Abbeydale
Building Environment Consultants

SUPPLEMENTARY GROUND INVESTIGATION REPORT

Proposed MVT Building, Barnsley College,

Honeywell Lane, Barnsley, South Yorkshire

Report: 151118GI2

Date: June 2022

Client:
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SUPPLEMENTARY GROUND INVESTIGATION REPORT

Proposed MVT Building, Barnsley College, Honeywell Lane, Barnsley

DOCUMENT VERIFICATION SHEET

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SUMMARY

Grid Ref: 434486 (E), 407092 (N) **Elevation:** 85 mAOD **Site Area:** 0.11 ha

Development proposals:		Two-storey campus building to be used as an automotive technology centre.
Past site development:		Allotments & then Multi Use Games Area (MUGA).
Ground Conditions	**Made Ground:**	Encountered to a maximum depth of 9.00m bgl.
	Natural Soils:	None encountered.
	Bedrock:	Pennine Middle Coal Measures encountered to a maximum depth of 22.0m bgl.
	Groundwater:	Not encountered.
	Shallow mining:	No signs of potential shallow mining identified.
Environmental Assessment:		No landscaping areas proposed.
Ground gases:		The site is designated as CS4. Ground gas protection measures will be required.
Remediation:		If imported soils to be used, will need to be validated.
Foundations:		Piled foundations required for proposed new building.
Drainage:		Attenuation and off-site drainage required.
Geotechnical Considerations:		Stability of railway cutting to be maintained during construction works.
Further Assessment:		Remediation Method Statement for gas protection.

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1. INTRODUCTION

On the instruction of Nu Construction Ltd, a supplementary Phase 2 Ground Investigation was carried out by Abbeydale Building Environment Consultants Ltd (Abbeydale BEC) on an existing Multi Use Games Area (MUGA) at Barnsley College, Honeywell Campus, off Honeywell Lane in Barnsley, South Yorkshire.

The site is situated on the northern side of Barnsley, centred on National Grid Reference 434486, 407092, with a site area of around 0.11 ha. See Figure 1.

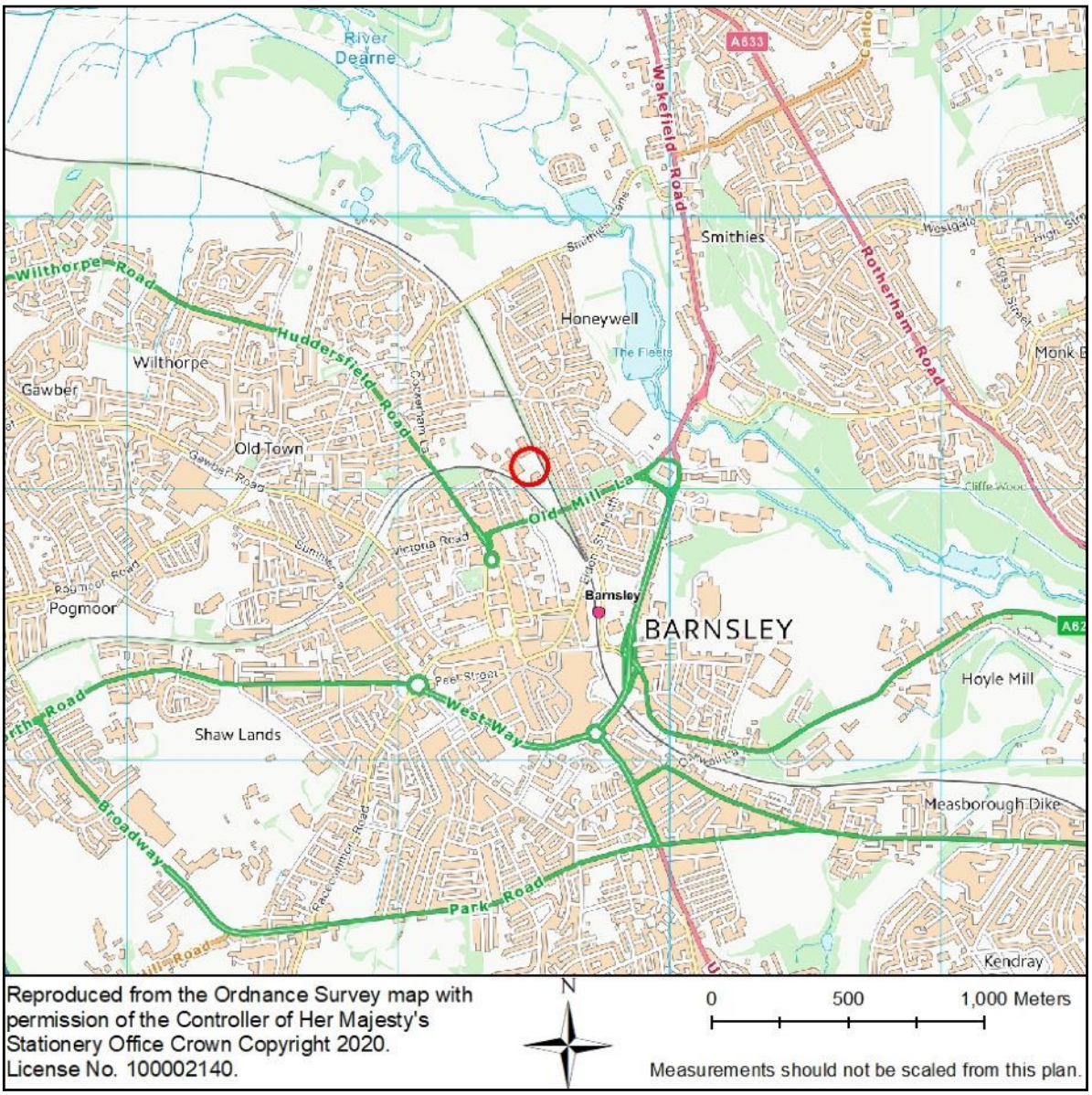


FIGURE 1 - LOCATION PLAN

This report was produced for our client, Nu Construction Ltd, and their advisors and financiers; it should not be relied upon or transferred to any other parties without the express written authorisation of Abbeydale BEC and our client. If any other unauthorised third party comes into possession of this report they rely on it at their own risk and the authors owe them no duty of care or skill.

The comments and recommendations present in this Supplementary Ground Investigation report are based on the findings of a review of available information; ground conditions encountered during the supplementary intrusive investigation work and the associated laboratory testing results. There may be other conditions prevailing on the site which have not been disclosed by this investigation and which have therefore not been taken in to account by this report. Responsibility cannot be accepted for conditions not revealed by this investigation.

Previously a combined Phase 1 Desk Study and Phase 2 Ground Investigation report was prepared for the proposed redevelopment of the site by Abbeydale BEC, report Ref: 151118GI dated January 2022. Where information has been referenced from the previous report it is clearly stated in the text of this supplementary report.

When writing this report the proposed development was a new two-storey campus building to be used as an automotive technology centre at, or close to, existing ground levels. If there are changes to these proposals then some modification to the comments and recommendations given may be required. The proposed site layout is shown on the proposed plans included in Appendix A.

2. OBJECTIVES

This report has been undertaken to provide further details regarding the ground conditions beneath the site. The report evaluates the current site proposals with regard to geotechnical and engineering considerations to determine what impact the ground conditions will have on the integrity any structures proposed as part of the development proposals. As part of this evaluation the report gives foundation, floor slab, highway and drainage recommendations.

3. THE SITE

The site is a square parcel of land used as a multi-use games area (MUGA) pitch set within the wider Barnsley College Honeywell Lane Campus. The current layout of the college campus and location of the MUGA pitch are shown on Figure 2.

The MUGA pitch is located towards the south of the Barnsley College Honeywell Lane campus, and is surrounded by college buildings and associated car parks. An active railway line bounds the site to the east and an electricity substation is located off the site's north-western corner, as shown on Figure 2.

Ground levels across the MUGA pitch are level, however the topography of the college campus generally slopes down to the south-east, as does the natural topography of the area, with notable development plateaus having been created

where the existing buildings and associated car parks are present. It is likely that these were formed by cut and fill methods.

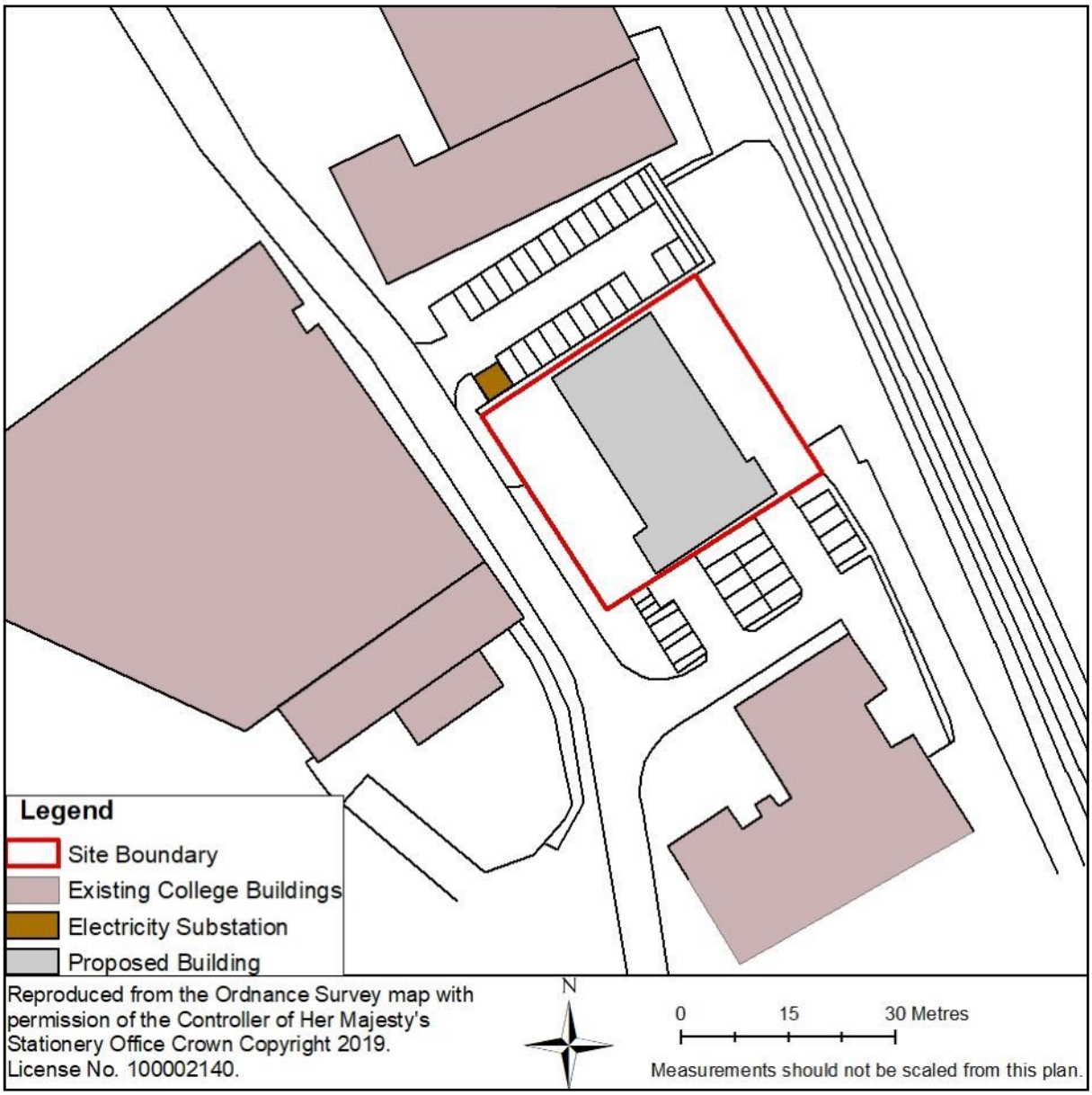


FIGURE 2 - SITE PLAN

4. HISTORY

As part of the previously prepared Phase 1 Desk Study and Phase 2 Ground Investigation report, Ordnance Survey (OS) maps of the site and surrounding area were obtained to assess the historical setting of the site and surrounding area. A summary of the history is given below for ease of reference; for a detailed description the previous report should be consulted.

The site remained undeveloped until the map dated 1960 - 1961 when allotment gardens are shown across the site, however they are no longer shown on mapping dated from 1986. The site appears to have remained undeveloped until between 2003 and 2008 when archive aerial imagery shows the MUGA pitch to have been

constructed as part of a small sports complex. No discernible changes are noted on subsequent OS maps or archive aerial imagery.

Across the surrounding area, the site was largely surrounded by undeveloped land with a spoil tip located immediately south and south-west, and a railway in cutting just to the east of the site. The map of 1938 shows a school, later labelled as Barnsley College, constructed 100m north-west of the site and subsequent maps show several periods of extension since its initial construction. Evidence of some potential re-profiling of the surrounding area is noted on the OS map dated 1986-1991.

5. GEOLOGY

The geological survey maps of the area, 1:10,000 scale sheet SE30NW, BGS 1:50,0000 scale sheet 87 (Barnsley) and Yorkshire County Series Sheet 274NE have been examined, along with the memoir of the area. The site is shown to be underlain by the Kents Rock, a named sandstone unit within the Pennine Middle Coal Measures Formation; dipping 4^0 to the north-east from an assessment of outcrop patterns and dip indicators on the geological maps.

The nearest geological fault is conjectured approximately 320m north-east of the site, trending north-west to south-east and downthrowing strata to the north-east, away from the direction of the site.

Superficial drift deposits are not recorded to be present over the solid geology. Natural soils would therefore be expected to be in the form of residual soils, weathered down from the parent bedrock.

Made ground, described as mainly colliery spoil and landfill on the geological maps, is recorded to be present across the whole site, and extending under the larger Barnsley College Honeywell Campus site.

6. HYDROGEOLOGY AND HYDROLOGY

6.1. Hydrogeology

The Environment Agency (EA) classify the solid geology as a Secondary A aquifer (formerly minor aquifer). It is likely that groundwater will be confined within the underlying bedrock sequence, but there is potential for perched water within the underlying made ground deposits.

No groundwater was encountered during post-investigation monitoring of groundwater levels and ground gas emissions as part of the previous ground investigation works undertaken across the MUGA pitch. No potable drinking water abstractions, surface water abstractions or groundwater abstraction licenses were highlighted within 250m of the site, and the site is not recorded to be within a groundwater Source Protection Zone (SPZ), according to the information reviewed as part of the previous combined Desk Study and Ground Investigation report.

6.2. Hydrology

The closest surface watercourse is an inland river around 241m north-east of the site at its closest point. No other surface water courses have been identified within the vicinity of the site.

6.3. Flood Risk

According to the previous report, the site is not shown to lie within an area that is deemed to be at risk of flooding from rivers or seas, nor are any adjacent areas.

7. MINING RISK ASSESSMENT & QUARRYING

The presence of rock and mineral seams, including coal, which may have been mined or quarried in the area has been determined by the published geological maps and memoirs of the area, and the Coal Authority Consultants report obtained as part of the previous report.

The shallowest anticipated named coal seam is the Kents Thin Coal, recorded to be around 0.60m (2ft) thick, is anticipated around 10m to 15m below rockhead under the site. The Coal Authority do not show the site to lie within an area of known or probable shallow mine workings, nor is the site in a defined Development High Risk Area, and there are no signs of potential mining of this seam from the geological maps of the area.

No other named coal seams are anticipated anticipated at a shallow depth (<30m) in the underlying geological sequence beneath the site that could have been mined unrecorded in the past. Based on the above information the risk of shallow mine workings beneath the site was deemed to be **low**.

No quarrying activities have been recorded on the historical OS maps either on the site or within the immediate vicinity, however unspecified ground workings were recorded on the site. The resultant risk of unrecorded quarrying having affected the site is considered to be **low**.

8. FIELDWORK

8.1. General

Supplementary fieldwork was undertaken between 11 and 13 April 2022 and on 30 May 2022, and undertaken in general accordance with Eurocode 7, BS5930:2015 and BS10175:2011 (+A2:2017).

Detailed descriptions of the strata encountered are recorded in the exploratory hole logs in Appendix B, including the exploratory hole logs for the previous ground investigation works undertaken at the site.

