CLIFF HILL, CUMBERWORTH LANE, DENBY DALE

GROUND STABILISATION REMEDIAL STRATEGY FOR URBAN GROUP (YORK) Ltd.

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P10350

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This report has been prepared in accordance with GRM's Accredited Quality Procedures.

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1.0 INTRODUCTION

1.1 PREAMBLE

GRM Development Solutions Ltd (GRM) was instructed by Urban Group to provide a mining remedial strategy for the proposed residential development at the Cliff Hill, Denby Dale site.

GRMs standard limitations of reporting are provided in Appendix A of this report.

The following reports have been used in the preparation of this document:

- Rogers Geotechnical Services Ltd report, Phase II Geo-Environmental Report, reference C2206/22/E/3401 dated May 2022

1.2 PROPOSED DEVELOPMENT

The development layout provided by the Client, on which this report is based, is presented in Appendix B. A development layout with proposed final levels is presented in Appendix C.

1.3 OBJECTIVES OF THIS ASSESSMENT

The aim of this report is to provide a geological setting and risk assessment of the conditions encountered on site and provide a means for viable development following remediation and treatment.

Whilst every effort has been made to pre-empt the likely requirements of the Local Authority and Coal Authority they may have specific requirements that will need to be discussed and addressed at a later date.

2.0 SUMMARY OF SITE AND GROUND CONDITIONS

2.1 SITE LOCATION

The proposed development site is located in Denby Dale village approximately 11.7km south east of Huddersfield town centre. The site is centred around grid reference 422867, 408715 and covers an area of approximately 2ha.

A site location plan is presented in Appendix D.

2.2 LITERATURE GEOLOGICAL SETTING

No superficial deposits are recorded on the BGS maps. The solid geology is recorded as the Pennine Lower Coal Measures Formation comprised of mudstone, sandstone, siltstone and coal seams. Coal seams are often present in Coal Measures strata and are laterally inconsistent and therefore are not always marked on geological maps or cross sections. The majority of the site is recorded to be underlain by sandstone (Pennine Flags) with the northern area underlain by mudstone.

Two coal seams are recorded to outcrop on site striking in a general north west to south easterly direction, the Cumberworth Thin Coal, known locally as the Lower Whinmoor Coal and will be referred to as such in this report, in the very north of the site, recorded to be up to 0.2m thick and the Whinmoor Coal seam approximately 40m south of the northern boundary recorded to be between 0.2m and 1.4m thick.

Dips recorded in the area range significantly, however the general trend suggests that the seams dip in a generally southerly direction between 5 and 10 degrees.

BGS memoirs suggest that a fireclay may also have been extracted locally, present below the Lower Whinmoor Coal seam. On occasion it suggests that the Lower Whinmoor Coal is left as a roof for the fireclay workings.

2.3 HISTORICAL GROUND INVESTIGATION

The client has provided GRM with a ground investigation report detailing works completed by Rogers Geotechnical Services Ltd (RGS) in April 2022. RGS completed:

- 10 windowless sample boreholes
- 9no rotary open hole boreholes
- 15no trial pits
- 3no soakaway pits
- 9no DCP profiles

The exploratory hole location plan and logs completed by RGS are presented in Appendix E and F respectively. A number of trenches were also excavated to locate recorded mine entry positions.

The rotary boreholes generally encountered 0.3m of topsoil overlying rock quality strata, described as sandstone. The depth to rock was confirmed by the trial pits, encountering coal or sandstone between 0.3m and 0.8m begl.

Borehole findings related to coal are summarised in the table below:

Borehole ID	Description	Depth
BH01	Void	3.5-4.5m
BH02	Void	3.5-5.5m
BH03	Void	3.5m-6.0m
BH04	Coal Void	1.0-3.0m 12.0-13.5
BH05	Void	1.8m-4.0m
BH06	Void	1.1m-2.0m
BH07	Void	8.5-9.2m 13.0-14.5m
BH08	Coal	4.0-6.0m 19.0-19.5m
BH09	Void	1.8-4.0m

The findings suggest that 3no seams of coal and 1no seam of fireclay are present on site. The shallowest workings are recorded between 1.8m and 4.0m depth with intact coal interpreted in the same horizon recorded between 0.5m depth and 3m depth. This seam is considered likely to be an unnamed seam above the Whinmoor Coal seam.

The second horizon has been interpreted as the Whinmoor Coal seam and was noted as being worked in 5no boreholes. Given the thickness of the seam, this will be within influencing distance of the surface and will require treatment where present. It should be noted that some of the boreholes did not progress deep enough to encounter the Whinmoor Coal seam across the site.

The deepest workings have been interpreted as the Lower Whinmoor seam with fireclay below with a combined thickness of approximately 1m.

3no mine entries are recorded to be present on site, mine entries 422408-002, 422408-015 and 422408-016. RGS conducted a geophysics scan to locate the mine entries followed by trenching in the area of 002 and 015. 016 was previously located in 2018.

The located mine entries are recorded to have depths ranging between 0.9m and 7.3m according to the investigation and mine entry data sheets. The recorded shaft locations are present in the table overleaf:

Mine Entry Reference	Easting	Northing	Recorded Depth
422408-002	422831.659	408654.972	7.3m
422408-015	422903.374	408741.294	0.9m
422408-016	422944.640	408709.500	3.8m

2.4 MINING RISK ASSESSMENT

The unamend coal and Whinmoor Coal seams were encountered within influencing distance of the surface and will require pressure grouting prior to development of the site. Additional boreholes will be required to refine the treatment grid as the Whinmoor seam may deepen to the southwest and be outside of influencing distance of the surface.

In some areas of the site, it is considered that the Lower Whinmoor Coal and associated Fireclay are deep enough to not affect the stability of the ground surface and proposed foundations. If the seams and associated workings are encountered at shallower depths, within influencing distance of the surface, pressure grouting will be required. Additional boreholes should be progressed to confirm this theory and refine the required treatment area.

A section plan and annotated section lines used to interpret the location of coal seams in relation to anticipated finished floor levels are presented in Appendix G.

3no recorded mine entries are present and require treating prior to development. The depths proven so far suggest that the mine entries were targeting the un-named and Whinmoor Coal seams.

In the central area of the site, proposed finished levels, (presented in Appendix C), are anticipated to be up to 2.5m lower than existing topographic levels. The shallowest workings and intact un-named coal is therefore likely to be close to the base of the foundation. This presents a risk from both unstable workings and spontaneous combustion within the seam.

The coal mining risk following the original risk assessment and ground investigation are summarised below:

Shallow Mine Workings – **High**.

Recorded Mine Entries – **High**.

Un-recorded Mine Entries – **High**.

Spontaneous Combustion – **High**.

Mine Gas Emissions – **Moderate**.

3.0 PROPOSED REMEDIAL MEASURES

3.1 SHALLOW MINE WORKINGS

Due to the recorded presence of shallow mine workings, of both coal and fireclay, drilling and pressure grouting of the workings will be required to mitigate the risk.

A proposed treatment grid has been provided in Appendix H, based on zoning the development into risk categories. Gardens and areas of public open space are considered to be at low risk. Estate roads are considered to be moderate, and the dwellings are considered as high risk areas.

Risk Designation	Description	Treatment Requirements
Low	Residential gardens and POS	No drilling and grouting required
Moderate	Estate roads	6m primary treatment grid. Localised secondary holes may be required where high grout takes are recorded.
High	Residential properties and immediate curtilage	6m primary grid with 3m secondary holes completed. Additional treatment holes may be required where high grout takes are recorded.

The treatment plan includes for treating the adoptable highways with pressurised grout, however in agreement with the Coal Authority and local adopting authority, this treatment can be in the form of geogrid reinforcement.

Based on the attached treatment grid, approximately 300no. primary holes are anticipated with an additional 250 secondary holes anticipated below proposed plots. The treatment holes are anticipated to be approximately 20m deep.

Prior to commencing treatment works, the specification should be agreed with the Coal Authority and listed under the permit application.

A typical Drill and grout treatment specification will include the following:

- *Grout to be pressure injected to the depth of coal workings using tremmie pipes, with the fill isolated via temporary steel casing socketed into rockhead.*
- *Grout mix of 1:10 OPC:PFA to be used. Weekly grout cube validation testing to be conducted to confirm compliance, tested at 28 days with a minimum compressive strength of 1.0 N/mm^2.*
- *Depths of target seams to be established during the ground investigation; depths vary across site and in turn, the requirement for treatment due to areas in which sufficient competent rock cover will be present (10 times a conservative average worked seam thickness in equivalent competent rock cover above).*

- *Primary holes to be drilled on a 6m grid, with centre (secondary) holes beneath and in the immediate areas surrounding proposed new buildings*
- *Check (tertiary) holes may also be required to prove grouting success.*
- *If excessive voiding is encountered, the use of sand will be adopted.*
- *Steel casing to be used in all treatment holes.*
- *Treatment holes to be injected with grout to surface, to ensure full depth reinstatement.*

3.2 MINE ENTRIES

3no recorded mine entries are present and require treating prior to development.

The final specification should be confirmed with the Coal Authority when applying for the permit, however mine entries are to be stabilised by full depth grouting as per the grout mix specification above for shallow coal workings.

This is completed using a rotary grouting rig and platform. The platform is positioned over the shaft and transfers the rig load away from the shaft to prevent any collapse.

Shafts will be treated via 3 probe holes, one of which will extend 5m below their base to prove the underlying ground conditions.

Once treated, a reinforced concrete cap should be installed at rock head. The final dimensions and design require confirmation from the Coal Authority and qualified structural engineer, however they will include the use of mesh reinforcement and cover an area twice the size of the shaft diameter.

For mine entries with recorded depths less than 3m, it may be possible to treat the shafts by full depth excavation and backfilling with lean mix concrete or engineered fill.

A full site strip to natural ground should be completed to confirm that no anomalous features, indicative of unrecorded mine entries are present elsewhere on site.

3.3 SPONTANEOUS COMBUSITION

In the central area of the site, proposed finished levels, (presented in Appendix C), are anticipated to be up to 2.5m lower than existing topographic levels.

Where ground levels are to be reduced during the earthworks, the un-named seam may be within influencing distance of the base of the foundation (<0.5m cover). In this instance, it may be more cost effective to over dig the earthworks and remove the workings/shallow seam in full. Subject to earthworks adjustments and final levels, an excavation plan has been presented in Appendix I.

Based on the information to date an extraction area of approximately 4500m^2 is anticipated. The boreholes have identified the un-named seam as being between 1m and 2m thick, both in-tact and worked. Assuming an average seam thickness of 1.4m,

an extraction area of 4500m^2, and assuming 30% of the seam has been worked, a potentially extractable volume of coal is estimated as being approximately 4150m^3. The volume is likely to change, however additional investigation in the area of potential extraction may refine the volume assessment.

Where levels are to be raised or excavation is deemed impractical, the seam will need grouting as outlined in Section 3.1.

It should be noted that an incidental coal license will need to be obtained from the Coal Authority prior to removal of any coal.

3.4 MINE GAS EMISSIONS

Gas monitoring should be undertaken throughout all investigation boreholes and at regular intervals during treatment works. Once the mine workings have been treated, the risk from mine gas is generally considered to be **negligible** as no gas can migrate through the hardened grout.

4.0 CONCLUSIONS AND RECOMMENDED FURTHER WORKS

The site layout and finished floor levels have yet to be confirmed. However, the scope and specification for remedial works set out in this document will be sufficient, if followed, to mitigate against the frisk from shallow coal workings.

In order to refine the treatment proposals additional investigation is recommended. This should include 10no rotary probe holes to approximately 20m depth in order to confirm the depth of the Whinmoor Coal seam and the depths of the Lower Whinmoor Coal seam and Fire Clay deposits.

An additional 3no boreholes should be sunk into the mine entries to better assess the total depth of the mine entries and aid in the design of suitable treatment works.

So that the area of excavation of the shallow unnamed coal seam can be refined, final proposed levels and earthworks levels should be determined. Once site levels have been confirmed and the additional ground investigation has been completed to avoid repetition, a more detailed depth of coal/excavation plan can then be produced. This should be agreed with the Coal Authority prior to starting works.

Prior to any further investigation or treatment, a Permit will be required from the Coal Authority and requires production of plans and approval of methodology.

APPENDIX A

GENERAL APPRAISAL COMMENTS

i INFORMATION SOURCES

Where available the following sources have been used for the identification and assessment of potential ground hazards:

- Relevant British Standards
- British Geological Survey (BGS) Geology Map Scale 1:10,000 for local area
- British Geological Survey (BGS) Geology Map Scale 1:50,000/1:63,320
- BGS Memoir
- BGS Borehole Records
- BGS online viewer: http://www.bgs.ac.uk/data/mapViewers/home.html
- Environment Agency Groundwater Vulnerability Maps
- Historical Ordnance Survey (OS) Maps
- Environmental Data Report
- Environment Agency Website: http://www.environment-agency.gov.uk/
- Guidance for the Selection of Water Supply Pipes to be used in Brownfield Sites, UKWIR, 2010.
- Coal Authority Records / Coal Mining Report
- DEFRA/Environment Agency Contaminated Land publications and DoE Industry Profiles
- BRE Guide BR211 (2023), 'Radon: Guidance on protective measures for new buildings (including supplementary advice for extensions, conversions and refurbishment projects)'
- HPA-RPD-033 (2007), 'Indicative Atlas of Radon in England and Wales'
- PHE-CRCE-032 (PHE, 2017), Radon in Homes in England: 2016 Data Report
- CIRIA C665 'Assessing risks posed by hazardous ground gases to buildings'
- BS8485:2015, 'Code of Practice for the design of protective measures for methane and carbon dioxide ground gases for new buildings'
- Other technical references used throughout this document are detailed in the text.

ii CONTAMINANTS OF CONCERN

The DoE Industry Profiles are normally used to assess likely contaminants from past land use and potential nearby industrial sources. For land uses where no profile is available, likely contaminants of concern are selected by GRM based on past experience of similar sites, a general screening suite of contaminants covered by CLEA and common contaminants from the Industry Profiles.

- Arsenic
- Cadmium
- Chromium
- Lead
- Mercury
- Selenium
- Copper
- Nickel
- Zinc
- Phenols
- cyanide (total)
- pH
- Water soluble sulphate
- PAH (polycyclic aromatic hydrocarbons)

Asbestos and PCBs are listed in the vast majority of profiles. PCBs are listed as the profiles expect electricity substations and switch boxes on all industrial sites. There is the potential for asbestos containing material to be mixed up with made ground, following any demolition works.

iii CONCEPTUAL MODEL METHODOLOGY

The consideration of contamination is based upon the principles of risk assessment, using the 'source-pathway-receptor' model in order to establish the presence, or potential presence, of a pollutant linkage.

To create a risk, contamination must have the potential to cause harm to susceptible targets or receptors such as humans, the water environment or the built environment. The potential for harm to occur requires three conditions to be satisfied to form a pollutant linkage:

- The presence of substances that may cause harm (SOURCE).
- The presence of a target which may be harmed (RECEPTOR).
- The existence of a plausible migration route between the source and the receptor (PATHWAY).

In the absence of a plausible pollutant linkage there is no risk. Where a potential linkage is identified in order for it not to pose a risk to the identified receptor it must be broken.

iv INTRUSIVE INVESTIGATION SAMPLING METHODOLOGY

The ground investigation (including fieldwork, sampling, monitoring and laboratory analyses) has been designed to identify and assess potential ground related problems and to allow cost effective solutions to be advised. It has been planned on the basis of the desk study, site inspection and the proposed development layout (where available). All fieldwork and soil descriptions were carried out in general accordance with relevant British Standards.

The exploratory holes have been positioned and advanced to depths to determine the general ground/groundwater/gas conditions below the site. A general grid pattern has been adopted, where possible, to provide sufficient information based on the current proposed layout scheme. Some holes have been targeted at particular hazards identified in the Phase I assessment. The resultant exploratory hole density is considered to be commensurate with the complexity of the site conditions and detail of information required for this phase of the investigation.

v GROUND GAS RISK ASSESSMENT METHODOLOGY

Gas monitoring programmes undertaken by GRM are designed to broadly comply with the recommendations outlined in CIRIA Report C665 'Assessing risks posed by hazardous ground gas to buildings' (2007) and BS8576 'Guidance on Investigations for ground gas – Permanent gases and Volatile Organic Compounds (VOCs) (2013).

To assess the risks posed by ground gases such as radon, carbon dioxide and methane, the relevant current guidance has been used. For radon the site has been assessed following the guidelines in 'Radon: guidance on protective measures for new dwellings (including supplementary advice for extensions, conversions and refurbishment projects) (BR211: 2023)'. For methane and carbon dioxide the primary guidance document used to determine if protection measures are required is *BS8485:2015 Code of practice for the design of protective measures from methane and carbon dioxide ground gases for new buildings*. This uses hazardous gas flow rates (Q_{hg}), which are gas concentrations multiplied by borehole flow rates, to derive a Gas Flow Rate (GSV) for the site. The gas regime is then determined based on the GSV and other limiting factors such as gas concentrations.

Where flow is not recorded during the monitoring a default flow rate of 0.1l/hr will be used in the assessment to produce a positive result.

vi HUMAN HEALTH RISK ASSESSMENT METHODOLOGY

Guidance contained in the Environment Agency's CLEA Reports has been used to assess the risks posed to human health.

