	<20	<20	40	<20	20	500	500	-	<20	mg/kg
Phenol	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	1	1	-	<0.1	mg/kg
Fluoride	<3	<3	<3	<3	<3	<3	<3	<3	<3	<3	10	10	-	<3	mg/kg
Sulphate as SO4	<5	24	28	23	<5	75	<5	31	<5	26	1000	3,000	-	<0.5	mg/kg
Chloride	<3	8	4	<3	<3	<3	<3	14	<3	3	800	2,400	-	<3	mg/kg

NAD- no asbestos detected

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

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

APPENDIX 18.A

Photographic Survey

Photographic Survey 31st March 2023

Appendix 18.A Photographic Survey details the results of the photographic survey and the existing artificial lighting sources close to the proposed development site. Figure 18.A.1 below illustrates the photographic lighting survey locations as detailed in Chapter 18 Artificial Lighting Figure 18.3: Photographic Lighting Survey Locations and Chapter 18 Artificial Lighting Table 18.4: Plate numbers and description of photographic locations.

Figure 18.A.1: Photographic Lighting Survey Locations

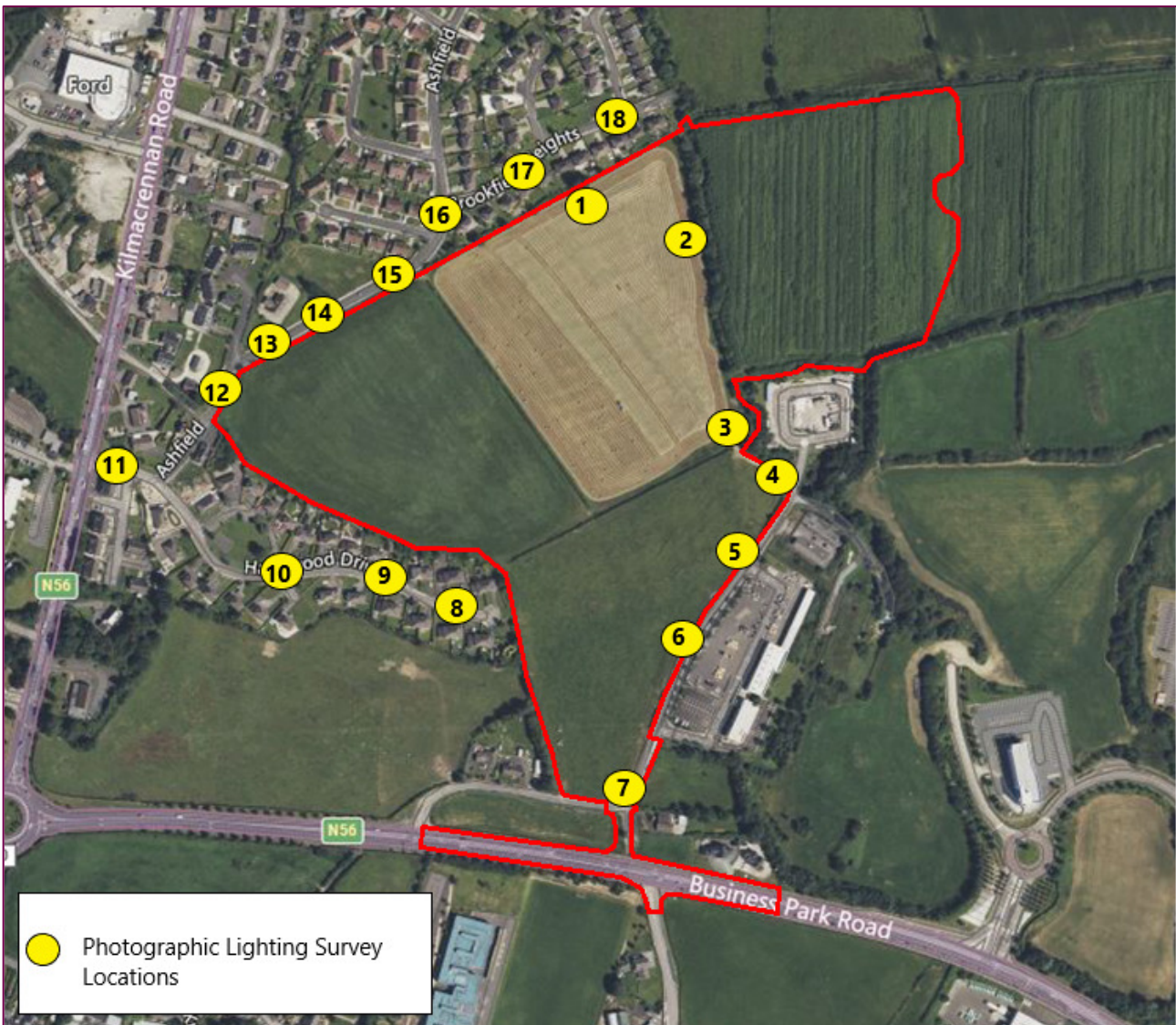


Table 18.A.1: Photographs of Existing Artificial Lighting in Local Area


<p>Plate 1</p> 	<p>Plate 2</p> 
<p>Plate 3</p> 	<p>Plate 4</p> 