8.2. Exploratory Hole Locations

The relative ground levels and positions of all of the exploratory holes undertaken during both phases of investigation were assessed relative to existing features using a tape measure; the approximate locations of which are shown on Figure 3.

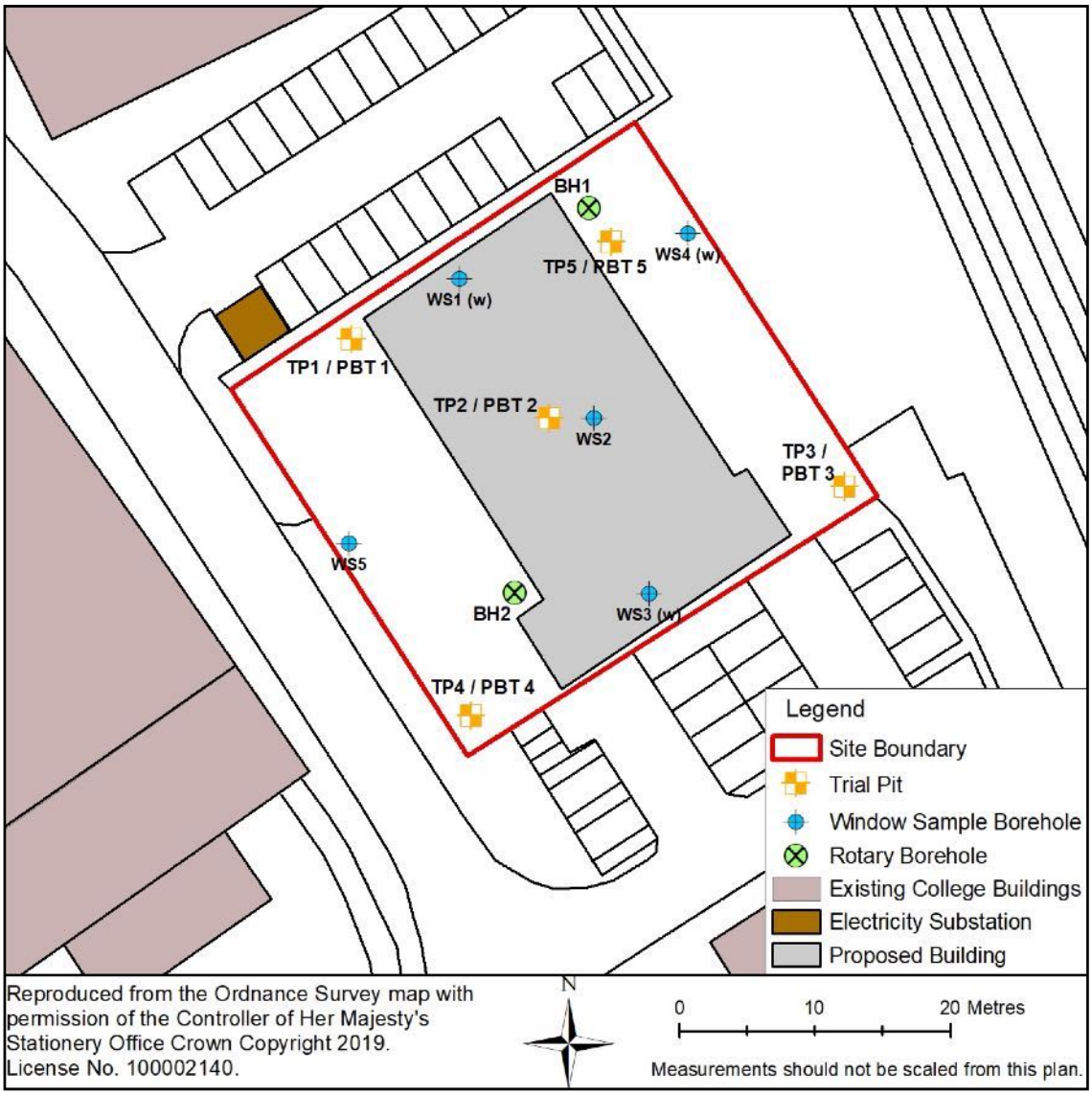


FIGURE 3 - EXPLORATORY HOLE PLAN

8.3. Trial Pits

To allow a detailed assessment of the shallow ground conditions beneath site five trial pits (TP1 to TP5) were excavated using a CAT 432E mechanical backhoe excavator with a 600mm wide toothed bucket, to depths of between 2.73m and 3.23m below ground level (bgl).

On completion the trial pits were backfilled with arisings to leave in a safe state.

8.4. Rotary Boreholes

To provide information on the deeper geology beneath the site two rotary boreholes (BH1 and BH2) were drilled to depths of 20.0m bgl and 22.0m bgl respectively. The boreholes were drilled using open hole techniques down to bedeck with rotary core follow on to to recover 125mm diameter PWF cores of the bedrock in rigid plastic liners. Prior to commencing the boreholes service inspection pits were hand excavated to a maximum depth of 1.20m bgl to confirm that no services were present at each borehole location.

On completion the rotary boreholes were backfilled with arisings and bentonite to leave in a safe state, and the rock cores were returned to Abbeydale BEC office for subsequent logging and arranging of rock strength testing.

8.5. Plate Bearing Tests

To provide information on the in-situ relative strength of the made ground across the MUGA, in-situ plate bearing tests were undertaken by Professional Soils Laboratory Ltd (PSL) at each trial pit location to access the vertical deformation of the ground when loaded. The plate bearing tests were undertaken on 30 May 2022. A 610mm diameter plate was used for the tests, which used the backhoe excavator as kentldge for the plate bearing testing equipment. Results sheets from the plate bearing tests are included as Appendix E.

9. LABORATORY TESTING

A series of in-house point load tests were undertaken on subsamples from the cores obtained to provide relative strength information. A tabular summary of the Point Load Testing data is enclosed in Appendix C and shown graphically on Figure 5.

Samples were also sent to Chemtech Environmental Ltd for Waste Acceptance Criteria (WAC) analysis to supplement the original chemical testing undertaken as part of the previous ground investigation works. The laboratory testing certificates from the WAC testing are included as Appendix D.

10. GROUND CONDITIONS

The ground conditions encountered are recorded in detail in the exploratory logs appended to this report (Appendix B) with the deeper geology summarised on the geological section, Figure 4. Any diagram of the possible configuration of ground conditions between exploratory holes is conjectural and given for guidance purposes only. If deemed critical confirmation of intermediate ground conditions should be sought.

The trial pits and previous window sample holes recorded made ground from the surface to the full depth of investigation within each exploratory hole. The made ground generally comprised the MUGA surfacing overlying limestone gravel to depths of between 0.38m bgl and 0.53m bgl. Below the limestone gravel the made

ground comprised soft to firm sandy gravelly clay or clayey gravelly sand with the gravel of brick, coal, concrete, quartz, slate, sandstone and mudstone. Fragments of timber, plastic, wire, glass, whole bricks and textiles were also frequently encountered along with occasional brickwork and concrete boulders.

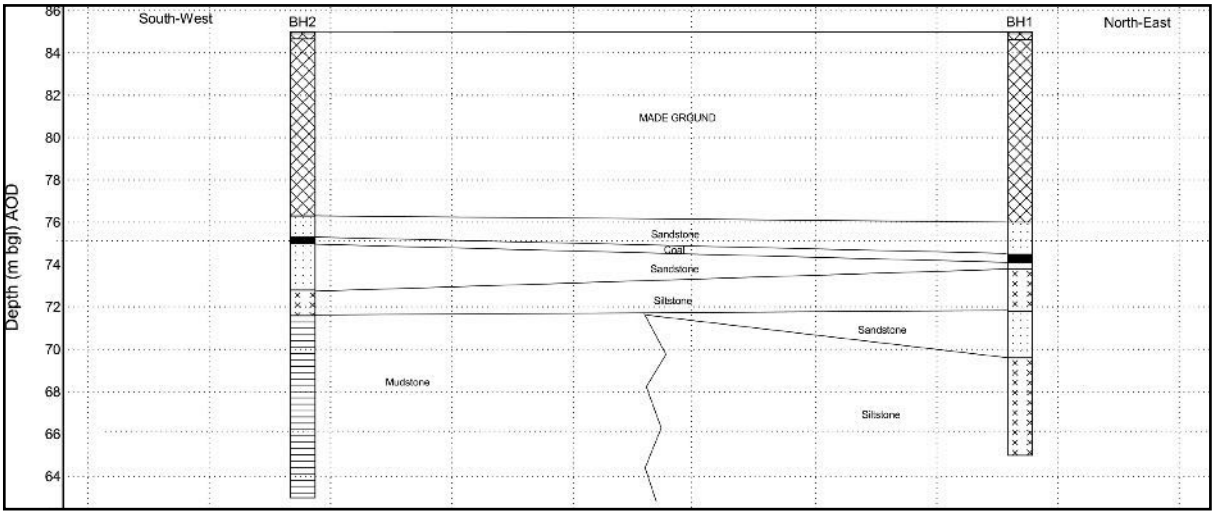


FIGURE 4 - GEOLOGICAL SECTION

Plate bearing tests undertaken in the trial pits recorded the California Bearing Ratio (CBR) values in the made ground to range between 2.3% (PBT4) and 4.6% (PBT1) across the MUGA pitch.

The rotary boreholes recorded the made ground down to a depth of 9.00m bgl in BH1 and 8.70m bgl in BH2.

No natural soils were recorded in either of the rotary boreholes, with sandstone bedrock encountered beneath the made ground in both boreholes, overlying a thin coal seam at depths between 10.51m to 10.90m bgl in BH1 and 9.70m to 10.00m bgl in BH2. The underlying sequence in BH1 consisted of mudstone, siltstone and sandstone down to a depth of 15.40m bgl were siltstone bedrock was encountered to to the base of the borehole at 20.00m bgl. The bedrock sequence underlying the coal seam in BH2 comprised sandstone and siltstone down to a depth of 13.41m bgl overlying mudstone bedrock which was encountered to the base of the borehole at 22.00m bgl.

Of the rock cores obtained, Total Core Recovery (TCR) ranged from 52% to 100% with the Solid Core Recovery (SCR) ranging between 34% and 84%. Rock Quality Designation (RQD) of the cores ranged between 8% and 39% due to the majority of the sequence consisting of mudstone. Rock coring was undertaken between 10.20m bgl and 16.90m bgl in BH1 and from 10.20 m bgl to 16.20m bgl in BH2. Above and below the core runs, rotary openhole drilling techniques were used to the basal depths of the boreholes. No loss of flush, voids or signs of broken ground that may be indicative of potential shallow mine workings were noted in either of the rotary boreholes undertaken.

Ground gas concentrations were monitored during the drilling of each borehole; no methane was detected and only minimal amounts of carbon dioxide (CO_2) were recorded.

No groundwater was encountered within any of the exploratory holes undertaken.

A summary of the point load test results undertaken on subsamples of the rock cores obtained is provided on Figure 5. Photographic records of the cores were taken during detailed geological logging, included as Appendix E. The results show a slight increase in relative strength with depth. The diametral point load testing results range from very weak to medium strong strength. However, as would be expected, the axial rock strength is slightly greater than the diametral strength; ranging between weak and strong.

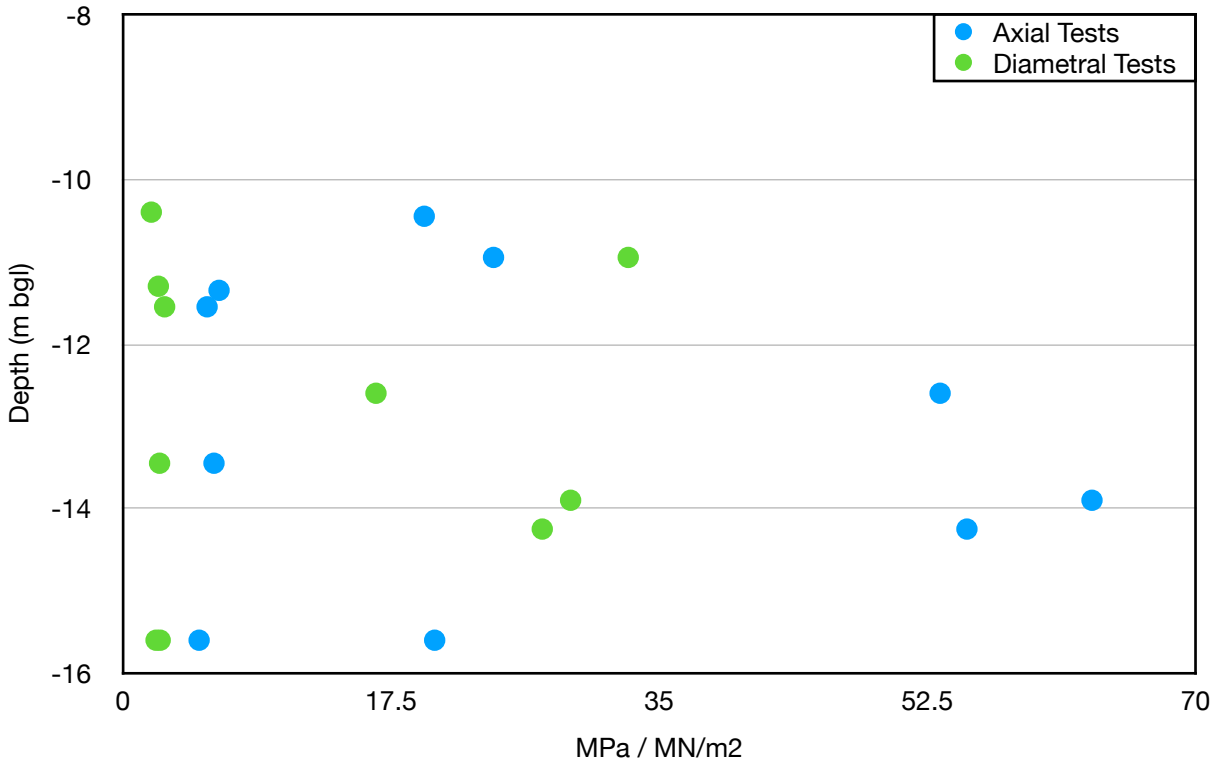


FIGURE 5 - ROCK STRENGTH VS DEPTH GRAPH

11. GEOTECHNICAL CONSIDERATIONS

11.1. General

An outline plan was available when completing this report. We understand that a two storey educational building will be constructed at or close to existing ground levels, that will be used as a motorised vehicle testing (MVT) centre. The proposed ground loadings were not know, but for the purposes of this report are assumed to be less than 100 kN/m. If there are changes to these proposals then some modification to the comments and recommendations given may be required.

11.2. Mining Precautions

The information reviewed as part of the Phase 1 Desk Study report concluded that the risks of potential unrecorded shallow mine workings or quarrying were considered to be **low.** In addition, no signs of potential shallow mine workings were identified in either of the rotary boreholes undertaken. Consequently it is not considered that any precautions with regards to potential unrecorded shallow mine workings are necessary.

11.3. Foundations

Based on the findings of the supplementary ground investigation, deep piled foundations will be required for the proposed MVT building. It is likely that the piles would be end bearing piles taken through the made ground into the underlying bedrock sequence. The piles may need to be taken below the coal seam encountered between depths of 10.51m bgl -10.90m bgl in BH1 and 9.70m bgl - 10.00m bgl in BH2. This should be assessed by a specialist pile designer / contractor.

The actual available pile loadings will be dependent on the configuration of piles used, and should be specified by a specialist piling contractor. When designing the piles consideration should be given to the potential for negative skin friction from the made ground and the effects of any groundwater encountered.

Consideration should also be given to the potential for encountering large cobbles, boulders or obstructions that may be present in the made ground soils, although they were only recorded in smaller proportions in the exploratory holes undertaken.

11.4. Floor Slabs

With greater than 600mm of made ground present across the site, suspended floors are recommended unless ground improvement of the made ground is undertaken or the floor slab is supported by compacted stone columns, rigid inclusions or piles.

11.5. Highways & Hardstanding

Five in-situ plate bearing tests were undertaken cross the site, at each of the trial pit locations once the MUGA surfacing had been broken out and prior to the trial pit being excavated. The reported CBR values ranges between 2.3% (PBT4) and 4.6% (PBT2). This information should be passed to the prospective pile installation company for their assessment of whether a piling mat needs to be installed to provide a suitable formation for the piling machinery.