For residential developments that include domestic gardens the default Tier 1 Assessment Criteria (TAC) for 'residential land with plant uptake' are used, i.e. a female with a start age class of one and an end age class of six. All pathways are considered including the consumption of home-grown vegetables.

For residential developments that do not include domestic gardens the default Tier 1 Assessment Criteria (TAC) for 'residential land without plant uptake' are used, i.e. a female with a start age class of one and an end age class of six. All pathways are considered except the consumption of home-grown vegetables. For commercial/industrial developments the default Tier 1 Assessment Criteria (TAC) for 'commercial/industrial' are used, i.e. a female with a start age class of sixteen and an end age class of eighteen. All pathways are considered except the consumption of home-grown vegetables.

The TAC used by GRM include Category 4 Screening Levels (C4SLs) published by DEFRA, values calculated by GRM using the CLEA v1.071 risk assessment, and values and Suitable for Use Levels (S4UL) developed by LQM/CIEH. The TAC used in the assessment are selected based on the lowest site specific SOM values returned as part of the chemical analysis.

Where soil chemical analysis results are found to exceed the TAC, Site-Specific Risk Assessments may be undertaken using the CLEA v1.071 risk assessment software using the age classes and pathways described above.

vii RISK TO SITE WORKERS – GENERAL COMMENTS

The risks to site workers are similar to those posed to site end users, although likely to be less severe due to the site workers' shorter exposure to the identified contamination. However, site workers (particularly groundworkers) are more likely to come into direct contact with contaminated soils due to the nature of their work. On this basis ground and construction workers should be provided with basic Personal Protective Equipment based on the site's general health and safety risk assessment, but including as a minimum safety footwear, gloves and overalls.

A site specific risk assessment should be carried out for all hazards identified within the ground investigation in accordance with current health and safety legislation. This assessment should identify any measures required to further reduce risks i.e. providing further Personal Protective Equipment, welfare facilities and if necessary preventing access to certain areas.

Demolition and dismantling of existing structures on the site must be carried out to a safe and acceptable standard, in accordance with current UK guidance and best practice. Whilst not ground related, asbestos and hazardous substances surveys should be conducted prior to any demolition.

Any unusual colours, odours and suspicious ground should be reported immediately to site management and then GRM.

Whilst this appraisal has considered the long-term effects of contamination, GRM can also help during the formulation of Health and Safety documentation, if required.

viii CONTROLLED WATERS RISK ASSESSMENT METHODOLOGY

Where the desk study and fieldwork do not reveal a potential source of contamination no leachate or groundwater testing will be performed. Where a potential source is identified the testing will comprise leachate testing on the material considered most likely to pose a risk, groundwater testing will be undertaken if water is present at shallow depth.

The UK Drinking Water Standards (UKDWS) or Environmental Quality Standards (EQS) are usually adopted for comparison with the leachate/groundwater test results. When the most sensitive receptor is considered to be the aquifer (groundwater) UKDWS will be adopted as the Initial Tier 1 screening values.

Where the most sensitive receptor is a surface water feature the EQS values will be used as Initial Tier I Screening values.

ix CONSTRUCTION MATERIALS RISK ASSESSMENT METHODOLOGY

The 'screening levels' adopted for the assessment of risk to construction materials are taken from the following documents:

- UK Water Industry Research (UKWIR) Contamination thresholds for sub-surface water pipes, for the protection of buried pipes.
- Building Research Establishment (BRE) Special Digest SD1 (2005), 'Concrete in Aggressive Ground', for the protection of buried concrete.

x WASTE DISPOSAL, SITE WASTE MANAGEMENT PLANS AND MATERIAL MANAGEMENT PLANS

Under current Waste Management Regulations, waste soil materials produced from the site will require characterisation to enable it to be disposed of correctly.

The chemical analysis results included in this report should be provided to the relevant landfill operators to establish the characterisation of the waste, confirm its suitability for landfill disposal and provide estimated costings. If material is classified as hazardous, then the site will need to be registered with the Environment Agency prior to the movement of the waste. Depending on the receiving landfill's current permit, further chemical analysis, incorporating Waste Acceptance Criteria (WAC) leachate analysis, may be required.

All materials removed from the site will be classified as 'waste' and therefore must be removed by a suitably licensed carrier of waste. This applies whether or not the waste is contaminated. All waste removed to landfill will attract Landfill Tax.

The developer/builder is likely to be classed as the waste producer and therefore, has a duty of care to ensure that all waste is disposed of appropriately. This includes ensuring the waste carrier is licensed and disposes of the waste to a suitably licensed landfill site. They are also required to keep a paper trail from 'cradle to grave' including copies of the waste disposal tickets.

Efficient materials management on site is recommended as it can lead to significant cost savings when compared to the traditional side casting or single stockpile of arisings. GRM can assist in the production of Material Management Plans under the CL:AIRE Definition of Waste: Code of Practice. The DoWCoP enables:

- The direct transfer and re-use of clean naturally occurring soil materials between sites, and
- The re-use of both contaminated and uncontaminated materials on their site of origin and between sites within defined Cluster projects.

GRM can also undertake the role of Qualified Person and submit the DoW CoP project Declaration.

Likewise making the site as volume neutral as possible will reduce the costs of development. Whilst not a statutory requirement, Site Waste Management Plans allow better waste management practices, help to reduce the amount of waste produced and identify best environmental disposal options. Implementing a Site Waste Management Plan (SWMP) can reduce costs (increasing business profits) and maximise resource efficiency.

xi GEOTECHNICAL ASSESSMENT GENERAL COMMENTS

Where finished floor levels of proposed structures have not been provided by the Client, then for the purposes of initial assessment, GRM will assume that finished levels will not vary appreciably from the existing ground levels. If the depths of any underground engineering works (i.e. sewers, pumping stations etc.) are unknown they will not be taken in to account in the assessment and it will be assumed that any such works will not compromise foundation or ground stability.

Should the development proposals or finished levels be different from these assumptions then the comments/recommendations in the Geotechnical Assessment may require revising.

It should be noted that the results of window sampling and/or cable percussive boreholes may not give a true indication of a soils actual engineering properties (i.e. stability, mass structure etc). GRM consider that that prior to development trial pitting should be undertaken to confirm the recommendations in the Geotechnical Assessment.

xii GEOTECHNICAL ASSESSMENT – ENGINEERING GROUND TREATMENT

Near surface soils have the potential to be disturbed by weathering and site traffic. Precautions should always be taken to avoid this, as excessive disturbance may leads to more onerous floor slab designs, road cap thickness and increased amounts of off-site disposal etc.

Near surface soils may need treatment or reinforcing to allow safe movement of construction plant and labour. An assessment by the contractor should be undertaken once the type of machinery/plant needed to complete the development is known.

xiii GEOTECHNICAL ASSESSMENT – EXCAVATIONS

Excavation instability (over-break) can result in damage to existing services or structures (e.g. foundations, roads or boundary walls/fences) both on and off-site, as well as increased foundation concrete costs. In order to minimise this, all excavations deeper than 1.2m deep (or any excavation within 1.5m of any existing structure or service) should be supported. Full support should be provided to the full depth of all near vertically sided excavations in made ground, soft and very soft clays and granular soils. A reduction to intermediate support should be acceptable within firm and stiffer natural clays.

Wherever possible, man entry into excavations should be prevented; however, where this is not possible, entry to, and time spent in, excavations should be kept to a minimum.

The build program should be tailored to reflect the impact that deep excavations through potentially unstable strata can have on adjacent properties, so that they are not undermined.

All excavations on site should be in accordance with HSE guidelines and stability should be practically maintained at all times. Reference should be made to HSE construction information sheet No. 8 (Revision 1) ‘Safety in Excavations’.

Care should be taken to ensure that falls from excavation faces do not adversely affect the integrity of foundation concrete.

If contaminated water enters excavations it should be removed and transported to an appropriate treatment facility by a suitably licensed carrier before construction begins.

xiv GEOTECHNICAL ASSESSMENT – SUBSTRUCTURES

Where practicable, existing buried construction should be fully removed; however, if this is not practicable all new foundations should be carried down to fully penetrate it and it should be broken well away from all new structures.

There may be existing structures and/or infrastructure in close proximity to the proposed development. New build foundations may be constructed next to pavements with existing underground services beneath them, or excavations may be required near existing footings associated with adjacent properties. These potential hazards need to be taken into consideration when designing foundations and the groundworker needs to be made aware of their potential impact during the redevelopment works. Foundations close to existing underground services or buildings may require alternative foundation techniques (such as piling) to protect the integrity of these structures.

The contractor for the works should carry them out in such a fashion so as to not cause excessive overbreak, concrete usage or undermine existing buildings/roads/ services that are to be retained.

xv GEOTECHNICAL ASSESSMENT – SOAKAWAYS

Soakaway testing in trial pits by GRM is broadly carried out in accordance with BRE DG 365 (2016). The testing comprises the excavation of a test pit to a suitable depth, and the placement of water into the pit. The level of water present is then monitored over time. For borehole installations, the permeability testing (falling head/rising head) is undertaken in accordance with BS5930.

If it is decided to proceed with the use of soakaway drainage, then the following general points should be noted:

- Soakaways should not be placed so that water can be discharged through potentially contaminated made ground.
- The Environment Agency may require soakaways to be sealed systems such that only roof run off falls to soakaway.
- Interceptors are likely to be required for soakaways for highway drainage. The adopting authority for the highways should be consulted at the earliest opportunity regarding the use of soakaways for highways drainage.
- Consideration of site levels and slopes should be taken into account during the design.
- The construction of all soakaways should be in accordance with the current building regulations.
- Soakaways should not be placed within 5m of a proposed building.
- Placement of soakaways needs to be considered so as to avoid ponding of water down slope.
- The base of a soakaway should not be below the highest recorded water level.
- The Environment Agency prefer 1m of dry soil to be present between the base of a soakaway and the water table to provide attenuation for contamination.

xvi GEOTECHNICAL ASSESSMENT – FOUNDATIONS

If soft or hard spots are encountered during foundation excavation then they should be replaced with suitably compacted material or the footings deepened to suitable strata, to avoid differential settlement.

If strata of differing bearing character (e.g. sand and clay) are encountered at foundation levels within the excavations for a single plot then the excavation depths should be altered as appropriate to ensure the foundations rest on a single stratum, or strata that will not induce differential settlement. Where this is impractical then GRM should be contacted to assess a reinforced concrete detail or an alternative foundation solution (e.g. piles or vibro-replacement).

NOTES ON LIMITATIONS

General

GRM Development Solutions Limited has prepared this report solely for the use of the Client and those parties with whom a warranty agreement had been executed, or with whom an assignment had been agreed. Should any third party wish to use or rely upon the contents of the report, written approval must be sought from GRM Development Solutions Limited; a charge may be levied against such approval.

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a) the consequences of this document being used for any purpose or project other than for which it was commissioned, and

b) the consequences of this document being used by any third party with whom an agreement has not been executed.

Phase I Environmental Audits/ Desk Studies

The work undertaken to provide the basis of this report comprised a study of available documented information from a variety of sources (including the Client), together with (where appropriate) a brief walk over inspection of the site and meetings and discussions with relevant authorities and other interested parties. The opinions given in this report have been dictated by the finite data on which they are based and are relevant only to the purpose for which the report was commissioned. The information reviewed should not be considered exhaustive and has been accepted in good faith as providing true and representative data pertaining to site conditions. Should additional information become available which may affect the opinions expressed in this report, GRM Development Solutions Limited reserves the right to review such information and as considered necessary and appropriate to modify the opinions accordingly. It should be noted that any risks identified in a Phase 1 report are perceived risks based on the information reviewed; actual risks can only be assessed following a physical investigation of the site.

Phase II Environmental Audits (Contamination Investigations)

The investigation of the site has been carried out to provide sufficient information concerning the type and degree of contamination, ground and groundwater conditions to allow a reasonable risk assessment to be made. The objectives of the investigation have been limited to establishing the risks associated with potential human targets, building materials, and controlled waters.

The amount of exploratory work and chemical testing undertaken has necessarily been restricted by the short timescale available, and the locations of exploratory holes have been restricted to the areas unoccupied by the building(s) on the site and by buried services. A more comprehensive investigation may be required if the site is to be redeveloped as, in addition to risk assessment, a number of important engineering and environmental issues need to be resolved.

For these reasons if costs have been included in relation to site remediation these must be considered as provisional only and must, in any event, be confirmed by a commercial adviser.

The exploratory holes undertaken, which investigate only a small volume of the ground in relation to the size of the site, can only provide a general indication of site conditions. Whilst exploratory testing is intended to gain an accurate representation of the site, the very nature of sampling and testing is such that it cannot ensure that all localised conditions are detected

The risk assessment and opinions provided take in to consideration, inter alia, currently available guidance relating to acceptable contamination concentrations; no liability can be accepted for the retrospective effects of any future changes or amendments to these values.

Phase II Geo-environmental Investigations (Combined Geotechnical and Contamination Investigations)

The investigation of the site has been carried out to provide sufficient information concerning the type and degree of contamination, geotechnical characteristics, and ground and groundwater conditions to provide a reasonable assessment of the environment risks together with engineering and development implications. If costs have been included in relation to site development a commercial adviser must confirm these.

The exploratory holes undertaken, which investigate only a small volume of the ground in relation to the size of the site, can only provide a general indication of site conditions. The opinions provided and recommendations given in this report are based on the ground conditions apparent at the site for each of the exploratory holes. There may be exceptional ground conditions elsewhere on the site which have not been disclosed by this investigation and which have therefore not been taken into account in this report.

The comments made on groundwater conditions are based on observations made at the time the site work was conducted. It should be noted that groundwater levels will vary owing to seasonal, tidal and weather related effects.

The scope of the investigation was selected on the basis of the specific development proposed by the Client and may be inappropriate to another form of development or scheme.

The risk assessment and opinions provided take in to consideration, inter alia, currently available guidance relating to acceptable contamination concentrations; no liability can be accepted for the retrospective effects of any future changes or amendments to these values.

APPENDIX B

0m 10m 20m 30m 40m 50m

N

P.O.S 538m²

P.O.S 32m²

P.O.S 1830m²

P.O.S 163m²

P.O.S 104m² ACOUSTIC BARRIER • DETAILS TO BE AGREED

ACOUSTIC BARRIER DETAILS TO BE AGREED

indicative attenuation tank.

Existing footpath width reduces for easement to Sustainable.

Hatching denotes sewer easement

Min 6m Easement zone for the adopted FW sewer

RW to SE specification

SCHEDULE		
TYPE A	5X	TYPE A - 2 BED GIA 71.9m²
TYPE B	5X	TYPE B - 3 BED GIA 87.2m²
TYPE C	6X	TYPE C - 4 BED GIA 144.4m²
TYPE D	8X	TYPE D - 4 BED GIA 134.8m²
TYPE E	3X	TYPE E - 5 BED GIA 228.4m²
TYPE F	3X	TYPE F - 4 BED GIA 148.2m²
TYPE G	8X	TYPE G - 3 BED GIA 140.6m²
TYPE H	4X	TYPE H - 4 BED GIA 143.2m²
TYPE I	7X	TYPE I - 4 BED GIA 191.3m²
TYPE K	1X	TYPE K - 4 BED GIA Approx. 150m²
TYPE L	1X	TYPE L - 5 BED GIA 215m²
TOTAL UNITS - 51		

P.O.S Total: 2667m²

*NOTE

Area in schedule are indicative.

