

Environmental
Geotechnical
Specialists



COAL MINING INVESTIGATION REPORT

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Report on Rotary Probing

Location: **Whitley Road**
Lower Whitley, Dewsbury, WF12 0NB

For: Paul Collins

Report No. C3619/23/E/5493

Report date: August 2023

For and on behalf of **Rogers Geotechnical Services Ltd**

Steven Hale BSc
Geo-environmental Technician

Rob Palmer MSc FGS ACIEH
Senior Geo-environmental Engineer

1. Introduction

It is understood that the site is to be developed by the construction of 2no. new residential dwellings with associated parking and soft landscaping. As part of the planning process a site investigation has been undertaken to establish if coal workings are present beneath the area of the proposed works. This report presents the data obtained and discusses the ground conditions in relation to the proposed development.

2. Limitations

The recommendations made and opinions expressed in this report are based on the ground conditions revealed by the site works, together with an assessment of the site and of the laboratory test results. Whilst opinions may be expressed relating to sub-soil conditions in parts of the site not investigated, for example between borehole positions, these are for guidance only and no liability can be accepted for their accuracy.

This report has been prepared in accordance with our understanding of current best practice. However, new information or legislation, or changes to best practice may necessitate revision of the report after the date of issue.

3. Preliminary Desk Study

The following information has been considered during the works.

- Appraisal of available on-line British Geological Survey and Coal Authority data.

- Review of the Coal Mining Risk Assessment (CMRA) provided by the client, produced by RB Geotechnical (ref: RBG202)

It was recommended in the coal mining risk assessment that 2no. to 3no. rotary openhole boreholes be progressed up to 30m below ground level to investigate potential mine workings.

4. Fieldworks

4.1 Acquisition of Coal Authority Permit

In order to undertake this investigation, it was necessary to obtain permission to enter or disturb Coal Authority interests. This permission was granted on the 17th July 2023 as permit reference number 26961, which is presented in Appendix 1 to this report. In accordance with the joint Coal Authority and Health and Safety Executive positioning statement, and under the requirements of the permit, the works were undertaken employing water flush drilling techniques. Furthermore, the drillers wore gas detectors on their person throughout the works.

4.2 Rotary Open-hole Boreholes

The fieldworks were completed on the 21st and 24th of July 2023, in accordance with the instruction to proceed issued by the client. These works were required in order to prove that workings were not present to a depth of 30m beneath this site.

The boreholes were sunk using a Comacchio 205 rotary drilling rig using rotary open-hole drilling techniques and employing 130mm diameter drag and tricone roller bits. Where necessary, 140mm diameter casing was temporarily installed through the overburden to support the bore. The investigation was undertaken using water flush drilling techniques in accordance with the Coal Authority and Health and Safety Executive positioning statement. Drill chippings brought to surface in the flush returns were inspected by the driller on a screen, which forms part of the re-circulation tanks. In addition, representative disturbed samples of the arisings were taken at regular depth intervals and sealed in plastic containers. The borehole positions are shown on the site plan, which is presented in Appendix 2 and the strata conditions are presented on the borehole records in Appendix 3.

A summary of the works completed is presented below:

4.3 Summary of Works

Location	Dates Drilled	Depth (m)	Comments
RO1	24/07/2023	30	Target depth reached.
RO2	21/07/2023	30	Target depth reached.

5. Geological Appraisal

The available published geological data for the site has been examined and the following table presents the anticipated geology.

Strata Type	Strata Name ¹	Previous Name	Description ²
Superficial Geology	None recorded	-	-
Solid Geology	Lepton Edge Rock	-	Regionally the Lepton Edge Rock (also referred to as the Gomersal Rock) is a fine-grained, cross-bedded flaggy sandstone that forms prominent features. On the Huddersfield Sheet the Lepton Edge Rock is fine to very fine-grained, thinly bedded to flaggy sandstone.

It should be appreciated that the site is underlain by a sandstone member of the Pennine Lower Coal Measures Formation. There are no geological dip indicators relevant to the site (i.e. within the same faulted block) shown on the available geological map data. However, taking into account the outcrop pattern of the strata and the topography of the area, it may be assumed that the solid geology gently dips to the east. In addition, the nearest geological dip indicator to the site suggests that the strata dips 4° to the east.

There are two notable coal seams that outcrop within the vicinity of the site, as summarised below:

Seam Name	Seam Thickness*	Outcrop Distance from Site*
Second Brown Metal Coal (2BM)	0.0m to 1.0m	100m W
Middleton Little Coal (ML)	0.2m to 0.9m	200m S

*All distances are given as approximations only. It should be noted that coal seam thicknesses may vary over relatively short distances.

