CAPITA

Llantarnam 3G Pitch

Ground Investigation Report

September 2020

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Project No: CS/099476 CS/Doc Ref: 99479-CAP-75-XX-RP-GT-002 Rev: P01

Torfaen County Borough Council

Llantarnam 3G Pitch

Ground Investigation Report

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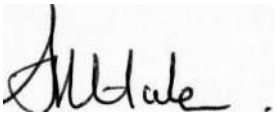
Approver	Andrew Hale		10/09/2020

Issue Record

Rev	Date	Description/Comments	Author/Prepared by:	Approved for Issue by:
P01	10/09/20	First Issue	A. Thrower	A. Hale

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1. Introduction

1.1 Background

Torfaen County Borough Council (TCBC) propose to construct a new 3G pitch with a new car park area and associated footpaths. There are a number of options currently being considered including a single and double pitch option. The proposed development is to take place adjacent to the existing Llantarnam Community Primary School.

Capita Real Estate and Infrastructure (Capita) were commissioned to carry out a ground investigation at the site, and to prepare a Ground Investigation Report (GIR) of the scheme.

1.2 Report Objectives

The objectives of this GIR are to:

- Evaluate the ground conditions at the site;
- Recommend material parameters for input into the detailed design;
- Provide advice on other geotechnical aspects of the design;
- Determine potential contaminative status of the underlying soils; and
- Provide recommendations for further works, should they be required.

This report presents the results of the fieldwork undertaken and provides an interpretation of the factual information obtained and should be read in conjunction with the desk study for the site (Ref. 1).

1.3 Site Location and Description

The site is located on the southern side of Cwmbran, to the west of the existing Llantarnam Community Primary School, approximately 250m southwest of Llantarnam Road. The National Grid reference of the site is 330141, 193445. The location of this scheme is presented on Drawing 99476-CAP-75-XX-DR-C-7501 – Site Location Plan.

The site is currently used as sports playing fields. Its western boundary is marked by a line of trees and the northern boundary by a series of garden walls/fence lines associated with the residential properties in this area. The southern boundary is again marked by a line of trees, and the eastern boundary by the fence line marking the boundary with the primary school. Current vehicular access on to the proposed site area is via Llantarnam Community Primary School site. There is foot access from Court Farm Road but this is through privately owned land.

Dowlais Brook is located adjacent to the southwest corner of the proposed site area. From this location the brook flows southwards into a pond located adjacent to Lakeside Close and Llantarnam Park Way some 400m south southeast.

1.4 Proposed Works

Construction of the proposed scheme will include the following main components:

- Excavation of existing ground and installation of drainage;
- The laying of sub pitch formation and the “3G/4G” surface;
- Secure perimeter fence-line;
- Associated parking areas and pedestrian access routes; and
- Lighting columns.

2. Existing Information

2.1 Topographical Maps (Historical)

A review of the development at the site, using historical Ordnance Survey (OS) plans from 1882 to 2019 has been undertaken to study the history and development at this location.

A Preliminary Sources Study Report (PSSR) (Ref. 1) was undertaken for this scheme in June 2020. Relevant site maps and historical background were studied at that stage and the PSSR report should be read in conjunction with this report. Copies of the maps are presented within Appendix C of the PSSR.

2.2 Geological Maps and Memoirs

Published geological information (Refs. 2 to 4) indicates that the following stratigraphic sequence is present beneath the site:

2.2.1 Superficial Deposits

Made Ground

Although not indicated as being present on the geological maps covering the area, it is likely that some of the site area will be underlain by Made Ground or re-worked natural materials.

Natural Superficial Deposits

Three types of superficial deposits are indicated at the site. It is anticipated that residual deposits will be present, formed by the in-situ weathering of the underlying bedrock materials. In this area these would typically be expected to comprise soft to firm red clay/silt. The eastern side of the site is likely to encounter river terrace deposits, with the southern side alluvial materials. These are likely to range from clays to gravels.

2.2.2 Solid Geology

Raglan Mudstone Group

The solid geology beneath the site is indicated to be underlain by the Raglan Mudstone Group. This group comprises predominately mudstone with subordinate sandstone and limestone beds. The limestone is noted as being more common in the upper most “Psammosteus”. In the former Gwent area, the Raglan Mudstone Group forms lower lying areas and weathers to a red heavy clay soil. In the Cwmbran area this group is between 550m and 610m thick. It consists of mudstone or silty mudstone usually reddish brown or purple in colour, with occasional green colouring as spots, irregular patches, stripes and tubes, or along margins of bedding and joint planes. It is poorly bedded and has an irregular blocky fracture. Mica flakes are commonly present, and particularly visible on bedding planes. It is this mineral which makes some sandstones soft and ‘shalely’ due to its abundance. A few lenticular sandstone beds are noted as being interbedded with the mudstone especially in the lower part of the sequence.

Calcareous deposits are common in the “Psammosteus” Limestone beds. Approximately 30m of strata contain both mudstone and limestone nodules which become more abundant up sequence terminating in the “Psammosteus” Limestone which is the most persistent limestone bed in the area and is used as a marker horizon.

2.2.3 Structural Geology

The dip of the strata in this area is variable, the closest recorded dip is indicated to be 20 degrees to the west.

2.2.4 Historical Boreholes

A number of historical boreholes in the area were identified on the British Geological Survey (BGS) borehole database. Four of these were between 30m and 131m from the site and provide an indication of the likely thickness of superficial deposits. These are summarised below.

Table 2.1: Summary of BGS Boreholes

Hole Reference	Distance / Direction from site	Approximate thickness of superficial deposits
ST39SW351	60m / SW	3.0m
ST39SW311	131m / NE	4.5m
ST39SW350	40m / SW	4.5m
ST39SW339	20m / E	3.5m

2.2.5 Hydrogeology

Information of the hydrogeology of the site is available in the PSSR (Ref. 1). The pertinent details are summarised below:

- The underlying strata at the site are classified as a Secondary type-A Aquifer with a high groundwater vulnerability;
- The site is not within a Groundwater Source Protection Zone;
- The southern portion of the site is classified as an area of potential for groundwater flooding to occur at the surface;
- The northeast corner of the site is classified as having the potential for groundwater flooding of property below ground level; and
- The northern part of the site is unclassified.

2.2.6 Hydrology

Information of the hydrology of the site is available in the PSSR (Ref. 1). The pertinent details are summarised below:

- The southern portion of the site is classified as being at low to medium risk of surface water flooding.

Further details can be found in the PSSR document.

3. Field and Laboratory Studies

3.1 Ground Investigation

A suite of ground investigations was carried out at the site by Quantum geotechnical between 3rd and 9th June 2020. The ground investigation was planned, procured and supervised by Capita, with the purpose to provide information to facilitate the detailed design of the scheme.

3.1.1 Description of Fieldwork

The following exploratory operations were undertaken by Quantum Geotechnical:

- 15 No. Windowless Sample Boreholes with Dynamic Probes;
- 18 No. Hand Excavated Trial Pits;
- 2 No. Machine Excavated Trial Pits;
- Soakaway infiltration tests were carried out in the machine excavated trial pits;
- TRL-DCP probes were carried out adjacent to the hand excavated and machine excavated trial pits; and
- Sampling of soils for geotechnical and geo-environmental laboratory testing.

The location of the exploratory holes is shown on drawing: 99476-CAP-75-XX-DR-C-7504 - Exploratory Hole Location Plan.

3.1.2 Ground Investigation Factual Report

The results from the site investigation carried out by Quantum Geotechnical was received at the end of July 2020 and presented in their final report "*Llantarnam 3G Pitches – Ground Investigation Factual Report, Report No. Q0269/FR*" issued in August 2020 (Ref. 5) Contained in Appendix A.

3.1.3 Results of In-Situ Tests

The results of the in-situ testing are presented within the aforementioned contractor's factual report for the ground investigation. The results have been analysed and are discussed in Section 5, Material Properties.

3.2 Laboratory Testing

3.2.1 Geotechnical Testing

A programme of geotechnical testing was devised by Capita and conducted by the Quantum Geotechnical in-house laboratory and their sub-contractor laboratories, Geo Site Testing Ltd of Llanelli. The following tests (see Table 3.1) were undertaken on representative samples of soil. Copies of the geotechnical test results are presented in Appendix A.

Table 3.1: Details of Soil Testing

Soil Testing	Number of Tests
Moisture Content	15
Atterberg Test	15
Particle Size Distribution by Wet Sieve	5
Particle Size Distribution: Sedimentation by pipette	5
Dry Density / Moisture content 2.5kg rammer	2
CBR at each compaction point	2
Sulfate content of soil/ water extract	3
pH value	3
Acid Soluble SO_4	3
Total sulphur	3

3.2.2 Geo-environmental Testing

Chemical testing was scheduled by Capita on samples taken from the exploratory holes. All of the geo-environmental laboratory testing was carried out at the Laboratories of Chemtest, Newmarket (UKAS accreditation number 2183). The results have been analysed and are discussed in Section 7, Land Contamination. Copies of the contamination test results are presented in Appendix A.

4. Ground Conditions

4.1 General

The ground investigation shows a simple geological sequence comprising topsoil overlying Superficial Deposits of clay, sand and gravel. Where present, Made Ground was overlying the natural superficial deposits. In general, the natural superficial deposits comprised an initial cohesive layer that was overlying the granular deposits. The table below summarises the thickness of the deposits encountered.

Table 4.1: Summary of Deposits Encountered

	Topsoil	Made Ground	Cohesive Superficial deposits	Granular Superficial Deposits (SAND)	Granular Superficial Deposits (GRAVEL)
Thickness (m)	0.01 to 0.25 [0.14]	0.10 to 1.15 [0.50]	0.30 to >2.90 [0.96]	0.30 to >1.70 [0.97]	0.30 to >2.10 [0.86]
Number of Holes Encountering material	29	26	30	6	7

[x] = average thickness (m)

The following sub-sections give an overview of the ground conditions encountered during the ground investigation.

4.2 Superficial Deposits

4.2.1 Topsoil

Topsoil was encountered in the majority of exploratory holes with thicknesses ranging between 0.01m and 0.25m. It was generally described as light brown, occasionally light grey, sandy silt, with ‘many rootlets.’

4.2.2 Made Ground

Made Ground was encountered in 26 of the exploratory holes at thicknesses of between 0.10m to 0.15m. The composition of the Made Ground was consistent across the site where it was encountered. It is described as a light brown slightly sandy, slightly gravelly to gravelly silt. The gravel is fine to coarse, sub-rounded to angular of sandstone, mudstone and brick, with occasional glass, concrete and clinker. Some exploratory holes report a low to medium cobble content of sandstone.

4.2.3 Cohesive Deposits (Clay and Silt)

Underlying the Made Ground and Topsoil, cohesive superficial deposits were encountered across the site. The deposits were between 0.30m and >2.90m in thickness. The deposits are described as firm to stiff, reddish brown occasionally slightly sandy silty clay. Occasional pockets of silt are also noted on the logs. Gravel is occasionally recorded, but where it is, it is described as fine to coarse, angular to rounded mudstone and sandstone.

Thin layers, up to approximately 0.2m, of very clayey gravel are recorded in the exploratory holes TP19 and WS01, interbedded with the cohesive material.

4.2.4 Granular Deposits (Sand and Gravel)

Underlying the cohesive layers were granular deposits of sand and gravel. The sandy layers were encountered with thicknesses of between 0.30m and >1.70m. The material is described as reddish brown slightly clayey, slightly silty, slightly gravelly sand, or just clayey sand. The gravel is described as fine to coarse, angular to sub-rounded sandstone.

The gravel layers encountered underlying the cohesive deposits were recorded with thicknesses of between 0.30m and >2.10m. The material is described as light brown and grey sandy gravel. The gravel is described as fine to coarse, sub-rounded to angular of sandstone.

4.3 Solid Geology

Bedrock was not encountered during the ground investigation.

4.4 Groundwater

Water seepage was observed in 4 of the 35 exploratory holes undertaken at the site, as summarised in the table below.

Table 4.2: Summary of Water Seepages

Exploratory Hole	Seepage Details
TP19	Between 1.50m and 1.70m bgl
TP20	At 2.3m bgl
WS11	Below 2.0m bgl
WS12	Below 2.0m bgl

Groundwater and gas monitoring standpipes (50mm diameter) were installed in four of the completed window sample locations. Groundwater readings were obtained during three site visits and a summary is provided in Table 4.3 below.

Table 4.3: Summary of Groundwater Observations During Monitoring

Exploratory Hole ID	Response zone (m bgl)	Observed Groundwater Levels					
		08/06/2020		09/06/2020		15/06/2020	
		mbgl	mOD	mbgl	mOD	mbgl	mOD
WS01	0.50 to 2.50	1.40	38.47	1.40	38.47	1.38	38.49
WS02	0.50 to 2.35	-	-	Dry	n/a	2.09	37.61
WS05	0.50 to 1.90	Dry	n/a	Dry	n/a	1.81	37.01
WS09	0.50 to 1.60	Dry	n/a	Dry	n/a	Dry	n/a

It should be noted that groundwater levels are subject to seasonal, diurnal and other effects and may at times differ to those measured during the investigation and subsequent monitoring visits.

5. Material Properties

5.1 Topsoil

Topsoil was encountered in the majority of exploratory holes and was recorded to a maximum thickness of 0.25m. No geotechnical parameters are presented for this material as it had limited thickness and will be stripped during the proposed development of the site. Topsoil stripped as part of the main works may suitable for reuse on the landscaped areas of the new development.

5.2 Made Ground

5.2.1 Undrained Shear Strength

The table below presents the results of in-situ super heavy dynamic probe (SHDP) testing undertaken in the Made Ground. The results have been presented showing the results for the number of blow counts per 100mm (N_{100}) and the number of blow counts per 300mm (N_{300}). The Made Ground was found to be typically cohesive in nature, and the results show the N_{100} values were between 2 and 10, with an average of 6. The corresponding N_{300} values, are between 12 and 24 with an average of 18.

Table 5.1: Summary of Super Heavy Dynamic Probe Data

Test Type	SHDP 'N' Value	No Tests	Min	Mean	Max	Standard Deviation
SHDP	N_{100}	43	2	6	10	1.98
	N_{300}	20	12	18	24	3.68

Notes: SHDP = Super Heavy Dynamic Probe

The N_{300} value, albeit tentatively, can be directly correlated with the standard penetration test (SPT) N value, which in turn may be used to estimate undrained shear strengths of clay soils. Assuming a c_u/N ratio of 4.5 (following CIRIA 143, 1995) these results are indicative of an undrained shear strength of approximately between 54kPa and 108kPa with an average of 81kPa. With reference to table 9 of BS5930 (2015), these values imply a medium to high strength material, averaging high strength.

5.3 Natural Superficial Deposits

5.3.1 Classification Tests

Moisture Content and Atterberg Limits

Atterberg limits and moisture content testing was carried out on fifteen samples of the natural cohesive soils. The results from the testing are summarised in Table 5.2 below.

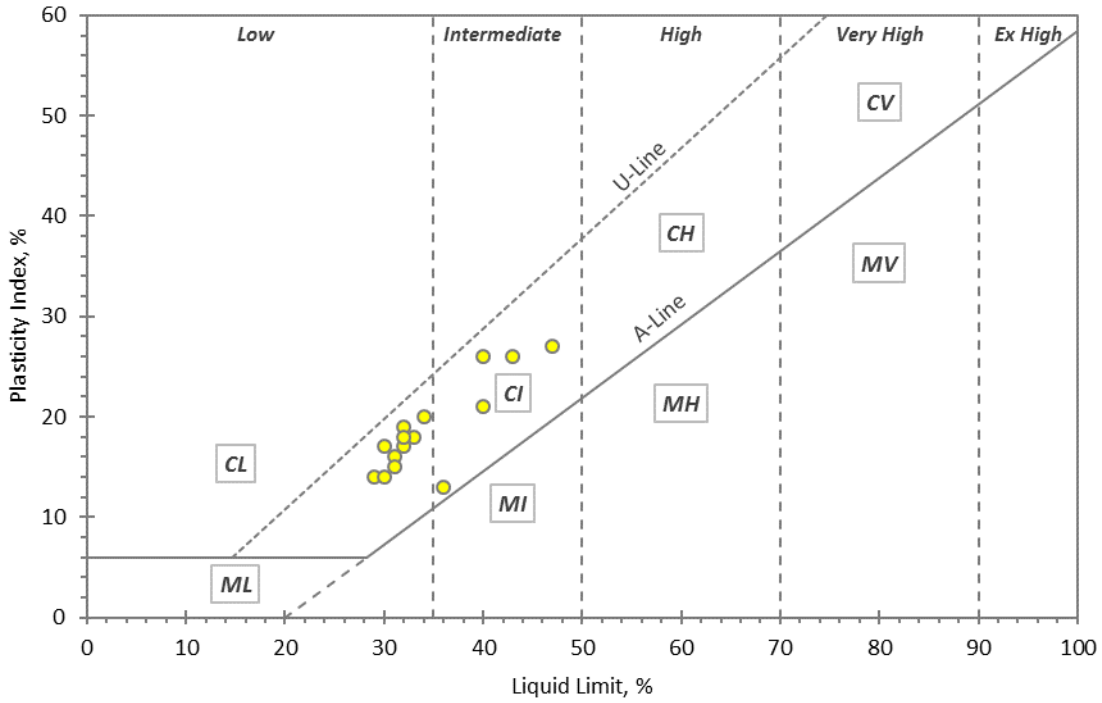
Table 5.2: Summary of Moisture Content and Atterberg Limit Data

Moisture Content w (%)	Plastic Limit w_P (%)	Liquid Limit w_L (%)	Plasticity Index I_P (%)
11 to 23 (16) [15]	13 to 23 (16) [15]	29 to 47 (35) [15]	13 to 27 (19) [15]

(x) average; [x] nr samples

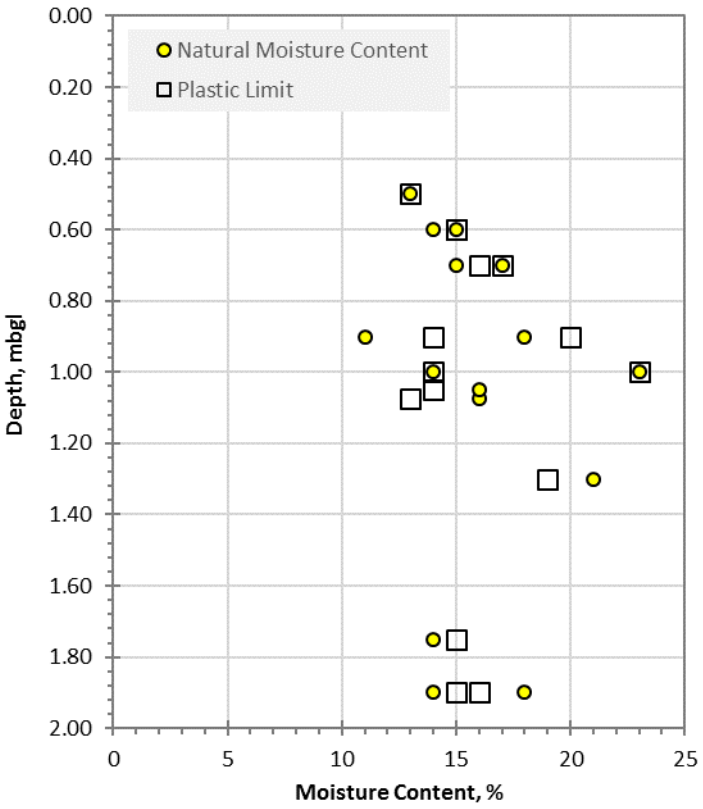
The Atterberg Limits test results carried out on the fifteen samples show the natural cohesive deposits to be predominantly of low to intermediate plasticity (Figure 5.1), with liquid limits ranging between 29% and 47% (Average 35%). Plastic limits ranged between 13 and 23% (Average 16%), with plasticity indices of between 13 to 27% (Average 19%).

Figure 5.1: Plasticity Index Chart for Natural Cohesive Deposits



The moisture contents measured from the fifteen samples range between 11% and 23%, with an average of 16%. Of the fifteen moisture content test results, six were below the corresponding plastic limit for the sample, with four at the corresponding plastic limit, and the remaining five test results above corresponding plastic limit of the individual sample. Test results show that the moisture content in the soil increases from ground level to approximately 1.20m below ground level, suggesting there may be a desiccated crust at the ground surface. These test results are summarised in Figure 5.2.

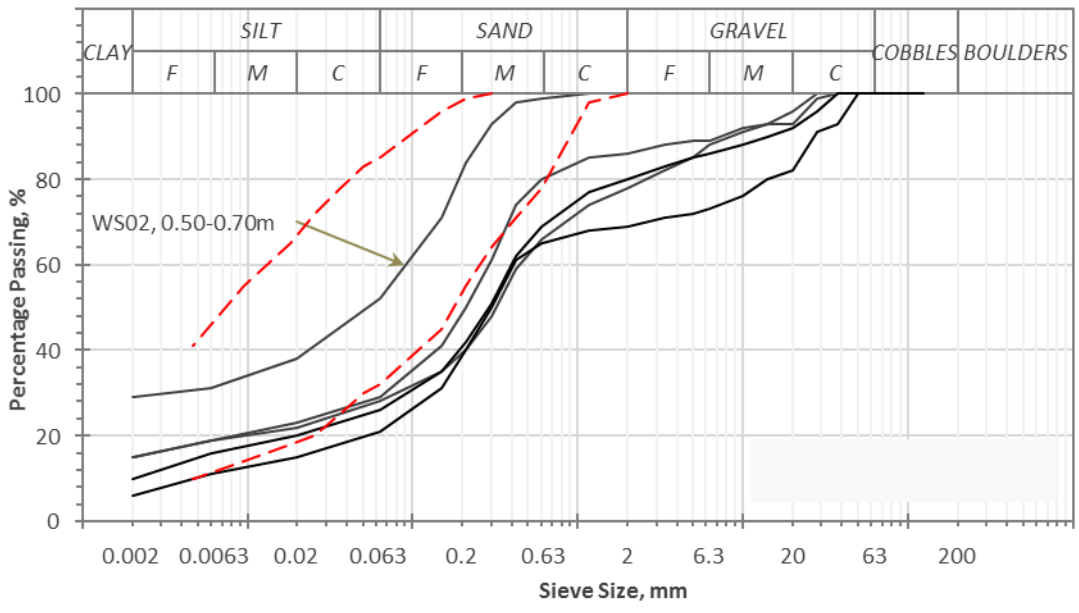
Figure 5.2: Moisture Content and Plastic Limit with Depth



Particle Size Distribution

The results of the particle size distribution tests are plotted collectively on Figure 5.3 below. Of the 5 number tests undertaken, all included a sedimentation analysis to quantify the fine content.

Figure 5.3: Particle Size Distribution of Natural Superficial Deposits



Of the 5 number tests undertaken in the natural superficial deposits, sample 1D in WS02 at 0.6m depth has a fines content of 52% (silt and clay fraction passing <0.063mm) implying the nature of the material is controlled by its fines content. The remaining 4 samples show the same general grading distribution with fines contents between 21% and 29% and appear to be mostly granular in nature with high gravel and sand contents. Cobble sized material was not encountered in the samples tested, but this does not exclude the possibility of cobble size material being present in the wider area.

Assessment of the material earthworks classifications indicate that the samples tested would generally classify as Grade 2A/2B or Grade 2C based on grading data alone. Frost susceptibility can be an issue for fine grained soils close to the ground surface. A frost susceptibility envelope has been plotted on the grading chart and indicates Sample 1D in WS02 may be frost susceptible. Constructing pavements on frost susceptible material may require greater thicknesses (>0.45m) for pavement foundations. A summary of the grading data is provided in Table 5.3.

Table 5.3; Summary of Sample Grading Proportions

Samples	HP12, 2B	WS02, 1D	WS03, 1B	WS11, B1	WS12, B2
Depth, m BGL	0.80 to 1.0	0.50 to 0.70	0.90 to 2.60	1.0 to 2.50	2.0 to 2.50
Fill classification	2A/2B	2A/2B	2C	2C	2A/2B
Cobbles, %	0	0	0	0	0
Gravel, %	14	0	22	31	20
Sand, %	57	48	50	48	54
Silt, %	14	23	13	15	16
Clay, %	15	29	15	6	10

5.3.2 Undrained Shear Strength

Super Heavy Dynamic Probe (SHDP) testing was undertaken in the natural superficial deposits. The results have been differentiated on the basis of cohesive and granular material types and presented showing the results for the number of blow counts per 100mm (N_{100}) and the number of blow counts per 300mm (N_{300}). The results are summarised in the table below.

Table 5.4: Summary of Super Heavy Dynamic Probe Data

Index Property	SHDP 'N' Value	No Tests	Min	Mean	Max	Standard Deviation
SHDP (Cohesive)	N_{100}	233	0	6	50	8.03
	N_{300}	201	1	17	87	13.98
SHDP (Granular)	N_{100}	170	1	9	50	10.60
	N_{300}	150	6	21	96	16.34

Notes: SHDP = Super Heavy Dynamic Probe

Cohesive deposits were encountered between 0.20m and 4.30m below ground level, with scattered N_{100} values between 0 and 50, with an average of 6. The corresponding N_{300} values are between 1 and 87 with an average of 17. The N_{300} value, albeit tentatively, can be directly

correlated with the standard penetration test (SPT) N value, which in turn may be used to estimate undrained shear strengths of clay soils. Assuming a c_u/N ratio of 5 (following CIRIA 143, 1995) these results are indicative of an undrained shear strength of approximately between 5kPa and >250kPa with an average of 85kPa. With reference to table 9 of BS5930 (2015), these values imply an extremely low to very high strength material, averaging high strength.

The results from the granular deposits show N_{100} values of between 1 and 50, with an average of 9. The corresponding N_{300} results show values between 6 and 96 with an average of 21. Based on these values, Table 10 of BS5930 implies a relative density of loose to very dense, with an average relative density of medium dense.

5.3.3 Hand Vane Tests

A number of hand vane tests were carried out on the cohesive soils recovered during the excavation of the window samples. The results are summarised in Table 5.5.

Table 5.5: Summary of Hand-Held Vane Tests Undertaken in Window Samples

Hole ID	Test Depth, mbgl	No. Tests	Strength, kPa			
			Peak	Residual	Peak Mean	Corrected
WS05	0.5	3	79 – 82	13 - 24	80	64
WS07	1.5	2	115 - 118	0 - 16	107	86
WS12	1.5	3	90 - 95	12 - 16	92	74
WS13	1.5	2	45 - 47	5	46	37
WS15	1.5	3	45 - 50	6 - 8	47	38

Note: corrected values derived from a correction factor of 0.8 in accordance with Bjerrum (Figure 1.3, Tomlinson, 1996)

With reference to Table 9 of BS5930 (2015), these values imply a medium to high strength soil, averaging medium strength.

5.3.4 Effective Shear Parameters

Estimates of the drained strength of the materials has been assessed by the relationship between the friction angle and plasticity given in BS8002 (Ref. 8) and by Kenney 1959 (Ref. 9). Based on an average plasticity value of 19% a critical angle of internal friction of 26° is indicated to be appropriate (based on BS8002) and peak angle of 30° (based on Kenney).

Considering the Mohr – Coulomb strength envelope can be expected to be curved sharply downwards at zero effective stress, it is considered that a small component of cohesion of 3 to 5kPa can be used in conjunction with the friction angle.

5.3.5 *Consolidation*

Settlement characteristics have been estimated from the relationship between the coefficient of volume compressibility and SPT 'N' values established by Stroud (Ref. 6). Based on the plasticity characteristics of the soils and the average N value of 17 recorded in the materials an m_v value of 0.12m^2/MN is obtained.

$$m_v = \frac{1}{f1N} = \frac{1}{0.50 \times 17} = 0.12 \text{ m}^2\text{MN}$$

5.3.6 *Groundwater*

Groundwater seepages were encountered within the natural superficial deposits during the ground investigation works. Details regarding the monitoring of groundwater levels at the site are discussed in Section 4.4.

5.3.7 *Summary of Material Design Parameters for natural superficial soils*

Based on the analysis of laboratory and in situ test results and past experience with similar soils, the following characteristic soil parameters are recommended for use in design.

Table 5.6: Summary of Characteristic Geotechnical Parameters

Stratum	Unit Weight (ɤ) kN/m^3	Effective Cohesion (c') kPa	Effective friction Angle (ϕ') Degrees	Undrained Shear Strength (c_u) kPa	Coefficient of Compressibility (m_v) m^2/MN
Made Ground	19	unknown	unknown	55 - 80	unknown
Natural Superficial Deposits	19	unknown	26	25 - 75	0.12

6. Geotechnical Considerations

6.1 Spread Foundations

Spread foundations will be required for the lighting columns. The bearing resistance of spread footings has been estimated using analytical methods and formulae outlined in Eurocode 7 Annex D for total stress (undrained) conditions. This assessment is tentative and based on the soil properties alone and no allowance has been included for loading from any proposed lighting column structure or bending moments from wind load effects. Further detailed assessment will need to be undertaken at a later stage once details for the proposed lighting column structure are known.

Using this method and the characteristic undrained shear strength parameters given for the superficial deposits discussed in section 5.4, the following soil bearing resistances are indicated to be available:

Table 6.1: Summary of Unit Bearing Resistances

Footing Size	Foundation Stratum	Level of foundation base (mbgl)*	Unit Bearing Resistance (kPa)	
			DA1C1	DA1C2
Square Pad (2.2m to 2.4m)	Clay	Assumed 1m	250	190

*mbgl = metres below existing ground level (prior to works).

The net allowable unit bearing resistances quoted in Table 6.1 are for a maximum total settlement of 25mm and founding within the underlying superficial deposits.

Additionally, it is recommended that;

- 150mm of compacted engineered fill (Type 1 sub-base) is placed beneath the lighting mast foundation bases.
- Formation to be inspected by a competent person prior to placing sub-base.
- Any soft spots encountered at formation are to be removed and backfilled with compacted engineered fill to the satisfaction of the engineer.

6.2 Protection of Buried Concrete

The requirement for protecting concrete from aggressive ground is determined from BRE Special Digest 1: Concrete in Aggressive Ground, 2005 (Ref. 10). Based on the testing results of 3 samples, Aggressive Chemical Environment for Concrete (ACEC) classification of AC-1d and a Design Sulphate Class DS-1 class appears to be appropriate for this site.

6.3 Pavement design

Nineteen TRL Dynamic Cone Penetration (DCP) tests were undertaken adjacent to each Hand Pit and machine excavated Trial Pit location (Appendix A). An indicative California Bearing Ratio (CBR) value is obtained from a relationship between CBR and the DCP readings, as derived by the Transport Research Laboratory. Data recorded indicates that at a minimum depth of 0.5mbgl, a CBR value of 3 to 4% is available based on the lower bound values.

Any soft spots uncovered at formation to be removed and backfilled with compacted engineered fill to the satisfaction of the engineer. In-situ verification CBR tests to be undertaken by the contractor at formation, number and location to be confirmed by the supervising engineer.

6.4 Swelling and shrinkage of clay

The tendency of clay to shrink and swell is linked to the type and amount of clay particles in the soil. These are quantified in index tests to determine the plasticity, specifically the Plasticity Index (PI) which is the difference between the Liquid and Plastic Limits. Plasticity Index represents the range of moisture contents over which a soil is plastic (i.e. it can be deformed without volume change). By calculating the modified PI it can be compared to the Volume change potential chart provided by the NHBC guidance on Foundations (Section 4.2) (Ref. 11).

Based on these recommendations, the volume change potential of the natural superficial deposits is considered low, with average Modified PI Values of below 20%.

6.5 Permeability

During the ground investigation, 2 No. soakaway tests were undertaken at the site in the machine excavated trial pits. Both recorded insufficient outflow to calculate permeability. Therefore the use of a soakaway drainage design would not be recommended at the site. Copies of the infiltration test results are presented in Appendix A.

7. Land Contamination

7.1 Conceptual Site Model and Environmental Risk Assessment

The Preliminary Sources (Desk) Study (Ref. 1) contains the desk study information upon which the Preliminary Conceptual Site Model is based. It also contains a preliminary environmental risk assessment that provides a qualitative assessment of the risks associated with the identified plausible pollutant linkages.

7.2 Preliminary Risk Assessment

Based on the CSM the following table presents the plausible pollutant linkages that apply to this site in the developed scenario. An indicative qualitative assessment of the likelihood that a risk could be realised is provided with Table 7.1 below, constituting the Preliminary Risk Assessment (PRA) as outlined in CLR 11 (Ref. 12).

Table 7.1: Summary of the Preliminary Risk Associated with Potential Pollutant Linkages

Potential Receptor	Potential Source	Potential Pathways	Preliminary Risk
Construction workers	Contaminated Soil (road / parking / loading / storage / manufacturing areas).	Dermal contact and direct ingestion of soils, inhalation of vapors and asbestos particles, ingestion of windblown dust.	Low
End Users	Contaminated Soil (road / parking/ loading / storage / manufacturing areas).	Dermal contact and direct ingestion of soils, inhalation of vapors and ingestion of windblown dust.	Low
Adjacent Site Users	Contaminated Soil (road / parking/ loading / storage / manufacturing areas).	Inhalation of vapors and ingestion of windblown dust.	Low
Controlled Waters - Groundwater	Contaminated Soil (road / parking / loading / storage / manufacturing areas). Contaminant release during construction (fuel leak etc.)	Release during construction of contaminates from soil or by direct release from plant (fuel / hydraulic leak/ spillage etc.)	Low
Controlled Waters – Rivers	Contaminated Soil (road / parking / loading / storage / manufacturing areas). Contaminant release during construction (fuel leak etc.)	Release during construction of contaminates from soil or by direct release from plant (fuel / hydraulic leak/ spillage etc.)	Low

7.3 Investigation Strategy

Hand pit and window sample boreholes were positioned to gather information below the footprint of the proposed 3G pitch, associated access tracks and parking areas, and the lighting columns.

7.4 Laboratory Testing

7.4.1 Geo-environmental Testing

Chemical testing was scheduled by Capita on samples taken from the exploratory holes. All of the geo-environmental lab testing was carried out at the Laboratories of Chemtest in Newmarket (UKAS accreditation number 2183).

Table 7.2: Details of Geo-environmental Testing

Type of Test	Number of Tests
Suite E Soil	8
Suite F Water	2
Suite K Soil Leachate	3

Various determinands tested within are presented in tables 7.3 to 7.5.

Table 7.3: Chemical Testing Suite E1 (Soil)

Suite E – Soil				
Metals	**Non-Metals**	**TPH**	**VOCs**	**SVOCs**
Arsenic	Inorganic Cyanide	Aliphatic C6-C10	Benzene SGV	Benz[a]anthracene
Boron		Aliphatic C10-21	Chloroethene	Benzo[a]pyrene
Cadmium		Aliphatic C21-40	1,2-Dichloroethane	Benzo[b]fluoranthene
Chromium VI			Ethylbenzene SGV	Benzo[ghi]perylene
Copper			Naphthalene	Benzo[k]fluoranthene
Lead			Tetrachloroethanes	Chrysene
Mercury			Tetrachloroethene	Dibenz[ah]anthracene
Nickel			Tetrachloromethane	Fluoranthene
Selenium			Toluene SGV	Indeno[123-cd]pyrene
Zinc			1,1,1-Trichloroethane	Naphthalene
			Trichloroethene	Phenol SGV.
			Xylenes SGV	Pyrene

Table 7.4: Suite F Water

Analytical Parameter (Water Analysis)	Analytical Parameter (Water Analysis)
Benzene	Arsenic as As (Dissolved)
Ethyl Benzene	Cadmium as Cd (Dissolved)
m/p Xylenes	Chromium as Cr (Dissolved)
Ammoniacal Nitrogen as N	Copper as Cu (Dissolved)
Chloride as Cl w	Lead as Pb (Dissolved)
Nitrate as N	Mercury as Hg (Dissolved)
Benzo-a-Pyrene	Nickel as Ni (Dissolved)
Chrysene	Zinc as Zn (Dissolved)

Table 7.5: Suite K (Leachate)

Analytical Parameter (Soil Analysis)	Analytical Parameter (Soil Analysis)
Arsenic (aqua regia extractable)	Nickel (aqua regia extractable)
Barium (aqua regia extractable)	Selenium (aqua regia extractable)
Berilium (aqua regia extractable)	Vanadium (aqua regia extractable)
Boron (aqua regia extractable)	PAH Speciated (USEPA16
Cadmium (aqua regia extractable)	TPH banded (C6 - C40)
Chromium (aqua regia extractable)	VOC's
Copper (aqua regia extractable)	SVOC'S
Lead (aqua regia extractable)	pH
Mercury (aqua regia extractable)	Total Phenols HPLC (monohydric)

7.5 Visual / Olfactory Signs of Contamination

During the ground investigation, no visual and olfactory signs of contamination were noted on the exploratory hole log sheets.

7.6 Generic Quantitative Risk Assessment - Human Health

This analysis compares the measured concentrations of contaminants within soils, as revealed by laboratory test results, with Generic Assessment Criteria (GAC) values appropriate to the proposed end-use.

The methodology for the derivation of the GAC values is presented in 'The LQM/CIEH S4ULs for Human Health Risk assessment' * (Ref. 13) with the exception of lead which in the absence of other authoritative guidance is that presented in SP1010 (Ref. 14).

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7.6.1 Method of Analysis – Soil Contamination

The GAC are used for preliminary screening purposes only. If a concentration of a determinant is less than the corresponding S4UL/C4SL and the assumptions of the generic land-use are appropriate to the site conditions, it is reasonable to assume the concentration poses an 'acceptable' level of risk to human health, within the context of Part 2A. However, where a determinands concentration exceeds the corresponding GAC value, it does not necessarily indicate an unacceptable risk; it indicates a need for further investigation/assessment and/or inclusion of appropriate mitigating measures during the design and construction phases of a development. It should be noted that construction workers are not included in this GQRA as acute exposure conditions, such as those encountered during the construction process, are not considered when deriving the GAC. The contractor should read this environmental assessment in order to satisfy himself that suitable health and safety precautions are put in place for his employees and the public during the works period.

The GQRA has been carried out to establish the risk to end users of the proposed development. The proposed end use in this case is a 3G sports pitch. In this case we have interpreted the 'Public Open Space (public park)' generic land-use as described in Ref. 13, to be suitably close to representing the characteristics of the proposed development.

There are a variety of surface soils present at the site which have been tested and revealed a wide range of soil organic matter (SOM) content. Consequently the GAC used are those derived for 'Sand' with 1 % SOM, this represents a worst-case scenario.

Laboratory test results have been analysed in the GQRA using the statistical methods outlined in Ref. 15.

7.6.2 Analysis of Results

The site has been analysed in terms of two distinct strata layers.

- Made Ground; and
- Natural superficial deposits.

The results of the GQRA are summarised below and presented in full within Appendix B.

7.6.2.1 Made Ground

Inorganic and Organic Chemistry

Of the five samples of Made Ground tested, no GAC exceedances were recorded for inorganic or organic determinands. No asbestos fibers were recorded.

Total Petroleum Hydrocarbons (TPH)

All of the results for Made Ground were below the LoD for TPH.

7.6.2.2 Natural Superficial Deposits

Inorganic and Organic Chemistry

For the six samples of natural superficial deposits, no GAC exceedances were recorded for any inorganic or organic determinands. No asbestos fibres were detected.

Total Petroleum Hydrocarbons (TPH)

All of the results for Made Ground were below the LoD for TPH.

7.6.3 Leachate Testing

Leachate testing is a useful indicator of the potential mobility of contaminants. In order to provide an indication of contaminant mobility, two samples of Made Ground were tested for Suite E2, leachable contaminants, and one sample of the natural superficial deposits. The results were screened as for a Tier 1 controlled waters GQRA using the GACs for UK Drinking Water Standards (DWS) or Environmental Quality Standard (EQS) value, which are generally very stringent target concentrations (Appendix B).

The pH of the samples for Made Ground ranged from 7.2 to 7.6, indicating slightly alkaline conditions. The pH for the one sample of natural superficial deposits was 8.8 having a slightly greater alkalinity than the Made Ground.

One sample of Made Ground and one sample of natural superficial deposits returned concentrations of Copper (dissolved) and Lead (dissolved) above the DWS limit.

7.6.4 Groundwater Testing

Two water samples that were collected from standpipes installed in window sample were tested. The results indicate levels of Arsenic (dissolved), Chromium (dissolved), Copper (dissolved), Nickle (Dissolved) and Boron (dissolved) were elevated above the GAC for DWS.

7.6.5 Conclusions of Soil GQRA

None of the soil samples tested recorded levels of organic or inorganic contaminants above their corresponding GAC value.

Leachate testing recorded levels of copper and lead in the Made Ground and natural superficial deposits which exceeded the DWS limit. It should also be noted that laboratory leachate tests are relatively aggressive, often over estimating contaminant concentrations and may not realistically represent actual conditions.

Groundwater testing indicates that a number of metals were found at levels that exceeded the GAC for drinking water standards (DWS).

7.7 Generic Quantitative Risk Assessment - Ground Gas

The Conceptual Site Model identified Made Ground as a potential source of ground gas and vapours at the site. The GI methodology permitted the installation of four 50 mm diameter combined groundwater and gas-monitoring pipes into window sample boreholes. A single round of ground gas monitoring was undertaken on 15/06/2020 in all four of the standpipes. The results are summarised in the table below.

Table 7.6: Summary of Ground Gas Readings

Hole ID	Flow L/hr	CH_4 %	CO_2 %	O_2 %	CO ppm	H_2S ppm
WS01	0.0	0.0	3.0	18.4	0.0	0.0
WS03	0.0	0.0	3.0	19.4	0.0	0.0
WS05	0.0	0.9	4.2	11.6	0.0	0.0
WS09	0.1	0.0	1.5	19.3	0.0	0.0

The results show that methane was recorded in WS05 at a concentration of 0.9%. Carbon dioxide was encountered in all the installations at concentrations between 1.5% and 4.2%. The lowest value of oxygen, 11.6% corresponds to WS05, which had the highest recording of carbon dioxide. The only flow that was recorded was in WS09 at 0.1 L/hr. Copies of the gas monitoring results are presented in Appendix A. Carbon monoxide and hydrogen sulphide were not detected.

Based upon this preliminary information, there appears to be a risk to the development from elevated levels of ground gas. This may be mitigated, however, by the nature of the works not requiring entry into deep excavations. This issue should be raised with the contracting firm undertaking the final works and incorporated into risk assessments going forward.

8. Updated Conceptual Site Model

8.1 Overview

This section summarises the findings of the recent ground investigation and presents an updated Conceptual Site Model.

The salient points determined by the ground investigation are:

- The ground conditions across the site are reasonably consistent, the sequence of which comprises:
    - Topsoil;
    - Made Ground; and
    - Natural Superficial Deposits.
- The Made Ground and underlying clay soils was relatively uncontaminated with no GAC exceedances or elevated concentrations of contaminants significantly above natural background concentrations (for 'Public Open Space' land use);
- Asbestos was not detected in any of the samples;
- Groundwater seepages were encountered in trial pits TP19 and TP20, and window samples WS11 and WS12 between 1.5mbgl and 2.7mbgl. Subsequent groundwater monitoring in standpipes installed in window samples WS01, WS02, WS05 and WS09 found that they were often dry (See table 4.1). WS01 had a water level of approximately 1.40m bgl on all three monitoring visits. WS02 and WS05 showed water levels of 1.80 and 2.10m bgl on the one visit they contained water. WS09 was consistently dry.
- Leachable concentrations of soil contaminants were generally low, with only copper and lead exceeding the corresponding GAC value.
- Testing of groundwater samples showed elevated levels of Arsenic (dissolved), Chromium (dissolved), Copper (dissolved), Nickle (Dissolved) and Boron (dissolved) exceeding the corresponding GAC values.
- Gas monitoring was undertaken on two occasions and revealed elevated concentrations of carbon dioxide with depleted levels of oxygen. Low levels of methane was also recorded in WS05. Typically, there was no associated flow with the results although 0.1L/hr was recorded in WS05.

8.2 Conceptual Site Model

The identified sources of contamination, the receptors in the developed scenario and the plausible pollutant linkages between them, are discussed below.

8.2.1 Contamination Sources

Post GI, the identified contamination sources are:

- Leachates in the form of metals; and
- Ground gas and vapours.

8.2.2 Receptors

The potential receptors identified in the developed scenario are:

8.2.2.1 Human Health

The Client proposes to use the site as a 3G pitch (playing field) for a school. Given this proposed end use, the human health receptors are:

- School children, staff and associated adults.
- Construction workers.

8.2.2.2 Controlled Water

The site is underlain by a Secondary A type aquifer. Six water abstractions have been granted within 1km of the site. The closest is 632m to the east of the site.

8.2.2.3 Property

Geotechnical and structural considerations are dealt with in section 6 of this report.

8.2.2.4 Eco-Systems

There are no sites with statutory protection in the immediate vicinity.

8.2.3 Plausible Pollutant (Contaminant) Linkages

The plausible contaminant linkages for the site is presented as Table 8.1 below. The pollutant linkages described below assume that the site will be developed for a 3G/4G pitch.

Table 8.1: Plausible Pollutant Linkages

Receptor	Source	Pathway	Preliminary Risk
Future Site Users & Site Staff	Contaminated Soil Including Asbestos Fibres	Dermal Contact / Particulate Inhalation / Ingestion	Very Low
	Gas and Vapours Methane, Hydrocarbons and Carbon Dioxide	Inhalation	Low
Construction Workers	Contaminated Soil Including Asbestos Fibres	Dermal Contact / Particulate Inhalation / Ingestion	Low
	Gas and Vapours Methane, Hydrocarbons and Carbon Dioxide	Inhalation	Low

8.2.4 Risk Evaluation

Potential risks are summarised in Table 8.1 above and are discussed in the following sections.

8.2.4.1 Construction Workers

During the ground works and construction phase of the development there is a risk of harm arising from the short-term exposure to contaminants through handling of impacted soils, dust generation and asbestos fibre liberation from bare ground and stockpiles, and vapours accumulating in trenches. It is noted, however, that asbestos was not recorded during the GI works.

Although these short-term risks are not quantified in the GQRA, the developer should use the GI data to assess the risks to the work force (and adjacent site occupiers). Risk mitigation measures must be identified in the construction phase health and safety plan and consequently implemented on site during the works.

Similar risks may occur where maintenance, repair or refurbishment involves excavation of the ground in the finished development.

Elevated levels of carbon dioxide ground gas were recorded during the monitoring of the installations with depleted levels of oxygen.

8.2.4.2 Users of Proposed Development

The human health GQRA identified the Made Ground and underlying sandy gravelly clay stratum as generally uncontaminated. Furthermore, once the construction works have been completed the site will be capped by the 3G/4G pitch, reducing the risk of end users being exposed to any contaminated soils.

9. Material Re-Use and Disposal

If any form of excavation is required then the designer has a duty to determine whether any of the materials encountered could be hazardous.

Any material removed from site will be subject to waste management regulations and these should be adhered to. The following section provides information on waste classification for disposal purposes and options for recycling.

The majority of excavated materials are likely to comprise topsoil and Made Ground of mixed lithologies. These materials are likely to be suitable for use as general fill and landscaping.

Soil classification for the natural superficial deposits soils underlying the topsoil and Made Ground indicate this material to be 'Class 2A/2B and 2C –Cohesive Material'. If any materials are to be reused for engineering purposes, then confirmation of its classification will need to be undertaken on representative samples prior to use.

A waste classification has been undertaken utilising HazWasteOnline. Seven samples of Made Ground and three sample of the underlying natural material were assessed utilising chemical test data obtained from the GI. The Waste Classification data is presented in Appendix C. The assessment determined the Made Ground and underlying natural ground to be non-hazardous.

Any materials being removed from the site will need appropriate testing by the contractor at the time of removal / disposal.

10. Geotechnical Risk Register

10.1 General

During ground investigation and subsequent geotechnical analysis of the area, certain geotechnical risks have been identified. Potential risks for the project have been assessed using a simple scale points system using the relationship:

Risk Rating R = Probability (P) x Consequence (C)

Table A

Probability (P)		
Category	**Definition**	**Scale**
Expected (>10%)	Likely to occur frequently, many times during the project	5
Probably (1-10%)	Several times during project period	4
Possible (0.1-1%)	Sometime during project period	3
Improbable (0.01–.1%)	Unlikely but possible in project period	2
Remote (<0.01%)	Very unlikely to occur at all	1

Table B

Consequence (C)		
Category	**Definition**	**Scale**
Catastrophic	Multiple deaths, total loss of system	5
Serious	Major damage, death	4
Significant	Partial failure, serious injury	3
Minor	Minor damage/injury	2
Negligible	Can be regarded as without consequence	1

Table C

Level of Risk (R)		
Risk Rating	**Category**	**Guidance**
20-25	Very High	Intolerable, must be eliminated or avoided
11-19	High	Unacceptable, must be eliminated or avoided
7-10	Moderate	Undesirable, to be avoided if reasonably practical
3-6	Low	Acceptable – can be accepted provided risk is managed
1-2	Very Low	No remedial action is necessary

The potential risks and impact on the overall scheme are summarised in the Table 10.1 below:

Table 10.1: Geotechnical Risk Register

Feature	Geotechnical Risk/Outcome	Initial Risk Rating				Mitigation
		L	S	R	Category	
Underestimation of Contamination Level	Increased cost / delay in works. Treatment and/or disposal required.	2	3	6	Low	Implementation of site waste management plan.
Pavement foundations	Subgrade CBR value less than anticipated. Increase in cost of capping/pavement.	2	2	4	Low	Review pavement design. Consider some form of improving subgrade soils. Visual inspection on site. Confirm CBR value by on site testing.
Spread Foundations	Excessive settlement of strata beneath shallow foundations. Bearing failure.	2	3	6	Low	Adequate initial site investigation and design. Foundations designed to reduce settlement to within allowable tolerances. Visual inspect of formation material to confirm ground conditions. Excavate and replace zone of soft material with suitable selected granular material.
Chemical attack on concrete structures	Structural deterioration.	2	3	6	Low	Selection of appropriate concrete class for construction of foundation structures.

11. Conclusions and Recommendations

11.1 Conclusions

- The geology encountered can be summarised as below:

Table 11.1 Summary of Encountered Geology

Strata	Description
Topsoil (Made Ground)	Light brown, occasionally light grey, sandy silt
Made Ground	Light brown slightly sandy, slightly gravelly to gravelly silt. The gravel is fine to coarse, sub-rounded to angular of sandstone, mudstone and brick, with occasional glass, concrete and clinker. Some exploratory holes report a low to medium cobble content of sandstone.
Natural Superficial Deposits	Cohesive deposits of firm to stiff, reddish brown occasionally slightly sandy silty clay. Occasional pockets of silt are also noted on the logs. Gravel is occasionally recorded, but where it is, it is described as fine to coarse, angular to rounded mudstone and sandstone. Granular layers comprising reddish brown slightly clayey, slightly silty, slightly gravelly sand, or just clayey sand; and light brown and grey sandy gravel. The gravel is described as fine to coarse, sub-rounded to angular of sandstone

- Human health considerations were assessed in relation to potential contamination. Samples were tested for metals and non-metals, volatile and semi volatile organic compounds, and total petroleum hydrocarbons. The assessment carried out indicates that the values for soils were below the GAC for "'Public Open Space (Public Park)" end use and therefore present a low risk to human health for that land use.

- Asbestos was not detected in the samples tested.

- There is considered to be a low ground gas generation potential at the site. Based on the current available information the risk of harm to the proposed development is considered to be low.

- Groundwater monitoring in standpipes installed in window samples WS01, WS02, WS05 and WS09 found that they were often dry (See table 4.1). WS01 had a water level of approximately 1.40m bgl on all three monitoring visits. WS02 and WS05 showed water levels of 1.80 and 2.10m bgl on the one visit they contained water. WS09 was consistently dry.

11.2 Recommendations

- Asbestos was not encountered in the samples tested, but consideration of its presence is advisable in any remediation strategy.

- Based on the results of the site investigation, laboratory and in situ testing, reference to technical literature and past experience with similar materials, the characteristic soil parameters in the Table 11.2 are recommended.

Table 11.2: Summary of Characteristic Geotechnical Parameters

Unit Weight (γ) kN/m^3	Effective Cohesion (c') kPa	Effective friction Angle (ϕ') Degrees	Undrained Shear Strength (c_u) kPa	Coefficient of Compressibility (m_v) m^2/MN
Made Ground	19.8	unknown	unknown	55 - 80
Natural Superficial Deposits	19.8	3 - 5	26	25 - 75

Any proposed spread foundation will be placed within the natural superficial deposits. The bearing resistance of such footings has been determined as outlined in Eurocode 7 Annex D (total stress conditions) and summarised in Table 11.2 below. The net allowable unit bearing resistances quoted in Table 11.2 are for a maximum total settlement of 25mm and founding within the underlying natural superficial deposits. This assessment is tentative only and based on the soil properties alone and no allowance has been included for loading from any proposed lighting column structure or bending moments from wind load effects. Further detailed assessment will need to be undertaken at a later stage once details for the proposed structure are known.

Table 11.3: Summary of Unit Bearing Resistances

Footing Size	Foundation Stratum	Level of foundation base (mbgl)*	Unit Bearing Resistance (kPa)	
			DA1C1	DA1C2
Square Pad (2.2m to 2.4m)	Clay	Assumed 1m	250	190

*mbgl = metres below existing ground level (prior to works).

- Additionally, it is recommended that where the lighting mast foundation bases are proposed, 150mm of compacted engineered fill (Type 1 sub-base) is placed beneath the foundation.

- The formation to be inspected by a competent person prior to placing sub base, and any soft spots encountered at formation are to be removed and backfilled with compacted engineered fill to the satisfaction of the engineer.
- Data recorded indicates that at a minimum depth of 0.5mbgl, a CBR value of 3 to 4% is available based on the lower bound values.
- Any soft spots uncovered at formation to be removed and backfilled with compacted engineered fill to the satisfaction of the engineer. In-situ verification CBR tests to be undertaken by the contractor at formation.
- Soakaway testing at two locations recorded insufficient outflow to calculate permeability. Therefore, the use of a soakaway drainage design would not be recommended at the site.
- Based on the testing results an Aggressive Chemical Environment for Concrete (ACEC) classification of AC-1d and a Design Sulphate Class DC-1 class appears to be appropriate for this site.

12. References

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DRAWINGS

Drawings

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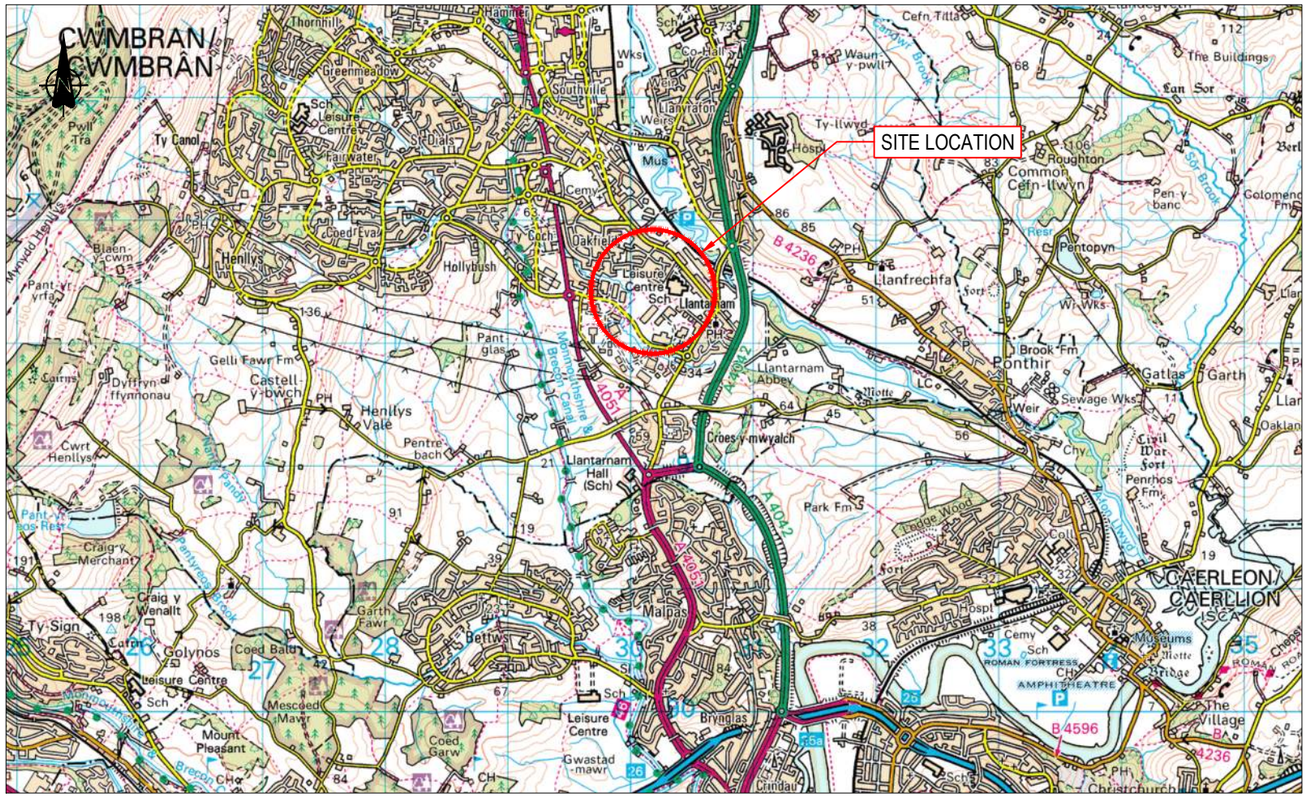

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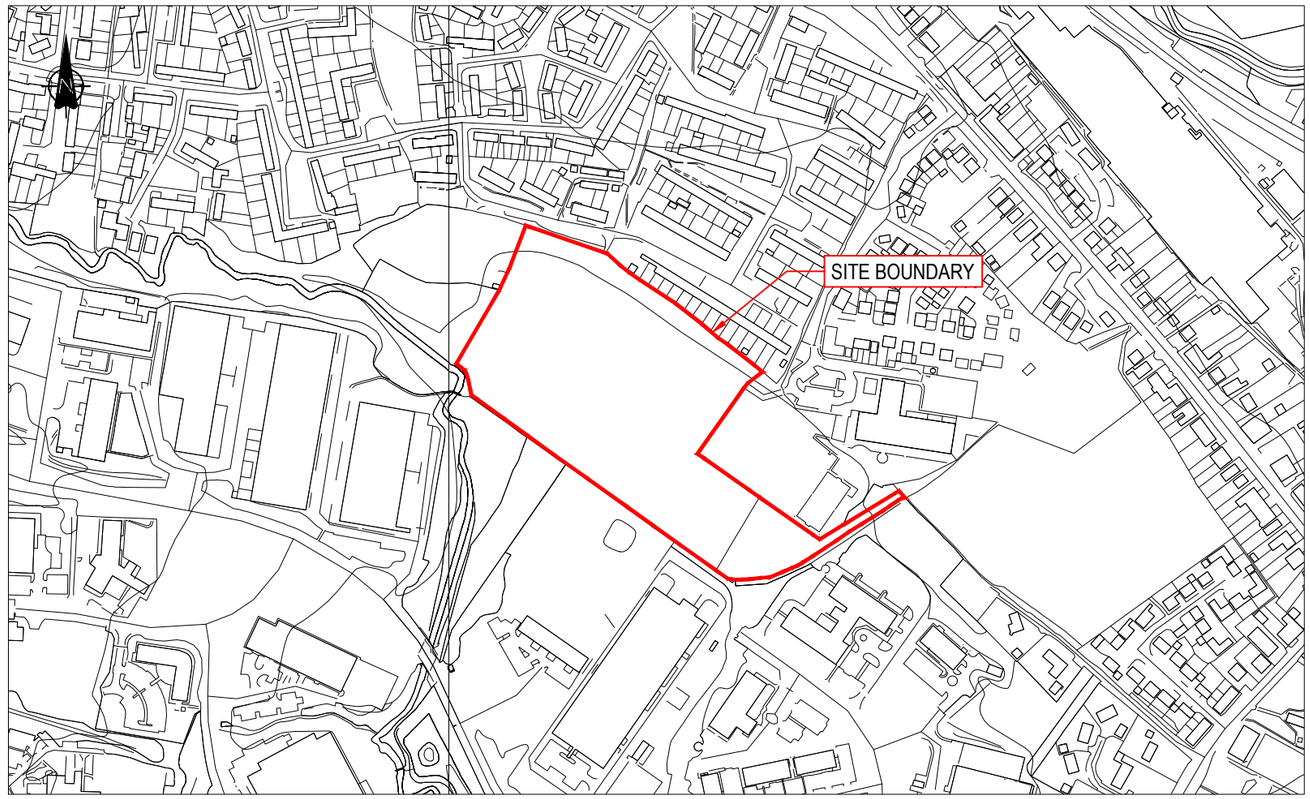

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Rev	Drwn	Chk'd	App'd	Description	Date
P01	LB	GW	AH	REPORT ISSUE	07/09/2020
P01	LB	IL	AH	TENDER ISSUE	24/02/2020

Purpose of Issue
S2 - FIT FOR INFORMATION

Classification
COMMERCIAL IN CONFIDENCE

Client
TORFAEN COUNTY BOROUGH COUNCIL

Project
LLANTARNAM 3G PITCHES

Drawing
SITE LOCATION PLAN

Scale @ A3	Drawn	Checked	Approved
AS SHOWN	LB	IL	AH

Project No.
CS099476

Date
07-FEB-2020

Drawing Identifier
Project - Originator - Zone - Level - File Type - Role - Number
99476-CAP-75-XX-DR-C-7501

BS1192 Compliant rev
P02

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KEY

- STE BOUNDARY
- TRIAL PITS
- WINDOW SAMPLES

Rev	Drwn	Chk'd	App'd	Description	Date
P01	LB	GW	AH	TENDER ISSUE	09/09/2020

Purpose of Issue
S2 - FIT FOR INFORMATION

Classification
COMMERCIAL IN CONFIDENCE

Client
TORFAEN COUNTY BOROUGH COUNCIL

Project
LLANTARNAM 3G PITCHES

Drawing
EXPLORATORY HOLE LOCATION PLAN

Scale @ A3	Drawn	Checked	Approved
1:1,250	LB	GW	AH

Project No.	Date
CS099476	09-SEPT-2020

Drawing Identifier — BS1192 Compliant
Project - Originator - Zone - Level - File Type - Role - Number — rev
99476-CAP-75-XX-DR-C-7504 — P01

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APPENDIX A

Appendix A
Quantum Ground Investigation Factual Report

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Llantarnam 3G Pitches

GROUND INVESTIGATION FACTUAL REPORT

Report No. Q0269/FR August 2020

DOCUMENT CONTROL	
Contract Name:	**LLANTARNAM 3G PITCHES**
Contract Reference:	**Q0269**
Report Type:	**Factual Ground Investigation Report**
Report Reference:	**Q0269/FR**
Date of Report Production:	**August 2020**
Client	**Torfaen County Borough Council**

Version:	Date:	Prepared by:	Checked by:	Approved by:
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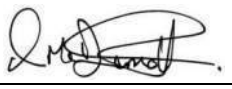
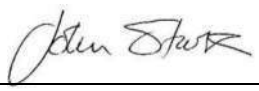
				
		Senior Eng. Geologist B.Sc.(Hons).,M.Sc., C.Geol., FGS	Company Manager B.Sc. (Hons)., M.Sc., C.Geol, FGS	Technical Manager *B.Sc.(Hons)., C.Geol., FGS*

CONTENTS

0.0. FOREWORD

The following Conditions and Notes on Site Investigation Procedures should be read in conjunction with this report.

0.1. Ground Investigation

0.1.1. General

Recommendations made and opinions expressed in the report are based on the strata observed in the boreholes and excavations, together with the results of site and laboratory tests. No responsibility can be held for conditions which have not been revealed by the Exploratory Holes or which occur between them. Whilst the report may suggest the likely configuration of strata, both between Exploratory Holes and below the maximum depth of investigation, this is only indicative and liability cannot be accepted for its accuracy.

Unless specifically stated, no account has been taken of possible subsidence due to mineral extraction below or close to the site.

0.1.2. Investigation Procedures

Widow Sampling and Trial Pitting techniques for ground investigation have been employed within the project. All Exploratory Hole operations, sampling and logging of soils, rocks and in-situ testing complies with the recommendations of the British Code of Practice BS 5930 (2020), 'Site Investigations', British Code of Practice BS 10175: 2011 +A1:2013 'Investigation of Potentially Contaminated Sites' and BS 1377: 1990, 'Methods of Test for Soils for Engineering Purposes'. Whilst these techniques allow the maximum data to be obtained in soft ground/ superficial deposits, some disturbance and variation of soft and layered soils is unavoidable. Attention is drawn to this condition whenever it is suspected.

0.1.3. Routine Sampling

Representative disturbed and environmental soil samples of the different strata are taken following completion of logging. Soil samples obtained for testing are sampled and sealed in plastic tubs, borosilicate amber jars or in specialist vessels where required. All samples are returned from site to QGL's laboratory for controlled storage within 24 hours of sampling to await test scheduling/requirements.

0.1.4. In-Situ Testing

- Hand Shear Vane
- Soakaway testing
- Dynamic Probes
- DCP/TRL Probes

0.1.5. Groundwater

Where possible, the depth of entry of any influx of groundwater is recorded during the course of excavation or boring operations. The rate of inflow into the excavation or borehole is monitored during the course of the excavation or during boring procedures. Upon encountering any water strikes, work is temporarily halted and the water levels monitored for a standard twenty-minute period recording the change in water level at the end of the twenty minutes.

Groundwater conditions observed in the excavations are those appertaining to the period of investigation. It should be noted, however, that groundwater levels are subject to diurnal, seasonal and climatic variations and can also be affected by drainage conditions or other causes.

0.1.6. Retention of Samples

After satisfactory completion of all the scheduled laboratory tests on any sample, the remaining material is discarded. Further to notifying the Engineer/ Client with one week's notice all soil and/or rock samples will be discarded 28 days after submission of the approved final report.

1.0. INTRODUCTION

1.1 General

Upon the instructions of Capita (Project Engineer / Investigation Supervisor), on behalf of Torfaen County Borough Council (Client), Quantum Geotechnic Ltd (QGL) has been commissioned to undertake a ground investigation on land to the west of the existing Llantarnam Community Primary School site, located some 250m to the south west of Llantarnam Road, Llantarnam, Cwmbran, for the proposed installation of a 3G pitch and associated infrastructure. The purpose of this ground investigation is to determine the existing ground and groundwater conditions on the site to allow the design to proceed.

The approximate Ordnance Survey National Grid Reference of the site is 330173, 193422.

This report presents a factual account of the fieldwork carried out, the strata encountered, groundwater observations and details subsequent laboratory testing undertaken on samples obtained from the investigation.

Other available sources of information that have been consulted include the published geological maps for the area.

General notes on the techniques employed by QGL are described in the Foreword together with the limitations inherent in carrying out site investigation work.

2.0. SITE DETAIL

2.1. Site Description

The ground investigation was undertaken across the site as directed by the Project Engineer / Investigation Supervisor. The site is currently a disused sports playing field and is generally flat with the exception of the strip of land close to the northern site boundary, which slopes up from south to north. Its western boundary is marked by a line of trees and the northern boundary by a series of garden walls associated with the properties in this area. The southern boundary is again marked by a line of trees/bushes, and the eastern boundary by the fenceline marking the boundary of the Llantarnam Community Primary School.

Dowlais Brook is located adjacent to the south west corner of the proposed site area. From this location the brook flows southwards into a pond located adjacent to Lakeside Close and Llantarnam Park Way some 400m south south east.

A site location plan can be found as Figure 1 in Appendix I.

2.2. Statutory Service Information

All service information was held by the Project Engineer and was made available to QGL prior to commencement of the intrusive works. Standard QGL procedures for breaking ground were followed and all areas were CAT scanned for presence of buried services.

3.0. GEOLOGY & ENVIRONMENTAL SETTING

3.1. Published Geology

Details of the superficial and solid geology of the site are provided by the British Geological Survey (BGS) Sheet 249 Newport (Solid and Drift) at 1:50,000 scale.

Superficial Geology

The geological sheet indicates the natural superficial deposits on the eastern side of the site is likely to be River Terrace deposits, with the southern side mapped to be underlain by Alluvial materials typically comprising of clays to gravels.

No Made Ground deposits are mapped across the site. There is however a possibility Made Ground may be present relating to the historic use / re-profiling of the site.

Solid Geology

The Geological map indicates the solid geology below the site to comprise of the Moor Cliff's Formation. This group comprises predominately mudstone with subordinate sandstone and limestone beds. The limestone is noted as being more common in the upper most Chapel Point Limestone Member.

4.0. FIELDWORK

4.1. General

The fieldwork was undertaken between the 3rd to the 9th June 2020. Full time on site supervision and attendance was provided by an Engineering Geologist from QGL.

All service plans were held onsite, with all site personnel inducted by QGL and briefed of the pertinent Risk Assessments and Method Statements relating to the tasks to be undertaken.