APPROX GIFA - 7271.8 m²

REV: P01	DATE: MAR 23	DRAWN: TC	CHECKED: MH

Layout amended for revised planning application

REVISIONS

urban

RESIDENTIAL DEVELOPMENT

DENBY DALE

PROPOSED SITE PLAN

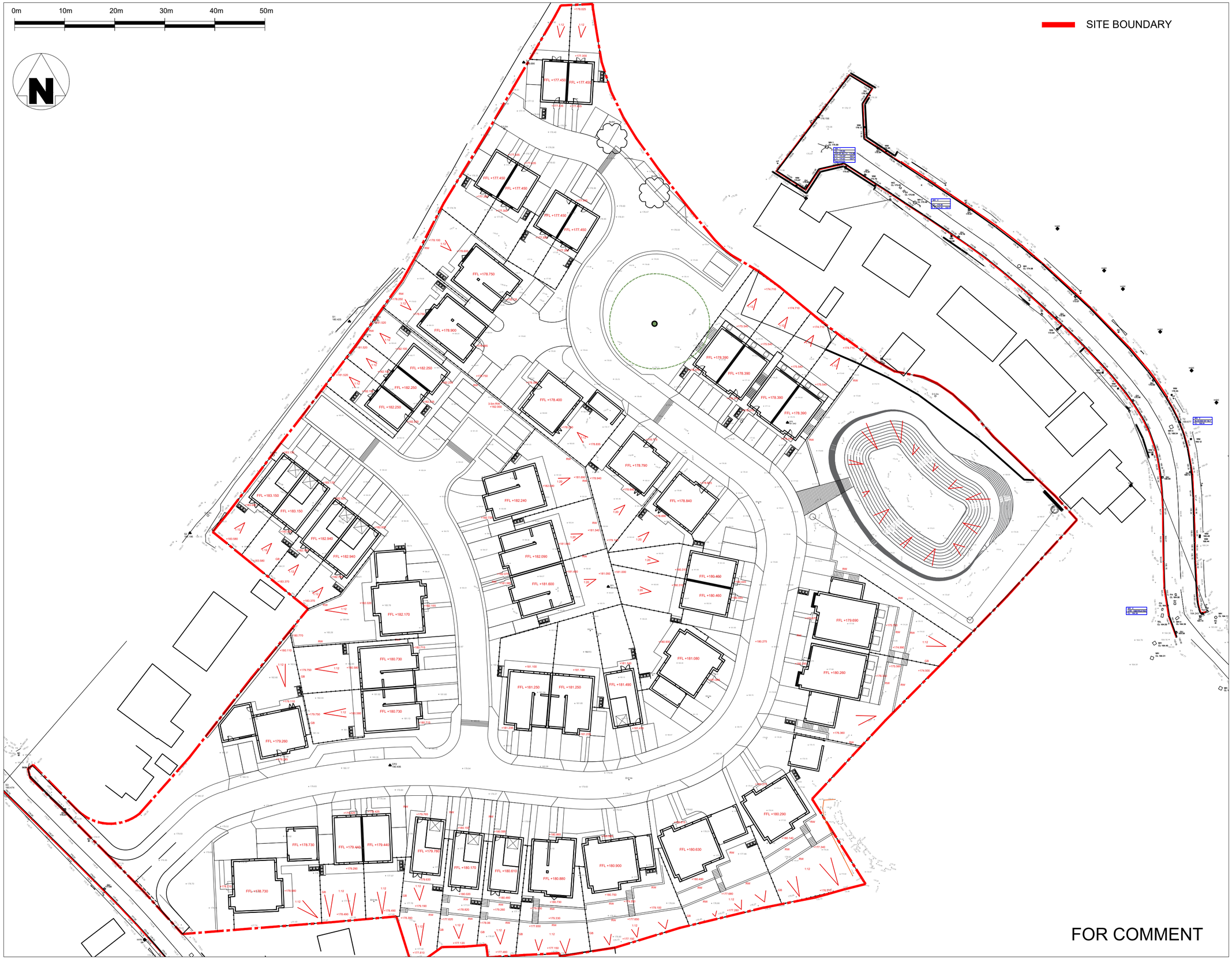
Drawn: WH Scale: 1:500 @ A2

Date: NOV 2021 Checked: MH

brewsterbye architects
5 NORTH HILL ROAD
HEADINGLEY
LEEDS
LS6 2EN
telephone
0113 2754000
facsimile
0113 2844250
e.mail
info@brewsterbye.co.uk

Dwg No: 571/16(02)010 P01

APPENDIX C



SCHEDULE		
TYPE A	8X	TYPE A - 2 BED GIA 71.9m²
TYPE B	1X	TYPE B - 3 BED GIA 87.2m²
TYPE C	4X	TYPE C - 4 BED GIA 144.4m²
TYPE D	4X	TYPE D - 4 BED GIA 134.8m²
TYPE E	6X	TYPE E - 5 BED GIA 228.4m²
TYPE F	3X	TYPE F - 4 BED GIA 148.2m²
TYPE G	8X	TYPE G - 3 BED GIA 140.6m²
TYPE H	4X	TYPE H - 4 BED GIA 143.2m²
TYPE I	7X	TYPE I - 4 BED GIA 191.3m²
TYPE J	2X	TYPE J - 5 BED GIA 260.1m²
TOTAL UNITS - 47		

P.O.S

*NOTE
Area in schedule are indicative.
APPROX GIFA - 7151.1 m²

REV: A	DATE: JUNE 22	DRAWN: TC	CHECKED: MH

Amended levels

REVISIONS

urban

RESIDENTIAL DEVELOPMENT

DENBY DALE

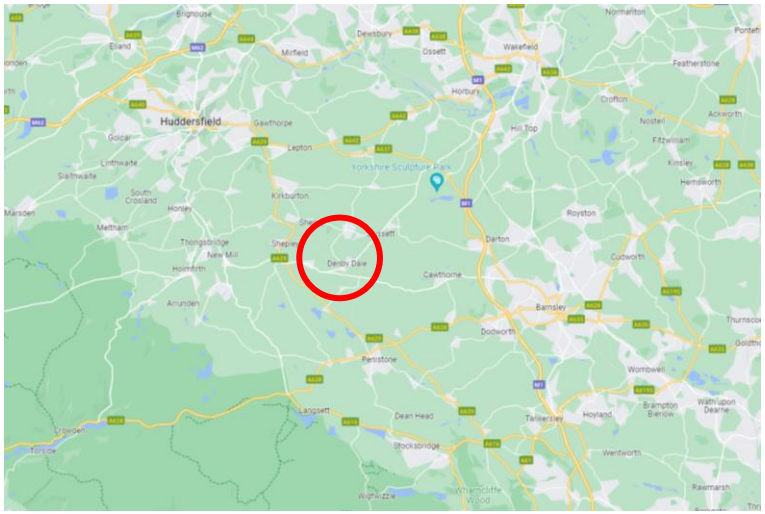
PROPOSED LEVELS PLAN

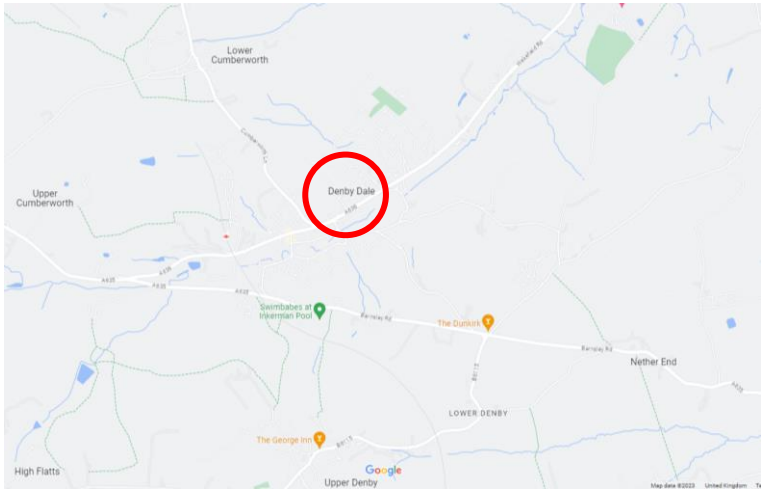
Drawn:	TC	Scale:	1:500 @ A2
Date:	May 22	Checked:	MH

brewsterbye architects
5 NORTH HILL ROAD
HEADINGLEY
LEEDS
LS6 2EN
telephone
0113 2754000
facsimile
0113 2844250
e.mail
info@brewsterbye.co.uk

Dwg No: 571/16(02)003 A

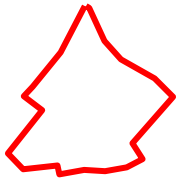
APPENDIX D





DO NOT SCALE

NOTES:



Approximate Site Boundary

GRM Development Solutions Ltd
Laurus House, First Ave, Centrum 100,
Burton-on-Trent, Staffordshire
Tel: 01283 551 249 Fax: 01283 211 968
mail@grm-uk.com www.grm-uk.com

CLIENT:

Urban Group (York) Ltd

PROJECT:

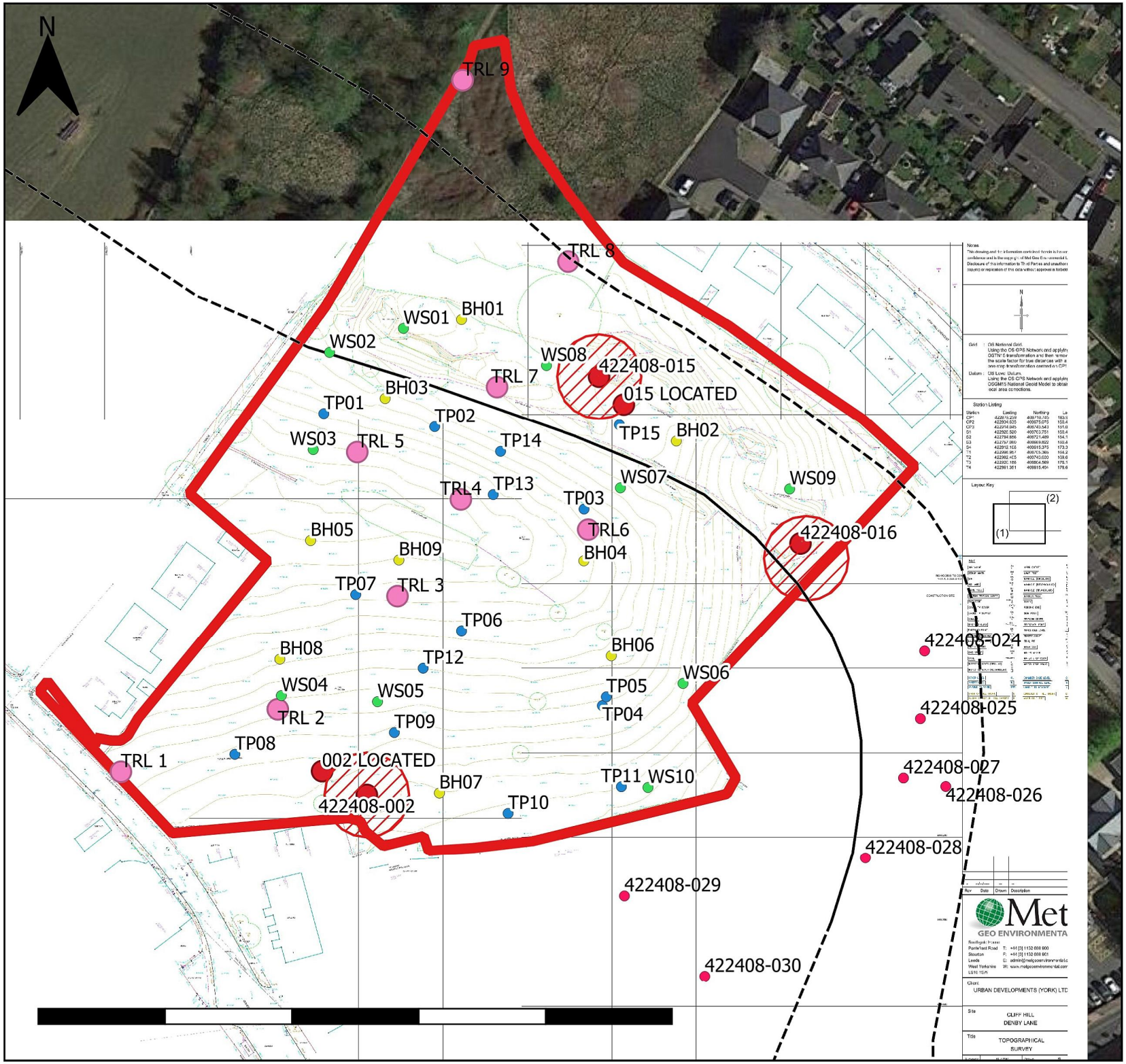
Cliff Hill, Cumberworth Lane, Denby Dale

TITLE:

Site Location Plan

SCALE@SIZE :	ISSUE:
NTS	FINAL
DESIGN/DRAWN : RDH	DATE: July 2023
PROJECT No: P10350	DRAWING No:

APPENDIX E



NOTES:
1. DO NOT SCALE FROM THIS DRAWING.
2. ALL DIMENSIONS ARE M
3. ALL LEVELS ARE IN METRES ABOVE ORDNANCE DATUM
4. THIS DRAWING IS TO BE READ IN CONJUNCTION WITH ALL RELEVANT ARCHITECTS AND ENGINEERS DRAWINGS AND SPECIFICATIONS.

LEGEND

- Buffered
- Location Details
  - DCP
  - RO
  - TP
  - WLS
  - CBR - TRL
- Buffered
- MINE SHAFTS
- SITE OUTLINE

FOR INFORMATION

CLIFF HILL DENBY DALE

HOLE LOCATION PLAN

RGS Environmental Geotechnical Specialists

JOB NUMBER: C2206/21/e

DATE: 17.05.2022

REVISION: 01

APPENDIX F

Appendix 3

Windowless Sample Borehole Records

Rogers Geotechnical Services Ltd Telephone 0843 50 666 87 Fax 0843 51 599 30
Email enquiries@rogersgeotech.co.uk www.rogersgeotech.co.uk

Borehole Log

Borehole No. **WS01**

Sheet 1 of 1

Project Name: Cliff Hill	Project No. C2206/21/E/3401	Co-ords: 422850.66E - 408760.40N	Hole Type WLS
Location: Cumberworth Lane, Denby Dale, Huddersfield, HD8 8RZ		Level: 180.18m aOD	Scale 1:50
Client: Urban Construction Interiors Ltd		Dates: 04/04/2022	Logged By CM

Well	Water Strikes	Samples and In Situ Testing: Depth (m)	Type	Dia. (mm)	TCR (%)	Results	Depth (m)	Level (m)	Legend	Stratum Description
		0.30 - 0.40 0.40 0.50 0.70 - 1.00	ES D D C	85	100		0.15	180.03		TOPSOIL (Dark brown organic silty fine SAND).
		1.00	SPT	75		N=6 (1,2/1,2,2,2,1)				MADE GROUND/ FILL (Soft light grey mottled light brown sandy gravelly CLAY. Sand is fine to coarse. Gravel is sub rounded to angular medium to coarse of sandstone siltstone and ironstone)
		2.00	SPT	65		N=9 (2,2/2,2,3,2)	1.77	178.41		Stiff orangish brown mottled bluish grey and light grey silty CLAY with rare lithorelicts of extremely weak angular tabular siltstone.
		3.00	SPT	55		N=19 (4,4/4,5,5,5)	2.85	177.33		Extremely weak thinly laminated greyish brown SILTSTONE.
		4.00	SPT			N=52 (8,1/13,13,13,13)	3.90	176.28		COAL [Possible Whinmoor Coal (Cumberworth Thick)]
							4.45	175.73		End of Borehole at 4.45m

Remarks

1) CAT scan prior to breaking ground. No services identified.

Borehole Log

Borehole No. **WS02**

Sheet 1 of 1

Project Name: Cliff Hill	Project No. C2206/21/E/3401	Co-ords: 422833.20E - 408754.72N	Hole Type WLS
Location: Cumberworth Lane, Denby Dale, Huddersfield, HD8 8RZ		Level: 181.00m aOD	Scale 1:50
Client: Urban Construction Interiors Ltd		Dates: 04/04/2022	Logged By CM

Well	Water Strikes	Samples and In Situ Testing: Depth (m)	Type	Dia. (mm)	TCR (%)	Results	Depth (m)	Level (m)	Legend	Stratum Description
		0.30 - 0.40 0.40 - 1.00	ES D	87	100		0.20 1.00	180.80 180.00		TOPSOIL (Dark brown organic silty fine SAND). MADE GROUND/ FILL (Soft light grey mottled light brown sandy gravelly CLAY. Sand is fine to coarse. Gravel is sub rounded to angular medium to coarse of sandstone siltstone and ironstone) End of Borehole at 1.00m

Remarks

1) CAT scan prior to breaking ground. No services identified.

Borehole Log

Borehole No. **WS03**

Sheet 1 of 1

Project Name: Cliff Hill	Project No. C2206/21/E/3401	Co-ords: 422829.33E - 408731.67N	Hole Type WLS
Location: Cumberworth Lane, Denby Dale, Huddersfield, HD8 8RZ		Level: 183.74m aOD	Scale 1:50
Client: Urban Construction Interiors Ltd		Dates: 04/04/2022	Logged By CM

Well	Water Strikes	Samples and In Situ Testing: Depth (m)	Type	Dia. (mm)	TCR (%)	Results	Depth (m)	Level (m)	Legend	Stratum Description
							0.15	183.59		TOPSOIL (Dark brown organic silty fine SAND).
				87	100		0.45	183.29		MADE GROUND/ FILL (Soft light grey mottled light brown sandy gravelly CLAY. Sand is fine to coarse. Gravel is sub rounded to angular medium to coarse of sandstone siltstone and ironstone)
							0.50	183.24		
		1.00	SPT			N=81 (7,12/16,21,22,22)	0.95	182.79		RELICT TOPSOIL
							1.45	182.29		COAL [Possible Whinmoor Coal (Cumberworth Thick), or, Unnamed Coal]
										Extremely weak thinly laminated light grey SILTSTONE with rare laminations of fine-grained SANDSTONE.
										End of Borehole at 1.45m

Remarks

1) CAT scan prior to breaking ground. No services identified.

Borehole Log

Borehole No. **WS04**

Sheet 1 of 1

Project Name: Cliff Hill	Project No. C2206/21/E/3401	Co-ords: 422821.80E - 408673.44N	Hole Type WLS
Location: Cumberworth Lane, Denby Dale, Huddersfield, HD8 8RZ		Level: 180.19m aOD	Scale 1:50
Client: Urban Construction Interiors Ltd		Dates: 04/04/2022	Logged By CM

Well	Water Strikes	Samples and In Situ Testing: Depth (m)	Type	Dia. (mm)	TCR (%)	Results	Depth (m)	Level (m)	Legend	Stratum Description
		0.00 - 0.30	ES				0.35	179.84		TOPSOIL (Dark brown organic silty fine SAND).
		0.50 - 1.00	D	87	100		0.90	179.29		Extremely weak weak thinly bedded orangish brown locally grey fine to medium-grained SANDSTONE (Recovered as sandy sub angular to tabular GRAVEL)
										End of Borehole at 0.90m

Remarks

1) CAT scan prior to breaking ground. No services identified.