6. Strata Conditions

In accordance with the geology of the area, the succession has been shown to include the following:

Depth to Base (m)	Strata Type	Positions Strata was Recorded	Groundwater (m)
0.30	TOPSOIL	All	None
1.00	Dark brown sandy CLAY	RO1	None
1.00	Light brownish orange sandy CLAY	RO2	None
15.00	Dark orangish brown and light brown SANDSTONE	RO1	None

¹ Sources: British Geological Survey (NERC) Map Sheets 77; Huddersfield; Solid and Drift Edition, and the Geology of Britain Viewer [online resource from www.bgs.ac.uk]

10.00	Light brownish grey SANDSTONE	RO2	None
+30.00	Dark grey and light grey MUDSTONE	RO1	None
+30.00	Interbedded light greyish brown and dark grey SANDSTONE and MUDSTONE	RO2	None

'+' Denotes that the strata extended below the termination depth of the investigated positions, thus the extent of the deposit is only proven to the depths indicated.

During this investigation, after initially encountering approximately 0.30m of topsoil, sandy clay was revealed to a maximum depth of 1.00m. This stratum is anticipated to represent the upper most weathered fraction of the Lepton Edge Rock, as indicated by the geological data for the site. Casing was installed to 6.00m within RO1 and 3.00m in RO2 due to soft ground conditions.

Below this stratum, competent layers of the Lepton Edge Rock and then Pennine Lower Coal Measures Formation were revealed to a depth of 30m, comprising interbedded layers of mudstones and sandstone. No coal seams or evidence of worked seams were encountered during the investigation.

No loss of resistance was recorded during the drilling, however, the drillers did note that water was being lost at around 30m in both boreholes. This was likely naturally fractured rock and is very unlikely to represent on workings due to there being no loss in resistance.

No groundwater strikes were noted during the investigation. In any event, it should be appreciated that groundwater levels are subject to seasonal variation or changes in local drainage conditions.

In addition, no methane was detected, with levels of 0% carbon dioxide and 20.8% oxygen being recorded during the drilling phase.

7. Discussion of Ground Conditions

On the basis of all of the information provided above it is noted that no coal seams or evidence of workings were encountered during the investigation.

In addition, the results of the gas monitoring conducted during the drilling phase suggest that there is a negligible risk of gasses associated with mine workings being present below the proposed development.

8. Risk Assessment

In light of the findings of this investigation, the risk to the proposed development is considered with reference to the following ratings and definitions:

- Low - The possibility of instability is unlikely therefore no further action is necessary.
- Moderate - The possibility of instability is likely and further investigation or remedial action may be required.
- High - The possibility of instability is highly likely and further investigation or remedial action will be necessary.

Table 5: Development Specific Risk Assessment

Item	Risk of Instability	Coal Seam(s) Considered	Risk Rating
1	Shallow coal workings	Second Brown Metal Coal	Low

In view of all the information obtained in this investigation, it is considered that there is a null to negligible risk of ground movement as a consequence of coal workings beneath the site.

9. References

- British Standards Institution (2015 +A1: 2020) BS 5930: *Code of practice for ground investigations*, B.S.I., London.
- Healy, P. and Head, J., 1984. *Construction over abandoned mine workings*. London: Construction Industry Research and Information Association [for] Directorate of Civil Engineering Services, Property Services Agency, Dept. of the Environment.
- Parry, D. and Chiverrell, C., 2019. *Abandoned mine workings manual*. London: CIRIA.
- British Geological Survey (NERC) (2023), BGS, Keyworth.
 - Geology of Britain Viewer:
(http://maps.bgs.ac.uk/geologyviewer_google/googleviewer.html)
 - Borehole Scans:
(<http://www.bgs.ac.uk/data/boreholescans/>)
 - Lexicon of Named Rock Units:
(<http://www.bgs.ac.uk/lexicon/>)

Appendix 1

Coal Authority Permit



The Coal
Authority

Granted Permit Boundary

Permit Ref: 26961

Permit Boundary:



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Appendix 2

Site Plan



Notes:

Investigation positions approximated from site operative's notes.



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Client:

Paul collins

Job Number:

C3619/23/E/5493

Project Details:

Lower Whitley, Dewsbury

Scale: Not to scale - reference only



Appendix 3

Borehole Records



Borehole Log

Borehole No.

R01

Sheet 1 of 3

Project Name: Whitley Road

Project No.
C3619/23/E/5493

Co-ords:

Hole Type
RO

Location: Lower Whitley, Dewsbury, WF12 0NB

Level:

Scale
1:50

Client: Paul Collins

Dates: 24/07/2023

Logged By
AB

Well	Water Strikes	Samples and In Situ Testing			Depth (m)	Level (m)	Legend	Stratum Description	
		Depth (m)	Type	Results					
					0.30		TOPSOIL (Drillers notes).		
							Dark brown sandy CLAY (Drillers notes).		
					1.00		Dark orangish brown SANDSTONE (Drillers notes). LEPTON EDGE ROCK	1	
								2	
								3	
								4	
								5	
								6	
								7	
								8	
								9	
					10.00			10	

Remarks

Casing to 6m.
1 hour taken to fill bowser.