Highways and hardstanding will need to be constructed on re-engineered material. For design purposes a CBR of 2.5% may be assumed provided that the formation is proof rolled and any soft spots are removed.

Consideration may need to be given to carrying out ground improvement of the underlying made ground soils or the use of geogrid reinforcement to help moderate any undue settlement of the made ground soils.

11.6. Drainage & Excavatability

Some difficulties in excavation of trenches for sewers and foundations in the made ground should be anticipated. Consideration should be given to providing safe temporary support of excavations within made ground or where greater than 1.20m deep.

Due to the ground conditions encountered, and the proximity to the adjacent railway cutting, soakaways are not suitable for this site. Attenuation and off-site drainage will therefore need to be considered. As the site is already entirely covered by impermeable surfacing it may be possible to discharge surface waters from the new MVT building into the existing drainage system. This would need to be confirmed by the appointed designer of the drainage system.

All drainage measures will need to be designed in accordance with Sustainable Urban Drainage Systems (SUDS) requirements.

11.7. Chemical Precautions

As per the previous report, Class DS-1 (ACEC Class AC-1s) can be considered for use on this site in accordance with BRE Special Digest 1:2005. Where piles may come into contact with coal sulphate resistant cement should be used to avoid any chemical attack.

11.8. Ground Source Heating

Providing space heating and hot water using ground source heating could be considered for this site. If this method of heating is being proposed then a further assessment of the site and its underlying geology would be required to determine the most efficient ground loop configuration for the required heat load of the proposed building(s). Consideration would need to be given to installing any groundloop collectors a suitable distance from any existing or proposed buildings or other structures.

12. ENVIRONMENTAL RISK ASSESSMENT

As part of the previously prepared Phase 1 Desk Study and Phase 2 Ground Investigation report, a detailed environmental risk assessment was undertaken. A summary is given below for ease of reference; for a detailed account the previous report should be consulted.

Chemical testing undertaken on made ground soils identified that the concentrations of contaminants were all below the current GQRA threshold values for a commercial landuse and are unlikely to pose a significant risk to construction worker receptors and future site users. Also, as no soft landscaping areas are proposed there will not be the potential for site end users to come into contact with the underlying soils.

Post-investigation gas monitoring classified the site as Characteristic Situation 4 (CS4) with regard to hazardous ground gases. In accordance with BS8485:2015 the new buildings will require ground gas protection measures with a minimum Gas Protection Score of 4.5 points.

13. REMEDIATION REQUIREMENTS

13.1. Imported Soils

If any imported soils are required to be brought to site for use in any soft landscaping areas they would need to be validated to confirm their chemical suitability, and that they do not pose a risk to future receptors. The soils should be validated in accordance with Yorkshire And Lincolnshire Pollution Advisory Group (YALPAG) guidance *"Verification Requirements for Cover Systems"* version 4.1, dated June 2021.

The scope and frequency of analysis required to validate any imported soils would be dependent on the source and/or historical setting of the source site and the volume of soils imported to site.

13.2. Ground Gas Protection Measures

The site is classified as Characteristic Situation 4 (CS4) with regard to the potential risk from ground gases. In accordance with BS8485:2015 the new buildings will require ground gas protection measures with a minimum Gas Protection Score of 4.5 points.

Gas protection points will be awarded in accordance with BS8485:2015 based on the construction design of the new building. As a minimum the gas protection system shall include two elements, such as a passively ventilated subfloor and gas resistant membrane. A small number of points may also be awarded for any ground-bearing floor slabs that would provide a structural barrier within the building construction.

Once the proposed building construction is known a remediation method statement will need to be produced to summarise the proposed gas protection system to be installed into the new MVT building, and confirm that it will meet the requirements of BS8485:2015. The Remediation Method Statement should include reference to the specific materials and components to be used, who will install the gas protection measures, how the installation will be validate, and the provision / requirement for any integrity testing depending on the proposed system to be used.

13.3. Validation & Verification of Remediation Works

Ground Gas protection measures will need to be verified by an appropriately experienced independent Validation Engineer in accordance with YALPAG guidance and CIRIA 735 to meet the requirements of BS8485:2015 for the proposed gas protection measures.

On completion of the remedial works a Verification Report will need to be compiled and submitted to the Local Authority, confirming that the agreed remedial works have been undertaken as proposed and that no residual risks are present to future residents / receptors.

14. WASTE DISPOSAL

Any waste arising from development of the site, such as excess soil or material deemed unsuitable for retention on site, should be disposed of in accordance with the Duty of Care Regulations.

As well as the basic soil suites undertaken during the initial ground investigation, a further three samples of the made ground soils were taken for Waste Acceptance Criteria (WAC) analysis as part of the supplementary ground investigation works.

The majority of the leachable metals concentrations were found to be below the threshold values for inert waste, with the exception of fluoride in sample TP4/0.50m and sample TP5/2.10m which were both slightly above the threshold value for inert waste but within the range for non-reactive hazardous waste.

The total organic carbon content within sample TP2/1.30m exceeded the non-reactive hazardous waste threshold, and in sample TP5/2.10m to exceed the threshold for inert waste.

To confirm the waste classification the WAC testing results and chemical testing results from the previous Phase 2 Ground Investigation should be forwarded to the prospective waste handler for a formal waste classification.

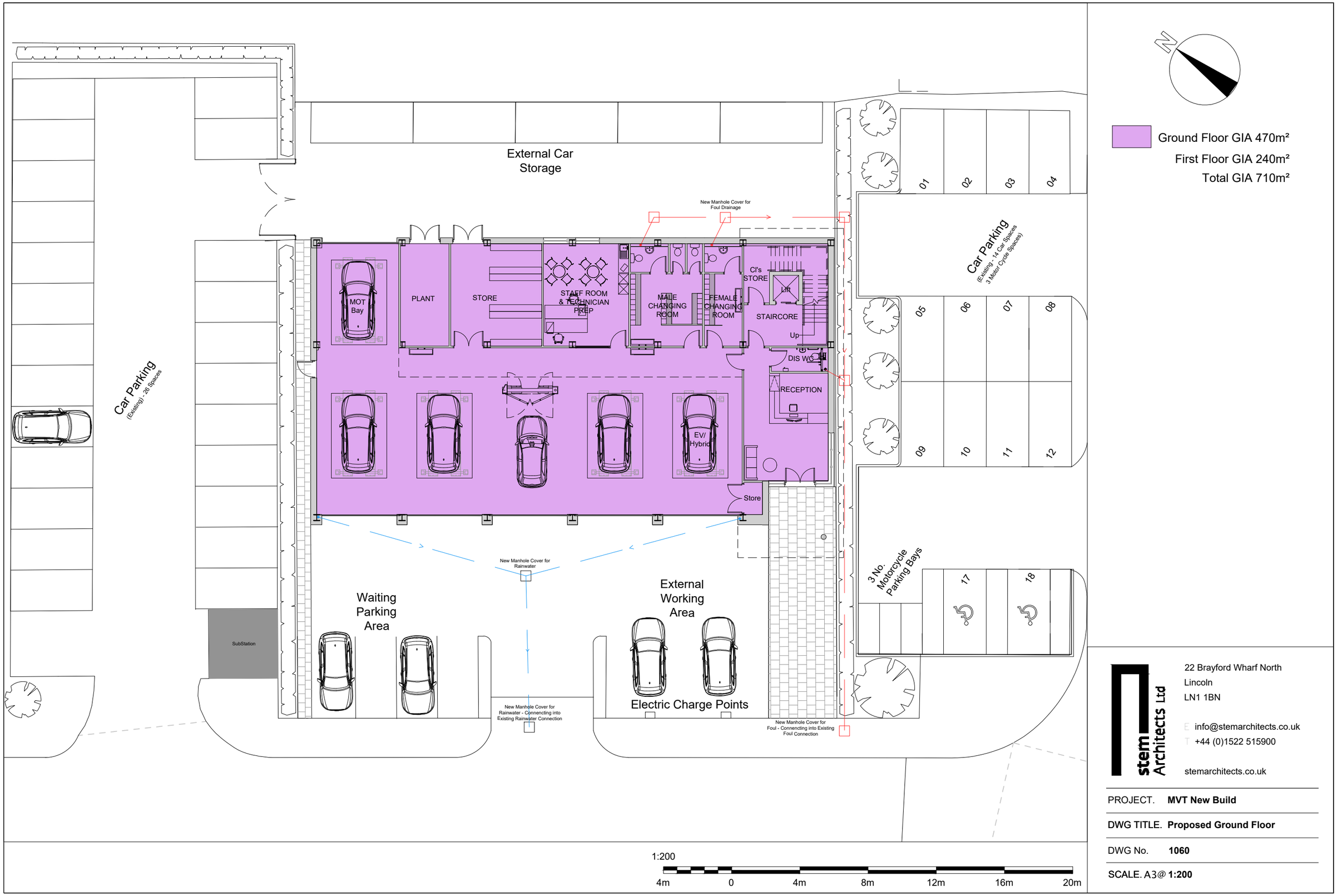
15. REGULATORY APPROVAL

The conclusions and recommendations in this report are based on a review of available information and observations made during the site walkover survey undertaken. The conclusions cannot be guaranteed to gain regulatory approval if this report is required as part of a planning application. If it is required as such it should be passed to the relevant regulatory bodies for their comment and approval.

16. FURTHER ASSESSMENT

Once the components of the proposed ground gas protection measures have been confirmed a Remediation Method Statement will need to be produced to outline the scope of gas protection measures proposed to be installed. The Remediation Method Statement will then need to be passed to the Local Authority for their comment and approval prior to installation of any ground gas protection measures.

APPENDIX A - PROPOSED LAYOUT DRAWING



N

Ground Floor GIA 470m²

First Floor GIA 240m²

Total GIA 710m²

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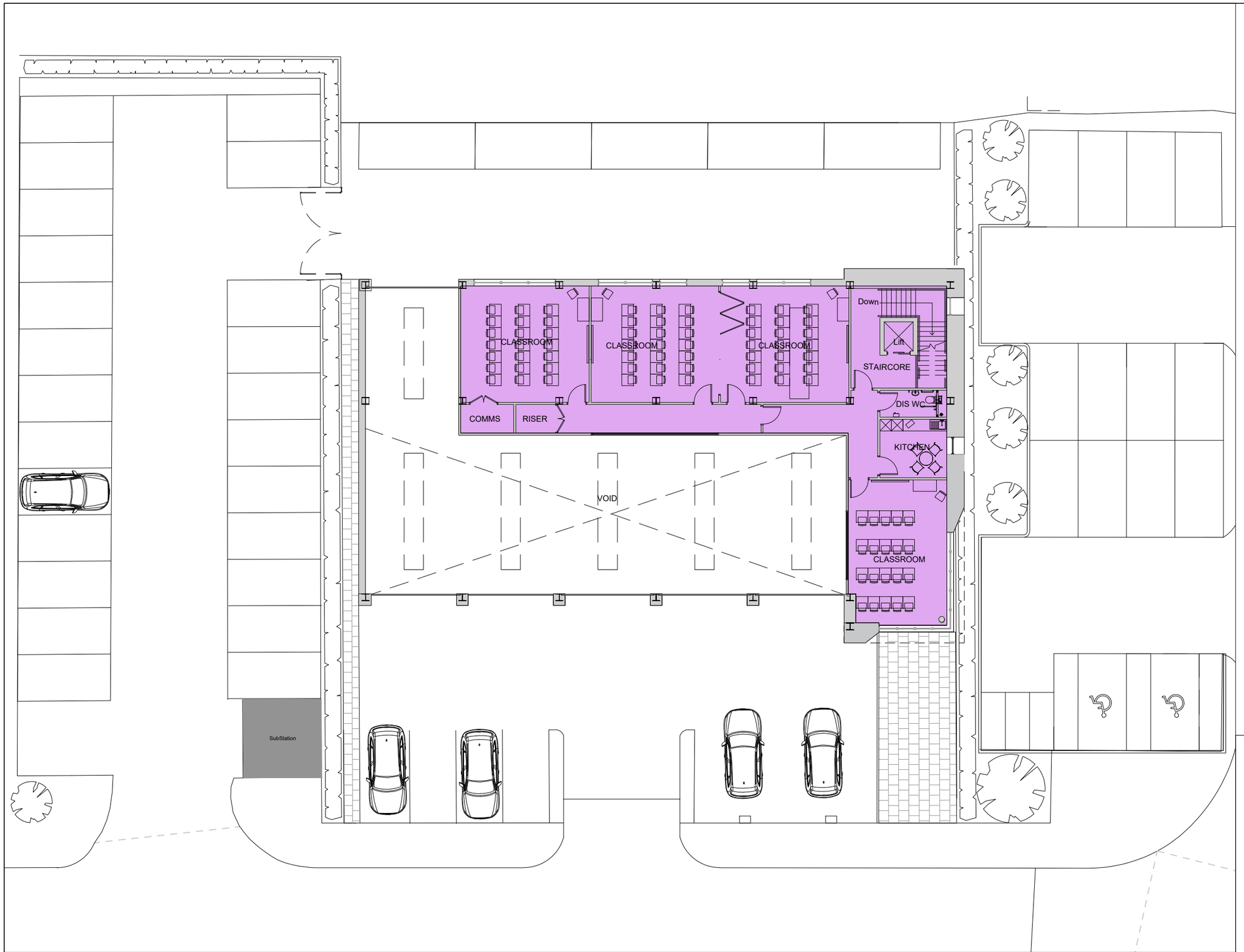
PROJECT. **MVT New Build**

DWG TITLE. **Proposed Ground Floor**

DWG No. **1060**

SCALE. A3@ **1:200**



N

Ground Floor GIA 470m²

First Floor GIA 240m²

Total GIA 710m²

1:200

4m 0 4m 8m 12m 16m 20m

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PROJECT. **MVT New Build**

DWG TITLE. **Proposed First Floor**

DWG No. **1061**

SCALE. A3@ **1:200**

APPENDIX B - EXPLORATORY HOLE LOGS

4 Neville Street
WAKEFIELD
WF1 5EF
Tel: 01924 376622
www.abbeydalebec.com

DRILLHOLE LOG

Abbeydale
Building Environment Consultants

Project				DRILLHOLE No
Proposed MVT Building, Barnsley College, Honeywell Campus				BH1
Job No	Date	Ground level (m)	Co-Ordinates (NGR)	
151118	11-04-22 12-04-22	85.00	E 434,489.0 N 407,109.0	
Method/Plant Used: Beretta T41-2 Rotary Driiling Rig				Sheet: 1 of 6

RUN DETAILS			STRATA							
Depth / Date	TCR (SCR) RQD	(SPT) Fracture Spacing	Red'cd Level	Legend	Depth (Thick-ness)	DESCRIPTION: Discontinuities	Detail	Main	Geology	Instrument/ Backfill
			84.99		0.01			MADE GROUND: Red MUGA macadam surfacing.		
			84.90		0.10			MADE GROUND: Black macadam.		
					(0.28)			MADE GROUND: Light grey rounded to subangular fine to medium of limestone GRAVEL.		
			84.62		0.38			MADE GROUND: Soft dark grey sandy very gravelly CLAY. Gravel is subrounded to subangular fine to medium of brick, coal, mudstone and concrete. Frequent brick cobbles.		

Drilling Progress and Water Observations

Date	Time	Depth	Casing	Core Dia mm	Water Strike	Water Standing

GENERAL REMARKS

CAT used to check for services. No groundwater encountered.

All dimensions in metres Scale 1:25	Client: Nu Construction Ltd	Contractor: Ace Drilling	Logged By: RZ

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DRILLHOLE LOG

Abbeydale
Building Environment Consultants

Project				DRILLHOLE No
Proposed MVT Building, Barnsley College, Honeywell Campus				BH1
Job No	Date	Ground level (m)	Co-Ordinates (NGR)	
151118	11-04-22 12-04-22	85.00	E 434,489.0 N 407,109.0	
Method/Plant Used: Beretta T41-2 Rotary Driiling Rig				Sheet: 2 of 6

RUN DETAILS			STRATA							
Depth / Date	TCR (SCR) RQD	(SPT) Fracture Spacing	Red'cd Level	Legend	Depth (Thick-ness)	DESCRIPTION: Discontinuities	Detail	Main	Geology	Instrument/ Backfill
					(8.62)			MADE GROUND: Soft dark grey sandy very gravelly CLAY. Gravel is subrounded to subangular fine to medium of brick, coal, mudstone and concrete. Frequent brick cobbles. *(continued)*		

Drilling Progress and Water Observations

Date	Time	Depth	Casing	Core Dia mm	Water Strike	Water Standing

GENERAL REMARKS

CAT used to check for services. No groundwater encountered.