Borehole Log

Borehole No. **WS05**

Sheet 1 of 1

Project Name: Cliff Hill	Project No. C2206/21/E/3401	Co-ords: 422844.53E - 408672.01N	Hole Type WLS
Location: Cumberworth Lane, Denby Dale, Huddersfield, HD8 8RZ		Level: 179.88m aOD	Scale 1:50
Client: Urban Construction Interiors Ltd		Dates: 04/04/2022	Logged By CM

Well	Water Strikes	Samples and In Situ Testing: Depth (m)	Type	Dia. (mm)	TCR (%)	Results	Depth (m)	Level (m)	Legend	Stratum Description
		0.00 - 0.30	ES							TOPSOIL (Dark brown organic silty fine SAND).
							0.35	179.53		
		0.50 - 1.00	D	87	100		0.50	179.38		Medium dense greyish brown mottled dark grey clayey silty sandy GRAVEL OF siltstone and rare coal. Sand is fine to coarse.
		1.00	SPT			N=72 (9,11/15,17,20,20)				Extremely weak to weak thinly bedded orangish brown locally grey fine to medium-grained SANDSTONE (Recovered as sandy sub angular to tabular GRAVEL)
							1.41	178.47		End of Borehole at 1.41m

Remarks

1) CAT scan prior to breaking ground. No services identified.

Borehole Log

Borehole No. **WS06**

Sheet 1 of 1

Project Name:	Cliff Hill	Project No. C2206/21/E/3401	Co-ords: 422916.85E - 408676.32N
Location:	Cumberworth Lane, Denby Dale, Huddersfield, HD8 8RZ		Level: 178.17m aOD
Client:	Urban Construction Interiors Ltd		Dates: 04/04/2022

Hole Type: WLS

Scale: 1:50

Logged By: CM

Well	Water Strikes	Samples and In Situ Testing: Depth (m)	Type	Dia. (mm)	TCR (%)	Results	Depth (m)	Level (m)	Legend	Stratum Description
		0.00 - 0.30	ES	87			0.20	177.97		TOPSOIL
							0.70	177.47		MADE GROUND/ FILL (Dark grey locally black silty slightly gravelly fine to coarse SAND. Gravel is angular tabular of sandstone and coal)
				77						INTACT COAL [Possible Whinmoor Coal (Cumberworth Thick)]
							1.50	176.67		Extremely weak to weak thinly laminated light grey mottled orange fine-grained SANDSTONE
							1.60	176.57		End of Borehole at 1.60m

Remarks

1) CAT scan prior to breaking ground. No services identified.

Borehole Log

Borehole No. **WS07**

Sheet 1 of 1

Project Name:	Cliff Hill	Project No. C2206/21/E/3401	Co-ords: 422902.05E - 408722.64N
Location:	Cumberworth Lane, Denby Dale, Huddersfield, HD8 8RZ	Level:	180.21m aOD
Client:	Urban Construction Interiors Ltd	Dates:	04/04/2022

Hole Type: WLS

Scale: 1:50

Logged By: CM

Well	Water Strikes	Samples and In Situ Testing: Depth (m)	Type	Dia. (mm)	TCR (%)	Results	Depth (m)	Level (m)	Legend	Stratum Description
		0.30 - 0.60	ES				0.30	179.91		topsoil
		0.50	D	87	100					Stiff friable thinly to thickly laminated light grey locally mottled orangish brown silty CLAY with lithorelicts of siltstone)
		1.00	SPT			N=15 (2,1/2,3,5,5)	1.10	179.11		
				77	100					Extremely weak thinly to thickly laminated light greyish brown SILTSTONE with subordinate laminations of fine-grained SANDSTONE
		2.00	SPT			N=54 (8,10/13,14,14,13)				
							2.45	177.76		End of Borehole at 2.45m

Remarks

1) CAT scan prior to breaking ground. No services identified.

Borehole Log

Borehole No. **WS08**

Sheet 1 of 1

Project Name:	Cliff Hill	Project No. C2206/21/E/3401	Co-ords: 422884.47E - 408751.62N
Location:	Cumberworth Lane, Denby Dale, Huddersfield, HD8 8RZ		Level: 179.54m aOD
Client:	Urban Construction Interiors Ltd		Dates: 05/04/2022

Hole Type: WLS

Scale: 1:50

Logged By: CM

Well	Water Strikes	Samples and In Situ Testing: Depth (m)	Type	Dia. (mm)	TCR (%)	Results	Depth (m)	Level (m)	Legend	Stratum Description
		0.50 - 0.60	C	87	100					MADE GROUND/ FILL (Firm locally stiff light brownish grey mottled orangish brown and brown sandy gravelly CLAY. Sand is fine to coarse. Gravel is sub rounded to angular medium to coarse of sandstone siltstone and ironstone)
		0.70 - 1.00	C							
				77	100					
		2.50	C	67	100		2.30	177.24		Stiff friable light grey mottled orangish brown silty CLAY. With rare ironstone nodules
							3.00	176.54		COAL [Possible Whinmoor Coal (Cumberworth Thick)]
				57	100		3.70	175.84		Stiff friable thinly laminated light grey mottled orangish brown silty CLAY. With rare ironstone nodules and rare siltstone lithorelicts
							4.00	175.54		End of Borehole at 4.00m

Remarks

1) CAT scan prior to breaking ground. No services identified.

Borehole Log

Borehole No. **WS09**

Sheet 1 of 1

Project Name: Cliff Hill	Project No. C2206/21/E/3401	Co-ords: 422942.07E - 408722.37N	Hole Type WLS
Location: Cumberworth Lane, Denby Dale, Huddersfield, HD8 8RZ		Level: 173.53m aOD	Scale 1:50
Client: Urban Construction Interiors Ltd		Dates: 05/04/2022	Logged By CM

Well	Water Strikes	Samples and In Situ Testing: Depth (m)	Type	Dia. (mm)	TCR (%)	Results	Depth (m)	Level (m)	Legend	Stratum Description
		0.00 - 0.40	ES	87	100		0.55	172.98		MADE GROUND/ FILL (Soft light grey mottled light brown sandy gravelly CLAY. Sand is fine to coarse. Gravel is sub rounded to angular medium to coarse of sandstone siltstone and ironstone)
		0.70 - 1.00	C							
		1.00	SPT			N=8 (2,2/2,2,2,2)	1.00	172.53		Firm lcoally stiff light grey mottled orangish brown silty CLAY
				77	100		1.45	172.08		COAL [Possible Whinmoor Coal (Cumberworth Thick)]
		2.00	SPT			N=27 (3,5/6,7,7,7)				Extremely weak thinly to thickly laminated light grey SILTSONE (locally recovered as clayey silty angular tabular fine to medium GRAVEL)
				67	100		2.30	171.23		Extremely weak thinly to thickly laminated pale yellowish grey SILTSTONE
		3.00	SPT			N=53 (7,9/13,13,13,14)	3.45	170.08		End of Borehole at 3.45m

Remarks

1) CAT scan prior to breaking ground. No services identified.

Borehole Log

Borehole No. **WS10**

Sheet 1 of 1

Project Name:	Cliff Hill	Project No. C2206/21/E/3401	Co-ords: 422908.57E - 408651.76N
Location:	Cumberworth Lane, Denby Dale, Huddersfield, HD8 8RZ		Level: 176.62m aOD
Client:	Urban Construction Interiors Ltd		Dates: 05/04/2022

Hole Type: WLS

Scale: 1:50

Logged By: CM

Well	Water Strikes	Samples and In Situ Testing: Depth (m)	Type	Dia. (mm)	TCR (%)	Results	Depth (m)	Level (m)	Legend	Stratum Description
		0.50 - 1.00	D	86	100		0.45	176.17		topsoil
				76	100		1.51	175.11		Extremely weak weak thinly bedded orangish brown locally grey fine to medium-grained SANDSTONE (Recovered as sandy sub angular to tabular GRAVEL)
										End of Borehole at 1.53m

Remarks

1) CAT scan prior to breaking ground. No services identified.

Appendix 4

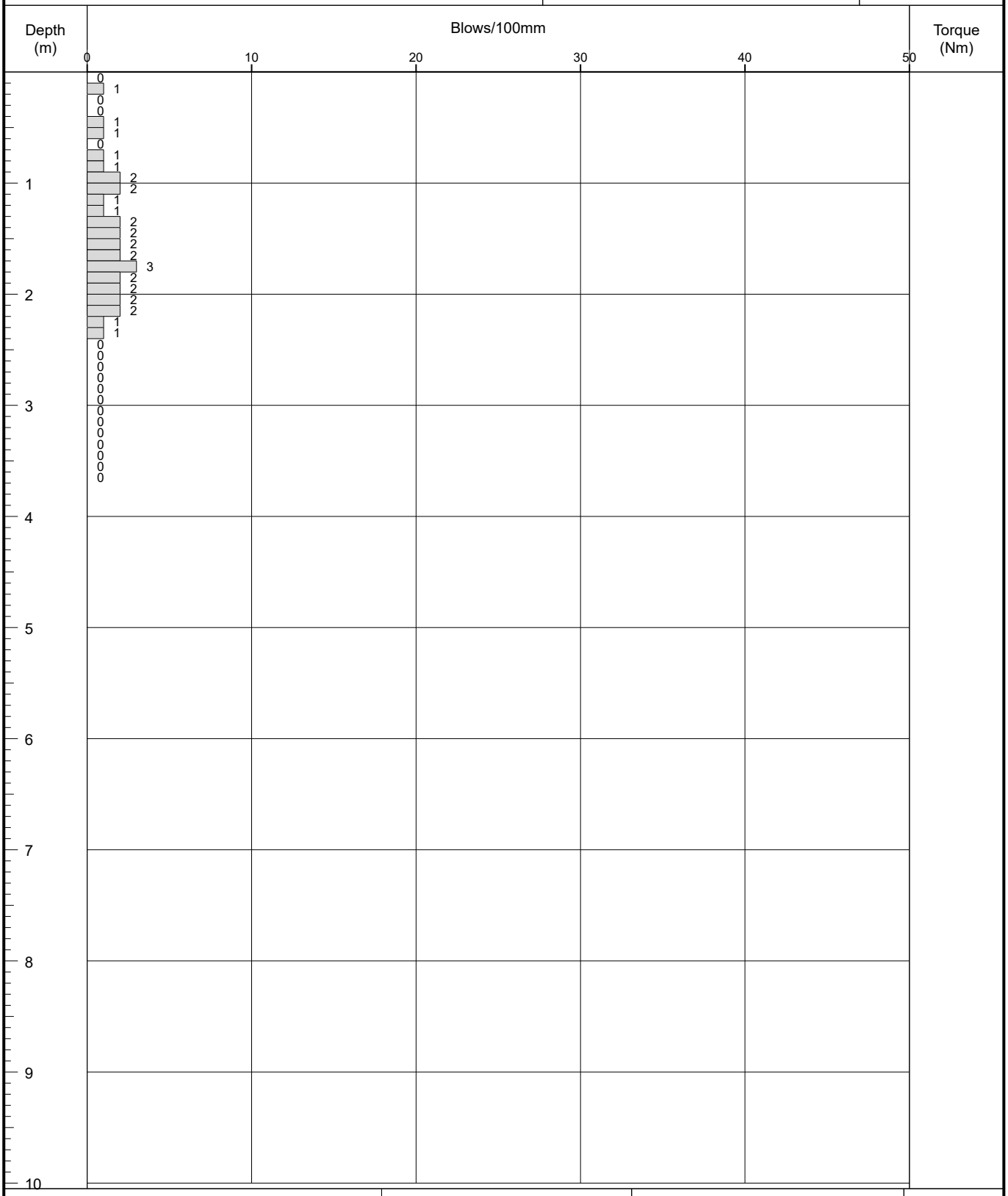
Dynamic Probes

Rogers Geotechnical Services Ltd Telephone 0843 50 666 87 Fax 0843 51 599 30
Email enquiries@rogersgeotech.co.uk www.rogersgeotech.co.uk

Probe Log

Probe No.
DP02
Sheet 1 of 1

Project Name: Cliff Hill	Project No. C2206/21/E/3401	Co-ords:	Hole Type DCP
Location: Cumberworth Lane, Denby Dale, Huddersfield, HD8 8RZ		Level:	Scale 1:50
Client: Urban Construction Interiors Ltd		Dates: 04/04/2022	Logged By CM



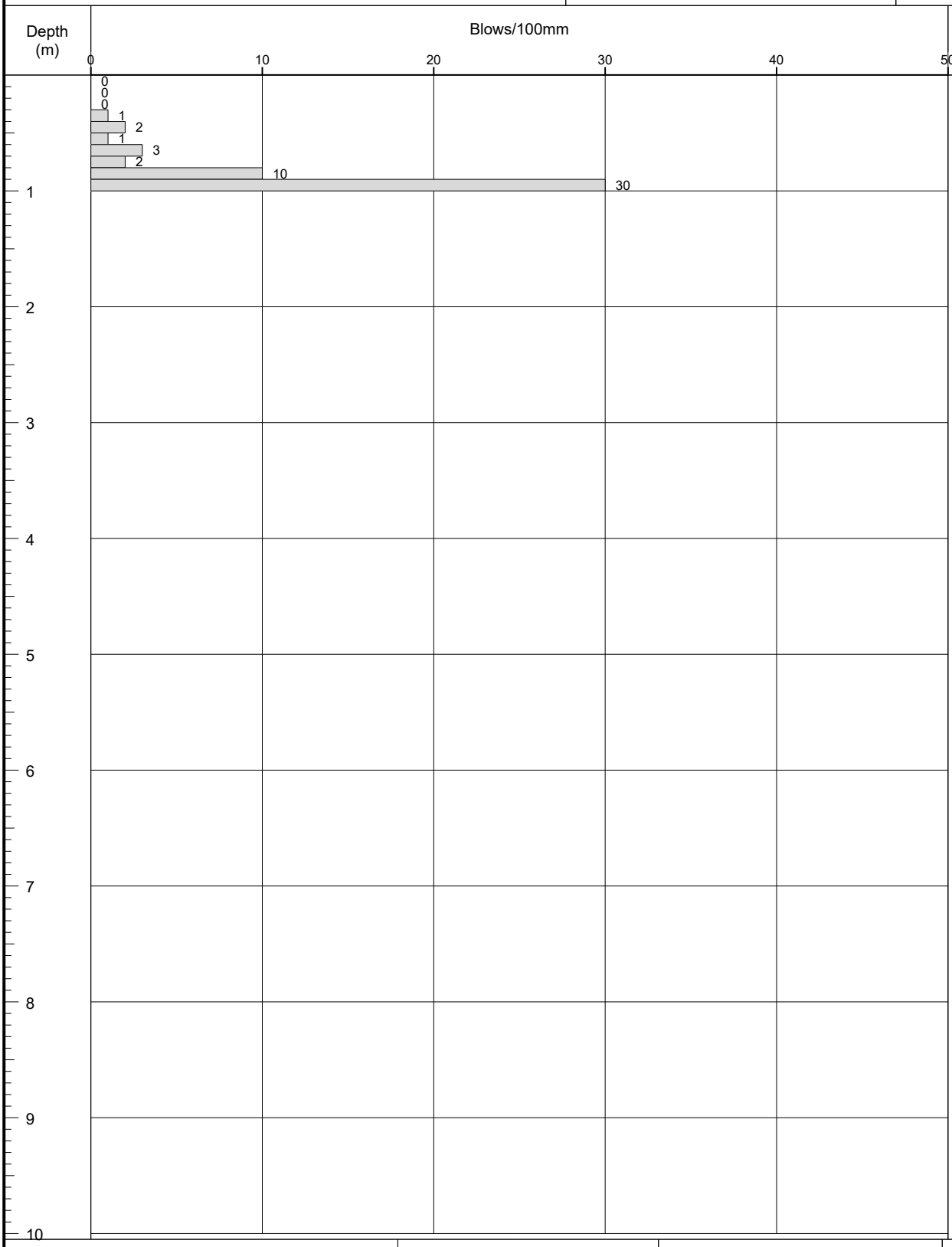
Remarks:

Fall Height	750mm	Cone Base Diameter	50.5mm
Hammer Wt	63.5kg	Final Depth	3.6m
Probe Type	DPSH-B		

Probe Log

Probe No.
DP04
Sheet 1 of 1

Project Name: Cliff Hill	Project No. C2206/21/E/3401	Co-ords:	Hole Type DCP
Location: Cumberworth Lane, Denby Dale, Huddersfield, HD8 8RZ		Level:	Scale 1:50
Client: Urban Construction Interiors Ltd		Dates: 04/04/2022	Logged By AB