Table 18.A.2: Photographs of Existing Artificial Lighting in Local Area

Plate 5	Plate 6
	
Plate 7	Plate 8
	

Table 18.A.3: Photographs of Existing Artificial Lighting in Local Area

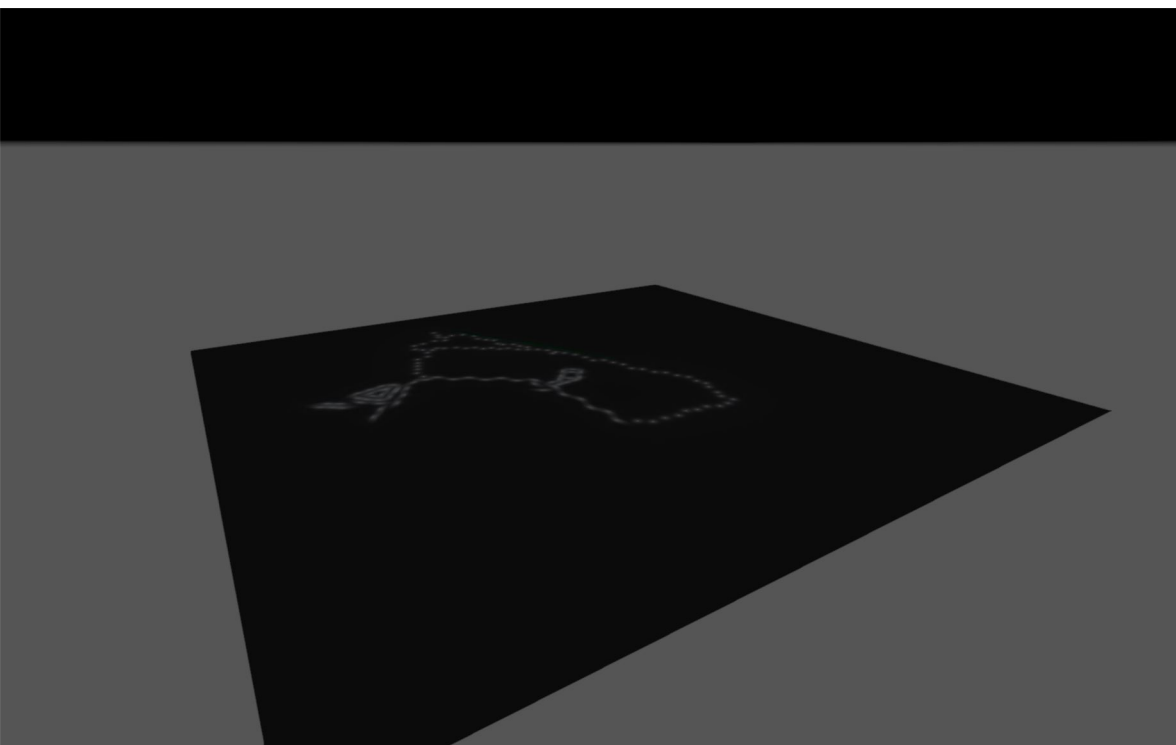
Plate 9	Plate 10
	
Plate 11	Plate 12
	

Table 18.A.4: Photographs of Existing Artificial Lighting in Local Area

Plate 13	Plate 14
	
Plate 15	Plate 16
	

Table 18.A.5: Photographs of Existing Artificial Lighting in Local Area

Plate 17	Plate 18
	

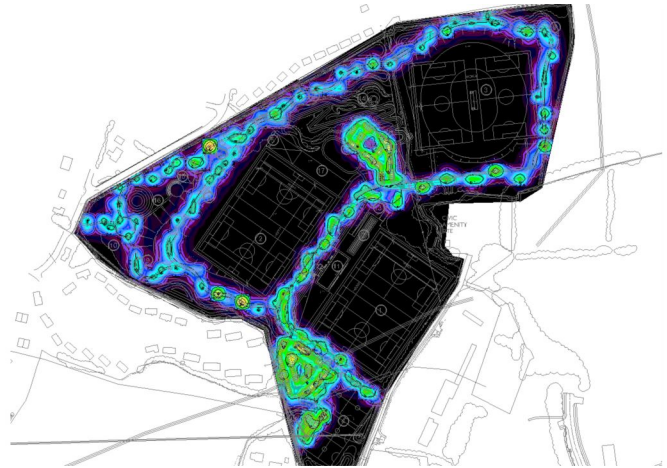


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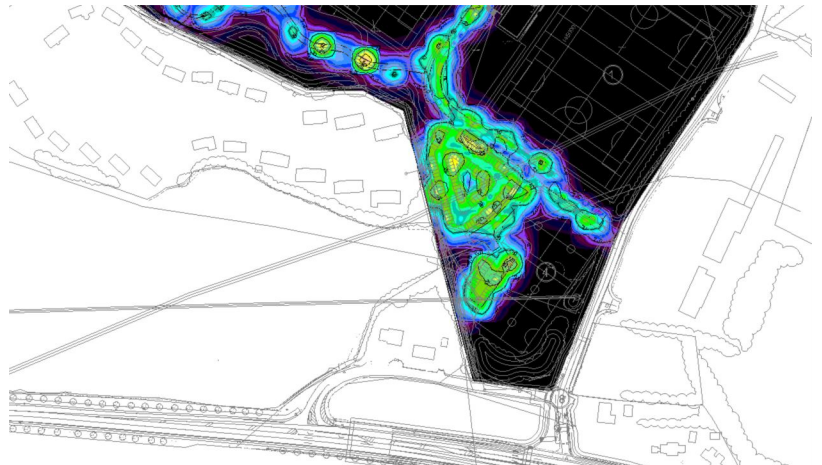
Obtrusive Lighting Report