Each area of investigation was fully CAT ('Cable Avoidance Tool') scanned prior to breaking ground.

Summary of Fieldworks

The fieldworks comprised;

- 18 No. Hand Excavated Trial Pits
- 2 No. Machine Excavated Trial Pits
- 15 No. Window sample holes with dynamic probes
- Soakaway tests within the Machine Excavated Trial Pits
- TRL DCP Probes adjacent to each Trial Pit
- Sampling of soils for environmental and geotechnical testing

General notes on the techniques employed by Quantum Geotechnic are described in the Foreword together with the limitations inherent in carrying out ground investigation work.

4.2. Exploratory Hole Locations

The exploratory hole locations were set out by QGL in liaison with the Project Engineer. The exploratory hole locations were surveyed upon completion using a Leica dual frequency GPS Model 1250, accurate to 0.005m horizontal and 0.01m vertical.

A site location plan is presented as Figure 2 in Appendix I. The Exploratory Hole co-ordinates and levels are detailed within Table 1.

Table 1: Exploratory Hole Co-Ordinates & Levels

Exploratory Hole ID	Easting	Northing	Height (mAOD)
HDTP01	330234.372	193451.967	40.561
HDTP02	330155.889	193509.345	41.146
HDTP03	330067.577	193537.687	40.428
HDTP04	330031.811	193436.849	39.853
HDTP05	330071.17	193402.82	39.313
HDTP06	330198.449	193323.667	38.394
HDTP07	330257.672	193317.759	37.757
HDTP08	330344.534	193326.641	40.312
HDTP09	330231.915	193331.024	38.145
HDTP10	330184.232	193348.409	38.391
HDTP11	330111.135	193389.201	39.01
HDTP12	330157.302	193403.216	38.638
HDTP13	330199.638	193449.951	39.175
HDTP14	330112.667	193504.539	39.505
HDTP15	330077.548	193459.996	39.386
HDTP16	330054.528	193427.783	39.419
HDTP17	330197.026	193377.072	38.575
HDTP18	330241.849	193436.211	40.213
TP19	330076.623	193522.958	39.807
TP20	330202.449	193338.089	38.337
WS01	330092.272	193525.757	39.869
WS02	330054.254	193476.627	39.77
WS03	330041.572	193436.178	39.696
WS04	330088.196	193398.888	39.171
WS05	330118.097	193432.568	38.817
WS06	330171.713	193476.133	39.315
WS07	330211.581	193461.583	40.36
WS08	330225.59	193455.844	40.458
WS09	330233.376	193447.493	40.363
WS10	330191.755	193381.107	38.49
WS11	330164.868	193352.169	38.435
WS12	330205.344	193361.134	38.309
WS13	330222.881	193348.205	38.244
WS14	330191.825	193358.812	38.348
WS15	330213.795	193322.96	38.279

4.3 Trial Pits

2 No. Trial Pits (HDTP19-20) were excavated using a JCB 3CX excavator. 18 No. Trial Pits (HDTP01-18) were excavated using insulated hand tools at the positions shown on the exploratory hole location plan in Appendix I.

This method of investigation allows direct sampling of the near surface deposits for identification purposes, as well as assessment of any salient features and Made Ground or disturbed ground. The trial pits were logged in accordance with BS5930:2015; BS EN ISO 14688-1:2002 and BS EN ISO 14688-2:2004, and supervised at all times by an Engineering Geologist from QGL.

All trial pits were backfilled with compacted layers of arisings upon completion.

Geotechnical and Environmental samples were taken within the superficial deposits for laboratory testing purposes.

Details of the Trial Pits, including final depths in metres below ground level (mbgl) are provided in Table 2.

Table 2: *Trial Pit Detail*

Exploratory Hole ID	Exploratory Hole Type	Final Length (mbgl)	Reason for termination
HDTP01	Hand Excavated Trial Pit	1.2	Specified depth
HDTP02	Hand Excavated Trial Pit	1.2	Specified depth
HDTP03	Hand Excavated Trial Pit	1.2	Specified depth
HDTP04	Hand Excavated Trial Pit	1.2	Specified depth
HDTP05	Hand Excavated Trial Pit	1.1	Unable to progress
HDTP06	Hand Excavated Trial Pit	1.1	Unable to progress
HDTP07	Hand Excavated Trial Pit	1.0	Unable to progress
HDTP08	Hand Excavated Trial Pit	1.1	Unable to progress
HDTP09	Hand Excavated Trial Pit	1.1	Unable to progress
HDTP10	Hand Excavated Trial Pit	1.15	Unable to progress
HDTP11	Hand Excavated Trial Pit	1.15	Unable to progress
HDTP12	Hand Excavated Trial Pit	1.2	Specified depth
HDTP13	Hand Excavated Trial Pit	1.2	Specified depth
HDTP14	Hand Excavated Trial Pit	1.1	Unable to progress
HDTP15	Hand Excavated Trial Pit	1.2	Specified depth
HDTP16	Hand Excavated Trial Pit	1.2	Specified depth
HDTP17	Hand Excavated Trial Pit	1.1	Unable to progress
HDTP18	Hand Excavated Trial Pit	1.2	Specified depth
TP19	Machine Excavated Trial Pit	2.7	Soakaway test undertaken
TP20	Machine Excavated Trial Pit	2.4	Soakaway test undertaken

A complete set of Engineering Geologist's Test Hole logs are presented within Appendix II.

4.4 Windowless Sample Boreholes

A total of 15 No. Windowless Sample Boreholes (WS01-WS15) were undertaken during the site works. Windowless Sampling techniques involve a sampler dynamically driven down to depth using sampling tubes, nominally 116mm in diameter and reducing as depth increases. This technique allows a relatively undisturbed sample of soil to be taken in a plastic liner, or alternatively sub sampled as a disturbed jar sample. Within competent granular-cohesive soils the portable equipment used for Windowless Sampling is limited by the nature of the ground and robustness of the driving tool. The recovered sample liners were subsequently split and logged on site in accordance with BS5930: 2015; BS EN ISO 14688-1:2002 and BS EN ISO 14688-2:2005, by a Quantum Engineering Geologist. Each Windowless Sample location was reinstated with Bentonite and surface replaced as per pre-existing construction.

The sequence of deposits encountered during the investigation is detailed within the Engineering Geologist's logs presented within Appendix III. The logs highlight the nature of the soils encountered and provide descriptions of the strata revealed at the site. Details of the Windowless Sample Boreholes, including final depths in metres below ground level (m.bgl) are provided below in Table 3:

Table 3: Windowless Sample Borehole Detail

Exploratory Hole ID	Terminated Depth (m.bgl)	Reason for Termination
WS01	3.00	Encountered Refusal in gravelly Clay – unable to progress
WS02	1.20	Encountered Refusal in cobbles – unable to progress
WS03	2.60	Encountered Refusal in gravelly Sand – unable to progress
WS04	1.60	Encountered Refusal in sandy Gravel – unable to progress
WS05	1.90	Encountered Refusal in sandy Gravel – unable to progress
WS06	2.00	Encountered Refusal in gravelly Clay – unable to progress
WS07	1.80	Encountered Refusal in gravelly Clay – unable to progress
WS08	1.60	Encountered Refusal in gravelly Clay – unable to progress
WS09	1.60	Encountered Refusal in gravelly Clay – unable to progress
WS10	1.80	Encountered Refusal in sandy Gravel – unable to progress
WS11	2.50	Encountered Refusal in gravelly Sand – unable to progress
WS12	3.00	Encountered Refusal in gravelly Sand – unable to progress
WS13	2.00	Encountered Refusal in gravelly Sand – unable to progress
WS14	1.5	Encountered Refusal in sandy Gravel – unable to progress
WS15	4.00	Encountered Refusal in sandy Gravel – unable to progress

A complete set of Engineering Geologist's Window Sample borehole logs are presented within Appendix III.

4.5 In-Situ Testing

4.5.1 Super Heavy Dynamic Probe

To complement the findings of the Windowless Sample Boreholes, each Borehole was accompanied by a Super Heavy Dynamic Probe (DPSH) test immediately adjacent.

Super Heavy Dynamic Probe testing involves recording the blow counts for every 100mm of driving (N_{100}), using the automated 63.5kg drop hammer. Dynamic probing determines the resistance of soils in-situ to the intermittent penetration of a 90º cone when driven dynamically in a standard manner, a continuous record is provided with respect to depth of the resistance of the cone. The test is performed in accordance with BS EN ISO22476-2:2005+A1:2011 *Geotechnical Investigation and Testing. Field Testing. Dynamic Probing*. The information submitted is recorded as the number of blows to drive the cone each 100mm increment. Table 4 below details the depths that were achieved within the Super Heavy Dynamic Probes.

Table 4: Super Heavy Dynamic Probe Test Detail

Exploratory Hole ID	Terminated Depth (m.bgl)	Reason for Termination
DP01	2.70	Refusal
DP02	2.20	Refusal
DP03	2.60	Refusal
DP04	2.80	Refusal
DP05	3.80	Refusal
DP06	2.50	Refusal
DP07	3.80	Refusal
DP08	4.10	Refusal
DP09	4.20	Refusal
DP10	1.90	Refusal
DP11	2.70	Refusal
DP12	4.20	Refusal
DP13	3.20	Refusal
DP14	1.60	Refusal
DP15	4.30	Refusal

A complete set of Dynamic Probe test results are presented in Appendix IV.

4.5.2 TRL DCP Probes

The TRL (Transport Research Laboratory) Dynamic Cone Penetrometer (DCP) tests were undertaken adjacent to each Trial Pit. The TRL DCP probe is used for rapid in-situ measurement of the structural properties of existing shallow ground conditions. The unit incorporates an 8 kg weight with a drop of 575 mm, and a 20 mm diameter cone fitted to the end of the shaft, allowing measurements to be made down to a depth of approximately 850 mm.

The TRL DCP Probe results are presented in Appendix V.

4.5.3 Soakaway Tests

Soakaway tests were undertaken within Trial Pits TP19 and TP20 in accordance with BRE 365. The test involves filling a test pit with water and measuring the time taken for the water level to drop.

The Soakaway test results are presented in Appendix VI.

4.6. Sampling - General

Sampling of soils was undertaken in accordance with the Specification for the Works as specified by the Engineer. Geotechnical bulk, large bulk and disturbed samples were taken where required within the superficial deposits for strata identification and laboratory testing purposes. In addition, environment samples were taken in amber jars for laboratory testing.

All geotechnical samples are returned from site to QGL's laboratory for controlled storage to await test scheduling/requirements. For specific details of laboratory testing see Section 5.0. Sample type and sample depth are recorded on the Engineering Geologist's Exploratory Hole Logs found within Appendices II and III.

4.7 Gas and Groundwater Monitoring

A 50mm ID gas and groundwater standpipes was installed within WS01, WS03, WS05 and WS09 in accordance with the Engineer's instruction.

Table 5 details the installation.

Table 5: *Monitoring Installation Details*

Exploratory Hole ID	Installation Diameter (m.bgl)	Installation Depth (m.bgl)	Installation Response Zone (m.bgl)
WS01	50mm	2.5	0.5-2.5
WS03	50mm	2.35	0.5-2.35
WS05	50mm	1.9	0.5-1.9
WS09	50mm	1.6	0.5-1.6

Groundwater monitoring was undertaken during the fieldworks and ground gas and water monitoring along with groundwater sampling was undertaken upon completion of the fieldworks. The results are presented within Appendix VII.

Gas monitoring was undertaken using a GA2000 gas analyser to measure the following:

- Atmospheric pressure
- Flow rates (L/hr)
- Methane
- Carbon Dioxide
- Oxygen
- Carbon Monoxide
- Hydrogen Sulphide

5.0. LABORATORY TESTING

5.1 General

The laboratory testing was scheduled by the Project Engineer / Investigation Supervisor and comprised a number of geotechnical and environmental tests on selected soil, soil leachate and groundwater samples obtained during the investigation.

5.2 Geotechnical Laboratory Testing

All the geotechnical soil testing work was carried out in accordance with the procedures stipulated in the various sections of BS 1377:1990 Parts 1 - 9 Methods of test for soils for civil engineering purposes. Table 6 details the tests undertaken.

Table 6: Geotechnical Tests Undertaken

Type of Test	No of Tests
Moisture Content	15
Liquid Limit, Plastic Limit & Plasticity Index	15
PSD Wet Sieve	5
PSD Sedimentation by pipette	5
Dry density / moisture content relationship using 2.5kg rammer	2
CBR at each compaction point	2

Results of the geotechnical testing undertaken are presented within Appendix VIII.

5.3 Geoenvironmental Laboratory Testing

Geoenvironmental testing was carried out on selected soil and soil leachate samples gained from the ground investigation. The purpose of the testing is to gain a holistic view of any raised levels of contaminants that may exist onsite. Table 7 details Geo-Environmental tests undertaken on selected soil samples.

Table 7: Geoenvironmental / Chemical Tests Undertaken

Type of Test			No of Tests
Suite D (Soil)	pH in 2.5:1 water / soil extract SO4 in 2.5:1 water / soil extract Acid Soluble SO4 Total Sulphur		11
Suite E (Soil)	Boron Water Soluble Arsenic Barium Beryllium Cadmium Chromium Copper Iron Lead Mercury Nickel Selenium Vanadium Zinc Sulphate Soluble 2:1 extract	Chromium VI Phenols HPLC Cyanide Total Thiocyanate pH Sulphur Total Sulphide Acid Soluble Moisture Content Soil organic matter PAH Speciated (USEPA 16) TPH banded (C6 – C40) VOCs SVOC Asbestos Screen	8
Suite F (Water)	Boron Water Soluble Arsenic Boron (water soluble) Barium Beryllium Cadmium Chromium Hexavalent Chromium Copper Dissolved Organic Carbon Iron Lead Mercury Nickel Selenium Vanadium Zinc	Sulphate (total) Chromium VI Phenols HPLC Cyanide Total Thiocyanate pH Sulphur Total Sulphide Fraction Organic Carbon PAH Speciated (USEPA 16) TPH banded (C6 – C40) VOCs SVOC Hardness – Total (as CaCO3) BOD COD	2
Suite K (Soil Leachate)	Leachate Preparation* pH Ammonium as NH4 Arsenic Boron (water soluble) Cadmium Chromium (total) Hexavalent Chromium Copper Lead Mercury Nickel Zinc Selenium Vanadium Cyanide (free) Cyanide (total)	Sulphate (total) Sulphide 16 EPA Speciated Polycyclic Aromatic Hydrocarbons Total Petroleum Hydrocarbons (>C10-C40) BTEX (benzene, toluene, ethylbenzene & xylenes) Phenols (total monohydric) Leachate Preparation* pH Ammonium as NH4 Arsenic Boron (water soluble) Cadmium	3

Results of the geoenvironmnetal / chemical testing undertaken are presented within Appendix IX.

6.0. REFERENCES

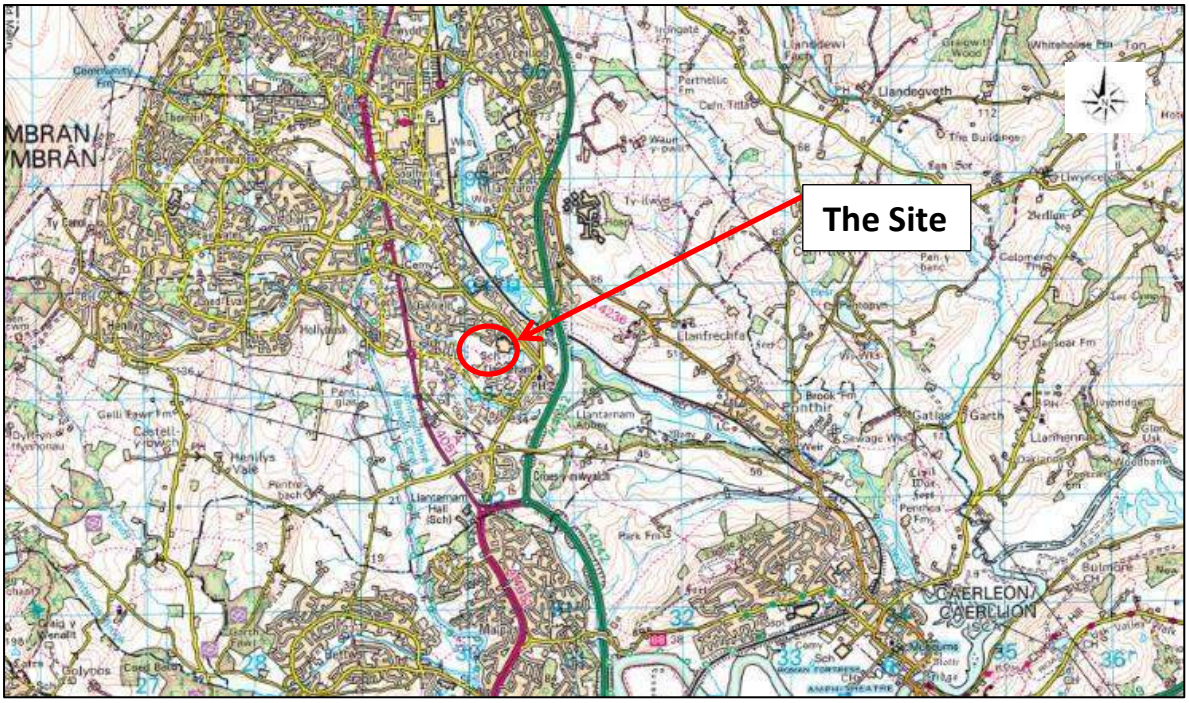
British Geological Survey: -

- Geological Sheet 249 Newport Drift and Solid editions at 1:50 000 scale.

Specialist Publications;-

- British Code of Practice BS 5930: (2015) *'Code of Practice for Site Investigations'*
- British Code of Practice BS 1377: (1990) *'Methods of test for soils for civil engineering purposes'.*
- *British Code of Practice BS EN ISO 14688-1:2002+A2:2013 Geotechnical investigation and testing.*
- *British Code of Practice BS EN ISO 14688-2:2004+A2:2013 Geotechnical investigation and testing.*
- *Identification and classification of soil. Principles for a classification.*
- *Health and Safety Executive Guidance Note EH40/90*

APPENDIX I – SITE PLANS



Mapping sourced from www.bing.com

Quantum Geotech

FIGURE 1

Project:	**Llantarnam 3G Pitch**
Job No:	**Q0269**
Drawing Title:	**Site Location Plan**

HP03
WS01
TP19
HP14
HP02
WS02
WS06
HP15
WS07
WS08
HP13
HP01
WS09
HP18
WS03
HP04
HP16
WS05
HP05
WS04
HP12
HP11
WS10
HP17
WS14
WS12
WS11
HP10
WS13
TP20
HP09
HP08
HP06
WS15
HP07

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KEY
Borehole
Trial Pit
Dynamic Probe
In-situ Test
Window Sample
Sampling Point
Historical Borehole

PROJECT
LLANTARNAM 3G PITCH, CWMBRAN

DRAWING TITLE:
EXPLORATORY HOLE LOCATION PLAN

JOB NO.	FIGURE NO.
Q0269	2
DATE	SCALE
10/07/20	1:1000

APPENDIX II – ENGINEERING GEOLOGIST'S TRIAL PIT LOGS

Contract : Llantarnam 3G Pitch, Cwmbran

Client : Torfaen County Borough Council

Trial Pit No. HP01

Dates : 3/6/20 - 3/6/20

Location : Within playing field

Job Number : Q0269

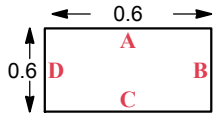
Engineer : Capita

Ground Level : 40.56 m A.O.D. *Level to Ordnance Datum*

Coordinates: 330234.37 E 193451.97 N *Co-ordinates to National Grid*

m B.G.L.	Samples Depth	Samples Type No.	Tests Depth	Tests Test Results	Strata Depth (Thick-ness)	Strata Description	Strata Legend	Strata Red. Level A.O.D.	WATER
					0.20	TOPSOIL - Light brown SILT with many rootlets			
					0.20	Firm to stiff light orangeish brown SILT / CLAY		40.36	
	0.50 -	D1 ES1			0.60				
	0.80 - 1.00	B1			0.80	Firm orangeish brown slightly sandy slightly gravelly SILT / CLAY. Gravel is fine to coarse angular Mudstone.		39.76	
1	1.00 -	ES2			0.40				
					1.20	Terminated at 1.2mbgl		39.36	

PLAN



Groundwater: No Groundwater Encountered

Stability:

Shoring:

Remarks :

Equipment Used:

Quantum
Plas Newydd
SA4 0FQ
Tel: 01554 744880
Fax:
email: enquiries@quantumgeotech.co.uk

Operator:	Logged By.	Sheet No.	m Per Page	All measurements in metres unless otherwise stated
		1 Of 2	3	

AGS

Contract : Llantarnam 3G Pitch, Cwmbran Client : Torfaen County Borough Council		Trial Pit No. HP01
Dates : 3/6/20 - 3/6/20 Location : Within playing field	Job Number : Q0269 Engineer : Capita	Ground Level : 40.56 m A.O.D. *Level to Ordnance Datum* Coordinates: 330234.37 E 193451.97 N *Co-ordinates to National Grid*

Quantum
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SA4 0FQ
Tel: 01554 744880
Fax:
email: enquiries@quantumgeotech.co.uk

Operator:	Logged By.	Sheet No. 2 Of 2	m Per Page	All measurements in metres unless otherwise stated	AGS

Contract : Llantarnam 3G Pitch, Cwmbran

Client : Torfaen County Borough Council

Trial Pit No. HP02

Dates : 3/6/20 - 3/6/20

Location : Within playing field

Job Number : Q0269

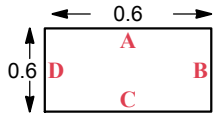
Engineer : Capita

Ground Level : 41.15 m A.O.D. *Level to Ordnance Datum*

Coordinates: 330155.89 E, 193509.35 N *Co-ordinates to National Grid*

m B.G.L.	Samples Depth	Samples Type No.	Tests Depth	Tests Test Results	Strata Depth (Thick-ness)	Strata Description	Strata Legend	Strata Red. Level A.O.D.	WATER
					0.10	TOPSOIL - Light brown SILT with many rootlets			
					0.10	MADE GROUND - Light brown gravelly SILT with low cobble content. Gravel is fine to coarse sub-rounded sandstone and mudstone. Cobbles are sub-rounded to sub-angular sandstone.		41.05	
	0.50 -	ES1			0.60				
	0.80 - 1.00	B1			0.70	Stiff reddish brown silty CLAY		40.45	
1	1.00 -	ES2			0.50				
					1.20	Terminated at 1.2mbgl		39.95	

PLAN



Groundwater: No Groundwater Encountered

Stability: Stable

Shoring: N/A

Remarks :

Equipment Used: Hand Tools

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Operator:	Logged By.	Sheet No.	m Per Page	
QGL	P Darby	1 Of 2	3	All measurements in metres unless otherwise stated

AGS

Contract : Llantarnam 3G Pitch, Cwmbran Client : Torfaen County Borough Council		Trial Pit No. HP02
Dates : 3/6/20 - 3/6/20 Location : Within playing field	Job Number : Q0269 Engineer : Capita	Ground Level : 41.15 m A.O.D. *Level to Ordnance Datum* Coordinates: 330155.89 E 193509.35 N *Co-ordinates to National Grid*

Quantum
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Fax:
email: enquiries@quantumgeotech.co.uk

Operator:	Logged By.	Sheet No.	m Per Page	
QGL	P Darby	2 Of 2		All measurements in metres unless otherwise stated

AGS

Contract : Llantarnam 3G Pitch, Cwmbran

Client : Torfaen County Borough Council

Trial Pit No. HP03

Dates : 3/6/20 - 3/6/20

Location : Within playing field

Job Number : Q0269

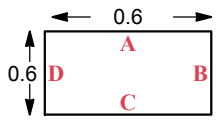
Engineer : Capita

Ground Level : 40.43 m A.O.D. *Level to Ordnance Datum*

Coordinates: 330067.58 E 193537.69 N *Co-ordinates to National Grid*

m B.G.L.	Samples Depth	Samples Type No.	Tests Depth	Tests Test Results	Strata Depth (Thick-ness)	Strata Description	Strata Legend	Strata Red. Level A.O.D.	WATER
					0.05	TOPSOIL - Light brown slightly sandy SILT with many rootlets		40.38	
					0.05	MADE GROUND - Stiff light brown gravelly SILT with low cobble content. Gravel is fine to coarse sub-rounded to sub-angular mudstone, quartz and sandstone. Cobbles are sub-rounded sandstone. (Subsoil)			
	0.40 -	D1 ES1							
	0.60 - 0.80	B1			1.15				
						..... very gravelly below 0.9mbgl			
1	1.00 -	ES2							
					1.20	Terminated at 1.2mbgl		39.23	

PLAN



Groundwater: No Groundwater Encountered

Stability: Stable

Shoring: N/A

Remarks :

Equipment Used: Hand Tools

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Operator:	Logged By.	Sheet No.	m Per Page	
QGL	P Darby	1 Of 2	3	All measurements in metres unless otherwise stated

AGS

Contract : Llantarnam 3G Pitch, Cwmbran Client : Torfaen County Borough Council		Trial Pit No. HP03
Dates : 3/6/20 - 3/6/20 Location : Within playing field	Job Number : Q0269 Engineer : Capita	Ground Level : 40.43 m A.O.D. *Level to Ordnance Datum* Coordinates: 330067.58 E 193537.69 N *Co-ordinates to National Grid*

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QGL	P Darby	2 Of 2		All measurements in metres unless otherwise stated

AGS

Contract : Llantarnam 3G Pitch, Cwmbran

Client : Torfaen County Borough Council

Trial Pit No.
HP04

Dates : 4/6/20 - 4/6/20
Location : Within playing field

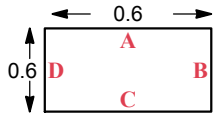
Job Number : Q0269
Engineer : Capita

Ground Level : 39.85 m A.O.D.
Level to Ordnance Datum

Coordinates: 330031.81 E
193436.85 N
Co-ordinates to National Grid

m B.G.L.	Samples Depth	Samples Type No.	Tests Depth	Tests Test Results	Strata Depth (Thick-ness)	Strata Description	Strata Legend	Strata Red. Level A.O.D.	WATER
					0.02	TOPSOIL - Light brown slightly sandy SILT with many rootlets.		39.83	
					0.02	Stiff reddish brown sandy clayey SILT.			
	0.30 -	D1 ES1			0.38				
					0.40	Reddish brown silty slightly sandy CLAY.		39.45	
	0.60 - 0.80	B1			0.80				
1	1.00 -	ES2							
					1.20	Terminated at 1.2mbgl		38.65	

PLAN



Groundwater: No Groundwater Encountered

Stability: Stable

Shoring: N/A

Remarks :

Equipment Used: Hand Tools

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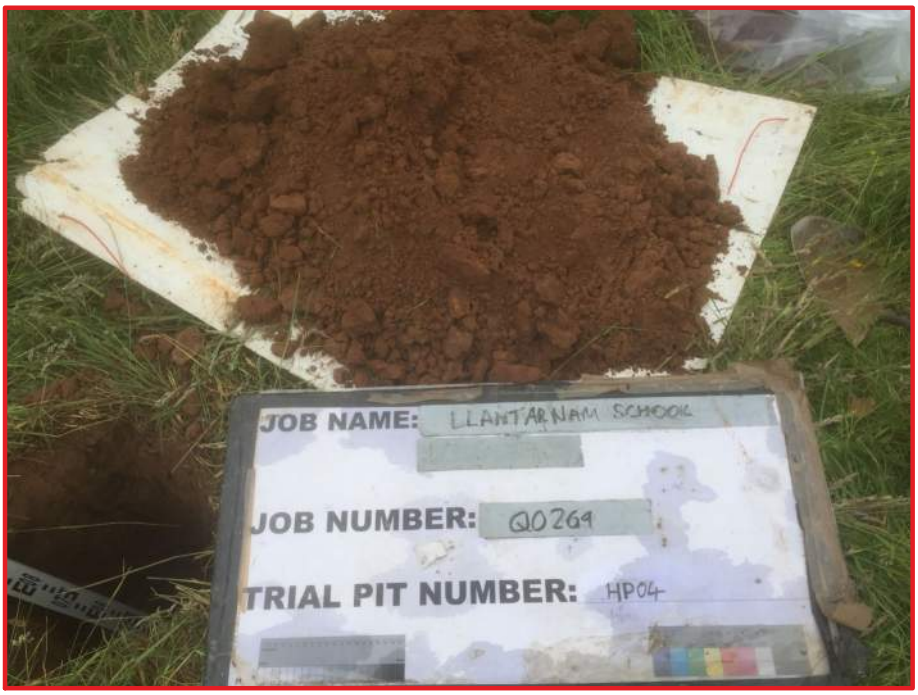
Operator:	Logged By.	Sheet No.	m Per Page	
QGL	P Darby	1 Of 2	3	All measurements in metres unless otherwise stated

AGS

Contract : Llantarnam 3G Pitch, Cwmbran Client : Torfaen County Borough Council			Trial Pit No. HP04
Dates : 4/6/20 - 4/6/20 Location : Within playing field	Job Number : Q0269 Engineer : Capita	Ground Level : 39.85 m A.O.D. *Level to Ordnance Datum* Coordinates: 330031.81 E 193436.85 N *Co-ordinates to National Grid*	



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QGL	P Darby	2 Of 2		All measurements in metres unless otherwise stated

AGS

Contract : Llantarnam 3G Pitch, Cwmbran

Client : Torfaen County Borough Council

Trial Pit No. HP05

Dates : 4/6/20 - 4/6/20

Job Number : Q0269

Location : Within playing field

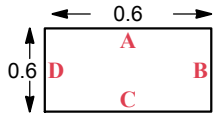
Engineer : Capita

Ground Level : 39.31 m A.O.D. *Level to Ordnance Datum*

Coordinates: 330071.17 E 193402.82 N *Co-ordinates to National Grid*

m B.G.L.	Samples Depth	Samples Type No.	Tests Depth	Tests Test Results	Strata Depth (Thick-ness)	Strata Description	Strata Legend	Strata Red. Level A.O.D.	WATER
					0.10	TOPSOIL - Light brown sandy SILT with many rootlets.			
	0.30 - 0.50	B1			0.10	Reddish brown slightly sandy very gravelly SILT / CLAY with medium cobble content. Gravel is fine to coarse sub-rounded sandstone. Cobbles are sub-rounded sandstone		39.21	
	0.30 -	ES1							
					1.00				
	0.80 -	ES2							
1									
					1.10	Terminated at 1.1mbgl		38.21	

PLAN



Groundwater: No Groundwater Encountered

Stability: Stable

Shoring: N/A

Remarks :

Equipment Used: Hand Tools

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QGL	P Darby	1 Of 2	3	

AGS

Contract : Llantarnam 3G Pitch, Cwmbran Client : Torfaen County Borough Council		Trial Pit No. HP05
Dates : 4/6/20 - 4/6/20 Location : Within playing field	Job Number : Q0269 Engineer : Capita	Ground Level : 39.31 m A.O.D. *Level to Ordnance Datum* Coordinates: 330071.17 E 193402.82 N *Co-ordinates to National Grid*

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QGL	P Darby	2 Of 2		All measurements in metres unless otherwise stated

AGS

Contract : Llantarnam 3G Pitch, Cwmbran

Client : Torfaen County Borough Council

Trial Pit No. HP06

Dates : 5/6/20 - 5/6/20

Location : Within playing field

Job Number : Q0269

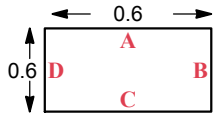
Engineer : Capita

Ground Level : 38.39 m A.O.D. *Level to Ordnance Datum*

Coordinates: 330198.45 E 193323.67 N *Co-ordinates to National Grid*

m B.G.L.	Samples Depth	Samples Type No.	Tests Depth	Tests Test Results	Strata Depth (Thick-ness)	Strata Description	Strata Legend	Strata Red. Level A.O.D.	WATER
	0.30 -	ES1			0.50	MADE GROUND - Light brown very sandy slightly gravelly SILT with low cobble content. Gravel is fine to coarse sub-rounded sandstone. Cobbles are sub-rounded sandstone. (Subsoil)			
	0.50 - 0.70	B1			0.50	Firm brown and grey sandy slightly gravelly CLAY. Gravel is fine to coarse sub-rounded to rounded sandstone.		37.89	
	0.70 -	D1			0.60				
1					1.10	Terminated at 1.1mbgl		37.29	

PLAN



Groundwater: No Groundwater Encountered

Stability: Stable

Shoring: N/A

Remarks :

Equipment Used: Hand Tools

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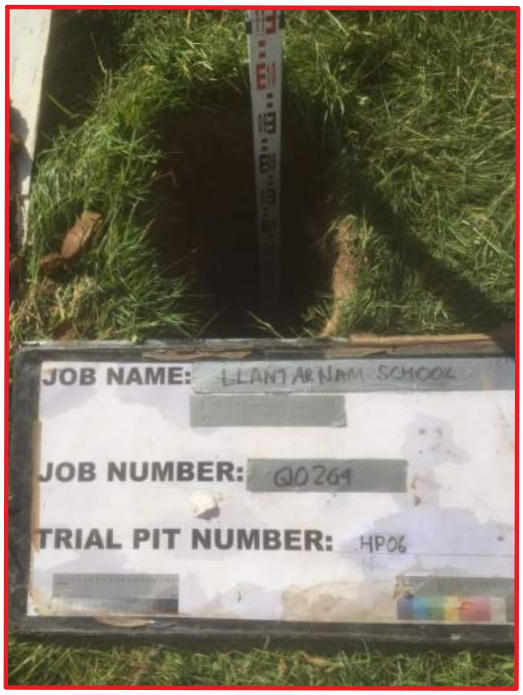
QGL	P Darby	1 Of 2	3	

AGS

Contract : Llantarnam 3G Pitch, Cwmbran Client : Torfaen County Borough Council		Trial Pit No. HP06
Dates : 5/6/20 - 5/6/20 Location : Within playing field	Job Number : Q0269 Engineer : Capita	Ground Level : 38.39 m A.O.D. *Level to Ordnance Datum* Coordinates: 330198.45 E 193323.67 N *Co-ordinates to National Grid*



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QGL	P Darby	2 Of 2		All measurements in metres unless otherwise stated

AGS

Contract : Llantarnam 3G Pitch, Cwmbran

Client : Torfaen County Borough Council

Trial Pit No. HP07

Dates : 5/6/20 - 5/6/20

Location : Along foot path

Job Number : Q0269

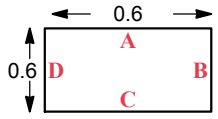
Engineer : Capita

Ground Level : 37.76 m A.O.D. *Level to Ordnance Datum*

Coordinates: 330257.67 E 193317.76 N *Co-ordinates to National Grid*

m B.G.L.	Samples Depth	Samples Type No.	Tests Depth	Tests Test Results	Strata Depth (Thick-ness)	Strata Description	Strata Legend	Strata Red. Level A.O.D.	WATER
					0.05	TOPSOIL - Light brown sandy SILT with many rootlets.			
					0.05	MADE GROUND - Light brown silty slightly gravelly SAND with low cobble content. Sand is fine to medium. Gravel is fine to coarse sub-rounded sandstone. Gravel is fine to coarse sub-rounded sandstone. (Subsoil)		37.71	
	0.30 - 0.50	B1			0.55				
	0.30 -	ES1							
					0.60	Firm reddish brown slightly clayey sandy GRAVEL with medium cobble content. Gravel is fine to coarse rounded sandstone. Cobbles are sub-angular to sub-rounded sandstone.		37.16	
	0.80 - 1.00	B2			0.40				
1					1.00	Terminated at 1.0mbgl. Unable to progress due to cobbles		36.76	

PLAN



Groundwater: No Groundwater Encountered

Stability: Stable

Shoring: N/A

Remarks :

Equipment Used: Hand Tools

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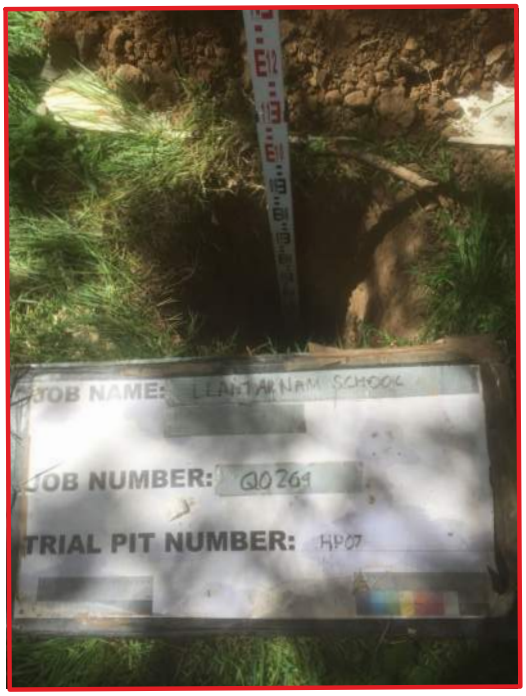
QGL	P Darby	1 Of 3	3	All measurements in metres unless otherwise stated

AGS

Contract : Llantarnam 3G Pitch, Cwmbran Client : Torfaen County Borough Council		Trial Pit No. HP07
Dates : 5/6/20 - 5/6/20 Location : Along foot path	Job Number : Q0269 Engineer : Capita	Ground Level : 37.76 m A.O.D. *Level to Ordnance Datum* Coordinates: 330257.67 E 193317.76 N *Co-ordinates to National Grid*



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QGL	P Darby	2 Of 3		All measurements in metres unless otherwise stated

AGS

Contract : Llantarnam 3G Pitch, Cwmbran Client : Torfaen County Borough Council		Trial Pit No. HP07
Dates : 5/6/20 - 5/6/20 Location : Along foot path	Job Number : Q0269 Engineer : Capita	Ground Level : 37.76 m A.O.D. *Level to Ordnance Datum* Coordinates: 330257.67 E 193317.76 N *Co-ordinates to National Grid*

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QGL	P Darby	3 Of 3		All measurements in metres unless otherwise stated

AGS

Contract : Llantarnam 3G Pitch, Cwmbran

Client : Torfaen County Borough Council

Trial Pit No. HP08

Dates : 5/6/20 - 5/6/20

Job Number : Q0269

Ground Level : 40.31 m A.O.D. *Level to Ordnance Datum*

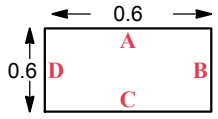
Location : Along foot path

Engineer : Capita

Coordinates: 330344.53 E 193326.64 N *Co-ordinates to National Grid*

m B.G.L.	Samples Depth	Samples Type No.	Tests Depth	Tests Test Results	Strata Depth (Thick-ness)	Strata Description	Strata Legend	Strata Red. Level A.O.D.	WATER
	0.30 - 0.50	B1			0.70	Greyish brown sandy slightly gravelly SILT with medium cobble content and occasional roots. Gravel is fine to coarse sub-rounded sandstone. Cobbles are sub-rounded sandstone.			
	0.30 -	ES1							
					0.70	Firm reddish brown slightly sandy gravelly silty CLAY. Gravel is fine to coarse sandstone and quartz.		39.61	
1	1.00 -	D1			0.40				
					1.10	Terminated at 1.1mbgl		39.21	

PLAN



Groundwater: No Groundwater Encountered

Stability: Stable

Shoring: N/A

Remarks :

Equipment Used: Hand Tools

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Operator:	Logged By.	Sheet No.	m Per Page	
QGL	P Darby	1 Of 3	3	All measurements in metres unless otherwise stated

AGS

Contract : Llantarnam 3G Pitch, Cwmbran		Trial Pit No. HP08
Client : Torfaen County Borough Council		
Dates : 5/6/20 - 5/6/20	Job Number : Q0269	Ground Level : 40.31 m A.O.D. *Level to Ordnance Datum*
Location : Along foot path	Engineer : Capita	Coordinates: 330344.53 E 193326.64 N *Co-ordinates to National Grid*

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Operator:	Logged By.	Sheet No.	m Per Page	
QGL	P Darby	2 Of 3		All measurements in metres unless otherwise stated

AGS

Contract : Llantarnam 3G Pitch, Cwmbran Client : Torfaen County Borough Council		Trial Pit No. HP08
Dates : 5/6/20 - 5/6/20 Location : Along foot path	Job Number : Q0269 Engineer : Capita	Ground Level : 40.31 m A.O.D. *Level to Ordnance Datum* Coordinates: 330344.53 E 193326.64 N *Co-ordinates to National Grid*

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Operator:	Logged By.	Sheet No.	m Per Page	
QGL	P Darby	3 Of 3		All measurements in metres unless otherwise stated

AGS

Contract : Llantarnam 3G Pitch, Cwmbran

Client : Torfaen County Borough Council

Trial Pit No. HP09

Dates : 5/6/20 - 5/6/20

Location : Within playing field

Job Number : Q0269

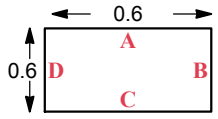
Engineer : Capita

Ground Level : 38.15 m A.O.D. *Level to Ordnance Datum*

Coordinates: 330231.92 E 193331.02 N *Co-ordinates to National Grid*

m B.G.L.	Samples Depth	Samples Type No.	Tests Depth	Tests Test Results	Strata Depth (Thick-ness)	Strata Description	Strata Legend	Strata Red. Level A.O.D.	WATER
	0.20 - 0.40	B1			0.60	MADE GROUND - Light brown very sandy slightly gravelly SILT with low cobble content. Gravel is fine to coarse sub-rounded sandstone. Cobbles are sub-rounded sandstone. (Subsoil)			
	0.40 -	ES1							
					0.60	Firm reddish brown sandy CLAY.		37.55	
					0.50				
1	1.00 -	D1							
					1.10	Terminated at 1.1mbgl		37.05	

PLAN



Groundwater: No Groundwater Encountered

Stability: Stable

Shoring: N/A

Remarks :

Equipment Used: Hand Tools

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Operator:	Logged By.	Sheet No.	m Per Page	
QGL	P Darby	1 Of 2	3	All measurements in metres unless otherwise stated

AGS

Contract : Llantarnam 3G Pitch, Cwmbran Client : Torfaen County Borough Council		Trial Pit No. HP09
Dates : 5/6/20 - 5/6/20 Location : Within playing field	Job Number : Q0269 Engineer : Capita	Ground Level : 38.15 m A.O.D. *Level to Ordnance Datum* Coordinates: 330231.92 E 193331.02 N *Co-ordinates to National Grid*

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QGL	P Darby	2 Of 2		All measurements in metres unless otherwise stated

AGS

Contract : Llantarnam 3G Pitch, Cwmbran

Client : Torfaen County Borough Council

Trial Pit No. HP10

Dates : 4/6/20 - 4/6/20

Location : Within playing field

Job Number : Q0269

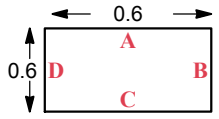
Engineer : Capita

Ground Level : 38.39 m A.O.D. *Level to Ordnance Datum*

Coordinates: 330184.23 E 193348.41 N *Co-ordinates to National Grid*

m B.G.L.	Samples Depth	Samples Type No.	Tests Depth	Tests Test Results	Strata Depth (Thick-ness)	Strata Description	Strata Legend	Strata Red. Level A.O.D.	WATER
					0.70	MADE GROUND - Light brown sandy slightly gravelly SILT with low to medium cobble content. Gravel is fine to coarse rounded sandstone and mudstone. Cobbles are sub-rounded sandstone. (Subsoil)			
	0.40 - 0.60	B1							
	0.50 -	ES1							
					0.70	Firm reddish brown sandy SILT / CLAY.		37.69	
	0.80 -	D1							
	0.80 - 1.00	B2							
	0.80 -	ES2							
1					0.45				
					1.15	Terminated at 1.15mbgl		37.24	

PLAN



Groundwater: No Groundwater Encountered

Stability: Stable

Shoring: N/A

Remarks :

Equipment Used: Hand Tools

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Operator:	Logged By.	Sheet No.	m Per Page	
QGL	P Darby	1 Of 2	3	All measurements in metres unless otherwise stated

AGS

Contract : Llantarnam 3G Pitch, Cwmbran Client : Torfaen County Borough Council		Trial Pit No. HP10
Dates : 4/6/20 - 4/6/20 Location : Within playing field	Job Number : Q0269 Engineer : Capita	Ground Level : 38.39 m A.O.D. *Level to Ordnance Datum* Coordinates: 330184.23 E 193348.41 N *Co-ordinates to National Grid*

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QGL	P Darby	2 Of 2			

Contract : Llantarnam 3G Pitch, Cwmbran

Client : Torfaen County Borough Council

Trial Pit No. HP11

Dates : 4/6/20 - 4/6/20

Location : Within playing field

Job Number : Q0269

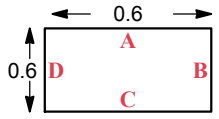
Engineer : Capita

Ground Level : 39.01 m A.O.D. *Level to Ordnance Datum*

Coordinates: 330126.14 E, 193379.20 N *Co-ordinates to National Grid*

m B.G.L.	Samples Depth	Samples Type No.	Tests Depth	Tests Test Results	Strata Depth (Thick-ness)	Strata Description	Strata Legend	Strata Red. Level A.O.D.	WATER
	0.20 - 0.40	B1			0.50	MADE GROUND - Light brown sandy slightly gravelly SILT with low to medium cobble content. Gravel is fine to coarse rounded sandstone and mudstone. Cobbles are sub-rounded sandstone. (Subsoil)			
	0.40 -	ES1			0.50	Firm reddish brown sandy SILT / CLAY.		38.51	
	0.70 -	D1							
	0.70 - 0.90	B2							
	0.70 -	ES2			0.65				
1					1.15	Terminated at 1.15mbgl		37.86	

PLAN



Groundwater: No Groundwwater Encountered

Stability: Stable

Shoring: N/A

Remarks :

Equipment Used: Hand Tools

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QGL	P Darby	1 Of 2	3	All measurements in metres unless otherwise stated

AGS

Contract : Llantarnam 3G Pitch, Cwmbran Client : Torfaen County Borough Council		Trial Pit No. HP11
Dates : 4/6/20 - 4/6/20 Location : Within playing field	Job Number : Q0269 Engineer : Capita	Ground Level : 39.01 m A.O.D. *Level to Ordnance Datum* Coordinates: 330126.14 E 193379.20 N *Co-ordinates to National Grid*

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Operator:	Logged By.	Sheet No.	m Per Page	
QGL	P Darby	2 Of 2		All measurements in metres unless otherwise stated

AGS

Contract : Llantarnam 3G Pitch, Cwmbran

Client : Torfaen County Borough Council

Trial Pit No.
HP12

Dates : 4/6/20 - 4/6/20
Location : Within playing field

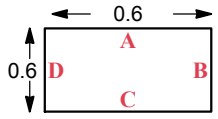
Job Number : Q0269
Engineer : Capita

Ground Level : 38.64 m A.O.D.
Level to Ordnance Datum

Coordinates: 330157.30 E
193403.22 N
Co-ordinates to National Grid

m B.G.L.	Samples Depth	Samples Type No.	Tests Depth	Tests Test Results	Strata Depth (Thick-ness)	Strata Description	Strata Legend	Strata Red. Level A.O.D.	WATER
	0.40 - 0.60 0.40 -	B1 ES1			0.70	MADE GROUND - Stiff light brown slighty sandy gravelly SILT with low cobble content. Gravel is fine to coarse sub-rounded sandstone, mudstone and quartz. Cobbles are sub-rounded sandstone. (Subsoil)			
	0.80 - 1.00	20b			0.70	Reddish brown slightly clayey lightly silty slightly gravelly SAND. Gravel is fine to coarse rounded sandstone.		37.94	
1	1.00 -	ES2			0.50				
					1.20	Terminated at 1.2mbgl		37.44	

PLAN



Groundwater: Mo Groundwater Encountered

Stability: Stable

Shoring: N/A

Remarks :

Equipment Used: Hand Tools

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QGL	P Darby	1 Of 3	3	

AGS

Contract : Llantarnam 3G Pitch, Cwmbran Client : Torfaen County Borough Council		Trial Pit No. HP12
Dates : 4/6/20 - 4/6/20 Location : Within playing field	Job Number : Q0269 Engineer : Capita	Ground Level : 38.64 m A.O.D. *Level to Ordnance Datum* Coordinates: 330157.30 E 193403.22 N *Co-ordinates to National Grid*

Contract : Llantarnam 3G Pitch, Cwmbran Client : Torfaen County Borough Council		Trial Pit No. HP12
Dates : 4/6/20 - 4/6/20 Location : Within playing field	Job Number : Q0269 Engineer : Capita	Ground Level : 38.64 m A.O.D. *Level to Ordnance Datum* Coordinates: 330157.30 E 193403.22 N *Co-ordinates to National Grid*

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QGL	P Darby	3 Of 3		All measurements in metres unless otherwise stated

AGS

Contract : Llantarnam 3G Pitch, Cwmbran

Client : Torfaen County Borough Council

Trial Pit No. HP13

Dates : 3/6/20 - 3/6/20

Location : Within playing field

Job Number : Q0269

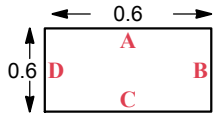
Engineer : Capita

Ground Level : 39.18 m A.O.D. *Level to Ordnance Datum*

Coordinates: 330199.64 E, 193449.95 N *Co-ordinates to National Grid*

m B.G.L.	Samples Depth	Samples Type No.	Tests Depth	Tests Test Results	Strata Depth (Thick-ness)	Strata Description	Strata Legend	Strata Red. Level A.O.D.	WATER
					0.10	TOPSOIL - Light brown SILT with many rootlets			
					0.10	MADE GROUND - Stiff greyish brown gravelly SILT with low cobble content. Gravel is fine to coarse angular to rounded quartz and sandstone. Cobbles are sub-rounded sandstone and quartz.		39.08	
	0.30 -	ES1			0.30				
					0.40	Stiff reddish brown CLAY.		38.78	
	0.80 - 1.00	B1			0.80				
1	1.00 -	D1 ES2							
					1.20	Terminated at 1.2mbgl		37.98	

PLAN



Groundwater: No groundwater encountered

Stability: Stable

Shoring: N/A

Remarks :

Equipment Used: Hand Tools

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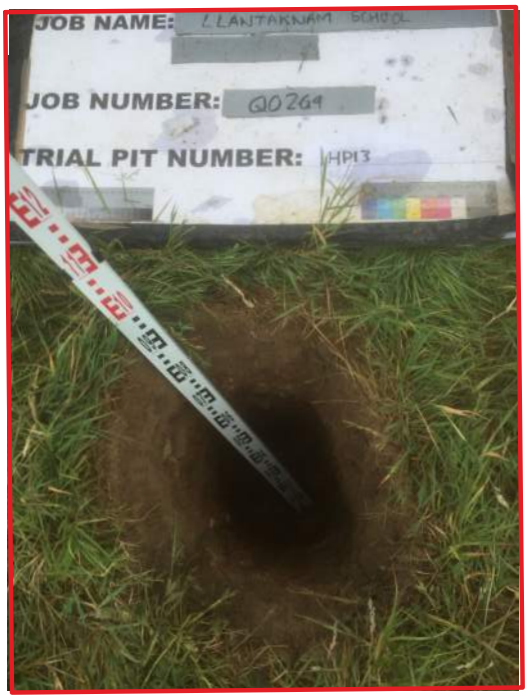
QGL	P Darby	1 Of 2	3	

AGS

Contract : Llantarnam 3G Pitch, Cwmbran Client : Torfaen County Borough Council		Trial Pit No. HP13
Dates : 3/6/20 - 3/6/20 Location : Within playing field	Job Number : Q0269 Engineer : Capita	Ground Level : 39.18 m A.O.D. *Level to Ordnance Datum* Coordinates: 330199.64 E 193449.95 N *Co-ordinates to National Grid*



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QGL	P Darby	2 Of 2		All measurements in metres unless otherwise stated

AGS

Contract : Llantarnam 3G Pitch, Cwmbran

Client : Torfaen County Borough Council

Trial Pit No. HP14

Dates : 3/6/20 - 3/6/20

Location : Within playing field

Job Number : Q0269

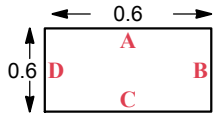
Engineer : Capita

Ground Level : 39.51 m A.O.D. *Level to Ordnance Datum*

Coordinates: 330112.67 E 193504.54 N *Co-ordinates to National Grid*

m B.G.L.	Samples Depth	Samples Type No.	Tests Depth	Tests Test Results	Strata Depth (Thick-ness)	Strata Description	Strata Legend	Strata Red. Level A.O.D.	WATER
					0.10	TOPSOIL - Light brown slightly sandy SILT with many rootlets			
					0.10	MADE GROUND - Stiff light brown gravelly SILT with low cobble content. Gravel is fine to coarse sub-rounded to sub-angular mudstone, quartz and sandstone. Cobble are sub-rounded sandstone. (Subsoil)		39.41	
	0.50 -	D1 ES1			0.60				
	0.80 -	B1			0.70	Stiff orangeish brown sandy slightly gravelly CLAY. Gravel is fine to coarse angular to rounded mudstone and sandstone.		38.81	
1	1.00 -	ES2			0.40				
					1.10	Trial Pit terminated at 1.1mbgl		38.41	

PLAN



Groundwater: No Groundwater Encountered

Stability: Stable

Shoring: N/A

Remarks :

Equipment Used: Hand Tools

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QGL	P Darby	1 Of 2	3	All measurements in metres unless otherwise stated

AGS

Contract : Llantarnam 3G Pitch, Cwmbran Client : Torfaen County Borough Council		Trial Pit No. HP14
Dates : 3/6/20 - 3/6/20 Location : Within playing field	Job Number : Q0269 Engineer : Capita	Ground Level : 39.51 m A.O.D. *Level to Ordnance Datum* Coordinates: 330112.67 E 193504.54 N *Co-ordinates to National Grid*

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QGL	P Darby	2 Of 2		All measurements in metres unless otherwise stated

AGS

Contract : Llantarnam 3G Pitch, Cwmbran

Client : Torfaen County Borough Council

Trial Pit No. HP15

Dates : 4/6/20 - 4/6/20

Location : Within playing field

Job Number : Q0269

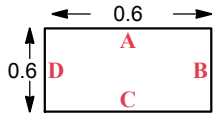
Engineer : Capita

Ground Level : 39.39 m A.O.D. *Level to Ordnance Datum*

Coordinates: 330077.55 E 193460.00 N *Co-ordinates to National Grid*

m B.G.L.	Samples Depth	Samples Type No.	Tests Depth	Tests Test Results	Strata Depth (Thick-ness)	Strata Description	Strata Legend	Strata Red. Level A.O.D.	WATER
					0.05	TOPSOIL - Light brown slightly sandy SILT with many rootlets			
					0.05	MADE GROUND - Stiff light brown slighty sandy gravelly SILT with low cobble content. Gravel is fine to coarse sub-rounded sandstone, mudstone and quartz. Cobbles are sub-rounded sandstone. (Subsoil)		39.34	
	0.40 -	ES1			0.65				
	0.70 - 0.90	B1			0.70	Reddish brown slightly sandy slightly gravelly CLAY. Gravel is fine to coarse rounded sandstone.		38.69	
1	1.00 -	D1 ES2			0.50				
					1.20	Terminated at 1.2mbgl		38.19	

PLAN



Groundwater: No Groundwater Encountered

Stability: Stable

Shoring: N/A

Remarks :

Equipment Used: Hand Tools

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QGL	P Darby	1 Of 3	3	All measurements in metres unless otherwise stated

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Contract : Llantarnam 3G Pitch, Cwmbran Client : Torfaen County Borough Council		Trial Pit No. HP15
Dates : 4/6/20 - 4/6/20 Location : Within playing field	Job Number : Q0269 Engineer : Capita	Ground Level : 39.39 m A.O.D. *Level to Ordnance Datum* Coordinates: 330077.55 E 193460.00 N *Co-ordinates to National Grid*

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QGL	P Darby	2 Of 3		All measurements in metres unless otherwise stated

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Contract : Llantarnam 3G Pitch, Cwmbran Client : Torfaen County Borough Council		Trial Pit No. HP15
Dates : 4/6/20 - 4/6/20 Location : Within playing field	Job Number : Q0269 Engineer : Capita	Ground Level : 39.39 m A.O.D. *Level to Ordnance Datum* Coordinates: 330077.55 E 193460.00 N *Co-ordinates to National Grid*

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QGL	P Darby	3 Of 3		All measurements in metres unless otherwise stated

AGS

Contract : Llantarnam 3G Pitch, Cwmbran

Client : Torfaen County Borough Council

Trial Pit No.
HP16

Dates : 4/6/20 - 4/6/20

Location : Within playing field

Job Number : Q0269

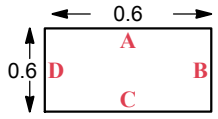
Engineer : Capita

Ground Level : 39.42 m A.O.D.
Level to Ordnance Datum

Coordinates: 330054.53 E
193427.78 N
Co-ordinates to National Grid

m B.G.L.	Samples Depth	Samples Type No.	Tests Depth	Tests Test Results	Strata Depth (Thick-ness)	Strata Description	Strata Legend	Strata Red. Level A.O.D.	WATER
					0.01	TOPSOIL - Light brown slightly sandy SILT with many rootlets.		39.41	
					0.01	Stiff reddish brown sandy clayey SILT.			
	0.30 -	ES1							
	0.40 -	D1							
	0.60 - 0.80	B1			1.19				
1	1.00 -	D2 ES2							
					1.20	Terminated at 1.2mbgl		38.22	

PLAN



Groundwater: No Groundwater Encountered

Stability: Stable

Shoring: N/A

Remarks :

Equipment Used: Hand Tools

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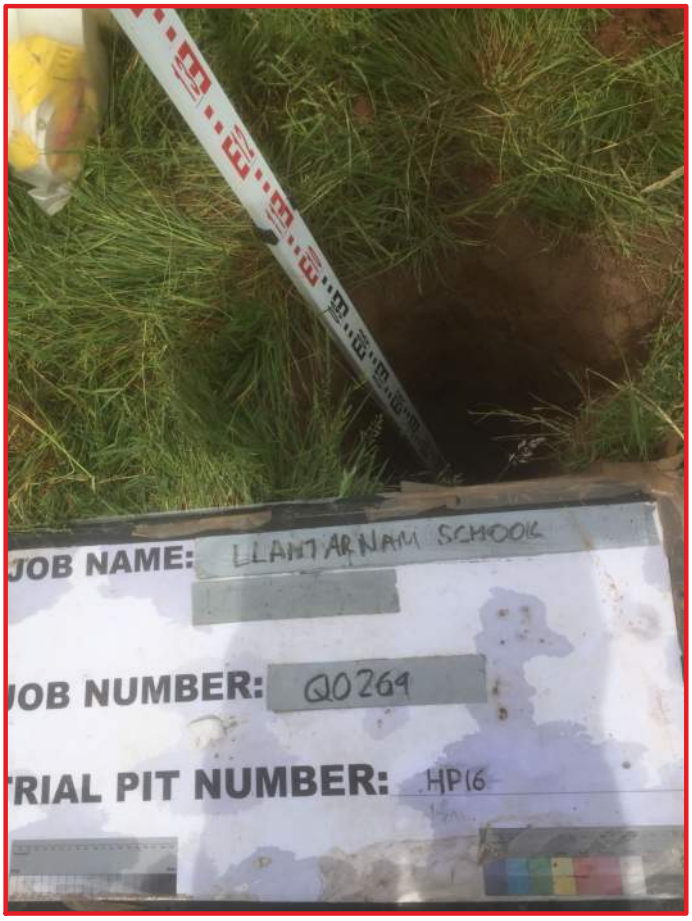
QGL	P Darby	1 Of 2	3	All measurements in metres unless otherwise stated

AGS

Contract : Llantarnam 3G Pitch, Cwmbran Client : Torfaen County Borough Council		Trial Pit No. HP16
Dates : 4/6/20 - 4/6/20 Location : Within playing field	Job Number : Q0269 Engineer : Capita	Ground Level : 39.42 m A.O.D. *Level to Ordnance Datum* Coordinates: 330054.53 E 193427.78 N *Co-ordinates to National Grid*



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QGL	P Darby	2 Of 2			

Contract : Llantarnam 3G Pitch, Cwmbran

Client : Torfaen County Borough Council

Trial Pit No. HP17

Dates : 4/6/20 - 4/6/20

Location : Within playing field

Job Number : Q0269

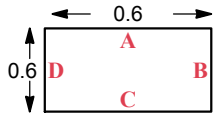
Engineer : Capita

Ground Level : 38.58 m A.O.D. *Level to Ordnance Datum*

Coordinates: 330197.03 E 193377.07 N *Co-ordinates to National Grid*

m B.G.L.	Samples Depth	Samples Type No.	Tests Depth	Tests Test Results	Strata Depth (Thick-ness)	Strata Description	Strata Legend	Strata Red. Level A.O.D.	WATER
					0.02	TOPSOIL - Light brown slightly sandy SILT with many rootlets		38.56	
					0.02	MADE GROUND - Light brown slightly gravelly slightly sandy SILT with low to medium cobble content. Gravel is fine to coarse sub-rounded sandstone and occasional angular glass. Cobbles are sub-rounded sandstone.			
	0.40 -	ES1							
	0.50 - 0.70	B1			1.08				
1	1.00 -	ES2							
					1.10	Terminated at 1.1mbgl		37.48	

PLAN



Groundwater: No Groundwater Encountered

Stability: Stable

Shoring: N/A

Remarks :

Equipment Used: Hand Tools

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QGL	P Darby	1 Of 2	3	

AGS

Contract : Llantarnam 3G Pitch, Cwmbran Client : Torfaen County Borough Council		Trial Pit No. HP17
Dates : 4/6/20 - 4/6/20 Location : Within playing field	Job Number : Q0269 Engineer : Capita	Ground Level : 38.58 m A.O.D. *Level to Ordnance Datum* Coordinates: 330197.03 E 193377.07 N *Co-ordinates to National Grid*

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QGL	P Darby	2 Of 2		All measurements in metres unless otherwise stated

AGS

Contract : Llantarnam 3G Pitch, Cwmbran

Client : Torfaen County Borough Council

Trial Pit No. HP18

Dates : 3/6/20 - 3/6/20

Location : Within playing field

Job Number : Q0269

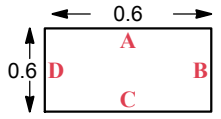
Engineer : Capita

Ground Level : 40.21 m A.O.D. *Level to Ordnance Datum*

Coordinates: 330241.85 E 193436.21 N *Co-ordinates to National Grid*

m B.G.L.	Samples Depth	Samples Type No.	Tests Depth	Tests Test Results	Strata Depth (Thick-ness)	Strata Description	Strata Legend	Strata Red. Level A.O.D.	WATER
					0.20	TOPSOIL - Light brown SILT with many rootlets			
					0.20	Firm to stiff light orangeish brown SILT / CLAY		40.01	
	0.40 - 0.60	B1			0.40				
	0.50 -	ES1							
					0.60	Firm orangeish brown slightly gravelly silty CLAY. Gravel is fine to coarse angular Mudstone.		39.61	
					0.60				
1	1.00 -	D1 ES2							
					1.20	Terminated at 1.2mbgl		39.01	

PLAN



Groundwater: No Groundwater Encountered

Stability: Stable

Shoring: N/A

Remarks :

Equipment Used: Hand Tools

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Operator:	Logged By.	Sheet No.	m Per Page	
QGL	P Darby	1 Of 2	3	All measurements in metres unless otherwise stated

AGS

Contract : Llantarnam 3G Pitch, Cwmbran Client : Torfaen County Borough Council		Trial Pit No. HP18
Dates : 3/6/20 - 3/6/20 Location : Within playing field	Job Number : Q0269 Engineer : Capita	Ground Level : 40.21 m A.O.D. *Level to Ordnance Datum* Coordinates: 330241.85 E 193436.21 N *Co-ordinates to National Grid*

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QGL	P Darby	2 Of 2			

Contract : Llantarnam 3G Pitch, Cwmbran

Client : Torfaen County Borough Council

Trial Pit No. TP19

Dates : 8/6/20 - 8/6/20

Location : Within playing field

Job Number : Q0269

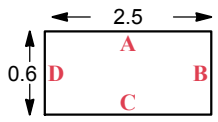
Engineer : Capita

Ground Level : 39.81 m A.O.D. *Level to Ordnance Datum*

Coordinates: 330076.62 E 193522.96 N *Co-ordinates to National Grid*

m B.G.L.	Samples Depth	Samples Type No.	Tests Depth	Tests Test Results	Strata Depth (Thick-ness)	Strata Description	Strata Legend	Strata Red. Level A.O.D.	WATER
					0.20	TOPSOIL - Light brown sandy SILT with many rootlets			
					0.20	MADE GROUND - Light brown slightly sandy slightly gravelly SILT. Gravel is fine to coarse angular sandstone.		39.61	
					0.10			39.51	
					0.30	Stiff reddish brown slightly sandy clayey SILT.			
1					1.20				
					1.50	Reddish brown very clayey GRAVEL. Gravel is fine to medium angular mudstone		38.31	≈
					0.20				
					1.70	Stiff reddish brown gravelly SILT / CLAY. Gravel is fine to coarse angular mudstone.		38.11	
2					1.00				
					2.70	Terminated at 2.7mbgl to undertake soakaway tests		37.11	

PLAN



Groundwater: Seepage between 1.5 and 1.7mbgl

Stability: Stable

Shoring: N/A

Remarks :

Equipment Used: JCB 3CX

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Garth Plant Hire	P Darby	1 Of 2	5	All measurements in metres unless otherwise stated

AGS

Contract : Llantarnam 3G Pitch, Cwmbran Client : Torfaen County Borough Council		Trial Pit No. TP19
Dates : 8/6/20 - 8/6/20 Location : Within playing field	Job Number : Q0269 Engineer : Capita	Ground Level : 39.81 m A.O.D. *Level to Ordnance Datum* Coordinates: 330076.62 E 193522.96 N *Co-ordinates to National Grid*

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Operator:	Logged By.	Sheet No.	m Per Page	All measurements in metres unless otherwise stated	AGS
Garth Plant Hire	P Darby	2 Of 2			

Contract : Llantarnam 3G Pitch, Cwmbran

Client : Torfaen County Borough Council

Trial Pit No. TP20

Dates : 8/6/20 - 8/6/20

Location : Within playing field

Job Number : Q0269

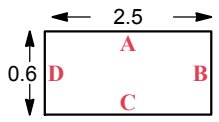
Engineer : Capita

Ground Level : 38.34 m A.O.D. *Level to Ordnance Datum*

Coordinates: 330202.44 E 193338.09 N *Co-ordinates to National Grid*

m B.G.L.	Samples Depth	Samples Type No.	Tests Depth	Tests Test Results	Strata Depth (Thick-ness)	Strata Description	Strata Legend	Strata Red. Level A.O.D.	WATER
					0.20	TOPSOIL - Light brown sandy SILT with many rootlets.			
					0.20 0.40	MADE GROUND - Light brown slightly sandy gravelly SILT. Gravel is fine to coarse sub-rounded to sub-angular.		38.14	
1					0.60 0.80	Firm reddish brown silty CLAY.		37.74	
2					1.40 1.00	Light brown and brown slightly clayey sandy GRAVEL with low cobble content. Gravel is fine to coarse angular sandstone. Cobbles are sub-angular sandstone.		36.94	≈
					2.40	Terminated at 2.4mbgl to undertake soakaway tests		35.94	

PLAN



Groundwater: Seepage below 2.3mbgl

Stability: Stable

Shoring: N/A

Remarks :

Equipment Used: JCB 3CX

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Operator:	Logged By.	Sheet No.	m Per Page	
Garth Plant Hire	P Darby	1 Of 2	5	All measurements in metres unless otherwise stated

AGS

Contract : Llantarnam 3G Pitch, Cwmbran Client : Torfaen County Borough Council		Trial Pit No. TP20
Dates : 8/6/20 - 8/6/20 Location : Within playing field	Job Number : Q0269 Engineer : Capita	Ground Level : 38.34 m A.O.D. *Level to Ordnance Datum* Coordinates: 330202.44 E 193338.09 N *Co-ordinates to National Grid*

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Garth Plant Hire	P Darby	2 Of 2		All measurements in metres unless otherwise stated

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KEY TO BOREHOLE AND TRIAL PIT LOGS

MATERIAL LEGENDS

 Made Ground	 Topsoil	 Clay
 Gravel	 Sand	 Silt
 Peat	 Boulders	 Cobbles
 Chalk	 Conglomerate	 Volcaniclastic
 Asphalt	 Void	 Mudstone
 Siltstone	 Sandstone	 Limestone
 Ironstone	 Mudstone / Siltstone	 Breccia
 Coal	 Coral	 Bedrock
 Shale	 Gypsum	 Igneous (Coarse Grained)
 Igneous (Fine Grained)	 Igneous (Medium Grained)	 Metamorphic (Coarse Grained)
 Metamorphic (Fine Grained)	 Metamorphic (Medium Grained)	

INSTALLATION / BACKFILL DETAILS

 Arisings	 Concrete	 Bentonite cement grout
 Bentonite seal	 Filter	 Pea Gravel
 Plain pipe	 Slotted pipe	 Piezometer / Standpipe tip

NOTE:
Legend symbols in accordance with BS 5930 (2015)

KEY TO BOREHOLE AND TRIAL PIT LOGS

m.A.O.D. metres Above Ordnance Datum.