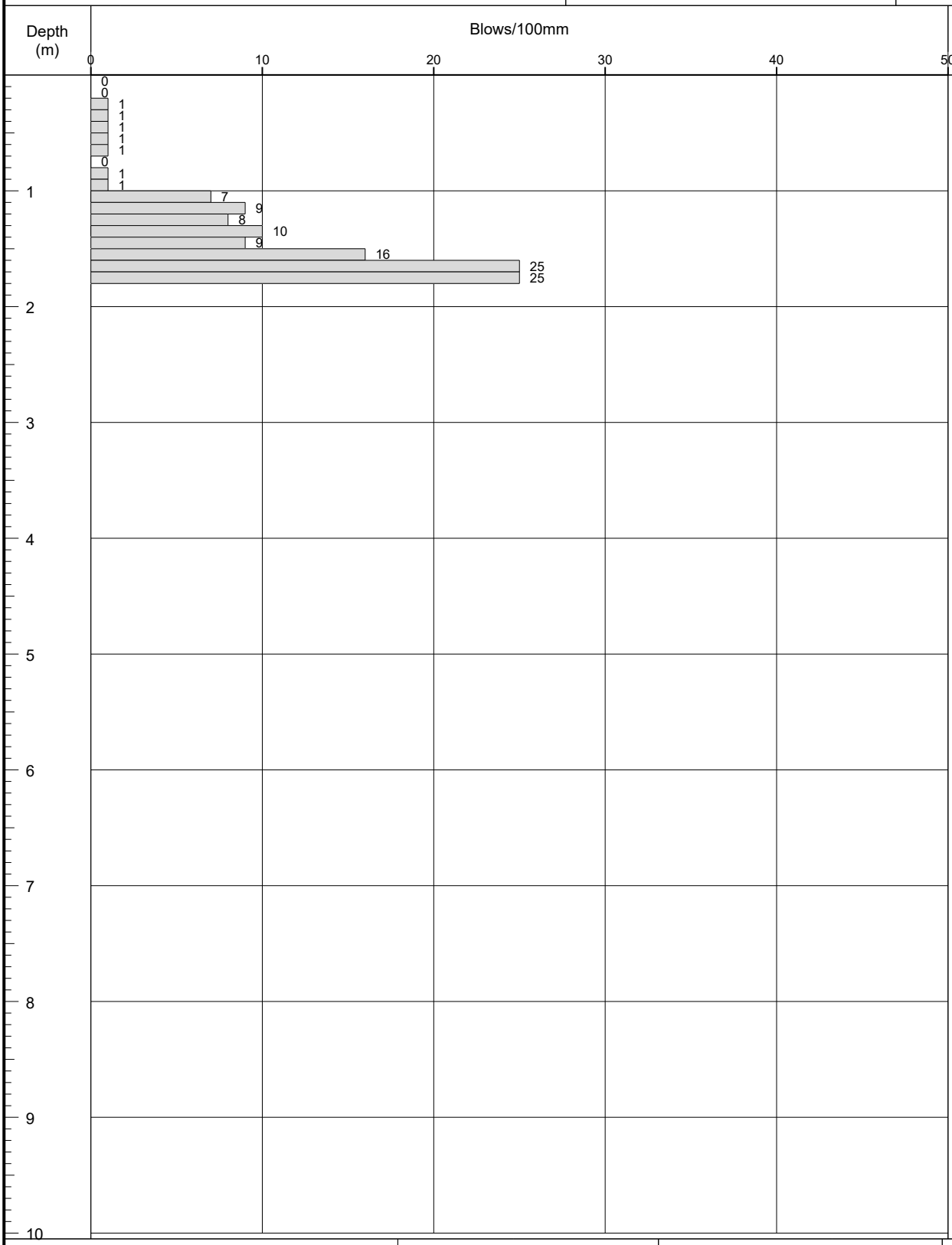
Remarks:

Fall Height	750mm	Cone Base Diameter	50.5mm
Hammer Wt	63.5kg	Final Depth	1m
Probe Type	DPSH-B		

Probe Log

Probe No.
DP06
Sheet 1 of 1

Project Name: Cliff Hill	Project No. C2206/21/E/3401	Co-ords:	Hole Type DCP
Location: Cumberworth Lane, Denby Dale, Huddersfield, HD8 8RZ		Level:	Scale 1:50
Client: Urban Construction Interiors Ltd		Dates: 04/04/2022	Logged By AB



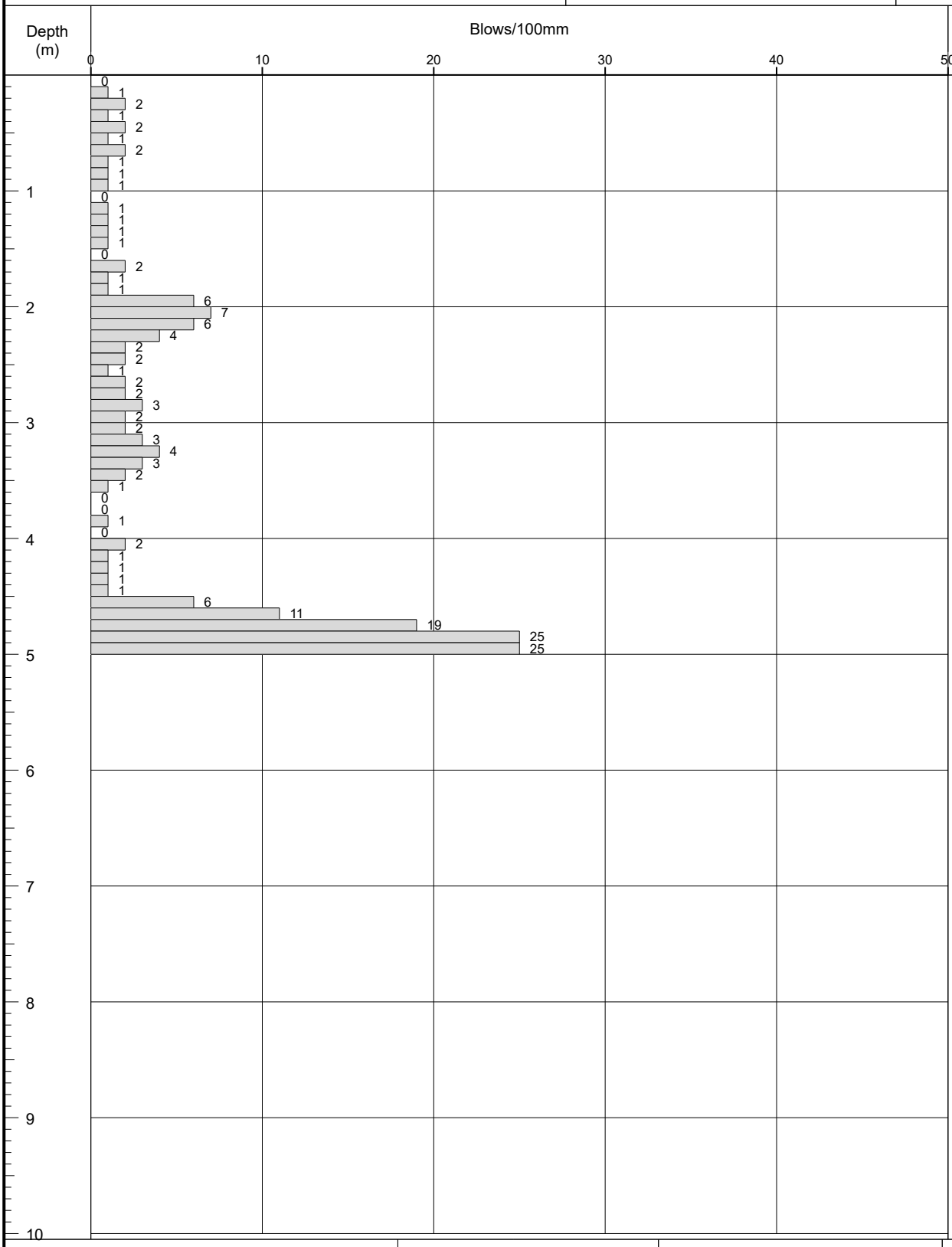
Remarks:

Fall Height	750mm	Cone Base Diameter	50.5mm
Hammer Wt	63.5kg	Final Depth	1.7m
Probe Type	DPSH-B		

Probe Log

Probe No.
DP08
Sheet 1 of 1

Project Name: Cliff Hill	Project No. C2206/21/E/3401	Co-ords:	Hole Type DCP
Location: Cumberworth Lane, Denby Dale, Huddersfield, HD8 8RZ		Level:	Scale 1:50
Client: Urban Construction Interiors Ltd		Dates: 05/04/2022	Logged By CM



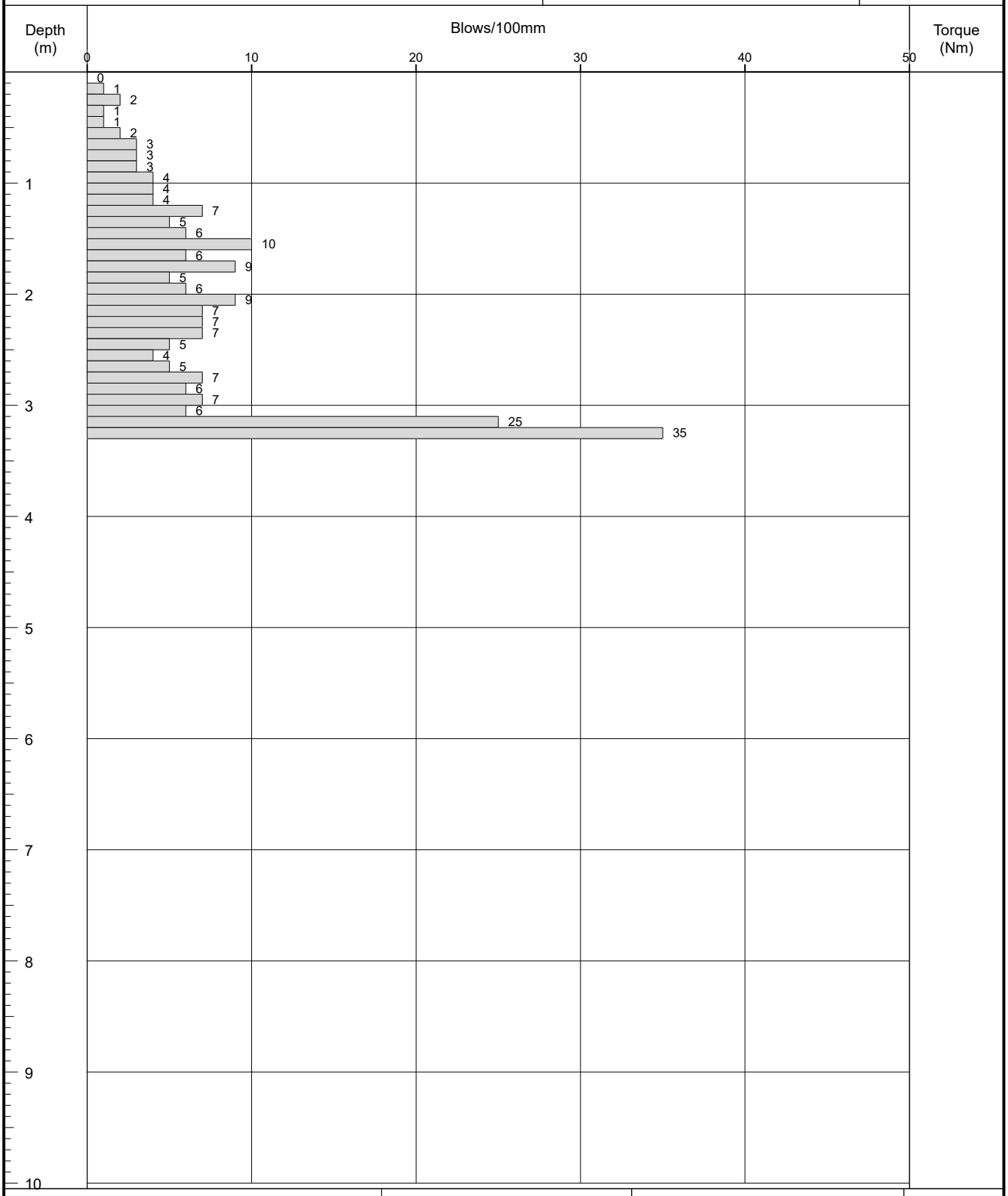
Remarks:

Fall Height	750mm	Cone Base Diameter	50.5mm
Hammer Wt	63.5kg	Final Depth	4.9m
Probe Type	DPSH-B		

Probe Log

Probe No.
DP10
Sheet 1 of 1

Project Name: Cliff Hill	Project No. C2206/21/E/3401	Co-ords:	Hole Type DCP
Location: Cumberworth Lane, Denby Dale, Huddersfield, HD8 8RZ		Level:	Scale 1:50
Client: Urban Construction Interiors Ltd		Dates: 05/04/2022	Logged By AB



Remarks:

Fall Height	750mm	Cone Base Diameter	50.5mm
Hammer Wt	63.5kg	Final Depth	3.2m
Probe Type	DPSH-B		

Environmental Geotechnical Specialists

Appendix 5

Rotary Borehole Records

Rogers Geotechnical Services Ltd Telephone 0843 50 666 87 Fax 0843 51 599 30
Email enquiries@rogersgeotech.co.uk www.rogersgeotech.co.uk

Borehole Log

Borehole No. **BH01**

Sheet 1 of 1

Project Name: Cliff Hill	Project No. C2206/21/E/3401	Co-ords: 422864.38E - 408762.51N	Hole Type RO
Location: Cumberworth Lane, Denby Dale, Huddersfield, HD8 8RZ		Level: 179.46m aOD	Scale 1:50
Client: Urban Construction Interiors Ltd		Dates: 07/04/2022	Logged By ABK

Well	Water Strikes	Samples and In Situ Testing: Depth (m)	Type	Results	Depth (m)	Level (m)	Legend	Stratum Description
								MADE GROUND/ FILL (Drilers notes)
					0.30	179.16		Light brown SANDSTONE (Drillers notes)
					1.20	178.26		Dark grey grading to dark brown SANDSTONE with localised clay nodules (Drillers notes)
					3.00	176.46		Dark brown SANDSTONE (Drillers notes)
					3.50	175.96		VOID (Complete loss of flush, water and drilling resistance) (Drillers notes) [Possible Whinmoor Coal (Cumberworth Thick)]
					4.50	174.96		*Hole terminated due to instability concerns.*
					4.50	174.96		Hard stratum - no flush returns. (Drillers notes)
								End of Borehole at 4.50m

Remarks

1) CAT scan prior to breaking ground. No services identified. 2) Borehole terminated due to potential instability. 3) casing installed to 3m 4) borehole backfilled arisings and bentonite

Borehole Log

Borehole No. **BH02**

Sheet 1 of 1

Project Name: Cliff Hill	Project No. C2206/21/E/3401	Co-ords: 422915.28E - 408733.70N	Hole Type RO
Location: Cumberworth Lane, Denby Dale, Huddersfield, HD8 8RZ		Level: 177.52m aOD	Scale 1:50
Client: Urban Construction Interiors Ltd		Dates: 07/04/2022	Logged By ABK

Well	Water Strikes	Samples and In Situ Testing: Depth (m)	Type	Results	Depth (m)	Level (m)	Legend	Stratum Description
								MADE GROUND/ FILL (Drillers notes)
					0.30	177.22		Light brown SANDSTONE (Drillers notes) (Drillers notes)
					2.00	175.52		Very soft light grey SILTSTONE (Drillers notes)
					3.50	174.02		VOID (complete loss of flush, drilling resistance and increase water takes) (Drillers notes) [Possible Whinmoor Coal (Cumberworth Thick)]
					5.50	172.02		Hard Stratum (no flush returns)
					5.50	172.02		End of Borehole at 5.50m

Remarks

1) CAT scan prior to breaking ground. No services identified. 2) Borehole terminated due to potential instability. 3) casing installed to 4m 4) borehole backfilled arisings and bentonite

Borehole Log

Borehole No. **BH03**

Sheet 1 of 1

Project Name: Cliff Hill	Project No. C2206/21/E/3401	Co-ords: 422846.33E - 408743.85N	Hole Type RO
Location: Cumberworth Lane, Denby Dale, Huddersfield, HD8 8RZ		Level: 181.26m aOD	Scale 1:50
Client: Urban Construction Interiors Ltd		Dates: 07/04/2022	Logged By ABK

Well	Water Strikes	Samples and In Situ Testing: Depth (m)	Type	Results	Depth (m)	Level (m)	Legend	Stratum Description
								MADE GROUND/ FILL (Drillers notes)
					0.30	180.96		Light brown SANDSTONE (Drillers notes)
					3.00	178.26		Dark brown SANDSTONE (Drillers notes)
					3.50	177.76		VOID (complete loss of flush, drilling resistance and increase water takes) (Drillers notes) [Possible Whinmoor Coal (Cumberworth Thick)]
					6.00	175.26		Hard Stratum (Drillers notes)
					6.00	175.26		End of Borehole at 6.00m

Remarks

1) CAT scan prior to breaking ground. No services identified. 2) Borehole terminated due to potential instability. 3) casing installed to 4m 4) borehole backfilled arisings and bentonite

Borehole Log

Borehole No. **BH04**

Sheet 1 of 2

Project Name: Cliff Hill	Project No. C2206/21/E/3401	Co-ords: 422893.40E - 408705.41N	Hole Type RO
Location: Cumberworth Lane, Denby Dale, Huddersfield, HD8 8RZ		Level: 182.73m aOD	Scale 1:50
Client: Urban Construction Interiors Ltd		Dates: 06/04/2022	Logged By ABK