Images

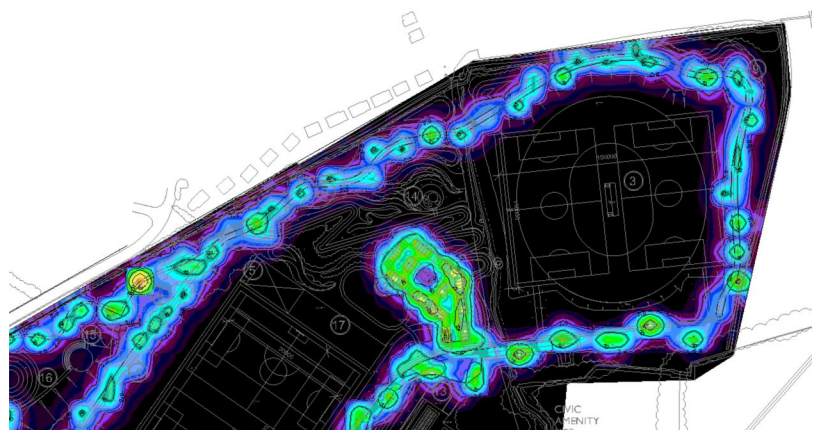
Overall Site Plan Lux Plot



Southern Site Lux Plot

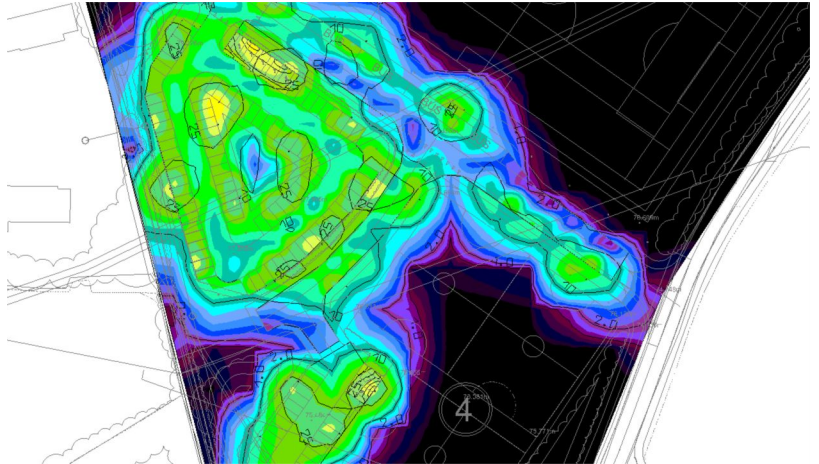


Northern Site Lux Plot

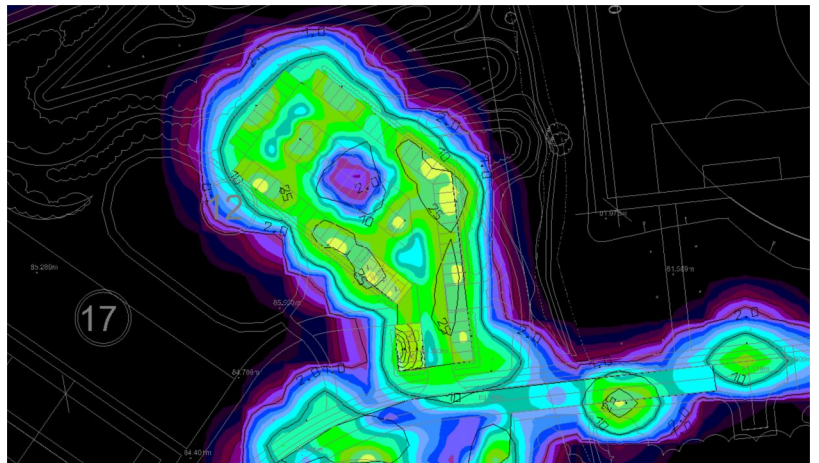


Images

Southern Carpark Lux Plot



Northern Carpark Lux Plot

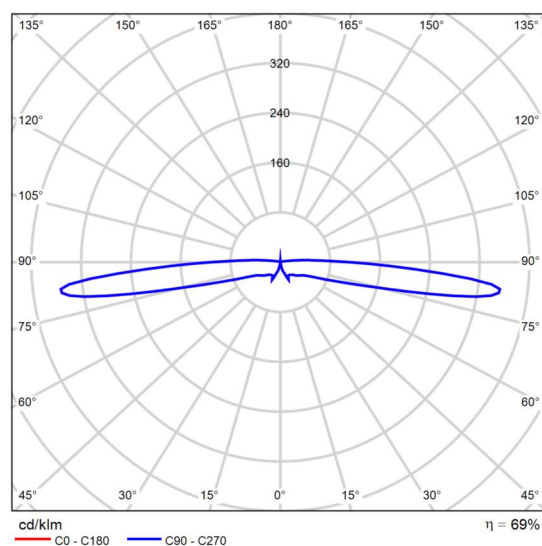


Product data sheet

Philips - BCP500 T25 S LED56/740 NO



P	37.5 W
Φ_{Lamp}	5600 lm
$\Phi_{\text{Luminaire}}$	3842 lm
η	68.62 %
Luminous efficacy	102.5 lm/W
CCT	3000 K
CRI	100