SAMPLE AND TEST TYPES

U	Undisturbed driven tube sample - 102mm diameter, 450mm long.
P	Undisturbed pushed piston sample - 102mm diameter, 1000mm long.
TW	Undisturbed thin walled push in sample - 100mm diameter, 750mm long.
B	Bulk disturbed sample.
BLK	Block Sample
CBR	Heavy duty undisturbed sample - 154 mm diameter (CBR mould).
D	Small disturbed sample.
LB	Large Bulk disturbed sample (for earthworks testing)
C	Core sample
W	Water sample
G	Gas sample
ES	Environmental sample (soil)
j	Jar sample
t	Tub sample
p	Pot sample
s	Small sample
v	Vial sample
S	Standard Penetration Test using split spoon sampler. (See Note).
C	Standard Penetration Test using a solid 60 degree cone. (See Note).

NOTE: Where a single value is quoted this is the N value for 300 mm penetration following a seating drive of 150 mm. Where this full penetration is not achieved the number of blows is quoted for the penetration below the seating drive eg. 63/160 mm.
Where total penetration is less than the seating drive this is indicated by a + and the number of blows for total penetration is quoted eg. +50/75 mm.

HV	Hand Vane Test. Vane undrained shear strength, c_u, quoted in kPa.
V	Borehole Vane Test. Vane undrained shear strength, c_u, quoted in kPa.
FHT/RHT	Falling / Rising Head Permeability Test.

CORE RUN DETAILS

TCR	Total Core Recovery, %
SCR	Solid Core Recovery, %
RQD	Rock Quality Designation, %
FI	Fracture Index. NI - Non intact where > 25 No. per metre length.

WATER COLUMN SYMBOLS

	First water strike, second water strike etc.
	Standing water level after first strike, second strike etc.
	Seepage.

NOTE:
Legend symbols in accordance with BS 5930 (2015)

APPENDIX III – WINDOW SAMPLING LOGS

Contract : Llantarnam 3G Pitch, Cwmbran

Client : Torfaen County Borough Council

Window Sample No. WS01

Dates : 5/6/20 - 5/6/20

Location : Within playing field

Job Number : Q0269

Engineer : Capita

Ground Level : 39.87 m A.O.D. *Level to Ordnance Datum*

Coordinates: 330092.27 E 193525.76 N *Co-ordinates to National Grid*

m B.G.L.	Samples		Sample Run		Strata				Water	
	Depth	Type No.	Diam. (mm)	Recovery (%)	Depth (Thick-ness)	Description	Legend	Red. Level A.O.D.		Install/ Backfill
0	0.00 - 0.25	ES 1			0.10	TOPSOIL - Light brown slightly sandy SILT with many rootlets				
					0.10	Orangeish brown SILT		39.77		
	0.30 - 0.50	D 1			0.50					
					0.60	Reddish brown and light brown clayey GRAVEL. Gravel is fine to coarse angular sandstone.		39.27		
	0.80 - 2.30	B 1			0.20					
					0.80	Firm to stiff reddish brown very sandy slightly gravelly CLAY locally light grey. Gravel is fine to medium sub-rounded to rounded sandstone.		39.07		
1										
	1.80 - 2.00	D 2								
					2.20					
2										
	2.30 - 2.50	D 3								
						No recovery				
3					3.00	Terminated upon refusal at 3.0mbgl		36.87		
4										

Equipment used: Dando Terrier. Using 87mm sample barrel

Remarks: Hand excavated trial pit to 1.2mbgl

No Groundwater Encountered

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AGS

Contract : Llantarnam 3G Pitch, Cwmbran

Client : Torfaen County Borough Council

Borehole No.
WS01

Dates : 5/6/20 - 5/6/20	Job Number : Q0269	Ground Level : 39.87 m A.O.D. *Level to Ordnance Datum*
Location : Within playing field	Engineer : Capita	Coordinates: 330092.27 E 193525.76 N *Co-ordinates to National Grid*

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Contract : Llantarnam 3G Pitch, Cwmbran

Client : Torfaen County Borough Council

Window Sample No. WS02

Dates : 8/6/20 - 8/6/20

Location : Within playing field

Job Number : Q0269

Engineer : Capita

Ground Level : 39.77 m A.O.D. *Level to Ordnance Datum*

Coordinates: 330054.25 E 193476.63 N *Co-ordinates to National Grid*

m B.G.L.	Samples Depth	Samples Type No.	Sample Run Diam. (mm)	Sample Run Recovery (%)	Strata Depth (Thick-ness)	Strata Description	Strata Legend	Strata Red. Level A.O.D.	Water	Install/ Backfill
0	0.00 - 0.20	ES 1			0.20	TOPSOIL - Light brown sandy SILT with many rootlets				
	0.30 - 0.50	ES 2			0.20	MADE GROUND - Light brown slightly sandy slightly gravelly CLAY. Gravel is fine to coarse angular sandstone.		39.57		
	0.50 - 0.70	D 1			0.10	Stiff reddish brown slightly very sandy silty CLAY.		39.47		
					0.30					
					0.90					
1						..... Sandstone cobble between 1.0 and 1.2mbgl				
					1.20	Terminated upon refusal at 1.2mbgl		38.57		
2										
3										
4										

Equipment used: Dando Terrier. Using 87mm sample barrel

Remarks: Hand excavated trial pit to 1.2mbgl

No groundwater encountered

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Contract : Llantarnam 3G Pitch, Cwmbran

Client : Torfaen County Borough Council

Borehole No.
WS02

Dates : 8/6/20 - 8/6/20	Job Number : Q0269	Ground Level : 39.77 m A.O.D. *Level to Ordnance Datum*
Location : Within playing field	Engineer : Capita	Coordinates: 330054.25 E 193476.63 N *Co-ordinates to National Grid*

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Contract : Llantarnam 3G Pitch, Cwmbran

Client : Torfaen County Borough Council

Window Sample No.
WS03

Dates : 8/6/20 - 8/6/20
Location : Within playing field
Job Number : Q0269
Engineer : Capita
Ground Level : 39.70 m A.O.D. *Level to Ordnance Datum*
Coordinates: 330041.57 E 193436.18 N *Co-ordinates to National Grid*

m B.G.L.	Samples Depth	Samples Type No.	Sample Run Diam. (mm)	Sample Run Recovery (%)	Strata Depth (Thick-ness)	Strata Description	Strata Legend	Strata Red. Level A.O.D.	Water	Install/ Backfill
0					0.15	TOPSOIL - Light brown sandy SILT with many rootlets				
	0.15 - 0.35	D 1			0.15	Dark reddish brown SILT.		39.55		
					0.75					
	0.90 - 2.60	B 1			0.90	Reddish brown locally orange slightly clayey slightly silty slightly gravelly SAND. Gravel is fine to coarse angular to sub-rounded sandstone.		38.80		
1										
					1.70					
2										
					2.60	Terminated upon refusal at 2.6mbgl		37.10		
3										
4										

Equipment used: Dando Terrier. Using 87mm sample barrel
Remarks: Hand excavated trial pit to 1.2mbgl

No Groundwater Encountered

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Contract : Llantarnam 3G Pitch, Cwmbran

Client : Torfaen County Borough Council

Borehole No.
WS03

Dates : 8/6/20 - 8/6/20	Job Number : Q0269	Ground Level : 39.70 m A.O.D. *Level to Ordnance Datum*
Location : Within playing field	Engineer : Capita	Coordinates: 330041.57 E 193436.18 N *Co-ordinates to National Grid*

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Contract : Llantarnam 3G Pitch, Cwmbran

Client : Torfaen County Borough Council

Window Sample No. WS04

Dates : 8/6/20 - 8/6/20

Location : Within playing field

Job Number : Q0269

Engineer : Capita

Ground Level : 39.17 m A.O.D. *Level to Ordnance Datum*

Coordinates: 330088.20 E 193398.89 N *Co-ordinates to National Grid*

m B.G.L.	Samples Depth	Samples Type No.	Sample Run Diam. (mm)	Sample Run Recovery (%)	Strata Depth (Thick-ness)	Strata Description	Strata Legend	Strata Red. Level A.O.D.	Water
0					0.10	TOPSOIL - Light brown sandy SILT with many rootlets.			
					0.10	MADE GROUND - Light brown slightly sandy gravelly SILT. Gravel is fine to coarse sub-rounded sandstone. (Sub-soil)		39.07	
					0.25				
	0.35 - 1.00	B 1			0.35	Firm reddish brown silty CLAY.		38.82	
	0.50 - 0.70	D 1			0.65				
1	1.00 - 1.60	B 2			1.00	Reddish brown clayey slightly sandy GRAVEL. Gravel is fine to coarse angular sandstone.		38.17	
					0.60				
					1.60	Terminated upon refusal at 1.6mbgl		37.57	
2									
3									
4									

Equipment used: Dando Terrier. Using 87mm sample barrel

Remarks: Hand excavated trial pit to 1.2mbgl

No Groundwater Encountered

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Contract : Llantarnam 3G Pitch, Cwmbran

Client : Torfaen County Borough Council

Borehole No.
WS04

Dates : 8/6/20 - 8/6/20	Job Number : Q0269	Ground Level : 39.17 m A.O.D. *Level to Ordnance Datum*
Location : Within playing field	Engineer : Capita	Coordinates: 330088.20 E 193398.89 N *Co-ordinates to National Grid*

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Contract : Llantarnam 3G Pitch, Cwmbran

Client : Torfaen County Borough Council

Window Sample No. WS05

Dates : 8/6/20 - 8/6/20

Job Number : Q0269

Location : Within playing field

Engineer : Capita

Ground Level : 38.82 m A.O.D. *Level to Ordnance Datum*

Coordinates: 330118.10 E 193432.57 N *Co-ordinates to National Grid*

m B.G.L.	Samples Depth	Samples Type No.	Sample Run Diam. (mm)	Sample Run Recovery (%)	Strata Depth (Thick-ness)	Strata Description	Strata Legend	Strata Red. Level A.O.D.	Water
0	0.00 - 0.25	ES 1			0.25	TOPSOIL - Light brown sandy SILT with many rootlets.			
	0.40 - 0.60	D 1			0.25 0.75	Firm reddish brown silty CLAY.		38.57	
1	1.00 - 1.20	D 2			1.00 0.90	Light brown sandy GRAVEL. Gravel is fine to coarse angular sandstone.		37.82	
					1.90	Terminated upon refusal at 1.9mbgl		36.92	
2									
3									
4									

Equipment used: Dando Terrier. Using 87mm sample barrel

Remarks: Hand excavated trial pit to 1.2mbgl

No Groundwater Encountered

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Contract : Llantarnam 3G Pitch, Cwmbran

Client : Torfaen County Borough Council

Borehole No.
WS05

Dates : 8/6/20 - 8/6/20	Job Number : Q0269	Ground Level : 38.82 m A.O.D. *Level to Ordnance Datum*
Location : Within playing field	Engineer : Capita	Coordinates: 330118.10 E 193432.57 N *Co-ordinates to National Grid*

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Contract : Llantarnam 3G Pitch, Cwmbran

Client : Torfaen County Borough Council

Window Sample No. WS06

Dates : 5/6/20 - 5/6/20

Location : Within playing field

Job Number : Q0269

Engineer : Capita

Ground Level : 39.32 m A.O.D. *Level to Ordnance Datum*

Coordinates: 330171.71 E 193476.13 N *Co-ordinates to National Grid*

m B.G.L.	Samples Depth	Samples Type No.	Sample Run Diam. (mm)	Sample Run Recovery (%)	Strata Depth (Thick-ness)	Strata Description	Strata Legend	Strata Red. Level A.O.D.	Water
0					0.15	TOPSOIL - Light grey sandy SILt with many rootlets.			
	0.15 - 0.45	ES 1			0.15	MADE GROUND - Grey and brown silty GRAVEL. Gravel is fine to medium angular slag concrete.		39.17	
	0.45 - 0.65	D 1			0.30				
	0.65 - 1.80	B 1			0.45	Firm reddish brown sandy slightly gravelly CLAY. Gravel is fine to coarse angular sandstone.		38.87	
1					1.55				
	1.80 - 2.00	D 2							
2					2.00	Terminated upon refusal at 2.0mbgl		37.32	
3									
4									

Equipment used: Dando Terrier. Using 87mm sample barrel

Remarks: Hand excavated trial pit to 1.2mbgl

No Groundwater Encountered

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Contract : Llantarnam 3G Pitch, Cwmbran

Client : Torfaen County Borough Council

Borehole No.
WS06

Dates : 5/6/20 - 5/6/20	Job Number : Q0269	Ground Level : 39.32 m A.O.D. *Level to Ordnance Datum*
Location : Within playing field	Engineer : Capita	Coordinates: 330171.71 E 193476.13 N *Co-ordinates to National Grid*

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Contract : Llantarnam 3G Pitch, Cwmbran

Client : Torfaen County Borough Council

Window Sample No. WS07

Dates : 5/6/20 - 5/6/20

Location : Within playing field

Job Number : Q0269

Engineer : Capita

Ground Level : 40.36 m A.O.D. *Level to Ordnance Datum*

Coordinates: 330211.58 E 193461.58 N *Co-ordinates to National Grid*

m B.G.L.	Samples		Sample Run		Strata				Water
	Depth	Type No.	Diam. (mm)	Recovery (%)	Depth (Thick-ness)	Description	Legend	Red. Level A.O.D.	
0					0.25	TOPSOIL - Light brown sandy SILT with many rootlets.			
	0.25 - 0.45	ES 1			0.25	MADE GROUND - Light brown slightly sandy gravelly SILT with low cobble content. Gravel is fine to coarse sub-angular sandstone. Cobbles are angular sandstone. (Sub-soil)		40.11	
	0.45 - 0.70	D 1			0.45				
	0.70 - 1.00	D 2			0.70	Stiff reddish brown silty CLAY with occasional pockets of grey silt (approx. 0.05m in diameter).		39.66	
1					1.10				
	1.60 - 1.80	D 3							
					1.80	Terminated upon refusal at 1.8mbgl		38.56	
2									
3									
4									

Equipment used: Dando Terrier. Using 87mm sample barrel

Remarks: Hand excavated trial pit to 1.2mbgl

No Groundwater Encountered

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Contract : Llantarnam 3G Pitch, Cwmbran

Client : Torfaen County Borough Council

Borehole No.
WS07

Dates : 5/6/20 - 5/6/20	Job Number : Q0269	Ground Level : 40.36 m A.O.D. *Level to Ordnance Datum*
Location : Within playing field	Engineer : Capita	Coordinates: 330211.58 E 193461.58 N *Co-ordinates to National Grid*

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QGL	P Darby	1 Of 1	2	All measurements in metres unless otherwise stated

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Contract : Llantarnam 3G Pitch, Cwmbran

Client : Torfaen County Borough Council

Window Sample No. WS08

Dates : 5/6/20 - 5/6/20

Location : Within playing field

Job Number : Q0269

Engineer : Capita

Ground Level : 40.46 m A.O.D. *Level to Ordnance Datum*

Coordinates: 330225.59 E 193455.84 N *Co-ordinates to National Grid*

m B.G.L.	Samples		Sample Run		Strata				Water
	Depth	Type No.	Diam. (mm)	Recovery (%)	Depth (Thick-ness)	Description	Legend	Red. Level A.O.D.	
0					0.10	TOPSOIL - Light grey slightly sandy SILT with many rootlets.			
	0.20 - 0.40	ES 1			0.10	MADE GROUND - Light brown slightly sandy gravelly SILT. Gravel is fine to coarse angular sandstone (Sub-soil)		40.36	
					0.50				
	0.60 - 1.60	B 1			0.60	Stiff reddish brown slightly gravelly CLAY with occasional pockets of grey Silt (approx. 0.05m in diameter). Gravel is fine to coarse angular sandstone.		39.86	
1	1.00 - 1.20	D 1			1.00				
					1.60	Terminated upon refusal at 1.6mbgl		38.86	
2									
3									
4									

Equipment used: Dando Terrier. Using 87mm sample barrel

Remarks: Hand excavated trial pit to 1.2mbgl

No Groundwater Encountered

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Contract : Llantarnam 3G Pitch, Cwmbran

Client : Torfaen County Borough Council

Borehole No.
WS08

Dates : 5/6/20 - 5/6/20	Job Number : Q0269	Ground Level : 40.46 m A.O.D. *Level to Ordnance Datum*
Location : Within playing field	Engineer : Capita	Coordinates: 330225.59 E 193455.84 N *Co-ordinates to National Grid*

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QGL	P Darby	1 Of 1	2	All measurements in metres unless otherwise stated

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Contract : Llantarnam 3G Pitch, Cwmbran

Client : Torfaen County Borough Council

Window Sample No. WS09

Dates : 5/6/20 - 5/6/20

Location : Within playing field

Job Number : Q0269

Engineer : Capita

Ground Level : 40.36 m A.O.D. *Level to Ordnance Datum*

Coordinates: 330233.38 E 193447.49 N *Co-ordinates to National Grid*

m B.G.L.	Samples		Sample Run		Strata				Water
	Depth	Type No.	Diam. (mm)	Recovery (%)	Depth (Thick-ness)	Description	Legend	Red. Level A.O.D.	
0	0.00 - 0.20	ES 1			0.20	TOPSOIL - Light brown sandy SILT with many rootlets.			
					0.20 0.30	MADE GROUND - Light brown slightly sandy gravelly SILT. Gravel is fine to coarse sub-rounded to sub-angular sandstone.		40.16	
	0.55 - 1.60	B 1			0.50 0.05 0.55	Orangeish brown gravelly SAND. Sand is fine. Gravel is fine to medium rounded sandstone. Firm to stiff reddish brown silty CLAY locally with pockets of grey sand (approx. 0.05m-0.10m in diameter).		39.86 39.81	
1	1.00 - 1.10	D 1			1.05				
					1.60	Terminated upon refusal at 1.6mbgl		38.76	
2									
3									
4									

Equipment used: Dando Terrier. Using 87mm sample barrel

Remarks: Hand excavated trial pit to 1.2mbgl

No Groundwater Encountered

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Contract : Llantarnam 3G Pitch, Cwmbran

Client : Torfaen County Borough Council

Borehole No.
WS09

Dates : 5/6/20 - 5/6/20	Job Number : Q0269	Ground Level : 40.36 m A.O.D. *Level to Ordnance Datum*
Location : Within playing field	Engineer : Capita	Coordinates: 330233.38 E 193447.49 N *Co-ordinates to National Grid*

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QGL	P Darby	1 Of 1	2	All measurements in metres unless otherwise stated

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Contract : Llantarnam 3G Pitch, Cwmbran

Client : Torfaen County Borough Council

Window Sample No. WS10

Dates : 8/6/20 - 8/6/20

Location : Within playing field

Job Number : Q0269

Engineer : Capita

Ground Level : 38.49 m A.O.D. *Level to Ordnance Datum*

Coordinates: 330191.76 E, 193381.11 N *Co-ordinates to National Grid*

m B.G.L.	Samples		Sample Run		Strata				Water
	Depth	Type No.	Diam. (mm)	Recovery (%)	Depth (Thick-ness)	Description	Legend	Red. Level A.O.D.	
0					0.20	TOPSOIL - Light grey slightly sandy SILT with many rootlets.			
	0.20 - 0.40	ES 1			0.20 0.40	MADE GROUND - Light brown slightly sandy gravelly SILT. Gravel is fine to coarse sub-rounded to angular sandstone and brick. (Sub-soil)		38.29	
	0.60 - 0.80	D 1			0.60 0.70	Firm reddish brown silty CLAY with occasional pockets of black silt (approx. 0.05m in diameter).		37.89	
1					1.30 0.50	Orange and brown locally clayey sandy GRAVEL. Gravel is fine to coarse angular sandstone.		37.19	
					1.80	Terminated upon refusal at 1.8mbgl		36.69	
2									
3									
4									

Equipment used: Dando Terrier. Using 87mm sample barrel

Remarks: Hand excavated trial pit to 1.2mbgl

Nro Groundwater Encountered

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Contract : Llantarnam 3G Pitch, Cwmbran

Client : Torfaen County Borough Council

Borehole No.
WS10

Dates : 8/6/20 - 8/6/20	Job Number : Q0269	Ground Level : 38.49 m A.O.D. *Level to Ordnance Datum*
Location : Within playing field	Engineer : Capita	Coordinates: 330191.76 E 193381.11 N *Co-ordinates to National Grid*

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Contract : Llantarnam 3G Pitch, Cwmbran

Client : Torfaen County Borough Council

Window Sample No. WS11

Dates : 8/6/20 - 8/6/20

Location : Within playing field

Job Number : Q0269

Engineer : Capita

Ground Level : 38.44 m A.O.D. *Level to Ordnance Datum*

Coordinates: 330164.87 E 193352.17 N *Co-ordinates to National Grid*

m B.G.L.	Samples		Sample Run		Strata				Water
	Depth	Type No.	Diam. (mm)	Recovery (%)	Depth (Thick-ness)	Description	Legend	Red. Level A.O.D.	
0					0.20	TOPSOIL - Light brown sandy SILT with many rootlets.			
	0.20 - 0.40	ES 1			0.20	MADE GROUND - Light brown slightly sandy gravelly SILT. Gravel is fine to coarse sub-rounded sandstone.		38.24	
					0.50				
	0.70 - 0.90	D 1			0.70	Soft to firm reddish brown slightly sandy silty CLAY.		37.74	
					0.30				
1	1.00 - 2.50	B 1			1.00	Reddish brown slightly silty slightly silty gravelly SAND. Sand is fine. Gravel is fine to coarse angular sandstone.		37.44	
					1.50				
2									
					2.50	Terminated upon refusal at 2.5mbgl		35.94	
3									
4									

Equipment used: Dando Terrier. Using 87mm sample barrel

Remarks: Hand excavated trial pit to 1.2mbgl

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AGS

Contract : Llantarnam 3G Pitch, Cwmbran

Client : Torfaen County Borough Council

Borehole No.
WS11

Dates : 8/6/20 - 8/6/20	Job Number : Q0269	Ground Level : 38.44 m A.O.D. *Level to Ordnance Datum*
Location : Within playing field	Engineer : Capita	Coordinates: 330164.87 E 193352.17 N *Co-ordinates to National Grid*

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AGS

Contract : Llantarnam 3G Pitch, Cwmbran

Client : Torfaen County Borough Council

Window Sample No. WS12

Dates : 9/6/20 - 9/6/20

Location : Within playing field

Job Number : Q0269

Engineer : Capita

Ground Level : 38.31 m A.O.D. *Level to Ordnance Datum*

Coordinates: 330205.34 E 193361.13 N *Co-ordinates to National Grid*

m B.G.L.	Samples Depth	Samples Type No.	Sample Run Diam. (mm)	Sample Run Recovery (%)	Strata Depth (Thick-ness)	Strata Description	Strata Legend	Strata Red. Level A.O.D.	Water
0					0.20	TOPSOIL - Light brown sandy SILT with many rootlets.			
					0.20	MADE GROUND - Light brown slightly sandy gravelly SILT. Gravel is fine to coarse sub-rounded to sub-angular.		38.11	
					0.40				
					0.60	Firm to stiff reddish brown silty CLAY.		37.71	
1									
	1.20 - 1.40	D 1			1.00				
	1.60 - 2.00	B 1			1.60	Reddish brown and orange slightly clayey slightly silty slightly gravelly SAND. Gravel is fine to coarse angular sandstone.		36.71	
2	2.00 - 2.50	B 2				..... Reddish brown below 2.0mbgl			
					1.40	No Recovery			
3					3.00	Terminated upon refusal at 3.0mbgl		35.31	
4									

Equipment used: Dando Terrier. Using 87mm sample barrel

Remarks: Hand excavated trial pit to 1.2mbgl

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AGS

Contract : Llantarnam 3G Pitch, Cwmbran

Client : Torfaen County Borough Council

Borehole No.
WS12

Dates : 9/6/20 - 9/6/20	Job Number : Q0269	Ground Level : 38.31 m A.O.D. *Level to Ordnance Datum*
Location : Within playing field	Engineer : Capita	Coordinates: 330205.34 E 193361.13 N *Co-ordinates to National Grid*

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AGS

Contract : Llantarnam 3G Pitch, Cwmbran

Client : Torfaen County Borough Council

Window Sample No. WS13

Dates : 9/6/20 - 9/6/20

Location : Within playing field

Job Number : Q0269

Engineer : Capita

Ground Level : 38.24 m A.O.D. *Level to Ordnance Datum*

Coordinates: 330222.88 E 193348.21 N *Co-ordinates to National Grid*

m B.G.L.	Samples		Sample Run		Strata				Water
	Depth	Type No.	Diam. (mm)	Recovery (%)	Depth (Thick-ness)	Description	Legend	Red. Level A.O.D.	
0					0.10	TOPSOIL - Light brown sandy SILT with many rootlets.			
					0.10	MADE GROUND - Light brown slightly sandy slight gravelly SILT with low to medium cobble content. Gravel is fine to coarse sub-angular sandstone. Cobbles are sub-angular sandstone.		38.14	
					0.40				
					0.50	Soft to firm reddish brown slightly sandy CLAY.		37.74	
1					1.10				
	1.20 - 1.40	D 1							
	1.60 - 2.00	B 2			1.60	Greyish brown slightly clayey slightly gravelly SAND. Sand is fine. Gravel is fine to coarse sub-rounded to sub-angular sandstone.		36.64	
					0.40				
2					2.00	Terminated upon refusal at 2.0mbgl		36.24	
3									
4									

Equipment used: Dando Terrier. Using 87mm sample barrel

Remarks: Hand excavated trial pit to 1.2mbgl

No Groundwater Encountered

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Contract : Llantarnam 3G Pitch, Cwmbran

Client : Torfaen County Borough Council

Borehole No.
WS13

Dates : 9/6/20 - 9/6/20	Job Number : Q0269	Ground Level : 38.24 m A.O.D. *Level to Ordnance Datum*
Location : Within playing field	Engineer : Capita	Coordinates: 330222.88 E 193348.21 N *Co-ordinates to National Grid*

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AGS

Contract : Llantarnam 3G Pitch, Cwmbran

Client : Torfaen County Borough Council

Window Sample No. WS14

Dates : 8/6/20 - 8/6/20

Location : Within playing field

Job Number : Q0269

Engineer : Capita

Ground Level : 38.35 m A.O.D. *Level to Ordnance Datum*

Coordinates: 330191.83 E 193358.81 N *Co-ordinates to National Grid*

m B.G.L.	Samples		Sample Run		Strata				Water
	Depth	Type No.	Diam. (mm)	Recovery (%)	Depth (Thick-ness)	Description	Legend	Red. Level A.O.D.	
0					0.20	TOPSOIL - Light brown sandy SILT with many rootlets.			
					0.20 0.40	MADE GROUND - Light brown slightly sandy gravelly SILT. Gravel is fine to coarse sub-rounded to sub-angular.		38.15	
	0.50	B 1			0.60	Firm reddish brown silty CLAY.		37.75	
1					0.60				
	1.20	D 2			1.20 0.30	Light brown and brown sandy GRAVEL. Gravel is fine to coarse angular sandstone.		37.15	
					1.50	Terminated upon refusal at 1.5mbgl		36.85	
2									
3									
4									

Equipment used: Dando Terrier. Using 87mm sample barrel

Remarks: Hand excavated trial pit to 1.2mbgl

No Groundwater Encountered

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Contract : Llantarnam 3G Pitch, Cwmbran

Client : Torfaen County Borough Council

Borehole No.
WS14

Dates : 8/6/20 - 8/6/20	Job Number : Q0269	Ground Level : 38.35 m A.O.D. *Level to Ordnance Datum*
Location : Within playing field	Engineer : Capita	Coordinates: 330191.83 E 193358.81 N *Co-ordinates to National Grid*

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Contract : Llantarnam 3G Pitch, Cwmbran

Client : Torfaen County Borough Council

Window Sample No. WS15

Dates : 9/6/20 - 9/6/20

Location : Within playing field

Job Number : Q0269

Engineer : Capita

Ground Level : 38.28 m A.O.D. *Level to Ordnance Datum*

Coordinates: 330213.80 E 193322.96 N *Co-ordinates to National Grid*

m B.G.L.	Samples Depth	Samples Type No.	Sample Run Diam. (mm)	Sample Run Recovery (%)	Strata Depth (Thick-ness)	Strata Description	Strata Legend	Strata Red. Level A.O.D.	Water	Install/ Backfill
0					0.20	TOPSOIL - Light brown sandy SILT with many rootlets.				
					0.20 0.45	MADE GROUND - Light brown slightly sandy gravelly SILT with low cobble content. Gravel is fine to coarse sub-rounded sandstone. Cobbles are sub-rounded sandstone. (Sub-soil)		38.08		
					0.65	Firm reddish brown silty CLAY.		37.63		
1					0.95					
	1.20 - 1.40	D 1								
	1.60 - 1.90	D 2			1.60 0.30	Reddish brown clayey SAND. Sand is fine.		36.68		
					1.90	Brown and grey sandy GRAVEL. Gravel is fine to coarse sub-rounded to angular sandstone.		36.38		
2						...No recovery from 1.90 - 4.00mbgl				
						No Recovery				
3					2.10					
						No Recovery				
4					4.00	Terminated upon refusal at 4.0mbgl		34.28		

Equipment used: Dando Terrier. Using 87mm sample barrel

Remarks: Hand excavated trail pit to 1.2mbgl

No Groundwater Encountered

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QGL	P Darby	1 Of 1	5	All measurements in metres unless otherwise stated

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Contract : Llantarnam 3G Pitch, Cwmbran

Client : Torfaen County Borough Council

Borehole No.
WS15

Dates : 9/6/20 - 9/6/20	Job Number : Q0269	Ground Level : 38.28 m A.O.D. *Level to Ordnance Datum*
Location : Within playing field	Engineer : Capita	Coordinates: 330213.80 E 193322.96 N *Co-ordinates to National Grid*

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KEY TO BOREHOLE AND TRIAL PIT LOGS

m.A.O.D. metres Above Ordnance Datum.

SAMPLE AND TEST TYPES

U	Undisturbed driven tube sample - 102mm diameter, 450mm long.
P	Undisturbed pushed piston sample - 102mm diameter, 1000mm long.
TW	Undisturbed thin walled push in sample - 100mm diameter, 750mm long.
B	Bulk disturbed sample.
BLK	Block Sample
CBR	Heavy duty undisturbed sample - 154 mm diameter (CBR mould).
D	Small disturbed sample.
LB	Large Bulk disturbed sample (for earthworks testing)
C	Core sample
W	Water sample
G	Gas sample
ES	Environmental sample (soil)
j	Jar sample
t	Tub sample
p	Pot sample
s	Small sample
v	Vial sample
S	Standard Penetration Test using split spoon sampler. (See Note).
C	Standard Penetration Test using a solid 60 degree cone. (See Note).

NOTE: Where a single value is quoted this is the N value for 300 mm penetration following a seating drive of 150 mm. Where this full penetration is not achieved the number of blows is quoted for the penetration below the seating drive eg. 63/160 mm.
Where total penetration is less than the seating drive this is indicated by a + and the number of blows for total penetration is quoted eg. +50/75 mm.

HV	Hand Vane Test. Vane undrained shear strength, c_u, quoted in kPa.
V	Borehole Vane Test. Vane undrained shear strength, c_u, quoted in kPa.
FHT/RHT	Falling / Rising Head Permeability Test.

CORE RUN DETAILS

TCR	Total Core Recovery, %
SCR	Solid Core Recovery, %
RQD	Rock Quality Designation, %
FI	Fracture Index. NI - Non intact where > 25 No. per metre length.

WATER COLUMN SYMBOLS

	First water strike, second water strike etc.
	Standing water level after first strike, second strike etc.
	Seepage.

NOTE:
Legend symbols in accordance with BS 5930 (2015)

KEY TO BOREHOLE AND TRIAL PIT LOGS

MATERIAL LEGENDS

 Made Ground	 Topsoil	 Clay
 Gravel	 Sand	 Silt
 Peat	 Boulders	 Cobbles
 Chalk	 Conglomerate	 Volcaniclastic
 Asphalt	 Void	 Mudstone
 Siltstone	 Sandstone	 Limestone
 Ironstone	 Mudstone / Siltstone	 Breccia
 Coal	 Coral	 Bedrock
 Shale	 Gypsum	 Igneous (Coarse Grained)
 Igneous (Fine Grained)	 Igneous (Medium Grained)	 Metamorphic (Coarse Grained)
 Metamorphic (Fine Grained)	 Metamorphic (Medium Grained)	

INSTALLATION / BACKFILL DETAILS

 Arisings	 Concrete	 Bentonite cement grout
 Bentonite seal	 Filter	 Pea Gravel
 Plain pipe	 Slotted pipe	 Piezometer / Standpipe tip

NOTE:
Legend symbols in accordance with BS 5930 (2015)

APPENDIX IV – DYNAMIC PROBE RESULTS

Contract : Llantarnam 3G Pitch, Cwmbran

Client : Torfaen County Borough Council

Dynamic Probe
DP01

Dates : 5/6/20 - 5/6/20

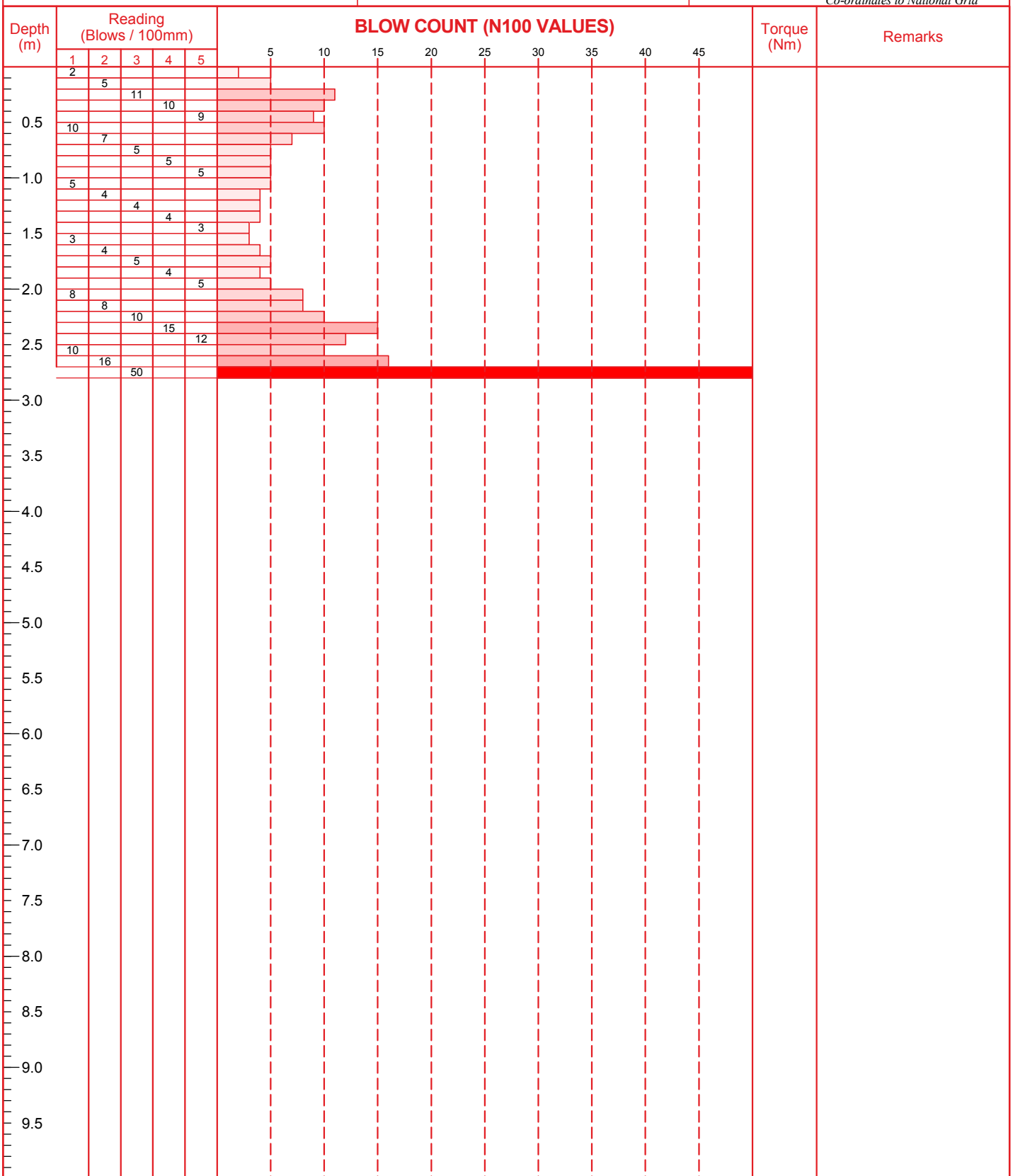
Location : Within playing field

Job Number : Q0269

Engineer : Capita

Ground Level : 39.87 m A.O.D.
Level to Ordnance Datum

Coordinates: 330092.27 E
193525.76 N
Co-ordinates to National Grid



Equipment: Dando Terrier Rig

Comments:

Test carried out in accordance with BS 1377 (1990):Part 9, Sect.3.2

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Contract : Llantarnam 3G Pitch, Cwmbran

Client : Torfaen County Borough Council

Dynamic Probe
DP02

Dates : 8/6/20 - 8/6/20

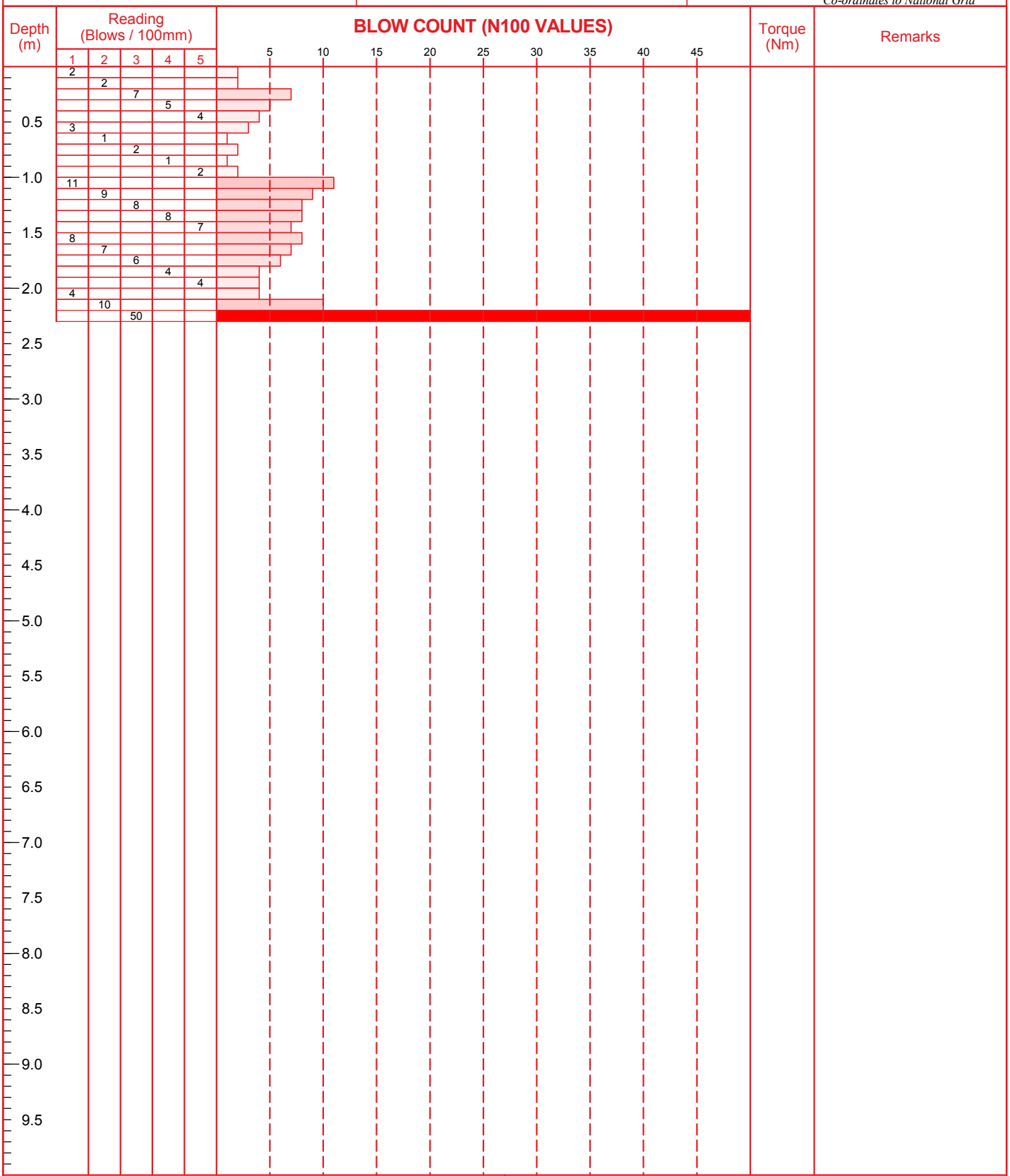
Location : Within playing field

Job Number : Q0269

Engineer : Capita

Ground Level : 39.77 m A.O.D.
Level to Ordnance Datum

Coordinates: 330054.25 E
193476.63 N
Co-ordinates to National Grid



Equipment: Dando Terrier Rig

Comments:

Test carried out in accordance with BS 1377 (1990):Part 9, Sect.3.2

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Contract : Llantarnam 3G Pitch, Cwmbran

Client : Torfaen County Borough Council

Dynamic Probe
DP03

Dates : 8/6/20 - 8/6/20

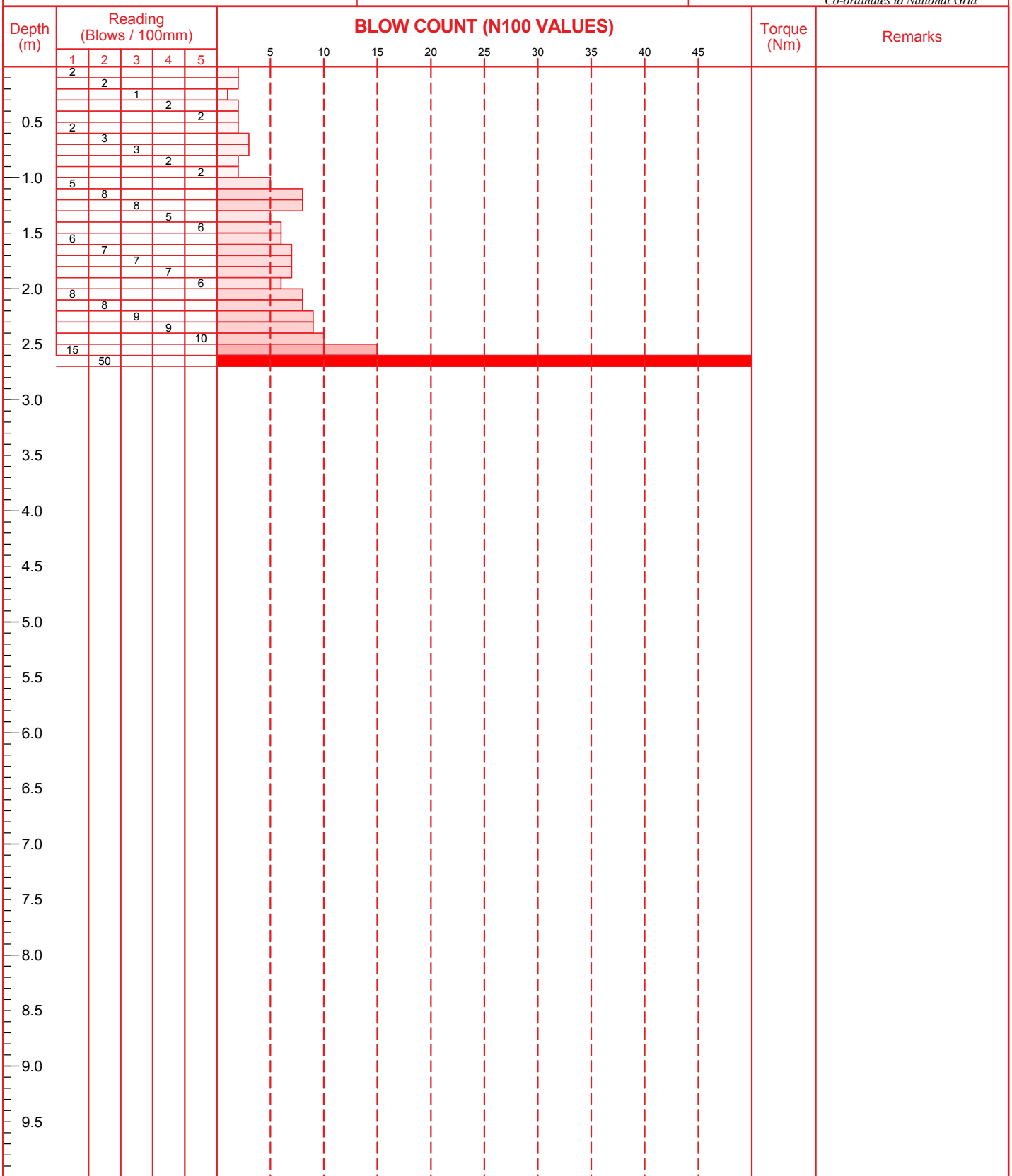
Location : Within playing field

Job Number : Q0269

Engineer : Capita

Ground Level : 39.70 m A.O.D.
Level to Ordnance Datum

Coordinates: 330041.57 E
193436.18 N
Co-ordinates to National Grid



Equipment: Dando Terrier Rig

Comments:

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Contract : Llantarnam 3G Pitch, Cwmbran

Client : Torfaen County Borough Council

Dynamic Probe
DP04

Dates : 8/6/20 - 8/6/20

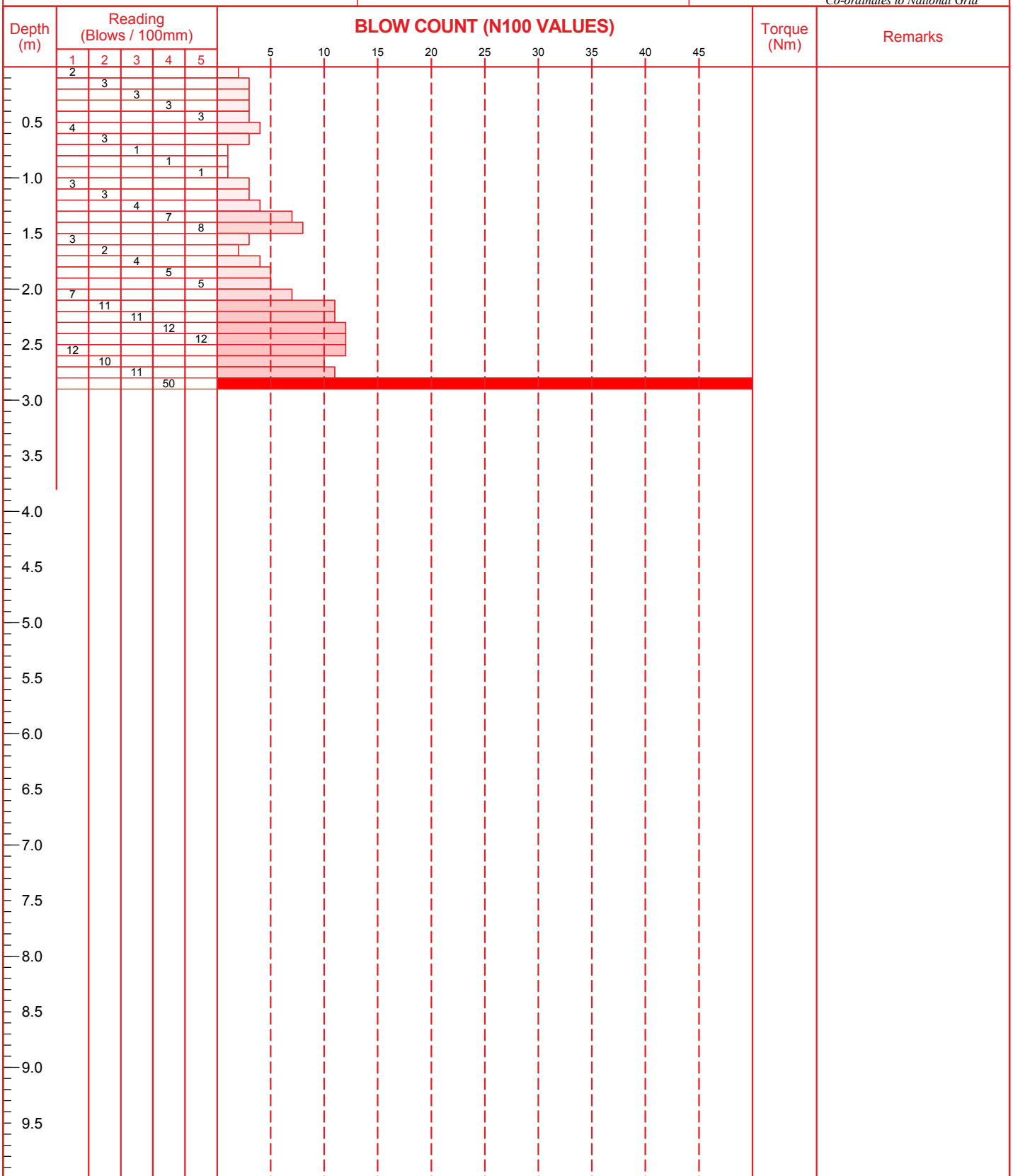
Location : Within playing field

Job Number : Q0269

Engineer : Capita

Ground Level : 39.17 m A.O.D.
Level to Ordnance Datum

Coordinates: 330088.20 E
193398.89 N
Co-ordinates to National Grid



Equipment: Dando Terrier Rig

Comments:

Test carried out in accordance with BS 1377 (1990):Part 9, Sect.3.2

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AGS

Contract : Llantarnam 3G Pitch, Cwmbran

Client : Torfaen County Borough Council

Dynamic Probe
DP05

Dates : 8/6/20 - 8/6/20

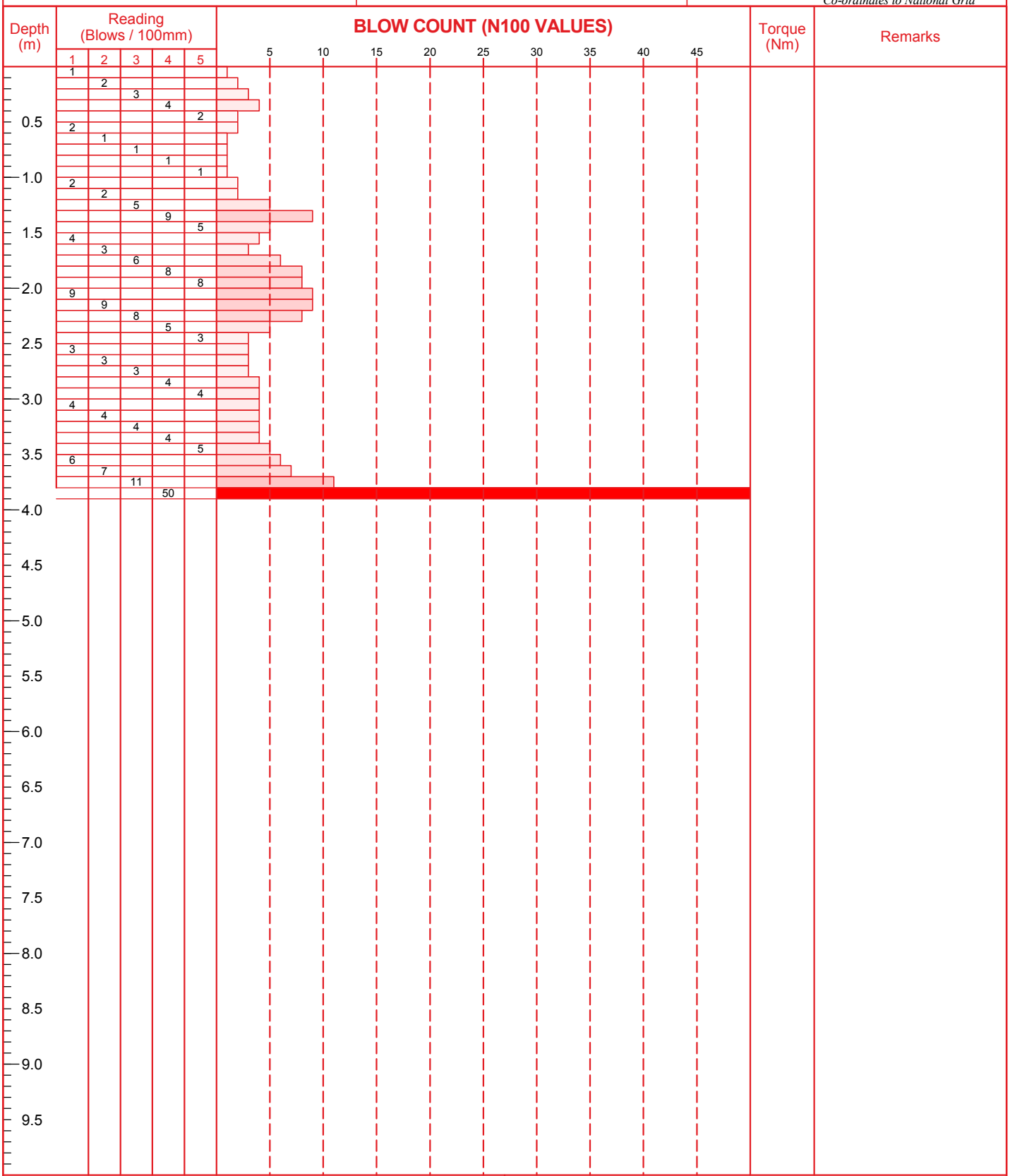
Location : Within playing field

Job Number : Q0269

Engineer : Capita

Ground Level : 38.82 m A.O.D.
Level to Ordnance Datum

Coordinates: 330118.10 E
193432.57 N
Co-ordinates to National Grid



Equipment: Dando Terrier Rig

Comments:

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Contract : Llantarnam 3G Pitch, Cwmbran

Client : Torfaen County Borough Council

Dynamic Probe
DP06

Dates : 5/6/20 - 5/6/20

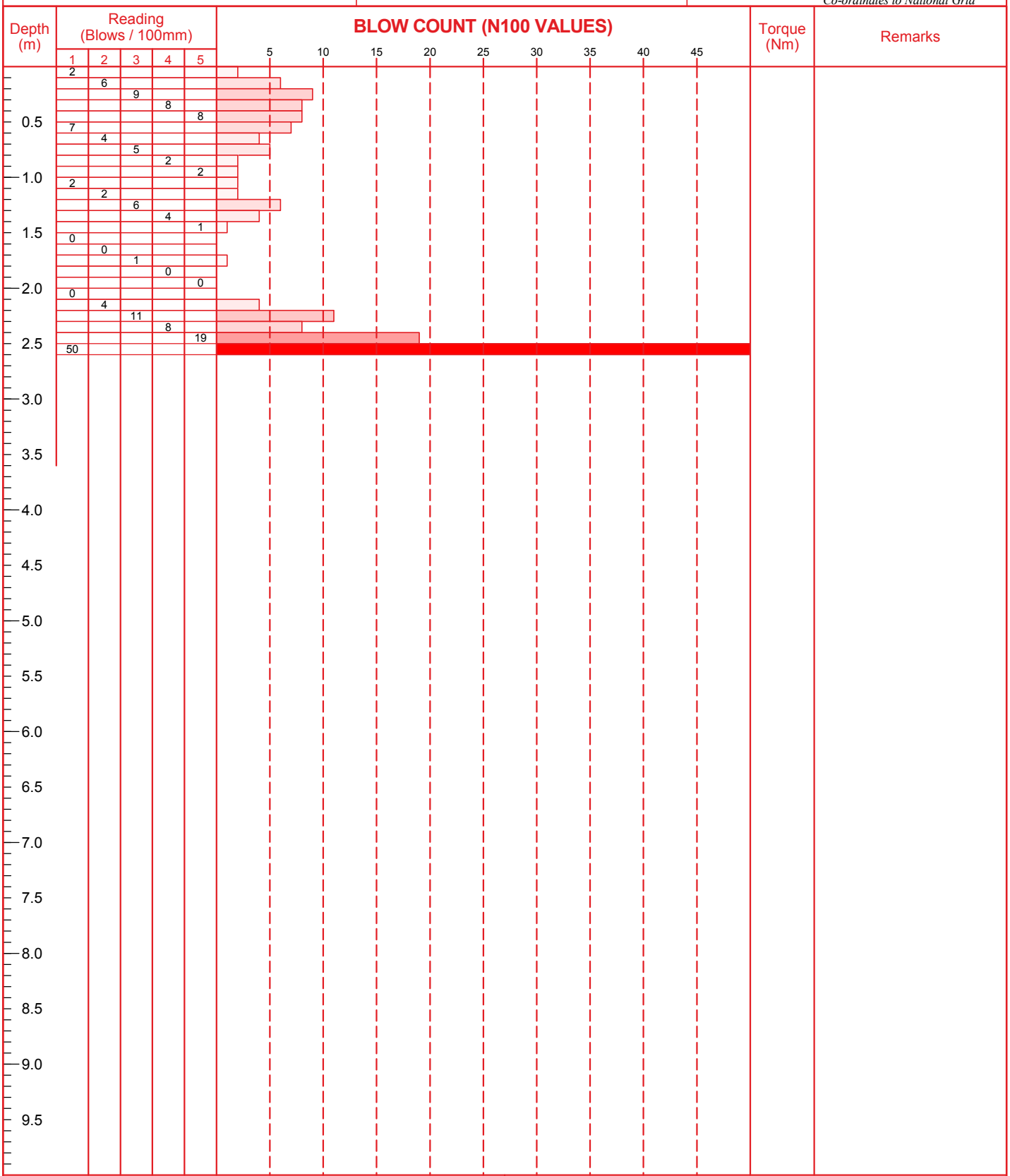
Location : Within playing field

Job Number : Q0269

Engineer : Capita

Ground Level : 39.32 m A.O.D.
Level to Ordnance Datum

Coordinates: 330171.71 E
193476.13 N
Co-ordinates to National Grid



Equipment: Dando Terrier Rig

Comments:

Test carried out in accordance with BS 1377 (1990):Part 9, Sect.3.2

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AGS

Contract : Llantarnam 3G Pitch, Cwmbran

Client : Torfaen County Borough Council

Dynamic Probe
DP07

Dates : 5/6/20 - 5/6/20

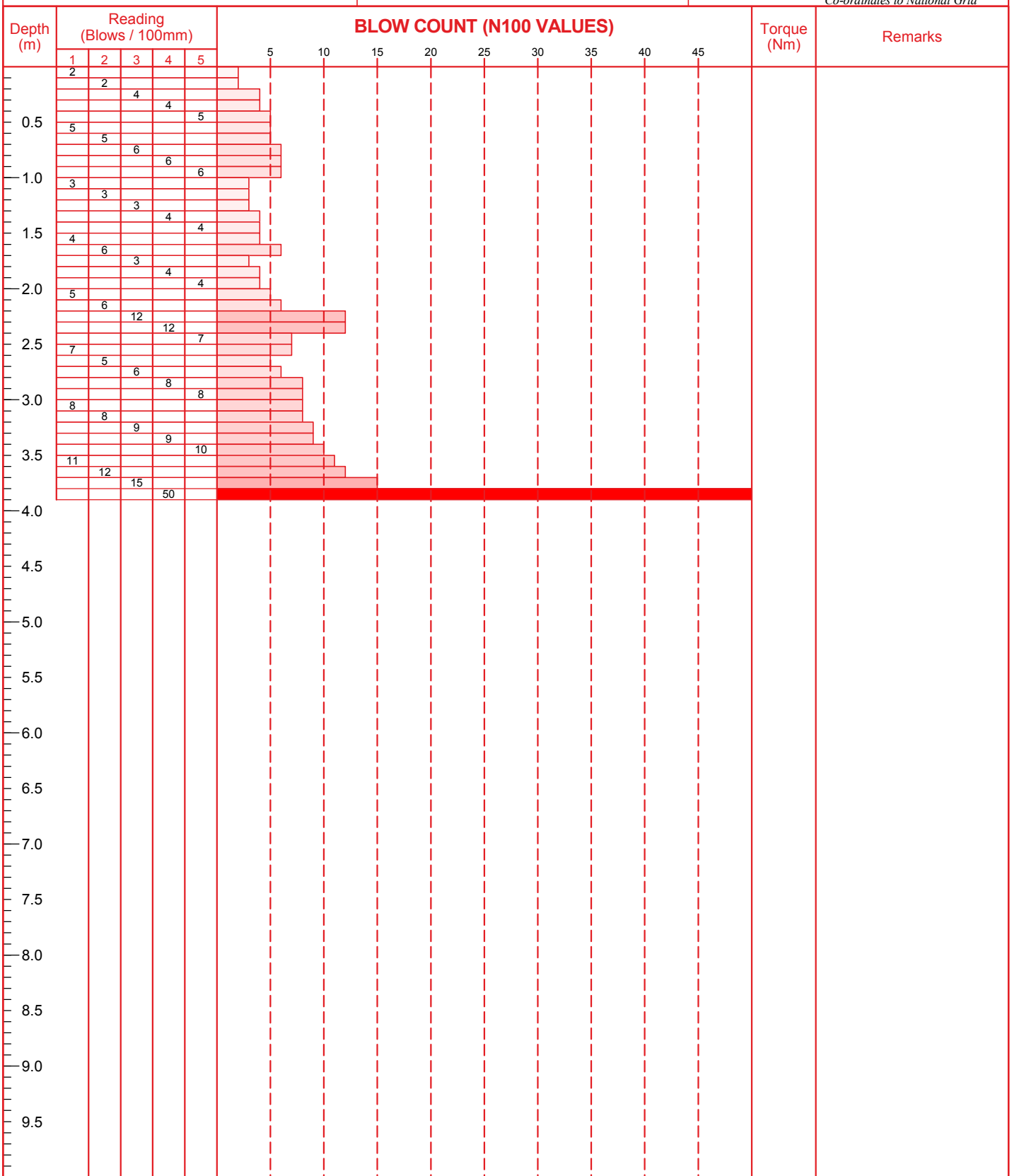
Location : Within playing field

Job Number : Q0269

Engineer : Capita

Ground Level : 40.36 m A.O.D.
Level to Ordnance Datum

Coordinates: 330211.58 E
193461.58 N
Co-ordinates to National Grid



Equipment: Dando Terrier Rig

Comments:

Test carried out in accordance with BS 1377 (1990):Part 9, Sect.3.2

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Contract : Llantarnam 3G Pitch, Cwmbran

Client : Torfaen County Borough Council

Dynamic Probe
DP08

Dates : 5/6/20 - 5/6/20

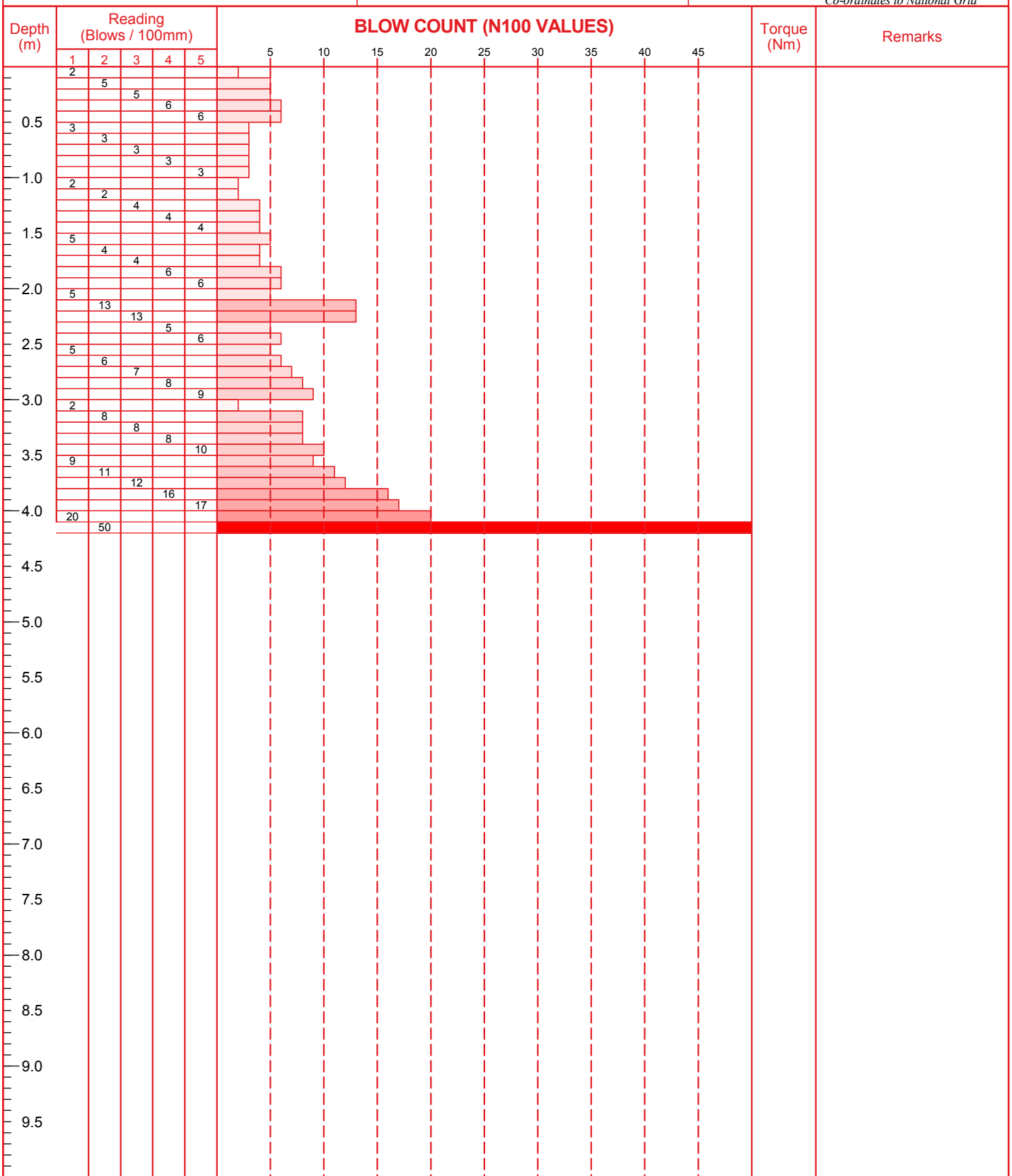
Location : Within playing field

Job Number : Q0269

Engineer : Capita

Ground Level : 40.46 m A.O.D.
Level to Ordnance Datum

Coordinates: 330225.59 E
193455.84 N
Co-ordinates to National Grid



Equipment: Dando Terrier Rig

Comments:

Test carried out in accordance with BS 1377 (1990):Part 9, Sect.3.2

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Contract : Llantarnam 3G Pitch, Cwmbran