All dimensions in metres Scale 1:25	Client: Nu Construction Ltd	Contractor: Ace Drilling	Logged By: RZ

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DRILLHOLE LOG

Abbeydale
Building Environment Consultants

Project				DRILLHOLE No
Proposed MVT Building, Barnsley College, Honeywell Campus				BH1
Job No	Date	Ground level (m)	Co-Ordinates (NGR)	
151118	11-04-22 12-04-22	85.00	E 434,489.0 N 407,109.0	
Method/Plant Used: Beretta T41-2 Rotary Driiling Rig				Sheet: 3 of 6

RUN DETAILS			STRATA							
Depth / Date	TCR (SCR) RQD	(SPT) Fracture Spacing	Red'cd Level	Legend	Depth (Thick-ness)	DESCRIPTION: Discontinuities	Detail	Main	Geology	Instrument/ Backfill
			76.00		9.00			MADE GROUND: Soft dark grey sandy very gravelly CLAY. Gravel is subrounded to subangular fine to medium of brick, coal, mudstone and concrete. Frequent brick cobbles. *(continued)*		
10.20			74.49		(1.51) 10.51			Very weak thinly bedded light brown mottled light grey and black fractured fine grained SANDSTONE. Fractures are 10 to 15 degrees medium spaced, planar, smooth and stained brown. 10.2m - 10.36m bgl Non-Intact.		
	75 (59) 39	11	74.10		(0.39) 10.90			No core recovery. Coal gravel in drilling returns.		
			73.80		(0.30) 11.20			Extremely weak and very weak thinly laminated light blue grey motlled black fissured MUDSTONE. Fissures are smooth and stained brown.		
11.70										

Drilling Progress and Water Observations						
Date	Time	Depth	Casing	Core Dia mm	Water Strike	Water Standing

GENERAL REMARKS

CAT used to check for services. No groundwater encountered.

All dimensions in metres Scale 1:25	Client: Nu Construction Ltd	Contractor: Ace Drilling	Logged By: RZ

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DRILLHOLE LOG

Abbeydale
Building Environment Consultants

Project				DRILLHOLE No
Proposed MVT Building, Barnsley College, Honeywell Campus				BH1
Job No	Date	Ground level (m)	Co-Ordinates (NGR)	
151118	11-04-22 12-04-22	85.00	E 434,489.0 N 407,109.0	
Method/Plant Used: Beretta T41-2 Rotary Driiling Rig				Sheet: 4 of 6

RUN DETAILS			STRATA							
Depth / Date	TCR (SCR) RQD	(SPT) Fracture Spacing	Red'cd Level	Legend	Depth (Thick-ness)	DESCRIPTION: Discontinuities	Detail	Main	Geology	Instrument/ Backfill
	52 (34) 19	5			(2.00)			Extremely weak and very weak thinly laminated light grey motlled black and brown fissured SILTSTONE. Fissures are smooth and stained brown. 11.37m-11.42m bgl Non-Intact 11.49m-11.56m bgl Non-Intact 11.62m-11.70m bgl Non-Intact *(continued)*		
13.20			71.80		13.20					
13.90								Very weak to weak thinly bedded light brown mottled light grey and black fractured fine grained SANDSTONE. Fractures are 10 to 20 degrees medium spaced, planar, smooth and stained brown.		
	100 (84) 37	11			(2.20)					
15.40			69.60		15.40					
								Extremely weak and very weak thinly laminated light grey motlled black and brown fissured SILTSTONE. Fissures are smooth and stained brown.		

Drilling Progress and Water Observations

Date	Time	Depth	Casing	Core Dia mm	Water Strike	Water Standing

GENERAL REMARKS

CAT used to check for services. No groundwater encountered.

All dimensions in metres Scale 1:25	Client: Nu Construction Ltd	Contractor: Ace Drilling	Logged By: RZ

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DRILLHOLE LOG

Abbeydale
Building Environment Consultants

Project				DRILLHOLE No
Proposed MVT Building, Barnsley College, Honeywell Campus				BH1
Job No	Date	Ground level (m)	Co-Ordinates (NGR)	
151118	11-04-22 12-04-22	85.00	E 434,489.0 N 407,109.0	
Method/Plant Used: Beretta T41-2 Rotary Driiling Rig				Sheet: 5 of 6

RUN DETAILS			STRATA							
Depth / Date	TCR (SCR) RQD	(SPT) Fracture Spacing	Red'cd Level	Legend	Depth (Thick-ness)	DESCRIPTION: Discontinuities	Detail	Main	Geology	Instrument/ Backfill
16.90	100 (78) 8	<25						Extremely weak and very weak thinly laminated light grey motlled black and brown fissured SILTSTONE. Fissures are smooth and stained brown. *(continued)*		
			65.00		(4.60) 20.00					

Drilling Progress and Water Observations

Date	Time	Depth	Casing	Core Dia mm	Water Strike	Water Standing

GENERAL REMARKS

CAT used to check for services. No groundwater encountered.

All dimensions in metres Scale 1:25	Client: Nu Construction Ltd	Contractor: Ace Drilling	Logged By: RZ

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DRILLHOLE LOG

Abbeydale
Building Environment Consultants

Project				DRILLHOLE No
Proposed MVT Building, Barnsley College, Honeywell Campus				**BH1**
Job No	Date	Ground level (m)	Co-Ordinates (NGR)	
151118	11-04-22 12-04-22	85.00	E 434,489.0 N 407,109.0	
Method/Plant Used: Beretta T41-2 Rotary Driiling Rig				Sheet: 6 of 6

RUN DETAILS			STRATA							
Depth / Date	TCR (SCR) RQD	(SPT) Fracture Spacing	Red'cd Level	Legend	Depth (Thick-ness)	DESCRIPTION: Discontinuities	Detail	Main	Geology	Instrument/ Backfill
								Borehole terminated.		

Drilling Progress and Water Observations

Date	Time	Depth	Casing	Core Dia mm	Water: Strike	Water: Standing

GENERAL REMARKS

CAT used to check for services. No groundwater encountered.

All dimensions in metres Scale 1:25	Client: Nu Construction Ltd	Contractor: Ace Drilling	Logged By: RZ

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DRILLHOLE LOG

Abbeydale
Building Environment Consultants

Project				DRILLHOLE No
Proposed MVT Building, Barnsley College, Honeywell Campus				BH2
Job No	Date	Ground level (m)	Co-Ordinates (NGR)	
151118	12-04-22 13-04-22	85.00	E 434,483.0 N 407,080.0	
Method/Plant Used: Beretta T41-2 Rotary Driiling Rig				Sheet: 1 of 6

RUN DETAILS			STRATA							
Depth / Date	TCR (SCR) RQD	(SPT) Fracture Spacing	Red'cd Level	Legend	Depth (Thick-ness)	DESCRIPTION: Discontinuities	Detail	Main	Geology	Instrument/ Backfill
			84.99		0.01			MADE GROUND: Red MUGA macadam surfacing.		
			84.90		0.10			MADE GROUND: Black macadam.		
					(0.24)			MADE GROUND: Light grey rounded to subangular fine to medium of limestone GRAVEL.		
			84.66		0.34			MADE GROUND: Soft dark grey sandy very gravelly CLAY. Gravel is subrounded to subangular fine to medium of brick, coal, mudstone and concrete. Frequent brick cobbles.		

Drilling Progress and Water Observations

Date	Time	Depth	Casing	Core Dia mm	Water Strike	Water Standing

GENERAL REMARKS

CAT used to check for services. No groundwater encountered.

All dimensions in metres Scale 1:25	Client: Nu Construction Ltd	Contractor: Ace Drilling	Logged By: RZ

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DRILLHOLE LOG

Abbeydale
Building Environment Consultants

Project				DRILLHOLE No
Proposed MVT Building, Barnsley College, Honeywell Campus				BH2
Job No	Date	Ground level (m)	Co-Ordinates (NGR)	
151118	12-04-22 13-04-22	85.00	E 434,483.0 N 407,080.0	
Method/Plant Used: Beretta T41-2 Rotary Driiling Rig				Sheet: 2 of 6

RUN DETAILS			STRATA							
Depth / Date	TCR (SCR) RQD	(SPT) Fracture Spacing	Red'cd Level	Legend	Depth (Thick-ness)	DESCRIPTION: Discontinuities	Detail	Main	Geology	Instrument/ Backfill
					(8.36)			MADE GROUND: Soft dark grey sandy very gravelly CLAY. Gravel is subrounded to subangular fine to medium of brick, coal, mudstone and concrete. Frequent brick cobbles. *(continued)*		

Drilling Progress and Water Observations

Date	Time	Depth	Casing	Core Dia mm	Water Strike	Water Standing

GENERAL REMARKS

CAT used to check for services. No groundwater encountered.

All dimensions in metres Scale 1:25	Client: Nu Construction Ltd	Contractor: Ace Drilling	Logged By: RZ

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DRILLHOLE LOG

Abbeydale
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Project				DRILLHOLE No
Proposed MVT Building, Barnsley College, Honeywell Campus				BH2
Job No	Date	Ground level (m)	Co-Ordinates (NGR)	
151118	12-04-22 13-04-22	85.00	E 434,483.0 N 407,080.0	
Method/Plant Used: Beretta T41-2 Rotary Driiling Rig				Sheet: 3 of 6

RUN DETAILS			STRATA							
Depth / Date	TCR (SCR) RQD	(SPT) Fracture Spacing	Red'cd Level	Legend	Depth (Thick-ness)	DESCRIPTION: Discontinuities	Detail	Main	Geology	Instrument/ Backfill
			76.30		8.70			MADE GROUND: Soft dark grey sandy very gravelly CLAY. Gravel is subrounded to subangular fine to medium of brick, coal, mudstone and concrete. Frequent brick cobbles. *(continued)*		
			75.30		(1.00) 9.70			Light brown SANDSTONE.		
			75.00		(0.30) 10.00			Black COAL.		
10.20								Very weak thinly bedded light brown mottled light grey and black fractured fine grained SANDSTONE. Fractures are 5 tp 10 degrees medium spaced, undulating, smooth and stained brown. 11.07m-11.20m bgl Non-Intact		
11.70	78 (67) 23	12			(2.20)					

Drilling Progress and Water Observations

Date	Time	Depth	Casing	Core Dia mm	Water Strike	Water Standing

GENERAL REMARKS

CAT used to check for services. No groundwater encountered.

All dimensions in metres Scale 1:25	Client: Nu Construction Ltd	Contractor: Ace Drilling	Logged By: RZ

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DRILLHOLE LOG

Abbeydale
Building Environment Consultants

Project				DRILLHOLE No
Proposed MVT Building, Barnsley College, Honeywell Campus				BH2
Job No	Date	Ground level (m)	Co-Ordinates (NGR)	
151118	12-04-22 13-04-22	85.00	E 434,483.0 N 407,080.0	
Method/Plant Used: Beretta T41-2 Rotary Driiling Rig				Sheet: 4 of 6

RUN DETAILS			STRATA							
Depth / Date	TCR (SCR) RQD	(SPT) Fracture Spacing	Red'cd Level	Legend	Depth (Thick-ness)	DESCRIPTION: Discontinuities	Detail	Main	Geology	Instrument/ Backfill
			72.80		12.20					
	100 (83) 38	11			(1.21)			Extremely weak and very weak thinly laminated light grey motlled black and brown fissured SILTSTONE. Fissures are smooth and stained brown. 13.02m-13.07m bgl Non-Intact. 13.2m-13.4m bgl Non-Intact		
13.20			71.59		13.41					
	100 (84) 34	<25						Extremely weak and very weak thinly laminated dark grey motlled brown fissured MUDSTONE. Fissures are smooth, planar and stained brown. 15.0m-15.10m bgl Non-Intact 15.24m-15.35m bgl Non-Intact 15.78m-16.0m bgl Non-Intact		
14.70										
	84 (45) 32	<25								

Drilling Progress and Water Observations

Date	Time	Depth	Casing	Core Dia mm	Water Strike	Water Standing

GENERAL REMARKS

CAT used to check for services. No groundwater encountered.

All dimensions in metres Scale 1:25	Client: Nu Construction Ltd	Contractor: Ace Drilling	Logged By: RZ

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DRILLHOLE LOG

Abbeydale
Building Environment Consultants

Project				DRILLHOLE No
Proposed MVT Building, Barnsley College, Honeywell Campus				BH2
Job No	Date	Ground level (m)	Co-Ordinates (NGR)	
151118	12-04-22 13-04-22	85.00	E 434,483.0 N 407,080.0	
Method/Plant Used: Beretta T41-2 Rotary Driiling Rig				Sheet: 5 of 6

RUN DETAILS			STRATA							
Depth / Date	TCR (SCR) RQD	(SPT) Fracture Spacing	Red'cd Level	Legend	Depth (Thick-ness)	DESCRIPTION: Discontinuities	Detail	Main	Geology	Instrument/ Backfill
16.20								Extremely weak and very weak thinly laminated dark grey motlled brown fissured MUDSTONE. Fissures are smooth, planar and stained brown. 15.0m-15.10m bgl Non-Intact 15.24m-15.35m bgl Non-Intact 15.78m-16.0m bgl Non-Intact *(continued)*		
					(8.59)					

Drilling Progress and Water Observations

Date	Time	Depth	Casing	Core Dia mm	Water Strike	Water Standing

GENERAL REMARKS

CAT used to check for services. No groundwater encountered.

All dimensions in metres Scale 1:25	Client: Nu Construction Ltd	Contractor: Ace Drilling	Logged By: RZ

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DRILLHOLE LOG

Abbeydale
Building Environment Consultants

Project				DRILLHOLE No
Proposed MVT Building, Barnsley College, Honeywell Campus				BH2
Job No	Date	Ground level (m)	Co-Ordinates (NGR)	
151118	12-04-22 13-04-22	85.00	E 434,483.0 N 407,080.0	
Method/Plant Used: Beretta T41-2 Rotary Driiling Rig				Sheet: 6 of 6

RUN DETAILS			STRATA							
Depth / Date	TCR (SCR) RQD	(SPT) Fracture Spacing	Red'cd Level	Legend	Depth (Thick-ness)	DESCRIPTION: Discontinuities	Detail	Main	Geology	Instrument/ Backfill
								Extremely weak and very weak thinly laminated dark grey motlled brown fissured MUDSTONE. Fissures are smooth, planar and stained brown. 15.0m-15.10m bgl Non-Intact 15.24m-15.35m bgl Non-Intact 15.78m-16.0m bgl Non-Intact *(continued)*		
			63.00		22.00					
								Borehole terminated.		

Drilling Progress and Water Observations

Date	Time	Depth	Casing	Core Dia mm	Water Strike	Water Standing

GENERAL REMARKS

CAT used to check for services. No groundwater encountered.

All dimensions in metres Scale 1:25	Client: Nu Construction Ltd	Contractor: Ace Drilling	Logged By: RZ

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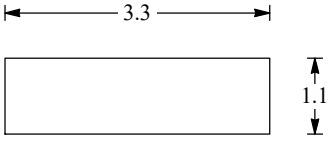
TRIAL PIT LOG

Abbeydale
Building Environment Consultants

Project				TRIAL PIT No
Proposed MVT Building, Barnsley College, Honeywell Campus				TP1
Job No	Date	Ground level (m)	Co-Ordinates (NGR)	
151118	30-05-22	85.00	E 434,471.0 N 407,099.0	
Method/Plant Used: CAT 432E mechanical backhoe excavator with 600mm toothed bucket				Sheet 1 of 1

SAMPLES & TESTS			Water	STRATA				Geology	Instrument/ Backfill
Depth	Type No	Test Result		Reduced Level	Legend	Depth (Thick-ness)	DESCRIPTION		
				84.99		0.01	MADE GROUND: Red MUGA macadam surfacing.		
				84.90		0.10	MADE GROUND: Black macadam.		
						(0.36)	MADE GROUND: Light grey rounded to subangular fine to medium of limestone GRAVEL.		
				84.54		0.46			
0.70	D						MADE GROUND: Firm dark grey mottled black, light blue-grey and brown sandy gravelly CLAY. Gravel is subrounded to subangular fine to coarse of brick, coal, concrete, quartz, slate and sandstone. Frequent fragments of timber, plastic, wire and glass. Frequent whole bricks.		
1.40	D					(2.22)			
				82.32		2.68			
						(0.55)	MADE GROUND: Light grey mottled orange-brown clayey gravelly SAND. Gravel is subrounded to subangular fine to medium of brick, mudstone and slate.		
				81.77		3.23			
							Trial pit terminated.		