Polar LDC

Glare evaluation according to UGR												
p Ceiling		70	70	50	50	30	70	70	50	50	30	
p Walls		50	30	50	30	30	50	30	50	30	30	
p Floor		20	20	20	20	20	20	20	20	20	20	
Room size X Y		Viewing direction at right angles to lamp axis					Viewing direction parallel to lamp axis					
2H	2H	17.9	19.8	18.3	20.2	20.7	17.9	19.8	18.3	20.2	20.7	
	3H	23.6	25.4	24.1	25.9	26.4	23.6	25.4	24.1	25.9	26.4	
	4H	28.0	29.7	28.5	30.2	30.8	28.0	29.7	28.5	30.2	30.8	
	6H	33.5	35.2	34.0	35.7	36.3	33.5	35.2	34.0	35.7	36.3	
	8H	35.7	37.4	36.2	37.9	38.5	35.7	37.4	36.2	37.9	38.5	
	12H	37.2	38.8	37.7	39.3	39.9	37.2	38.8	37.7	39.3	39.9	
4H	2H	19.4	21.2	19.9	21.7	22.2	19.4	21.2	19.9	21.7	22.2	
	3H	25.3	26.9	25.8	27.4	28.0	25.3	26.9	25.8	27.4	28.0	
	4H	29.7	31.2	30.2	31.8	32.4	29.7	31.2	30.2	31.8	32.4	
	6H	35.2	36.6	35.7	37.2	37.9	35.2	36.6	35.7	37.2	37.9	
	8H	37.4	38.8	38.0	39.4	40.1	37.4	38.8	38.0	39.4	40.1	
	12H	38.9	40.2	39.5	40.8	41.5	38.9	40.2	39.5	40.8	41.5	
8H	4H	31.3	32.7	31.9	33.3	34.0	31.3	32.7	31.9	33.3	34.0	
	6H	36.6	37.9	37.2	38.5	39.2	36.6	37.9	37.2	38.5	39.2	
	8H	38.8	40.0	39.4	40.6	41.4	38.8	40.0	39.4	40.6	41.4	
	12H	40.4	41.5	41.0	42.1	42.8	40.4	41.5	41.0	42.1	42.8	
12H	4H	32.1	33.5	32.7	34.1	34.8	32.1	33.5	32.7	34.1	34.8	
	6H	37.1	38.3	37.8	39.0	39.7	37.1	38.3	37.8	39.0	39.7	
	8H	39.3	40.5	40.0	41.1	41.8	39.3	40.5	40.0	41.1	41.8	
Variation of the observer position for the luminaire distances S												
S = 1.0H		+0.1 / -0.1					+0.1 / -0.1					
S = 1.5H		+0.2 / -0.3					+0.2 / -0.3					
S = 2.0H		+0.4 / -0.5					+0.4 / -0.5					
Standard table		---					---					
Correction summand		---					---					
Corrected glare indices referring to 6e+03lm Total luminous flux												

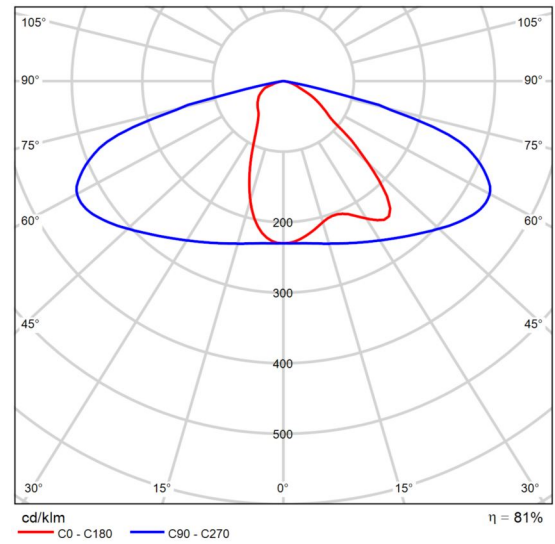
UGR diagram (SHR: 0.25)