Client : Torfaen County Borough Council

Dynamic Probe
DP09

Dates : 5/6/20 - 5/6/20

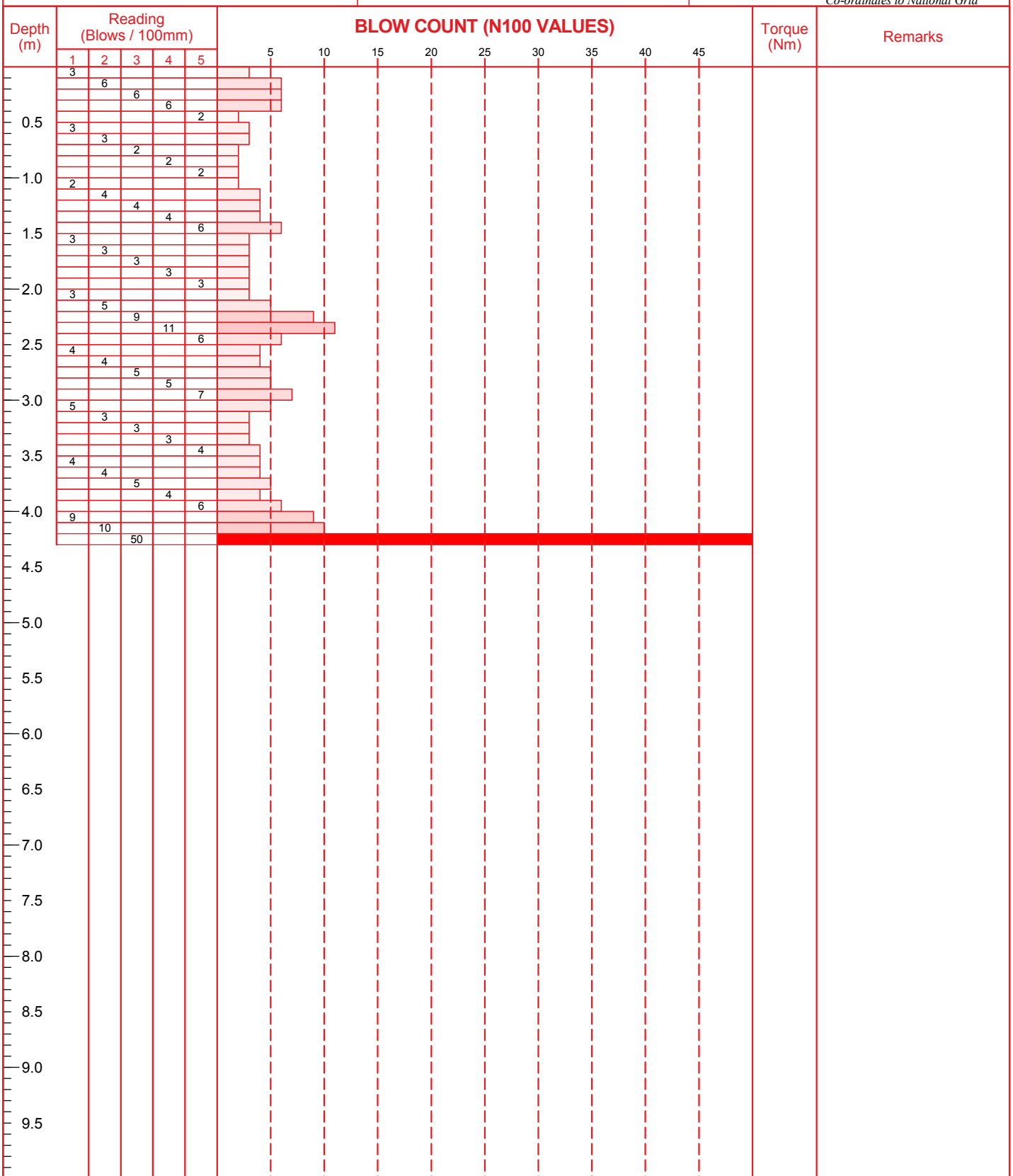
Location : Within playing field

Job Number : Q0269

Engineer : Capita

Ground Level : 40.36 m A.O.D.
Level to Ordnance Datum

Coordinates: 330233.38 E
193447.49 N
Co-ordinates to National Grid



Equipment: Dando Terrier Rig

Comments:

Test carried out in accordance with BS 1377 (1990):Part 9, Sect.3.2

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Contract : Llantarnam 3G Pitch, Cwmbran

Client : Torfaen County Borough Council

Dynamic Probe
DP10

Dates : 8/6/20 - 8/6/20

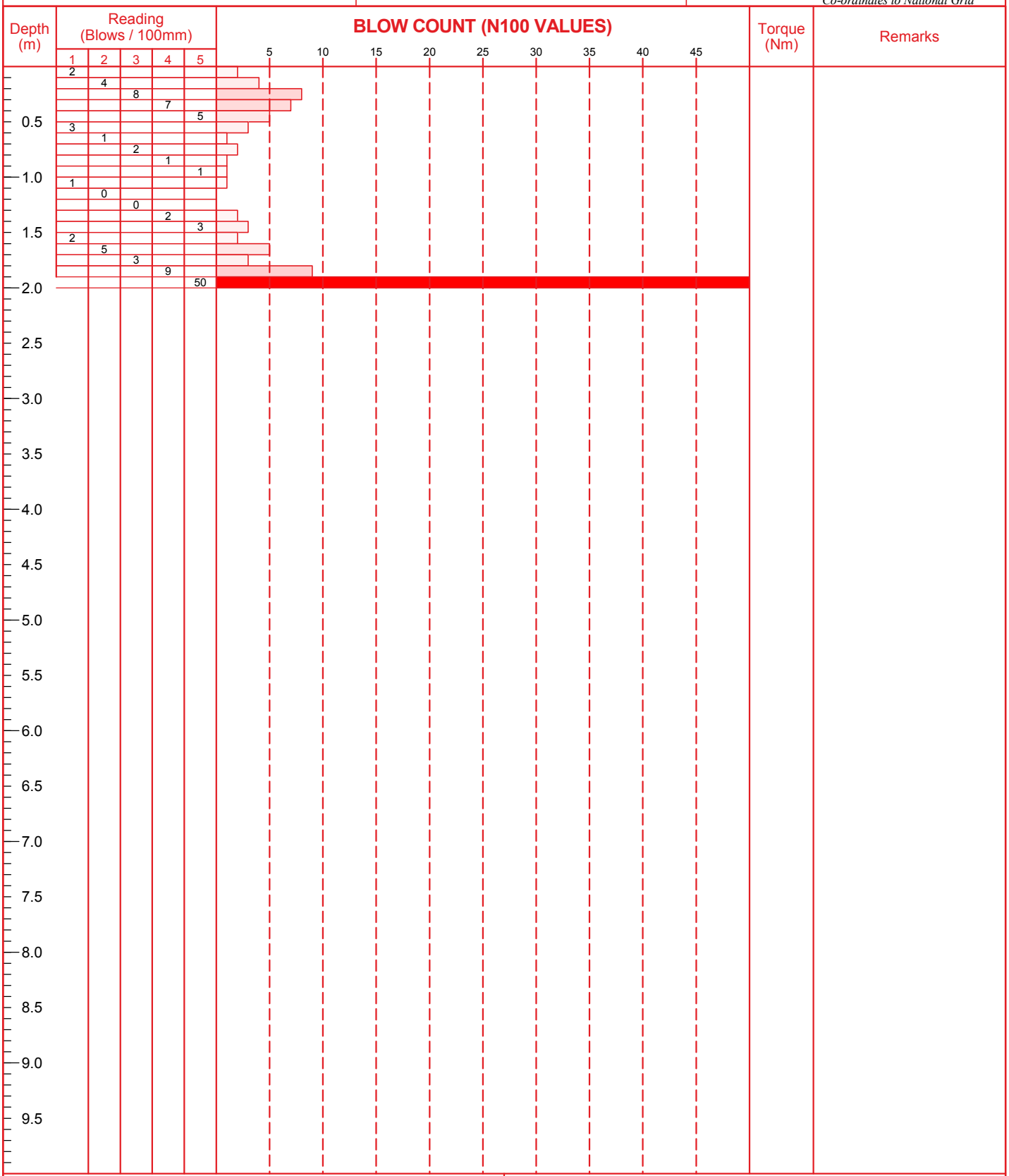
Location : Within playing field

Job Number : Q0269

Engineer : Capita

Ground Level : 38.49 m A.O.D.
Level to Ordnance Datum

Coordinates: 330191.76 E
193381.11 N
Co-ordinates to National Grid



Equipment: Dando Terrier Rig

Comments:

Test carried out in accordance with BS 1377 (1990):Part 9, Sect.3.2

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Tel: 01554 744880
Fax:
email: enquiries@quantumgeotech.co.uk

Operator:	Logged By.	Sheet No.	m Per Page	All measurements in metres unless otherwise stated
QG	P Darby	1 Of 1	10	

Contract : Llantarnam 3G Pitch, Cwmbran

Client : Torfaen County Borough Council

Dynamic Probe
DP11

Dates : 8/6/20 - 8/6/20

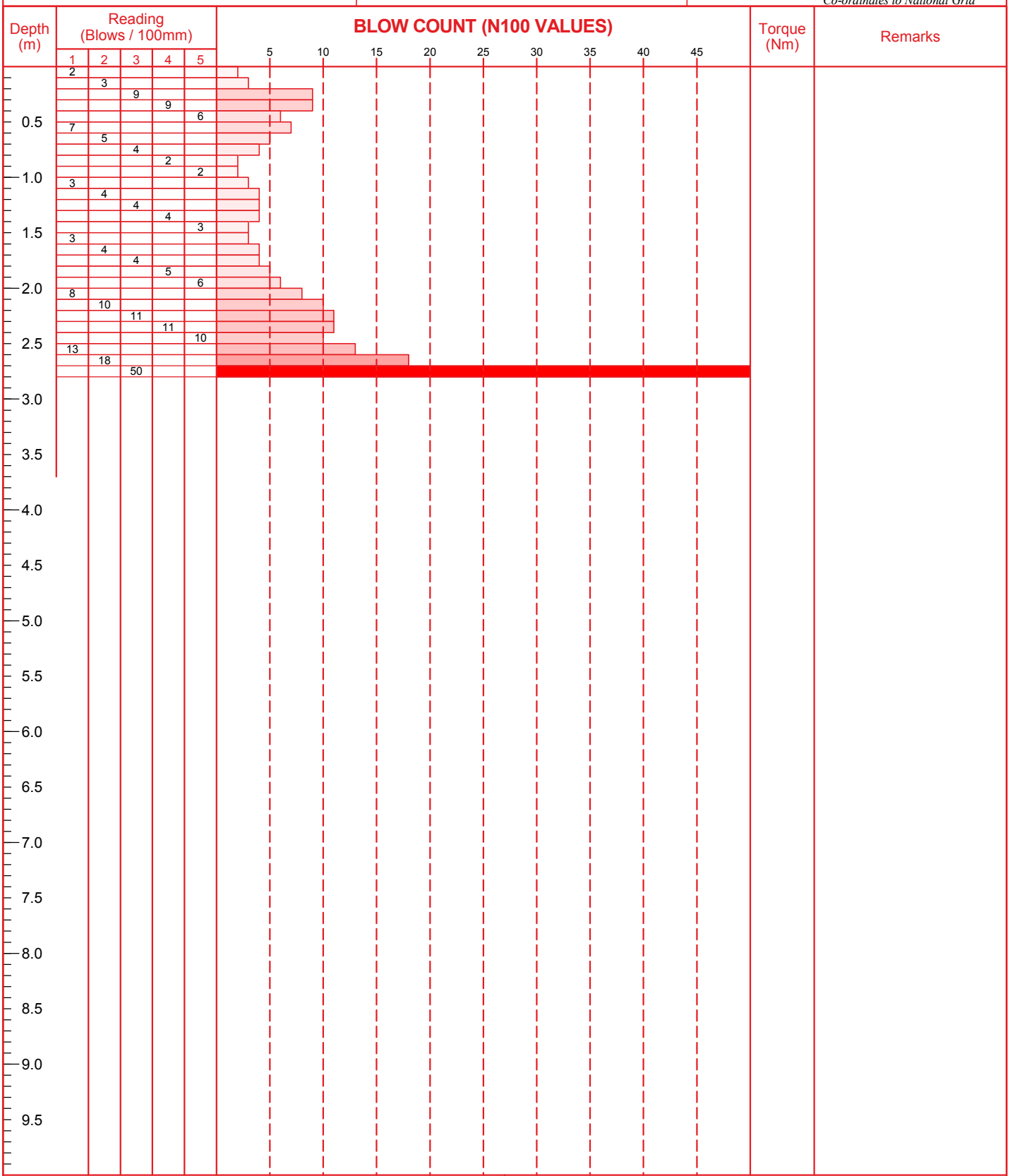
Location : Within playing field

Job Number : Q0269

Engineer : Capita

Ground Level : 38.44 m A.O.D.
Level to Ordnance Datum

Coordinates: 330174.87 E
193352.17 N
Co-ordinates to National Grid



Equipment: Dando Terrier Rig

Comments:

Test carried out in accordance with BS 1377 (1990):Part 9, Sect.3.2

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email: enquiries@quantumgeotech.co.uk

Operator:	Logged By.	Sheet No.	m Per Page	All measurements in metres unless otherwise stated
QG	P Darby	1 Of 1	10	

AGS

Contract : Llantarnam 3G Pitch, Cwmbran

Client : Torfaen County Borough Council

Dynamic Probe
DP12

Dates : 9/6/20 - 9/6/20

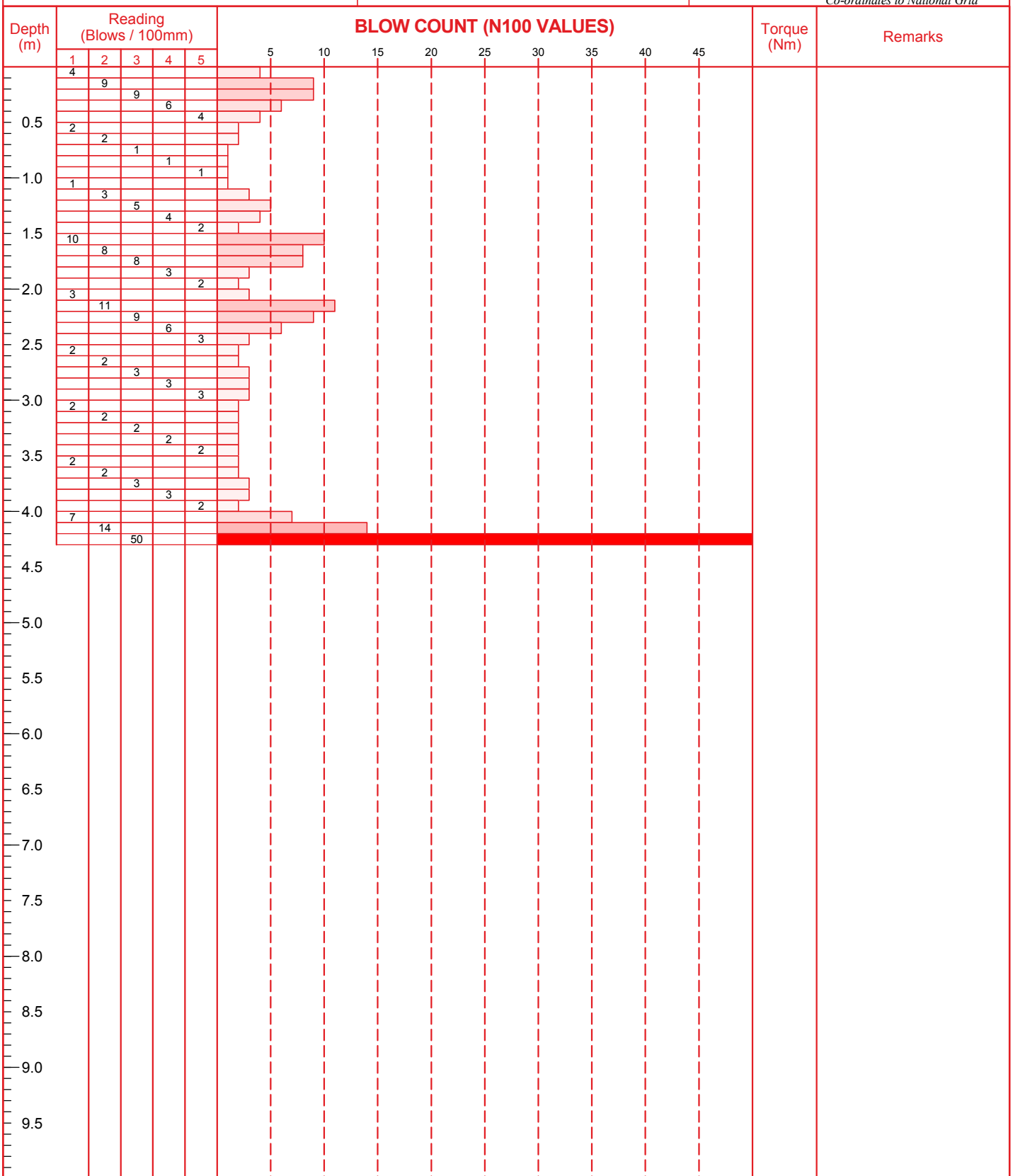
Location : Within playing field

Job Number : Q0269

Engineer : Capita

Ground Level : 38.31 m A.O.D.
Level to Ordnance Datum

Coordinates: 330205.34 E
193361.13 N
Co-ordinates to National Grid



Equipment: Dando Terrier Rig

Comments:

Test carried out in accordance with BS 1377 (1990):Part 9, Sect.3.2

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Operator:	Logged By.	Sheet No.	m Per Page	All measurements in metres unless otherwise stated
QG	P Darby	1 Of 1	10	

AGS

Contract : Llantarnam 3G Pitch, Cwmbran

Client : Torfaen County Borough Council

Dynamic Probe
DP13

Dates : 9/6/20 - 9/6/20

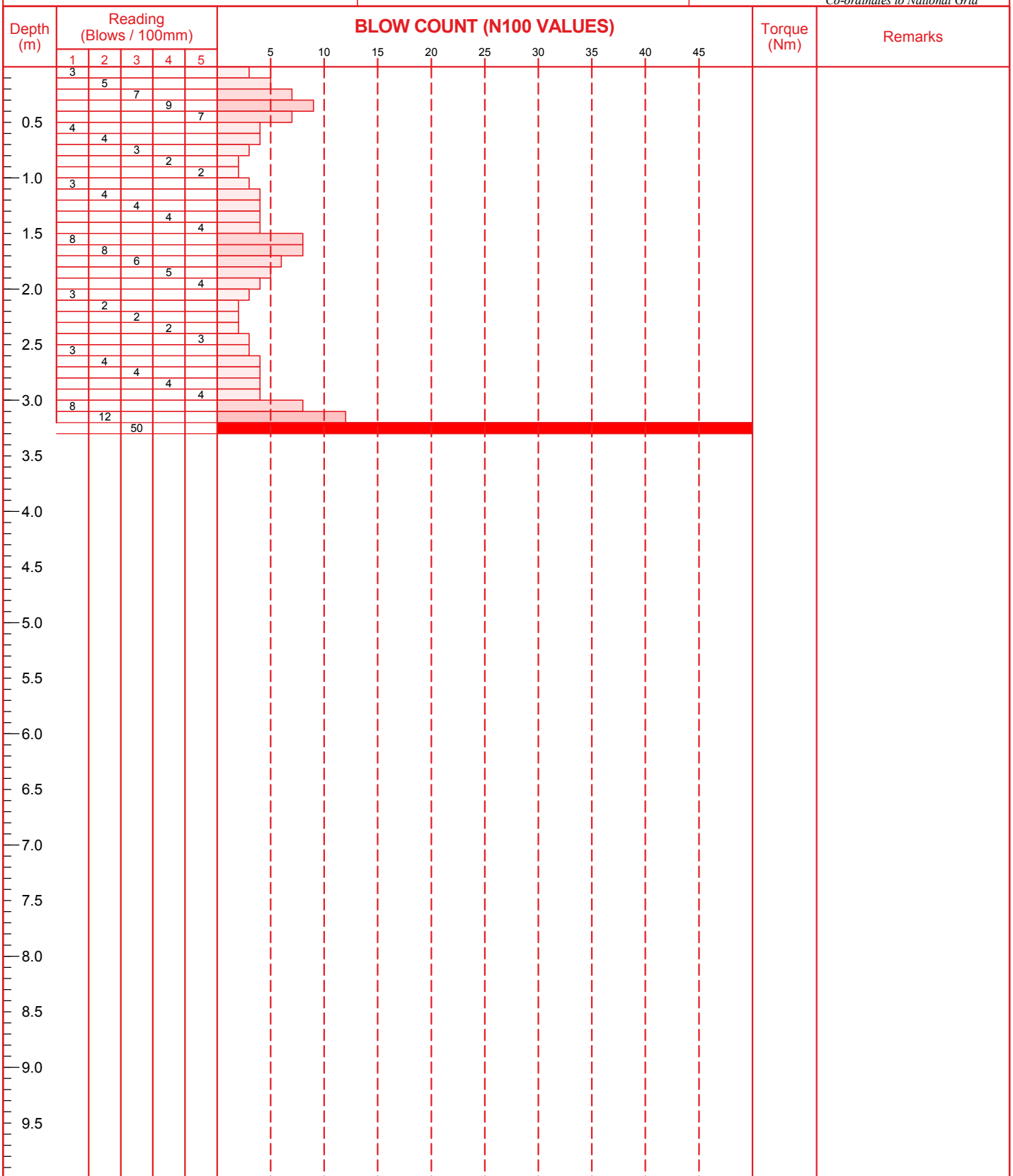
Location : Within playing field

Job Number : Q0269

Engineer : Capita

Ground Level : 38.24 m A.O.D.
Level to Ordnance Datum

Coordinates: 330222.88 E
193348.21 N
Co-ordinates to National Grid



Equipment: Dando Terrier Rig

Comments:

Test carried out in accordance with BS 1377 (1990):Part 9, Sect.3.2

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Operator:	Logged By.	Sheet No.	m Per Page	All measurements in metres unless otherwise stated
QG	P Darby	1 Of 1	10	

Contract : Llantarnam 3G Pitch, Cwmbran

Client : Torfaen County Borough Council

Dynamic Probe
DP14

Dates : 8/6/20 - 8/6/20

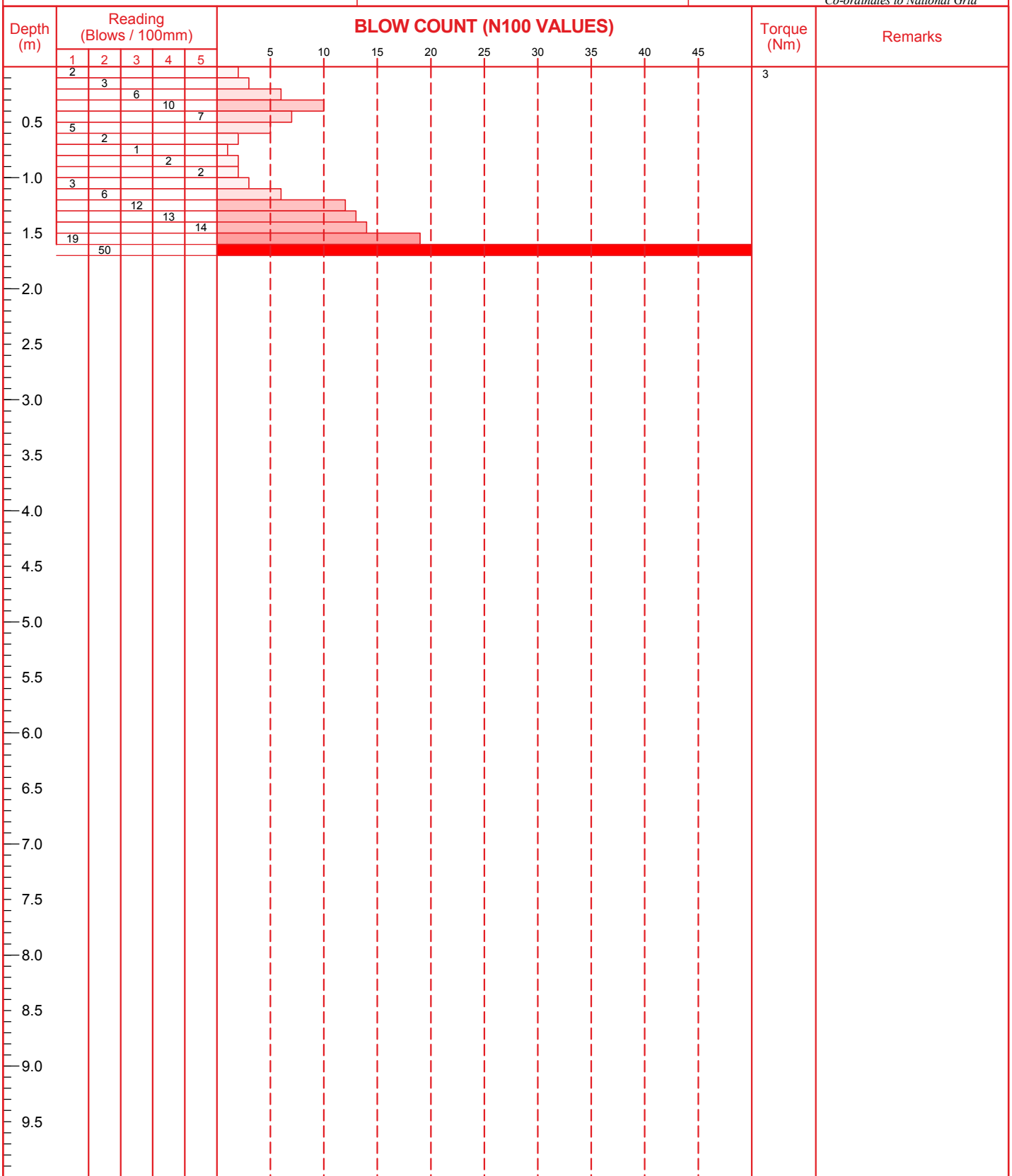
Location : Within playing field

Job Number : Q0269

Engineer : Capita

Ground Level : 38.35 m A.O.D.
Level to Ordnance Datum

Coordinates: 330191.83 E
193358.81 N
Co-ordinates to National Grid



Equipment: Dando Terrier Rig

Comments:

Test carried out in accordance with BS 1377 (1990):Part 9, Sect.3.2

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Operator:	Logged By.	Sheet No.	m Per Page	All measurements in metres unless otherwise stated
QG	P Darby	1 Of 1	10	

AGS

Contract : Llantarnam 3G Pitch, Cwmbran

Client : Torfaen County Borough Council

Dynamic Probe
DP15

Dates : 9/6/20 - 9/6/20

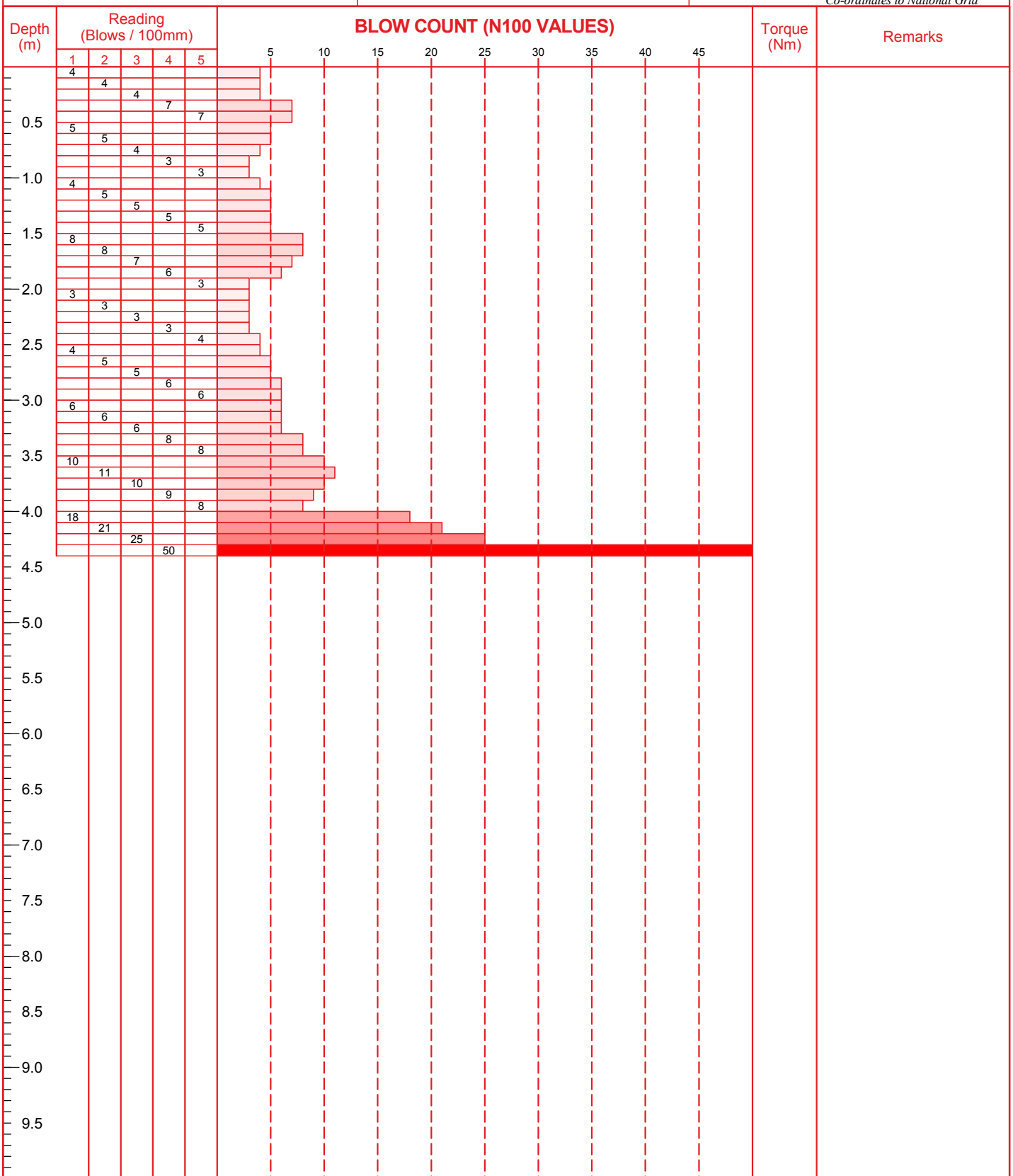
Location : Within playing field

Job Number : Q0269

Engineer : Capita

Ground Level : 38.28 m A.O.D.
Level to Ordnance Datum

Coordinates: 330213.80 E
193322.96 N
Co-ordinates to National Grid



Equipment: Dando Terrier Rig

Comments:

Test carried out in accordance with BS 1377 (1990):Part 9, Sect.3.2

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Operator:	Logged By.	Sheet No.	m Per Page	All measurements in metres unless otherwise stated
QG	P Darby	1 Of 1	10	

APPENDIX V – TRL PROBE RESULTS

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Plas Newydd, Llanedi
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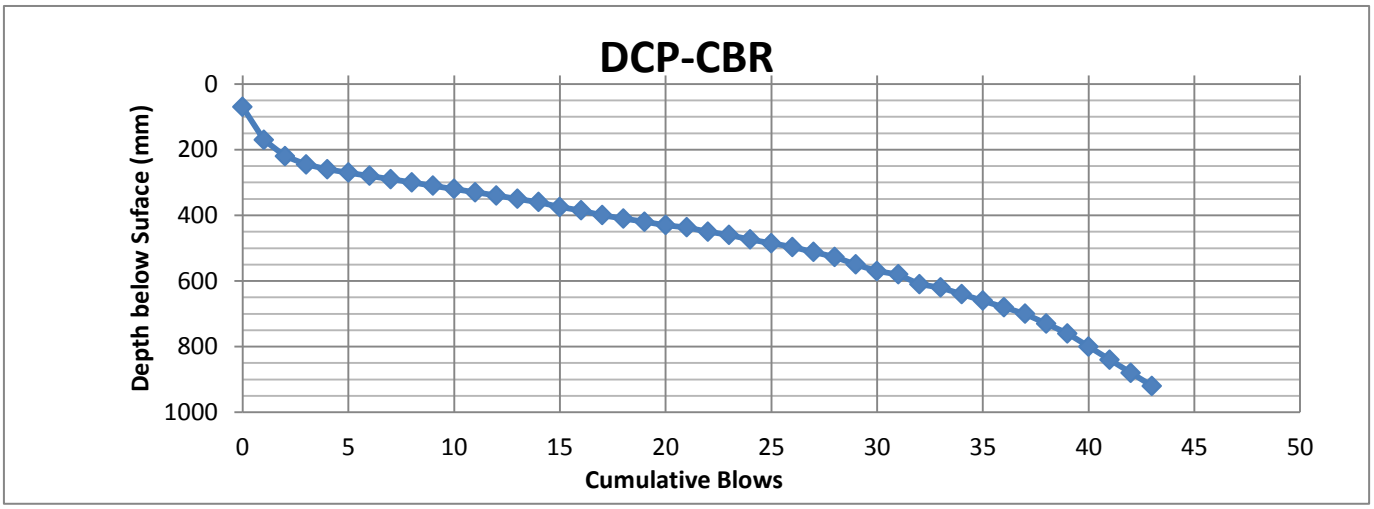
Tel.: 01554 744880

Determination of Equivalent CBR using TRL Dynamic Cone Penetrometer DCP
CBR Relationship based on Kleyn & Van Heerden (60° Cone) - TRL, DMRB HD 29/08 & TP 12

Client Name:	Torfaen County Borough Council		
Client Address:	Civic Centre, Pontypool, NP4 6YB.		
Contract Name:	Llantarnam Sports Pitch, Cwmbran.	**Contract No.:**	Q0269

Site Reference:	1	Lab. Reference:	1.1	Date Tested:	12.6.20
Sample Location:	HP01			Date Received:	12.6.20
Material Description:	Topsoil				
Supplier:	In-Situ	Source:		In-Situ	
Depth Start of Test (mm)	0mm	Tested By:		TMB + PD	



CBR Relationship - TRL Equation $Log_{10}(CBR) = 2.48-1.057*Log_{10}(Peneration\ Rate)$

Layer No.	Number of Blows		Penetration (mm)		Rate of Penetration (mm/blow)	Equilavent CBR (%)	Remarks
	Start	Finish	Start	Finish			
1	0	36	70	700	17.50	15	
2	36	43	700	920	31.43	8	

Signed: *T.M. Burke*
Position: Principal Engineering Technician
Dated: 17 June 2020

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Plas Newydd, Llanedi
Pontarddulais, Swansea
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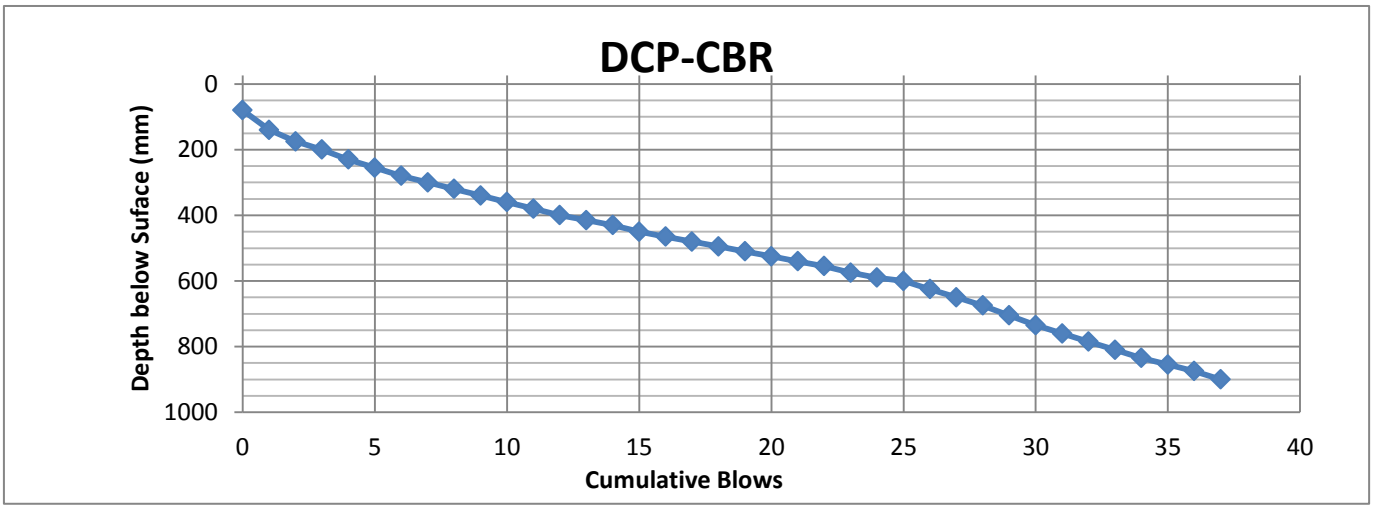
Tel.: 01554 744880

Determination of Equivalent CBR using TRL Dynamic Cone Penetrometer DCP
CBR Relationship based on Kleyn & Van Heerden (60° Cone) - TRL, DMRB HD 29/08 & TP 12

Client Name:	Torfaen County Borough Council		
Client Address:	Civic Centre, Pontypool, NP4 6YB.		
Contract Name:	Llantarnam Sports Pitch, Cwmbran.	**Contract No.:**	Q0269

Site Reference:	2	Lab. Reference:	1.2	Date Tested:	12.6.20
Sample Location:	HP02			Date Received:	12.6.20
Material Description:	Topsoil				
Supplier:	In-Situ	Source:	In-Situ		
Depth Start of Test (mm)	0mm	Tested By:	TMB + PD		



CBR Relationship - TRL Equation $Log_{10}(CBR) = 2.48-1.057*Log_{10}(Peneration\ Rate)$

Layer No.	Number of Blows		Penetration (mm)		Rate of Penetration (mm/blow)	Equilavent CBR (%)	Remarks
	Start	Finish	Start	Finish			
1	0	24	80	600	21.67	12	
2	24	36	600	900	25.00	10	

Signed: *T.M.Burke*
Position: Principal Engineering Technician
Dated: 17 June 2020

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Plas Newydd, Llanedi
Pontarddulais, Swansea
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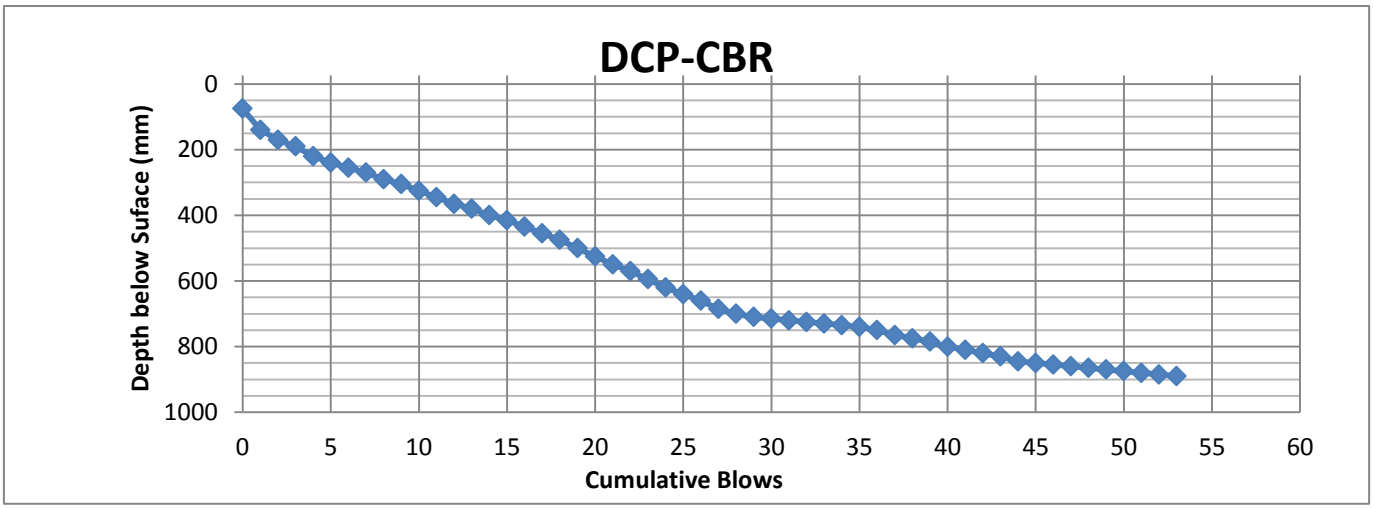
Tel.: 01554 744880

Determination of Equivalent CBR using TRL Dynamic Cone Penetrometer DCP
CBR Relationship based on Kleyn & Van Heerden (60° Cone) - TRL, DMRB HD 29/08 & TP 12

Client Name:	Torfaen County Borough Council		
Client Address:	Civic Centre, Pontypool, NP4 6YB.		
Contract Name:	Llantarnam Sports Pitch, Cwmbran.	**Contract No.:**	Q0269

Site Reference:	3	Lab. Reference:	1.3	Date Tested:	12.6.20
Sample Location:	HP03			Date Received:	12.6.20
Material Description:	Topsoil				
Supplier:	In-Situ	Source:		In-Situ	
Depth Start of Test (mm)	0mm	Tested By:		TMB + PD	



CBR Relationship - TRL Equation $Log_{10}(CBR) = 2.48-1.057*Log_{10}(Peneration\ Rate)$

Layer No.	Number of Blows		Penetration (mm)		Rate of Penetration (mm/blow)	Equilavent CBR (%)	Remarks
	Start	Finish	Start	Finish			
1	0	27	75	685	22.59	11	
2	27	36	685	750	7.22	37	
3	36	45	750	850	11.11	24	
4	45	53	850	890	5.00	55	

Signed: *T.M.Burke*
Position: Principal Engineering Technician
Dated: 17 June 2020

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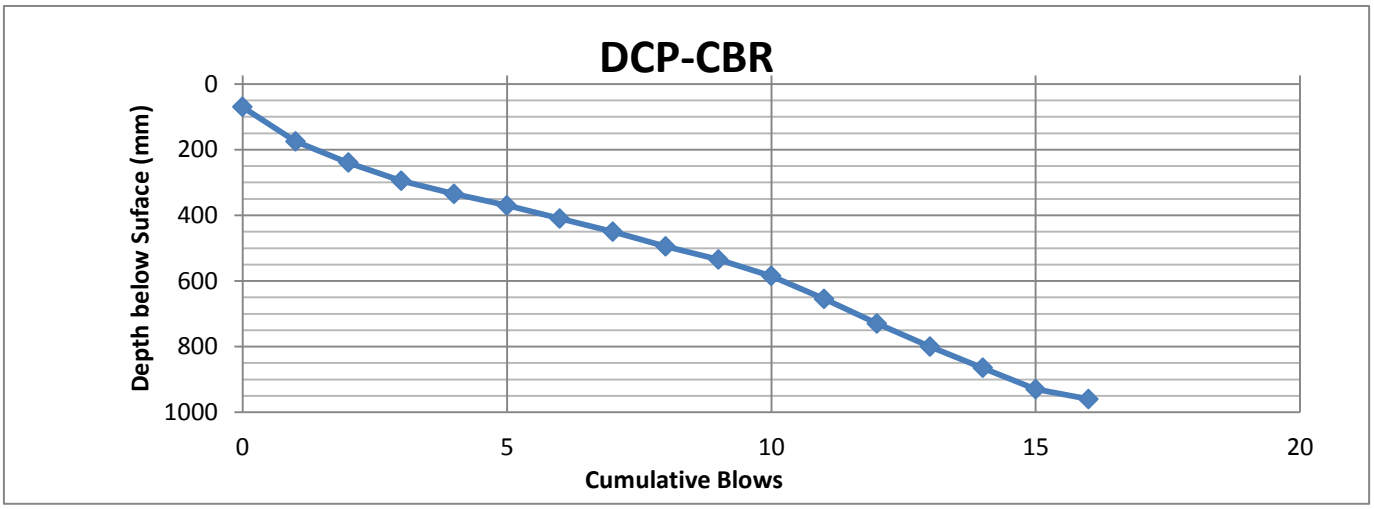
Tel.: 01554 744880

Determination of Equivalent CBR using TRL Dynamic Cone Penetrometer DCP
CBR Relationship based on Kleyn & Van Heerden (60° Cone) - TRL, DMRB HD 29/08 & TP 12

Client Name:	Torfaen County Borough Council		
Client Address:	Civic Centre, Pontypool, NP4 6YB.		
Contract Name:	Llantarnam Sports Pitch, Cwmbran.	**Contract No.:**	Q0269

Site Reference:	4	Lab. Reference:	1.4	Date Tested:	12.6.20
Sample Location:	HP04			Date Received:	12.6.20
Material Description:	Topsoil				
Supplier:	In-Situ	Source:		In-Situ	
Depth Start of Test (mm)	0mm	Tested By:		TMB + PD	



CBR Relationship - TRL Equation $Log_{10}(CBR) = 2.48-1.057*Log_{10}(Peneration\ Rate)$

Layer No.	Number of Blows		Penetration (mm)		Rate of Penetration (mm/blow)	Equilavent CBR (%)	Remarks
	Start	Finish	Start	Finish			
1	0	9	70	535	51.67	5	
2	9	16	535	960	60.71	4	

Signed: *T.M.Burke*
Position: Principal Engineering Technician
Dated: 17 June 2020

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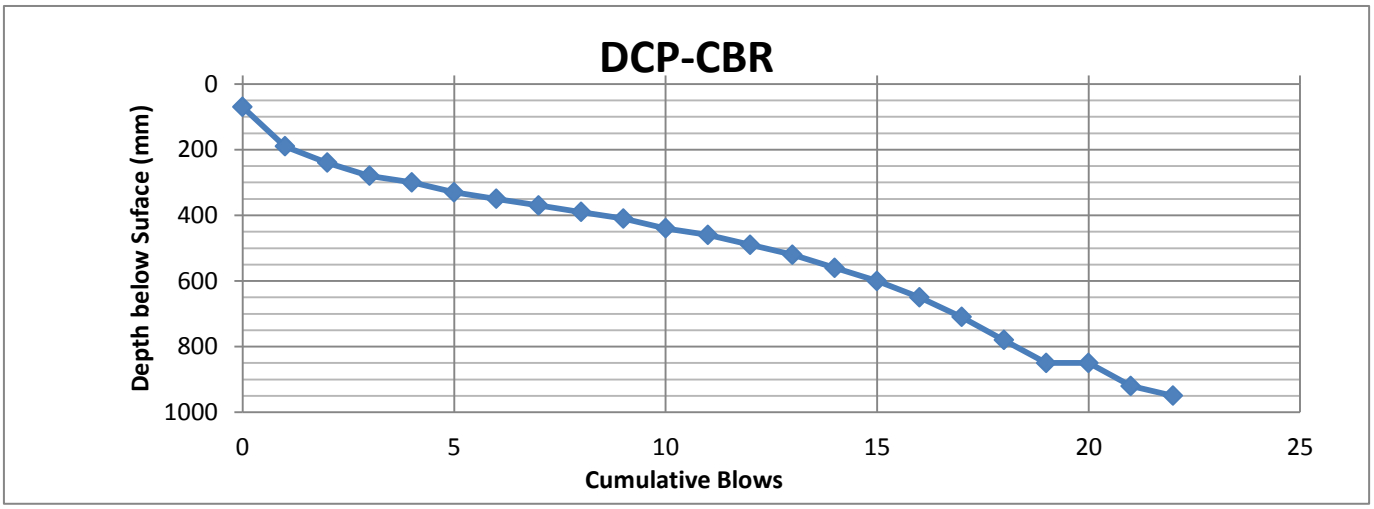
Pontarddulais, Swansea
SA4 0FQ
Tel.: 01554 744880

Determination of Equivalent CBR using TRL Dynamic Cone Penetrometer DCP
CBR Relationship based on Kleyn & Van Heerden (60° Cone) - TRL, DMRB HD 29/08 & TP 12

Client Name:	Torfaen County Borough Council		
Client Address:	Civic Centre, Pontypool, NP4 6YB.		
Contract Name:	Llantarnam Sports Pitch, Cwmbran.	**Contract No.:**	Q0269

Site Reference:	5	Lab. Reference:	1.5	Date Tested:	12.6.20
Sample Location:	HP05			Date Received:	12.6.20
Material Description:	Topsoil				
Supplier:	In-Situ	Source:	In-Situ		
Depth Start of Test (mm)	0mm	Tested By:	TMB + PD		



CBR Relationship - TRL Equation $Log_{10}(CBR) = 2.48-1.057*Log_{10}(Peneration\ Rate)$

Layer No.	Number of Blows		Penetration (mm)		Rate of Penetration (mm/blow)	Equilavent CBR (%)	Remarks
	Start	Finish	Start	Finish			
1	0	5	70	330	52.00	5	
2	5	13	330	520	23.75	11	
3	13	19	520	850	55.00	4	
4	19	22	850	950	33.33	7	

Signed: *T.M.Burke*
Position: Principal Engineering Technician
Dated: 17 June 2020

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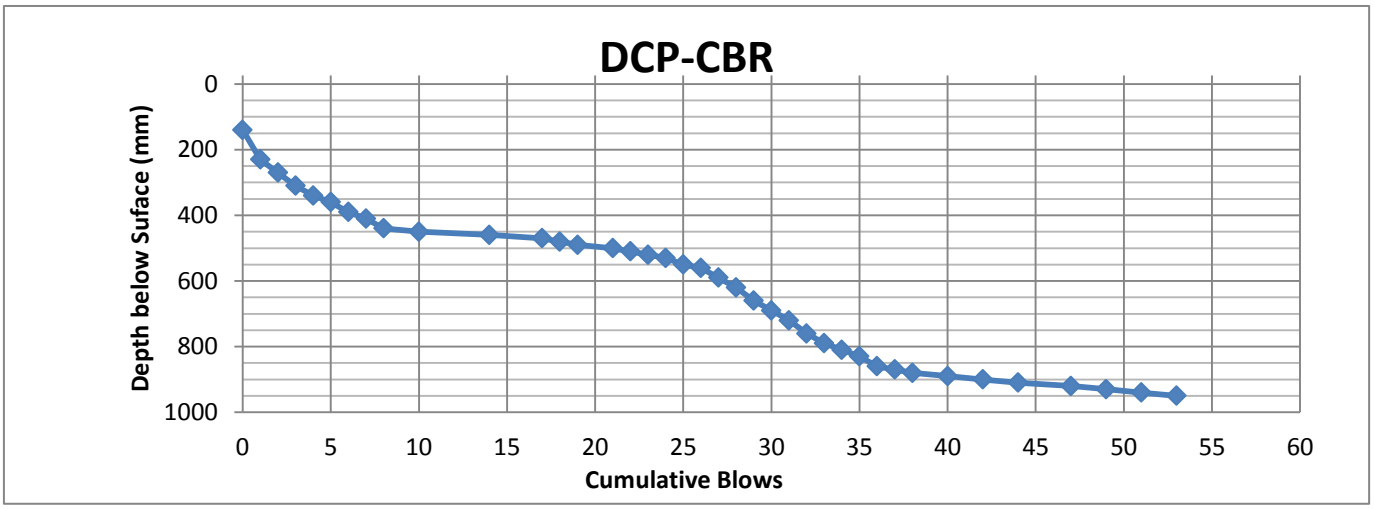
Determination of Equivalent CBR using TRL Dynamic Cone Penetrometer DCP
CBR Relationship based on Kleyn & Van Heerden (60° Cone) - TRL, DMRB HD 29/08 & TP 12

Client Name:	Torfaen County Borough Council		
Client Address:	Civic Centre, Pontypool, NP4 6YB.		
Contract Name:	Llantarnam Sports Pitch, Cwmbran.	**Contract No.:**	Q0269

Site Reference:	6	Lab. Reference:	1.6	Date Tested:	12.6.20
Sample Location:	HP07			Date Received:	12.6.20
Material Description:	Topsoil				
Supplier:	In-Situ	Source:		In-Situ	
Depth Start of Test (mm)	0mm	Tested By:		TMB + PD	



CBR Relationship - TRL Equation $Log_{10}(CBR) = 2.48-1.057*Log_{10}(Peneration\ Rate)$

Layer No.	Number of Blows		Penetration (mm)		Rate of Penetration (mm/blow)	Equilavent CBR (%)	Remarks
	Start	Finish	Start	Finish			
1	0	8	140	440	37.50	7	
2	8	23	440	520	5.33	51	
3	23	36	520	860	26.15	10	
4	36	53	860	950	5.29	52	

Signed: *T.M. Burke*
Position: Principal Engineering Technician
Dated: 17 June 2020

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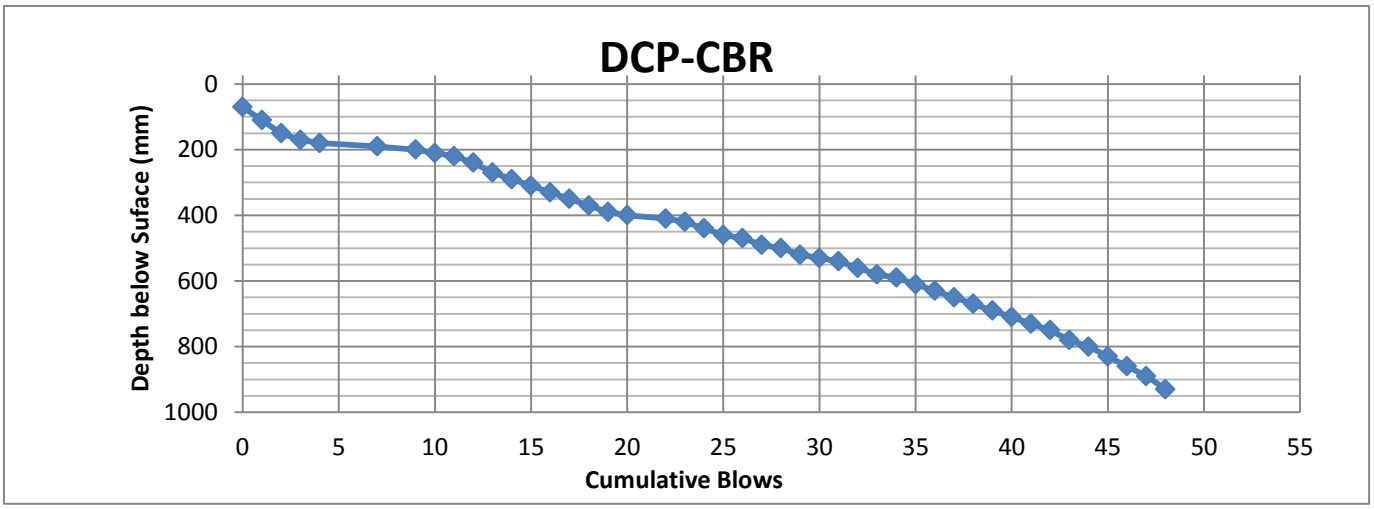
Determination of Equivalent CBR using TRL Dynamic Cone Penetrometer DCP
CBR Relationship based on Kleyn & Van Heerden (60° Cone) - TRL, DMRB HD 29/08 & TP 12

Client Name:	Torfaen County Borough Council		
Client Address:	Civic Centre, Pontypool, NP4 6YB.		
Contract Name:	Llantarnam Sports Pitch, Cwmbran.	**Contract No.:**	Q0269

Site Reference:	7	Lab. Reference:	1.7	Date Tested:	12.6.20
Sample Location:	HP08			Date Received:	12.6.20
Material Description:	Topsoil				
Supplier:	In-Situ	Source:		In-Situ	
Depth Start of Test (mm)	0mm	Tested By:		TMB + PD	



CBR Relationship - TRL Equation $Log_{10}(CBR) = 2.48-1.057*Log_{10}(Peneration\ Rate)$

Layer No.	Number of Blows		Penetration (mm)		Rate of Penetration (mm/blow)	Equilavent CBR (%)	Remarks
	Start	Finish	Start	Finish			
1	0	3	70	170	33.33	7	
2	3	10	170	210	5.71	48	
3	10	20	210	400	19.00	13	
4	20	39	400	690	15.26	17	
5	39	48	690	930	26.67	9	

Signed: *T.M. Burke*
Position: Principal Engineering Technician
Dated: 17 June 2020

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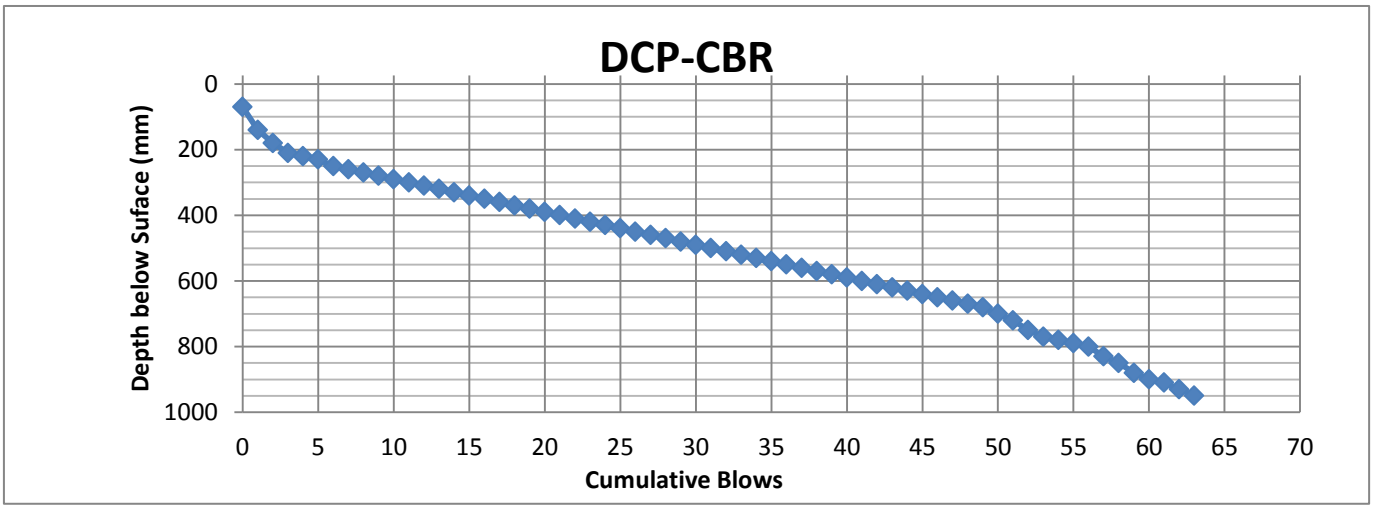
Determination of Equivalent CBR using TRL Dynamic Cone Penetrometer DCP
CBR Relationship based on Kleyn & Van Heerden (60° Cone) - TRL, DMRB HD 29/08 & TP 12

Client Name:	Torfaen County Borough Council		
Client Address:	Civic Centre, Pontypool, NP4 6YB.		
Contract Name:	Llantarnam Sports Pitch, Cwmbran.	**Contract No.:**	Q0269

Site Reference:	8	Lab. Reference:	1.8	Date Tested:	12.6.20
Sample Location:	HP09			Date Received:	12.6.20
Material Description:	Topsoil				
Supplier:	In-Situ	Source:		In-Situ	
Depth Start of Test (mm)	0mm	Tested By:		TMB + PD	



CBR Relationship - TRL Equation $Log_{10}(CBR) = 2.48-1.057*Log_{10}(Peneration\ Rate)$

Layer No.	Number of Blows		Penetration (mm)		Rate of Penetration (mm/blow)	Equilavent CBR (%)	Remarks
	Start	Finish	Start	Finish			
1	0	4	70	220	37.50	7	
2	4	27	220	430	9.13	29	
3	27	47	430	520	4.50	62	
4	47	64	520	670	8.82	30	
5	64	71	670	790	17.14	15	
6	71	79	790	950	20.00	13	

Signed: *T.M.Burke*
Position: Principal Engineering Technician
Dated: 17 June 2020

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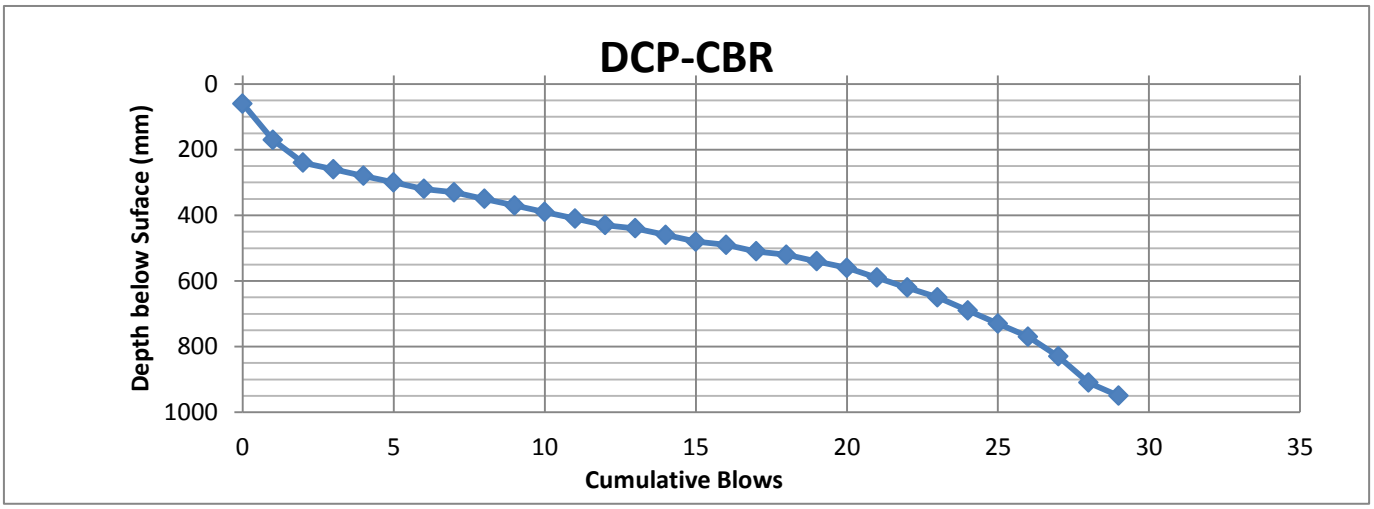
Determination of Equivalent CBR using TRL Dynamic Cone Penetrometer DCP
CBR Relationship based on Kleyn & Van Heerden (60° Cone) - TRL, DMRB HD 29/08 & TP 12

Client Name:	Torfaen County Borough Council		
Client Address:	Civic Centre, Pontypool, NP4 6YB.		
Contract Name:	Llantarnam Sports Pitch, Cwmbran.	**Contract No.:**	Q0269

Site Reference:	9	Lab. Reference:	1.9	Date Tested:	12.6.20
Sample Location:	HP10			Date Received:	12.6.20
Material Description:	Topsoil				
Supplier:	In-Situ	Source:	In-Situ		
Depth Start of Test (mm)	0mm	Tested By:	TMB + PD		



CBR Relationship - TRL Equation $Log_{10}(CBR) = 2.48-1.057*Log_{10}(Peneration\ Rate)$

Layer No.	Number of Blows		Penetration (mm)		Rate of Penetration (mm/blow)	Equilavent CBR (%)	Remarks
	Start	Finish	Start	Finish			
1	0	3	70	260	63.33	4	
2	3	23	260	650	19.50	13	
3	23	29	650	950	50.00	5	

Signed: *T.M.Burke*
Position: Principal Engineering Technician
Dated: 17 June 2020

Quantum Geotech

Plas Newydd, Llanedi
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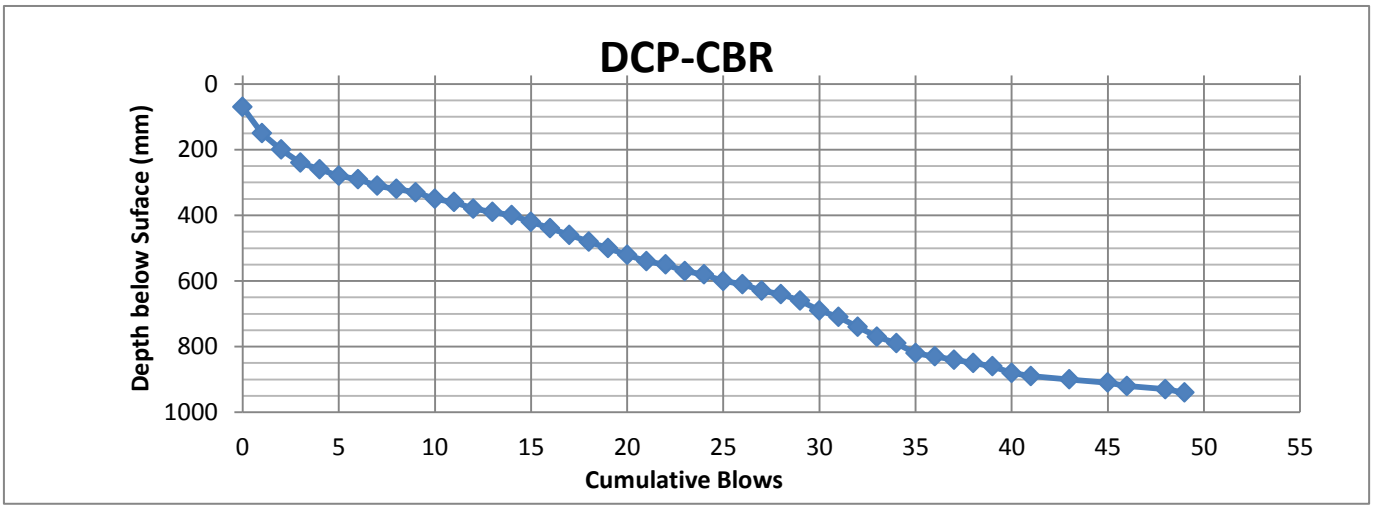
Tel.: 01554 744880

Determination of Equivalent CBR using TRL Dynamic Cone Penetrometer DCP
CBR Relationship based on Kleyn & Van Heerden (60° Cone) - TRL, DMRB HD 29/08 & TP 12

Client Name:	Torfaen County Borough Council		
Client Address:	Civic Centre, Pontypool, NP4 6YB.		
Contract Name:	Llantarnam Sports Pitch, Cwmbran.	**Contract No.:**	Q0269

Site Reference:	10	Lab. Reference:	1.10	Date Tested:	12.6.20
Sample Location:	HP12			Date Received:	12.6.20
Material Description:	Topsoil				
Supplier:	In-Situ	Source:	In-Situ		
Depth Start of Test (mm)	0mm	Tested By:	TMB + PD		



CBR Relationship - TRL Equation $Log_{10}(CBR) = 2.48-1.057*Log_{10}(Peneration\ Rate)$

Layer No.	Number of Blows		Penetration (mm)		Rate of Penetration (mm/blow)	Equilavent CBR (%)	Remarks
	Start	Finish	Start	Finish			
1	0	4	70	260	47.50	5	
2	4	29	260	660	16.00	16	
3	29	35	660	820	26.67	9	
4	35	49	820	940	8.57	31	

Signed: *T.M. Burke*
Position: Principal Engineering Technician
Dated: 17 June 2020

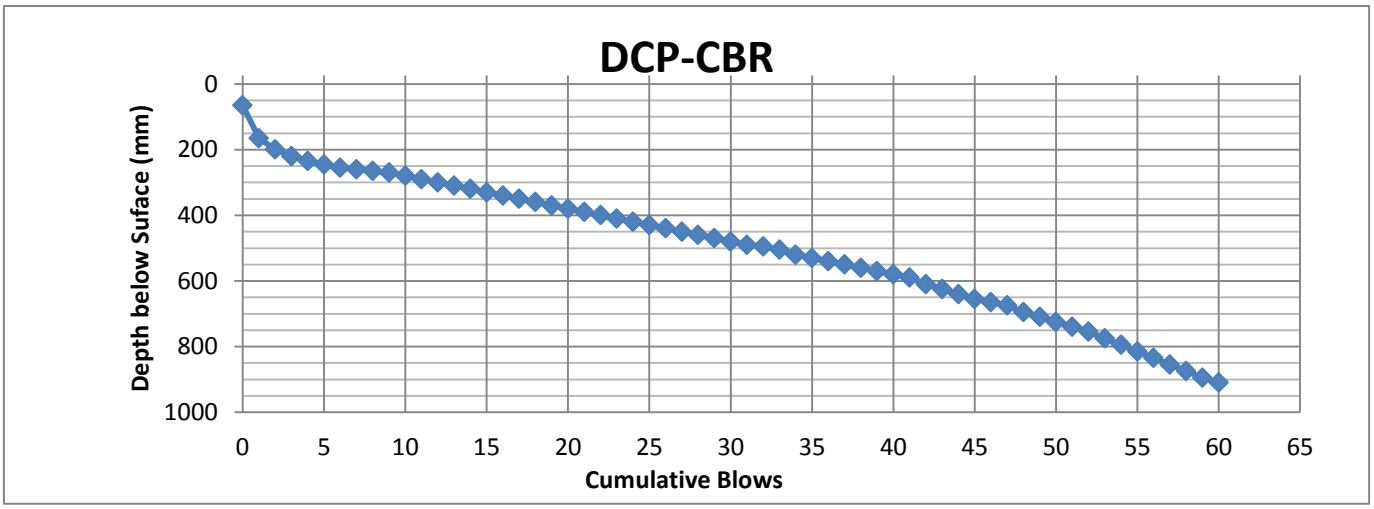
Quantum Geotech

Plas Newydd, Llanedi
Pontarddulais, Swansea
SA4 0FQ
Tel.: 01554 744880

Determination of Equivalent CBR using TRL Dynamic Cone Penetrometer DCP
CBR Relationship based on Kleyn & Van Heerden (60° Cone) - TRL, DMRB HD 29/08 & TP 12

Client Name:	Torfaen County Borough Council		
Client Address:	Civic Centre, Pontypool, NP4 6YB.		
Contract Name:	Llantarnam Sports Pitch, Cwmbran.	**Contract No.:**	Q0269

Site Reference:	11	Lab. Reference:	1.11	Date Tested:	12.6.20
Sample Location:	HP13			Date Received:	12.6.20
Material Description:	Topsoil				
Supplier:	In-Situ	Source:		In-Situ	
Depth Start of Test (mm)	0mm	Tested By:		TMB + PD	



CBR Relationship - TRL Equation $Log_{10}(CBR) = 2.48-1.057*Log_{10}(Peneration\ Rate)$

Layer No.	Number of Blows		Penetration (mm)		Rate of Penetration (mm/blow)	Equilavent CBR (%)	Remarks
	Start	Finish	Start	Finish			
1	0	3	65	220	51.67	5	
2	3	10	220	280	8.57	31	
3	10	40	280	580	10.00	26	
4	40	60	580	910	16.50	16	