Shoring/Support:
Stability:



GENERAL REMARKS

CAT used to check for services. No groundwater encountered.

All dimensions in metres Scale 1:25	Client: Nu Construction Ltd	Contractor: Hather Plant Hire	Logged By: RZ

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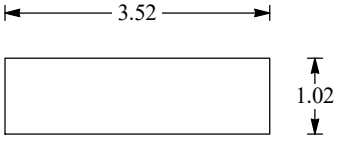
TRIAL PIT LOG

Abbeydale
Building Environment Consultants

Project				TRIAL PIT No
Proposed MVT Building, Barnsley College, Honeywell Campus				TP2
Job No	Date	Ground level (m)	Co-Ordinates (NGR)	
151118	30-05-22	85.00	E 434,486.0 N 407,093.0	
Method/Plant Used: CAT 432E mechanical backhoe excavator with 600mm toothed bucket				Sheet 1 of 1

SAMPLES & TESTS			Water	STRATA				Geology	Instrument/ Backfill
Depth	Type No	Test Result		Reduced Level	Legend	Depth (Thick-ness)	DESCRIPTION		
				84.99		0.01	MADE GROUND: Red MUGA macadam surfacing.		
				84.90		0.10	MADE GROUND: Black macadam.		
						(0.33)	MADE GROUND: Light grey rounded to subangular fine to medium of limestone GRAVEL.		
				84.57		0.43			
0.80	D						MADE GROUND: Soft to firm dark grey mottled black and brown sandy gravelly CLAY. Gravel is subrounded to angular fine to coarse of brick, concrete, coal, slate and mudstone. Concrete boulder at 1.20m bgl and large timber sleepers at 1.54m bgl. Frequent fragments of plastic, wire, glass, timber and whole bricks.		
1.30	D					(2.32)			
				82.25		2.75			
2.80	B					(0.21)	MADE GROUND: Light brown gravelly clayey SAND. Gravel is subrounded to subangular fine to coarse of sandstone and concrete.		
2.90	D			82.04		2.96			
							Trial pit terminated.		

Shoring/Support:
Stability:



GENERAL REMARKS

CAT used to check for services. No groundwater encountered.

All dimensions in metres Scale 1:25	Client: Nu Construction Ltd	Contractor: Hather Plant Hire	Logged By: RZ

ABEC TRIAL PIT 151118.GPJ ABEC TEMPLATE.GDT 1/6/22

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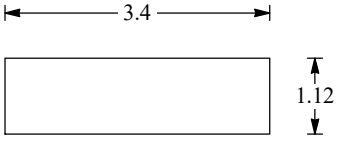
TRIAL PIT LOG

Abbeydale
Building Environment Consultants

Project				TRIAL PIT No
Proposed MVT Building, Barnsley College, Honeywell Campus				TP3
Job No	Date	Ground level (m)	Co-Ordinates (NGR)	
151118	30-05-22	85.00	E 434,508.0 N 407,088.0	
Method/Plant Used: CAT 432E mechanical backhoe excavator with 600mm toothed bucket				Sheet: 1 of 1

SAMPLES & TESTS			Water	STRATA				Geology	Instrument/ Backfill
Depth	Type No	Test Result		Reduced Level	Legend	Depth (Thick-ness)	DESCRIPTION		
				84.99		0.01	MADE GROUND: Red MUGA macadam surfacing.		
				84.90		0.10	MADE GROUND: Black macadam.		
						(0.28)	MADE GROUND: Light grey rounded to subangular fine to medium of limestone GRAVEL.		
				84.62		0.38			
1.00	D					(1.24)	MADE GROUND: Soft to firm light brown mottled light grey sandy gravelly CLAY. Gravel is fine to coarse rounded to angular of coal, quartz, concrete and brick. Frequent fragments of plastic, material and whole bricks. Black ribbed plastic pipe encountered at 0.65m bgl.		
				83.38		1.62			
						(1.23)	MADE GROUND: Firm light blue-grey mottled light orange-brown gravelly CLAY. Gravel is subrounded to subangular fine to coarse of brick and coal.		
2.80	D			82.15		2.85			
							Trial pit terminated.		

Shoring/Support:
Stability:



GENERAL REMARKS

CAT used to check for services. No groundwater encountered.

All dimensions in metres Scale 1:25	Client: Nu Construction Ltd	Contractor: Hather Plant Hire	Logged By: RZ

ABEC TRIAL PIT 151118.GPJ ABEC TEMPLATE.GDT 1/6/22

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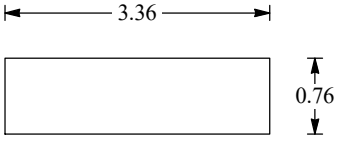
TRIAL PIT LOG

Abbeydale
Building Environment Consultants

Project				TRIAL PIT No
Proposed MVT Building, Barnsley College, Honeywell Campus				**TP4**
Job No	Date	Ground level (m)	Co-Ordinates (NGR)	
151118	30-05-22	85.00	E 434,480.0 N 407,071.0	
Method/Plant Used: CAT 432E mechanical backhoe excavator with 600mm toothed bucket				Sheet: 1 of 1

SAMPLES & TESTS			Water	STRATA				Geology	Instrument/ Backfill
Depth	Type No	Test Result		Reduced Level	Legend	Depth (Thick-ness)	DESCRIPTION		
				84.99		0.01	MADE GROUND: Red MUGA macadam surfacing.		
				84.90		0.10	MADE GROUND: Black macadam.		
				84.61		(0.29) 0.39	MADE GROUND: Light grey rounded to subangular fine to medium of limestone GRAVEL.		
0.50	D			83.76		(0.85) 1.24	MADE GROUND: Soft to firm light brown mottled black and brown sandy gravelly CLAY. Gravel is fine to coarse rounded to angular of coal, quartz, concrete and brick. Frequent fragments of plastic, timber and whole bricks. Black ribbed plastic pipe encountered at 0.60m bgl.		
2.20	D			82.25		(1.51) 2.75	MADE GROUND: Firm light blue-grey mottled light orange-brown gravelly CLAY. Gravel is subrounded to subangular fine to coarse of sandstone and coal.		
							Trial pit terminated.		

Shoring/Support:
Stability:



GENERAL REMARKS

CAT used to check for services. No groundwater encountered.

All dimensions in metres Scale 1:25	Client: Nu Construction Ltd	Contractor: Hather Plant Hire	Logged By: RZ

ABEC TRIAL PIT 151118.GPJ ABEC TEMPLATE.GDT 1/6/22

4 Neville Street
WAKEFIELD
WF1 5EF
Tel: 01924 376622
www.abbeydalebec.com

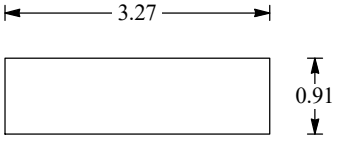
TRIAL PIT LOG

Abbeydale
Building Environment Consultants

Project				TRIAL PIT No
Proposed MVT Building, Barnsley College, Honeywell Campus				TP5
Job No	Date	Ground level (m)	Co-Ordinates (NGR)	
151118	30-05-22	85.00	E 434,491.0 N 407,106.0	
Method/Plant Used: CAT 432E mechanical backhoe excavator with 600mm toothed bucket				Sheet: 1 of 1

SAMPLES & TESTS			Water	STRATA				Geology	Instrument/ Backfill
Depth	Type No	Test Result		Reduced Level	Legend	Depth (Thick-ness)	DESCRIPTION		
				84.99		0.01	MADE GROUND: Red MUGA macadam surfacing.		
				84.90		0.10	MADE GROUND: Black macadam.		
						(0.43)	MADE GROUND: Light grey rounded to subangular fine to medium of limestone GRAVEL.		
				84.47		0.53			
0.90	D					(1.95)	MADE GROUND: Firm dark grey mottled black, light blue-grey and brown sandy gravelly CLAY. Gravel is subrounded to subangular fine to coase of brick, coal, concrete, quartz, mudstone and sandstone. Frequent fragments of timber, plastic, wire and glass. Frequent whole bricks, occasional brickwork and concrete boulders.		
2.10	D								
				82.52		2.48			
						(0.25)	MADE GROUND: Light grey mottled orange-brown clayey gravelly SAND. Gravel is subrounded to subangular fine to medium of brick, mudstone and slate.		
				82.27		2.73			
							Trial pit terminated.		

Shoring/Support:
Stability:



GENERAL REMARKS

CAT used to check for services. No groundwater encountered.

All dimensions in metres Scale 1:25	Client: Nu Construction Ltd	Contractor: Hather Plant Hire	Logged By: RZ

ABEC TRIAL PIT 151118.GPJ ABEC TEMPLATE.GDT 1/6/22

APPENDIX C - POINT LOAD TESTING RESULTS

Point Load Testing of Rock Cores - Calculations Table

ISRM suggested method 1985

Job:	Barnsley College
Job number:	151118

Ram Area (A) = 1442.1 mm^2

BH	Depth (m)	Axial (A) / Diametral (D) / Lump (L)	Specimen				Gauge Reading (G)	Failure Load P	Is	F	Is 50	Is 50 x	Description / Remarks	Strata Code	Strength
			Axial (mm)		Diametral (mm)			G x A	P / De		F x Is	20			
			De	Dia	De	L	(MN/m^2)	(N)	(N/mm^2)	$(De/50)^{0.45}$	(N/mm^2)	(MN/m^2)			
1	10.40 - 10.50	D			90	55	0.4	576.84	0.07	1.30	0.09	1.86	PL1 - Slightly rough	Sandstone	Very Weak
1	10.45 - 10.50	A	64	84			2.5	3605.25	0.88	1.12	0.98	19.67	PL1 - Fairly smooth	Sandstone	Weak
1	11.30 - 11.40	D			78	55	0.4	576.84	0.09	1.22	0.12	2.32	PL2 - Very rough, crumble	Siltstone	Very Weak
1	11.35 - 11.40	A	41	85			0.4	576.84	0.34	0.91	0.31	6.28	PL2 - Very rough, crumble	Siltstone	Weak
1	12.10 - 12.18	L			67	45	1.5	2163.15	0.48	1.14	0.55	10.99	PL3 - Lump	Siltstone	Weak
1	13.90 - 14.00	D			90	40	6.3	9085.23	1.12	1.30	1.46	29.22	PL4 - Fairly smooth	Sandstone	Medium Strong
1	13.90 - 13.94	A	58	85			6.9	9950.49	2.96	1.07	3.16	63.24	PL4 - Fairly smooth	Sandstone	Strong
1	14.25 - 14.34	D			90	65	5.9	8508.39	1.05	1.30	1.37	27.37	PL5 - Fairly smooth	Sandstone	Medium Strong
1	14.25 - 14.29	A	64	82			7	10094.70	2.46	1.12	2.75	55.08	PL5 - Fairly smooth	Sandstone	Strong
1	14.85 - 14.95	L			70	65	2.2	3172.62	0.65	1.16	0.75	15.07	PL6 - Lump. Slightly rough	Sandstone	Weak
1	15.25 - 15.31	L			75	40	2.1	3028.41	0.54	1.20	0.65	12.92	PL7 - Lump. Fairly smooth	Sandstone	Weak
1	15.60 - 15.65	D			94	35	0.5	721.05	0.08	1.33	0.11	2.17	PL8 - Broke along several planes	Siltstone	Very Weak
1	15.60 - 15.63	A	39	85			1.2	1730.52	1.14	0.89	1.02	20.35	PL8 - Uneven split	Siltstone	Weak
1	16.20 - 16.24	L			45	20	0.7	1009.47	0.50	0.95	0.48	9.51	PL9 - Lump. Crumble	Siltstone	Weak
1	16.85 - 16.90	L			50	40	3.3	4758.93	1.90	1.00	1.90	38.07	PL10 - Lump. Smooth	Siltstone	Medium Strong
2	10.95 - 11.02	D			67	35	4.5	6489.45	1.45	1.14	1.65	32.98	PL11 - Lump. Smooth	Sandstone	Medium Strong
2	10.95 - 10.98	A	42	84			1.6	2307.36	1.31	0.92	1.21	24.19	PL11 - Lump. Crumble	Sandstone	Weak
2	11.55 - 11.66	D			81	60	0.5	721.05	0.11	1.24	0.14	2.73	PL12 - Fairly rough	Sandstone	Very Weak
2	11.55 - 11.61	A	58	82			0.6	865.26	0.26	1.07	0.27	5.50	PL12 - Crumble	Sandstone	Weak
2	12.10 - 12.14	L			35	30	3.8	5479.98	4.47	0.85	3.81	76.20	PL13 - Lump. Uneven split	Sandstone	Strong
2	12.60 - 12.66	D			89	45	3.5	5047.35	0.64	1.30	0.83	16.52	PL14 - Slightly rough	Siltstone	Weak
2	12.60 - 12.64	A	47	85			4.2	6056.82	2.74	0.97	2.67	53.33	PL14 - Fairly smooth	Siltstone	Strong
2	13.45 - 13.49	D			88	45	0.5	721.05	0.09	1.29	0.12	2.40	PL15 - Crumble	Mudstone	Very Weak
2	13.45 - 13.49	A	49	84			0.5	721.05	0.30	0.99	0.30	5.95	PL16 - Crumble	Mudstone	Weak
2	15.60 - 15.71	D			87	65	0.5	721.05	0.10	1.28	0.12	2.44	PL17 - Crumble	Mudstone	Very Weak
2	15.60 - 15.66	A	55	85			0.5	721.05	0.24	1.04	0.25	4.98	PL17 - Crumble	Mudstone	Very Weak

APPENDIX D - LABORATORY TESTING RESULTS

ANALYTICAL TEST REPORT

Contract no: 109936

Contract name: Barnsley College, Honeywell Lane

Client reference: 151118

Clients name: Abbeydale BEC

Clients address: 4 Neville Street
Wakefield
WF1 5EF

Samples received: 01 June 2022

Analysis started: 01 June 2022

Analysis completed: 10 June 2022

Report issued: 10 June 2022

Key

U	UKAS accredited test
M	MCERTS & UKAS accredited test
$	Test carried out by an approved subcontractor
I/S	Insufficient sample to carry out test
N/S	Sample not suitable for testing

Approved by:

Megan Harris

Senior Reporting Administrator

Chemtech Environmental Limited

SAMPLE INFORMATION

MCERTS (Soils):

Soil descriptions are only intended to provide a log of sample matrices with respect to MCERTS validation. They are not intended as full geological descriptions. MCERTS accreditation applies for sand, clay and loam/topsoil, or combinations of these whether these are derived from naturally occurring soils or from made ground, as long as these materials constitute the major part of the sample. Other materials such as concrete, gravel and brick are not accredited if they comprise the major part of the sample.