Product data sheet

Philips - BRP102 T25 DM /740



P	56.0 W
Φ_{Lamp}	7600 lm
$\Phi_{Luminaire}$	6175 lm
η	81.26 %
Luminous efficacy	110.3 lm/W
CCT	3000 K
CRI	100



Polar LDC

Site 1

Luminaire list Φ_{total}

626266 lm

 P_{total}

5873.5 W

Luminous efficacy

106.6 lm/W

pcs.	Manufacturer	Article No.	Article name	P	Φ	Luminous efficacy
73	Philips		BCP500 T25 S LED56/740 NO	37.5 W	3842 lm	102.5 lm/W
56	Philips		BRP102 T25 DM /740	56.0 W	6175 lm	110.3 lm/W

Site 1 (Light scene 1)

Calculation objects



Site 1 (Light scene 1)

Calculation objects

Calculation surfaces

Properties	\bar{E}	E_{min}	E_{max}	g_1	g_2	Index
Road Way - Medium Slow Moving Traffic (10lx) Perpendicular illuminance Height: 0.000 m	14.6 lx	0.95 lx	56.5 lx	0.065	0.017	CG1
Carpark (20lx - Major Sports Complex) Perpendicular illuminance Height: 0.000 m	23.4 lx	5.93 lx	44.9 lx	0.25	0.13	CG2
Carpark (20lx - Major Sports Complex) Perpendicular illuminance Height: 0.000 m	19.6 lx	1.29 lx	43.3 lx	0.066	0.030	CG3
DAC (20lx - Part M) Perpendicular illuminance Height: 0.000 m	28.8 lx	20.1 lx	41.5 lx	0.70	0.48	CG4
Walkway (7.5lx - P3/S3 Classification) Perpendicular illuminance Height: 0.000 m	11.2 lx	1.32 lx	107 lx	0.12	0.012	CG5
Obtrusive Light E3 (10lx/2lx) Perpendicular illuminance Height: 10.000 m	0.49 lx	0.062 lx	1.84 lx	0.13	0.034	CG6
Obtrusive Light E3 (10lx/2lx) Perpendicular illuminance Height: 10.000 m	0.72 lx	0.30 lx	1.56 lx	0.42	0.19	CG7
Obtrusive Light E3 (10lx/2lx) Perpendicular illuminance Height: 10.000 m	0.43 lx	0.006 lx	1.13 lx	0.014	0.005	CG8
Obtrusive Light E3 (10lx/2lx) Perpendicular illuminance Height: 10.000 m	0.55 lx	0.19 lx	1.67 lx	0.35	0.11	CG9
Site Plan Perpendicular illuminance Height: 0.000 m	2.78 lx	0.001 lx	108 lx	0.000	0.000	CG10
DAC (20lx - Part M) Perpendicular illuminance Height: 0.000 m	23.5 lx	12.6 lx	39.7 lx	0.54	0.32	CG11

Site 1 (Light scene 1)

Calculation objects

DAC (20lx - Part M) Perpendicular illuminance Height: 0.000 m	33.9 lx	17.2 lx	47.2 lx	0.51	0.36	CG12
DAC (20lx - Part M) Perpendicular illuminance Height: 0.000 m	28.8 lx	17.5 lx	42.0 lx	0.61	0.42	CG13
Obtrusive Light E3 (10lx/2lx) Perpendicular illuminance Height: 10.000 m	0.64 lx	0.26 lx	1.56 lx	0.41	0.17	CG14

Utilisation profile: DIALux presetting (5.1.4 Standard (outdoor transportation area))