Signed: *T.M.Burke*
Position: Principal Engineering Technician
Dated: 17 June 2020

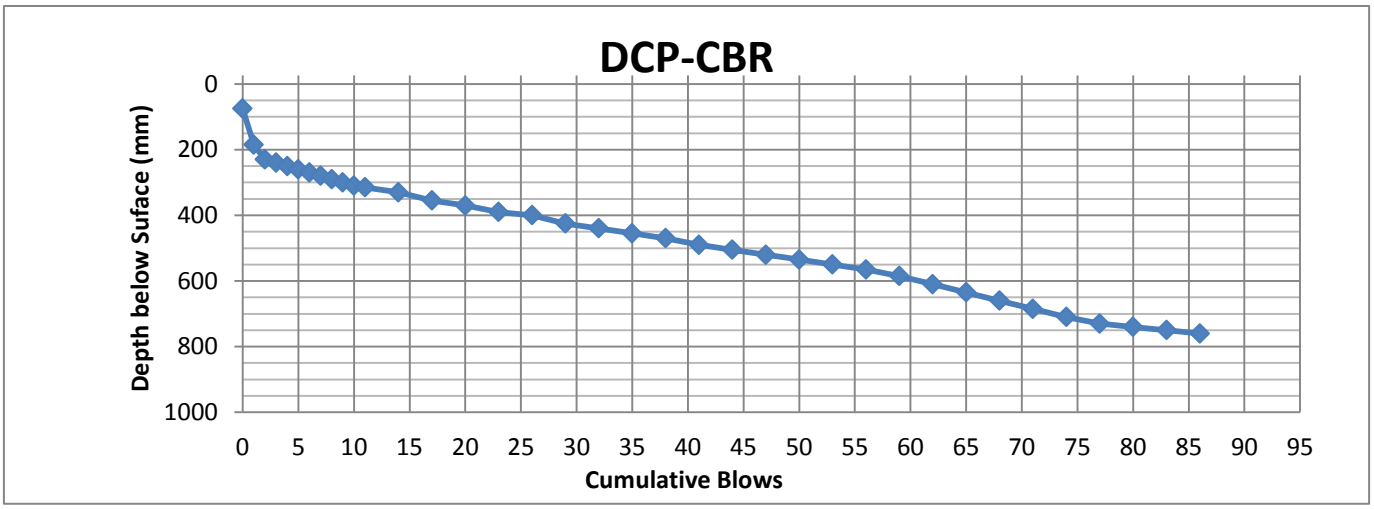
Quantum Geotech

Plas Newydd, Llanedi
Pontarddulais, Swansea
SA4 0FQ
Tel.: 01554 744880

Determination of Equivalent CBR using TRL Dynamic Cone Penetrometer DCP
CBR Relationship based on Kleyn & Van Heerden (60° Cone) - TRL, DMRB HD 29/08 & TP 12

Client Name:	Torfaen County Borough Council		
Client Address:	Civic Centre, Pontypool, NP4 6YB.		
Contract Name:	Llantarnam Sports Pitch, Cwmbran.	**Contract No.:**	Q0269

Site Reference:	12	Lab. Reference:	1.12	Date Tested:	12.6.20
Sample Location:	HP14			Date Received:	12.6.20
Material Description:	Topsoil				
Supplier:	In-Situ	Source:	In-Situ		
Depth Start of Test (mm)	0mm	Tested By:	TMB + PD		



CBR Relationship - TRL Equation $Log_{10}(CBR) = 2.48-1.057*Log_{10}(Peneration\ Rate)$

Layer No.	Number of Blows		Penetration (mm)		Rate of Penetration (mm/blow)	Equilavent CBR (%)	Remarks
	Start	Finish	Start	Finish			
1	0	2	75	230	77.50	3	
2	2	10	230	310	10.00	26	
3	10	59	310	585	5.61	49	
4	59	77	585	730	8.06	33	
5	77	86	730	760	3.33	85	

Signed: *T.M.Burke*
Position: Principal Engineering Technician
Dated: 17 June 2020

Quantum Geotech

Plas Newydd, Llanedi
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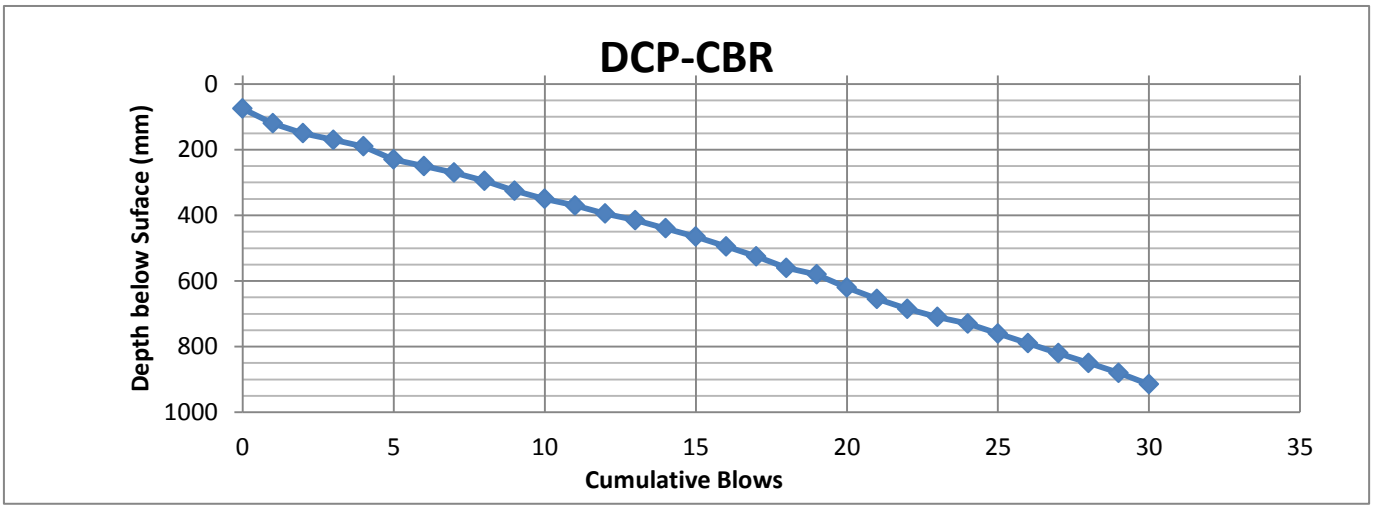
Tel.: 01554 744880

Determination of Equivalent CBR using TRL Dynamic Cone Penetrometer DCP
CBR Relationship based on Kleyn & Van Heerden (60° Cone) - TRL, DMRB HD 29/08 & TP 12

Client Name:	Torfaen County Borough Council		
Client Address:	Civic Centre, Pontypool, NP4 6YB.		
Contract Name:	Llantarnam Sports Pitch, Cwmbran.	**Contract No.:**	Q0269

Site Reference:	13	Lab. Reference:	1.13	Date Tested:	12.6.20
Sample Location:	HP15			Date Received:	12.6.20
Material Description:	Topsoil				
Supplier:	In-Situ	Source:	In-Situ		
Depth Start of Test (mm)	0mm	Tested By:	TMB + PD		



CBR Relationship - TRL Equation $Log_{10}(CBR) = 2.48-1.057*Log_{10}(Peneration\ Rate)$

Layer No.	Number of Blows		Penetration (mm)		Rate of Penetration (mm/blow)	Equilavent CBR (%)	Remarks
	Start	Finish	Start	Finish			
1	0	16	75	495	26.25	10	
2	16	30	495	915	30.00	8	

Signed: *T.M. Burke*
Position: Principal Engineering Technician
Dated: 17 June 2020

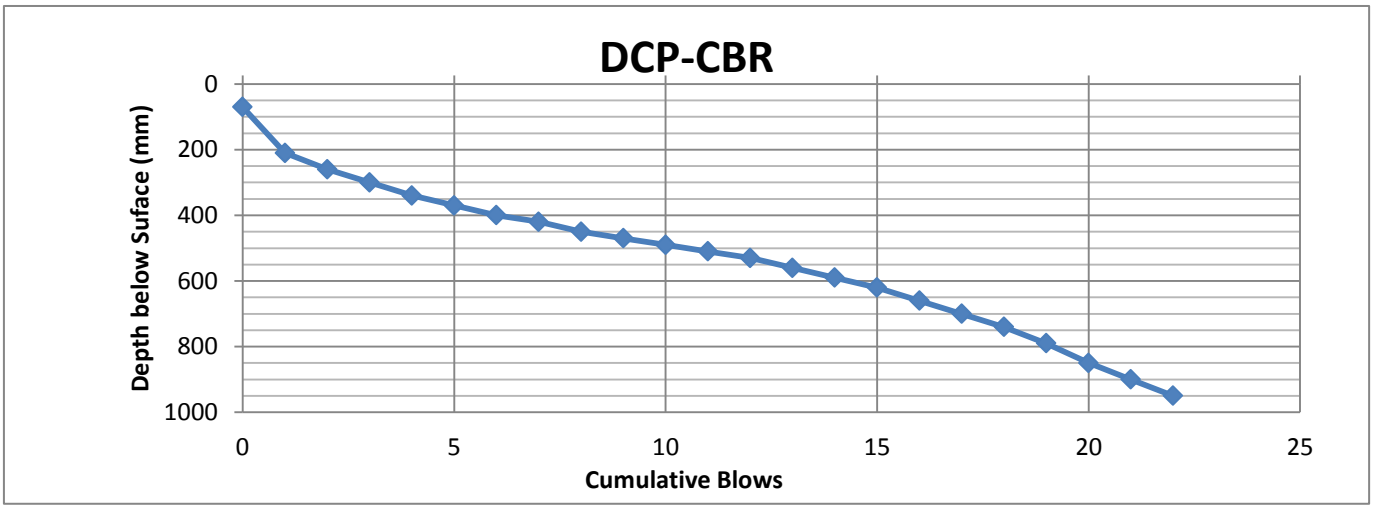
Quantum Geotech

Plas Newydd, Llanedi
Pontarddulais, Swansea
SA4 0FQ
Tel.: 01554 744880

Determination of Equivalent CBR using TRL Dynamic Cone Penetrometer DCP
CBR Relationship based on Kleyn & Van Heerden (60° Cone) - TRL, DMRB HD 29/08 & TP 12

Client Name:	Torfaen County Borough Council		
Client Address:	Civic Centre, Pontypool, NP4 6YB.		
Contract Name:	Llantarnam Sports Pitch, Cwmbran.	**Contract No.:**	Q0269

Site Reference:	14	Lab. Reference:	1.14	Date Tested:	12.6.20
Sample Location:	HP16			Date Received:	12.6.20
Material Description:	Topsoil				
Supplier:	In-Situ	Source:		In-Situ	
Depth Start of Test (mm)	0mm	Tested By:		TMB + PD	



CBR Relationship - TRL Equation $Log_{10}(CBR) = 2.48-1.057*Log_{10}(Peneration\ Rate)$

Layer No.	Number of Blows		Penetration (mm)		Rate of Penetration (mm/blow)	Equilavent CBR (%)	Remarks
	Start	Finish	Start	Finish			
1	0	3	70	300	76.67	3	
2	3	15	300	620	26.67	9	
3	15	22	620	950	47.14	5	

Signed: *T.M.Burke*
Position: Principal Engineering Technician
Dated: 17 June 2020

Quantum Geotech

Plas Newydd, Llanedi
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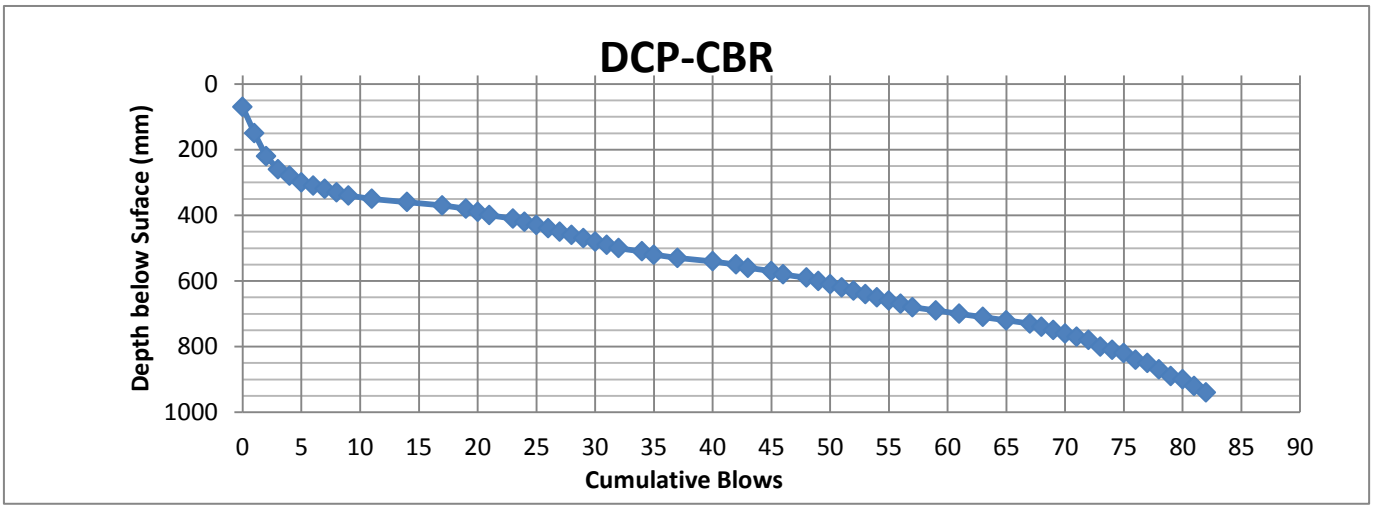
Tel.: 01554 744880

Determination of Equivalent CBR using TRL Dynamic Cone Penetrometer DCP
CBR Relationship based on Kleyn & Van Heerden (60° Cone) - TRL, DMRB HD 29/08 & TP 12

Client Name:	Torfaen County Borough Council		
Client Address:	Civic Centre, Pontypool, NP4 6YB.		
Contract Name:	Llantarnam Sports Pitch, Cwmbran.	**Contract No.:**	Q0269

Site Reference:	15	Lab. Reference:	1.15	Date Tested:	12.6.20
Sample Location:	HP17			Date Received:	12.6.20
Material Description:	Topsoil				
Supplier:	In-Situ	Source:		In-Situ	
Depth Start of Test (mm)	0mm	Tested By:		TMB + PD	



CBR Relationship - TRL Equation $Log_{10}(CBR) = 2.48-1.057*Log_{10}(Peneration\ Rate)$

Layer No.	Number of Blows		Penetration (mm)		Rate of Penetration (mm/blow)	Equilavent CBR (%)	Remarks
	Start	Finish	Start	Finish			
1	0	3	70	260	63.33	4	
2	3	9	260	340	13.33	20	
3	9	23	340	410	5.00	55	
4	23	31	410	490	10.00	26	
5	31	48	490	590	5.88	46	
6	48	57	590	680	10.00	26	
7	57	67	680	730	5.00	55	
8	67	75	730	820	11.25	23	
9	75	82	820	940	17.14	15	

Signed: *T.M. Burke*
Position: Principal Engineering Technician
Dated: 17 June 2020

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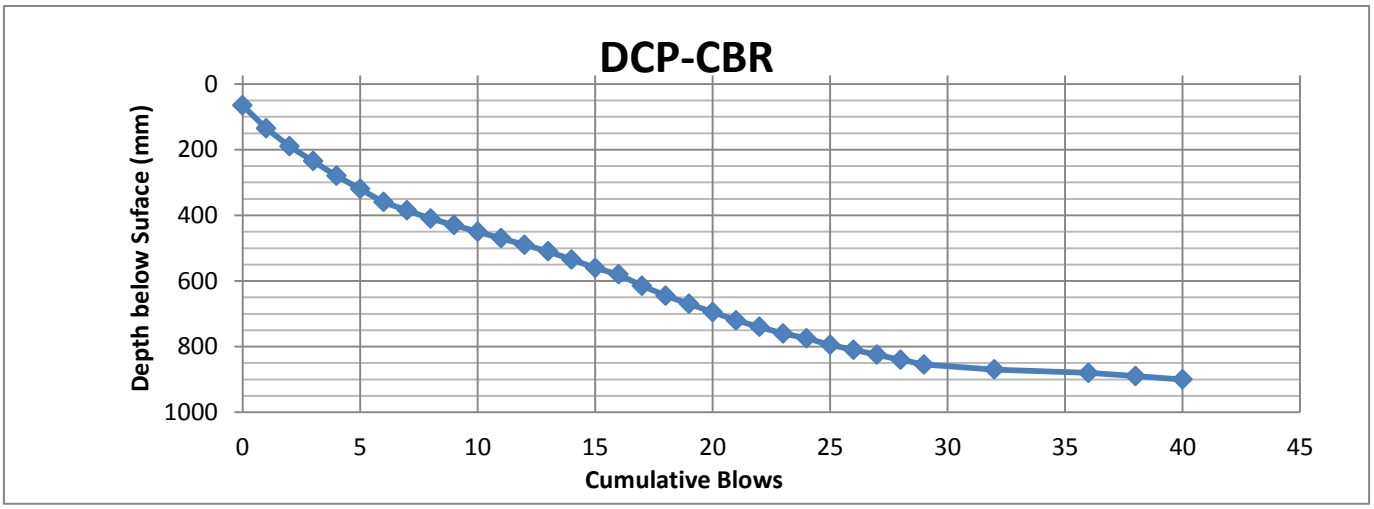
Tel.: 01554 744880

Determination of Equivalent CBR using TRL Dynamic Cone Penetrometer DCP
CBR Relationship based on Kleyn & Van Heerden (60° Cone) - TRL, DMRB HD 29/08 & TP 12

Client Name:	Torfaen County Borough Council		
Client Address:	Civic Centre, Pontypool, NP4 6YB.		
Contract Name:	Llantarnam Sports Pitch, Cwmbran.	**Contract No.:**	Q0269

Site Reference:	16	Lab. Reference:	1.16	Date Tested:	12.6.20
Sample Location:	HP18			Date Received:	12.6.20
Material Description:	Topsoil				
Supplier:	In-Situ	Source:	In-Situ		
Depth Start of Test (mm)	0mm	Tested By:	TMB + PD		



CBR Relationship - TRL Equation $Log_{10}(CBR) = 2.48-1.057*Log_{10}(Peneration\ Rate)$

Layer No.	Number of Blows		Penetration (mm)		Rate of Penetration (mm/blow)	Equilavent CBR (%)	Remarks
	Start	Finish	Start	Finish			
1	0	6	65	360	49.17	5	
2	6	16	360	580	22.00	12	
3	16	23	580	760	25.71	10	
4	23	29	760	855	15.83	16	
5	29	40	855	900	4.09	68	

Signed: *T.M.Burke*
Position: Principal Engineering Technician
Dated: 17 June 2020

Quantum Geotech

Plas Newydd, Llanedi
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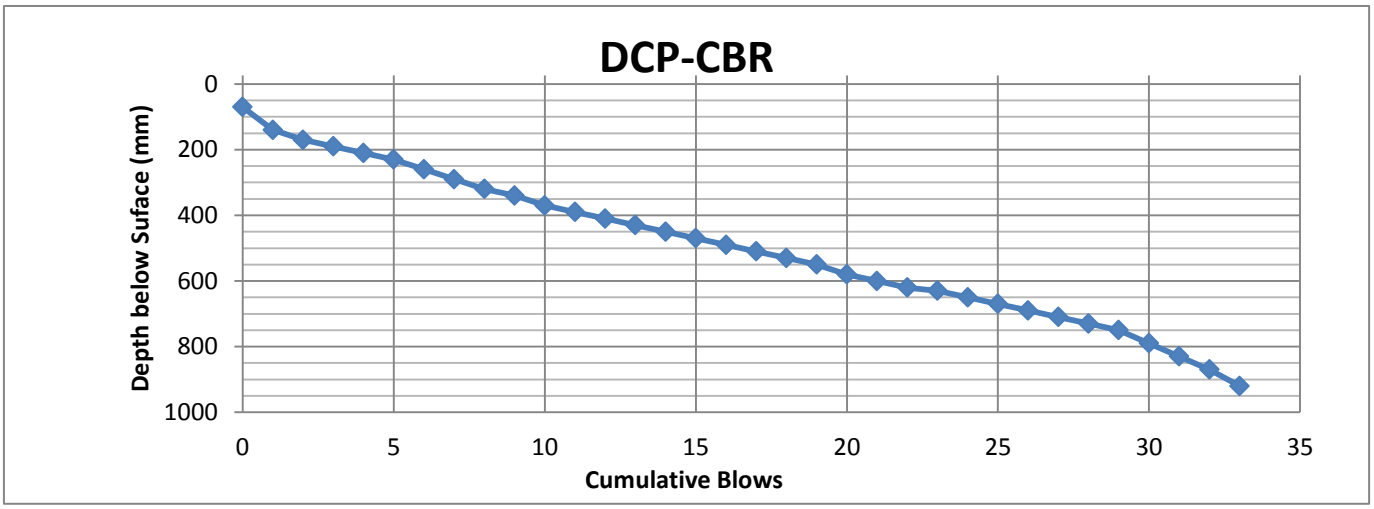
Tel.: 01554 744880

Determination of Equivalent CBR using TRL Dynamic Cone Penetrometer DCP
CBR Relationship based on Kleyn & Van Heerden (60° Cone) - TRL, DMRB HD 29/08 & TP 12

Client Name:	Torfaen County Borough Council		
Client Address:	Civic Centre, Pontypool, NP4 6YB.		
Contract Name:	Llantarnam Sports Pitch, Cwmbran.	**Contract No.:**	Q0269

Site Reference:	17	Lab. Reference:	1.17	Date Tested:	12.6.20
Sample Location:	HP20			Date Received:	12.6.20
Material Description:	Topsoil				
Supplier:	In-Situ	Source:		In-Situ	
Depth Start of Test (mm)	0mm	Tested By:		TMB + PD	



CBR Relationship - TRL Equation $Log_{10}(CBR) = 2.48-1.057*Log_{10}(Peneration\ Rate)$

Layer No.	Number of Blows		Penetration (mm)		Rate of Penetration (mm/blow)	Equilavent CBR (%)	Remarks
	Start	Finish	Start	Finish			
1	0	2	70	170	50.00	5	
2	2	22	170	620	22.50	11	
3	22	29	620	750	18.57	14	
4	29	33	750	920	42.50	6	

Signed: *T.M. Burke*
Position: Principal Engineering Technician
Dated: 17 June 2020

Quantum Geotech

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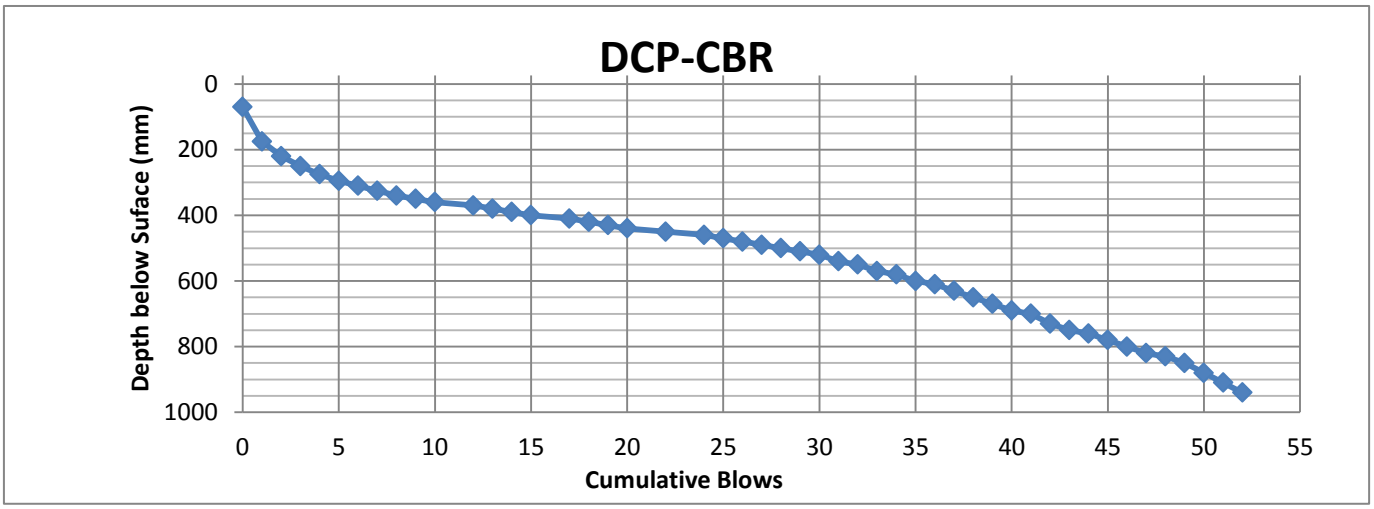
Determination of Equivalent CBR using TRL Dynamic Cone Penetrometer DCP
CBR Relationship based on Kleyn & Van Heerden (60° Cone) - TRL, DMRB HD 29/08 & TP 12

Client Name:	Torfaen County Borough Council		
Client Address:	Civic Centre, Pontypool, NP4 6YB.		
Contract Name:	Llantarnam Sports Pitch, Cwmbran.	**Contract No.:**	Q0269

Site Reference:	18	Lab. Reference:	1.18	Date Tested:	12.6.20
Sample Location:	TP19			Date Received:	12.6.20
Material Description:	Topsoil				
Supplier:	In-Situ	Source:	In-Situ		
Depth Start of Test (mm)	0mm	Tested By:	TMB + PD		



CBR Relationship - TRL Equation $Log_{10}(CBR) = 2.48-1.057*Log_{10}(Peneration\ Rate)$

Layer No.	Number of Blows		Penetration (mm)		Rate of Penetration (mm/blow)	Equilavent CBR (%)	Remarks
	Start	Finish	Start	Finish			
1	0	3	70	250	60.00	4	
2	3	10	250	360	15.71	16	
3	10	24	360	460	7.14	38	
4	24	35	460	600	12.73	21	
5	35	47	600	820	18.33	14	
6	47	52	820	940	24.00	10	

Signed: *T.M.Burke*
Position: Principal Engineering Technician
Dated: 17 June 2020

Quantum Geotech

Plas Newydd, Llanedi
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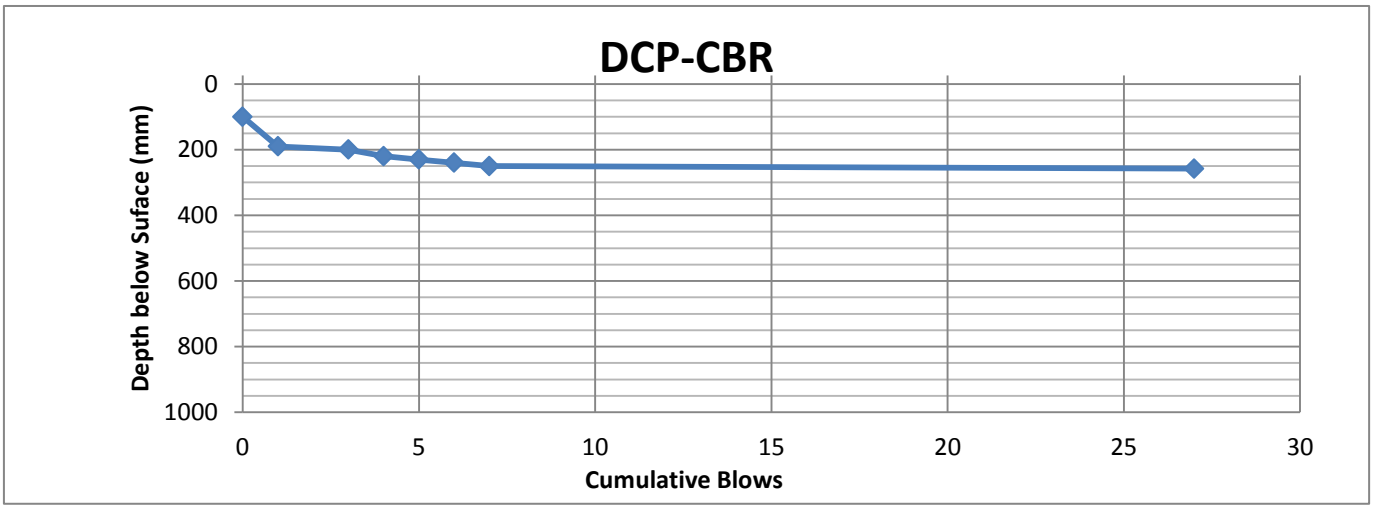
Determination of Equivalent CBR using TRL Dynamic Cone Penetrometer DCP
CBR Relationship based on Kleyn & Van Heerden (60° Cone) - TRL, DMRB HD 29/08 & TP 12

Client Name:	Torfaen County Borough Council		
Client Address:	Civic Centre, Pontypool, NP4 6YB.		
Contract Name:	Llantarnam Sports Pitch, Cwmbran.	**Contract No.:**	Q0269

Site Reference:	19	Lab. Reference:	1.19	Date Tested:	12.6.20
Sample Location:	TP20			Date Received:	12.6.20
Material Description:	Topsoil				
Supplier:	In-Situ	Source:		In-Situ	
Depth Start of Test (mm)	0mm	Tested By:		TMB + PD	



CBR Relationship - TRL Equation $Log_{10}(CBR) = 2.48-1.057*Log_{10}(Peneration\ Rate)$

Layer No.	Number of Blows		Penetration (mm)		Rate of Penetration (mm/blow)	Equilavent CBR (%)	Remarks
	Start	Finish	Start	Finish			
1	0	1	100	190	90.00	3	
2	1	27	190	258	2.62	109	

Signed: *T.M. Burke*
Position: Principal Engineering Technician
Dated: 17 June 2020

APPENDIX VI – SOAKAWAY TEST RESULTS

Contract : Llantarnam 3G Pitch, Cwmbran

Client : Torfaen County Borough Council

Point Plotted
TP19,0

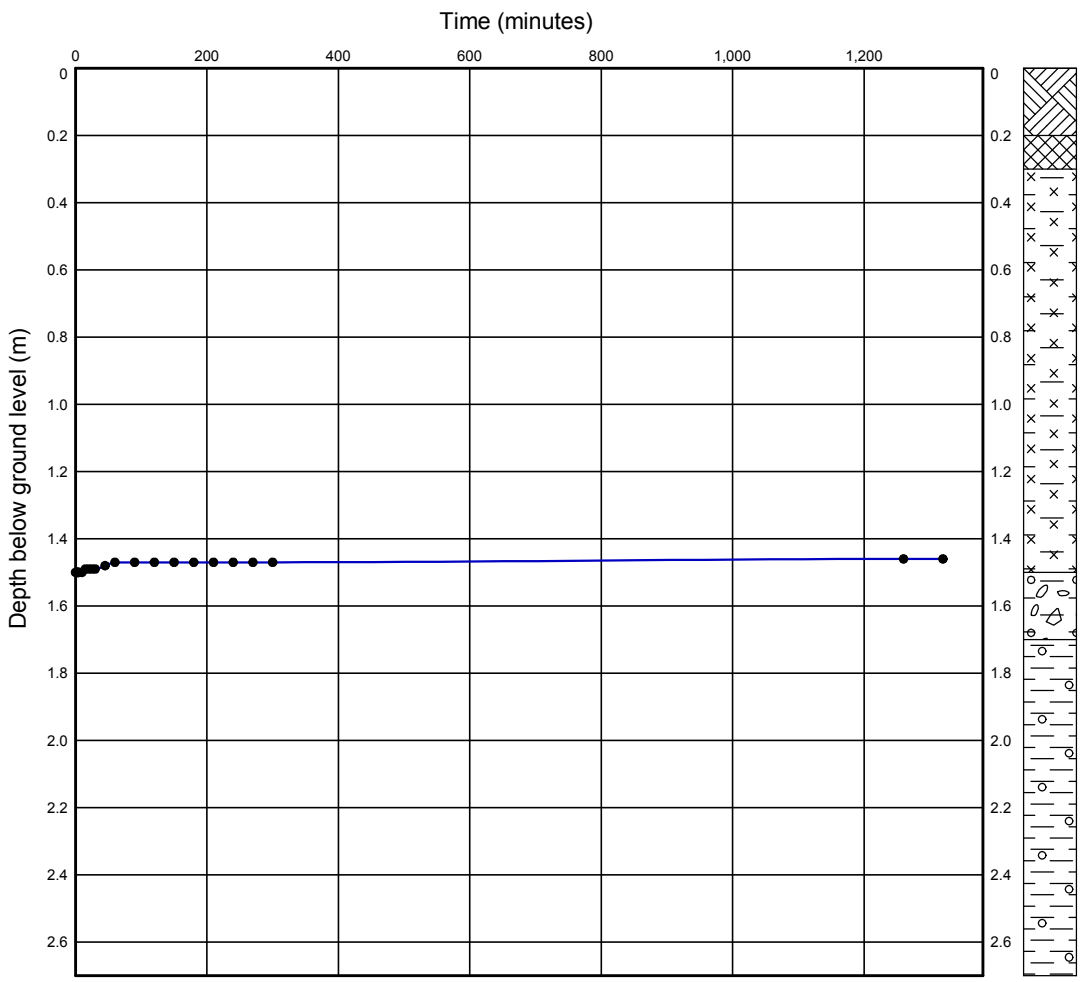
Job Number : Q0269

Engineer : Capita

SOAKAWAY TEST CALCULATION SHEET

Time (Minutes)	Depth of water from ground level (m)
0.0	1.5
1.0	1.5
2.0	1.5
3.0	1.5
4.0	1.5
5.0	1.5
10.0	1.5
15.0	1.49
20.0	1.49
25.0	1.49
30.0	1.49
45.0	1.48
60.0	1.47
90.0	1.47
120.0	1.47
150.0	1.47
180.0	1.47
210.0	1.47
240.0	1.47
270.0	1.47
300.0	1.47
1260.0	1.46
1320.0	1.46

Field Observations from soakaway trial pit



Remarks: Failed to soakaway

Soakaway test for soil infiltration rate
design method based on BRE Digest 365

Permeability Test on Strata

Trial Pit Depth	2.700 m	V_{p75-25}=	0.900 m^3
Trial Pit Length	2.500 m	a_{p50}=	5.220 m^2
Trial Pit Width	0.600 m	t_{p75-25}=	minutes
Effective Depth	1.200 m		
Outflow Time	mins from 75% to 25% full		

f = m/sec

Quantum

Plas Newydd
SA4 0FQ
Tel: 01554 744880
Tel:
email: enquiries@quantumgeotech.co.uk

Date of Test: 08/06/2020

All measurements in metres unless otherwise stated

Project File: Q0269.GPJ

Figure No. 1

Contract : Llantarnam 3G Pitch, Cwmbran

Client : Torfaen County Borough Council

Point Plotted
TP20,1

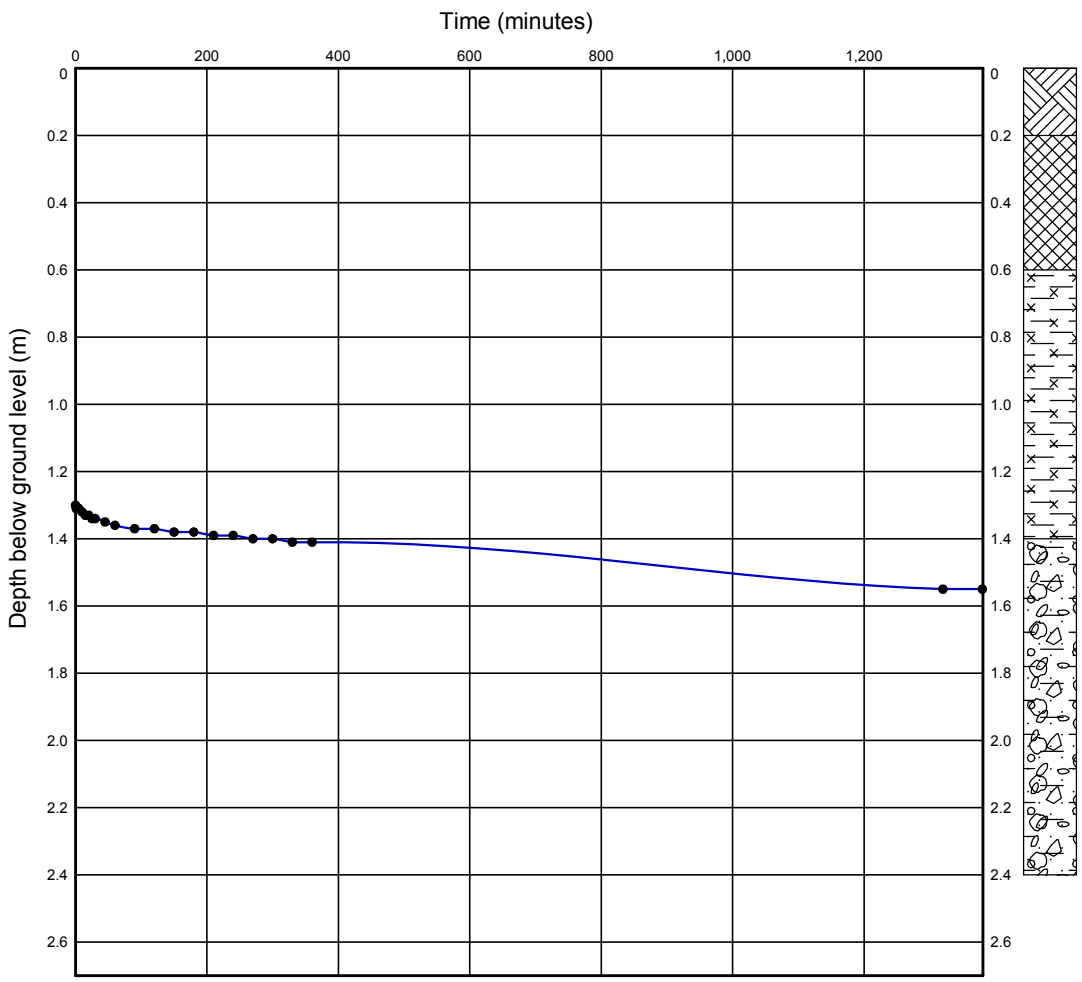
Job Number : Q0269

Engineer : Capita

SOAKAWAY TEST CALCULATION SHEET

Time (Minutes)	Depth of water from ground level (m)
0.0	1.3
1.0	1.31
2.0	1.31
3.0	1.31
4.0	1.31
5.0	1.31
10.0	1.32
15.0	1.33
20.0	1.33
25.0	1.34
30.0	1.34
45.0	1.35
60.0	1.36
90.0	1.37
120.0	1.37
150.0	1.38
180.0	1.38
210.0	1.39
240.0	1.39
270.0	1.4
300.0	1.4
330.0	1.41
360.0	1.41
1320.0	1.55
1380.0	1.55

Field Observations from soakaway trial pit



Remarks: Failed to soakaway

Soakaway test for soil infiltration rate
design method based on BRE Digest 365

Permeability Test on Strata

Trial Pit Depth	2.400 m	V_{p75-25}=	0.825 m^3
Trial Pit Length	2.500 m	a_{p50}=	4.910 m^2
Trial Pit Width	0.600 m	t_{p75-25}=	minutes
Effective Depth	1.100 m		
Outflow Time	mins from 75% to 25% full		

f = m/sec

Quantum

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Tel:
email: enquiries@quantumgeotech.co.uk

Date of Test: 08/06/2020

All measurements in metres unless otherwise stated

Project File: Q0269.GPJ

Figure No. 2

APPENDIX VII– MONITORING RECORDS

LANDGAS & GROUNDWATER MONITORING RECORD SHEET

Project Name:	Llantarnam Sports Pitch
Project No.:	Q0269
BH/TP No.:	WS01
Instruments Used:	Water Dip Meter Probe, GA2000 Gas Anaylser

Installation Date:				
GL (mAOD)	Pipe	Type	Installation Depth (mbgl)	Response Zone (mbgl)
39.869	A	50mm	2.50	0.5-2.5

Pipe	Date	Time (24hrs)	Atmos Pressure mBar	Differential Well Pressure mBar	Flow L/hr	CH_4 %	CO_2 %	O_2 %	CO ppm	H_2S ppm	Water Level		HoleDepth		Local Weather		Remarks
											mbgl	mAOD	mbgl	mAOD	Recent	Current	
A	08/06/2020	8.15									1.40	38.47	2.42	37.45	Cloudy	Sunny	
A	08/06/2020	8.15									1.40	-1.40	2.42	37.45	Cloudy	Sunny	
A	15/06/2020	09:30	1006	0.53	0.0	0.0	3.0	18.4	0	0	1.38	38.49	2.42	37.45	Sunny	Sunny	Water Sample Taken - EW1

LANDGAS & GROUNDWATER MONITORING RECORD SHEET

Project Name:	Llantarnam Sports Pitch
Project No.:	Q0269
BH/TP No.:	WS03
Instruments Used:	Water Dip Meter Probe, GA2000 Gas Anaylser

Installation Date:				
GL (mAOD)	Pipe	Type	Installation Depth (mbgl)	Response Zone (mbgl)
39.696	A	50mm	2.35	0.5-2.35

Pipe	Date	Time (24hrs)	Atmos Pressure mBar	Differential Well Pressure mBar	Flow L/hr	CH_4 %	CO_2 %	O_2 %	CO ppm	H_2S ppm	Water Level		HoleDepth		Local Weather		Remarks
											mbgl	mAOD	mbgl	mAOD	Recent	Current	
A	09/06/2020	08:10									Dry		2.32	37.38	Sunny	Sunny	
A	15/06/2020	09:40	1005	0.54	0.0	0.0	3.0	19.4	0	0	2.09	37.61	2.32	37.38	Sunny	Sunny	Insufficient Water to Sample

LANDGAS & GROUNDWATER MONITORING RECORD SHEET

Project Name:	Llantarnam Sports Pitch
Project No.:	Q0269
BH/TP No.:	WS05
Instruments Used:	Water Dip Meter Probe, GA2000 Gas Anaylser

Installation Date:				
GL (mAOD)	Pipe	Type	Installation Depth (mbgl)	Response Zone (mbgl)
38.817	A	50mm	1.90	0.5-1.9

Pipe	Date	Time (24hrs)	Atmos Pressure mBar	Differential Well Pressure mBar	Flow L/hr	CH_4 %	CO_2 %	O_2 %	CO ppm	H_2S ppm	Water Level		HoleDepth		Local Weather		Remarks
											mbgl	mAOD	mbgl	mAOD	Recent	Current	
A	08/06/2020	08:05									Dry		3.40	35.42	Sunny	Cloudy	
A	09/06/2020	08:05									Dry		3.40	35.42	Sunny	Sunny	
A	15/06/2020	10:00	1005	0.50	0.0	0.9	4.2	11.6	0	0	1.81	37.01	3.40	35.42	Sunny	Sunny	

LANDGAS & GROUNDWATER MONITORING RECORD SHEET

Project Name:	Llantarnam Sports Pitch
Project No.:	Q0269
BH/TP No.:	WS09
Instruments Used:	Water Dip Meter Probe, GA2000 Gas Anaylser

Installation Date:				
GL (mAOD)	Pipe	Type	Installation Depth (mbgl)	Response Zone (mbgl)
40.363	A	50mm	1.60	0.5-1.6

Pipe	Date	Time (24hrs)	Atmos Pressure mBar	Differential Well Pressure mBar	Flow L/hr	CH_4 %	CO_2 %	O_2 %	CO ppm	H_2S ppm	Water Level		HoleDepth		Local Weather		Remarks
											mbgl	mAOD	mbgl	mAOD	Recent	Current	
A	08/06/2020	08:00									Dry		1.60	38.76	Cloudy	Sunny	Well Dry
A	09/06/2020	08:00									Dry		1.60	38.76	Sunny	Sunny	Well Dry
A	15/06/2020	10:15	1005	0.49	0.1	0.0	1.5	19.3	0	0	Dry		1.60	38.76	Sunny	Sunny	

APPENDIX VIII– GEOENVIRONMENTAL LABORATORY TEST RESULTS

eurofins | Chemtest
Eurofins Chemtest Ltd.
Depot Road
Newmarket
CB8 0AL
Tel: 01638 606070
Email: info@chemtest.com

Final Report

Report No.:	20-15922-1
Initial Date of Issue:	01-Jul-2020
Client	Quantum Geotechnic Ltd
Client Address:	Plas Newydd Llanedi Pontarddulais Swansea SA4 0FQ
Contact(s):	Phil Darby
Project	Q0269 Llantarnam 3G Pitch
Quotation No.:	Q20-20396
Date Received:	24-Jun-2020
Order No.:	
Date Instructed:	24-Jun-2020
No. of Samples:	3
Turnaround (Wkdays):	5
Results Due:	30-Jun-2020
Date Approved:	01-Jul-2020
Approved By:	
Details:	Glynn Harvey, Technical Manager

Results - Soil

Project: Q0269 Llantarnam 3G Pitch

Client: Quantum Geotechnic Ltd			**Chemtest Job No.:**		20-15922	20-15922	20-15922
Quotation No.: Q20-20396			**Chemtest Sample ID.:**		1021430	1021431	1021432
			Client Sample ID.:		1	1	1
			Sample Location:		WS12	WS06	WS15
			Sample Type:		SOIL	SOIL	SOIL
			Top Depth (m):		1.6	0.65	1.2
			Bottom Depth (m):		2.0	1.8	1.4
			Asbestos Lab:			COVENTRY	
Determinand	**Accred.**	**SOP**	**Units**	**LOD**			
Moisture	N	2030	%	0.020	14	12	15
Soil Colour	N	2040		N/A	Brown	Brown	Brown
Other Material	N	2040		N/A	Stones	Stones	Stones
Soil Texture	N	2040		N/A	Loam	Loam	Sand
pH (2.5:1)	N	2010		4.0	[A] 8.2	[A] 7.8	[A] 7.4
Sulphate (2:1 Water Soluble) as SO4	M	2120	g/l	0.010	0.030	0.026	0.047
Sulphate (2:1 Extract)	M	2120	mg/kg	20	60	52	94
Total Sulphur	M	2175	%	0.010	[A] < 0.010	[A] < 0.010	[A] 0.013
Sulphate (Acid Soluble)	M	2430	%	0.010	[A] 0.011	[A] < 0.010	[A] < 0.010

Deviations

In accordance with UKAS Policy on Deviating Samples TPS 63. Eurofins Chemtest have a procedure to ensure 'upon receipt of each sample a competent laboratory shall assess whether the sample is suitable with regard to the requested test(s)'. This policy and the respective holding times applied, can be supplied upon request.The reason a sample is declared as deviating is detailed below. Where applicable the analysis remains UKAS/MCERTs accredited but the results may be compromised.

Sample:	Sample Ref:	Sample ID:	Sample Location:	Sampled Date:	Deviation Code(s):	Containers Received:
1021430		1	WS12		A	Plastic Tub 500g
1021431		1	WS06		A	Plastic Tub 500g
1021432		1	WS15		A	Plastic Tub 500g

Test Methods

SOP	Title	Parameters included	Method summary
2010	pH Value of Soils	pH	pH Meter
2030	Moisture and Stone Content of Soils(Requirement of MCERTS)	Moisture content	Determination of moisture content of soil as a percentage of its as received mass obtained at <37°C.
2040	Soil Description(Requirement of MCERTS)	Soil description	As received soil is described based upon BS5930
2120	Water Soluble Boron, Sulphate, Magnesium & Chromium	Boron; Sulphate; Magnesium; Chromium	Aqueous extraction / ICP-OES
2175	Total Sulphur in Soils	Total Sulphur	Determined by high temperature combustion under oxygen, using an Eltra elemental analyser.
2430	Total Sulphate in soils	Total Sulphate	Acid digestion followed by determination of sulphate in extract by ICP-OES.

Report Information

Key

U	UKAS accredited
M	MCERTS and UKAS accredited
N	Unaccredited
S	This analysis has been subcontracted to a UKAS accredited laboratory that is accredited for this analysis
SN	This analysis has been subcontracted to a UKAS accredited laboratory that is not accredited for this analysis
T	This analysis has been subcontracted to an unaccredited laboratory
I/S	Insufficient Sample
U/S	Unsuitable Sample
N/E	not evaluated
<	"less than"
>	"greater than"

Comments or interpretations are beyond the scope of UKAS accreditation
The results relate only to the items tested
Uncertainty of measurement for the determinands tested are available upon request
None of the results in this report have been recovery corrected
All results are expressed on a dry weight basis
The following tests were analysed on samples as received and the results subsequently corrected to a dry weight basis TPH, BTEX, VOCs, SVOCs, PCBs, Phenols
For all other tests the samples were dried at < 37°C prior to analysis
All Asbestos testing is performed at the indicated laboratory
Issue numbers are sequential starting with 1 all subsequent reports are incremented by 1

Sample Deviation Codes

A - Date of sampling not supplied
B - Sample age exceeds stability time (sampling to extraction)
C - Sample not received in appropriate containers
D - Broken Container
E - Insufficient Sample (Applies to LOI in Trommel Fines Only)

Sample Retention and Disposal

All soil samples will be retained for a period of 45 days from the date of receipt
All water samples will be retained for 14 days from the date of receipt
Charges may apply to extended sample storage

If you require extended retention of samples, please email your requirements to:
customerservices@chemtest.com

Eurofins Chemtest Ltd.
Depot Road
Newmarket
CB8 0AL
Tel: 01638 606070
Email: info@chemtest.com

Final Report

Report No.:	20-15917-1		
Initial Date of Issue:	01-Jul-2020		
Client	Quantum Geotechnic Ltd		
Client Address:	Plas Newydd Llanedi Pontarddulais Swansea SA4 0FQ		
Contact(s):	Phil Darby		
Project	Q0269 Llantarnam 3G Pitches		
Quotation No.:	Q20-20396	**Date Received:**	24-Jun-2020
Order No.:		**Date Instructed:**	24-Jun-2020
No. of Samples:	5		
Turnaround (Wkdays):	5	**Results Due:**	01-Jul-2020
Date Approved:	01-Jul-2020		
Approved By:			
Details:	Glynn Harvey, Technical Manager		

Results - Leachate

Project: Q0269 Llantarnam 3G Pitches

Client: Quantum Geotechnic Ltd				**Chemtest Job No.:**		20-15917	20-15917	20-15917
Quotation No.: Q20-20396				**Chemtest Sample ID.:**		1021412	1021416	1021418
Order No.:				Client Sample Ref.:		2	1	1
				Sample Location:		WS02	WS08	WS10
				Sample Type:		SOIL	SOIL	SOIL
				Top Depth (m):		0.3	0.2	0.2
				Bottom Depth (m):		0.5	0.4	0.4
				Date Sampled:		05-Jun-2020	05-Jun-2020	05-Jun-2020
Determinand	**Accred.**	**SOP**	**Type**	**Units**	**LOD**			
pH	U	1010	10:1		N/A	8.8	7.6	7.2
Ammonium	U	1220	10:1	mg/l	0.050	0.19	0.098	0.092
Sulphate	U	1220	10:1	mg/l	1.0	5.4	< 1.0	1.4
Cyanide (Total)	U	1300	10:1	mg/l	0.050	< 0.050	< 0.050	< 0.050
Cyanide (Free)	U	1300	10:1	mg/l	0.050	< 0.050	< 0.050	< 0.050
Sulphide	U	1325	10:1	mg/l	0.050	< 0.050	< 0.050	< 0.050
Arsenic (Dissolved)	U	1450	10:1	µg/l	1.0	< 1.0	< 1.0	< 1.0
Boron (Dissolved)	U	1450	10:1	µg/l	20	< 20	< 20	< 20
Cadmium (Dissolved)	U	1450	10:1	µg/l	0.080	< 0.080	< 0.080	< 0.080
Copper (Dissolved)	U	1450	10:1	µg/l	1.0	3.9	2.1	< 1.0
Mercury (Dissolved)	U	1450	10:1	µg/l	0.50	< 0.50	< 0.50	< 0.50
Nickel (Dissolved)	U	1450	10:1	µg/l	1.0	< 1.0	< 1.0	< 1.0
Lead (Dissolved)	U	1450	10:1	µg/l	1.0	1.5	1.6	< 1.0
Selenium (Dissolved)	U	1450	10:1	µg/l	1.0	3.6	< 1.0	< 1.0
Vanadium (Dissolved)	U	1450	10:1	µg/l	1.0	< 1.0	< 1.0	< 1.0
Zinc (Dissolved)	U	1450	10:1	µg/l	1.0	5.1	3.4	< 1.0
Chromium (Total)	U	1450	10:1	µg/l	1.0	< 1.0	< 1.0	< 1.0
Chromium (Hexavalent)	U	1490	10:1	µg/l	20	[B] < 20	[B] < 20	[B] < 20
Total TPH >C10-C40	U	1670	10:1	µg/l	10	[B] < 10	[B] < 10	[B] < 10
Naphthalene	U	1700	10:1	µg/l	0.10	< 0.10	< 0.10	< 0.10
Acenaphthylene	U	1700	10:1	µg/l	0.10	< 0.10	< 0.10	< 0.10
Acenaphthene	U	1700	10:1	µg/l	0.10	< 0.10	< 0.10	< 0.10
Fluorene	U	1700	10:1	µg/l	0.10	< 0.10	< 0.10	< 0.10
Phenanthrene	U	1700	10:1	µg/l	0.10	< 0.10	< 0.10	< 0.10
Anthracene	U	1700	10:1	µg/l	0.10	< 0.10	< 0.10	< 0.10
Fluoranthene	U	1700	10:1	µg/l	0.10	< 0.10	< 0.10	< 0.10
Pyrene	U	1700	10:1	µg/l	0.10	< 0.10	< 0.10	< 0.10
Benzo[a]anthracene	U	1700	10:1	µg/l	0.10	< 0.10	< 0.10	< 0.10
Chrysene	N	1700	10:1	µg/l	0.10	< 0.10	< 0.10	< 0.10
Benzo[b]fluoranthene	U	1700	10:1	µg/l	0.10	< 0.10	< 0.10	< 0.10
Benzo[k]fluoranthene	U	1700	10:1	µg/l	0.10	< 0.10	< 0.10	< 0.10
Benzo[a]pyrene	U	1700	10:1	µg/l	0.10	< 0.10	< 0.10	< 0.10
Indeno(1,2,3-c,d)Pyrene	U	1700	10:1	µg/l	0.10	< 0.10	< 0.10	< 0.10
Dibenz(a,h)Anthracene	U	1700	10:1	µg/l	0.10	< 0.10	< 0.10	< 0.10
Benzo[g,h,i]perylene	U	1700	10:1	µg/l	0.10	< 0.10	< 0.10	< 0.10
Total Of 16 PAH's	N	1700	10:1	µg/l	2.0	< 2.0	< 2.0	< 2.0
Benzene	U	1760	10:1	µg/l	1.0	[B] < 1.0	[B] < 1.0	[B] < 1.0
Toluene	U	1760	10:1	µg/l	1.0	[B] < 1.0	[B] < 1.0	[B] < 1.0

Results - Leachate

Project: Q0269 Llantarnam 3G Pitches

Client: Quantum Geotechnic Ltd				**Chemtest Job No.:**		20-15917	20-15917	20-15917
Quotation No.: Q20-20396				**Chemtest Sample ID.:**		1021412	1021416	1021418
Order No.:				Client Sample Ref.:		2	1	1
				Sample Location:		WS02	WS08	WS10
				Sample Type:		SOIL	SOIL	SOIL
				Top Depth (m):		0.3	0.2	0.2
				Bottom Depth (m):		0.5	0.4	0.4
				Date Sampled:		05-Jun-2020	05-Jun-2020	05-Jun-2020
Determinand	**Accred.**	**SOP**	**Type**	**Units**	**LOD**			
Ethylbenzene	U	1760	10:1	µg/l	1.0	[B] < 1.0	[B] < 1.0	[B] < 1.0
m & p-Xylene	U	1760	10:1	µg/l	1.0	[B] < 1.0	[B] < 1.0	[B] < 1.0
o-Xylene	U	1760	10:1	µg/l	1.0	[B] < 1.0	[B] < 1.0	[B] < 1.0
Total Phenols	U	1920	10:1	mg/l	0.030	< 0.030	< 0.030	< 0.030

Results - Soil

Project: Q0269 Llantarnam 3G Pitches

Client: Quantum Geotechnic Ltd			**Chemtest Job No.:**		20-15917	20-15917	20-15917	20-15917	20-15917
Quotation No.: Q20-20396			**Chemtest Sample ID.:**		1021412	1021413	1021414	1021416	1021418
Order No.:			Client Sample Ref.:		2	1	1	1	1
			Sample Location:		WS02	WS05	WS06	WS08	WS10
			Sample Type:		SOIL	SOIL	SOIL	SOIL	SOIL
			Top Depth (m):		0.3	0.0	0.15	0.2	0.2
			Bottom Depth (m):		0.5	0.25	0.45	0.4	0.4
			Date Sampled:		05-Jun-2020	05-Jun-2020	05-Jun-2020	05-Jun-2020	05-Jun-2020
			Asbestos Lab:		COVENTRY	COVENTRY	COVENTRY	COVENTRY	COVENTRY
Determinand	**Accred.**	**SOP**	**Units**	**LOD**					
ACM Type	U	2192		N/A	-	-	-	-	-
Asbestos Identification	U	2192	%	0.001	No Asbestos Detected	No Asbestos Detected	No Asbestos Detected	No Asbestos Detected	No Asbestos Detected
ACM Detection Stage	U	2192		N/A	-	-	-	-	-
Moisture	N	2030	%	0.020	15	15	6.4	13	6.1
pH	U	2010		4.0	6.9	7.3	7.0	7.2	7.1
Boron (Hot Water Soluble)	U	2120	mg/kg	0.40	0.59	0.70	0.83	0.51	< 0.40
Sulphate (2:1 Water Soluble) as SO4	U	2120	g/l	0.010	0.049	0.048	0.089	0.025	0.012
Total Sulphur	U	2175	%	0.010	0.035	0.053	0.24	0.14	0.050
Cyanide (Total)	U	2300	mg/kg	0.50	[B] < 0.50	[B] < 0.50	[B] < 0.50	[B] < 0.50	[B] < 0.50
Thiocyanate	U	2300	mg/kg	5.0	[B] < 5.0	[B] < 5.0	[B] < 5.0	[B] < 5.0	[B] < 5.0
Sulphide (Easily Liberatable)	N	2325	mg/kg	0.50	2.8	510	5.0	240	47
Iron (Available)	N	2430	mg/kg	20.0	1200	1500	1100	1100	570
Arsenic	U	2450	mg/kg	1.0	11	12	12	12	7.6
Barium	U	2450	mg/kg	10	130	160	570	350	170
Beryllium	U	2450	mg/kg	1.0	< 1.0	< 1.0	5.5	1.7	1.3
Cadmium	U	2450	mg/kg	0.10	0.25	0.32	0.28	0.32	0.17
Chromium	U	2450	mg/kg	1.0	20	25	25	32	25
Copper	U	2450	mg/kg	0.50	24	28	22	21	17
Mercury	U	2450	mg/kg	0.10	< 0.10	< 0.10	< 0.10	0.10	< 0.10
Nickel	U	2450	mg/kg	0.50	22	25	25	28	26
Selenium	U	2450	mg/kg	0.20	0.58	0.51	0.81	0.71	0.35
Vanadium	U	2450	mg/kg	5.0	29	36	140	81	45
Zinc	U	2450	mg/kg	0.50	110	120	78	110	63
Chromium (Hexavalent)	N	2490	mg/kg	0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50
Organic Matter	U	2625	%	0.40	2.6	3.5	1.9	1.9	0.90
TPH >C6-C10	N	2670	mg/kg	1.0	[B] < 1.0	[B] < 1.0	[B] < 1.0	[B] < 1.0	[B] < 1.0
TPH >C10-C21	N	2670	mg/kg	1.0	[B] < 1.0	[B] < 1.0	[B] < 1.0	[B] < 1.0	[B] < 1.0
TPH >C21-C40	N	2670	mg/kg	1.0	[B] < 1.0	[B] < 1.0	[B] < 1.0	[B] < 1.0	[B] < 1.0
Total TPH >C6-C40	U	2670	mg/kg	10	[B] < 10	[B] < 10	[B] < 10	[B] < 10	[B] < 10
Naphthalene	U	2700	mg/kg	0.10	< 0.10	< 0.10	< 0.10	< 0.10	< 0.10
Acenaphthylene	U	2700	mg/kg	0.10	< 0.10	< 0.10	< 0.10	< 0.10	< 0.10
Acenaphthene	U	2700	mg/kg	0.10	< 0.10	< 0.10	< 0.10	< 0.10	< 0.10
Fluorene	U	2700	mg/kg	0.10	< 0.10	< 0.10	< 0.10	< 0.10	< 0.10
Phenanthrene	U	2700	mg/kg	0.10	< 0.10	< 0.10	< 0.10	< 0.10	< 0.10
Anthracene	U	2700	mg/kg	0.10	< 0.10	< 0.10	< 0.10	< 0.10	< 0.10
Fluoranthene	U	2700	mg/kg	0.10	< 0.10	< 0.10	< 0.10	< 0.10	< 0.10

Results - Soil

Project: Q0269 Llantarnam 3G Pitches

Client: Quantum Geotechnic Ltd			**Chemtest Job No.:**		20-15917	20-15917	20-15917	20-15917	20-15917
Quotation No.: Q20-20396			**Chemtest Sample ID.:**		1021412	1021413	1021414	1021416	1021418
Order No.:			Client Sample Ref.:		2	1	1	1	1
			Sample Location:		WS02	WS05	WS06	WS08	WS10
			Sample Type:		SOIL	SOIL	SOIL	SOIL	SOIL
			Top Depth (m):		0.3	0.0	0.15	0.2	0.2
			Bottom Depth (m):		0.5	0.25	0.45	0.4	0.4
			Date Sampled:		05-Jun-2020	05-Jun-2020	05-Jun-2020	05-Jun-2020	05-Jun-2020
			Asbestos Lab:		COVENTRY	COVENTRY	COVENTRY	COVENTRY	COVENTRY
Determinand	**Accred.**	**SOP**	**Units**	**LOD**					
Pyrene	U	2700	mg/kg	0.10	< 0.10	< 0.10	< 0.10	< 0.10	< 0.10
Benzo[a]anthracene	U	2700	mg/kg	0.10	< 0.10	< 0.10	< 0.10	< 0.10	< 0.10
Chrysene	U	2700	mg/kg	0.10	< 0.10	< 0.10	< 0.10	< 0.10	< 0.10
Benzo[b]fluoranthene	U	2700	mg/kg	0.10	< 0.10	< 0.10	< 0.10	< 0.10	< 0.10
Benzo[k]fluoranthene	U	2700	mg/kg	0.10	< 0.10	< 0.10	< 0.10	< 0.10	< 0.10
Benzo[a]pyrene	U	2700	mg/kg	0.10	< 0.10	< 0.10	< 0.10	< 0.10	< 0.10
Indeno(1,2,3-c,d)Pyrene	U	2700	mg/kg	0.10	< 0.10	< 0.10	< 0.10	< 0.10	< 0.10
Dibenz(a,h)Anthracene	U	2700	mg/kg	0.10	< 0.10	< 0.10	< 0.10	< 0.10	< 0.10
Benzo[g,h,i]perylene	U	2700	mg/kg	0.10	< 0.10	< 0.10	< 0.10	< 0.10	< 0.10
Total Of 16 PAH's	U	2700	mg/kg	2.0	< 2.0	< 2.0	< 2.0	< 2.0	< 2.0
Dichlorodifluoromethane	U	2760	µg/kg	1.0	[B] < 1.0	[B] < 1.0	[B] < 1.0	[B] < 1.0	[B] < 1.0
Chloromethane	U	2760	µg/kg	1.0	[B] < 1.0	[B] < 1.0	[B] < 1.0	[B] < 1.0	[B] < 1.0
Vinyl Chloride	U	2760	µg/kg	1.0	[B] < 1.0	[B] < 1.0	[B] < 1.0	[B] < 1.0	[B] < 1.0
Bromomethane	U	2760	µg/kg	20	[B] < 20	[B] < 20	[B] < 20	[B] < 20	[B] < 20
Chloroethane	U	2760	µg/kg	2.0	[B] < 2.0	[B] < 2.0	[B] < 2.0	[B] < 2.0	[B] < 2.0
Trichlorofluoromethane	U	2760	µg/kg	1.0	[B] < 1.0	[B] < 1.0	[B] < 1.0	[B] < 1.0	[B] < 1.0
1,1-Dichloroethene	U	2760	mg/kg	1.0	[B] < 1.0	[B] < 1.0	[B] < 1.0	[B] < 1.0	[B] < 1.0
Trans 1,2-Dichloroethene	U	2760	mg/kg	1.0	[B] < 1.0	[B] < 1.0	[B] < 1.0	[B] < 1.0	[B] < 1.0
1,1-Dichloroethane	U	2760	µg/kg	1.0	[B] < 1.0	[B] < 1.0	[B] < 1.0	[B] < 1.0	[B] < 1.0
cis 1,2-Dichloroethene	U	2760	µg/kg	1.0	[B] < 1.0	[B] < 1.0	[B] < 1.0	[B] < 1.0	[B] < 1.0
Bromochloromethane	U	2760	µg/kg	5.0	[B] < 5.0	[B] < 5.0	[B] < 5.0	[B] < 5.0	[B] < 5.0
Trichloromethane	U	2760	µg/kg	1.0	[B] < 1.0	[B] < 1.0	[B] < 1.0	[B] < 1.0	[B] < 1.0
1,1,1-Trichloroethane	U	2760	µg/kg	1.0	[B] < 1.0	[B] < 1.0	[B] < 1.0	[B] < 1.0	[B] < 1.0
Tetrachloromethane	U	2760	µg/kg	1.0	[B] < 1.0	[B] < 1.0	[B] < 1.0	[B] < 1.0	[B] < 1.0
1,1-Dichloropropene	U	2760	µg/kg	1.0	[B] < 1.0	[B] < 1.0	[B] < 1.0	[B] < 1.0	[B] < 1.0
Benzene	U	2760	µg/kg	1.0	[B] < 1.0	[B] < 1.0	[B] < 1.0	[B] < 1.0	[B] < 1.0
1,2-Dichloroethane	U	2760	µg/kg	2.0	[B] < 2.0	[B] < 2.0	[B] < 2.0	[B] < 2.0	[B] < 2.0
Trichloroethene	N	2760	µg/kg	1.0	[B] < 1.0	[B] < 1.0	[B] < 1.0	[B] < 1.0	[B] < 1.0
1,2-Dichloropropane	U	2760	µg/kg	1.0	[B] < 1.0	[B] < 1.0	[B] < 1.0	[B] < 1.0	[B] < 1.0
Dibromomethane	U	2760	µg/kg	1.0	[B] < 1.0	[B] < 1.0	[B] < 1.0	[B] < 1.0	[B] < 1.0
Bromodichloromethane	U	2760	µg/kg	5.0	[B] < 5.0	[B] < 5.0	[B] < 5.0	[B] < 5.0	[B] < 5.0
cis-1,3-Dichloropropene	N	2760	µg/kg	10	[B] < 10	[B] < 10	[B] < 10	[B] < 10	[B] < 10
Toluene	U	2760	µg/kg	1.0	[B] < 1.0	[B] < 1.0	[B] < 1.0	[B] < 1.0	[B] < 1.0
Trans-1,3-Dichloropropene	N	2760	µg/kg	10	[B] < 10	[B] < 10	[B] < 10	[B] < 10	[B] < 10
1,1,2-Trichloroethane	U	2760	µg/kg	10	[B] < 10	[B] < 10	[B] < 10	[B] < 10	[B] < 10
Tetrachloroethene	U	2760	µg/kg	1.0	[B] < 1.0	[B] < 1.0	[B] < 1.0	[B] < 1.0	[B] < 1.0
1,3-Dichloropropane	U	2760	µg/kg	2.0	[B] < 2.0	[B] < 2.0	[B] < 2.0	[B] < 2.0	[B] < 2.0