Well	Water Strikes	Samples and In Situ Testing: Depth (m)	Type	Results	Depth (m)	Level (m)	Legend	Stratum Description
					0.30	182.43		TOPSOIL ((Drillers notes)
								Light to dark grey SANDSTONE (Drillers notes)
					1.00	181.73		COAL (Drillers notes) [Possible Whinmoor Coal (Cumberworth Thick), or, Unnamed Coal]
					3.00	179.73		Light brown SANDSTONE (Drillers notes)
					6.00	176.73		Dark brown SANDSTONE (Drillers notes)
					9.00	173.73		Dark brown MUDSTONE (Drillers notes)
								Continued on Next Sheet

Remarks

1) CAT scan prior to breaking ground. No services identified. 2) Borehole terminated due to potential instability. 3) casing installed to 6m 4) borehole backfilled arisings and bentonite

Borehole Log

Borehole No. **BH04**

Sheet 2 of 2

Project Name: Cliff Hill	Project No. C2206/21/E/3401	Co-ords: 422893.40E - 408705.41N	Hole Type RO
Location: Cumberworth Lane, Denby Dale, Huddersfield, HD8 8RZ		Level: 182.73m aOD	Scale 1:50
Client: Urban Construction Interiors Ltd		Dates: 06/04/2022	Logged By ABK

Well	Water Strikes	Samples and In Situ Testing: Depth (m)	Type	Results	Depth (m)	Level (m)	Legend	Stratum Description
					12.00	170.73		VOID (complete loss of flush, drilling resistance and increase water takes) (Drillers notes) [Possible Whinmoor Coal (Cumberworth Thin)]
					13.50	169.23		Hard Stratum (Drillers notes)
					13.50	169.23		End of Borehole at 13.50m

11 12 13 14 15 16 17 18 19 20

Remarks

1) CAT scan prior to breaking ground. No services identified. 2) Borehole terminated due to potential instability. 3) casing installed to 6m 4) borehole backfilled arisings and bentonite

Borehole Log

Borehole No. **BH05**

Sheet 1 of 1

Project Name: Cliff Hill	Project No. C2206/21/E/3401	Co-ords: 422828.71E - 408710.19N	Hole Type RO
Location: Cumberworth Lane, Denby Dale, Huddersfield, HD8 8RZ		Level: 184.05m aOD	Scale 1:50
Client: Urban Construction Interiors Ltd		Dates: 08/04/2022	Logged By ABK

Well	Water Strikes	Samples and In Situ Testing: Depth (m)	Type	Results	Depth (m)	Level (m)	Legend	Stratum Description
					0.30	183.75		TOPSOIL (Drillers notes)
								Light brown SANDSTONE (Drillers notes)
					1.80	182.25		VOID (complete loss of flush, drilling resistance and increase water takes) (Drillers notes) [Possible Whinmoor Coal (Cumberworth Thick), or, Unnamed Coal]
					4.00	180.05		Hard stratum (Drillers notes)
					4.00	180.05		End of Borehole at 4.00m

Remarks

1) CAT scan prior to breaking ground. No services identified. 2) Borehole terminated due to potential instability. 3) casing installed to 4m 4) borehole backfilled arisings and bentonite

Borehole Log

Borehole No. **BH06**

Sheet 1 of 1

Project Name: Cliff Hill	Project No. C2206/21/E/3401	Co-ords: 422899.89E - 408682.86N	Hole Type RO
Location: Cumberworth Lane, Denby Dale, Huddersfield, HD8 8RZ		Level: 183.00m aOD	Scale 1:50
Client: Urban Construction Interiors Ltd		Dates: 05/04/2022	Logged By ABK

Well	Water Strikes	Samples and In Situ Testing: Depth (m)	Type	Results	Depth (m)	Level (m)	Legend	Stratum Description
					0.30	182.70		TOPSOIL (Drillers notes)
					1.10	181.90		Dark brown becoming light brown SANDSTONE (Drillers notes)
					2.00	181.00		VOID (complete loss of flush, drilling resistance and increase water takes) (Drillers notes) [Possible Whinmoor Coal (Cumberworth Thick), or, Unnamed Coal]
								End of Borehole at 2.00m

Remarks

1) CAT scan prior to breaking ground. No services identified. 2) Borehole terminated due to potential instability. 3) borehole backfilled arisings and bentonite

Borehole Log

Borehole No. **BH07**

Sheet 1 of 2

Project Name: Cliff Hill	Project No. C2206/21/E/3401	Co-ords: 422859.16E - 408650.45N	Hole Type RO
Location: Cumberworth Lane, Denby Dale, Huddersfield, HD8 8RZ		Level: 177.24m aOD	Scale 1:50
Client: Urban Construction Interiors Ltd		Dates: 04/04/2022	Logged By ABK

Well	Water Strikes	Samples and In Situ Testing: Depth (m)	Type	Results	Depth (m)	Level (m)	Legend	Stratum Description
					0.20	177.04		TOPSOIL (Drillers notes)
								Light brown SANDSTONE (Drillers notes)
					3.00	174.24		light brown SANDSTONE with rare subordinate beds of light grey MUDSTONE (Drillers notes)
					8.50	168.74		VOID (complete loss of flush, drilling resistance and increase water takes) (Drillers notes) [Possible Whinmoor Coal (Cumberworth Thick)]
					9.20	168.04		Light grey MUDSTONE (Drillers Notes)
								Continued on Next Sheet

Remarks

1) CAT scan prior to breaking ground. No services identified. 2) Borehole terminated due to potential instability. 3) casing installed to 4m 4) borehole backfilled arisings and bentonite

Borehole Log

Borehole No. **BH07**

Sheet 2 of 2

Project Name: Cliff Hill	Project No. C2206/21/E/3401	Co-ords: 422859.16E - 408650.45N	Hole Type RO
Location: Cumberworth Lane, Denby Dale, Huddersfield, HD8 8RZ		Level: 177.24m aOD	Scale 1:50
Client: Urban Construction Interiors Ltd		Dates: 04/04/2022	Logged By ABK

Well	Water Strikes	Samples and In Situ Testing: Depth (m)	Type	Results	Depth (m)	Level (m)	Legend	Stratum Description
					13.00	164.24		VOID (complete loss of flush, drilling resistance and increase water takes) (Drillers notes) [Possible Low Whinmoor Coal (Cumberworth Thin]
					14.50	162.74		End of Borehole at 14.50m

11 12 13 14 15 16 17 18 19 20

Remarks

1) CAT scan prior to breaking ground. No services identified. 2) Borehole terminated due to potential instability. 3) casing installed to 4m 4) borehole backfilled arisings and bentonite

Borehole Log

Borehole No. **BH08**

Sheet 1 of 3

Project Name: Cliff Hill	Project No. C2206/21/E/3401	Co-ords: 422821.44E - 408682.06N	Hole Type RO
Location: Cumberworth Lane, Denby Dale, Huddersfield, HD8 8RZ		Level: 180.99m aOD	Scale 1:50
Client: Urban Construction Interiors Ltd		Dates: 04/04/2022	Logged By ABK

Well	Water Strikes	Samples and In Situ Testing: Depth (m)	Type	Results	Depth (m)	Level (m)	Legend	Stratum Description
								TOPSOIL (Drillers Notes)
					0.40	180.59		Light brown SANDSTONE (Drillers notes)
					3.00	177.99		Dark orange SANDSTONE (Dillers notes)
					4.00	176.99		COAL (Drillers notes) [Possible Whinmoor Coal (Cumberworth Thick)]
					6.00	174.99		Dark grey MUDSTONE (Drillers notes)
								Continued on Next Sheet

Remarks

1) CAT scan prior to breaking ground. No services identified. 2) Borehole terminated due to potential instability. 3) casing installed to 4m 4) borehole backfilled arisings and bentonite

Borehole Log

Borehole No. **BH08**

Sheet 2 of 3

Project Name: Cliff Hill	Project No. C2206/21/E/3401	Co-ords: 422821.44E - 408682.06N	Hole Type RO
Location: Cumberworth Lane, Denby Dale, Huddersfield, HD8 8RZ		Level: 180.99m aOD	Scale 1:50
Client: Urban Construction Interiors Ltd		Dates: 04/04/2022	Logged By ABK

Well	Water Strikes	Samples and In Situ Testing: Depth (m)	Type	Results	Depth (m)	Level (m)	Legend	Stratum Description
					15.00	165.99		Light grey MUDSTONE (Drillers notes)
					18.00	162.99		Very dark grey MUDSTONE (Drillers notes)
					19.00	161.99		COAL (Drillers notes) [Possible Low Whinmoor Coal (Cumberworth Thin]
					19.50	161.49		FIRE CLAY (white clay)
					20.00	160.99		Continued on Next Sheet

11 12 13 14 15 16 17 18 19 20

Remarks

1) CAT scan prior to breaking ground. No services identified. 2) Borehole terminated due to potential instability. 3) casing installed to 4m 4) borehole backfilled arisings and bentonite

Borehole Log

Borehole No. **BH08**

Sheet 3 of 3

Project Name: Cliff Hill	Project No. C2206/21/E/3401	Co-ords: 422821.44E - 408682.06N	Hole Type RO
Location: Cumberworth Lane, Denby Dale, Huddersfield, HD8 8RZ		Level: 180.99m aOD	Scale 1:50
Client: Urban Construction Interiors Ltd		Dates: 04/04/2022	Logged By ABK

Well	Water Strikes	Samples and In Situ Testing: Depth (m)	Type	Results	Depth (m)	Level (m)	Legend	Stratum Description
								Light grey MUDSTONE (Drillers notes)
					22.00	158.99		End of Borehole at 22.00m

Remarks

1) CAT scan prior to breaking ground. No services identified. 2) Borehole terminated due to potential instability. 3) casing installed to 4m 4) borehole backfilled arisings and bentonite

Borehole Log

Borehole No. **BH09**

Sheet 1 of 1

Project Name: Cliff Hill	Project No. C2206/21/E/3401	Co-ords: 422849.58E - 408705.61N	Hole Type RO
Location: Cumberworth Lane, Denby Dale, Huddersfield, HD8 8RZ		Level: 183.60m aOD	Scale 1:50
Client: Urban Construction Interiors Ltd		Dates: 08/04/2022	Logged By ABK

Well	Water Strikes	Samples and In Situ Testing: Depth (m)	Type	Results	Depth (m)	Level (m)	Legend	Stratum Description
					0.30	183.30		TOPSOIL (Drillers notes)
								Light grey SANDSTONE (Drillers notes)
					1.80	181.80		VOID (Drillers notes) [Possible Whinmoor Coal (Cumberworth Thick), or, Unnamed Coal]
					4.00	179.60		End of Borehole at 4.00m

Remarks

1) CAT scan prior to breaking ground. No services identified. 2) Borehole terminated due to potential instability. 3) casing installed to 4m 4) borehole backfilled arisings and bentonite

Environmental Geotechnical Specialists

Appendix 6

Trial Pit Records

Rogers Geotechnical Services Ltd Telephone 0843 50 666 87 Fax 0843 51 599 30
Email enquiries@rogersgeotech.co.uk www.rogersgeotech.co.uk

Trial Pit Log

Trialpit No **TP01**

Sheet 1 of 1

Project Name: Cliff Hill	Project No. C2206/21/E/3401	Co-ords: 422831.83 - 408740.26 Level: 182.47	Date 04/04/2022
Location: Cumberworth Lane, Denby Dale, Huddersfield, HD8 8RZ		Dimensions (m): Depth 2.00 — 2 × 0.6	Scale 1:50
Client: Urban Construction Interiors Ltd			Logged CM

Water Strike	Samples and In Situ Testing: Depth	Type	Results	Depth (m)	Level (m)	Legend	Stratum Description
				0.25	182.22		TOPSOIL (Dark brown organic silty fine SAND).
				0.80	181.67		MADE GROUND/ FILL (Soft light grey mottled light brown sandy gravelly CLAY. Sand is fine to coarse. Gravel is sub rounded to angular medium to coarse of sandstone siltstone and ironstone)
	1.00 - 1.01	D					Extremely weak light yellowish grey SILTSTONE (Recovered as sandy angular tabular GRAVEL. Sand is fine to coarse)
	1.50 - 2.00	B					
				2.00	180.47		End of pit at 2.00 m

Remarks: 1) CAT scan prior to breaking ground. No services identified. 2) Pit terminated due to refusal

Stability: Good

Trial Pit Log

Trialpit No **TP02**

Sheet 1 of 1

Project Name: Cliff Hill	Project No. C2206/21/E/3401	Co-ords: 422858.04 - 408737.10 Level: 181.75	Date 04/04/2022
Location: Cumberworth Lane, Denby Dale, Huddersfield, HD8 8RZ		Dimensions (m): 2.5 × 0.6, Depth 1.95	Scale 1:50
Client: Urban Construction Interiors Ltd			Logged CM

Water Strike	Samples and In Situ Testing: Depth	Type	Results	Depth (m)	Level (m)	Legend	Stratum Description
				0.35	181.40		TOPSOIL (Dark brown organic silty fine SAND).
	0.65 - 0.66	D		0.65	181.10		MADE GROUND/ FILL (Light brownish grey locally clayey silty sandy sub angular to angular medium to coarse GRAVEL of siltstone sandstone ironstone. Sand is fine to medium).
	1.00 - 1.50	B					Extremely weak light yellowish grey SILTSTONE and fine grained SANDSTONE (Recovered as sandy angular medium to coarse GRAVEL. Sand is fine to coarse)
				1.95	179.80		End of pit at 1.95 m

Remarks: 1) CAT scan prior to breaking ground. No services identified. 2) Pit terminated due to refusal

Stability: Good

Trial Pit Log

Trialpit No **TP03**

Sheet 1 of 1

Project Name: Cliff Hill	Project No. C2206/21/E/3401	Co-ords: 422893.45 - 408717.63 Level: 181.69	Date 04/04/2022
Location: Cumberworth Lane, Denby Dale, Huddersfield, HD8 8RZ		Dimensions (m): Depth 1.35 — 2 × 0.6	Scale 1:50
Client: Urban Construction Interiors Ltd			Logged CM

Water Strike	Samples and In Situ Testing: Depth	Type	Results	Depth (m)	Level (m)	Legend	Stratum Description
				0.35	181.34		TOPSOIL (Dark brown organic silty fine SAND).
				0.45	181.24		Medium dense light brown slightly sandy sub angular tabular medium to coarse GRAVEL of siltstone and fine grained SANDSTONE. Sand is fine to coarse.
				1.35	180.34		Medium strong light grey locally stained orange thinly bedded SILTSTONE and locally fine grained SANDSTONE (Recovered as angular tabular coarse gravel and cobbles)
							End of pit at 1.35 m

Remarks: 1) CAT scan prior to breaking ground. No services identified. 2) Pit terminated due to refusal

Stability: Good

Trial Pit Log

Trialpit No **TP04**

Sheet 1 of 1

Project Name: Cliff Hill	Project No. C2206/21/E/3401	Co-ords: 422897.78 - 408671.07 Level: 179.40	Date 04/04/2022
Location: Cumberworth Lane, Denby Dale, Huddersfield, HD8 8RZ		Dimensions (m): 2 × 0.6, Depth 1.90	Scale 1:50
Client: Urban Construction Interiors Ltd			Logged CM

Water Strike	Samples and In Situ Testing: Depth	Type	Results	Depth (m)	Level (m)	Legend	Stratum Description
				0.38	179.02		TOPSOIL (Dark brown organic silty fine SAND).
							Medium strong orange locally yellow thinly to thickly bedded SANDSTONE (recovered as cobbles / angular tabular flags) .
				1.90	177.50		End of pit at 1.90 m

Remarks: 1) CAT scan prior to breaking ground. No services identified. 2) Pit terminated due to refusal

Stability: Good

Trial Pit Log

Trialpit No **TP05**

Sheet 1 of 1

Project Name: Cliff Hill	Project No. C2206/21/E/3401	Co-ords: 422898.72 - 408673.15 Level: 180.00	Date 04/04/2022
Location: Cumberworth Lane, Denby Dale, Huddersfield, HD8 8RZ		Dimensions (m): 1.8 × 0.6, Depth 1.10	Scale 1:50
Client: Urban Construction Interiors Ltd			Logged CM

Water Strike	Samples and In Situ Testing: Depth	Type	Results	Depth (m)	Level (m)	Legend	Stratum Description
				0.35	179.65		TOPSOIL (Dark brown organic silty fine SAND).
				1.10	178.90		Medium strong thinly bedded orangish brown fine to medium grained SANDSTONE . (Recovered as sandy gravelly COBBLES. Sand is fine to coarse. Gravel is angular tabular and coarse. Cobbles are angular tabular flags) End of pit at 1.10 m

Remarks: 1) CAT scan prior to breaking ground. No services identified. 2) Pit terminated due to refusal

Stability: Good

Trial Pit Log

Trialpit No **TP06**

Sheet 1 of 1

Project Name: Cliff Hill	Project No. C2206/21/E/3401	Co-ords: 422864.39 - 408688.85 Level: 181.79	Date 04/04/2022
Location: Cumberworth Lane, Denby Dale, Huddersfield, HD8 8RZ		Dimensions (m): Depth 1.30; 1.8 × 0.6	Scale 1:50
Client: Urban Construction Interiors Ltd			Logged CM