Lab ref	Sample id	Depth (m)	Sample description	Material removed	% Removed	% Moisture
109936-1	TP2	1.30	Sandy Loamy Clay with Gravel	-	-	19.3
109936-2	TP4	0.50	Loamy Clay with Gravel	-	-	19.6
109936-3	TP5	2.10	Sandy Loamy Clay with Gravel	-	-	25.3

Chemtech Environmental Limited

SOILS

Lab number			109936-1	109936-2	109936-3
Sample id			TP2	TP4	TP5
Depth (m)			1.30	0.50	2.10
Date sampled			30/05/2022	30/05/2022	30/05/2022
Test	**Method**	**Units**			
Antimony (total)	CE127 [U]	mg/kg Sb	1.2	1.0	1.4
Arsenic (total)	CE127 [M]	mg/kg As	16	14	14
Barium (total)	CE127 [M]	mg/kg Ba	127	101	186
Cadmium (total)	CE127 [M]	mg/kg Cd	0.3	<0.2	0.3
Chromium (total)	CE127 [M]	mg/kg Cr	29	31	32
Copper (total)	CE127 [M]	mg/kg Cu	43	38	35
Lead (total)	CE127 [M]	mg/kg Pb	92	56	113
Mercury (total)	CE127 [M]	mg/kg Hg	<0.5	<0.5	0.9
Molybdenum (total)	CE127 [M]	mg/kg Mo	2.6	2.4	2.2
Nickel (total)	CE127 [M]	mg/kg Ni	33	25	26
Selenium (total)	CE127 [M]	mg/kg Se	1.3	1.1	1.8
Zinc (total)	CE127 [M]	mg/kg Zn	234	117	112

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METHOD DETAILS

METHOD	SOILS	METHOD SUMMARY	SAMPLE	STATUS	LOD	UNITS
CE127	Antimony (total)	Aqua regia digest, ICP-MS	Dry	U	0.2	mg/kg Sb
CE127	Arsenic (total)	Aqua regia digest, ICP-MS	Dry	M	1	mg/kg As
CE127	Barium (total)	Aqua regia digest, ICP-MS	Dry	M	1	mg/kg Ba
CE127	Cadmium (total)	Aqua regia digest, ICP-MS	Dry	M	0.2	mg/kg Cd
CE127	Chromium (total)	Aqua regia digest, ICP-MS	Dry	M	1	mg/kg Cr
CE127	Copper (total)	Aqua regia digest, ICP-MS	Dry	M	1	mg/kg Cu
CE127	Lead (total)	Aqua regia digest, ICP-MS	Dry	M	1	mg/kg Pb
CE127	Mercury (total)	Aqua regia digest, ICP-MS	Dry	M	0.5	mg/kg Hg
CE127	Molybdenum (total)	Aqua regia digest, ICP-MS	Dry	M	1	mg/kg Mo
CE127	Nickel (total)	Aqua regia digest, ICP-MS	Dry	M	1	mg/kg Ni
CE127	Selenium (total)	Aqua regia digest, ICP-MS	Dry	M	0.3	mg/kg Se
CE127	Zinc (total)	Aqua regia digest, ICP-MS	Dry	M	5	mg/kg Zn

Chemtech Environmental Limited

DEVIATING SAMPLE INFORMATION

Comments
Sample deviation is determined in accordance with the UKAS note "Guidance on Deviating Samples" and based on reference standards and laboratory trials.
For samples identified as deviating, test result(s) may be compromised and may not be representative of the sample at the time of sampling.
Chemtech Environmental Ltd cannot be held responsible for the integrity of sample(s) received if Chemtech Environmental Ltd did not undertake the sampling. Such samples may be deviating.

Key

N	No (not deviating sample)
Y	Yes (deviating sample)
NSD	Sampling date not provided
NST	Sampling time not provided (waters only)
EHT	Sample exceeded holding time(s)
IC	Sample not received in appropriate containers
HP	Headspace present in sample container
NCF	Sample not chemically fixed (where appropriate)
OR	Other (specify)

Lab ref	Sample id	Depth (m)	Deviating	Tests (Reason for deviation)
109936-1	TP2	1.30	N	
109936-2	TP4	0.50	N	
109936-3	TP5	2.10	N	

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ADDITIONAL INFORMATION

Notes

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

Unless otherwise stated, Chemtech Environmental Ltd was not responsible for sampling.

All testing carried out at Unit 6 Parkhead, Stanley, DH9 7YB, except for subcontracted testing.

Methods, procedures and performance data are available on request.

Results reported herein relate only to the material supplied to the laboratory.

This report shall not be reproduced except in full, without prior written approval.

Samples will be disposed of 4 weeks from initial receipt unless otherwise instructed.

For soils and solids, all results are reported on a dry basis. Samples dried at no more than 30°C in a drying cabinet.

For soils and solids, analytical results are inclusive of stones, where applicable.

Waste Acceptance Criteria Testing
BS EN 12457-Part 2, Single Stage Process

CHEMTECH environmental part of Cawood

Sample Details

Contract Name	Barnsley College, Honeywell Lane
Lab Number	109936-1
Sample ID	TP2 1.30m
Date Sampled	30 May 2022
Date Received	1 June 2022
Particle Size (<4mm)	-
Method of size reduction	N/A
Non-crushable matter	N/A

Test Values

Mass of Raw Test Portion (kg)	0.112
Mass of Dried Test Portion (kg)	0.090
Moisture Content Ratio (%)	23.90
Dry Matter Content Ratio (%)	80.71
Leachant Volume (litre)	0.878

Eluate Analysis	Conc in Eluate	Amount leached	BS EN 12457-2 Limit Values mg/kg at L:S 10:1		
			Inert Waste	Non-reactive Hazardous Waste	Hazardous Waste
Liquid : Waste Ratio	10:1				
pH (units)	7.8				
Temperature (°C)	20	10:1			
Conductivity (µS/cm)	323	**mg/kg**			
Antimony (µg/l Sb)	5.4	**0.054**	*0.06*	*0.7*	*5*
Arsenic (µg/l As)	5.28	**0.053**	*0.5*	*2*	*25*
Barium (µg/l Ba)	24.4	**0.244**	*20*	*100*	*300*
Cadmium (µg/l Cd)	<0.07	**<0.0007**	*0.04*	*1*	*5*
Chromium (µg/l Cr)	0.7	**0.007**	*0.5*	*10*	*70*
Copper (µg/l Cu)	7.2	**0.072**	*2*	*50*	*100*
Lead (µg/l Pb)	0.8	**0.008**	*0.5*	*10*	*50*
Mercury (µg/l Hg)	<0.008	**<0.00008**	*0.01*	*0.2*	*2*
Molybdenum (µg/l Mo)	49.7	**0.497**	*0.5*	*10*	*30*
Nickel (µg/l Ni)	5.8	**0.058**	*0.4*	*10*	*40*
Selenium (µg/l Se)	1.07	**0.011**	*0.1*	*0.5*	*7*
Zinc (µg/l Zn)	1	**0.010**	*4*	*50*	*200*
Chloride (mg/l Cl)	2.4	**350**	*800*	*15000*	*25000*
Fluoride (mg/l F)	0.6	**5.6**	*10*	*150*	*500*
Sulphate (mg/l SO_4)	46	**464**	*1000*	*20000*	*50000*
Total Dissolved Solids (mg/l TDS)	195	**1950**	*4000*	*60000*	*100000*
Phenol Index (µg/l PhOH)	<10	**<0.1**	*1*		
Dissolved Organic Carbon (mg/l C)	40	**400**	*500*	*800*	*1000*

Waste Analysis	Units	Result			
Total Organic Carbon	% w/w	**5.6**	3%	5%	6%
Loss on Ignition	% w/w	**8.8**			10%
BTEX	mg/kg	**0.09**	6		
PCBs (7 congeners)	mg/kg	**<0.045**	1		
Mineral Oil (C10 - C40)	mg/kg	**98**	500		
PAH (total)	mg/kg	**12.6**	100		
pH	pH units	**7.7**		>6	
Acid Neutralisation Capacity (pH4)	mol/kg	**0.06**		To be evaluated	
Acid Neutralisation Capacity (pH7)	mol/kg	**0.02**		To be evaluated	

Disclaimer : The Landfill Waste Acceptance Criteria limits in this report are provided for guidance only.
Chemtech Environmental Ltd does not take responsibility for any errors or omissions. Data is correct as of 01/09/2005.
Samples will be disposed of 6 weeks from initial receipt unless written instructions are received and further storage is agreed.
Waste Acceptance Criteria testing is outside the scope of the laboratory's UKAS accreditation.

Comments

Authorised by: Name: Rachael Burton

Report date: 10 June 2022 Position: Reporting Team Lead

Unit 6 Parkhead, Greencroft Industrial Park, Stanley, County Durham, DH9 7YB
Tel 01207 528578 Email customerservices@chemtech-env.co.uk
Vat Reg No. 772 5703 18 Registered in England number 4284013

Waste Acceptance Criteria Testing
BS EN 12457-Part 2, Single Stage Process

CHEMTECH environmental part of Cawood

Sample Details

Contract Name	Barnsley College, Honeywell Lane
Lab Number	109936-2
Sample ID	TP4 0.50m
Date Sampled	30 May 2022
Date Received	1 June 2022
Particle Size (<4mm)	-
Method of size reduction	N/A
Non-crushable matter	N/A

Test Values

Mass of Raw Test Portion (kg)	0.112
Mass of Dried Test Portion (kg)	0.090
Moisture Content Ratio (%)	24.45
Dry Matter Content Ratio (%)	80.36
Leachant Volume (litre)	0.878

Eluate Analysis	Conc in Eluate	Amount leached	BS EN 12457-2 Limit Values mg/kg at L:S 10:1		
			Inert Waste	Non-reactive Hazardous Waste	Hazardous Waste
Liquid : Waste Ratio	10:1				
pH (units)	7.9				
Temperature (°C)	20	10:1			
Conductivity (µS/cm)	210	**mg/kg**			
Antimony (µg/l Sb)	3.8	**0.038**	*0.06*	*0.7*	*5*
Arsenic (µg/l As)	2.88	**0.029**	*0.5*	*2*	*25*
Barium (µg/l Ba)	34.3	**0.343**	*20*	*100*	*300*
Cadmium (µg/l Cd)	<0.07	**<0.0007**	*0.04*	*1*	*5*
Chromium (µg/l Cr)	<0.2	**<0.002**	*0.5*	*10*	*70*
Copper (µg/l Cu)	4.2	**0.042**	*2*	*50*	*100*
Lead (µg/l Pb)	0.5	**0.005**	*0.5*	*10*	*50*
Mercury (µg/l Hg)	<0.008	**<0.00008**	*0.01*	*0.2*	*2*
Molybdenum (µg/l Mo)	20.8	**0.208**	*0.5*	*10*	*30*
Nickel (µg/l Ni)	1.2	**0.012**	*0.4*	*10*	*40*
Selenium (µg/l Se)	0.49	**0.005**	*0.1*	*0.5*	*7*
Zinc (µg/l Zn)	<1	**<0.01**	*4*	*50*	*200*
Chloride (mg/l Cl)	0.5	**350**	*800*	*15000*	*25000*
Fluoride (mg/l F)	1.1	**11.2**	*10*	*150*	*500*
Sulphate (mg/l SO_4)	7.7	**77**	*1000*	*20000*	*50000*
Total Dissolved Solids (mg/l TDS)	125	**1250**	*4000*	*60000*	*100000*
Phenol Index (µg/l PhOH)	<10	**<0.1**	*1*		
Dissolved Organic Carbon (mg/l C)	28	**280**	*500*	*800*	*1000*

Waste Analysis	Units	Result			
Total Organic Carbon	% w/w	**3.0**	3%	5%	6%
Loss on Ignition	% w/w	**5.9**			10%
BTEX	mg/kg	**<0.06**	6		
PCBs (7 congeners)	mg/kg	**<0.045**	1		
Mineral Oil (C10 - C40)	mg/kg	**106**	500		
PAH (total)	mg/kg	**3.12**	100		
pH	pH units	**7.6**		>6	
Acid Neutralisation Capacity (pH4)	mol/kg	**0.06**		To be evaluated	
Acid Neutralisation Capacity (pH7)	mol/kg	**0.02**		To be evaluated	

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Waste Acceptance Criteria testing is outside the scope of the laboratory's UKAS accreditation.

Comments

Authorised by: R Burton Name: Rachael Burton

Report date: 10 June 2022 Position: Reporting Team Lead

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Vat Reg No. 772 5703 18 Registered in England number 4284013

Waste Acceptance Criteria Testing
BS EN 12457-Part 2, Single Stage Process

CHEMTECH environmental part of Cawood

Sample Details

Contract Name	Barnsley College, Honeywell Lane
Lab Number	109936-3
Sample ID	TP5 2.10m
Date Sampled	30 May 2022
Date Received	1 June 2022
Particle Size (<4mm)	-
Method of size reduction	N/A
Non-crushable matter	N/A

Test Values

Mass of Raw Test Portion (kg)	0.120
Mass of Dried Test Portion (kg)	0.090
Moisture Content Ratio (%)	33.88
Dry Matter Content Ratio (%)	74.70
Leachant Volume (litre)	0.870

Eluate Analysis	Conc in Eluate	Amount leached	BS EN 12457-2 Limit Values mg/kg at L:S 10:1		
			Inert Waste	Non-reactive Hazardous Waste	Hazardous Waste
Liquid : Waste Ratio	10:1				
pH (units)	8				
Temperature (°C)	20	10:1			
Conductivity (µS/cm)	267	**mg/kg**			
Antimony (µg/l Sb)	3.6	**0.036**	*0.06*	*0.7*	*5*
Arsenic (µg/l As)	3.80	**0.038**	*0.5*	*2*	*25*
Barium (µg/l Ba)	33.7	**0.337**	*20*	*100*	*300*
Cadmium (µg/l Cd)	<0.07	**<0.0007**	*0.04*	*1*	*5*
Chromium (µg/l Cr)	0.4	**0.004**	*0.5*	*10*	*70*
Copper (µg/l Cu)	4.6	**0.046**	*2*	*50*	*100*
Lead (µg/l Pb)	0.9	**0.009**	*0.5*	*10*	*50*
Mercury (µg/l Hg)	<0.008	**<0.00008**	*0.01*	*0.2*	*2*
Molybdenum (µg/l Mo)	28.5	**0.285**	*0.5*	*10*	*30*
Nickel (µg/l Ni)	1.4	**0.014**	*0.4*	*10*	*40*
Selenium (µg/l Se)	0.65	**0.006**	*0.1*	*0.5*	*7*
Zinc (µg/l Zn)	<1	**<0.01**	*4*	*50*	*200*
Chloride (mg/l Cl)	0.6	**350**	*800*	*15000*	*25000*
Fluoride (mg/l F)	1.0	**10.1**	*10*	*150*	*500*
Sulphate (mg/l SO_4)	13	**126**	*1000*	*20000*	*50000*
Total Dissolved Solids (mg/l TDS)	160	**1600**	*4000*	*60000*	*100000*
Phenol Index (µg/l PhOH)	<10	**<0.1**	*1*		
Dissolved Organic Carbon (mg/l C)	47	**470**	*500*	*800*	*1000*

Waste Analysis	Units	Result			
Total Organic Carbon	% w/w	**4.2**	3%	5%	6%
Loss on Ignition	% w/w	**8.1**			10%
BTEX	mg/kg	**<0.06**	6		
PCBs (7 congeners)	mg/kg	**<0.045**	1		
Mineral Oil (C10 - C40)	mg/kg	**401**	500		
PAH (total)	mg/kg	**71.0**	100		
pH	pH units	**7.5**		>6	
Acid Neutralisation Capacity (pH4)	mol/kg	**0.06**		To be evaluated	
Acid Neutralisation Capacity (pH7)	mol/kg	**0.02**		To be evaluated	

Disclaimer : The Landfill Waste Acceptance Criteria limits in this report are provided for guidance only.
Chemtech Environmental Ltd does not take responsibility for any errors or omissions. Data is correct as of 01/09/2005.
Samples will be disposed of 6 weeks from initial receipt unless written instructions are received and further storage is agreed.
Waste Acceptance Criteria testing is outside the scope of the laboratory's UKAS accreditation.

Comments

Authorised by: R Burton Name: Rachael Burton

Report date: 10 June 2022 Position: Reporting Team Lead

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Tel 01207 528578 Email customerservices@chemtech-env.co.uk
Vat Reg No. 772 5703 18 Registered in England number 4284013

Waste Acceptance Criteria Testing
BS EN 12457-Part 3, 2 Stage Process

Statement of Conformity
Where Chemtech reports a statement of conformity to a specification, the decision rules applied are derived from the Ilac document ILAC G8:09/2019.
Acceptance limits (AL), applied are derived from the tolerance limits (TL) by you the client or applicable standard (e.g. 2003.33.EC Council Decision)

Agreed and reported Decision Rule:
"PASS" if the result < TL, and the bias / precision values for the process meet the targets defined within the methodology and/or applied accreditation.