Results - Soil

Project: Q0269 Llantarnam 3G Pitches

Client: Quantum Geotechnic Ltd					**Chemtest Job No.:**	20-15917	20-15917	20-15917	20-15917	20-15917
Quotation No.: Q20-20396					**Chemtest Sample ID.:**	1021412	1021413	1021414	1021416	1021418
Order No.:					Client Sample Ref.:	2	1	1	1	1
					Sample Location:	WS02	WS05	WS06	WS08	WS10
					Sample Type:	SOIL	SOIL	SOIL	SOIL	SOIL
					Top Depth (m):	0.3	0.0	0.15	0.2	0.2
					Bottom Depth (m):	0.5	0.25	0.45	0.4	0.4
					Date Sampled:	05-Jun-2020	05-Jun-2020	05-Jun-2020	05-Jun-2020	05-Jun-2020
					Asbestos Lab:	COVENTRY	COVENTRY	COVENTRY	COVENTRY	COVENTRY
Determinand	**Accred.**	**SOP**	**Units**	**LOD**						
Dibromochloromethane	U	2760	µg/kg	10	[B] < 10	[B] < 10	[B] < 10	[B] < 10	[B] < 10	
1,2-Dibromoethane	U	2760	µg/kg	5.0	[B] < 5.0	[B] < 5.0	[B] < 5.0	[B] < 5.0	[B] < 5.0	
Chlorobenzene	U	2760	µg/kg	1.0	[B] < 1.0	[B] < 1.0	[B] < 1.0	[B] < 1.0	[B] < 1.0	
1,1,1,2-Tetrachloroethane	U	2760	µg/kg	2.0	[B] < 2.0	[B] < 2.0	[B] < 2.0	[B] < 2.0	[B] < 2.0	
Ethylbenzene	U	2760	µg/kg	1.0	[B] < 1.0	[B] < 1.0	[B] < 1.0	[B] < 1.0	[B] < 1.0	
m & p-Xylene	U	2760	µg/kg	1.0	[B] < 1.0	[B] < 1.0	[B] < 1.0	[B] < 1.0	[B] < 1.0	
o-Xylene	U	2760	µg/kg	1.0	[B] < 1.0	[B] < 1.0	[B] < 1.0	[B] < 1.0	[B] < 1.0	
Styrene	U	2760	µg/kg	1.0	[B] < 1.0	[B] < 1.0	[B] < 1.0	[B] < 1.0	[B] < 1.0	
Tribromomethane	U	2760	µg/kg	1.0	[B] < 1.0	[B] < 1.0	[B] < 1.0	[B] < 1.0	[B] < 1.0	
Isopropylbenzene	U	2760	µg/kg	1.0	[B] < 1.0	[B] < 1.0	[B] < 1.0	[B] < 1.0	[B] < 1.0	
Bromobenzene	U	2760	µg/kg	1.0	[B] < 1.0	[B] < 1.0	[B] < 1.0	[B] < 1.0	[B] < 1.0	
1,2,3-Trichloropropane	N	2760	µg/kg	50	[B] < 50	[B] < 50	[B] < 50	[B] < 50	[B] < 50	
N-Propylbenzene	U	2760	µg/kg	1.0	[B] < 1.0	[B] < 1.0	[B] < 1.0	[B] < 1.0	[B] < 1.0	
2-Chlorotoluene	U	2760	µg/kg	1.0	[B] < 1.0	[B] < 1.0	[B] < 1.0	[B] < 1.0	[B] < 1.0	
1,3,5-Trimethylbenzene	U	2760	µg/kg	1.0	[B] < 1.0	[B] < 1.0	[B] < 1.0	[B] < 1.0	[B] < 1.0	
4-Chlorotoluene	U	2760	µg/kg	1.0	[B] < 1.0	[B] < 1.0	[B] < 1.0	[B] < 1.0	[B] < 1.0	
Tert-Butylbenzene	U	2760	µg/kg	1.0	[B] < 1.0	[B] < 1.0	[B] < 1.0	[B] < 1.0	[B] < 1.0	
1,2,4-Trimethylbenzene	U	2760	µg/kg	1.0	[B] < 1.0	[B] < 1.0	[B] < 1.0	[B] < 1.0	[B] < 1.0	
Sec-Butylbenzene	U	2760	µg/kg	1.0	[B] < 1.0	[B] < 1.0	[B] < 1.0	[B] < 1.0	[B] < 1.0	
1,3-Dichlorobenzene	U	2760	µg/kg	1.0	[B] < 1.0	[B] < 1.0	[B] < 1.0	[B] < 1.0	[B] < 1.0	
4-Isopropyltoluene	U	2760	µg/kg	1.0	[B] < 1.0	[B] < 1.0	[B] < 1.0	[B] < 1.0	[B] < 1.0	
1,4-Dichlorobenzene	U	2760	µg/kg	1.0	[B] < 1.0	[B] < 1.0	[B] < 1.0	[B] < 1.0	[B] < 1.0	
N-Butylbenzene	U	2760	µg/kg	1.0	[B] < 1.0	[B] < 1.0	[B] < 1.0	[B] < 1.0	[B] < 1.0	
1,2-Dichlorobenzene	U	2760	µg/kg	1.0	[B] < 1.0	[B] < 1.0	[B] < 1.0	[B] < 1.0	[B] < 1.0	
1,2-Dibromo-3-Chloropropane	U	2760	µg/kg	50	[B] < 50	[B] < 50	[B] < 50	[B] < 50	[B] < 50	
1,2,4-Trichlorobenzene	U	2760	µg/kg	1.0	[B] < 1.0	[B] < 1.0	[B] < 1.0	[B] < 1.0	[B] < 1.0	
Hexachlorobutadiene	U	2760	µg/kg	1.0	[B] < 1.0	[B] < 1.0	[B] < 1.0	[B] < 1.0	[B] < 1.0	
1,2,3-Trichlorobenzene	U	2760	µg/kg	2.0	[B] < 2.0	[B] < 2.0	[B] < 2.0	[B] < 2.0	[B] < 2.0	
Methyl Tert-Butyl Ether	U	2760	µg/kg	1.0	[B] < 1.0	[B] < 1.0	[B] < 1.0	[B] < 1.0	[B] < 1.0	
N-Nitrosodimethylamine	U	2790	mg/kg	0.50	[B] < 0.50	[B] < 0.50	[B] < 0.50	[B] < 0.50	[B] < 0.50	
Phenol	U	2790	mg/kg	0.50	[B] < 0.50	[B] < 0.50	[B] < 0.50	[B] < 0.50	[B] < 0.50	
2-Chlorophenol	U	2790	mg/kg	0.50	[B] < 0.50	[B] < 0.50	[B] < 0.50	[B] < 0.50	[B] < 0.50	
Bis-(2-Chloroethyl)Ether	U	2790	mg/kg	0.50	[B] < 0.50	[B] < 0.50	[B] < 0.50	[B] < 0.50	[B] < 0.50	
1,3-Dichlorobenzene	U	2790	mg/kg	0.50	[B] < 0.50	[B] < 0.50	[B] < 0.50	[B] < 0.50	[B] < 0.50	
1,4-Dichlorobenzene	N	2790	mg/kg	0.50	[B] < 0.50	[B] < 0.50	[B] < 0.50	[B] < 0.50	[B] < 0.50	
1,2-Dichlorobenzene	U	2790	mg/kg	0.50	[B] < 0.50	[B] < 0.50	[B] < 0.50	[B] < 0.50	[B] < 0.50	
2-Methylphenol	U	2790	mg/kg	0.50	[B] < 0.50	[B] < 0.50	[B] < 0.50	[B] < 0.50	[B] < 0.50	

Results - Soil

Project: Q0269 Llantarnam 3G Pitches

Client: Quantum Geotechnic Ltd			**Chemtest Job No.:**		20-15917	20-15917	20-15917	20-15917	20-15917
Quotation No.: Q20-20396			**Chemtest Sample ID.:**		1021412	1021413	1021414	1021416	1021418
Order No.:			Client Sample Ref.:		2	1	1	1	1
			Sample Location:		WS02	WS05	WS06	WS08	WS10
			Sample Type:		SOIL	SOIL	SOIL	SOIL	SOIL
			Top Depth (m):		0.3	0.0	0.15	0.2	0.2
			Bottom Depth (m):		0.5	0.25	0.45	0.4	0.4
			Date Sampled:		05-Jun-2020	05-Jun-2020	05-Jun-2020	05-Jun-2020	05-Jun-2020
			Asbestos Lab:		COVENTRY	COVENTRY	COVENTRY	COVENTRY	COVENTRY
Determinand	**Accred.**	**SOP**	**Units**	**LOD**					
Bis(2-Chloroisopropyl)Ether	U	2790	mg/kg	0.50	[B] < 0.50	[B] < 0.50	[B] < 0.50	[B] < 0.50	[B] < 0.50
Hexachloroethane	N	2790	mg/kg	0.50	[B] < 0.50	[B] < 0.50	[B] < 0.50	[B] < 0.50	[B] < 0.50
N-Nitrosodi-n-propylamine	U	2790	mg/kg	0.50	[B] < 0.50	[B] < 0.50	[B] < 0.50	[B] < 0.50	[B] < 0.50
4-Methylphenol	U	2790	mg/kg	0.50	[B] < 0.50	[B] < 0.50	[B] < 0.50	[B] < 0.50	[B] < 0.50
Nitrobenzene	U	2790	mg/kg	0.50	[B] < 0.50	[B] < 0.50	[B] < 0.50	[B] < 0.50	[B] < 0.50
Isophorone	U	2790	mg/kg	0.50	[B] < 0.50	[B] < 0.50	[B] < 0.50	[B] < 0.50	[B] < 0.50
2-Nitrophenol	N	2790	mg/kg	0.50	[B] < 0.50	[B] < 0.50	[B] < 0.50	[B] < 0.50	[B] < 0.50
2,4-Dimethylphenol	N	2790	mg/kg	0.50	[B] < 0.50	[B] < 0.50	[B] < 0.50	[B] < 0.50	[B] < 0.50
Bis(2-Chloroethoxy)Methane	U	2790	mg/kg	0.50	[B] < 0.50	[B] < 0.50	[B] < 0.50	[B] < 0.50	[B] < 0.50
2,4-Dichlorophenol	U	2790	mg/kg	0.50	[B] < 0.50	[B] < 0.50	[B] < 0.50	[B] < 0.50	[B] < 0.50
1,2,4-Trichlorobenzene	U	2790	mg/kg	0.50	[B] < 0.50	[B] < 0.50	[B] < 0.50	[B] < 0.50	[B] < 0.50
Naphthalene	U	2790	mg/kg	0.50	[B] < 0.50	[B] < 0.50	[B] < 0.50	[B] < 0.50	[B] < 0.50
4-Chloroaniline	N	2790	mg/kg	0.50	[B] < 0.50	[B] < 0.50	[B] < 0.50	[B] < 0.50	[B] < 0.50
Hexachlorobutadiene	U	2790	mg/kg	0.50	[B] < 0.50	[B] < 0.50	[B] < 0.50	[B] < 0.50	[B] < 0.50
4-Chloro-3-Methylphenol	U	2790	mg/kg	0.50	[B] < 0.50	[B] < 0.50	[B] < 0.50	[B] < 0.50	[B] < 0.50
2-Methylnaphthalene	U	2790	mg/kg	0.50	[B] < 0.50	[B] < 0.50	[B] < 0.50	[B] < 0.50	[B] < 0.50
4-Nitrophenol	N	2790	mg/kg	0.50	[B] < 0.50	[B] < 0.50	[B] < 0.50	[B] < 0.50	[B] < 0.50
Hexachlorocyclopentadiene	N	2790	mg/kg	0.50	[B] < 0.50	[B] < 0.50	[B] < 0.50	[B] < 0.50	[B] < 0.50
2,4,6-Trichlorophenol	U	2790	mg/kg	0.50	[B] < 0.50	[B] < 0.50	[B] < 0.50	[B] < 0.50	[B] < 0.50
2,4,5-Trichlorophenol	U	2790	mg/kg	0.50	[B] < 0.50	[B] < 0.50	[B] < 0.50	[B] < 0.50	[B] < 0.50
2-Chloronaphthalene	U	2790	mg/kg	0.50	[B] < 0.50	[B] < 0.50	[B] < 0.50	[B] < 0.50	[B] < 0.50
2-Nitroaniline	U	2790	mg/kg	0.50	[B] < 0.50	[B] < 0.50	[B] < 0.50	[B] < 0.50	[B] < 0.50
Acenaphthylene	U	2790	mg/kg	0.50	[B] < 0.50	[B] < 0.50	[B] < 0.50	[B] < 0.50	[B] < 0.50
Dimethylphthalate	U	2790	mg/kg	0.50	[B] < 0.50	[B] < 0.50	[B] < 0.50	[B] < 0.50	[B] < 0.50
2,6-Dinitrotoluene	U	2790	mg/kg	0.50	[B] < 0.50	[B] < 0.50	[B] < 0.50	[B] < 0.50	[B] < 0.50
Acenaphthene	U	2790	mg/kg	0.50	[B] < 0.50	[B] < 0.50	[B] < 0.50	[B] < 0.50	[B] < 0.50
3-Nitroaniline	N	2790	mg/kg	0.50	[B] < 0.50	[B] < 0.50	[B] < 0.50	[B] < 0.50	[B] < 0.50
Dibenzofuran	U	2790	mg/kg	0.50	[B] < 0.50	[B] < 0.50	[B] < 0.50	[B] < 0.50	[B] < 0.50
4-Chlorophenylphenylether	U	2790	mg/kg	0.50	[B] < 0.50	[B] < 0.50	[B] < 0.50	[B] < 0.50	[B] < 0.50
2,4-Dinitrotoluene	U	2790	mg/kg	0.50	[B] < 0.50	[B] < 0.50	[B] < 0.50	[B] < 0.50	[B] < 0.50
Fluorene	U	2790	mg/kg	0.50	[B] < 0.50	[B] < 0.50	[B] < 0.50	[B] < 0.50	[B] < 0.50
Diethyl Phthalate	U	2790	mg/kg	0.50	[B] < 0.50	[B] < 0.50	[B] < 0.50	[B] < 0.50	[B] < 0.50
4-Nitroaniline	U	2790	mg/kg	0.50	[B] < 0.50	[B] < 0.50	[B] < 0.50	[B] < 0.50	[B] < 0.50
2-Methyl-4,6-Dinitrophenol	N	2790	mg/kg	0.50	[B] < 0.50	[B] < 0.50	[B] < 0.50	[B] < 0.50	[B] < 0.50
Azobenzene	U	2790	mg/kg	0.50	[B] < 0.50	[B] < 0.50	[B] < 0.50	[B] < 0.50	[B] < 0.50
4-Bromophenylphenyl Ether	U	2790	mg/kg	0.50	[B] < 0.50	[B] < 0.50	[B] < 0.50	[B] < 0.50	[B] < 0.50
Hexachlorobenzene	U	2790	mg/kg	0.50	[B] < 0.50	[B] < 0.50	[B] < 0.50	[B] < 0.50	[B] < 0.50

Results - Soil

Project: Q0269 Llantarnam 3G Pitches

Client: Quantum Geotechnic Ltd			**Chemtest Job No.:**		20-15917	20-15917	20-15917	20-15917	20-15917
Quotation No.: Q20-20396			**Chemtest Sample ID.:**		1021412	1021413	1021414	1021416	1021418
Order No.:			Client Sample Ref.:		2	1	1	1	1
			Sample Location:		WS02	WS05	WS06	WS08	WS10
			Sample Type:		SOIL	SOIL	SOIL	SOIL	SOIL
			Top Depth (m):		0.3	0.0	0.15	0.2	0.2
			Bottom Depth (m):		0.5	0.25	0.45	0.4	0.4
			Date Sampled:		05-Jun-2020	05-Jun-2020	05-Jun-2020	05-Jun-2020	05-Jun-2020
			Asbestos Lab:		COVENTRY	COVENTRY	COVENTRY	COVENTRY	COVENTRY
Determinand	**Accred.**	**SOP**	**Units**	**LOD**					
Pentachlorophenol	N	2790	mg/kg	0.50	[B] < 0.50	[B] < 0.50	[B] < 0.50	[B] < 0.50	[B] < 0.50
Phenanthrene	U	2790	mg/kg	0.50	[B] < 0.50	[B] < 0.50	[B] < 0.50	[B] < 0.50	[B] < 0.50
Anthracene	U	2790	mg/kg	0.50	[B] < 0.50	[B] < 0.50	[B] < 0.50	[B] < 0.50	[B] < 0.50
Carbazole	U	2790	mg/kg	0.50	[B] < 0.50	[B] < 0.50	[B] < 0.50	[B] < 0.50	[B] < 0.50
Di-N-Butyl Phthalate	U	2790	mg/kg	0.50	[B] < 0.50	[B] < 0.50	[B] < 0.50	[B] < 0.50	[B] < 0.50
Fluoranthene	U	2790	mg/kg	0.50	[B] < 0.50	[B] < 0.50	[B] < 0.50	[B] < 0.50	[B] < 0.50
Pyrene	U	2790	mg/kg	0.50	[B] < 0.50	[B] < 0.50	[B] < 0.50	[B] < 0.50	[B] < 0.50
Butylbenzyl Phthalate	U	2790	mg/kg	0.50	[B] < 0.50	[B] < 0.50	[B] < 0.50	[B] < 0.50	[B] < 0.50
Benzo[a]anthracene	U	2790	mg/kg	0.50	[B] < 0.50	[B] < 0.50	[B] < 0.50	[B] < 0.50	[B] < 0.50
Chrysene	U	2790	mg/kg	0.50	[B] < 0.50	[B] < 0.50	[B] < 0.50	[B] < 0.50	[B] < 0.50
Bis(2-Ethylhexyl)Phthalate	N	2790	mg/kg	0.50	[B] < 0.50	[B] < 0.50	[B] < 0.50	[B] < 0.50	[B] < 0.50
Di-N-Octyl Phthalate	U	2790	mg/kg	0.50	[B] < 0.50	[B] < 0.50	[B] < 0.50	[B] < 0.50	[B] < 0.50
Benzo[b]fluoranthene	U	2790	mg/kg	0.50	[B] < 0.50	[B] < 0.50	[B] < 0.50	[B] < 0.50	[B] < 0.50
Benzo[k]fluoranthene	U	2790	mg/kg	0.50	[B] < 0.50	[B] < 0.50	[B] < 0.50	[B] < 0.50	[B] < 0.50
Benzo[a]pyrene	U	2790	mg/kg	0.50	[B] < 0.50	[B] < 0.50	[B] < 0.50	[B] < 0.50	[B] < 0.50
Indeno(1,2,3-c,d)Pyrene	U	2790	mg/kg	0.50	[B] < 0.50	[B] < 0.50	[B] < 0.50	[B] < 0.50	[B] < 0.50
Dibenz(a,h)Anthracene	U	2790	mg/kg	0.50	[B] < 0.50	[B] < 0.50	[B] < 0.50	[B] < 0.50	[B] < 0.50
Benzo[g,h,i]perylene	U	2790	mg/kg	0.50	[B] < 0.50	[B] < 0.50	[B] < 0.50	[B] < 0.50	[B] < 0.50
Total Phenols	U	2920	mg/kg	0.30	< 0.30	< 0.30	< 0.30	< 0.30	< 0.30

Deviations

In accordance with UKAS Policy on Deviating Samples TPS 63. Eurofins Chemtest have a procedure to ensure 'upon receipt of each sample a competent laboratory shall assess whether the sample is suitable with regard to the requested test(s)'. This policy and the respective holding times applied, can be supplied upon request.The reason a sample is declared as deviating is detailed below. Where applicable the analysis remains UKAS/MCERTs accredited but the results may be compromised.

Sample:	Sample Ref:	Sample ID:	Sample Location:	Sampled Date:	Deviation Code(s):	Containers Received:
1021412	2		WS02	05-Jun-2020	B	Amber Glass 250ml
1021412	2		WS02	05-Jun-2020	B	Amber Glass 60ml
1021412	2		WS02	05-Jun-2020	B	Plastic Tub 500g
1021413	1		WS05	05-Jun-2020	B	Amber Glass 250ml
1021413	1		WS05	05-Jun-2020	B	Amber Glass 60ml
1021413	1		WS05	05-Jun-2020	B	Plastic Tub 500g
1021414	1		WS06	05-Jun-2020	B	Amber Glass 250ml
1021414	1		WS06	05-Jun-2020	B	Amber Glass 60ml
1021414	1		WS06	05-Jun-2020	B	Plastic Tub 500g
1021416	1		WS08	05-Jun-2020	B	Amber Glass 250ml
1021416	1		WS08	05-Jun-2020	B	Amber Glass 60ml
1021416	1		WS08	05-Jun-2020	B	Plastic Tub 500g
1021418	1		WS10	05-Jun-2020	B	Amber Glass 250ml
1021418	1		WS10	05-Jun-2020	B	Amber Glass 60ml
1021418	1		WS10	05-Jun-2020	B	Plastic Tub 500g

Deviations

In accordance with UKAS Policy on Deviating Samples TPS 63. Eurofins Chemtest have a procedure to ensure 'upon receipt of each sample a competent laboratory shall assess whether the sample is suitable with regard to the requested test(s)'. This policy and the respective holding times applied, can be supplied upon request.The reason a sample is declared as deviating is detailed below. Where applicable the analysis remains UKAS/MCERTs accredited but the results may be compromised.

Sample:	Sample Ref:	Sample ID:	Sample Location:	Sampled Date:	Deviation Code(s):	Containers Received:

Test Methods

SOP	Title	Parameters included	Method summary
1010	pH Value of Waters	pH	pH Meter
1220	Anions, Alkalinity & Ammonium in Waters	Fluoride; Chloride; Nitrite; Nitrate; Total; Oxidisable Nitrogen (TON); Sulfate; Phosphate; Alkalinity; Ammonium	Automated colorimetric analysis using 'Aquakem 600' Discrete Analyser.
1300	Cyanides & Thiocyanate in Waters	Free (or easy liberatable) Cyanide; total Cyanide; complex Cyanide; Thiocyanate	Continuous Flow Analysis.
1325	Sulphide in Waters	Sulphides	Automated colorimetric analysis by 'Aquakem 600' Discrete Analyser using N,N–dimethyl-pphenylenediamine.
1450	Metals in Waters by ICP-MS	Metals, including: Antimony; Arsenic; Barium; Beryllium; Boron; Cadmium; Chromium; Cobalt; Copper; Lead; Manganese; Mercury; Molybdenum; Nickel; Selenium; Tin; Vanadium; Zinc	Filtration of samples followed by direct determination by inductively coupled plasma mass spectrometry (ICP-MS).
1490	Hexavalent Chromium in Waters	Chromium [VI]	Automated colorimetric analysis by 'Aquakem 600' Discrete Analyser using 1,5-diphenylcarbazide.
1670	Total Petroleum Hydrocarbons (TPH) in Waters by GC-FID	TPH (C6–C40); optional carbon banding, e.g. 3-band – GRO, DRO & LRO	Pentane extraction / GC FID detection
1700	Speciated Polynuclear Aromatic Hydrocarbons (PAH) in Waters by GC-FID	Acenaphthene; Acenaphthylene; Anthracene; Benzo[a]Anthracene; Benzo[a]Pyrene; Benzo[b]Fluoranthene; Benzo[ghi]Perylene; Benzo[k]Fluoranthene; Chrysene; Dibenz[ah]Anthracene; Fluoranthene; Fluorene; Indeno[123cd]Pyrene; Naphthalene; Phenanthrene; Pyrene	Dichloromethane extraction / GC-FID (GC-FID detection is non-selective and can be subject to interference from co-eluting compounds)
1760	Volatile Organic Compounds (VOCs) in Waters by Headspace GC-MS	Volatile organic compounds, including BTEX and halogenated Aliphatic/Aromatics. (cf. USEPA Method 8260)	Automated headspace gas chromatographic (GC) analysis of water samples with mass spectrometric (MS) detection of volatile organic compounds.
1920	Phenols in Waters by HPLC	Phenolic compounds including: Phenol, Cresols, Xylenols, Trimethylphenols Note: Chlorophenols are excluded.	Determination by High Performance Liquid Chromatography (HPLC) using electrochemical detection.
2010	pH Value of Soils	pH	pH Meter
2030	Moisture and Stone Content of Soils(Requirement of MCERTS)	Moisture content	Determination of moisture content of soil as a percentage of its as received mass obtained at <37°C.
2040	Soil Description(Requirement of MCERTS)	Soil description	As received soil is described based upon BS5930
2120	Water Soluble Boron, Sulphate, Magnesium & Chromium	Boron; Sulphate; Magnesium; Chromium	Aqueous extraction / ICP-OES
2175	Total Sulphur in Soils	Total Sulphur	Determined by high temperature combustion under oxygen, using an Eltra elemental analyser.
2192	Asbestos	Asbestos	Polarised light microscopy / Gravimetry
2300	Cyanides & Thiocyanate in Soils	Free (or easy liberatable) Cyanide; total Cyanide; complex Cyanide; Thiocyanate	Allkaline extraction followed by colorimetric determination using Automated Flow Injection Analyser.
2325	Sulphide in Soils	Sulphide	Steam distillation with sulphuric acid / analysis by 'Aquakem 600' Discrete Analyser, using N,N–dimethyl-p-phenylenediamine.
2430	Total Sulphate in soils	Total Sulphate	Acid digestion followed by determination of sulphate in extract by ICP-OES.
2450	Acid Soluble Metals in Soils	Metals, including: Arsenic; Barium; Beryllium; Cadmium; Chromium; Cobalt; Copper; Lead; Manganese; Mercury; Molybdenum; Nickel; Selenium; Vanadium; Zinc	Acid digestion followed by determination of metals in extract by ICP-MS.

Test Methods

SOP	Title	Parameters included	Method summary
2490	Hexavalent Chromium in Soils	Chromium [VI]	Soil extracts are prepared by extracting dried and ground soil samples into boiling water. Chromium [VI] is determined by 'Aquakem 600' Discrete Analyser using 1,5-diphenylcarbazide.
2625	Total Organic Carbon in Soils	Total organic Carbon (TOC)	Determined by high temperature combustion under oxygen, using an Eltra elemental analyser.
2670	Total Petroleum Hydrocarbons (TPH) in Soils by GC-FID	TPH (C6–C40); optional carbon banding, e.g. 3-band – GRO, DRO & LRO*TPH C8–C40	Dichloromethane extraction / GC-FID
2700	Speciated Polynuclear Aromatic Hydrocarbons (PAH) in Soil by GC-FID	Acenaphthene; Acenaphthylene; Anthracene; Benzo[a]Anthracene; Benzo[a]Pyrene; Benzo[b]Fluoranthene; Benzo[ghi]Perylene; Benzo[k]Fluoranthene; Chrysene; Dibenz[ah]Anthracene; Fluoranthene; Fluorene; Indeno[123cd]Pyrene; Naphthalene; Phenanthrene; Pyrene	Dichloromethane extraction / GC-FID (GC-FID detection is non-selective and can be subject to interference from co-eluting compounds)
2760	Volatile Organic Compounds (VOCs) in Soils by Headspace GC-MS	Volatile organic compounds, including BTEX and halogenated Aliphatic/Aromatics.(cf. USEPA Method 8260)*please refer to UKAS schedule	Automated headspace gas chromatographic (GC) analysis of a soil sample, as received, with mass spectrometric (MS) detection of volatile organic compounds.
2790	Semi-Volatile Organic Compounds (SVOCs) in Soils by GC-MS	Semi-volatile organic compounds(cf. USEPA Method 8270)	Acetone/Hexane extraction / GC-MS
2920	Phenols in Soils by HPLC	Phenolic compounds including Resorcinol, Phenol, Methylphenols, Dimethylphenols, 1-Naphthol and TrimethylphenolsNote: chlorophenols are excluded.	60:40 methanol/water mixture extraction, followed by HPLC determination using electrochemical detection.
640	Characterisation of Waste (Leaching C10)	Waste material including soil, sludges and granular waste	ComplianceTest for Leaching of Granular Waste Material and Sludge

Report Information

Key

U	UKAS accredited
M	MCERTS and UKAS accredited
N	Unaccredited
S	This analysis has been subcontracted to a UKAS accredited laboratory that is accredited for this analysis
SN	This analysis has been subcontracted to a UKAS accredited laboratory that is not accredited for this analysis
T	This analysis has been subcontracted to an unaccredited laboratory
I/S	Insufficient Sample
U/S	Unsuitable Sample
N/E	not evaluated
<	"less than"
>	"greater than"

Comments or interpretations are beyond the scope of UKAS accreditation
The results relate only to the items tested
Uncertainty of measurement for the determinands tested are available upon request
None of the results in this report have been recovery corrected
All results are expressed on a dry weight basis
The following tests were analysed on samples as received and the results subsequently corrected to a dry weight basis TPH, BTEX, VOCs, SVOCs, PCBs, Phenols
For all other tests the samples were dried at < 37°C prior to analysis
All Asbestos testing is performed at the indicated laboratory
Issue numbers are sequential starting with 1 all subsequent reports are incremented by 1

Sample Deviation Codes

A - Date of sampling not supplied
B - Sample age exceeds stability time (sampling to extraction)
C - Sample not received in appropriate containers
D - Broken Container
E - Insufficient Sample (Applies to LOI in Trommel Fines Only)

Sample Retention and Disposal

All soil samples will be retained for a period of 45 days from the date of receipt
All water samples will be retained for 14 days from the date of receipt
Charges may apply to extended sample storage

If you require extended retention of samples, please email your requirements to:
customerservices@chemtest.com

Chemtest Ltd.
Depot Road
Newmarket
CB8 0AL
Tel: 01638 606070
Email: info@chemtest.com

Final Report

Report No.:	20-15137-1		
Initial Date of Issue:	30-Jun-2020		
Client	Quantum Geotechnic Ltd		
Client Address:	Plas Newydd Llanedi Pontarddulais Swansea SA4 0FQ		
Contact(s):	Phil Darby		
Project	Q0269 LLantarnam 3G Pitch		
Quotation No.:	Q20-20396	**Date Received:**	16-Jun-2020
Order No.:		**Date Instructed:**	23-Jun-2020
No. of Samples:	2		
Turnaround (Wkdays):	5	**Results Due:**	29-Jun-2020
Date Approved:	30-Jun-2020		
Approved By:			
Details:	Glynn Harvey, Technical Manager		

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Results - Water

Project: Q0269 LLantarnam 3G Pitch

Client: Quantum Geotechnic Ltd			**Chemtest Job No.:**		20-15137	20-15137
Quotation No.: Q20-20396			**Chemtest Sample ID.:**		1017806	1017807
Order No.:			Client Sample Ref.:		EW1	EW1
			Sample Location:		WS1	WS15
			Sample Type:		WATER	WATER
			Top Depth (m):		1.38	1.81
			Date Sampled:		15-Jun-2020	15-Jun-2020
Determinand	**Accred.**	**SOP**	**Units**	**LOD**		
pH	U	1010		N/A	8.6	8.2
Biochemical Oxygen Demand	N	1090	mg O2/l	4.0	[B] < 4.0	[B] < 4.0
Chemical Oxygen Demand	U	1100	mg O2/l	10	16	13
Sulphur	N	1220	mg/l	1.0	8.7	< 1.0
Sulphate	U	1220	mg/l	1.0	26	2.4
Cyanide (Total)	U	1300	mg/l	0.050	< 0.050	< 0.050
Thiocyanate	U	1300	mg/l	0.50	< 0.50	< 0.50
Sulphide	U	1325	mg/l	0.050	[B] < 0.050	[B] < 0.050
Total Hardness as CaCO3	U	1270	mg/l	15	120	89
Arsenic (Dissolved)	U	1450	µg/l	1.0	< 1.0	3.8
Boron (Dissolved)	U	1450	µg/l	20	24	< 20
Barium (Dissolved)	U	1450	µg/l	5.0	71	230
Beryllium (Dissolved)	U	1450	µg/l	1.0	< 1.0	< 1.0
Cadmium (Dissolved)	U	1450	µg/l	0.080	< 0.080	< 0.080
Chromium (Dissolved)	U	1450	µg/l	1.0	3.5	< 1.0
Copper (Dissolved)	U	1450	µg/l	1.0	1.9	< 1.0
Iron (Dissolved)	N	1450	µg/l	20	86	11000
Mercury (Dissolved)	U	1450	µg/l	0.50	< 0.50	< 0.50
Nickel (Dissolved)	U	1450	µg/l	1.0	3.9	6.3
Lead (Dissolved)	U	1450	µg/l	1.0	< 1.0	< 1.0
Selenium (Dissolved)	U	1450	µg/l	1.0	< 1.0	< 1.0
Vanadium (Dissolved)	U	1450	µg/l	1.0	< 1.0	< 1.0
Zinc (Dissolved)	U	1450	µg/l	1.0	24	9.0
Chromium (Hexavalent)	U	1490	µg/l	20	< 20	< 20
Dissolved Organic Carbon	U	1610	mg/l	2.0	4.3	4.9
Total Organic Carbon	U	1610	mg/l	2.0	4.6	5.2
TPH >C6-C10	N	1670	µg/l	0.10	< 0.10	< 0.10
TPH >C10-C21	N	1670	µg/l	0.10	< 0.10	< 0.10
TPH >C21-C40	N	1670	µg/l	0.10	< 0.10	< 0.10
Total TPH >C6-C40	U	1670	µg/l	10	< 10	< 10
Naphthalene	U	1700	µg/l	0.10	< 0.10	< 0.10
Acenaphthylene	U	1700	µg/l	0.10	< 0.10	< 0.10
Acenaphthene	U	1700	µg/l	0.10	< 0.10	< 0.10
Fluorene	U	1700	µg/l	0.10	< 0.10	< 0.10
Phenanthrene	U	1700	µg/l	0.10	< 0.10	< 0.10
Anthracene	U	1700	µg/l	0.10	< 0.10	< 0.10
Fluoranthene	U	1700	µg/l	0.10	< 0.10	< 0.10
Pyrene	U	1700	µg/l	0.10	< 0.10	< 0.10
Benzo[a]anthracene	U	1700	µg/l	0.10	< 0.10	< 0.10

Chemtest
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Results - Water

Project: Q0269 LLantarnam 3G Pitch

Client: Quantum Geotechnic Ltd			**Chemtest Job No.:**		20-15137	20-15137
Quotation No.: Q20-20396			**Chemtest Sample ID.:**		1017806	1017807
Order No.:			Client Sample Ref.:		EW1	EW1
			Sample Location:		WS1	WS15
			Sample Type:		WATER	WATER
			Top Depth (m):		1.38	1.81
			Date Sampled:		15-Jun-2020	15-Jun-2020
Determinand	**Accred.**	**SOP**	**Units**	**LOD**		
Chrysene	N	1700	µg/l	0.10	< 0.10	< 0.10
Benzo[b]fluoranthene	U	1700	µg/l	0.10	< 0.10	< 0.10
Benzo[k]fluoranthene	U	1700	µg/l	0.10	< 0.10	< 0.10
Benzo[a]pyrene	U	1700	µg/l	0.10	< 0.10	< 0.10
Indeno(1,2,3-c,d)Pyrene	U	1700	µg/l	0.10	< 0.10	< 0.10
Dibenz(a,h)Anthracene	U	1700	µg/l	0.10	< 0.10	< 0.10
Benzo[g,h,i]perylene	U	1700	µg/l	0.10	< 0.10	< 0.10
Total Of 16 PAH's	N	1700	µg/l	2.0	< 2.0	< 2.0
Dichlorodifluoromethane	U	1760	µg/l	1.0	< 1.0	< 1.0
Chloromethane	U	1760	µg/l	1.0	< 1.0	< 1.0
Vinyl Chloride	N	1760	µg/l	1.0	< 1.0	< 1.0
Bromomethane	U	1760	µg/l	5.0	< 5.0	< 5.0
Chloroethane	U	1760	µg/l	2.0	< 2.0	< 2.0
Trichlorofluoromethane	U	1760	µg/l	1.0	< 1.0	< 1.0
1,1-Dichloroethene	U	1760	µg/l	1.0	< 1.0	< 1.0
Trans 1,2-Dichloroethene	U	1760	µg/l	1.0	< 1.0	< 1.0
1,1-Dichloroethane	U	1760	µg/l	1.0	< 1.0	< 1.0
cis 1,2-Dichloroethene	U	1760	µg/l	1.0	< 1.0	< 1.0
Bromochloromethane	U	1760	µg/l	5.0	< 5.0	< 5.0
Trichloromethane	U	1760	µg/l	1.0	< 1.0	< 1.0
1,1,1-Trichloroethane	U	1760	µg/l	1.0	< 1.0	< 1.0
Tetrachloromethane	U	1760	µg/l	1.0	< 1.0	< 1.0
1,1-Dichloropropene	U	1760	µg/l	1.0	< 1.0	< 1.0
Benzene	U	1760	µg/l	1.0	< 1.0	< 1.0
1,2-Dichloroethane	U	1760	µg/l	2.0	< 2.0	< 2.0
Trichloroethene	N	1760	µg/l	1.0	< 1.0	< 1.0
1,2-Dichloropropane	U	1760	µg/l	1.0	< 1.0	< 1.0
Dibromomethane	U	1760	µg/l	10	< 10	< 10
Bromodichloromethane	U	1760	µg/l	5.0	< 5.0	< 5.0
cis-1,3-Dichloropropene	N	1760	µg/l	10	< 10	< 10
Toluene	U	1760	µg/l	1.0	< 1.0	< 1.0
Trans-1,3-Dichloropropene	N	1760	µg/l	10	< 10	< 10
1,1,2-Trichloroethane	U	1760	µg/l	10	< 10	< 10
Tetrachloroethene	U	1760	µg/l	1.0	< 1.0	< 1.0
1,3-Dichloropropane	U	1760	µg/l	2.0	< 2.0	< 2.0
Dibromochloromethane	U	1760	µg/l	10	< 10	< 10
1,2-Dibromoethane	U	1760	µg/l	5.0	< 5.0	< 5.0
Chlorobenzene	N	1760	µg/l	1.0	< 1.0	< 1.0
1,1,1,2-Tetrachloroethane	U	1760	µg/l	2.0	< 2.0	< 2.0

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Results - Water

Project: Q0269 LLantarnam 3G Pitch

Client: Quantum Geotechnic Ltd			**Chemtest Job No.:**		20-15137	20-15137
Quotation No.: Q20-20396			**Chemtest Sample ID.:**		1017806	1017807
Order No.:			Client Sample Ref.:		EW1	EW1
			Sample Location:		WS1	WS15
			Sample Type:		WATER	WATER
			Top Depth (m):		1.38	1.81
			Date Sampled:		15-Jun-2020	15-Jun-2020
Determinand	**Accred.**	**SOP**	**Units**	**LOD**		
Ethylbenzene	U	1760	µg/l	1.0	< 1.0	< 1.0
m & p-Xylene	U	1760	µg/l	1.0	< 1.0	< 1.0
o-Xylene	U	1760	µg/l	1.0	< 1.0	< 1.0
Styrene	U	1760	µg/l	1.0	< 1.0	< 1.0
Tribromomethane	U	1760	µg/l	1.0	< 1.0	< 1.0
Isopropylbenzene	U	1760	µg/l	1.0	< 1.0	< 1.0
Bromobenzene	U	1760	µg/l	1.0	< 1.0	< 1.0
1,2,3-Trichloropropane	N	1760	µg/l	50	< 50	< 50
N-Propylbenzene	U	1760	µg/l	1.0	< 1.0	< 1.0
2-Chlorotoluene	U	1760	µg/l	1.0	< 1.0	< 1.0
1,3,5-Trimethylbenzene	U	1760	µg/l	1.0	< 1.0	< 1.0
4-Chlorotoluene	U	1760	µg/l	1.0	< 1.0	< 1.0
Tert-Butylbenzene	U	1760	µg/l	1.0	< 1.0	< 1.0
1,2,4-Trimethylbenzene	U	1760	µg/l	1.0	< 1.0	< 1.0
Sec-Butylbenzene	U	1760	µg/l	1.0	< 1.0	< 1.0
1,3-Dichlorobenzene	N	1760	µg/l	1.0	< 1.0	< 1.0
4-Isopropyltoluene	U	1760	µg/l	1.0	< 1.0	< 1.0
1,4-Dichlorobenzene	U	1760	µg/l	1.0	< 1.0	< 1.0
N-Butylbenzene	U	1760	µg/l	1.0	< 1.0	< 1.0
1,2-Dichlorobenzene	U	1760	µg/l	1.0	< 1.0	< 1.0
1,2-Dibromo-3-Chloropropane	U	1760	µg/l	50	< 50	< 50
1,2,4-Trichlorobenzene	U	1760	µg/l	1.0	< 1.0	< 1.0
Hexachlorobutadiene	U	1760	µg/l	1.0	< 1.0	< 1.0
1,2,3-Trichlorobenzene	U	1760	µg/l	2.0	< 2.0	< 2.0
Methyl Tert-Butyl Ether	N	1760	µg/l	1.0	< 1.0	< 1.0
N-Nitrosodimethylamine	N	1790	µg/l	0.50	< 0.50	< 0.50
Phenol	N	1790	µg/l	0.50	< 0.50	< 0.50
2-Chlorophenol	N	1790	µg/l	0.50	< 0.50	< 0.50
Bis-(2-Chloroethyl)Ether	N	1790	µg/l	0.50	< 0.50	< 0.50
1,3-Dichlorobenzene	N	1790	µg/l	0.50	< 0.50	< 0.50
1,4-Dichlorobenzene	N	1790	µg/l	0.50	< 0.50	< 0.50
1,2-Dichlorobenzene	N	1790	µg/l	0.50	< 0.50	< 0.50
2-Methylphenol (o-Cresol)	N	1790	µg/l	0.50	< 0.50	< 0.50
Bis(2-Chloroisopropyl)Ether	N	1790	µg/l	0.50	< 0.50	< 0.50
Hexachloroethane	N	1790	µg/l	0.50	< 0.50	< 0.50
N-Nitrosodi-n-propylamine	N	1790	µg/l	0.50	< 0.50	< 0.50
4-Methylphenol	N	1790	µg/l	0.50	< 0.50	< 0.50
Nitrobenzene	N	1790	µg/l	0.50	< 0.50	< 0.50
Isophorone	N	1790	µg/l	0.50	< 0.50	< 0.50

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Results - Water

Project: Q0269 LLantarnam 3G Pitch

Client: Quantum Geotechnic Ltd			**Chemtest Job No.:**		20-15137	20-15137
Quotation No.: Q20-20396			**Chemtest Sample ID.:**		1017806	1017807
Order No.:			Client Sample Ref.:		EW1	EW1
			Sample Location:		WS1	WS15
			Sample Type:		WATER	WATER
			Top Depth (m):		1.38	1.81
			Date Sampled:		15-Jun-2020	15-Jun-2020
Determinand	**Accred.**	**SOP**	**Units**	**LOD**		
2-Nitrophenol	N	1790	µg/l	0.50	< 0.50	< 0.50
2,4-Dimethylphenol	N	1790	µg/l	0.50	< 0.50	< 0.50
Bis(2-Chloroethoxy)Methane	N	1790	µg/l	0.50	< 0.50	< 0.50
2,4-Dichlorophenol	N	1790	µg/l	0.50	< 0.50	< 0.50
1,2,4-Trichlorobenzene	N	1790	µg/l	0.50	< 0.50	< 0.50
Naphthalene	N	1790	µg/l	0.50	< 0.50	< 0.50
4-Chloroaniline	N	1790	µg/l	0.50	< 0.50	< 0.50
Hexachlorobutadiene	N	1790	µg/l	0.50	< 0.50	< 0.50
4-Chloro-3-Methylphenol	N	1790	µg/l	0.50	< 0.50	< 0.50
2-Methylnaphthalene	N	1790	µg/l	0.50	< 0.50	< 0.50
Hexachlorocyclopentadiene	N	1790	µg/l	0.50	< 0.50	< 0.50
2,4,6-Trichlorophenol	N	1790	µg/l	0.50	< 0.50	< 0.50
2,4,5-Trichlorophenol	N	1790	µg/l	0.50	< 0.50	< 0.50
2-Chloronaphthalene	N	1790	µg/l	0.50	< 0.50	< 0.50
2-Nitroaniline	N	1790	µg/l	0.50	< 0.50	< 0.50
Acenaphthylene	N	1790	µg/l	0.50	< 0.50	< 0.50
Dimethylphthalate	N	1790	µg/l	0.50	< 0.50	< 0.50
2,6-Dinitrotoluene	N	1790	µg/l	0.50	< 0.50	< 0.50
Acenaphthene	N	1790	µg/l	0.50	< 0.50	< 0.50
3-Nitroaniline	N	1790	µg/l	0.50	< 0.50	< 0.50
Dibenzofuran	N	1790	µg/l	0.50	< 0.50	< 0.50
4-Chlorophenylphenylether	N	1790	µg/l	0.50	< 0.50	< 0.50
2,4-Dinitrotoluene	N	1790	µg/l	0.50	< 0.50	< 0.50
Fluorene	N	1790	µg/l	0.50	< 0.50	< 0.50
Diethyl Phthalate	N	1790	µg/l	0.50	< 0.50	< 0.50
4-Nitroaniline	N	1790	µg/l	0.50	< 0.50	< 0.50
2-Methyl-4,6-Dinitrophenol	N	1790	µg/l	0.50	< 0.50	< 0.50
Azobenzene	N	1790	µg/l	0.50	< 0.50	< 0.50
4-Bromophenylphenyl Ether	N	1790	µg/l	0.50	< 0.50	< 0.50
Hexachlorobenzene	N	1790	µg/l	0.50	< 0.50	< 0.50
Pentachlorophenol	N	1790	µg/l	0.50	< 0.50	< 0.50
Phenanthrene	N	1790	µg/l	0.50	< 0.50	< 0.50
Anthracene	N	1790	µg/l	0.50	< 0.50	< 0.50
Carbazole	N	1790	µg/l	0.50	< 0.50	< 0.50
Di-N-Butyl Phthalate	N	1790	µg/l	0.50	< 0.50	< 0.50
Fluoranthene	N	1790	µg/l	0.50	< 0.50	< 0.50
Pyrene	N	1790	µg/l	0.50	< 0.50	< 0.50
Butylbenzyl Phthalate	N	1790	µg/l	0.50	< 0.50	< 0.50
Benzo[a]anthracene	N	1790	µg/l	0.50	< 0.50	< 0.50

Chemtest
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Results - Water

Project: Q0269 LLantarnam 3G Pitch

Client: Quantum Geotechnic Ltd			**Chemtest Job No.:**		20-15137	20-15137
Quotation No.: Q20-20396			**Chemtest Sample ID.:**		1017806	1017807
Order No.:			Client Sample Ref.:		EW1	EW1
			Sample Location:		WS1	WS15
			Sample Type:		WATER	WATER
			Top Depth (m):		1.38	1.81
			Date Sampled:		15-Jun-2020	15-Jun-2020
Determinand	**Accred.**	**SOP**	**Units**	**LOD**		
Chrysene	N	1790	µg/l	0.50	< 0.50	< 0.50
Bis(2-Ethylhexyl)Phthalate	N	1790	µg/l	0.50	< 0.50	< 0.50
Di-N-Octyl Phthalate	N	1790	µg/l	0.50	< 0.50	< 0.50
Benzo[b]fluoranthene	N	1790	µg/l	0.50	< 0.50	< 0.50
Benzo[k]fluoranthene	N	1790	µg/l	0.50	< 0.50	< 0.50
Benzo[a]pyrene	N	1790	µg/l	0.50	< 0.50	< 0.50
Indeno(1,2,3-c,d)Pyrene	N	1790	µg/l	0.50	< 0.50	< 0.50
Dibenz(a,h)Anthracene	N	1790	µg/l	0.50	< 0.50	< 0.50
Benzo[g,h,i]perylene	N	1790	µg/l	0.50	< 0.50	< 0.50
4-Nitrophenol	N	1790	µg/l	0.50	< 0.50	< 0.50
Total Phenols	U	1920	mg/l	0.030	[B] < 0.030	[B] < 0.030

Deviations

In accordance with UKAS Policy on Deviating Samples TPS 63. Chemtest have a procedure to ensure 'upon receipt of each sample a competent laboratory shall assess whether the sample is suitable with regard to the requested test(s)'. This policy and the respective holding times applied, can be supplied upon request.The reason a sample is declared as deviating is detailed below. Where applicable the analysis remains UKAS/MCERTs accredited but the results may be compromised.

Sample:	Sample Ref:	Sample ID:	Sample Location:	Sampled Date:	Deviation Code(s):	Containers Received:
1017806	EW1		WS1	15-Jun-2020	B	Coloured Winchester 1000ml
1017806	EW1		WS1	15-Jun-2020	B	EPA Vial 40ml
1017806	EW1		WS1	15-Jun-2020	B	Plastic Bottle 1000ml
1017807	EW1		WS15	15-Jun-2020	B	Coloured Winchester 1000ml
1017807	EW1		WS15	15-Jun-2020	B	EPA Vial 40ml
1017807	EW1		WS15	15-Jun-2020	B	Plastic Bottle 1000ml

Test Methods

SOP	Title	Parameters included	Method summary
1010	pH Value of Waters	pH	pH Meter
1090	Biochemical Oxygen Demand	Biochemical Oxygen demand (BOD)	Colorimetric determination of dissolved oxygen in seeded sample after 5 days incubation at 20°C.
1100	Chemical Oxygen Demand	Chemical Oxygen demand (COD)	Dichromate oxidation of organic matter in sample followed by colorimetric determination of residual Cr[VI].
1220	Anions, Alkalinity & Ammonium in Waters	Fluoride; Chloride; Nitrite; Nitrate; Total; Oxidisable Nitrogen (TON); Sulfate; Phosphate; Alkalinity; Ammonium	Automated colorimetric analysis using 'Aquakem 600' Discrete Analyser.
1270	Total Hardness of Waters	Total hardness	Calculation applied to calcium and magnesium results, expressed as mg l-1 CaCO3 equivalent.
1300	Cyanides & Thiocyanate in Waters	Free (or easy liberatable) Cyanide; total Cyanide; complex Cyanide; Thiocyanate	Continuous Flow Analysis.
1325	Sulphide in Waters	Sulphides	Automated colorimetric analysis by 'Aquakem 600' Discrete Analyser using N,N–dimethyl-pphenylenediamine.
1415	Cations in Waters by ICP-MS	Sodium; Potassium; Calcium; Magnesium	Direct determination by inductively coupled plasma - mass spectrometry (ICP-MS).
1450	Metals in Waters by ICP-MS	Metals, including: Antimony; Arsenic; Barium; Beryllium; Boron; Cadmium; Chromium; Cobalt; Copper; Lead; Manganese; Mercury; Molybdenum; Nickel; Selenium; Tin; Vanadium; Zinc	Filtration of samples followed by direct determination by inductively coupled plasma mass spectrometry (ICP-MS).
1490	Hexavalent Chromium in Waters	Chromium [VI]	Automated colorimetric analysis by 'Aquakem 600' Discrete Analyser using 1,5-diphenylcarbazide.
1610	Total/Dissolved Organic Carbon in Waters	Organic Carbon	TOC Analyser using Catalytic Oxidation
1670	Total Petroleum Hydrocarbons (TPH) in Waters by GC-FID	TPH (C6–C40); optional carbon banding, e.g. 3-band – GRO, DRO & LRO	Pentane extraction / GC FID detection
1700	Speciated Polynuclear Aromatic Hydrocarbons (PAH) in Waters by GC-FID	Acenaphthene; Acenaphthylene; Anthracene; Benzo[a]Anthracene; Benzo[a]Pyrene; Benzo[b]Fluoranthene; Benzo[ghi]Perylene; Benzo[k]Fluoranthene; Chrysene; Dibenz[ah]Anthracene; Fluoranthene; Fluorene; Indeno[123cd]Pyrene; Naphthalene; Phenanthrene; Pyrene	Dichloromethane extraction / GC-FID (GC-FID detection is non-selective and can be subject to interference from co-eluting compounds)
1760	Volatile Organic Compounds (VOCs) in Waters by Headspace GC-MS	Volatile organic compounds, including BTEX and halogenated Aliphatic/Aromatics. (cf. USEPA Method 8260)	Automated headspace gas chromatographic (GC) analysis of water samples with mass spectrometric (MS) detection of volatile organic compounds.
1790	Semi-Volatile Organic Compounds (SVOCs) in Waters by GC-MS	Semi-volatile organic compounds	Solvent extraction / GCMS detection
1920	Phenols in Waters by HPLC	Phenolic compounds including: Phenol, Cresols, Xylenols, Trimethylphenols Note: Chlorophenols are excluded.	Determination by High Performance Liquid Chromatography (HPLC) using electrochemical detection.

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Report Information

Key

U	UKAS accredited
M	MCERTS and UKAS accredited
N	Unaccredited
S	This analysis has been subcontracted to a UKAS accredited laboratory that is accredited for this analysis
SN	This analysis has been subcontracted to a UKAS accredited laboratory that is not accredited for this analysis
T	This analysis has been subcontracted to an unaccredited laboratory
I/S	Insufficient Sample
U/S	Unsuitable Sample
N/E	not evaluated
<	"less than"
>	"greater than"

Comments or interpretations are beyond the scope of UKAS accreditation
The results relate only to the items tested
Uncertainty of measurement for the determinands tested are available upon request
None of the results in this report have been recovery corrected
All results are expressed on a dry weight basis
The following tests were analysed on samples as received and the results subsequently corrected to a dry weight basis TPH, BTEX, VOCs, SVOCs, PCBs, Phenols
For all other tests the samples were dried at < 37°C prior to analysis
All Asbestos testing is performed at the indicated laboratory
Issue numbers are sequential starting with 1 all subsequent reports are incremented by 1

Sample Deviation Codes

A - Date of sampling not supplied
B - Sample age exceeds stability time (sampling to extraction)
C - Sample not received in appropriate containers
D - Broken Container
E - Insufficient Sample (Applies to LOI in Trommel Fines Only)

Sample Retention and Disposal

All soil samples will be retained for a period of 45 days from the date of receipt
All water samples will be retained for 14 days from the date of receipt
Charges may apply to extended sample storage

If you require extended retention of samples, please email your requirements to:
customerservices@chemtest.com

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Chemtest Ltd.
Depot Road
Newmarket
CB8 0AL
Tel: 01638 606070
Email: info@chemtest.com

Final Report

Report No.:	20-14402-1 20-14402-1		
Initial Date of Issue:	22/Jun/2020 22/Jun/2020		
Client	Quantum Geotechnic Ltd Quantum Geotechnic Ltd		
Client Address:	Plas Newydd Llanedi Pontarddulais Swansea SA4 0FQ Plas Newydd Llanedi Pontarddulais Swansea SA4 0FQ		
Contact(s):	Phil Darby Phil Darby		
Project	Q0269 Llantarnam 3G Pitch Q0269 Llantarnam School		
Quotation No.:	Q20-20396 Q20-20396	**Date Received:**	09/Jun/2020 09
Order No.:		**Date Instructed:**	16/Jun/2020 16
No. of Samples:	6 6		
Turnaround (Wkdays):	5 5	**Results Due:**	22/Jun/2020 22
Date Approved:	22/Jun/2020 22/Jun/2020		

Approved By:

Details: Glynn Harvey, Technical Manager

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Results - Soil

Project: Q0269 Llantarnam 3G Pitch

Client: Quantum Geotechnic Ltd				**Chemtest Job No.:**	20-14402	20-14402	20-14402	20-14402	20-14402	20-14402
Quotation No.: Q20-20396				**Chemtest Sample ID.:**	1014479	1014480	1014482	1014487	1014492	1017768
Order No.:				Client Sample Ref.:	1	1	2	1	2	1
				Sample Location:	HP17	HP03	HP05	HP01	HP18	HP05
				Sample Type:	SOIL	SOIL	SOIL	SOIL	SOIL	SOIL
				Top Depth (m):	0.4	0.4	0.8	0.5	1.0	0.3
				Date Sampled:	04-Jun-2020	03-Jun-2020	04-Jun-2020	03-Jun-2020	03-Jun-2020	12-Jun-2020
				Asbestos Lab:	COVENTRY	COVENTRY				
Determinand	**Accred.**	**SOP**	**Units**	**LOD**						
ACM Type	U	2192		N/A	-	-				
Asbestos Identification	U	2192	%	0.001	No Asbestos Detected	No Asbestos Detected				
ACM Detection Stage	U	2192		N/A	-	-				
Moisture	N	2030	%	0.020	10	10	12	11	13	9.1
Soil Colour	N	2040		N/A		Brown	Brown	Brown	Brown	Brown
Other Material	N	2040		N/A		Stones	Stones	Stones	Stones	Stones and Roots
Soil Texture	N	2040		N/A		Sand	Sand	Sand	Sand	Sand
pH	M	2010		4.0	7.6	7.1				
pH (2.5:1)	N	2010		4.0		7.1	7.4	7.3	7.3	6.9
Boron (Hot Water Soluble)	M	2120	mg/kg	0.40	0.42	< 0.40				
Sulphate (2:1 Water Soluble) as SO4	M	2120	g/l	0.010	0.19	0.10	0.091	0.097	0.085	< 0.010
Sulphate (2:1 Extract)	M	2120	mg/kg	20		200	180	190	170	< 20
Total Sulphur	M	2175	%	0.010	0.086	0.070	0.043	0.045	0.045	0.026
Cyanide (Total)	M	2300	mg/kg	0.50	17	12				
Thiocyanate	M	2300	mg/kg	5.0	10	9.3				
Sulphide (Easily Liberatable)	N	2325	mg/kg	0.50	56	21				
Sulphate (Acid Soluble)	M	2430	%	0.010		0.093	0.061	0.052	0.054	0.027
Iron (Available)	N	2430	mg/kg	20.0	540	410				
Arsenic	M	2450	mg/kg	1.0	9.2	6.6				
Barium	M	2450	mg/kg	10	140	150				
Beryllium	U	2450	mg/kg	1.0	1.4	< 1.0				
Cadmium	M	2450	mg/kg	0.10	0.21	0.12				
Chromium	M	2450	mg/kg	1.0	25	19				
Copper	M	2450	mg/kg	0.50	18	14				
Mercury	M	2450	mg/kg	0.10	0.13	< 0.10				
Nickel	M	2450	mg/kg	0.50	26	21				
Selenium	M	2450	mg/kg	0.20	0.44	0.53				
Vanadium	U	2450	mg/kg	5.0	39	31				
Zinc	M	2450	mg/kg	0.50	73	55				
Chromium (Hexavalent)	N	2490	mg/kg	0.50	< 0.50	< 0.50				
Organic Matter	M	2625	%	0.40	2.4	1.7				
TPH >C6-C10	N	2670	mg/kg	1.0	< 1.0	< 1.0				
TPH >C10-C21	N	2670	mg/kg	1.0	< 1.0	< 1.0				
TPH >C21-C40	N	2670	mg/kg	1.0	< 1.0	< 1.0				
Total TPH >C6-C40	M	2670	mg/kg	10	< 10	< 10				
Naphthalene	M	2700	mg/kg	0.10	0.52	0.58				

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Results - Soil

Project: Q0269 Llantarnam 3G Pitch

Client: Quantum Geotechnic Ltd			**Chemtest Job No.:**		20-14402	20-14402	20-14402	20-14402	20-14402	20-14402
Quotation No.: Q20-20396			**Chemtest Sample ID.:**		1014479	1014480	1014482	1014487	1014492	1017768
Order No.:			Client Sample Ref.:		1	1	2	1	2	1
			Sample Location:		HP17	HP03	HP05	HP01	HP18	HP05
			Sample Type:		SOIL	SOIL	SOIL	SOIL	SOIL	SOIL
			Top Depth (m):		0.4	0.4	0.8	0.5	1.0	0.3
			Date Sampled:		04-Jun-2020	03-Jun-2020	04-Jun-2020	03-Jun-2020	03-Jun-2020	12-Jun-2020
			Asbestos Lab:		COVENTRY	COVENTRY				
Determinand	**Accred.**	**SOP**	**Units**	**LOD**						
Acenaphthylene	M	2700	mg/kg	0.10	1.1	0.81				
Acenaphthene	M	2700	mg/kg	0.10	0.64	0.55				
Fluorene	M	2700	mg/kg	0.10	1.3	1.0				
Phenanthrene	M	2700	mg/kg	0.10	5.4	4.2				
Anthracene	M	2700	mg/kg	0.10	2.0	1.4				
Fluoranthene	M	2700	mg/kg	0.10	8.3	5.4				
Pyrene	M	2700	mg/kg	0.10	8.1	5.1				
Benzo[a]anthracene	M	2700	mg/kg	0.10	3.6	2.1				
Chrysene	M	2700	mg/kg	0.10	3.6	2.0				
Benzo[b]fluoranthene	M	2700	mg/kg	0.10	5.8	3.2				
Benzo[k]fluoranthene	M	2700	mg/kg	0.10	2.3	1.3				
Benzo[a]pyrene	M	2700	mg/kg	0.10	4.5	2.1				
Indeno(1,2,3-c,d)Pyrene	M	2700	mg/kg	0.10	3.8	1.9				
Dibenz(a,h)Anthracene	M	2700	mg/kg	0.10	0.91	0.57				
Benzo[g,h,i]perylene	M	2700	mg/kg	0.10	4.1	2.2				
Total Of 16 PAH's	M	2700	mg/kg	2.0	56	34				
Dichlorodifluoromethane	U	2760	µg/kg	1.0	< 1.0	< 1.0				
Chloromethane	M	2760	µg/kg	1.0	< 1.0	< 1.0				
Vinyl Chloride	M	2760	µg/kg	1.0	< 1.0	< 1.0				
Bromomethane	M	2760	µg/kg	20	< 20	< 20				
Chloroethane	U	2760	µg/kg	2.0	< 2.0	< 2.0				
Trichlorofluoromethane	M	2760	µg/kg	1.0	< 1.0	< 1.0				
1,1-Dichloroethene	M	2760	mg/kg	1.0	< 1.0	< 1.0				
Trans 1,2-Dichloroethene	M	2760	mg/kg	1.0	< 1.0	< 1.0				
1,1-Dichloroethane	M	2760	µg/kg	1.0	< 1.0	< 1.0				
cis 1,2-Dichloroethene	M	2760	µg/kg	1.0	< 1.0	< 1.0				
Bromochloromethane	U	2760	µg/kg	5.0	< 5.0	< 5.0				
Trichloromethane	M	2760	µg/kg	1.0	< 1.0	< 1.0				
1,1,1-Trichloroethane	M	2760	µg/kg	1.0	< 1.0	< 1.0				
Tetrachloromethane	M	2760	µg/kg	1.0	< 1.0	< 1.0				
1,1-Dichloropropene	U	2760	µg/kg	1.0	< 1.0	< 1.0				
Benzene	M	2760	µg/kg	1.0	< 1.0	< 1.0				
1,2-Dichloroethane	M	2760	µg/kg	2.0	< 2.0	< 2.0				
Trichloroethene	N	2760	µg/kg	1.0	< 1.0	< 1.0				
1,2-Dichloropropane	M	2760	µg/kg	1.0	< 1.0	< 1.0				
Dibromomethane	M	2760	µg/kg	1.0	< 1.0	< 1.0				
Bromodichloromethane	M	2760	µg/kg	5.0	< 5.0	< 5.0				
cis-1,3-Dichloropropene	N	2760	µg/kg	10	< 10	< 10				

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Results - Soil

Project: Q0269 Llantarnam 3G Pitch

Client: Quantum Geotechnic Ltd					**Chemtest Job No.:**	20-14402	20-14402	20-14402	20-14402	20-14402	20-14402
Quotation No.: Q20-20396					**Chemtest Sample ID.:**	1014479	1014480	1014482	1014487	1014492	1017768
Order No.:					Client Sample Ref.:	1	1	2	1	2	1
					Sample Location:	HP17	HP03	HP05	HP01	HP18	HP05
					Sample Type:	SOIL	SOIL	SOIL	SOIL	SOIL	SOIL
					Top Depth (m):	0.4	0.4	0.8	0.5	1.0	0.3
					Date Sampled:	04-Jun-2020	03-Jun-2020	04-Jun-2020	03-Jun-2020	03-Jun-2020	12-Jun-2020
					Asbestos Lab:	COVENTRY	COVENTRY				
Determinand	**Accred.**	**SOP**	**Units**	**LOD**							
Toluene	M	2760	µg/kg	1.0		< 1.0	< 1.0				
Trans-1,3-Dichloropropene	N	2760	µg/kg	10		< 10	< 10				
1,1,2-Trichloroethane	M	2760	µg/kg	10		< 10	< 10				
Tetrachloroethene	M	2760	µg/kg	1.0		< 1.0	< 1.0				
1,3-Dichloropropane	U	2760	µg/kg	2.0		< 2.0	< 2.0				
Dibromochloromethane	U	2760	µg/kg	10		< 10	< 10				
1,2-Dibromoethane	M	2760	µg/kg	5.0		< 5.0	< 5.0				
Chlorobenzene	M	2760	µg/kg	1.0		< 1.0	< 1.0				
1,1,1,2-Tetrachloroethane	M	2760	µg/kg	2.0		< 2.0	< 2.0				
Ethylbenzene	M	2760	µg/kg	1.0		< 1.0	< 1.0				
m & p-Xylene	M	2760	µg/kg	1.0		< 1.0	< 1.0				
o-Xylene	M	2760	µg/kg	1.0		< 1.0	< 1.0				
Styrene	M	2760	µg/kg	1.0		< 1.0	< 1.0				
Tribromomethane	U	2760	µg/kg	1.0		< 1.0	< 1.0				
Isopropylbenzene	M	2760	µg/kg	1.0		< 1.0	< 1.0				
Bromobenzene	M	2760	µg/kg	1.0		< 1.0	< 1.0				
1,2,3-Trichloropropane	N	2760	µg/kg	50		< 50	< 50				
N-Propylbenzene	U	2760	µg/kg	1.0		< 1.0	< 1.0				
2-Chlorotoluene	M	2760	µg/kg	1.0		< 1.0	< 1.0				
1,3,5-Trimethylbenzene	M	2760	µg/kg	1.0		< 1.0	< 1.0				
4-Chlorotoluene	U	2760	µg/kg	1.0		< 1.0	< 1.0				
Tert-Butylbenzene	U	2760	µg/kg	1.0		< 1.0	< 1.0				
1,2,4-Trimethylbenzene	M	2760	µg/kg	1.0		< 1.0	< 1.0				
Sec-Butylbenzene	U	2760	µg/kg	1.0		< 1.0	< 1.0				
1,3-Dichlorobenzene	M	2760	µg/kg	1.0		< 1.0	< 1.0				
4-Isopropyltoluene	U	2760	µg/kg	1.0		< 1.0	< 1.0				
1,4-Dichlorobenzene	M	2760	µg/kg	1.0		< 1.0	< 1.0				
N-Butylbenzene	U	2760	µg/kg	1.0		< 1.0	< 1.0				
1,2-Dichlorobenzene	M	2760	µg/kg	1.0		< 1.0	< 1.0				
1,2-Dibromo-3-Chloropropane	U	2760	µg/kg	50		< 50	< 50				
1,2,4-Trichlorobenzene	M	2760	µg/kg	1.0		< 1.0	< 1.0				
Hexachlorobutadiene	U	2760	µg/kg	1.0		< 1.0	< 1.0				
1,2,3-Trichlorobenzene	U	2760	µg/kg	2.0		< 2.0	< 2.0				
Methyl Tert-Butyl Ether	M	2760	µg/kg	1.0		< 1.0	< 1.0				
N-Nitrosodimethylamine	M	2790	mg/kg	0.50		< 0.50	< 0.50				
Phenol	M	2790	mg/kg	0.50		< 0.50	< 0.50				
2-Chlorophenol	M	2790	mg/kg	0.50		< 0.50	< 0.50				
Bis-(2-Chloroethyl)Ether	M	2790	mg/kg	0.50		< 0.50	< 0.50				

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Results - Soil

Project: Q0269 Llantarnam 3G Pitch

Client: Quantum Geotechnic Ltd					**Chemtest Job No.:**	20-14402	20-14402	20-14402	20-14402	20-14402	20-14402
Quotation No.: Q20-20396					**Chemtest Sample ID.:**	1014479	1014480	1014482	1014487	1014492	1017768
Order No.:					Client Sample Ref.:	1	1	2	1	2	1
					Sample Location:	HP17	HP03	HP05	HP01	HP18	HP05
					Sample Type:	SOIL	SOIL	SOIL	SOIL	SOIL	SOIL
					Top Depth (m):	0.4	0.4	0.8	0.5	1.0	0.3
					Date Sampled:	04-Jun-2020	03-Jun-2020	04-Jun-2020	03-Jun-2020	03-Jun-2020	12-Jun-2020
					Asbestos Lab:	COVENTRY	COVENTRY				
Determinand	**Accred.**	**SOP**	**Units**	**LOD**							
1,3-Dichlorobenzene	M	2790	mg/kg	0.50		< 0.50	< 0.50				
1,4-Dichlorobenzene	N	2790	mg/kg	0.50		< 0.50	< 0.50				
1,2-Dichlorobenzene	M	2790	mg/kg	0.50		< 0.50	< 0.50				
2-Methylphenol	M	2790	mg/kg	0.50		< 0.50	< 0.50				
Bis(2-Chloroisopropyl)Ether	M	2790	mg/kg	0.50		< 0.50	< 0.50				
Hexachloroethane	N	2790	mg/kg	0.50		< 0.50	< 0.50				
N-Nitrosodi-n-propylamine	M	2790	mg/kg	0.50		< 0.50	< 0.50				
4-Methylphenol	M	2790	mg/kg	0.50		< 0.50	< 0.50				
Nitrobenzene	M	2790	mg/kg	0.50		< 0.50	< 0.50				
Isophorone	M	2790	mg/kg	0.50		< 0.50	< 0.50				
2-Nitrophenol	N	2790	mg/kg	0.50		< 0.50	< 0.50				
2,4-Dimethylphenol	N	2790	mg/kg	0.50		< 0.50	< 0.50				
Bis(2-Chloroethoxy)Methane	M	2790	mg/kg	0.50		< 0.50	< 0.50				
2,4-Dichlorophenol	M	2790	mg/kg	0.50		< 0.50	< 0.50				
1,2,4-Trichlorobenzene	M	2790	mg/kg	0.50		< 0.50	< 0.50				
Naphthalene	M	2790	mg/kg	0.50		< 0.50	< 0.50				
4-Chloroaniline	N	2790	mg/kg	0.50		< 0.50	< 0.50				
Hexachlorobutadiene	M	2790	mg/kg	0.50		< 0.50	< 0.50				
4-Chloro-3-Methylphenol	M	2790	mg/kg	0.50		< 0.50	< 0.50				
2-Methylnaphthalene	M	2790	mg/kg	0.50		< 0.50	< 0.50				
4-Nitrophenol	N	2790	mg/kg	0.50		< 0.50	< 0.50				
Hexachlorocyclopentadiene	N	2790	mg/kg	0.50		< 0.50	< 0.50				
2,4,6-Trichlorophenol	M	2790	mg/kg	0.50		< 0.50	< 0.50				
2,4,5-Trichlorophenol	M	2790	mg/kg	0.50		< 0.50	< 0.50				
2-Chloronaphthalene	M	2790	mg/kg	0.50		< 0.50	< 0.50				
2-Nitroaniline	M	2790	mg/kg	0.50		< 0.50	< 0.50				
Acenaphthylene	M	2790	mg/kg	0.50		< 0.50	< 0.50				
Dimethylphthalate	M	2790	mg/kg	0.50		< 0.50	< 0.50				
2,6-Dinitrotoluene	M	2790	mg/kg	0.50		< 0.50	< 0.50				
Acenaphthene	M	2790	mg/kg	0.50		< 0.50	< 0.50				
3-Nitroaniline	N	2790	mg/kg	0.50		< 0.50	< 0.50				
Dibenzofuran	M	2790	mg/kg	0.50		< 0.50	< 0.50				
4-Chlorophenylphenylether	M	2790	mg/kg	0.50		< 0.50	< 0.50				
2,4-Dinitrotoluene	M	2790	mg/kg	0.50		< 0.50	< 0.50				
Fluorene	M	2790	mg/kg	0.50		< 0.50	< 0.50				
Diethyl Phthalate	M	2790	mg/kg	0.50		< 0.50	< 0.50				
4-Nitroaniline	M	2790	mg/kg	0.50		< 0.50	< 0.50				
2-Methyl-4,6-Dinitrophenol	N	2790	mg/kg	0.50		< 0.50	< 0.50				

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Results - Soil

Project: Q0269 Llantarnam 3G Pitch

Client: Quantum Geotechnic Ltd			**Chemtest Job No.:**		20-14402	20-14402	20-14402	20-14402	20-14402	20-14402
Quotation No.: Q20-20396			**Chemtest Sample ID.:**		1014479	1014480	1014482	1014487	1014492	1017768
Order No.:			Client Sample Ref.:		1	1	2	1	2	1
			Sample Location:		HP17	HP03	HP05	HP01	HP18	HP05
			Sample Type:		SOIL	SOIL	SOIL	SOIL	SOIL	SOIL
			Top Depth (m):		0.4	0.4	0.8	0.5	1.0	0.3
			Date Sampled:		04-Jun-2020	03-Jun-2020	04-Jun-2020	03-Jun-2020	03-Jun-2020	12-Jun-2020
			Asbestos Lab:		COVENTRY	COVENTRY				
Determinand	**Accred.**	**SOP**	**Units**	**LOD**						
Azobenzene	M	2790	mg/kg	0.50	< 0.50	< 0.50				
4-Bromophenylphenyl Ether	M	2790	mg/kg	0.50	< 0.50	< 0.50				
Hexachlorobenzene	M	2790	mg/kg	0.50	< 0.50	< 0.50				
Pentachlorophenol	N	2790	mg/kg	0.50	< 0.50	< 0.50				
Phenanthrene	M	2790	mg/kg	0.50	< 0.50	< 0.50				
Anthracene	M	2790	mg/kg	0.50	< 0.50	< 0.50				
Carbazole	M	2790	mg/kg	0.50	< 0.50	< 0.50				
Di-N-Butyl Phthalate	M	2790	mg/kg	0.50	< 0.50	< 0.50				
Fluoranthene	M	2790	mg/kg	0.50	< 0.50	< 0.50				
Pyrene	M	2790	mg/kg	0.50	< 0.50	< 0.50				
Butylbenzyl Phthalate	M	2790	mg/kg	0.50	< 0.50	< 0.50				
Benzo[a]anthracene	M	2790	mg/kg	0.50	< 0.50	< 0.50				
Chrysene	M	2790	mg/kg	0.50	< 0.50	< 0.50				
Bis(2-Ethylhexyl)Phthalate	N	2790	mg/kg	0.50	< 0.50	< 0.50				
Di-N-Octyl Phthalate	M	2790	mg/kg	0.50	< 0.50	< 0.50				
Benzo[b]fluoranthene	M	2790	mg/kg	0.50	< 0.50	< 0.50				
Benzo[k]fluoranthene	M	2790	mg/kg	0.50	< 0.50	< 0.50				
Benzo[a]pyrene	M	2790	mg/kg	0.50	< 0.50	< 0.50				
Indeno(1,2,3-c,d)Pyrene	M	2790	mg/kg	0.50	< 0.50	< 0.50				
Dibenz(a,h)Anthracene	M	2790	mg/kg	0.50	< 0.50	< 0.50				
Benzo[g,h,i]perylene	M	2790	mg/kg	0.50	< 0.50	< 0.50				
Total Phenols	M	2920	mg/kg	0.30	< 0.30	< 0.30				

Test Methods

SOP	Title	Parameters included	Method summary
2010	pH Value of Soils	pH	pH Meter
2030	Moisture and Stone Content of Soils(Requirement of MCERTS)	Moisture content	Determination of moisture content of soil as a percentage of its as received mass obtained at <37°C.
2040	Soil Description(Requirement of MCERTS)	Soil description	As received soil is described based upon BS5930
2120	Water Soluble Boron, Sulphate, Magnesium & Chromium	Boron; Sulphate; Magnesium; Chromium	Aqueous extraction / ICP-OES
2175	Total Sulphur in Soils	Total Sulphur	Determined by high temperature combustion under oxygen, using an Eltra elemental analyser.
2192	Asbestos	Asbestos	Polarised light microscopy / Gravimetry
2300	Cyanides & Thiocyanate in Soils	Free (or easy liberatable) Cyanide; total Cyanide; complex Cyanide; Thiocyanate	Allkaline extraction followed by colorimetric determination using Automated Flow Injection Analyser.
2325	Sulphide in Soils	Sulphide	Steam distillation with sulphuric acid / analysis by 'Aquakem 600' Discrete Analyser, using N,N–dimethyl-p-phenylenediamine.
2430	Total Sulphate in soils	Total Sulphate	Acid digestion followed by determination of sulphate in extract by ICP-OES.
2450	Acid Soluble Metals in Soils	Metals, including: Arsenic; Barium; Beryllium; Cadmium; Chromium; Cobalt; Copper; Lead; Manganese; Mercury; Molybdenum; Nickel; Selenium; Vanadium; Zinc	Acid digestion followed by determination of metals in extract by ICP-MS.
2490	Hexavalent Chromium in Soils	Chromium [VI]	Soil extracts are prepared by extracting dried and ground soil samples into boiling water. Chromium [VI] is determined by 'Aquakem 600' Discrete Analyser using 1,5-diphenylcarbazide.
2625	Total Organic Carbon in Soils	Total organic Carbon (TOC)	Determined by high temperature combustion under oxygen, using an Eltra elemental analyser.
2670	Total Petroleum Hydrocarbons (TPH) in Soils by GC-FID	TPH (C6–C40); optional carbon banding, e.g. 3-band – GRO, DRO & LRO*TPH C8–C40	Dichloromethane extraction / GC-FID
2700	Speciated Polynuclear Aromatic Hydrocarbons (PAH) in Soil by GC-FID	Acenaphthene; Acenaphthylene; Anthracene; Benzo[a]Anthracene; Benzo[a]Pyrene; Benzo[b]Fluoranthene; Benzo[ghi]Perylene; Benzo[k]Fluoranthene; Chrysene; Dibenz[ah]Anthracene; Fluoranthene; Fluorene; Indeno[123cd]Pyrene; Naphthalene; Phenanthrene; Pyrene	Dichloromethane extraction / GC-FID (GC-FID detection is non-selective and can be subject to interference from co-eluting compounds)
2760	Volatile Organic Compounds (VOCs) in Soils by Headspace GC-MS	Volatile organic compounds, including BTEX and halogenated Aliphatic/Aromatics.(cf. USEPA Method 8260)*please refer to UKAS schedule	Automated headspace gas chromatographic (GC) analysis of a soil sample, as received, with mass spectrometric (MS) detection of volatile organic compounds.
2790	Semi-Volatile Organic Compounds (SVOCs) in Soils by GC-MS	Semi-volatile organic compounds(cf. USEPA Method 8270)	Acetone/Hexane extraction / GC-MS
2920	Phenols in Soils by HPLC	Phenolic compounds including Resorcinol, Phenol, Methylphenols, Dimethylphenols, 1-Naphthol and TrimethylphenolsNote: chlorophenols are excluded.	60:40 methanol/water mixture extraction, followed by HPLC determination using electrochemical detection.