Water Strike	Samples and In Situ Testing: Depth	Type	Results	Depth (m)	Level (m)	Legend	Stratum Description
				0.00			TOPSOIL (Dark brown organic silty fine SAND).
	0.50 - 1.00	B		0.45	181.34		Medium strong thinly to thickly bedded orangish brown SANDSTONE (Recovered as sandy angular tabular GRAVEL AND cobbles. Sand is fine to coarse. Gravel and cobbles are angular and tabular/flags)
				1.30	180.49		End of pit at 1.30 m

Remarks: 1) CAT scan prior to breaking ground. No services identified. 2) Pit terminated due to refusal

Stability: Good

Trial Pit Log

Trialpit No **TP07**

Sheet 1 of 1

Project Name: Cliff Hill	Project No. C2206/21/E/3401	Co-ords: 422839.38 - 408697.44 Level: 182.59	Date 04/04/2022
Location: Cumberworth Lane, Denby Dale, Huddersfield, HD8 8RZ		Dimensions (m): 1.9 × 0.6, Depth 1.40	Scale 1:50
Client: Urban Construction Interiors Ltd			Logged CM

Water Strike	Samples and In Situ Testing: Depth	Type	Results	Depth (m)	Level (m)	Legend	Stratum Description
	0.35 - 0.60	B		0.35	182.24		TOPSOIL (Dark brown organic silty fine SAND).
				0.60	181.99		Orangish brown sandy sub angular tabular medium to coarse GRAVEL of sandstone. Sand is fine to coarse.
							Medium strong thinly bedded light grey locally orange fine grained SANDSTONE (Recovered as sandy angular tabular coarse GRAVEL and cobbles / Flags of sandstone. Sand is fine to coarse)
				1.40	181.19		End of pit at 1.40 m

Remarks: 1) CAT scan prior to breaking ground. No services identified. 2) Pit terminated due to refusal

Stability: Good

Trial Pit Log

Trialpit No **TP08**

Sheet 1 of 1

Project Name: Cliff Hill	Project No. C2206/21/E/3401	Co-ords: 422810.80 - 408659.60 Level: 178.84	Date 04/04/2022
Location: Cumberworth Lane, Denby Dale, Huddersfield, HD8 8RZ		Dimensions (m): Depth 1.30 — 1.9 × 0.6	Scale 1:50
Client: Urban Construction Interiors Ltd			Logged CM

Water Strike	Samples and In Situ Testing: Depth	Type	Results	Depth (m)	Level (m)	Legend	Stratum Description
				0.25	178.58		TOPSOIL (Dark brown organic silty fine SAND).
	0.50 - 0.80	B		0.85	177.98		Dense orangish brown sandy GRAVEL with high cobble content. Sand is medium to coarse. Gravel is angular tabular medium to coarse of fine to medium grained sandstone.
				1.30	177.54		Medium strong thinly to thickly laminated orangish brown fine to ,medium grained SANDSTONE. (Recovered as angular tabular medium to coarse gravel and cobbles). End of pit at 1.30 m

Remarks: 1) CAT scan prior to breaking ground. No services identified. 2) Pit terminated due to refusal

Stability: Good

Trial Pit Log

Trialpit No **TP09**

Sheet 1 of 1

Project Name: Cliff Hill	Project No. C2206/21/E/3401	Co-ords: 422848.51 - 408664.73 Level: 178.73	Date 04/04/2022
Location: Cumberworth Lane, Denby Dale, Huddersfield, HD8 8RZ		Dimensions (m): Depth 1.20, 2 × 0.6	Scale 1:50
Client: Urban Construction Interiors Ltd			Logged CM

Water Strike	Samples and In Situ Testing: Depth	Type	Results	Depth (m)	Level (m)	Legend	Stratum Description
	0.30 - 0.60	B		0.25	178.48		TOPSOIL (Dark brown organic silty fine SAND).
				1.20	177.53		Weak locally medium strong thinly bedded light grey locally orangish brown fine to medium grained SANDSTONE. (Recovered as sandy GRAVEL/ COBBLES. Sand is medium to coarse. Gravel and cobbles are angular tabular of sandstone) End of pit at 1.20 m

Remarks: 1) CAT scan prior to breaking ground. No services identified. 2) Pit terminated due to refusal

Stability: Good

Trial Pit Log

Trialpit No **TP10**

Sheet 1 of 1

Project Name: Cliff Hill	Project No. C2206/21/E/3401	Co-ords: 422875.39 - 408645.64 Level: 176.79	Date 04/04/2022
Location: Cumberworth Lane, Denby Dale, Huddersfield, HD8 8RZ		Dimensions (m): Depth 1.30, 2, 0.6	Scale 1:50
Client: Urban Construction Interiors Ltd			Logged CM

Water Strike	Samples and In Situ Testing: Depth	Type	Results	Depth (m)	Level (m)	Legend	Stratum Description
				0.30	176.49		TOPSOIL (Dark brown organic silty fine SAND).
				1.30	175.49		Weak thinly bedded light orangish brown fine to medium grained SANDSTONE. (Recovered as sandy GRAVEL/ COBBLES. Sand is medium to coarse. Gravel and cobbles are angular tabular/flaggy) End of pit at 1.30 m

Remarks: 1) CAT scan prior to breaking ground. No services identified. 2) Pit terminated due to refusal

Stability: Good

Trial Pit Log

Trialpit No **TP11**

Sheet 1 of 1

Project Name: Cliff Hill	Project No. C2206/21/E/3401	Co-ords: 422902.28 - 408651.95 Level: 176.82	Date 04/04/2022
Location: Cumberworth Lane, Denby Dale, Huddersfield, HD8 8RZ		Dimensions (m): Depth 1.25 — 2 × 0.6	Scale 1:50
Client: Urban Construction Interiors Ltd			Logged CM

Water Strike	Samples and In Situ Testing: Depth	Type	Results	Depth (m)	Level (m)	Legend	Stratum Description
				0.30	176.52		TOPSOIL (Dark brown organic silty fine SAND).
				1.25	175.57		Weak to medium strong thinly bedded light grey and orange fine to medium grained SANDSTONE. (Recovered as sandy coarse angular tabular GRAVEL/ COBBLES. Sand is medium to coarse. Gravel and cobbles are angular and tabular/flaggy) End of pit at 1.25 m

Remarks: 1) CAT scan prior to breaking ground. No services identified. 2) Pit terminated due to refusal

Stability: Good

Trial Pit Log

Trialpit No **TP12**

Sheet 1 of 1

Project Name: Cliff Hill	Project No. C2206/21/E/3401	Co-ords: 422855.31 - 408679.91 Level: 180.53	Date 05/04/2022
Location: Cumberworth Lane, Denby Dale, Huddersfield, HD8 8RZ		Dimensions (m): 1 × 0.3 Depth 0.90	Scale 1:50
Client: Urban Construction Interiors Ltd			Logged CM

Water Strike	Samples and In Situ Testing: Depth	Type	Results	Depth (m)	Level (m)	Legend	Stratum Description
				0.35	180.18		TOPSOIL
				1.00	179.53		Weak locally medium strong thinly bedded light grey locally orangish brown fine to medium grained SANDSTONE. (Recovered as sandy GRAVEL/ COBBLES. Sand is medium to coarse. Gravel and cobbles are angular tabular of sandstone) End of pit at 0.90 m

Remarks: 1) CAT scan prior to breaking ground. No services identified. 2) Pit terminated due to refusal

Stability: Good

Trial Pit Log

Trialpit No
TP13
Sheet 1 of 1

Project Name: Cliff Hill	Project No. C2206/21/E/3401	Co-ords: 422871.88 - 408721.05 Level: 183.46	Date 05/04/2022
Location: Cumberworth Lane, Denby Dale, Huddersfield, HD8 8RZ		Dimensions (m): Depth 1.25, 1.2, 3	Scale 1:50
Client: Urban Construction Interiors Ltd			Logged CM

Water Strike	Samples and In Situ Testing: Depth	Type	Results	Depth (m)	Level (m)	Legend	Stratum Description
							TOPSOIL (Dark brown organic silty fine SAND).
				0.45	183.01		INTACT dirty coal seperated by a thin clay parting [Possible Whinmoor Coal (Cumberworth Thick), or, Unnamed Coal]
				1.10	182.36		SANDSTONE
				1.20	182.26		End of pit at 1.25 m

Remarks: 1) CAT scan prior to breaking ground. No services identified. 2) Pit terminated due to refusal

Stability: Good

Trial Pit Log

Trialpit No
TP14
Sheet 1 of 1

Project Name: Cliff Hill	Project No. C2206/21/E/3401	Co-ords: 422873.61 - 408731.25 Level: 181.41	Date 05/04/2022
Location: Cumberworth Lane, Denby Dale, Huddersfield, HD8 8RZ		Dimensions (m): 1.7 × 0.3, Depth 1.05	Scale 1:50
Client: Urban Construction Interiors Ltd			Logged CM

Water Strike	Samples and In Situ Testing: Depth	Type	Results	Depth (m)	Level (m)	Legend	Stratum Description
				0.40	181.00		MADE GROUND/ FILL (Soft light grey mottled light brown sandy gravelly CLAY. Sand is fine to coarse. Gravel is sub rounded to angular medium to coarse of sandstone siltstone and ironstone)
				1.05	180.36		Firm light yellowish brown very sandy silty CLAY End of pit at 1.05 m

Remarks: 1) CAT scan prior to breaking ground. No services identified. 2) Pit terminated due to refusal

Stability: Good

Trial Pit Log

Trialpit No **TP15**

Sheet 1 of 1

Project Name: Cliff Hill	Project No. C2206/21/E/3401	Co-ords: 422901.80 - 408737.55 Level: 178.47	Date 05/04/2022
Location: Cumberworth Lane, Denby Dale, Huddersfield, HD8 8RZ		Dimensions (m): 2 × 0.3 Depth 1.24	Scale 1:50
Client: Urban Construction Interiors Ltd			Logged CM

Water Strike	Samples and In Situ Testing: Depth	Type	Results	Depth (m)	Level (m)	Legend	Stratum Description
				0.40	178.07		MADE GROUND/ FILL (Soft light grey mottled light brown sandy gravelly CLAY. Sand is fine to coarse. Gravel is sub rounded to angular medium to coarse of sandstone siltstone and ironstone)
				0.55	177.92		TOPSOIL (Dark brown organic silty fine SAND).
							Firm friable thinly laminated light grey mottled orangish brown silty CLAY
				1.24	177.23		End of pit at 1.24 m

Remarks: 1) CAT scan prior to breaking ground. No services identified. 2) Pit terminated due to refusal

Stability: Good

APPENDIX G

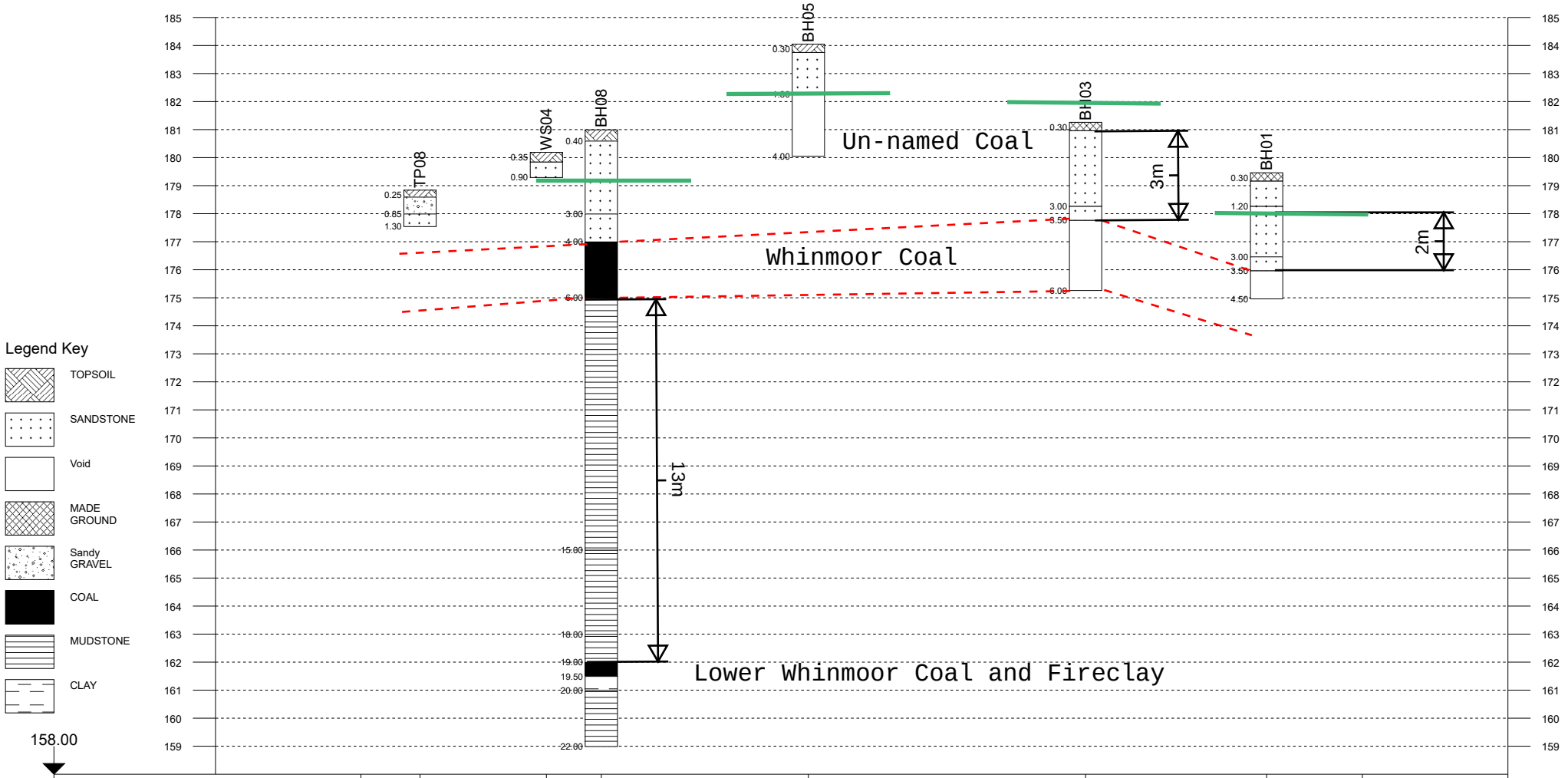
NOTES:	CLIENT: Urban Group (York) Ltd	PROJECT No: P10350	DATE: July 2023	DESIGN/DRAWN: RDH
	PROJECT: Cliff Hill, Cumberworth Lane, Denby Dale, Huddersf	DRAWING NUMBER: Preliminary	ISSUE: Preliminary	
	TITLE: Cross Section Plan			

GRM Development Solutions Ltd
Tel: 01283 551 249
mail@grm-uk.com www.grm-uk.com

Project Id: P10350
Project Title: Cliff Hill, Cumberworth Lane, Denby Dale, Huddersfield
Location:
Client: Urban Group (York) Ltd

Title: Section Line 1
Vertical Scale: 1:207
Horizontal Scale: 1:795
Engineer: GRM Development Solutions Ltd.