Reported Decisions:
Result < TL for determinands: PASS
Result > TL for determinands: FAIL

Definitions Used:
Acceptance limit (AL) Specified upper or lower bounds of permissible measured quantity values.
Tolerance limit (TL) Specified upper or lower bound of permissible values of a property.

APPENDIX E - PLATE LOAD TESTING RESULTS

LABORATORY REPORT

4043

Contract Number: PSL22/3817

Report Date: 31 May 2022

Client's Reference:

Client Name: Abbeydale BEC
4 Neville Street
Wakefield
WF1 5EF

For the attention of: Glyn Hogg

Contract Title: Barnsley College

Date Received: 30/5/2022
Date Commenced: 30/5/2022
Date Completed: 31/5/2022

Notes: Opinions and Interpretations are outside the UKAS Accreditation

A copy of the Laboratory Schedule of accredited tests as issued by UKAS is attached to this report. This certificate is issued in accordance with the accreditation requirements of the United Kingdom Accreditation Service. The results reported herein relate only to the material supplied to the laboratory. This certificate shall not be reproduced other than in full, without the prior written approval of the laboratory.

Checked and Approved Signatories:

A Watkins (Director)	R Berriman (Quality Manager)	S Royle (Laboratory Manager)
L Knight (Senior Technician)	S Eyre (Senior Technician)	T Watkins (Senior Technician)

5 – 7 Hexthorpe Road, Hexthorpe,
Doncaster DN4 0AR
tel: +44 (0)844 815 6641
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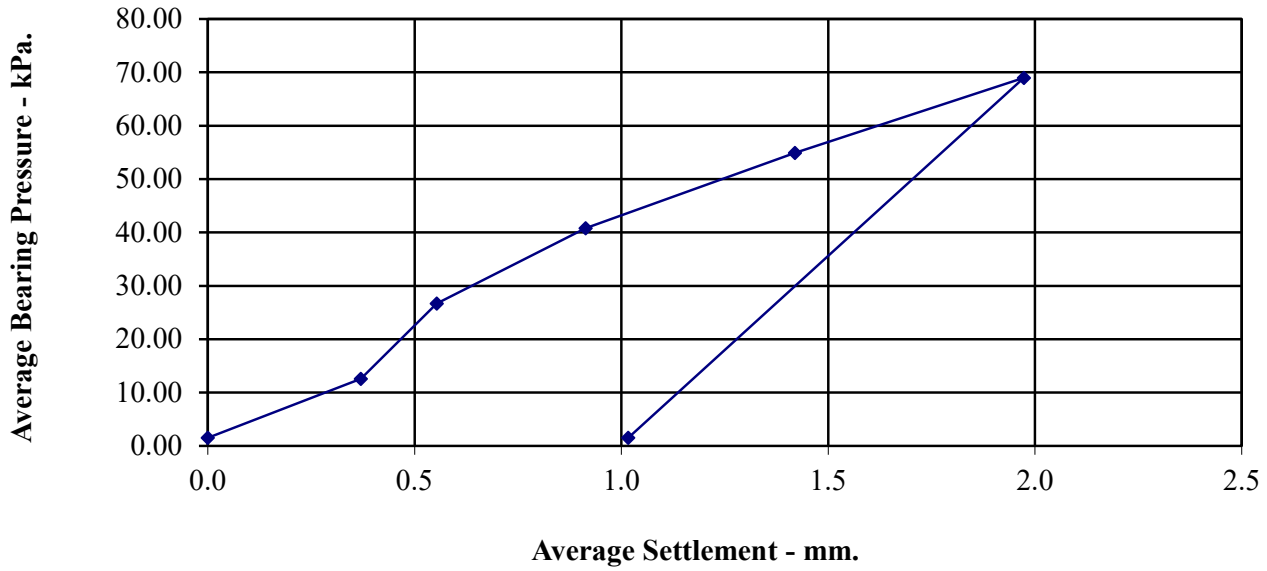
e-mail: awatkins@prosoils.co.uk
rberriman@prosoils.co.uk

VERTICAL DEFORMATION TESTS.

BS 1377 : Part 9 : 1990.

Date of Test:	**30-May-22**	**Test Ref:**	**PBT 1**
Grid Ref:		**Depth (m):**	**1.50**
Layer:		**Comments:**	

Maximum Applied Pressure (kPa): **68.98**
Maximum Deformation (mm): **1.97**
Plate Area (m2): **0.2922**
Description: **6F5**



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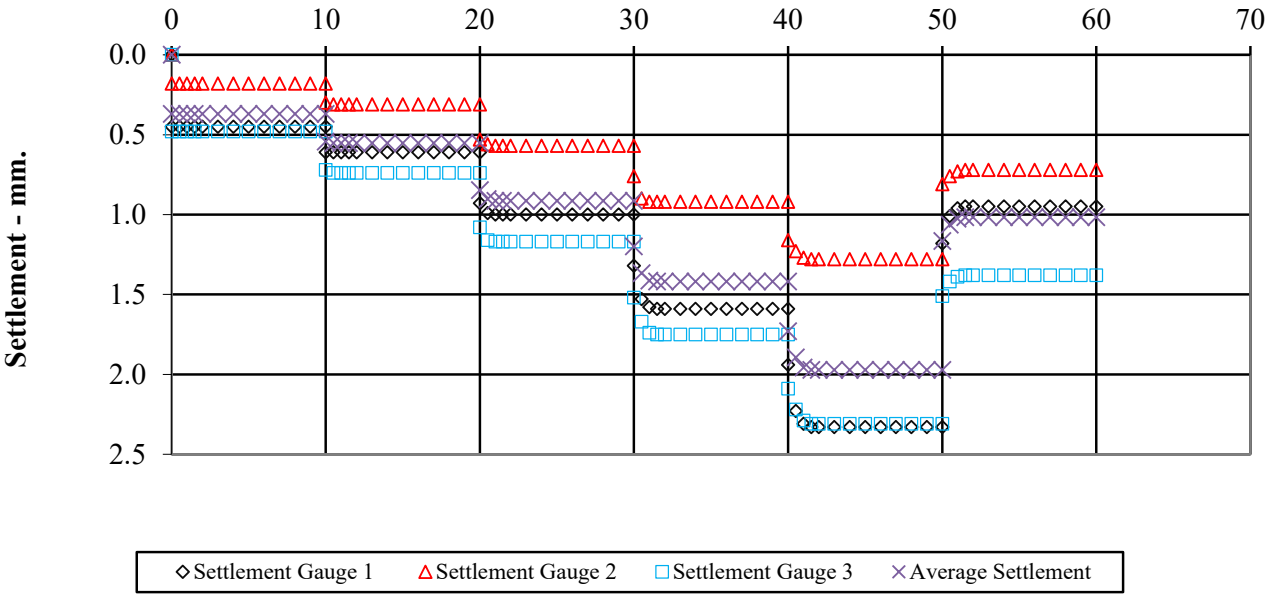


Calculation of Equivalent CBR Value from Plate Bearing Test

Design Manual for Roads and Bridges Volume 7 Section 2 Chapter 4
Incorporating IAN 73/06

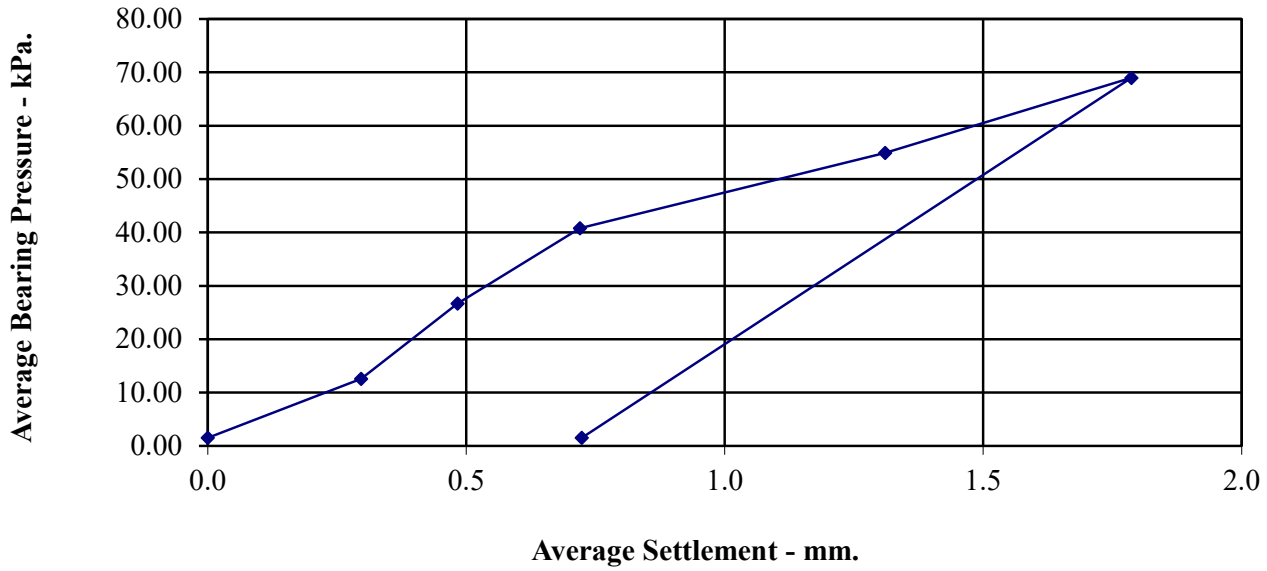
Date of Test	**30-May-22**	
Test Ref	**PBT 1**	
Depth (m)	**1.50**	
Grid Ref		
Layer		
Comments		
Description	**6F5**	
Maximum Deflection	**1.97**	**mm**
Deflection required for CBR value	**1.25**	**mm**
Load at 1.25mm	**50**	**kN/m^2**
Plate diameter	**610**	**mm**
Conversion factor for plate diameter	**0.816**	
K_{762}(modulus of subgrade reaction) calculated using 1.25mm settlement	**32.8**	**$kN/m^2/mm$**
CBR Value	**4.1**	**%**

VERTICAL DEFORMATION TESTS.

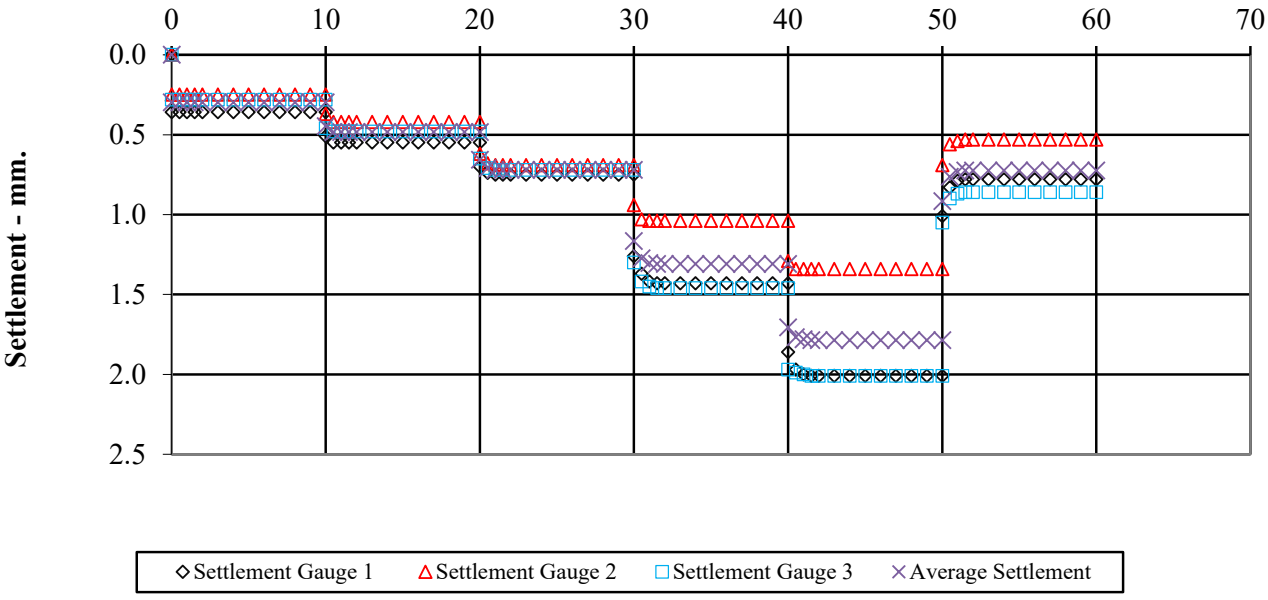
BS 1377 : Part 9 : 1990.

Date of Test:	**30-May-22**	**Test Ref:**	**PBT 2**
Grid Ref:		**Depth (m):**	**1.50**
Layer:		**Comments:**	

Maximum Applied Pressure (kPa):	**68.98**
Maximum Deformation (mm):	**1.79**
Plate Area (m2):	**0.2922**
Description:	**6F5**



Time - minutes.



Calculation of Equivalent CBR Value from Plate Bearing Test

Design Manual for Roads and Bridges Volume 7 Section 2 Chapter 4
Incorporating IAN 73/06

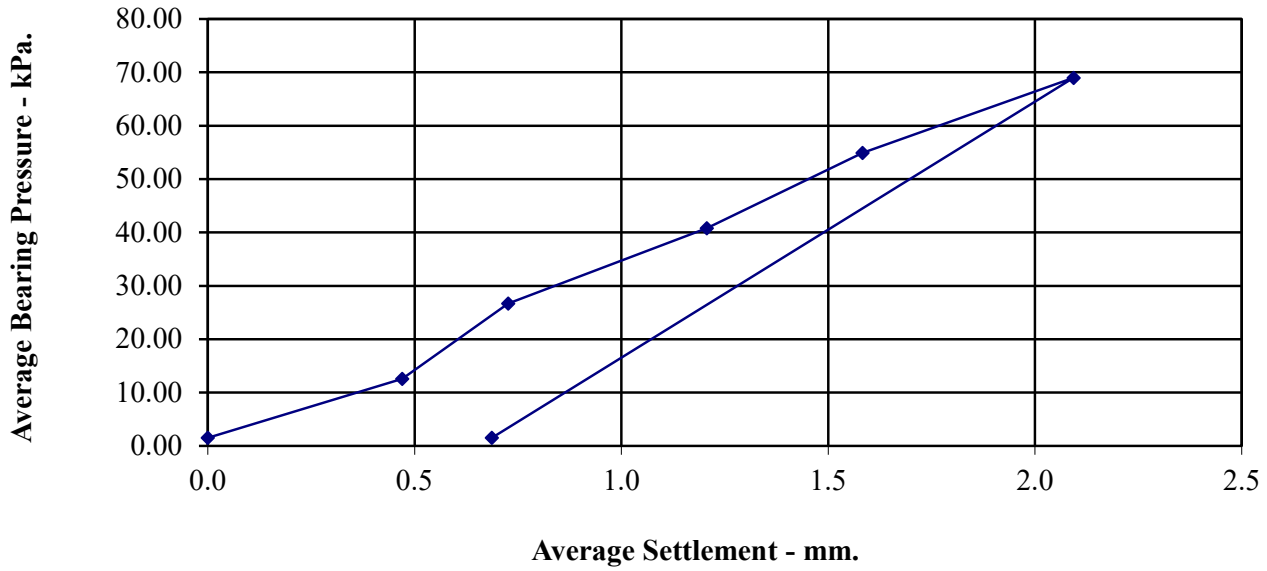
Date of Test	**30-May-22**	
Test Ref	**PBT 2**	
Depth (m)	**1.50**	
Grid Ref		
Layer		
Comments		
Description	**6F5**	
Maximum Deflection	**1.79**	**mm**
Deflection required for CBR value	**1.25**	**mm**
Load at 1.25mm	**53**	**kN/m^2**
Plate diameter	**610**	**mm**
Conversion factor for plate diameter	**0.816**	
K_{762}(modulus of subgrade reaction) calculated using 1.25mm settlement	**34.9**	**$kN/m^2/mm$**
CBR Value	**4.6**	**%**

VERTICAL DEFORMATION TESTS.