Report Information

Key

U	UKAS accredited
M	MCERTS and UKAS accredited
N	Unaccredited
S	This analysis has been subcontracted to a UKAS accredited laboratory that is accredited for this analysis
SN	This analysis has been subcontracted to a UKAS accredited laboratory that is not accredited for this analysis
T	This analysis has been subcontracted to an unaccredited laboratory
I/S	Insufficient Sample
U/S	Unsuitable Sample
N/E	not evaluated
<	"less than"
>	"greater than"

Comments or interpretations are beyond the scope of UKAS accreditation
The results relate only to the items tested
Uncertainty of measurement for the determinands tested are available upon request
None of the results in this report have been recovery corrected
All results are expressed on a dry weight basis
The following tests were analysed on samples as received and the results subsequently corrected to a dry weight basis TPH, BTEX, VOCs, SVOCs, PCBs, Phenols
For all other tests the samples were dried at < 37°C prior to analysis
All Asbestos testing is performed at the indicated laboratory
Issue numbers are sequential starting with 1 all subsequent reports are incremented by 1

Sample Deviation Codes

A - Date of sampling not supplied
B - Sample age exceeds stability time (sampling to extraction)
C - Sample not received in appropriate containers
D - Broken Container
E - Insufficient Sample (Applies to LOI in Trommel Fines Only)

Sample Retention and Disposal

All soil samples will be retained for a period of 45 days from the date of receipt
All water samples will be retained for 14 days from the date of receipt
Charges may apply to extended sample storage

If you require extended retention of samples, please email your requirements to:
customerservices@chemtest.com

APPENDIX IX – GEOTECHNICAL LABORATORY TEST RESULTS

Laboratory Report

UKAS TESTING
2788

GSTL
GEO Site & Testing Services Ltd

Contract Number: 48912

Client Ref: **Q0269**
Client PO:

Report Date: **03-07-2020**

Client **Quantum Geotechnic Ltd**
Ty Berwig
Bynea
Llanelli.
Carmarthenshire.
SA14 9ST

Contract Title: **Llantarnam 3G Pitch**
For the attention of: **Arwel Jones**

Date Received: **12-06-2020**
Date Completed: **03-07-2020**

Test Description	Qty
Moisture Content BS 1377:1990 - Part 2 : 3.2 - * UKAS	5
4 Point Liquid & Plastic Limit BS 1377:1990 - Part 2 : 4.3 & 5.3 - * UKAS	5
PSD Wet Sieve method BS 1377:1990 - Part 2 : 9.2 - * UKAS	1
PSD: Sedimentation by pipette carried out with Wet Sieve (Wet Sieve must also be selected) BS 1377:1990 - Part 2 : 9.4 - * UKAS	1
Disposal of samples for job	1

Notes: **Observations and Interpretations are outside the UKAS Accreditation**
*** - denotes test included in laboratory scope of accreditation**
 # - denotes test carried out by approved contractor
@ - denotes non accredited tests

Approved Signatories:
Emma Sharp (Office Manager) - Paul Evans (Quality/Technical Manager) - Richard John (Advanced Testing Manager)
Sean Penn (Administrative/Accounts Assistant) - Shaun Jones (Laboratory manager) - Wayne Honey (Administrative/Quality Assistant)

GEO Site & Testing Services Ltd
Unit 3-4, Heol Aur, Dafen Ind Estate, Dafen, Llanelli, Carmarthenshire SA14 8QN
Tel: 01554 784040 Fax: 01554 784041 info@gstl.co.uk gstl.co.uk

GSTL	NATURAL MOISTURE, LIQUID LIMIT, PLASTIC LIMIT AND PLASTICITY INDEX (BS 1377 : Part 2 : 1990 Method 5)	
Contract Number	48912	
Site Name	Llantarnam 3G Pitch	
Date Tested	23/06/2020	
	DESCRIPTIONS	

Sample/Hole Reference	Sample Number	Sample Type	Depth (m)			Descriptions
HP02	1	B	0.80	-	1.00	Brown fine sandy silty CLAY.
HP04	1	B	0.60	-	0.80	Brown fine to coarse gravelly sandy silty CLAY.
HP15	1	D	1.00	-	1.00	Brown fine sandy silty CLAY.
HP18	1	D	1.00	-		Brown fine to coarse gravelly sandy silty CLAY.
				-		
				-		
				-		
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				-		
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				-		
				-		
				-		
				-		
				-		

Operators	Checked	03/07/2020	Wayne Honey (Administrative/Quality Assistant)
Luke Williams	Approved	03/07/2020	Paul Evans (Quality/Technical Manager)

UKAS TESTING 2788

GSTL	NATURAL MOISTURE, LIQUID LIMIT, PLASTIC LIMIT AND PLASTICITY INDEX (BS 1377 : Part 2 : 1990 Method 5)	
Contract Number	48912	
Project Location	Llantarnam 3G Pitch	
Date Tested	23/06/2020	

Sample/Hole Reference	Sample Number	Sample Type	Depth (m)			Moisture Content %	Liquid Limit %	Plastic Limit %	Plasticity index %	Passing 0.425mm %	Remarks
HP02	1	B	0.80	-	1.00	18	47	20	27	100	CI Intermediate Plasticity
HP04	1	B	0.60	-	0.80	15	43	17	26	80	CI Intermediate Plasticity
HP12	2	B	0.80	-	1.00	11	40	14	26	74	CI Intermediate Plasticity
HP15	1	D	1.00	-	1.00	23	36	23	13	100	CI Intermediate Plasticity
HP18	1	D	1.00	-		14	34	14	20	90	CL Low Plasticity
				-							
				-							
				-							
				-							
				-							
				-							
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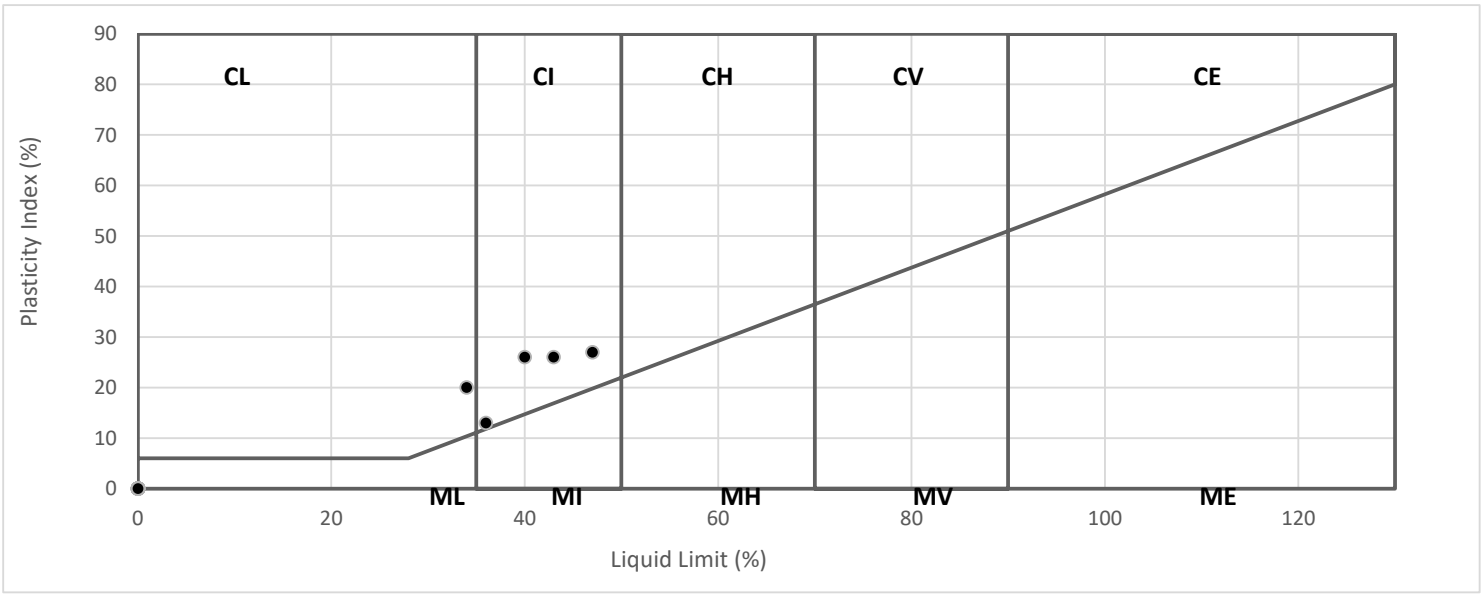
				-							
				-							
				-							
				-							

Symbols: NP : Non Plastic # : Liquid Limit and Plastic Limit Wet Sieved

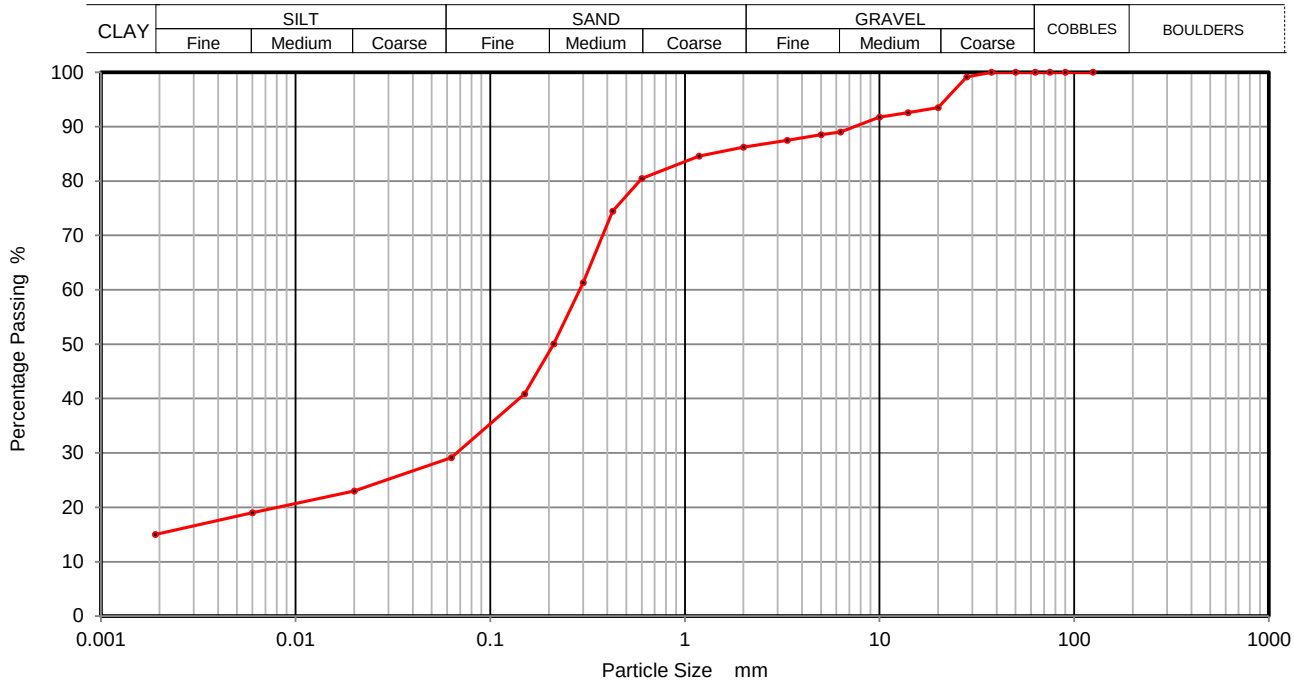
PLASTICITY CHART FOR CASAGRANDE CLASSIFICATION
BS 5930:1999+A2:2010



Operators	Checked	03/07/2020	Wayne Honey (Administrative/Quality Assistant)
Luke Williams	Approved	03/07/2020	Paul Evans (Quality/Technical Manager)

UKAS TESTING 2788

GSTL	PARTICLE SIZE DISTRIBUTION BS 1377 Part 2:1990 Wet Sieve & Pipette Analysis, Clause 9.2 & 9.4	Contract Number	48912
		Borehole/Pit No.	HP12
Site Name	Llantarnam 3G Pitch	Sample No.	2
Soil Description	Brown fine to coarse gravelly silty clayey fine to coarse SAND.	Depth Top	0.80
		Depth Base	1.00
Date Tested	01/07/2020	Sample Type	B



Sieving		Sedimentation	
Particle Size mm	% Passing	Particle Size mm	% Passing
125	100	0.0200	23
90	100	0.0060	19
75	100	0.0020	15
63	100		
50	100		
37.5	100		
28	99		
20	93		
14	93		
10	92		
6.3	89		
5	89		
3.35	88		
2	86		
1.18	85		
0.6	80		
0.425	74		
0.3	61		
0.212	50		
0.15	41		
0.063	29		

Sample Proportions	% dry mass
Cobbles	0
Gravel	14
Sand	57
Silt	14
Clay	15

Remarks

Preparation and testing in accordance with BS1377 unless noted below

Operators	Checked	02/07/2020	Wayne Honey	W. Honey
RO/MH	Approved	03/07/2020	Paul Evans	D P Evans

UKAS TESTING 2788

Laboratory Report

2788

GEO Site & Testing Services Ltd

Contract Number: 49046

Client Ref: **Q0269**
Client PO:

Report Date: **17-07-2020**

Client **Quantum Geotechnic Ltd**
Ty Berwig
Bynea
Llanelli.
Carmarthenshire.
SA14 9ST

Contract Title: **Llantarnam 3G Pitch**
For the attention of: **Jim Dennis**

Date Received: **24-06-2020**
Date Completed: **17-07-2020**

Test Description	Qty
Moisture Content BS 1377:1990 - Part 2 : 3.2 - * UKAS	10
4 Point Liquid & Plastic Limit BS 1377:1990 - Part 2 : 4.3 & 5.3 - * UKAS	10
PSD Wet Sieve method BS 1377:1990 - Part 2 : 9.2 - * UKAS	4
PSD: Sedimentation by pipette carried out with Wet Sieve (Wet Sieve must also be selected) BS 1377:1990 - Part 2 : 9.4 - * UKAS	4
Dry Den/MC (2.5kg Rammer Method CBR Mould) BS 1377:1990 - Part 4 : 3.4 - * UKAS	2
CBR at each Compaction point (5 Points) excludes compaction test BS 1377:1990 - Part 4 : 7 - * UKAS	2
Disposal of samples for job	1

Notes: **Observations and Interpretations are outside the UKAS Accreditation**
*** - denotes test included in laboratory scope of accreditation**
 # - denotes test carried out by approved contractor
@ - denotes non accredited tests

Approved Signatories:
Emma Sharp (Office Manager) - Paul Evans (Quality/Technical Manager) - Richard John (Advanced Testing Manager)
Sean Penn (Administrative/Accounts Assistant) - Shaun Jones (Laboratory manager) - Wayne Honey (Administrative/Quality Assistant)

GEO Site & Testing Services Ltd
Unit 3-4, Heol Aur, Dafen Ind Estate, Dafen, Llanelli, Carmarthenshire SA14 8QN
Tel: 01554 784040 Fax: 01554 784041 info@gstl.co.uk gstl.co.uk

GSTL	NATURAL MOISTURE, LIQUID LIMIT, PLASTIC LIMIT AND PLASTICITY INDEX (BS 1377 : Part 2 : 1990 Method 5)	
Contract Number	49046	
Site Name	Llantarnam 3G Pitch	
Date Tested	08/07/2020	
	DESCRIPTIONS	

Sample/Hole Reference	Sample Number	Sample Type	Depth (m)			Descriptions
WS01	2	D	1.80	-	2.00	Reddish greyish brown fine to medium gravelly sandy silty CLAY
WS02	1	D	0.50	-	0.70	Reddish brown silty clayey fine to coarse SAND
WS03	1	B	0.90	-	2.60	Brown silty clayey fine to coarse gravelly fine to coarse SAND
WS04	1	D	0.50	-	0.70	Reddish brown fine to medium gravelly silty sandy CLAY
WS05	1	D	0.40	-	0.60	Reddish brown fine to coarse gravelly silty sandy CLAY
WS06	2	D	1.80	-	2.00	Reddish brown silty sandy CLAY
WS09	1	B	0.55	-	1.60	Reddish brown silty CLAY
WS09	1	D	1.00	-	1.10	Reddish brown silty CLAY
WS10	1	D	0.60	-	0.80	Reddish brown silty CLAY
WS13	1	D	1.20	-	1.40	Reddish brown silty CLAY
				-		
				-		
				-		
				-		
				-		
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				-		
				-		
				-		
				-		
				-		
				-		
				-		
				-		

Operators	Checked	17/07/2020	Wayne Honey (Administrative/Quality Assistant)
Conor Davison	Approved	17/07/2020	Paul Evans (Quality/Technical Manager)

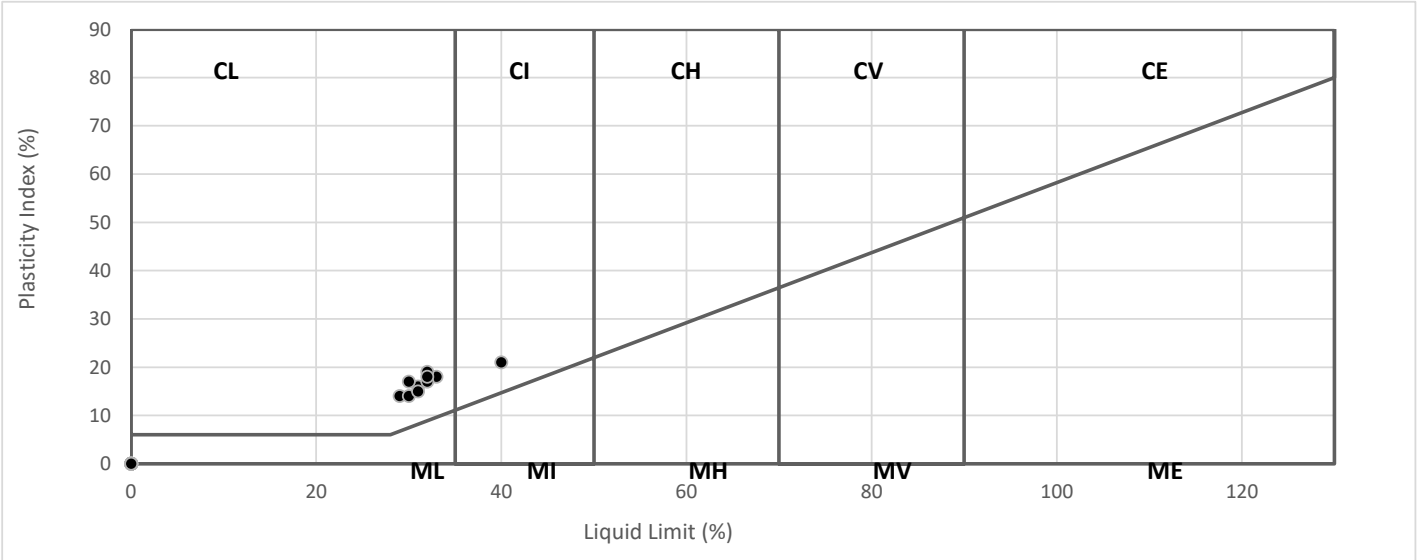
UKAS TESTING 2788

GSTL	NATURAL MOISTURE, LIQUID LIMIT, PLASTIC LIMIT AND PLASTICITY INDEX (BS 1377 : Part 2 : 1990 Method 5)	
Contract Number	**49046**	
Project Location	**Llantarnam 3G Pitch**	
Date Tested	**08/07/2020**	

Sample/Hole Reference	Sample Number	Sample Type	Depth (m)			Moisture Content %	Liquid Limit %	Plastic Limit %	Plasticity index %	Passing 0.425mm %	Remarks
WS01	2	D	1.80	-	2.00	14	31	15	16	88	CL Low Plasticity
WS02	1	D	0.50	-	0.70	15	33	15	18	98	CL Low Plasticity
WS03	1	B	0.90	-	2.60	14	32	15	17	59	CL Low Plasticity
WS04	1	D	0.50	-	0.70	14	29	15	14	87	CL Low Plasticity
WS05	1	D	0.40	-	0.60	13	32	13	19	85	CL Low Plasticity
WS06	2	D	1.80	-	2.00	18	30	16	14	100	CL Low Plasticity
WS09	1	B	0.55	-	1.60	16	30	13	17	100	CL Low Plasticity
WS09	1	D	1.00	-	1.10	16	32	14	18	100	CL Low Plasticity
WS10	1	D	0.60	-	0.80	17	31	16	15	100	CL Low Plasticity
WS13	1	D	1.20	-	1.40	21	40	19	21	100	CI Intermediate Plasticity
				-							
				-							
				-							
				-							
				-							
				-							
				-							
				-							
				-							
				-							
				-							
				-							
				-							
				-							

Symbols: NP : Non Plastic # : Liquid Limit and Plastic Limit Wet Sieved

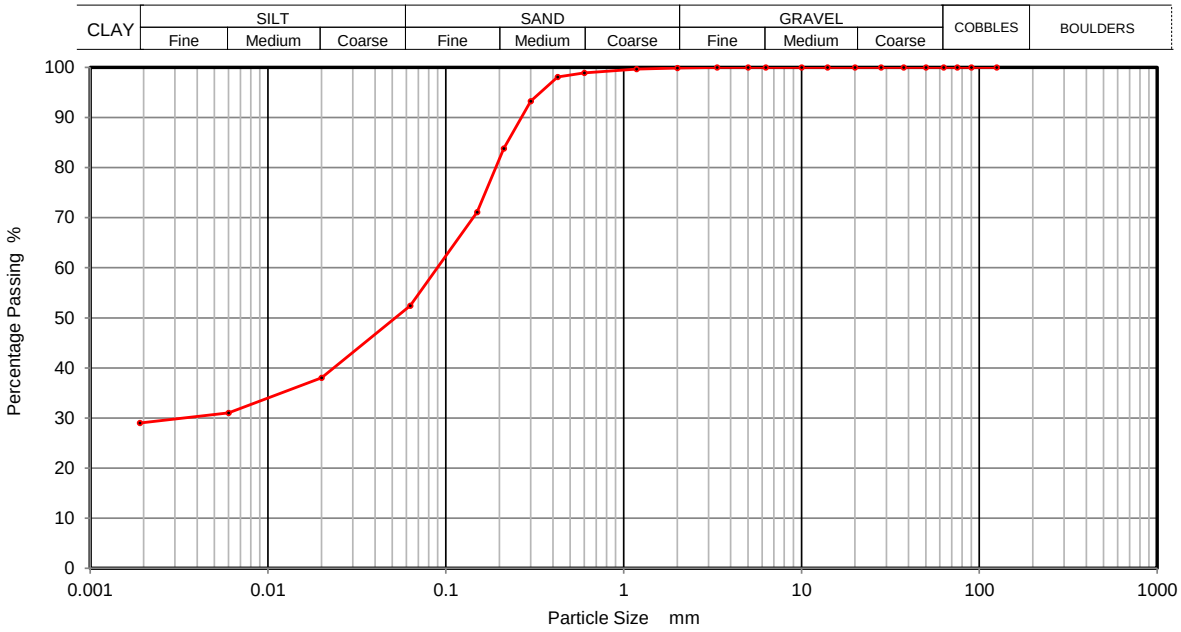
PLASTICITY CHART FOR CASAGRANDE CLASSIFICATION
BS 5930:1999+A2:2010



Operators	Checked	17/07/2020	Wayne Honey (Administrative/Quality Assistant)
Conor Davison	Approved	17/07/2020	Paul Evans (Quality/Technical Manager)

UKAS TESTING 2788

GSTL	PARTICLE SIZE DISTRIBUTION BS 1377 Part 2:1990 Wet Sieve & Pipette Analysis, Clause 9.2 & 9.4	Contract Number	49046
		Borehole/Pit No.	WS02
Site Name	Llantarnam 3G Pitch	Sample No.	1
Soil Description	Reddish brown silty clayey fine to coarse SAND	Depth Top	0.50
		Depth Base	0.70
Date Tested	15/07/2020	Sample Type	D



Sieving		Sedimentation	
Particle Size mm	% Passing	Particle Size mm	% Passing
125	100	0.0200	38
90	100	0.0060	31
75	100	0.0020	29
63	100		
50	100		
37.5	100		
28	100		
20	100		
14	100		
10	100		
6.3	100		
5	100		
3.35	100		
2	100		
1.18	100		
0.6	99		
0.425	98		
0.3	93		
0.212	84		
0.15	71		
0.063	52		

Sample Proportions	% dry mass
Cobbles	0
Gravel	0
Sand	48
Silt	23
Clay	29

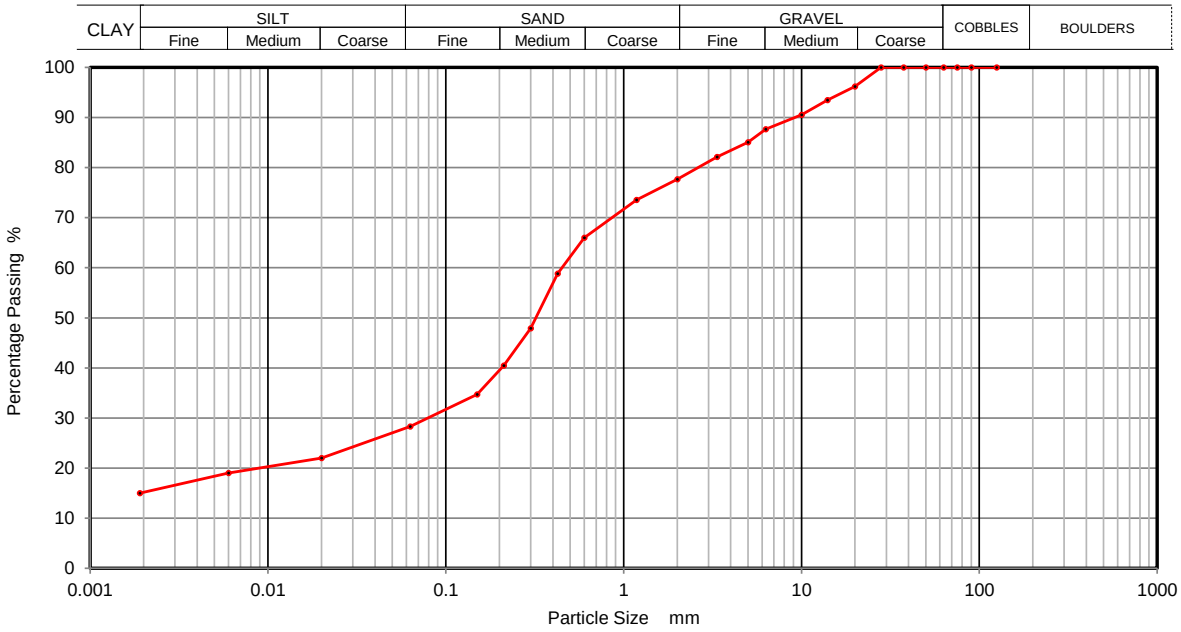
Remarks

Preparation and testing in accordance with BS1377 unless noted below

Operators	Checked	16/07/2020	Wayne Honey	W. Honey
RO/MH	Approved	17/07/2020	Paul Evans	D P Evans

UKAS TESTING 2788

GSTL	**PARTICLE SIZE DISTRIBUTION** **BS 1377 Part 2:1990** **Wet Sieve & Pipette Analysis, Clause 9.2 & 9.4**	Contract Number	**49046**
		Borehole/Pit No.	**WS03**
Site Name	**Llantarnam 3G Pitch**	Sample No.	**1**
Soil Description	Brown silty clayey fine to coarse gravelly fine to coarse SAND	Depth Top	**0.90**
		Depth Base	**2.60**
Date Tested	15/07/2020	Sample Type	**B**



Sieving		Sedimentation	
Particle Size mm	% Passing	Particle Size mm	% Passing
125	100	0.0200	22
90	100	0.0060	19
75	100	0.0020	15
63	100		
50	100		
37.5	100		
28	100		
20	96		
14	93		
10	91		
6.3	88		
5	85		
3.35	82		
2	78		
1.18	74		
0.6	66		
0.425	59		
0.3	48		
0.212	40		
0.15	35		
0.063	28		

Sample Proportions	% dry mass
Cobbles	0
Gravel	22
Sand	50
Silt	13
Clay	15

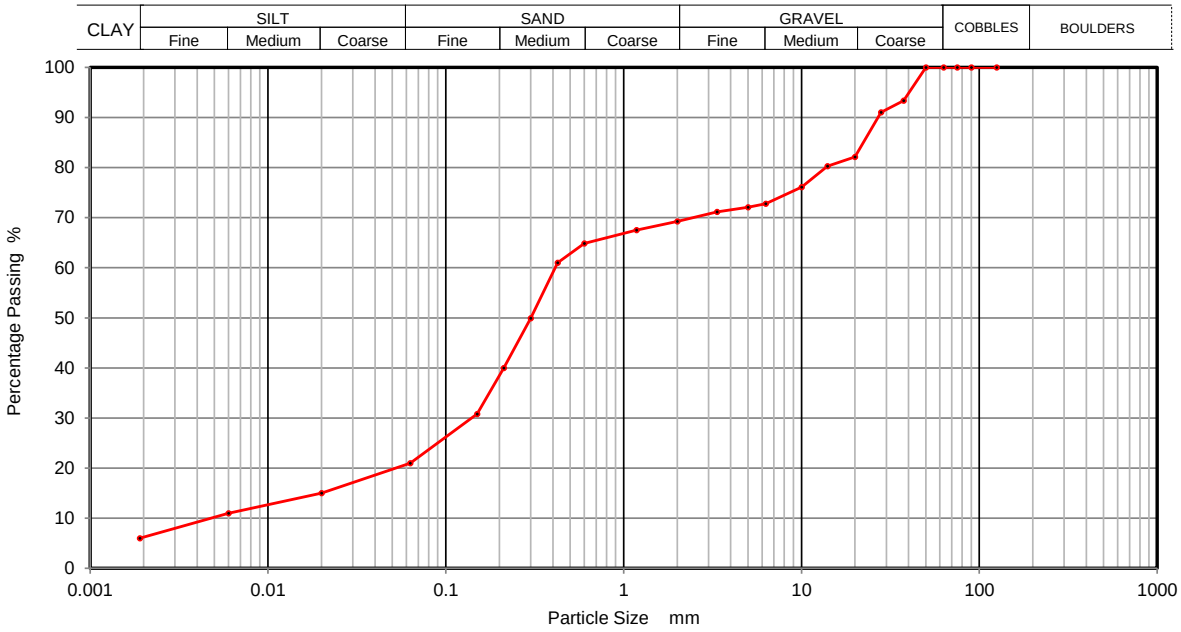
Remarks

Preparation and testing in accordance with BS1377 unless noted below

Operators	Checked	16/07/2020	Wayne Honey	W. Honey
RO/MH	Approved	17/07/2020	Paul Evans	P Evans

UKAS TESTING 2788

GSTL	PARTICLE SIZE DISTRIBUTION BS 1377 Part 2:1990 Wet Sieve & Pipette Analysis, Clause 9.2 & 9.4	Contract Number	49046
		Borehole/Pit No.	WS11
Site Name	Llantarnam 3G Pitch	Sample No.	1
Soil Description	Brown slightly clayey silty fine to coarse gravelly fine to coarse SAND	Depth Top	1.00
		Depth Base	2.50
Date Tested	15/07/2020	Sample Type	0



Sieving		Sedimentation	
Particle Size mm	% Passing	Particle Size mm	% Passing
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90	100	0.0060	11
75	100	0.0020	6
63	100		
50	100		
37.5	93		
28	91		
20	82		
14	80		
10	76		
6.3	73		
5	72		
3.35	71		
2	69		
1.18	68		
0.6	65		
0.425	61		
0.3	50		
0.212	40		
0.15	31		
0.063	21		

Sample Proportions	% dry mass
Cobbles	0
Gravel	31
Sand	48
Silt	15
Clay	6

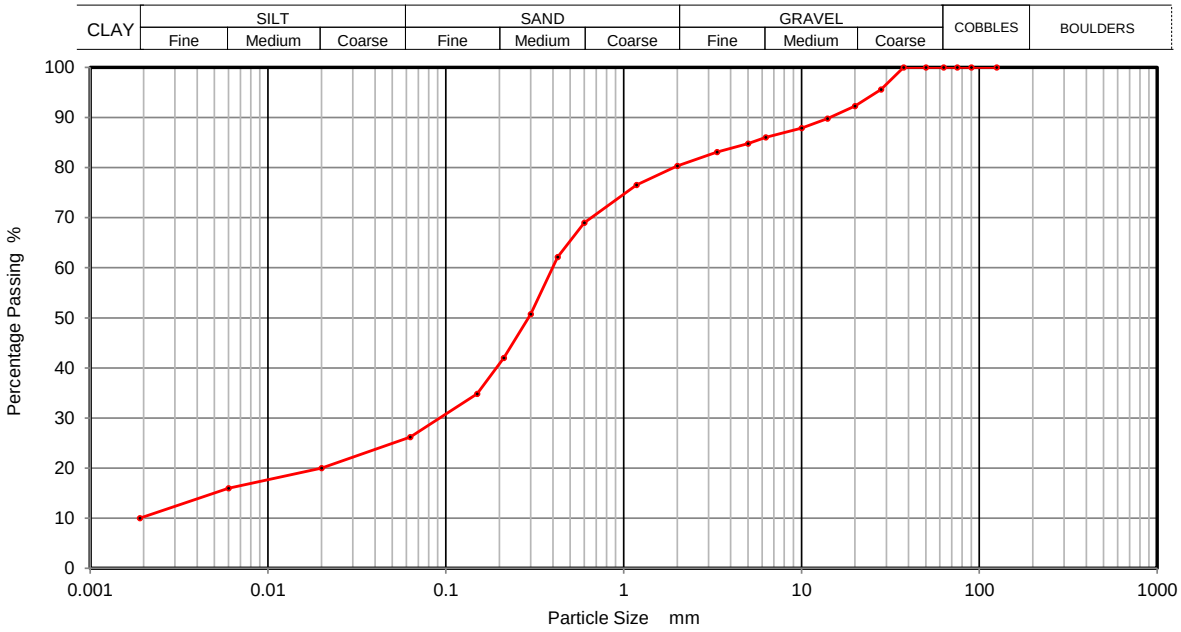
Remarks

Preparation and testing in accordance with BS1377 unless noted below

Operators	Checked	16/07/2020	Wayne Honey	W. Honey
RO/MH	Approved	17/07/2020	Paul Evans	D P Evans

UKAS TESTING 2788

GSTL	PARTICLE SIZE DISTRIBUTION BS 1377 Part 2:1990 Wet Sieve & Pipette Analysis, Clause 9.2 & 9.4	Contract Number	49046
		Borehole/Pit No.	WS12
Site Name	Llantarnam 3G Pitch	Sample No.	2
Soil Description	Brown clayey silty fine to coarse gravelly fine to coarse SAND	Depth Top	2.00
		Depth Base	2.50
Date Tested	15/07/2020	Sample Type	B



Sieving		Sedimentation	
Particle Size mm	% Passing	Particle Size mm	% Passing
125	100	0.0200	20
90	100	0.0060	16
75	100	0.0020	10
63	100		
50	100		
37.5	100		
28	96		
20	92		
14	90		
10	88		
6.3	86		
5	85		
3.35	83		
2	80		
1.18	77		
0.6	69		
0.425	62		
0.3	51		
0.212	42		
0.15	35		
0.063	26		

Sample Proportions	% dry mass
Cobbles	0
Gravel	20
Sand	54
Silt	16
Clay	10

Remarks

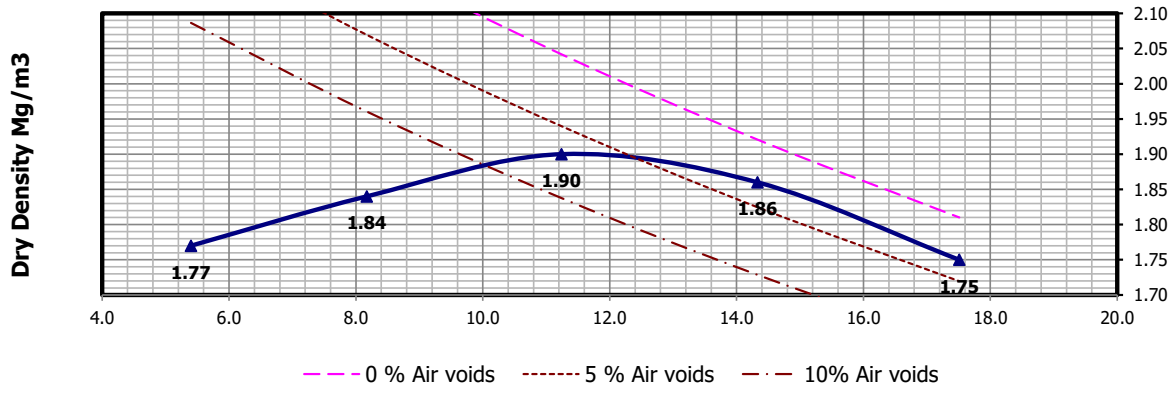
Preparation and testing in accordance with BS1377 unless noted below

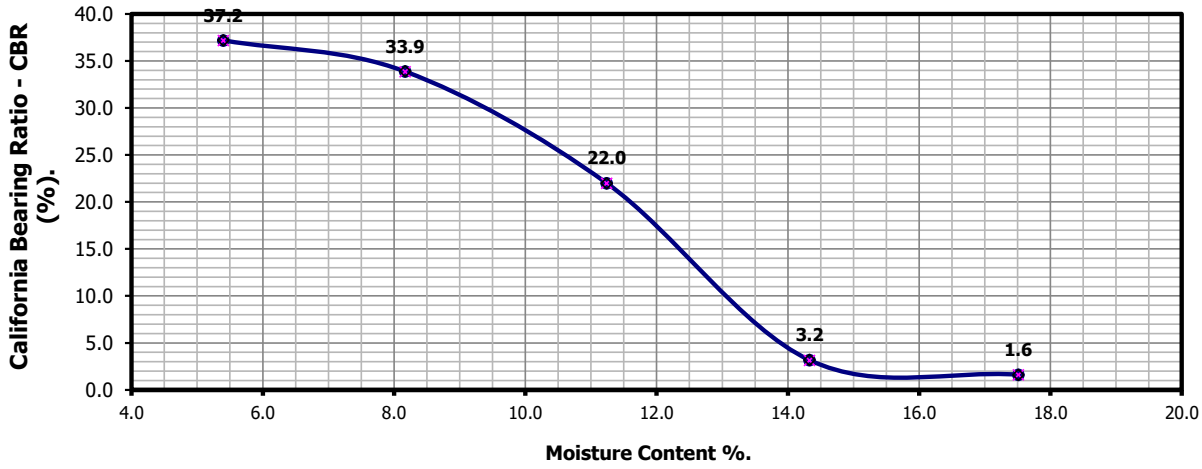
Operators	Checked	16/07/2020	Wayne Honey	W. Honey
RO/MH	Approved	17/07/2020	Paul Evans	P Evans

UKAS TESTING 2788

California Bearing Ratio/Dry Density Moisture Content Relationship
BS 1377:Part 4:1990

Client ref:	**Q0269**
Location:	**Llantarnam 3G Pitch**
Contract Number:	**49046**
Hole Number:	**HDTP3**
Sample Number:	**1**
Depth (m) : from	**0.60**
Depth (m) : to	**0.80**
Sample Type	**B**





Moisture Content	5.4	8.2	11.2	14.3	17.5	
CBR Value Top	37.2	33.9	22.0	3.2	1.6	
CBR Value Bot						
Mean CBR Value	37	34	22	3	2	
Dry Density	1.77	1.84	1.90	1.86	1.75	

Initial Sample Conditions:			Method of Compaction 2.5 KG Rammer
Initial Moisture Content (%):		11.2	Single sample Tested
Material Retained on the 37.5mm BS Sieve (%):		0	Maximum Dry Density (Mg/m^3) 1.90
Material Retained on the 20.0mm BS Sieve (%):		5	Optimum Moisture Content (% 11
Particle Density (Mg/m^3) :	Assumed	2.65	

D P Evans — **Checked by** — **17/07/2020 Date**

Approved by — **17/07/2020 Date**

GSTL GEO SITE & TESTING SERVICES LTD

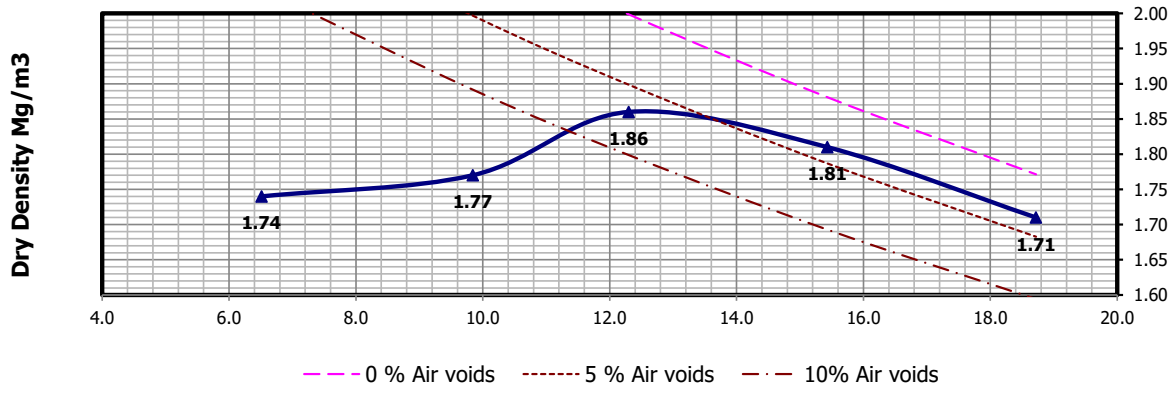
UKAS TESTING 2788

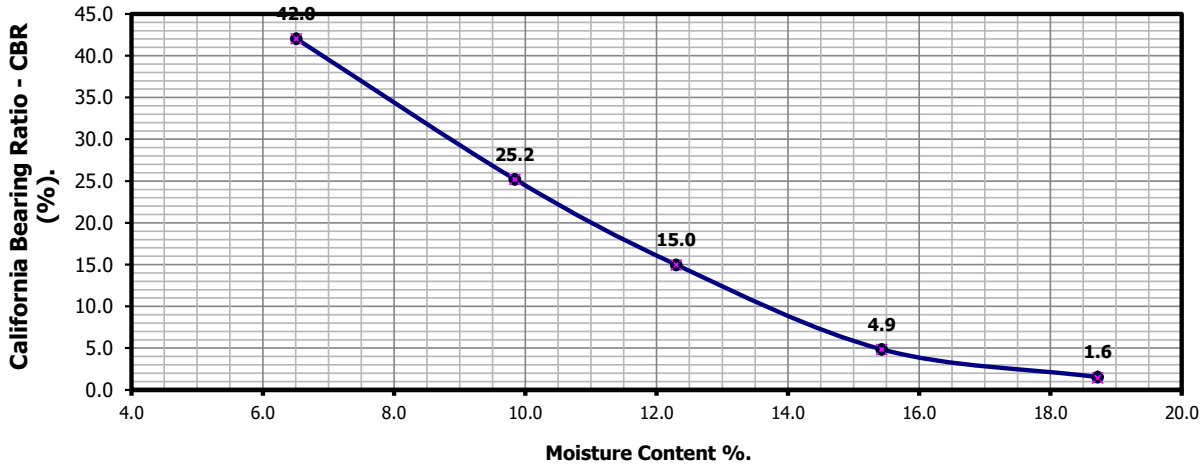
Contract No.: **49046**

Client Ref No: **Q0269**

California Bearing Ratio/Dry Density Moisture Content Relationship
BS 1377:Part 4:1990

Client ref:	**Q0269**
Location:	**Llantarnam 3G Pitch**
Contract Number:	**49046**
Hole Number:	**HDTP5**
Sample Number:	**1**
Depth (m) : from	**0.60**
Depth (m) : to	**0.80**
Sample Type	**B**





Moisture Content	6.5	9.8	12.3	15.4	18.7	
CBR Value Top	42.0	25.2	15.0	4.9	1.5	
CBR Value Bot						
Mean CBR Value	42	25	15	5	2	
Dry Density	1.74	1.77	1.86	1.81	1.71	

Initial Sample Conditions:			Method of Compaction 2.5 KG Rammer
Initial Moisture Content (%):		15.4	Single sample Tested
Material Retained on the 37.5mm BS Sieve (%):		21	Maximum Dry Density (Mg/m^3) 1.86
Material Retained on the 20.0mm BS Sieve (%):		4	Optimum Moisture Content (% 12
Particle Density (Mg/m^3) :	Assumed	2.65	

D P Evans — **Checked by** — **Date** 17/07/2020

Approved by — **Date** 17/07/2020

GSTL
GEO SITE & TESTING SERVICES LTD

UKAS TESTING 2788

Contract No.: **49046**

Client Ref No: **Q0269**

Quantum Geotechnic Ltd
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APPENDIX B

Appendix B
GQRA Results

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Leachate Screening Results

AC values chosen from minimum value of EU EWS, WFD 2015, and WHO DWQ standards

			Sample ID	WS02	WS08	WS10				
			Sample Desc	0.3	0.2	0.2				
			Date Sampled	05/06/2020	05/06/2020	05/06/2020				
Analyte:	Method Code:	AC	Units:							
Arsenic as As (Dissolved)	ICPMSW	0.0075	mg/l	< 1.0	< 1.0	< 1.0				
Cadmium as Cd (Dissolved)	ICPMSW	0.003	mg/l	< 0.080	< 0.080	< 0.080				
Chromium as Cr (Dissolved)	ICPMSW	0.0375	mg/l							
Copper as Cu (Dissolved)	ICPMSW	1.5	mg/l	3.9	2.1	< 1.0				
Lead as Pb (Dissolved)	ICPMSW	0.0075	mg/l	1.5	1.6	< 1.0				
Mercury as Hg (Dissolved)	ICPMSW	0.00075	mg/l	< 0.50	< 0.50	< 0.50				
Nickel as Ni (Dissolved)	ICPMSW	0.015	mg/l	< 1.0	< 1.0	< 1.0				
Selenium as Se (Dissolved)	ICPMSW	0.0075	mg/l	3.6	< 1.0	< 1.0				
Zinc as Zn (Dissolved)	ICPMSW		mg/l							
Boron as B (Dissolved) a	ICPWATVAR	0.75	mg/l	< 20	< 20	< 20				
Antimony as Sb (Dissolved)	ICPMSW	0.02	mg/l							
Molybdenum as Mo (Dissolved)	ICPMSW	0.7	mg/l							
Barium as Ba (Dissolved) a	ICPWATVAR		mg/l							
Total Sulphur as SO4 (Dissolved) a	ICPWATVAR		mg/l							
Fluoride as F a	ISEF	1.13	mg/l							
Chloride as Cl w	KONENS	188	mg/l							
Acenaphthene	PAHMSW		ug/l							
Acenaphthylene	PAHMSW		ug/l							
Anthracene	PAHMSW		ug/l							
Benzo(a)anthracene	PAHMSW		ug/l							
Benzo(b)fluoranthene	PAHMSW	0.075	ug/l							
Benzo(ghi)perylene	PAHMSW		ug/l							
Benzo(k)fluoranthene	PAHMSW		ug/l							
Benzo-a-Pyrene	PAHMSW	0.0075	ug/l	< 0.10	< 0.10	< 0.10				
Chrysene	PAHMSW		ug/l							
Dibenzo(a,h)anthracene	PAHMSW		ug/l							
Fluoranthene	PAHMSW	0.075	ug/l							
Fluorene	PAHMSW		ug/l							
Indeno(1,2,3-cd)pyrene	PAHMSW		ug/l							
Naphthalene	PAHMSW	0.075	ug/l							
Phenanthrene	PAHMSW		ug/l							
Pyrene	PAHMSW		ug/l							
Total PAH (Sum of USEPA 16)	PAHMSW	40	ug/l							
Phenol Index as C6H5OH	SFAPI		mg/l							
Dissolved Organic Carbon w	WSLM13		mg/l							
Conductivity uS/cm @ 25C w	WSLM2	2500	uS/cm							
Total Dissolved Solids	WSLM27		mg/l							
Total Dissolved Solids w	WSLM28		mg/l							
pH units w	WSLM3		pH units							

CAPITA

Soil Screening Table

			Sample ID	WS02	WS05	WS06	WS08	WS10	HP17	HP03	HP05	HP01	HP18	HP05
GAC value based on minimum AC value of			Sample Desc	0.5	0.25	0.45	0.4	0.4	0.4	0.4	0.8	0.5	1	0.3
			Date Sampled	05/06/2020	05/06/2020	05/06/2020	05/06/2020	05/06/2020	04/06/2020	03/06/2020	04/06/2020	03/06/2020	03/06/2020	12/06/2020
Determinant*	Method Code:	GAC	Units:											
Benzene	BTEXHSA	27	ug/kg	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1
Ethyl Benzene	BTEXHSA	5700	ug/kg	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1
m/p Xylenes	BTEXHSA	5900	ug/kg	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1
o Xylene	BTEXHSA	6600	ug/kg	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1
Toluene	BTEXHSA	22	ug/kg	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1
Xylenes	BTEXHSA	18700	ug/kg											
GRO	GROHSA	-	mg/kg											
GRO (>C5 - C6)	GROHSA	-	mg/kg											
GRO (>C7 - C8)	GROHSA	-	mg/kg											
GRO (>C8 - C10)	GROHSA	-	mg/kg											
GRO (C5-C6 Aliphatic)	GROHSA	-	mg/kg											
GRO (C6-C7 Aliphatic)	GROHSA	-	mg/kg											
GRO (C6-C7)	GROHSA	-	mg/kg											
GRO (C7-C8 Aliphatic)	GROHSA	-	mg/kg											
Acid Neut. Capacity	ANC	-	Mol/kg											
MTBE	BTEXHSA	-	ug/kg											
GRO (C8-C10 Aliphatic)	GROHSA	-	mg/kg											
SO4-- (acid sol)	ICPACIDS	-	mg/kg											
Boron (H20 Soluble)	ICPBOR	46000	mg/kg	0.59	0.7	0.83	0.51	0.4	<0.4	<0.4				
Arsenic (MS)	ICPMSS	170	mg/kg	11	12	12	12	7.6	9.2	6.6				
Cadmium (MS)	ICPMSS	190	mg/kg	0.25	0.32	0.28	0.32	0.17	0.21	0.12				
Chromium (MS)	ICPMSS	8633	mg/kg	20	25	25	32	25	25	19				
Copper (MS)	ICPMSS	44000	mg/kg	24	28	22	21	17	18	14				
Lead (MS)	ICPMSS	1300	mg/kg											
Mercury (MS)	ICPMSS	338	mg/kg	< 0.10	< 0.10	< 0.10	0.1	< 0.10	0.13	< 0.10				
Nickel (MS)	ICPMSS	980	mg/kg	22	25	25	28	26	26	21				
Selenium (MS)	ICPMSS	1800	mg/kg	0.58	0.51	0.81	0.71	0.35	0.44	0.53				
Zinc (MS)	ICPMSS	170000	mg/kg	110	120	78	110	63	73	55				
Chromium vi:	KONECR	33	mg/kg	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50				
L.O.I. % @ 450C	LOI(%MM)	-	%											
Acenaphthene	PAHMSUS	29000	mg/kg											
Acenaphthylene	PAHMSUS	29000	mg/kg	< 0.10	< 0.10	< 0.10	< 0.10	< 0.10	1.1	0.81				
Anthracene	PAHMSUS	150000	mg/kg	< 0.10	< 0.10	< 0.10	< 0.10	< 0.10	0.64	0.55				
Benzo(a)anthracene	PAHMSUS	49	mg/kg	< 0.10	< 0.10	< 0.10	< 0.10	< 0.10	3.6	2.1				
Benzo(a)pyrene	PAHMSUS	11	mg/kg	< 0.10	< 0.10	< 0.10	< 0.10	< 0.10	4.5	2.1				
Benzo(b)fluoranthene	PAHMSUS	13	mg/kg	< 0.10	< 0.10	< 0.10	< 0.10	< 0.10	5.8	3.2				
Benzo(ghi)perylene	PAHMSUS	1400	mg/kg	< 0.10	< 0.10	< 0.10	< 0.10	< 0.10	4.1	2.2				
Benzo(k)fluoranthene	PAHMSUS	370	mg/kg	< 0.10	< 0.10	< 0.10	< 0.10	< 0.10	2.3	1.3				
Chrysene	PAHMSUS	93	mg/kg	< 0.10	< 0.10	< 0.10	< 0.10	< 0.10	3.6	2				
Dibenzo(ah)anthracene	PAHMSUS	1.1	mg/kg	< 0.10	< 0.10	< 0.10	< 0.10	< 0.10	0.91	0.57				
Fluoranthene	PAHMSUS	6300	mg/kg	< 0.10	< 0.10	< 0.10	< 0.10	< 0.10	8.3	5.4				
Fluorene	PAHMSUS	20000	mg/kg	< 0.10	< 0.10	< 0.10	< 0.10	< 0.10	1.3	1				
Indeno(123-cd)pyrene	PAHMSUS	150	mg/kg	< 0.10	< 0.10	< 0.10	< 0.10	< 0.10	3.8	1.9				
Naphthalene	PAHMSUS	190	mg/kg	< 0.10	< 0.10	< 0.10	< 0.10	< 0.10	0.52	0.58				
Phenanthrene	PAHMSUS	6200	mg/kg	< 0.10	< 0.10	< 0.10	< 0.10	< 0.10	5.4	4.2				
Pyrene	PAHMSUS	15000	mg/kg	< 0.10	< 0.10	< 0.10	< 0.10	< 0.10	8.1	5.1				
Total PAH (Sum of USEPA 16)	PAHMSUS	-	mg/kg	< 2.0	< 2.0	< 2.0	< 2.0	< 2.0	56	34				
Coronene	PAHMSUS	-	mg/kg											
PCB 101	PCBECD	-	ug/kg											
PCB 118	PCBECD	-	ug/kg											
PCB 138	PCBECD	-	ug/kg											
PCB 153	PCBECD	-	ug/kg											
PCB 180	PCBECD	-	ug/kg											
PCB 28	PCBECD	-	ug/kg											
PCB 52	PCBECD	-	ug/kg											
pH units (AR)	PHSOIL	-	pH Units											
Cyanide(Total) (AR)	SFAPI	-	mg/kg											
Phenol Index.(AR)	SFAPI	-	mg/kg											
Tot.Moisture @ 105C	TMSS	-	%											
TPH Ali Band >C8-C10	TPHUSSI	2000	mg/kg											
TPH Ali Band >C10-C12	TPHUSSI	9700	mg/kg											
TPH Ali Band >C12-C16	TPHUSSI	13000	mg/kg											
TPH Ali Band >C16-C21	TPHUSSI	-	mg/kg											
TPH Ali Band >C21-C35	TPHUSSI	-	mg/kg											
TPH Ali Band >C8-C40	TPHUSSI	250000	mg/kg											
TPH Band (>C10-C40)	TPHFIDUS	-	mg/kg											
TPH by GCFID (AR)	TPHFIDUS	-	mg/kg											
TPH Aro Band >C8-C10	TPHUSSI	-	mg/kg											
TPH Aro Band >C10-C12	TPHUSSI	3500	mg/kg											
TPH Aro Band >C12-C16	TPHUSSI	5000	mg/kg											
TPH Aro Band >C16-C21	TPHUSSI	5100	mg/kg											
TPH Aro Band >C21-C35	TPHUSSI	3800	mg/kg											
TPH Aro Band >C8-C40	TPHUSSI	3800	mg/kg											
1,1,1,2-Tetrachloroethane	VOCHSAS	-	ug/kg											
1,1,1-Trichloroethane	VOCHSAS	-	ug/kg											
1,1,2,2-Tetrachloroethane	VOCHSAS	-	ug/kg											
1,1,2-Trichloroethane	VOCHSAS	-	ug/kg											
1,1-Dichloroethane	VOCHSAS	-	ug/kg											
1,1-Dichloroethene	VOCHSAS	-	ug/kg											
1,1-Dichloropropene	VOCHSAS	-	ug/kg											
1,2,3-Trichlorobenzene	VOCHSAS	-	ug/kg											
1,2,3-Trichloropropane	VOCHSAS	-	ug/kg											
1,2,4-Trichlorobenzene	VOCHSAS	-	ug/kg											
1,2,4-Trimethylbenzene	VOCHSAS	-	ug/kg											
1,2-Dibromo-3-chloropropane	VOCHSAS	-	ug/kg											
1,2-Dibromoethane	VOCHSAS	-	ug/kg											
1,2-Dichlorobenzene	VOCHSAS	-	ug/kg											
1,2-Dichloroethane	VOCHSAS	-	ug/kg											
1,2-Dichloropropane	VOCHSAS	-	ug/kg											
1,3,5-Trimethylbenzene	VOCHSAS	-	ug/kg											
1,3-Dichlorobenzene	VOCHSAS	-	ug/kg											
1,3-Dichloropropane	VOCHSAS	-	ug/kg											
1,4-Dichlorobenzene	VOCHSAS	-	ug/kg											
2,2-Dichloropropane	VOCHSAS	-	ug/kg											
2-Chlorotoluene	VOCHSAS	-	ug/kg											
4-Chlorotoluene	VOCHSAS	-	ug/kg											
Benzene	VOCHSAS	-	ug/kg											
Bromobenzene	VOCHSAS	-	ug/kg											
Bromochloromethane	VOCHSAS	-	ug/kg											
Bromodichloromethane	VOCHSAS	-	ug/kg											
Bromoform	VOCHSAS	-	ug/kg											
Bromomethane	VOCHSAS	-	ug/kg											
Carbon Tetrachloride	VOCHSAS	-	ug/kg											
Chlorobenzene	VOCHSAS	-	ug/kg											
Chloroethane	VOCHSAS	-	ug/kg											
Chloroform	VOCHSAS	-	ug/kg											
Chloromethane	VOCHSAS	-	ug/kg											
cis 1,2-Dichloroethene	VOCHSAS	-	ug/kg											
cis 1,3-Dichloropropene	VOCHSAS	-	ug/kg											
Dibromochloromethane	VOCHSAS	-	ug/kg											
Dibromomethane	VOCHSAS	-	ug/kg											
Dichlorodifluoromethane	VOCHSAS	-	ug/kg											
Ethylbenzene	VOCHSAS	-	ug/kg											
Hexachlorobutadiene	VOCHSAS	-	ug/kg											
iso-Propylbenzene	VOCHSAS	-	ug/kg											
m and p-Xylene	VOCHSAS	-	ug/kg											
MTBE	VOCHSAS	-	ug/kg											
Naphthalene	VOCHSAS	-	ug/kg											
n-Butylbenzene	VOCHSAS	-	ug/kg											
o-Xylene	VOCHSAS	-	ug/kg											
p-Isopropyltoluene	VOCHSAS	-	ug/kg											
Propylbenzene	VOCHSAS	-	ug/kg											
sec-Butylbenzene	VOCHSAS	-	ug/kg											
Styrene	VOCHSAS	-	ug/kg											
tert-Butylbenzene	VOCHSAS	-	ug/kg											
Tetrachloroethene	VOCHSAS	-	ug/kg											
Toluene	VOCHSAS	-	ug/kg											
trans 1,2-Dichloroethene	VOCHSAS	-	ug/kg											
trans 1,3-Dichloropropene	VOCHSAS	-	ug/kg											
Trichloroethene	VOCHSAS	-	ug/kg											
Trichlorofluoromethane	VOCHSAS	-	ug/kg											
Vinyl Chloride	VOCHSAS	-	ug/kg											
Arsenic	WAC_CALC	-	mg/kg											
Barium	WAC_CALC	-	mg/kg											
Cadmium	WAC_CALC	-	mg/kg											
Chromium	WAC_CALC	-	mg/kg											
Copper	WAC_CALC	-	mg/kg											
Mercury	WAC_CALC	-	mg/kg											
Molybdenum	WAC_CALC	-	mg/kg											
Nickel	WAC_CALC	-	mg/kg											
Lead	WAC_CALC	-	mg/kg											
Antimony	WAC_CALC	-	mg/kg											
Selenium	WAC_CALC	-	mg/kg											
Zinc	WAC_CALC	-	mg/kg											
Chloride	WAC_CALC	-	mg/kg											
Fluoride	WAC_CALC	-	mg/kg											
Sulphate as SO4	WAC_CALC	-	mg/kg											
Total Dissolved Solids	WAC_CALC	-	mg/kg											
Phenol Index	WAC_CALC	-	mg/kg											
Dissolved Organic Carbon	WAC_CALC	-	mg/kg											
Total Organic Carbon	WSLM59	-	% M/M											