Approximate FFL from nearby plots
Conjectured coal seam depth

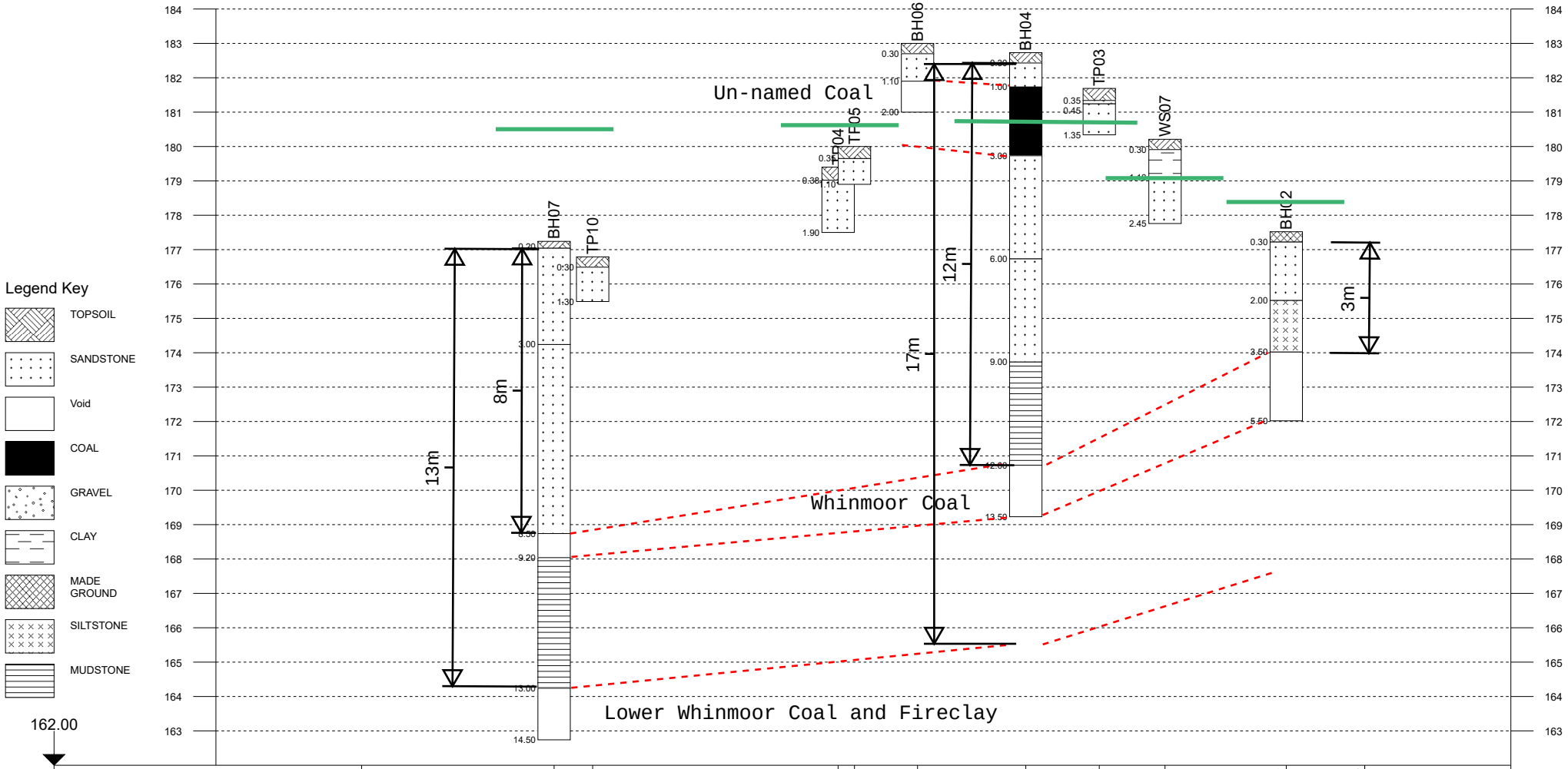


Chainage (m)	0.00	8.10	25.42	32.95	61.32	99.31	124.12	137.24
Offset (m)		2.14	5.68	1.46	4.79	4.31	3.34	
Elevation (mAOD)		178.84	180.19	180.99	184.05	181.26	179.46	

Project Id: P10350
Project Title: Cliff Hill, Cumberworth Lane, Denby Dale, Huddersfield
Location:
Client: Urban Group (York) Ltd

Title: Section line 2
Vertical Scale: 1:169
Horizontal Scale: 1:797
Engineer: GRM Development Solutions Ltd.

Approximate FFL from nearby plots
Conjectured coal seam depth

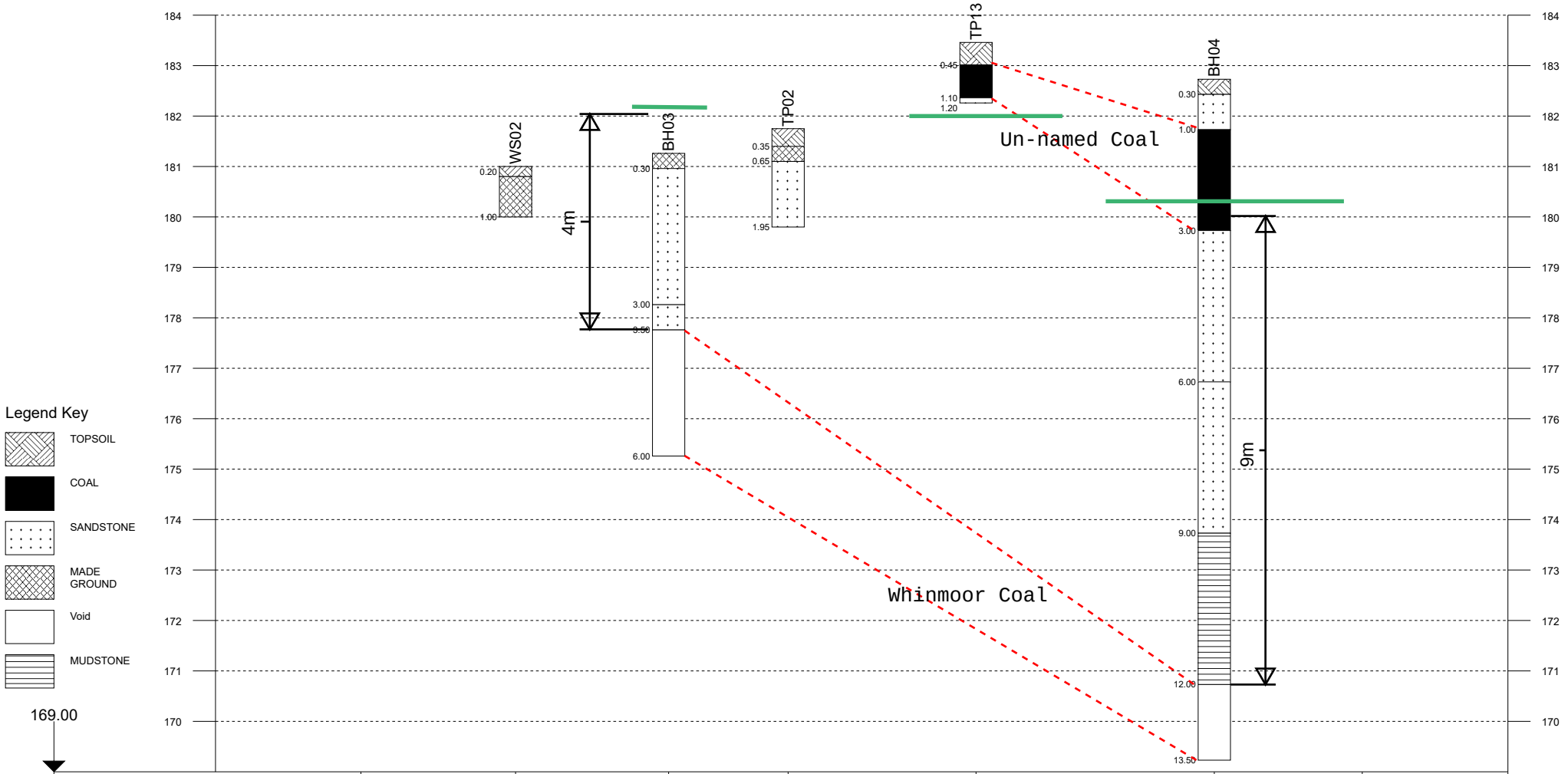


Chainage (m)	0.00	26.40	31.68	65.34	67.58	76.23	91.07	101.15	110.16	126.79	137.55
Offset (m)		4.69	11.39	15.32	14.91	10.34	7.84	14.75	10.54	5.96	
Elevation (mAOD)		177.24	176.79	179.40	180.00	183.00	182.73	181.69	180.21	177.52	

Project Id: P10350
Project Title: Cliff Hill, Cumberworth Lane, Denby Dale, Huddersfield
Location:
Client: Urban Group (York) Ltd

Title: Section line 3
Vertical Scale: 1:115
Horizontal Scale: 1:646
Engineer: GRM Development Solutions Ltd.

Approximate FFL from nearby plots
Conjectured coal seam depth

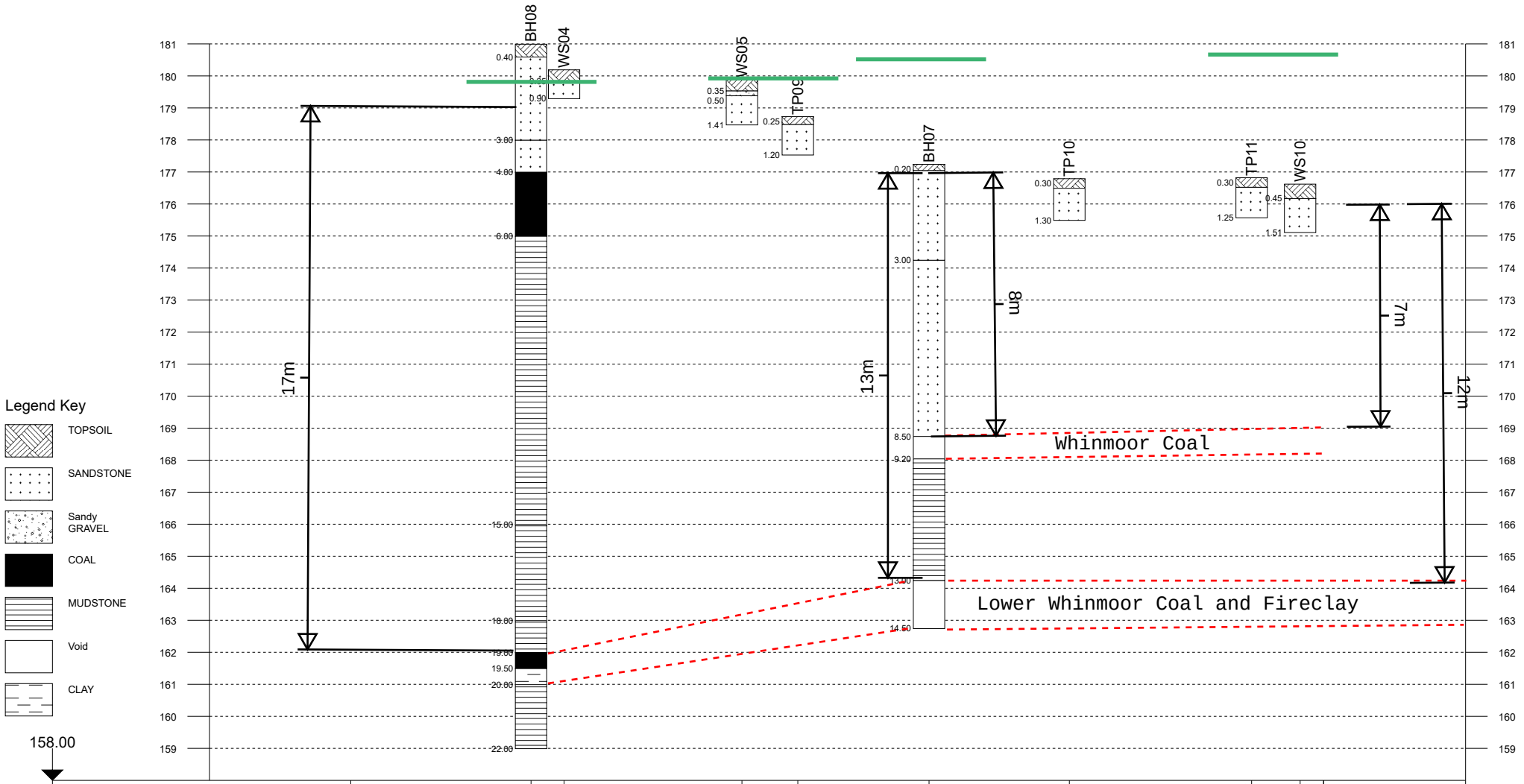


Chainage (m)	0.00	17.22	34.27	47.57	68.50	95.03	111.51
Offset (m)	1.53	1.38	1.01	2.34	0.42		
Elevation (mAOD)	181.00	181.26	181.75	183.46	182.73		

Project Id: P10350
Project Title: Cliff Hill, Cumberworth Lane, Denby Dale, Huddersfield
Location:
Client: Urban Group (York) Ltd

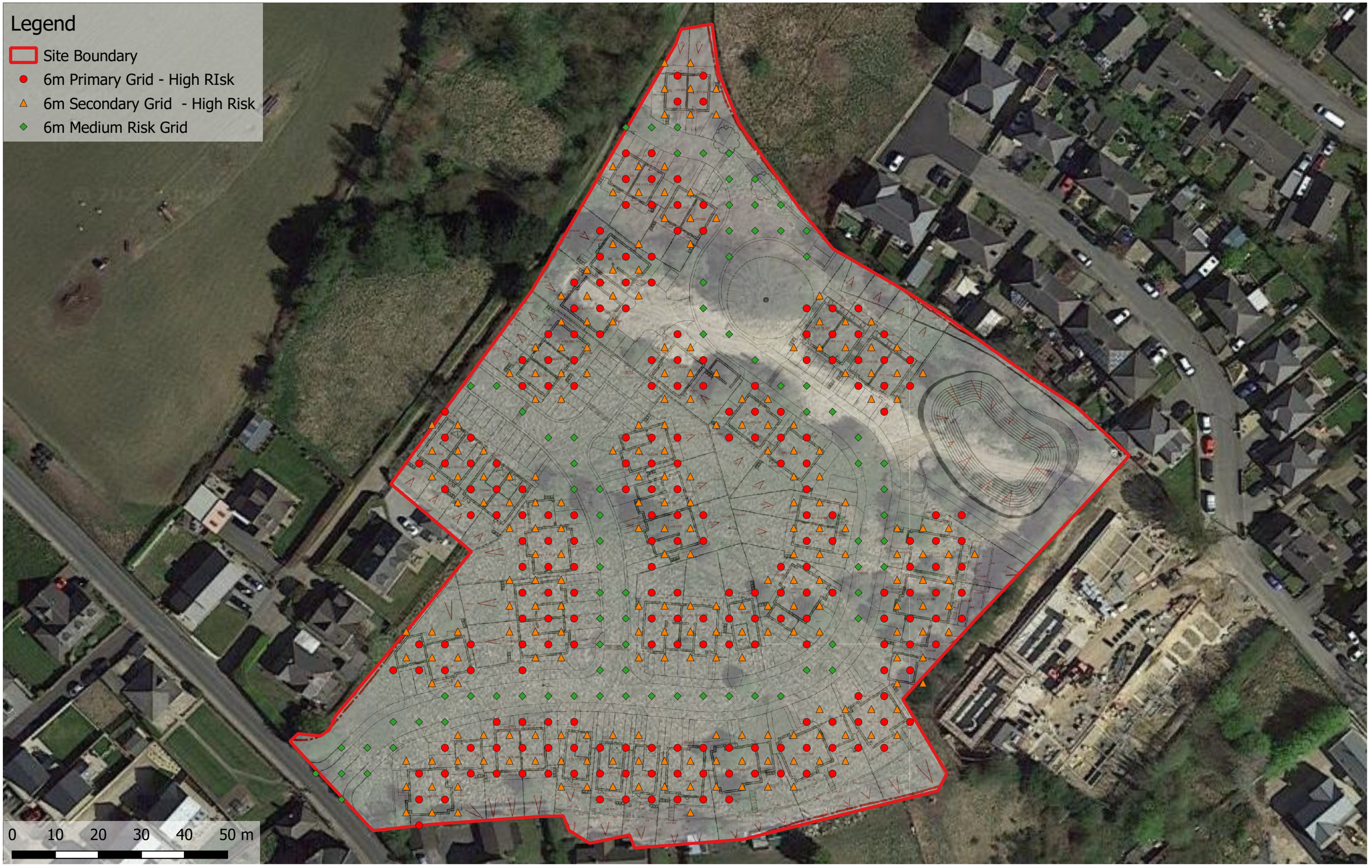
Title: Section line 4
Vertical Scale: 1:176
Horizontal Scale: 1:673
Engineer: GRM Development Solutions Ltd.

Approximate FFL from nearby plots
Conjectured coal seam depth



Chainage (m)	0.00	21.52	25.46	46.69	53.36	69.02	85.77	107.53	113.32	116.11			
Offset (m)	4.34	3.34	4.91	0.03	8.52	6.07	10.95	13.42					
Elevation (mAOD)	180.99	180.19	179.88	178.73	177.24	176.79	176.82	176.62					

APPENDIX H



NOTES:

- Based on 6m primary grid with 3m centres under plots

CLIENT:	Urban Group (York) Ltd
PROJECT:	Cliff Hill, Cumberworth Lane, Denby Dale, Huddersf
TITLE:	Proposed Drill and Grout Treatment Grid

PROJECT No: P10350	DATE: July 2023	DESIGN/DRAWN: RDH
DRAWING NUMBER: Preliminary	ISSUE: Preliminary	

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APPENDIX I

SCHEDULE		
TYPE A	8X	TYPE A - 2 BED GIA 71.9m²
TYPE B	1X	TYPE B - 3 BED GIA 87.2m²
TYPE C	4X	TYPE C - 4 BED GIA 144.4m²
TYPE D	4X	TYPE D - 4 BED GIA 134.8m²
TYPE E	6X	TYPE E - 5 BED GIA 228.4m²
TYPE F	3X	TYPE F - 4 BED GIA 148.2m²
TYPE G	8X	TYPE G - 3 BED GIA 140.6m²
TYPE H	4X	TYPE H - 4 BED GIA 143.2m²
TYPE I	7X	TYPE I - 4 BED GIA 191.3m²
TYPE J	2X	TYPE J - 5 BED GIA 260.1m²
TOTAL UNITS - 47		

P.O.S

*NOTE
Area in schedule are indicative.
APPROX GIFA - 7151.1 m²

REV: A	DATE: JUNE 22	DRAWN: TC	CHECKED: MH

Amended levels

REVISIONS

urban

RESIDENTIAL DEVELOPMENT

DENBY DALE

PROPOSED LEVELS PLAN

Drawn:	TC	Scale:	1:500 @ A2
Date:	May 22	Checked:	MH

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