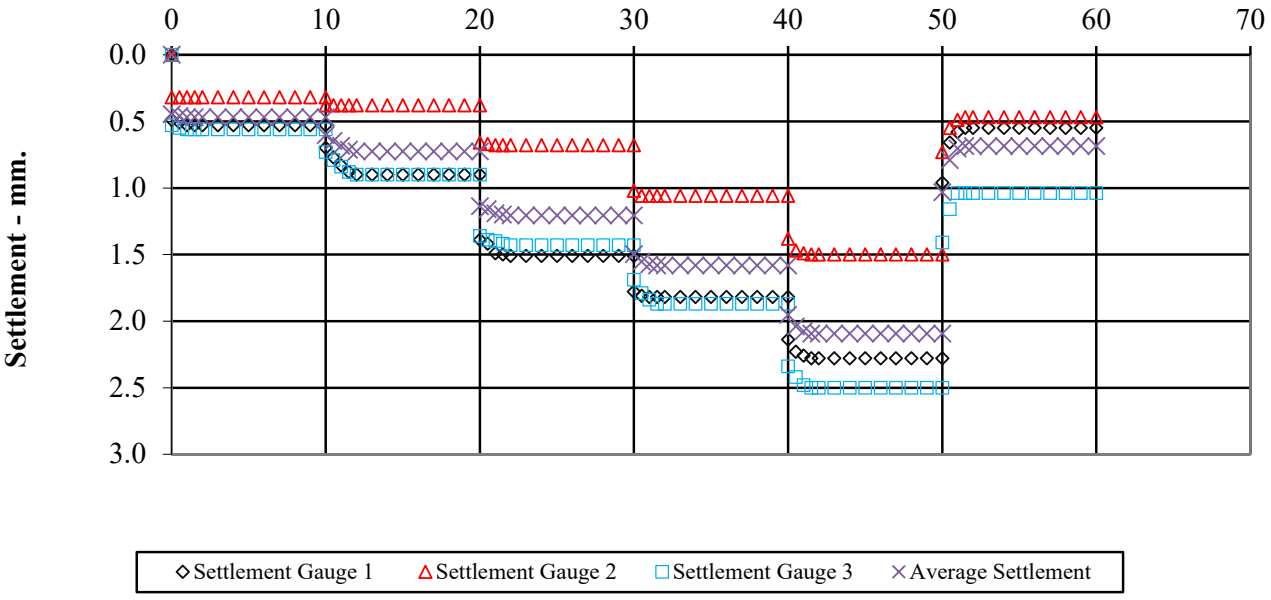
BS 1377 : Part 9 : 1990.

Date of Test:	**30-May-22**	**Test Ref:**	**PBT 3**
Grid Ref:		**Depth (m):**	**1.50**
Layer:		**Comments:**	

Maximum Applied Pressure (kPa): **68.98**
Maximum Deformation (mm): **2.09**
Plate Area (m2): **0.2922**
Description: **6F5**



Time - minutes.



Calculation of Equivalent CBR Value from Plate Bearing Test

Design Manual for Roads and Bridges Volume 7 Section 2 Chapter 4
Incorporating IAN 73/06

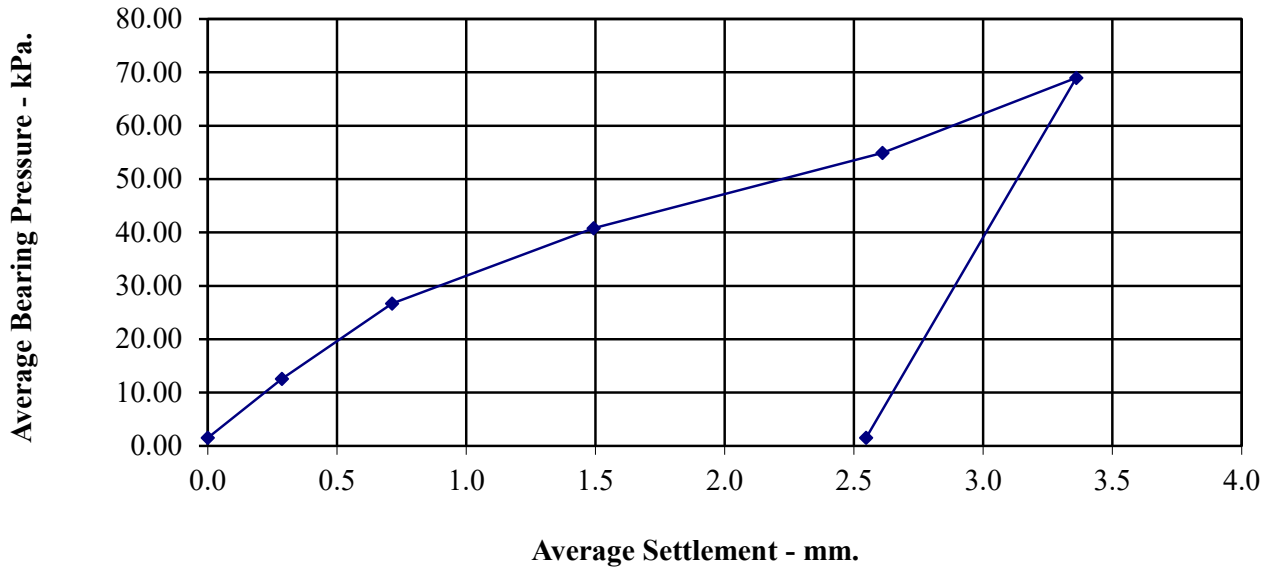
Date of Test	**30-May-22**	
Test Ref	**PBT 3**	
Depth (m)	**1.50**	
Grid Ref		
Layer		
Comments		
Description	**6F5**	
Maximum Deflection	**2.09**	**mm**
Deflection required for CBR value	**1.25**	**mm**
Load at 1.25mm	**42**	**kN/m^2**
Plate diameter	**610**	**mm**
Conversion factor for plate diameter	**0.816**	
K_{762}(modulus of subgrade reaction) calculated using 1.25mm settlement	**27.7**	**$kN/m^2/mm$**
CBR Value	**3.0**	**%**

VERTICAL DEFORMATION TESTS.

BS 1377 : Part 9 : 1990.

Date of Test:	**30-May-22**	**Test Ref:**	**PBT 4**
Grid Ref:		**Depth (m):**	**1.50**
Layer:		**Comments:**	

Maximum Applied Pressure (kPa): 68.98
Maximum Deformation (mm): 3.36
Plate Area (m2): 0.2922
Description: 6F5



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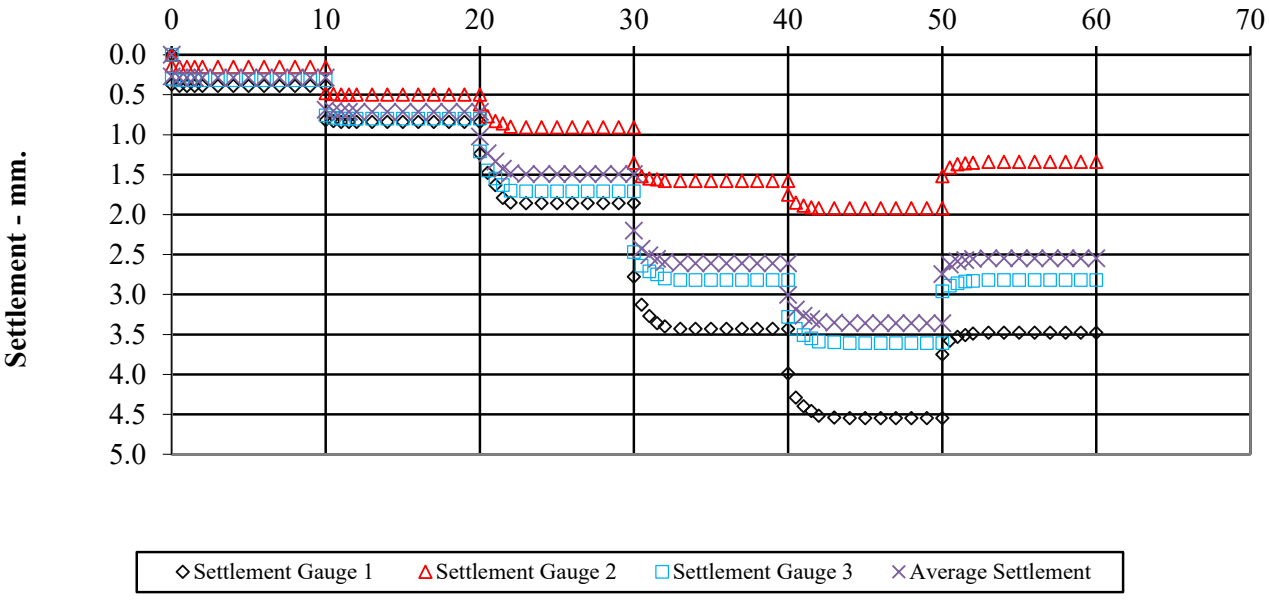


Calculation of Equivalent CBR Value from Plate Bearing Test

Design Manual for Roads and Bridges Volume 7 Section 2 Chapter 4
Incorporating IAN 73/06

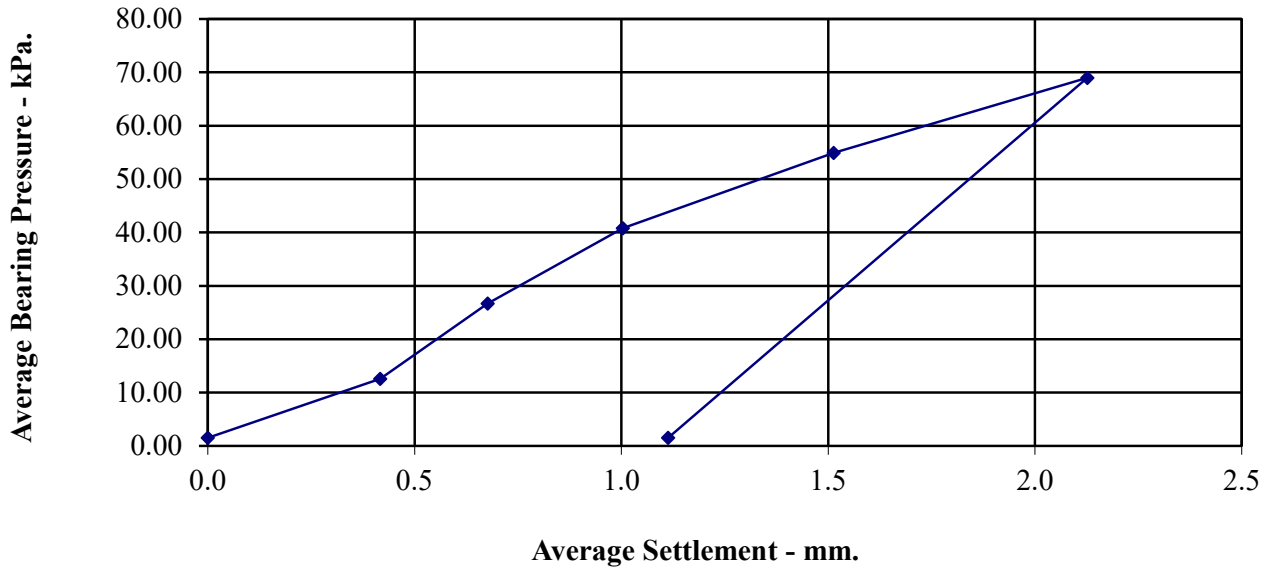
Date of Test	**30-May-22**	
Test Ref	**PBT 4**	
Depth (m)	**1.50**	
Grid Ref		
Layer		
Comments		
Description	**6F5**	
Maximum Deflection	**3.36**	**mm**
Deflection required for CBR value	**1.25**	**mm**
Load at 1.25mm	**36**	**kN/m^2**
Plate diameter	**610**	**mm**
Conversion factor for plate diameter	**0.816**	
K_{762}(modulus of subgrade reaction) calculated using 1.25mm settlement	**23.8**	**$kN/m^2/mm$**
CBR Value	**2.3**	**%**

VERTICAL DEFORMATION TESTS.

BS 1377 : Part 9 : 1990.

Date of Test:	**30-May-22**	**Test Ref:**	**PBT 5**
Grid Ref:		**Depth (m):**	**1.50**
Layer:		**Comments:**	

Maximum Applied Pressure (kPa): **68.98**
Maximum Deformation (mm): **2.13**
Plate Area (m2): **0.2922**
Description: **6F5**



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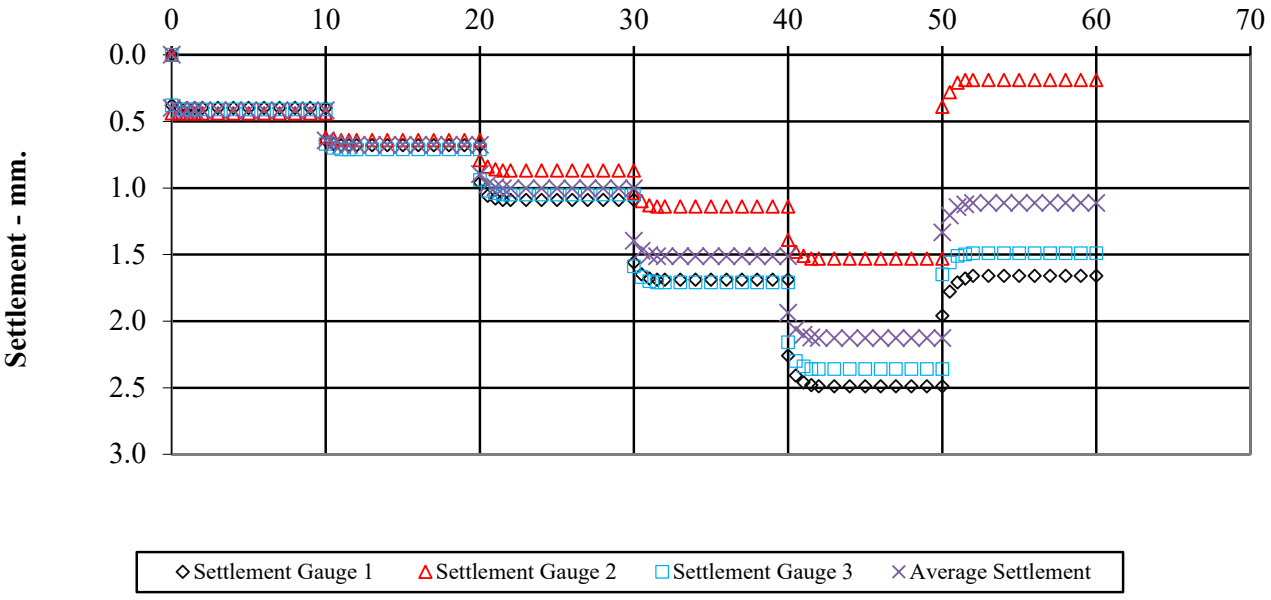

Calculation of Equivalent CBR Value from Plate Bearing Test

Design Manual for Roads and Bridges Volume 7 Section 2 Chapter 4
Incorporating IAN 73/06

Date of Test	**30-May-22**	
Test Ref	**PBT 5**	
Depth (m)	**1.50**	
Grid Ref		
Layer		
Comments		
Description	**6F5**	
Maximum Deflection	**2.13**	**mm**
Deflection required for CBR value	**1.25**	**mm**
Load at 1.25mm	**48**	**kN/m^2**
Plate diameter	**610**	**mm**
Conversion factor for plate diameter	**0.816**	
K_{762}(modulus of subgrade reaction) calculated using 1.25mm settlement	**31.1**	**$kN/m^2/mm$**
CBR Value	**3.7**	**%**

APPENDIX F - ROTARY CORE PHOTOGRAPHS

Photographic Record

Plate 1: BH1 - 10.2m -14.4m bgl

Plate 2: BH1 - 14.4m -16.9m bgl

Abbeydale
Building Environment Consultants

Appendix D

Site: Proposed MVT Building, Barnsley College

Client: NU Construction Ltd

Job No: 151118

Photographic Record

Plate 3: BH2 - 10.2m -13.2m bgl

Plate 4: BH2 - 13.2m -16.2m bgl

Abbeydale
Building Environment Consultants

Appendix D

Site: Proposed MVT Building, Barnsley College

Client: NU Construction Ltd

Job No: 151118