CAPITA

Water Screening Results

CWAC values chosen from minimum value of EU EWS, WFD 2015, and WHO DWQ standards

			Sample ID	WS01	WS15
			Sample Desc	1.38	1.81
			Date Sampled	15/06/2020	15/06/2020
Analyte:	Method Code:	CWAC	Units:		
Benzene	BTEXHSA	0.75	ug/l	<1	<1
Ethyl Benzene	BTEXHSA	300	ug/l	<1	<1
m/p Xylenes	BTEXHSA		ug/l		
o Xylene	BTEXHSA		ug/l		
Toluene	BTEXHSA	700	ug/l	<1	<1
Xylenes	BTEXHSA		ug/l		
Ammonia (Free) as N calc a	FNH3CALC		mg/l		
GRO >C5->C6	GROHSA		mg/l		
GRO >C5->C6 Aliphatic	GROHSA		mg/l		
GRO >C6->C7	GROHSA		mg/l		
GRO >C6->C7 Aliphatic	GROHSA		mg/l		
GRO >C7->C8	GROHSA		mg/l		
GRO >C7->C8 Aliphatic	GROHSA		mg/l		
GRO >C8->C10	GROHSA		mg/l		
GRO >C8->C10 Aliphatic	GROHSA		mg/l		
GRO-HSA o	GROHSA		mg/l		
Arsenic as As (Dissolved)	ICPMSW	0.0075	mg/l	< 1.0	3.8
Cadmium as Cd (Dissolved)	ICPMSW	0.003	mg/l	< 0.080	< 0.080
Chromium as Cr (Dissolved)	ICPMSW	0.0375	mg/l	3.5	< 1.0
Copper as Cu (Dissolved)	ICPMSW	1.5	mg/l	1.9	< 1.0
Lead as Pb (Dissolved)	ICPMSW	0.0075	mg/l	< 1.0	< 1.0
Mercury as Hg (Dissolved)	ICPMSW	0.00075	mg/l	< 0.50	< 0.50
Nickel as Ni (Dissolved)	ICPMSW	0.015	mg/l	3.9	6.3
Zinc as Zn (Dissolved)	ICPMSW		mg/l		
Boron as B (Dissolved) a	ICPWATVAR	0.075	mg/l	24	< 20
Calcium as Ca (Dissolved) a	ICPWATVAR		mg/l		
Magnesium as Mg (Dissolved) a	ICPWATVAR		mg/l		
Ammoniacal Nitrogen as N	KONENS	0.29	mg/l		
Chloride as Cl w	KONENS	188	mg/l		
Nitrate as N	KONENS	37.5	mg/l		
Acenaphthene	PAHMSW		ug/l		
Acenaphthylene	PAHMSW		ug/l		
Anthracene	PAHMSW		ug/l		
Benzo(a)anthracene	PAHMSW		ug/l		
Benzo(b)fluoranthene	PAHMSW	0.075	ug/l		
Benzo(ghi)perylene	PAHMSW		ug/l		
Benzo(k)fluoranthene	PAHMSW		ug/l		
Benzo-a-Pyrene	PAHMSW	0.0075	ug/l		
Chrysene	PAHMSW		ug/l		
Dibenzo(a,h)anthracene	PAHMSW		ug/l		
Fluoranthene	PAHMSW	0.075	ug/l		
Fluorene	PAHMSW		ug/l		
Indeno(1,2,3-cd)pyrene	PAHMSW		ug/l		
Naphthalene	PAHMSW	0.075	ug/l		
Phenanthrene	PAHMSW		ug/l		
Pyrene	PAHMSW		ug/l		
Total PAH (Sum of USEPA 16)	PAHMSW	40	ug/l		
Cyanide (Free) as CN	SFAPI		mg/l		
TPH Ali Band >C10-C12	TPHFID-Si		mg/l		
TPH Ali Band >C12-C16	TPHFID-Si		mg/l		
TPH Ali Band >C16-C21	TPHFID-Si		mg/l		
TPH Ali Band >C21-C35	TPHFID-Si		mg/l		
TPH Ali Band >C8-C10	TPHFID-Si		mg/l		
TPH Ali Band >C8-C40	TPHFID-Si		mg/l		
TPH Aro Band >C10-C12	TPHFID-Si		mg/l		
TPH Aro Band >C12-C16	TPHFID-Si		mg/l		
TPH Aro Band >C16-C21	TPHFID-Si		mg/l		
TPH Aro Band >C21-C35	TPHFID-Si		mg/l		
TPH Aro Band >C8-C10	TPHFID-Si		mg/l		
TPH Aro Band >C8-C40	TPHFID-Si		mg/l		
Total Alkalinity as CaCO3 w	WSLM12		mg/l		
Dissolved Organic Carbon w	WSLM13		mg/l		
Conductivity uS/cm @ 25C w	WSLM2	2500	uS/cm		
pH units w	WSLM3		pH units		

CAPITA

APPENDIX C

Appendix C
Waste Classification Data

We | Listen Create Deliver

Waste Classification Report

76BGG-YZ4LS-5A7ZY

Job name

Llantarnam 3G Pitch

Description/Comments

Project

Llantarnam 3G Pitch

Site

Llantarnam 3G Pitch

Related Documents

#	Name	Description
None		

Waste Stream Template

Example waste stream template for contaminated soils

Classified by

Name:
Liam Bailey
Date:
09 Sep 2020 13:30 GMT
Telephone:
02920803500

Company:
Capita Property and Infrasturcture Ltd (Wales)
St David's House
Pascal Close, St Mellons
Cardiff
CF3 0LW

HazWasteOnline™ Training Record:

Course	Date
Hazardous Waste Classification	-
Advanced Hazardous Waste Classification	-

Report

Created by: Liam Bailey
Created date: 09 Sep 2020 13:30 GMT

Job summary

Classification of sample: WS02

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

Sample details

Sample Name:
WS02
Sample Depth:
0.3 m
Moisture content:
15%
(no correction)

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

Hazard properties

None identified

Determinands

Moisture content: 15% No Moisture Correction applied (MC)

#	Determinand	CLP index number	EC Number	CAS Number	CLP Note	User entered data		Conv. Factor	Compound conc.		Classification value	MC Applied	Conc. Not Used
1	arsenic { arsenic trioxide }	033-003-00-0	215-481-4	1327-53-3		11	mg/kg	1.32	14.524	mg/kg	0.00145 %		
2	beryllium { beryllium oxide }	004-003-00-8	215-133-1	1304-56-9		1	mg/kg	2.775	2.775	mg/kg	0.000278 %		
3	boron { diboron trioxide; boric oxide }	005-008-00-8	215-125-8	1303-86-2		0.59	mg/kg	3.22	1.9	mg/kg	0.00019 %		
4	cadmium { cadmium oxide }	048-002-00-0	215-146-2	1306-19-0		0.25	mg/kg	1.142	0.286	mg/kg	0.0000286 %		
5	chromium in chromium(III) compounds { chromium(III) oxide (worst case) }		215-160-9	1308-38-9		20	mg/kg	1.462	29.231	mg/kg	0.00292 %		
6	chromium in chromium(VI) compounds { chromium(VI) oxide }	024-001-00-0	215-607-8	1333-82-0		0.5	mg/kg	1.923	0.962	mg/kg	0.0000962 %		
7	copper { dicopper oxide; copper (I) oxide }	029-002-00-X	215-270-7	1317-39-1		24	mg/kg	1.126	27.021	mg/kg	0.0027 %		
8	mercury { mercury dichloride }	080-010-00-X	231-299-8	7487-94-7		0.1	mg/kg	1.353	0.135	mg/kg	0.0000135 %		
9	nickel { nickel chromate }	028-035-00-7	238-766-5	14721-18-7		22	mg/kg	2.976	65.478	mg/kg	0.00655 %		
10	selenium { selenium compounds with the exception of cadmium sulphoselenide and those specified elsewhere in this Annex }	034-002-00-8				0.58	mg/kg	2.554	1.481	mg/kg	0.000148 %		
11	zinc { zinc chromate }	024-007-00-3	236-878-9	13530-65-9		110	mg/kg	2.774	305.156	mg/kg	0.0305 %		
12	TPH (C6 to C40) petroleum group			TPH		10	mg/kg		10	mg/kg	0.001 %		
13	benzene	601-020-00-8	200-753-7	71-43-2		0.001	mg/kg		0.001	mg/kg	0.0000001 %		
14	toluene	601-021-00-3	203-625-9	108-88-3		0.001	mg/kg		0.001	mg/kg	0.0000001 %		

#		Determinand			CLP Note	User entered data		Conv. Factor	Compound conc.		Classification value	MC Applied	Conc. Not Used
		CLP index number	EC Number	CAS Number									
15		ethylbenzene				0.001	mg/kg		0.001	mg/kg	0.0000001 %		
		601-023-00-4	202-849-4	100-41-4									
16		xylene				0.001	mg/kg		0.001	mg/kg	0.0000001 %		
		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]									
17		cyanides { salts of hydrogen cyanide with the exception of complex cyanides such as ferrocyanides, ferricyanides and mercuric oxycyanide and those specified elsewhere in this Annex }				0.5	mg/kg	1.884	0.942	mg/kg	0.0000942 %		
		006-007-00-5											
18		pH				6.9	pH		6.9	pH	6.9 pH		
				PH									
19		naphthalene				0.1	mg/kg		0.1	mg/kg	0.00001 %		
		601-052-00-2	202-049-5	91-20-3									
20		acenaphthylene				0.1	mg/kg		0.1	mg/kg	0.00001 %		
			205-917-1	208-96-8									
21		acenaphthene				0.1	mg/kg		0.1	mg/kg	0.00001 %		
			201-469-6	83-32-9									
22		fluorene				0.1	mg/kg		0.1	mg/kg	0.00001 %		
			201-695-5	86-73-7									
23		phenanthrene				0.1	mg/kg		0.1	mg/kg	0.00001 %		
			201-581-5	85-01-8									
24		anthracene				0.1	mg/kg		0.1	mg/kg	0.00001 %		
			204-371-1	120-12-7									
25		fluoranthene				0.1	mg/kg		0.1	mg/kg	0.00001 %		
			205-912-4	206-44-0									
26		pyrene				0.1	mg/kg		0.1	mg/kg	0.00001 %		
			204-927-3	129-00-0									
27		benzo[a]anthracene				0.1	mg/kg		0.1	mg/kg	0.00001 %		
		601-033-00-9	200-280-6	56-55-3									
28		chrysene				0.1	mg/kg		0.1	mg/kg	0.00001 %		
		601-048-00-0	205-923-4	218-01-9									
29		benzo[b]fluoranthene				0.1	mg/kg		0.1	mg/kg	0.00001 %		
		601-034-00-4	205-911-9	205-99-2									
30		benzo[k]fluoranthene				0.1	mg/kg		0.1	mg/kg	0.00001 %		
		601-036-00-5	205-916-6	207-08-9									
31		benzo[a]pyrene; benzo[def]chrysene				0.1	mg/kg		0.1	mg/kg	0.00001 %		
		601-032-00-3	200-028-5	50-32-8									
32		indeno[123-cd]pyrene				0.1	mg/kg		0.1	mg/kg	0.00001 %		
			205-893-2	193-39-5									
33		dibenz[a,h]anthracene				0.1	mg/kg		0.1	mg/kg	0.00001 %		
		601-041-00-2	200-181-8	53-70-3									
34		benzo[ghi]perylene				0.1	mg/kg		0.1	mg/kg	0.00001 %		
			205-883-8	191-24-2									
35		phenol				0.5	mg/kg		0.5	mg/kg	0.00005 %		
		604-001-00-2	203-632-7	108-95-2									
36		carbon tetrachloride; tetrachloromethane				0.001	mg/kg		0.001	mg/kg	0.0000001 %		
		602-008-00-5	200-262-8	56-23-5									
37		vinyl chloride; chloroethylene				0.001	mg/kg		0.001	mg/kg	0.0000001 %		
		602-023-00-7	200-831-0	75-01-4									
										Total:	0.0462 %		

Key

	User supplied data
	Determinand defined or amended by HazWasteOnline (see Appendix A)
	Speciated Deteminand - Unless the Determinand is Note 1, the Conversion Factor is used to calculate the compound concentration

Supplementary Hazardous Property Information

HP 2: Oxidizing "waste which may, generally by providing oxygen, cause or contribute to the combustion of other materials"
Force this Hazardous property to non hazardous because At limit of detection.

Hazard Statements hit:

Ox. Sol. 1; H271 "May cause fire or explosion; strong oxidiser."

Because of determinand:

chromium(VI) oxide: (compound conc.: 0.00009%)

HP 3(i): Flammable "flammable liquid waste: liquid waste having a flash point below 60°C or waste gas oil, diesel and light heating oils having a flash point > 55°C and <= 75°C"
Force this Hazardous property to non hazardous because At limit of detection.

Hazard Statements hit:

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

Because of determinands:

benzene: (conc.: 1.0e-07%)
toluene: (conc.: 1.0e-07%)
ethylbenzene: (conc.: 1.0e-07%)

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

Because of determinands:

TPH (C6 to C40) petroleum group: (conc.: 0.001%)
xylene: (conc.: 1.0e-07%)

HP 3(iv): Flammable "flammable gaseous waste: gaseous waste which is flammable in air at 20°C and a standard pressure of 101.3 kPa"
Force this Hazardous property to non hazardous because At limit of detection.

Hazard Statements hit:

Flam. Gas 1; H220 "Extremely flammable gas."

Because of determinand:

vinyl chloride; chloroethylene: (conc.: 1.0e-07%)

Classification of sample: WS05

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

Sample details

Sample Name:
WS05
Sample Depth:
0.0 m
Moisture content:
15%
(no correction)

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

Hazard properties

None identified

Determinands

Moisture content: 15% No Moisture Correction applied (MC)

#	Determinand	CLP index number	EC Number	CAS Number	CLP Note	User entered data		Conv. Factor	Compound conc.		Classification value	MC Applied	Conc. Not Used
1	arsenic { arsenic trioxide }	033-003-00-0	215-481-4	1327-53-3		12	mg/kg	1.32	15.844	mg/kg	0.00158 %		
2	beryllium { beryllium oxide }	004-003-00-8	215-133-1	1304-56-9		1	mg/kg	2.775	2.775	mg/kg	0.000278 %		
3	boron { diboron trioxide; boric oxide }	005-008-00-8	215-125-8	1303-86-2		0.7	mg/kg	3.22	2.254	mg/kg	0.000225 %		
4	cadmium { cadmium oxide }	048-002-00-0	215-146-2	1306-19-0		0.32	mg/kg	1.142	0.366	mg/kg	0.0000366 %		
5	chromium in chromium(III) compounds { chromium(III) oxide (worst case) }		215-160-9	1308-38-9		25	mg/kg	1.462	36.539	mg/kg	0.00365 %		
6	chromium in chromium(VI) compounds { chromium(VI) oxide }	024-001-00-0	215-607-8	1333-82-0		0.5	mg/kg	1.923	0.962	mg/kg	0.0000962 %		
7	copper { dicopper oxide; copper (I) oxide }	029-002-00-X	215-270-7	1317-39-1		28	mg/kg	1.126	31.525	mg/kg	0.00315 %		
8	mercury { mercury dichloride }	080-010-00-X	231-299-8	7487-94-7		0.1	mg/kg	1.353	0.135	mg/kg	0.0000135 %		
9	nickel { nickel chromate }	028-035-00-7	238-766-5	14721-18-7		25	mg/kg	2.976	74.407	mg/kg	0.00744 %		
10	selenium { selenium compounds with the exception of cadmium sulphoselenide and those specified elsewhere in this Annex }	034-002-00-8				0.51	mg/kg	2.554	1.302	mg/kg	0.00013 %		
11	zinc { zinc chromate }	024-007-00-3	236-878-9	13530-65-9		120	mg/kg	2.774	332.898	mg/kg	0.0333 %		
12	TPH (C6 to C40) petroleum group			TPH		10	mg/kg		10	mg/kg	0.001 %		
13	benzene	601-020-00-8	200-753-7	71-43-2		0.001	mg/kg		0.001	mg/kg	0.0000001 %		
14	toluene	601-021-00-3	203-625-9	108-88-3		0.001	mg/kg		0.001	mg/kg	0.0000001 %		

#		Determinand			CLP Note	User entered data		Conv. Factor	Compound conc.		Classification value	MC Applied	Conc. Not Used
		CLP index number	EC Number	CAS Number									
15		ethylbenzene				0.001	mg/kg		0.001	mg/kg	0.0000001 %		
		601-023-00-4	202-849-4	100-41-4									
16		xylene				0.001	mg/kg		0.001	mg/kg	0.0000001 %		
		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]									
17		cyanides { salts of hydrogen cyanide with the exception of complex cyanides such as ferrocyanides, ferricyanides and mercuric oxycyanide and those specified elsewhere in this Annex }				0.5	mg/kg	1.884	0.942	mg/kg	0.0000942 %		
		006-007-00-5											
18		pH				7.3	pH		7.3	pH	7.3 pH		
				PH									
19		naphthalene				0.1	mg/kg		0.1	mg/kg	0.00001 %		
		601-052-00-2	202-049-5	91-20-3									
20		acenaphthylene				0.1	mg/kg		0.1	mg/kg	0.00001 %		
			205-917-1	208-96-8									
21		acenaphthene				0.1	mg/kg		0.1	mg/kg	0.00001 %		
			201-469-6	83-32-9									
22		fluorene				0.1	mg/kg		0.1	mg/kg	0.00001 %		
			201-695-5	86-73-7									
23		phenanthrene				0.1	mg/kg		0.1	mg/kg	0.00001 %		
			201-581-5	85-01-8									
24		anthracene				0.1	mg/kg		0.1	mg/kg	0.00001 %		
			204-371-1	120-12-7									
25		fluoranthene				0.1	mg/kg		0.1	mg/kg	0.00001 %		
			205-912-4	206-44-0									
26		pyrene				0.1	mg/kg		0.1	mg/kg	0.00001 %		
			204-927-3	129-00-0									
27		benzo[a]anthracene				0.1	mg/kg		0.1	mg/kg	0.00001 %		
		601-033-00-9	200-280-6	56-55-3									
28		chrysene				0.1	mg/kg		0.1	mg/kg	0.00001 %		
		601-048-00-0	205-923-4	218-01-9									
29		benzo[b]fluoranthene				0.1	mg/kg		0.1	mg/kg	0.00001 %		
		601-034-00-4	205-911-9	205-99-2									
30		benzo[k]fluoranthene				0.1	mg/kg		0.1	mg/kg	0.00001 %		
		601-036-00-5	205-916-6	207-08-9									
31		benzo[a]pyrene; benzo[def]chrysene				0.1	mg/kg		0.1	mg/kg	0.00001 %		
		601-032-00-3	200-028-5	50-32-8									
32		indeno[123-cd]pyrene				0.1	mg/kg		0.1	mg/kg	0.00001 %		
			205-893-2	193-39-5									
33		dibenz[a,h]anthracene				0.1	mg/kg		0.1	mg/kg	0.00001 %		
		601-041-00-2	200-181-8	53-70-3									
34		benzo[ghi]perylene				0.1	mg/kg		0.1	mg/kg	0.00001 %		
			205-883-8	191-24-2									
35		phenol				0.5	mg/kg		0.5	mg/kg	0.00005 %		
		604-001-00-2	203-632-7	108-95-2									
36		carbon tetrachloride; tetrachloromethane				0.001	mg/kg		0.001	mg/kg	0.0000001 %		
		602-008-00-5	200-262-8	56-23-5									
37		vinyl chloride; chloroethylene				0.001	mg/kg		0.001	mg/kg	0.0000001 %		
		602-023-00-7	200-831-0	75-01-4									
										Total:	0.0512 %		

Key

- User supplied data
- Determinand defined or amended by HazWasteOnline (see Appendix A)
- Speciated Deteminand - Unless the Determinand is Note 1, the Conversion Factor is used to calculate the compound concentration

Supplementary Hazardous Property Information

HP 2: Oxidizing "waste which may, generally by providing oxygen, cause or contribute to the combustion of other materials"

Force this Hazardous property to non hazardous because At limit of detection.

Hazard Statements hit:

Ox. Sol. 1; H271 "May cause fire or explosion; strong oxidiser."

Because of determinand:

chromium(VI) oxide: (compound conc.: 0.00009%)

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

Force this Hazardous property to non hazardous because At limit of detection.

Hazard Statements hit:

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

Because of determinands:

benzene: (conc.: 1.0e-07%)
toluene: (conc.: 1.0e-07%)
ethylbenzene: (conc.: 1.0e-07%)

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

Because of determinands:

TPH (C6 to C40) petroleum group: (conc.: 0.001%)
xylene: (conc.: 1.0e-07%)

HP 3(iv): Flammable "flammable gaseous waste: gaseous waste which is flammable in air at 20°C and a standard pressure of 101.3 kPa"

Force this Hazardous property to non hazardous because At limit of detection.

Hazard Statements hit:

Flam. Gas 1; H220 "Extremely flammable gas."

Because of determinand:

vinyl chloride; chloroethylene: (conc.: 1.0e-07%)

Classification of sample: WS06

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

Sample details

Sample Name:
WS06
Sample Depth:
0.15 m
Moisture content:
6.4%
(no correction)

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

Hazard properties

None identified

Determinands

Moisture content: 6.4% No Moisture Correction applied (MC)

#	Determinand	CLP index number	EC Number	CAS Number	CLP Note	User entered data		Conv. Factor	Compound conc.		Classification value	MC Applied	Conc. Not Used
1	arsenic { arsenic trioxide }	033-003-00-0	215-481-4	1327-53-3		12	mg/kg	1.32	15.844	mg/kg	0.00158 %		
2	beryllium { beryllium oxide }	004-003-00-8	215-133-1	1304-56-9		5.5	mg/kg	2.775	15.264	mg/kg	0.00153 %		
3	boron { diboron trioxide; boric oxide }	005-008-00-8	215-125-8	1303-86-2		0.83	mg/kg	3.22	2.672	mg/kg	0.000267 %		
4	cadmium { cadmium oxide }	048-002-00-0	215-146-2	1306-19-0		0.28	mg/kg	1.142	0.32	mg/kg	0.000032 %		
5	chromium in chromium(III) compounds { chromium(III) oxide (worst case) }		215-160-9	1308-38-9		25	mg/kg	1.462	36.539	mg/kg	0.00365 %		
6	chromium in chromium(VI) compounds { chromium(VI) oxide }	024-001-00-0	215-607-8	1333-82-0		0.5	mg/kg	1.923	0.962	mg/kg	0.0000962 %		
7	copper { dicopper oxide; copper (I) oxide }	029-002-00-X	215-270-7	1317-39-1		22	mg/kg	1.126	24.77	mg/kg	0.00248 %		
8	mercury { mercury dichloride }	080-010-00-X	231-299-8	7487-94-7		0.1	mg/kg	1.353	0.135	mg/kg	0.0000135 %		
9	nickel { nickel chromate }	028-035-00-7	238-766-5	14721-18-7		25	mg/kg	2.976	74.407	mg/kg	0.00744 %		
10	selenium { selenium compounds with the exception of cadmium sulphoselenide and those specified elsewhere in this Annex }	034-002-00-8				0.81	mg/kg	2.554	2.068	mg/kg	0.000207 %		
11	zinc { zinc chromate }	024-007-00-3	236-878-9	13530-65-9		78	mg/kg	2.774	216.383	mg/kg	0.0216 %		
12	TPH (C6 to C40) petroleum group			TPH		10	mg/kg		10	mg/kg	0.001 %		
13	benzene	601-020-00-8	200-753-7	71-43-2		0.001	mg/kg		0.001	mg/kg	0.0000001 %		
14	toluene	601-021-00-3	203-625-9	108-88-3		0.001	mg/kg		0.001	mg/kg	0.0000001 %		

#		Determinand			CLP Note	User entered data		Conv. Factor	Compound conc.		Classification value	MC Applied	Conc. Not Used
		CLP index number	EC Number	CAS Number									
15		ethylbenzene				0.001	mg/kg		0.001	mg/kg	0.0000001 %		
		601-023-00-4	202-849-4	100-41-4									
16		xylene				0.001	mg/kg		0.001	mg/kg	0.0000001 %		
		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]									
17		cyanides { salts of hydrogen cyanide with the exception of complex cyanides such as ferrocyanides, ferricyanides and mercuric oxycyanide and those specified elsewhere in this Annex }				0.5	mg/kg	1.884	0.942	mg/kg	0.0000942 %		
		006-007-00-5											
18		pH				7	pH		7	pH	7pH		
				PH									
19		naphthalene				0.1	mg/kg		0.1	mg/kg	0.00001 %		
		601-052-00-2	202-049-5	91-20-3									
20		acenaphthylene				0.1	mg/kg		0.1	mg/kg	0.00001 %		
			205-917-1	208-96-8									
21		acenaphthene				0.1	mg/kg		0.1	mg/kg	0.00001 %		
			201-469-6	83-32-9									
22		fluorene				0.1	mg/kg		0.1	mg/kg	0.00001 %		
			201-695-5	86-73-7									
23		phenanthrene				0.1	mg/kg		0.1	mg/kg	0.00001 %		
			201-581-5	85-01-8									
24		anthracene				0.1	mg/kg		0.1	mg/kg	0.00001 %		
			204-371-1	120-12-7									
25		fluoranthene				0.1	mg/kg		0.1	mg/kg	0.00001 %		
			205-912-4	206-44-0									
26		pyrene				0.1	mg/kg		0.1	mg/kg	0.00001 %		
			204-927-3	129-00-0									
27		benzo[a]anthracene				0.1	mg/kg		0.1	mg/kg	0.00001 %		
		601-033-00-9	200-280-6	56-55-3									
28		chrysene				0.1	mg/kg		0.1	mg/kg	0.00001 %		
		601-048-00-0	205-923-4	218-01-9									
29		benzo[b]fluoranthene				0.1	mg/kg		0.1	mg/kg	0.00001 %		
		601-034-00-4	205-911-9	205-99-2									
30		benzo[k]fluoranthene				0.1	mg/kg		0.1	mg/kg	0.00001 %		
		601-036-00-5	205-916-6	207-08-9									
31		benzo[a]pyrene; benzo[def]chrysene				0.1	mg/kg		0.1	mg/kg	0.00001 %		
		601-032-00-3	200-028-5	50-32-8									
32		indeno[123-cd]pyrene				0.1	mg/kg		0.1	mg/kg	0.00001 %		
			205-893-2	193-39-5									
33		dibenz[a,h]anthracene				0.1	mg/kg		0.1	mg/kg	0.00001 %		
		601-041-00-2	200-181-8	53-70-3									
34		benzo[ghi]perylene				0.1	mg/kg		0.1	mg/kg	0.00001 %		
			205-883-8	191-24-2									
35		phenol				0.5	mg/kg		0.5	mg/kg	0.00005 %		
		604-001-00-2	203-632-7	108-95-2									
36		carbon tetrachloride; tetrachloromethane				0.001	mg/kg		0.001	mg/kg	0.0000001 %		
		602-008-00-5	200-262-8	56-23-5									
37		vinyl chloride; chloroethylene				0.001	mg/kg		0.001	mg/kg	0.0000001 %		
		602-023-00-7	200-831-0	75-01-4									
										Total:	0.0402 %		

Key

	User supplied data
	Determinand defined or amended by HazWasteOnline (see Appendix A)
	Speciated Deteminand - Unless the Determinand is Note 1, the Conversion Factor is used to calculate the compound concentration

Supplementary Hazardous Property Information

HP 2: Oxidizing "waste which may, generally by providing oxygen, cause or contribute to the combustion of other materials"
Force this Hazardous property to non hazardous because At limit of detection.

Hazard Statements hit:

Ox. Sol. 1; H271 "May cause fire or explosion; strong oxidiser."

Because of determinand:

chromium(VI) oxide: (compound conc.: 0.00009%)

HP 3(i): Flammable "flammable liquid waste: liquid waste having a flash point below 60°C or waste gas oil, diesel and light heating oils having a flash point > 55°C and <= 75°C"
Force this Hazardous property to non hazardous because At limit of detection.

Hazard Statements hit:

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

Because of determinands:

benzene: (conc.: 1.0e-07%)
toluene: (conc.: 1.0e-07%)
ethylbenzene: (conc.: 1.0e-07%)

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

Because of determinands:

TPH (C6 to C40) petroleum group: (conc.: 0.001%)
xylene: (conc.: 1.0e-07%)

HP 3(iv): Flammable "flammable gaseous waste: gaseous waste which is flammable in air at 20°C and a standard pressure of 101.3 kPa"
Force this Hazardous property to non hazardous because At limit of detection.

Hazard Statements hit:

Flam. Gas 1; H220 "Extremely flammable gas."

Because of determinand:

vinyl chloride; chloroethylene: (conc.: 1.0e-07%)

Classification of sample: WS08

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

Sample details

Sample Name:
WS08
Sample Depth:
0.2 m
Moisture content:
13%
(no correction)

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

Hazard properties

None identified

Determinands

Moisture content: 13% No Moisture Correction applied (MC)

#	Determinand	CLP index number	EC Number	CAS Number	CLP Note	User entered data		Conv. Factor	Compound conc.		Classification value	MC Applied	Conc. Not Used
1	arsenic { arsenic trioxide }	033-003-00-0	215-481-4	1327-53-3		12	mg/kg	1.32	15.844	mg/kg	0.00158 %		
2	beryllium { beryllium oxide }	004-003-00-8	215-133-1	1304-56-9		1.7	mg/kg	2.775	4.718	mg/kg	0.000472 %		
3	boron { diboron trioxide; boric oxide }	005-008-00-8	215-125-8	1303-86-2		0.51	mg/kg	3.22	1.642	mg/kg	0.000164 %		
4	cadmium { cadmium oxide }	048-002-00-0	215-146-2	1306-19-0		0.32	mg/kg	1.142	0.366	mg/kg	0.0000366 %		
5	chromium in chromium(III) compounds { chromium(III) oxide (worst case) }		215-160-9	1308-38-9		32	mg/kg	1.462	46.77	mg/kg	0.00468 %		
6	chromium in chromium(VI) compounds { chromium(VI) oxide }	024-001-00-0	215-607-8	1333-82-0		0.5	mg/kg	1.923	0.962	mg/kg	0.0000962 %		
7	copper { dicopper oxide; copper (I) oxide }	029-002-00-X	215-270-7	1317-39-1		21	mg/kg	1.126	23.644	mg/kg	0.00236 %		
8	mercury { mercury dichloride }	080-010-00-X	231-299-8	7487-94-7		0.1	mg/kg	1.353	0.135	mg/kg	0.0000135 %		
9	nickel { nickel chromate }	028-035-00-7	238-766-5	14721-18-7		28	mg/kg	2.976	83.335	mg/kg	0.00833 %		
10	selenium { selenium compounds with the exception of cadmium sulphoselenide and those specified elsewhere in this Annex }	034-002-00-8				0.71	mg/kg	2.554	1.813	mg/kg	0.000181 %		
11	zinc { zinc chromate }	024-007-00-3	236-878-9	13530-65-9		110	mg/kg	2.774	305.156	mg/kg	0.0305 %		
12	TPH (C6 to C40) petroleum group			TPH		10	mg/kg		10	mg/kg	0.001 %		
13	benzene	601-020-00-8	200-753-7	71-43-2		0.001	mg/kg		0.001	mg/kg	0.0000001 %		
14	toluene	601-021-00-3	203-625-9	108-88-3		0.001	mg/kg		0.001	mg/kg	0.0000001 %		

#		Determinand			CLP Note	User entered data		Conv. Factor	Compound conc.		Classification value	MC Applied	Conc. Not Used
		CLP index number	EC Number	CAS Number									
15		ethylbenzene				0.001	mg/kg		0.001	mg/kg	0.0000001 %		
		601-023-00-4	202-849-4	100-41-4									
16		xylene				0.001	mg/kg		0.001	mg/kg	0.0000001 %		
		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]									
17		cyanides { salts of hydrogen cyanide with the exception of complex cyanides such as ferrocyanides, ferricyanides and mercuric oxycyanide and those specified elsewhere in this Annex }				0.5	mg/kg	1.884	0.942	mg/kg	0.0000942 %		
		006-007-00-5											
18		pH				7.2	pH		7.2	pH	7.2 pH		
				PH									
19		naphthalene				0.1	mg/kg		0.1	mg/kg	0.00001 %		
		601-052-00-2	202-049-5	91-20-3									
20		acenaphthylene				0.1	mg/kg		0.1	mg/kg	0.00001 %		
			205-917-1	208-96-8									
21		acenaphthene				0.1	mg/kg		0.1	mg/kg	0.00001 %		
			201-469-6	83-32-9									
22		fluorene				0.1	mg/kg		0.1	mg/kg	0.00001 %		
			201-695-5	86-73-7									
23		phenanthrene				0.1	mg/kg		0.1	mg/kg	0.00001 %		
			201-581-5	85-01-8									
24		anthracene				0.1	mg/kg		0.1	mg/kg	0.00001 %		
			204-371-1	120-12-7									
25		fluoranthene				0.1	mg/kg		0.1	mg/kg	0.00001 %		
			205-912-4	206-44-0									
26		pyrene				0.1	mg/kg		0.1	mg/kg	0.00001 %		
			204-927-3	129-00-0									
27		benzo[a]anthracene				0.1	mg/kg		0.1	mg/kg	0.00001 %		
		601-033-00-9	200-280-6	56-55-3									
28		chrysene				0.1	mg/kg		0.1	mg/kg	0.00001 %		
		601-048-00-0	205-923-4	218-01-9									
29		benzo[b]fluoranthene				0.1	mg/kg		0.1	mg/kg	0.00001 %		
		601-034-00-4	205-911-9	205-99-2									
30		benzo[k]fluoranthene				0.1	mg/kg		0.1	mg/kg	0.00001 %		
		601-036-00-5	205-916-6	207-08-9									
31		benzo[a]pyrene; benzo[def]chrysene				0.1	mg/kg		0.1	mg/kg	0.00001 %		
		601-032-00-3	200-028-5	50-32-8									
32		indeno[123-cd]pyrene				0.1	mg/kg		0.1	mg/kg	0.00001 %		
			205-893-2	193-39-5									
33		dibenz[a,h]anthracene				0.1	mg/kg		0.1	mg/kg	0.00001 %		
		601-041-00-2	200-181-8	53-70-3									
34		benzo[ghi]perylene				0.1	mg/kg		0.1	mg/kg	0.00001 %		
			205-883-8	191-24-2									
35		phenol				0.5	mg/kg		0.5	mg/kg	0.00005 %		
		604-001-00-2	203-632-7	108-95-2									
36		carbon tetrachloride; tetrachloromethane				0.001	mg/kg		0.001	mg/kg	0.0000001 %		
		602-008-00-5	200-262-8	56-23-5									
37		vinyl chloride; chloroethylene				0.001	mg/kg		0.001	mg/kg	0.0000001 %		
		602-023-00-7	200-831-0	75-01-4									
										Total:	0.0497 %		

Key

- User supplied data
- Determinand defined or amended by HazWasteOnline (see Appendix A)
- Speciated Deteminand - Unless the Determinand is Note 1, the Conversion Factor is used to calculate the compound concentration

Supplementary Hazardous Property Information

HP 2: Oxidizing "waste which may, generally by providing oxygen, cause or contribute to the combustion of other materials"

Force this Hazardous property to non hazardous because At limit of detection.

Hazard Statements hit:

Ox. Sol. 1; H271 "May cause fire or explosion; strong oxidiser."

Because of determinand:

chromium(VI) oxide: (compound conc.: 0.00009%)

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

Force this Hazardous property to non hazardous because At limit of detection.

Hazard Statements hit:

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

Because of determinands:

benzene: (conc.: 1.0e-07%)
toluene: (conc.: 1.0e-07%)
ethylbenzene: (conc.: 1.0e-07%)

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

Because of determinands:

TPH (C6 to C40) petroleum group: (conc.: 0.001%)
xylene: (conc.: 1.0e-07%)

HP 3(iv): Flammable "flammable gaseous waste: gaseous waste which is flammable in air at 20°C and a standard pressure of 101.3 kPa"

Force this Hazardous property to non hazardous because At limit of detection.

Hazard Statements hit:

Flam. Gas 1; H220 "Extremely flammable gas."

Because of determinand:

vinyl chloride; chloroethylene: (conc.: 1.0e-07%)

Classification of sample: WS10

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

Sample details

Sample Name:
WS10
Sample Depth:
0.2 m
Moisture content:
6.1%
(no correction)

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

Hazard properties

None identified

Determinands

Moisture content: 6.1% No Moisture Correction applied (MC)

#	Determinand	CLP index number	EC Number	CAS Number	CLP Note	User entered data		Conv. Factor	Compound conc.		Classification value	MC Applied	Conc. Not Used
1	arsenic { arsenic trioxide }	033-003-00-0	215-481-4	1327-53-3		7.6	mg/kg	1.32	10.034	mg/kg	0.001 %		
2	beryllium { beryllium oxide }	004-003-00-8	215-133-1	1304-56-9		1.3	mg/kg	2.775	3.608	mg/kg	0.000361 %		
3	boron { diboron trioxide; boric oxide }	005-008-00-8	215-125-8	1303-86-2		0.4	mg/kg	3.22	1.288	mg/kg	0.000129 %		
4	cadmium { cadmium oxide }	048-002-00-0	215-146-2	1306-19-0		0.17	mg/kg	1.142	0.194	mg/kg	0.0000194 %		
5	chromium in chromium(III) compounds { chromium(III) oxide (worst case) }		215-160-9	1308-38-9		25	mg/kg	1.462	36.539	mg/kg	0.00365 %		
6	chromium in chromium(VI) compounds { chromium(VI) oxide }	024-001-00-0	215-607-8	1333-82-0		0.5	mg/kg	1.923	0.962	mg/kg	0.0000962 %		
7	copper { dicopper oxide; copper (I) oxide }	029-002-00-X	215-270-7	1317-39-1		17	mg/kg	1.126	19.14	mg/kg	0.00191 %		
8	mercury { mercury dichloride }	080-010-00-X	231-299-8	7487-94-7		0.1	mg/kg	1.353	0.135	mg/kg	0.0000135 %		
9	nickel { nickel chromate }	028-035-00-7	238-766-5	14721-18-7		26	mg/kg	2.976	77.383	mg/kg	0.00774 %		
10	selenium { selenium compounds with the exception of cadmium sulphoselenide and those specified elsewhere in this Annex }	034-002-00-8				0.35	mg/kg	2.554	0.894	mg/kg	0.0000894 %		
11	zinc { zinc chromate }	024-007-00-3	236-878-9	13530-65-9		63	mg/kg	2.774	174.771	mg/kg	0.0175 %		
12	TPH (C6 to C40) petroleum group			TPH		10	mg/kg		10	mg/kg	0.001 %		
13	benzene	601-020-00-8	200-753-7	71-43-2		0.001	mg/kg		0.001	mg/kg	0.0000001 %		
14	toluene	601-021-00-3	203-625-9	108-88-3		0.001	mg/kg		0.001	mg/kg	0.0000001 %		

#		Determinand			CLP Note	User entered data		Conv. Factor	Compound conc.		Classification value	MC Applied	Conc. Not Used
		CLP index number	EC Number	CAS Number									
15		ethylbenzene				0.001	mg/kg		0.001	mg/kg	0.0000001 %		
		601-023-00-4	202-849-4	100-41-4									
16		xylene				0.001	mg/kg		0.001	mg/kg	0.0000001 %		
		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]									
17		cyanides { salts of hydrogen cyanide with the exception of complex cyanides such as ferrocyanides, ferricyanides and mercuric oxycyanide and those specified elsewhere in this Annex }				0.5	mg/kg	1.884	0.942	mg/kg	0.0000942 %		
		006-007-00-5											
18		pH				7.1	pH		7.1	pH	7.1 pH		
				PH									
19		naphthalene				0.1	mg/kg		0.1	mg/kg	0.00001 %		
		601-052-00-2	202-049-5	91-20-3									
20		acenaphthylene				0.1	mg/kg		0.1	mg/kg	0.00001 %		
			205-917-1	208-96-8									
21		acenaphthene				0.1	mg/kg		0.1	mg/kg	0.00001 %		
			201-469-6	83-32-9									
22		fluorene				0.1	mg/kg		0.1	mg/kg	0.00001 %		
			201-695-5	86-73-7									
23		phenanthrene				0.1	mg/kg		0.1	mg/kg	0.00001 %		
			201-581-5	85-01-8									
24		anthracene				0.1	mg/kg		0.1	mg/kg	0.00001 %		
			204-371-1	120-12-7									
25		fluoranthene				0.1	mg/kg		0.1	mg/kg	0.00001 %		
			205-912-4	206-44-0									
26		pyrene				0.1	mg/kg		0.1	mg/kg	0.00001 %		
			204-927-3	129-00-0									
27		benzo[a]anthracene				0.1	mg/kg		0.1	mg/kg	0.00001 %		
		601-033-00-9	200-280-6	56-55-3									
28		chrysene				0.1	mg/kg		0.1	mg/kg	0.00001 %		
		601-048-00-0	205-923-4	218-01-9									
29		benzo[b]fluoranthene				0.1	mg/kg		0.1	mg/kg	0.00001 %		
		601-034-00-4	205-911-9	205-99-2									
30		benzo[k]fluoranthene				0.1	mg/kg		0.1	mg/kg	0.00001 %		
		601-036-00-5	205-916-6	207-08-9									
31		benzo[a]pyrene; benzo[def]chrysene				0.1	mg/kg		0.1	mg/kg	0.00001 %		
		601-032-00-3	200-028-5	50-32-8									
32		indeno[123-cd]pyrene				0.1	mg/kg		0.1	mg/kg	0.00001 %		
			205-893-2	193-39-5									
33		dibenz[a,h]anthracene				0.1	mg/kg		0.1	mg/kg	0.00001 %		
		601-041-00-2	200-181-8	53-70-3									
34		benzo[ghi]perylene				0.1	mg/kg		0.1	mg/kg	0.00001 %		
			205-883-8	191-24-2									
35		phenol				0.5	mg/kg		0.5	mg/kg	0.00005 %		
		604-001-00-2	203-632-7	108-95-2									
36		carbon tetrachloride; tetrachloromethane				0.001	mg/kg		0.001	mg/kg	0.0000001 %		
		602-008-00-5	200-262-8	56-23-5									
37		vinyl chloride; chloroethylene				0.001	mg/kg		0.001	mg/kg	0.0000001 %		
		602-023-00-7	200-831-0	75-01-4									
										Total:	0.0338 %		

Key

	User supplied data
	Determinand defined or amended by HazWasteOnline (see Appendix A)
	Speciated Deteminand - Unless the Determinand is Note 1, the Conversion Factor is used to calculate the compound concentration

Supplementary Hazardous Property Information

HP 2: Oxidizing "waste which may, generally by providing oxygen, cause or contribute to the combustion of other materials"
Force this Hazardous property to non hazardous because At limit of detection.

Hazard Statements hit:

Ox. Sol. 1; H271 "May cause fire or explosion; strong oxidiser."

Because of determinand:

chromium(VI) oxide: (compound conc.: 0.00009%)

HP 3(i): Flammable "flammable liquid waste: liquid waste having a flash point below 60°C or waste gas oil, diesel and light heating oils having a flash point > 55°C and <= 75°C"
Force this Hazardous property to non hazardous because At limit of detection.

Hazard Statements hit:

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

Because of determinands:

benzene: (conc.: 1.0e-07%)
toluene: (conc.: 1.0e-07%)
ethylbenzene: (conc.: 1.0e-07%)

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

Because of determinands:

TPH (C6 to C40) petroleum group: (conc.: 0.001%)
xylene: (conc.: 1.0e-07%)

HP 3(iv): Flammable "flammable gaseous waste: gaseous waste which is flammable in air at 20°C and a standard pressure of 101.3 kPa"
Force this Hazardous property to non hazardous because At limit of detection.

Hazard Statements hit:

Flam. Gas 1; H220 "Extremely flammable gas."

Because of determinand:

vinyl chloride; chloroethylene: (conc.: 1.0e-07%)

Classification of sample: HP17

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

Sample details

Sample Name:
HP17
Sample Depth:
0.4 m
Moisture content:
10%
(no correction)

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

Hazard properties

None identified

Determinands

Moisture content: 10% No Moisture Correction applied (MC)

#		Determinand	CLP index number	EC Number	CAS Number	CLP Note	User entered data		Conv. Factor	Compound conc.		Classification value	MC Applied	Conc. Not Used
1		arsenic { arsenic trioxide }	033-003-00-0	215-481-4	1327-53-3		9.2	mg/kg	1.32	12.147	mg/kg	0.00121 %		
2		beryllium { beryllium oxide }	004-003-00-8	215-133-1	1304-56-9		1.4	mg/kg	2.775	3.885	mg/kg	0.000389 %		
3		boron { diboron trioxide; boric oxide }	005-008-00-8	215-125-8	1303-86-2		0.42	mg/kg	3.22	1.352	mg/kg	0.000135 %		
4		cadmium { cadmium oxide }	048-002-00-0	215-146-2	1306-19-0		0.21	mg/kg	1.142	0.24	mg/kg	0.000024 %		
5		chromium in chromium(III) compounds { chromium(III) oxide (worst case) }		215-160-9	1308-38-9		25	mg/kg	1.462	36.539	mg/kg	0.00365 %		
6		chromium in chromium(VI) compounds { chromium(VI) oxide }	024-001-00-0	215-607-8	1333-82-0		0.5	mg/kg	1.923	0.962	mg/kg	0.0000962 %		
7		copper { dicopper oxide; copper (I) oxide }	029-002-00-X	215-270-7	1317-39-1		18	mg/kg	1.126	20.266	mg/kg	0.00203 %		
8		mercury { mercury dichloride }	080-010-00-X	231-299-8	7487-94-7		0.13	mg/kg	1.353	0.176	mg/kg	0.0000176 %		
9		nickel { nickel chromate }	028-035-00-7	238-766-5	14721-18-7		26	mg/kg	2.976	77.383	mg/kg	0.00774 %		
10		selenium { selenium compounds with the exception of cadmium sulphoselenide and those specified elsewhere in this Annex }	034-002-00-8				0.44	mg/kg	2.554	1.124	mg/kg	0.000112 %		
11		zinc { zinc chromate }	024-007-00-3	236-878-9	13530-65-9		73	mg/kg	2.774	202.513	mg/kg	0.0203 %		
12		TPH (C6 to C40) petroleum group			TPH		10	mg/kg		10	mg/kg	0.001 %		
13		benzene	601-020-00-8	200-753-7	71-43-2		0.001	mg/kg		0.001	mg/kg	0.0000001 %		
14		toluene	601-021-00-3	203-625-9	108-88-3		0.001	mg/kg		0.001	mg/kg	0.0000001 %		

#		Determinand			CLP Note	User entered data		Conv. Factor	Compound conc.		Classification value	MC Applied	Conc. Not Used
		CLP index number	EC Number	CAS Number									
15		ethylbenzene				0.001	mg/kg		0.001	mg/kg	0.0000001 %		
		601-023-00-4	202-849-4	100-41-4									
16		xylene				0.001	mg/kg		0.001	mg/kg	0.0000001 %		
		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]									
17		cyanides { salts of hydrogen cyanide with the exception of complex cyanides such as ferrocyanides, ferricyanides and mercuric oxycyanide and those specified elsewhere in this Annex }				17	mg/kg	1.884	32.028	mg/kg	0.0032 %		
		006-007-00-5											
18		pH				7.6	pH		7.6	pH	7.6 pH		
				PH									
19		naphthalene				0.52	mg/kg		0.52	mg/kg	0.000052 %		
		601-052-00-2	202-049-5	91-20-3									
20		acenaphthylene				1.1	mg/kg		1.1	mg/kg	0.00011 %		
			205-917-1	208-96-8									
21		acenaphthene				0.64	mg/kg		0.64	mg/kg	0.000064 %		
			201-469-6	83-32-9									
22		fluorene				1.3	mg/kg		1.3	mg/kg	0.00013 %		
			201-695-5	86-73-7									
23		phenanthrene				5.4	mg/kg		5.4	mg/kg	0.00054 %		
			201-581-5	85-01-8									
24		anthracene				2	mg/kg		2	mg/kg	0.0002 %		
			204-371-1	120-12-7									
25		fluoranthene				8.3	mg/kg		8.3	mg/kg	0.00083 %		
			205-912-4	206-44-0									
26		pyrene				8.1	mg/kg		8.1	mg/kg	0.00081 %		
			204-927-3	129-00-0									
27		benzo[a]anthracene				3.6	mg/kg		3.6	mg/kg	0.00036 %		
		601-033-00-9	200-280-6	56-55-3									
28		chrysene				3.6	mg/kg		3.6	mg/kg	0.00036 %		
		601-048-00-0	205-923-4	218-01-9									
29		benzo[b]fluoranthene				5.8	mg/kg		5.8	mg/kg	0.00058 %		
		601-034-00-4	205-911-9	205-99-2									
30		benzo[k]fluoranthene				2.3	mg/kg		2.3	mg/kg	0.00023 %		
		601-036-00-5	205-916-6	207-08-9									
31		benzo[a]pyrene; benzo[def]chrysene				4.5	mg/kg		4.5	mg/kg	0.00045 %		
		601-032-00-3	200-028-5	50-32-8									
32		indeno[123-cd]pyrene				3.8	mg/kg		3.8	mg/kg	0.00038 %		
			205-893-2	193-39-5									
33		dibenz[a,h]anthracene				0.91	mg/kg		0.91	mg/kg	0.000091 %		
		601-041-00-2	200-181-8	53-70-3									
34		benzo[ghi]perylene				4.1	mg/kg		4.1	mg/kg	0.00041 %		
			205-883-8	191-24-2									
35		phenol				0.5	mg/kg		0.5	mg/kg	0.00005 %		
		604-001-00-2	203-632-7	108-95-2									
36		carbon tetrachloride; tetrachloromethane				0.001	mg/kg		0.001	mg/kg	0.0000001 %		
		602-008-00-5	200-262-8	56-23-5									
37		vinyl chloride; chloroethylene				0.001	mg/kg		0.001	mg/kg	0.0000001 %		
		602-023-00-7	200-831-0	75-01-4									
										Total:	0.0455 %		

Key

- User supplied data
- Determinand defined or amended by HazWasteOnline (see Appendix A)
- Speciated Deteminand - Unless the Determinand is Note 1, the Conversion Factor is used to calculate the compound concentration

Supplementary Hazardous Property Information

HP 2: Oxidizing "waste which may, generally by providing oxygen, cause or contribute to the combustion of other materials"

Force this Hazardous property to non hazardous because At limit of detection.

Hazard Statements hit:

Ox. Sol. 1; H271 "May cause fire or explosion; strong oxidiser."

Because of determinand:

chromium(VI) oxide: (compound conc.: 0.00009%)

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

Force this Hazardous property to non hazardous because At limit of detection.

Hazard Statements hit:

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

Because of determinands:

benzene: (conc.: 1.0e-07%)
toluene: (conc.: 1.0e-07%)
ethylbenzene: (conc.: 1.0e-07%)

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

Because of determinands:

TPH (C6 to C40) petroleum group: (conc.: 0.001%)
xylene: (conc.: 1.0e-07%)

HP 3(iv): Flammable "flammable gaseous waste: gaseous waste which is flammable in air at 20°C and a standard pressure of 101.3 kPa"

Force this Hazardous property to non hazardous because At limit of detection.

Hazard Statements hit:

Flam. Gas 1; H220 "Extremely flammable gas."

Because of determinand:

vinyl chloride; chloroethylene: (conc.: 1.0e-07%)

Classification of sample: HP03

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

Sample details

Sample Name:
HP03
Sample Depth:
0.4 m
Moisture content:
10%
(no correction)

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

Hazard properties

None identified

Determinands

Moisture content: 10% No Moisture Correction applied (MC)

#	Determinand	CLP index number	EC Number	CAS Number	CLP Note	User entered data		Conv. Factor	Compound conc.		Classification value	MC Applied	Conc. Not Used
1	arsenic { arsenic trioxide }	033-003-00-0	215-481-4	1327-53-3		6.6	mg/kg	1.32	8.714	mg/kg	0.000871 %		
2	beryllium { beryllium oxide }	004-003-00-8	215-133-1	1304-56-9		1	mg/kg	2.775	2.775	mg/kg	0.000278 %		
3	boron { diboron trioxide; boric oxide }	005-008-00-8	215-125-8	1303-86-2		0.4	mg/kg	3.22	1.288	mg/kg	0.000129 %		
4	cadmium { cadmium oxide }	048-002-00-0	215-146-2	1306-19-0		0.12	mg/kg	1.142	0.137	mg/kg	0.0000137 %		
5	chromium in chromium(III) compounds { chromium(III) oxide (worst case) }		215-160-9	1308-38-9		19	mg/kg	1.462	27.77	mg/kg	0.00278 %		
6	chromium in chromium(VI) compounds { chromium(VI) oxide }	024-001-00-0	215-607-8	1333-82-0		0.5	mg/kg	1.923	0.962	mg/kg	0.0000962 %		
7	copper { dicopper oxide; copper (I) oxide }	029-002-00-X	215-270-7	1317-39-1		14	mg/kg	1.126	15.762	mg/kg	0.00158 %		
8	mercury { mercury dichloride }	080-010-00-X	231-299-8	7487-94-7		0.1	mg/kg	1.353	0.135	mg/kg	0.0000135 %		
9	nickel { nickel chromate }	028-035-00-7	238-766-5	14721-18-7		21	mg/kg	2.976	62.502	mg/kg	0.00625 %		
10	selenium { selenium compounds with the exception of cadmium sulphoselenide and those specified elsewhere in this Annex }	034-002-00-8				0.53	mg/kg	2.554	1.353	mg/kg	0.000135 %		
11	zinc { zinc chromate }	024-007-00-3	236-878-9	13530-65-9		55	mg/kg	2.774	152.578	mg/kg	0.0153 %		
12	TPH (C6 to C40) petroleum group			TPH		10	mg/kg		10	mg/kg	0.001 %		
13	benzene	601-020-00-8	200-753-7	71-43-2		0.001	mg/kg		0.001	mg/kg	0.0000001 %		
14	toluene	601-021-00-3	203-625-9	108-88-3		0.001	mg/kg		0.001	mg/kg	0.0000001 %		

#		Determinand			CLP Note	User entered data		Conv. Factor	Compound conc.		Classification value	MC Applied	Conc. Not Used
		CLP index number	EC Number	CAS Number									
15		ethylbenzene				0.001	mg/kg		0.001	mg/kg	0.0000001 %		
		601-023-00-4	202-849-4	100-41-4									
16		xylene				0.001	mg/kg		0.001	mg/kg	0.0000001 %		
		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]									
17		cyanides { salts of hydrogen cyanide with the exception of complex cyanides such as ferrocyanides, ferricyanides and mercuric oxycyanide and those specified elsewhere in this Annex }				12	mg/kg	1.884	22.608	mg/kg	0.00226 %		
		006-007-00-5											
18		pH				7.1	pH		7.1	pH	7.1 pH		
				PH									
19		naphthalene				0.58	mg/kg		0.58	mg/kg	0.000058 %		
		601-052-00-2	202-049-5	91-20-3									
20		acenaphthylene				0.81	mg/kg		0.81	mg/kg	0.000081 %		
			205-917-1	208-96-8									
21		acenaphthene				0.55	mg/kg		0.55	mg/kg	0.000055 %		
			201-469-6	83-32-9									
22		fluorene				1	mg/kg		1	mg/kg	0.0001 %		
			201-695-5	86-73-7									
23		phenanthrene				4.2	mg/kg		4.2	mg/kg	0.00042 %		
			201-581-5	85-01-8									
24		anthracene				1.4	mg/kg		1.4	mg/kg	0.00014 %		
			204-371-1	120-12-7									
25		fluoranthene				5.4	mg/kg		5.4	mg/kg	0.00054 %		
			205-912-4	206-44-0									
26		pyrene				5.1	mg/kg		5.1	mg/kg	0.00051 %		
			204-927-3	129-00-0									
27		benzo[a]anthracene				2.1	mg/kg		2.1	mg/kg	0.00021 %		
		601-033-00-9	200-280-6	56-55-3									
28		chrysene				2	mg/kg		2	mg/kg	0.0002 %		
		601-048-00-0	205-923-4	218-01-9									
29		benzo[b]fluoranthene				3.2	mg/kg		3.2	mg/kg	0.00032 %		
		601-034-00-4	205-911-9	205-99-2									
30		benzo[k]fluoranthene				1.3	mg/kg		1.3	mg/kg	0.00013 %		
		601-036-00-5	205-916-6	207-08-9									
31		benzo[a]pyrene; benzo[def]chrysene				2.1	mg/kg		2.1	mg/kg	0.00021 %		
		601-032-00-3	200-028-5	50-32-8									
32		indeno[123-cd]pyrene				1.9	mg/kg		1.9	mg/kg	0.00019 %		
			205-893-2	193-39-5									
33		dibenz[a,h]anthracene				0.57	mg/kg		0.57	mg/kg	0.000057 %		
		601-041-00-2	200-181-8	53-70-3									
34		benzo[ghi]perylene				2.2	mg/kg		2.2	mg/kg	0.00022 %		
			205-883-8	191-24-2									
35		phenol				0.5	mg/kg		0.5	mg/kg	0.00005 %		
		604-001-00-2	203-632-7	108-95-2									
36		carbon tetrachloride; tetrachloromethane				0.001	mg/kg		0.001	mg/kg	0.0000001 %		
		602-008-00-5	200-262-8	56-23-5									
37		vinyl chloride; chloroethylene				0.001	mg/kg		0.001	mg/kg	0.0000001 %		
		602-023-00-7	200-831-0	75-01-4									
										Total:	0.0342 %		

Key

	User supplied data
	Determinand defined or amended by HazWasteOnline (see Appendix A)
	Speciated Deteminand - Unless the Determinand is Note 1, the Conversion Factor is used to calculate the compound concentration

Supplementary Hazardous Property Information

HP 2: Oxidizing "waste which may, generally by providing oxygen, cause or contribute to the combustion of other materials"
Force this Hazardous property to non hazardous because At limit of detection.

Hazard Statements hit:

Ox. Sol. 1; H271 "May cause fire or explosion; strong oxidiser."

Because of determinand:

chromium(VI) oxide: (compound conc.: 0.00009%)

HP 3(i): Flammable "flammable liquid waste: liquid waste having a flash point below 60°C or waste gas oil, diesel and light heating oils having a flash point > 55°C and <= 75°C"
Force this Hazardous property to non hazardous because At limit of detection.

Hazard Statements hit:

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

Because of determinands:

benzene: (conc.: 1.0e-07%)
toluene: (conc.: 1.0e-07%)
ethylbenzene: (conc.: 1.0e-07%)

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

Because of determinands:

TPH (C6 to C40) petroleum group: (conc.: 0.001%)
xylene: (conc.: 1.0e-07%)

HP 3(iv): Flammable "flammable gaseous waste: gaseous waste which is flammable in air at 20°C and a standard pressure of 101.3 kPa"
Force this Hazardous property to non hazardous because At limit of detection.

Hazard Statements hit:

Flam. Gas 1; H220 "Extremely flammable gas."

Because of determinand:

vinyl chloride; chloroethylene: (conc.: 1.0e-07%)

Classification of sample: HP05

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

Sample details

Sample Name:
HP05
Sample Depth:
0.8 m
Moisture content:
12%
(no correction)

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

Hazard properties

None identified

Determinands

Moisture content: 12% No Moisture Correction applied (MC)

#		Determinand			CLP Note	User entered data	Conv. Factor	Compound conc.	Classification value	MC Applied	Conc. Not Used
		CLP index number	EC Number	CAS Number							
1	●	pH		PH		7.4 pH		7.4 pH	7.4 pH		
								Total:	0%		

Key

	User supplied data
●	Determinand defined or amended by HazWasteOnline (see Appendix A)

Classification of sample: HP01

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

Sample details

Sample Name:
HP01
Sample Depth:
0.5 m
Moisture content:
11%
(no correction)

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

Hazard properties

None identified

Determinands

Moisture content: 11% No Moisture Correction applied (MC)

#		Determinand			CLP Note	User entered data	Conv. Factor	Compound conc.	Classification value	MC Applied	Conc. Not Used
		CLP index number	EC Number	CAS Number							
1	•	pH		PH		7.3 pH		7.3 pH	7.3 pH		
								Total:	0%		

Key

	User supplied data
•	Determinand defined or amended by HazWasteOnline (see Appendix A)

Classification of sample: HP18

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

Sample details

Sample Name:
HP18
Sample Depth:
1.0 m
Moisture content:
13%
(no correction)

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

Hazard properties

None identified

Determinands

Moisture content: 13% No Moisture Correction applied (MC)

#		Determinand			CLP Note	User entered data	Conv. Factor	Compound conc.	Classification value	MC Applied	Conc. Not Used
		CLP index number	EC Number	CAS Number							
1	●	pH		PH		7.3 pH		7.3 pH	7.3 pH		
								Total:	0%		

Key

	User supplied data
●	Determinand defined or amended by HazWasteOnline (see Appendix A)

Classification of sample: HP05[2]

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

Sample details

Sample Name:
HP05[2]
Sample Depth:
0.3 m
Moisture content:
9.1%
(no correction)

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

Hazard properties

None identified

Determinands

Moisture content: 9.1% No Moisture Correction applied (MC)

#		Determinand			CLP Note	User entered data	Conv. Factor	Compound conc.	Classification value	MC Applied	Conc. Not Used
		CLP index number	EC Number	CAS Number							
1	●	pH				6.9 pH		6.9 pH	6.9 pH		
				PH							
								Total:	0%		

Key

	User supplied data
●	Determinand defined or amended by HazWasteOnline (see Appendix A)

Appendix A: Classifier defined and non CLP determinands

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

Conversion factor: 1.462
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)

CLP index number: 601-023-00-4
Description/Comments:
Data source: Commission Regulation (EU) No 605/2014 – 6th Adaptation to Technical Progress for Regulation (EC) No 1272/2008. (ATP6)
Additional Hazard Statement(s): Carc. 2 H351
Reason for additional Hazards Statement(s):
03 Jun 2015 - Carc. 2 H351 hazard statement sourced from: IARC Group 2B (77) 2000

- **salts of hydrogen cyanide with the exception of complex cyanides such as ferrocyanides, ferricyanides and mercuric oxycyanide and those specified elsewhere in this Annex**

CLP index number: 006-007-00-5
Description/Comments: Conversion factor based on a worst case compound: sodium cyanide
Data source: Commission Regulation (EC) No 790/2009 - 1st Adaptation to Technical Progress for Regulation (EC) No 1272/2008. (ATP1)
Additional Hazard Statement(s): EUH032 >= 0.2 %
Reason for additional Hazards Statement(s):
14 Dec 2015 - EUH032 >= 0.2 % hazard statement sourced from: WM3, Table C12.2

- **pH** (CAS Number: PH)

Description/Comments: Appendix C4
Data source: WM3 1st Edition 2015
Data source date: 25 May 2015
Hazard Statements: None.

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

Description/Comments: Data from C&L Inventory Database
Data source: http://echa.europa.eu/web/guest/information-on-chemicals/cl-inventory-database
Data source date: 17 Jul 2015
Hazard Statements: Acute Tox. 4 H302 , Acute Tox. 1 H330 , Acute Tox. 1 H310 , Eye Irrit. 2 H319 , STOT SE 3 H335 , Skin Irrit. 2 H315

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

Description/Comments: Data from C&L Inventory Database
Data source: http://echa.europa.eu/web/guest/information-on-chemicals/cl-inventory-database
Data source date: 17 Jul 2015
Hazard Statements: Eye Irrit. 2 H319 , STOT SE 3 H335 , Skin Irrit. 2 H315 , Aquatic Acute 1 H400 , Aquatic Chronic 1 H410 , Aquatic Chronic 2 H411

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

Description/Comments: Data from C&L Inventory Database
Data source: http://echa.europa.eu/web/guest/information-on-chemicals/cl-inventory-database
Data source date: 06 Aug 2015
Hazard Statements: Aquatic Acute 1 H400 , Aquatic Chronic 1 H410

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

Description/Comments: Data from C&L Inventory Database
Data source: http://echa.europa.eu/web/guest/information-on-chemicals/cl-inventory-database
Data source date: 06 Aug 2015
Hazard Statements: Acute Tox. 4 H302 , Eye Irrit. 2 H319 , STOT SE 3 H335 , Carc. 2 H351 , Skin Sens. 1 H317 , Aquatic Acute 1 H400 , Aquatic Chronic 1 H410 , Skin Irrit. 2 H315

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

Description/Comments: Data from C&L Inventory Database
Data source: http://echa.europa.eu/web/guest/information-on-chemicals/cl-inventory-database
Data source date: 17 Jul 2015
Hazard Statements: Eye Irrit. 2 H319 , STOT SE 3 H335 , Skin Irrit. 2 H315 , Skin Sens. 1 H317 , Aquatic Acute 1 H400 , Aquatic Chronic 1 H410

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

Description/Comments: Data from C&L Inventory Database
Data source: http://echa.europa.eu/web/guest/information-on-chemicals/cl-inventory-database
Data source date: 21 Aug 2015
Hazard Statements: Acute Tox. 4 H302 , Aquatic Acute 1 H400 , Aquatic Chronic 1 H410

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

Description/Comments: Data from C&L Inventory Database; SDS Sigma Aldrich 2014
Data source: http://echa.europa.eu/web/guest/information-on-chemicals/cl-inventory-database
Data source date: 21 Aug 2015
Hazard Statements: Skin Irrit. 2 H315 , Eye Irrit. 2 H319 , STOT SE 3 H335 , Aquatic Acute 1 H400 , Aquatic Chronic 1 H410

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

Description/Comments: Data from C&L Inventory Database
Data source: http://echa.europa.eu/web/guest/information-on-chemicals/cl-inventory-database
Data source date: 06 Aug 2015
Hazard Statements: Carc. 2 H351

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

Description/Comments: Data from C&L Inventory Database; SDS Sigma Aldrich 28/02/2015
Data source: http://echa.europa.eu/web/guest/information-on-chemicals/cl-inventory-database
Data source date: 23 Jul 2015
Hazard Statements: Aquatic Acute 1 H400 , Aquatic Chronic 1 H410

Appendix B: Rationale for selection of metal species

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)

beryllium {beryllium oxide}

Reasonable case CLP species based on hazard statements/molecular weight. Industrial sources include: most common (non alloy) form, used in ceramics (edit as required)

boron {diboron trioxide; boric oxide}

Reasonable case CLP species based on hazard statements/ molecular weight, physical form and low solubility. Industrial sources include: fluxing agent for glass/enamels; additive for fibre optics, borosilicate glass (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) oxide}

Worst case CLP species based on hazard statements/molecular weight. Industrial sources include: production stainless steel, electroplating, wood preservation, anti-corrosion agents or coatings, pigments (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)

mercury {mercury dichloride}

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 {selenium compounds with the exception of cadmium sulphoselenide and those specified elsewhere in this Annex}

Harmonised group entry used as most reasonable case. Pigment cadmium sulphoselenide not likely to be present in this soil. No evidence for the other CLP entries: sodium selenite, nickel II selenite and nickel selenide, to be present in this soil. (edit as required)

zinc {zinc chromate}

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

cyanides {salts of hydrogen cyanide with the exception of complex cyanides such as ferrocyanides, ferricyanides and mercuric oxycyanide and those specified elsewhere in this Annex}

Harmonised group entry used as most reasonable case as complex cyanides and those specified elsewhere in the annex are not likely to be present in this soil: [Note conversion factor based on a worst case compound: sodium cyanide] (edit as required)

Appendix C: Version

HazWasteOnline Classification Engine: WM3 1st Edition v1.1, May 2018
HazWasteOnline Classification Engine Version: 2020.241.4455.8692 (28 Aug 2020)
HazWasteOnline Database: 2020.241.4455.8692 (28 Aug 2020)

This classification utilises the following guidance and legislation:
WM3 v1.1 - Waste Classification - 1st Edition v1.1 - May 2018
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 Wastes 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
POPs Regulation 2004 - Regulation 850/2004/EC of 29 April 2004
1st ATP to POPs Regulation - Regulation 756/2010/EU of 24 August 2010
2nd ATP to POPs Regulation - Regulation 757/2010/EU of 24 August 2010

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