Borehole Log

Borehole No.

R01

Sheet 2 of 3

Project Name: Whitley Road

Project No.
C3619/23/E/5493

Co-ords:

Hole Type
RO

Location: Lower Whitley, Dewsbury, WF12 0NB

Level:

Scale
1:50

Client: Paul Collins

Dates: 24/07/2023

Logged By
AB

Well	Water Strikes	Samples and In Situ Testing			Depth (m)	Level (m)	Legend	Stratum Description	
		Depth (m)	Type	Results					
							Light brown SANDSTONE (Drillers notes). LEPTON EGDE ROCK		11
									12
									13
									14
					15.00		Dark grey MUDSTONE (Drillers notes). PENNINE LOWER COAL MEASURES FORMATION		15
									16
									17
									18
									19
									20

Remarks

Casing to 6m.
1 hour taken to fill bowser.





Borehole Log

Borehole No.

R01

Sheet 3 of 3

Project Name: Whitley Road

Project No.
C3619/23/E/5493

Co-ords:

Hole Type
RO

Location: Lower Whitley, Dewsbury, WF12 0NB

Level:

Scale
1:50

Client: Paul Collins

Dates: 24/07/2023

Logged By
AB

Well	Water Strikes	Samples and In Situ Testing			Depth (m)	Level (m)	Legend	Stratum Description	
		Depth (m)	Type	Results					
							Dark grey MUDSTONE (Drillers notes). PENNINE LOWER COAL MEASURES FORMATION		
					21.00		Light grey MUDSTONE (Drillers notes). PENNINE LOWER COAL MEASURES FORMATION	21	
								22	
								23	
								24	
								25	
								26	
								27	
								28	
								29	
					30.00		End of Borehole at 30.00m	30	

Remarks

Casing to 6m.
1 hour taken to fill bowser.





Borehole Log

Borehole No.

R02

Sheet 1 of 3

Project Name: Whitley Road

Project No.
C3619/23/E/5493

Co-ords:

Hole Type
RO

Location: Lower Whitley, Dewsbury, WF12 0NB

Level:

Scale
1:50

Client: Paul Collins

Dates: 24/07/2023

Logged By
AB

Well	Water Strikes	Samples and In Situ Testing			Depth (m)	Level (m)	Legend	Stratum Description	
		Depth (m)	Type	Results					
					0.30		TOPSOIL (Drillers notes).		
							Light brownish orange sandy CLAY (Drillers notes).		
					1.00		Light brownish grey SANDSTONE (Drillers notes). LEPTON EDGE ROCK	1	
								2	
								3	
								4	
								5	
								6	
								7	
								8	
								9	
					10.00			10	

Remarks

Casing to 3m. 1 hour taken to fill bowser.





Borehole Log

Borehole No.

R02

Sheet 2 of 3

Project Name: Whitley Road

Project No.
C3619/23/E/5493

Co-ords:

Hole Type
RO

Location: Lower Whitley, Dewsbury, WF12 0NB

Level:

Scale
1:50

Client: Paul Collins

Dates: 24/07/2023

Logged By
AB

Well	Water Strikes	Samples and In Situ Testing			Depth (m)	Level (m)	Legend	Stratum Description	
		Depth (m)	Type	Results					
							Light greyish brown SANDSTONE and MUDSTONE (Drillers notes). PENNINE LOWER COAL MEASURES FORMATION		
								11	
								12	
								13	
								14	
								15	
								16	
								17	
								18	
								19	
					20.00			20	

Remarks
Casing to 3m. 1 hour taken to fill bowser.





Borehole Log

Borehole No.

R02

Sheet 3 of 3

Project Name: Whitley Road

Project No.
C3619/23/E/5493

Co-ords:

Hole Type
RO

Location: Lower Whitley, Dewsbury, WF12 0NB

Level:

Scale
1:50

Client: Paul Collins

Dates: 24/07/2023

Logged By
AB

Well	Water Strikes	Samples and In Situ Testing			Depth (m)	Level (m)	Legend	Stratum Description	
		Depth (m)	Type	Results					
							Dark grey MUDSTONE and SANDSTONE (Drillers notes). PENNINE LOWER COAL MEASURES FORMATION		
								21	
								22	
								23	
								24	
								25	
								26	
								27	
								28	
								29	
					30.00		End of Borehole at 30.00m	30	

Remarks

Casing to 3m. 1 hour taken to fill bowser.

