



Your Environment

COAL MINING SITE INVESTIGATION - LAND LOCATED AT JUNCTION WITH BANK STREET & NAB LANE, MIRFIELD, WF14 9QF For Peel Construction

Your Environment

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Report Number: YG0146-20, Date: February 2020

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	Name	Position	Signature	Date
Prepared by:	Rob Lewis	Principal Engineer		February 2020
Reviewed by:	Dan Speight	Geo-environmental Engineer		February 2020
For and on behalf of YourEnvironment				

Issue	Date	Description	Prepared	Reviewed	Approved
01	14.02.2020	Final Report	RL	DS	RL

1.0 Introduction

YourEnvironment (YE) was instructed by Peel Construction (Quote No: email, Dated: February 1st 2020) to prepare an interpretive report on works commissioned managed by Peel construction at a site identified as Land Located at Junction with Bank Street & Nab Lane, Mirfield, WF14 9QF.

The purpose of this investigation was to provide an and interpretative report on the data supplied in respect to works completed at the site by ACE Drilling Services Ltd, which briefly comprised two (2no.) Rotary Probe boreholes.

This report presents a full factual record of all site works carried out, the results of *insitu* testing and subsequent laboratory testing of selected samples obtained during these works. BS5930:2015 '*Code of Practice for Site investigations*' and from the National Planning Policy Framework.

YE take no responsibility for conditions which have not been revealed by the boreholes, or which occur between boreholes. Whilst every effort has been made to interpret the conditions between investigation locations, such information is only indicative and liability cannot be accepted for its accuracy.

The information contained in this report is intended for the use of the named client (or their approved contractors). Should a third party rely on any part of this report, that party does so wholly at its own risk and YE disclaim any liability to such parties. Should the purposes for which the report is used, or the proposed use of the site change, this report may no longer be valid and further use of reliance upon the report in those circumstances shall be at the client's sole and own risk. The passage of time may result in changes in site conditions, regulatory or other legal provisions, technology or economic conditions which could render the report inaccurate or unreliable. YE should in all such altered circumstances be commissioned to review and update this report accordingly.

2.0 Proposed Development

We understand from reference to current plans provided by the client that development of the site includes:

- Erection of a two two-storey residential properties.

The proposed redevelopment plans for the site can be reviewed within **Appendix A**.

3.0 Physical Setting

3.2 Geology

Mapping information derived from 1:50,000 scale BGS Geological map (Sheet No: 077), suggest that the site is underlain by the Pennine Lower Coal Measures Formation, this unit comprises mudstones, siltstones and sandstones. In particular deposits of the Clifton Rock a named sandstone unit are shown to be present on the site. There are no faults, inferred, on the site. The mapping further suggests that the Shertcliffe Coal outcrops on the site. the Shertcliffe coal is part of the Beeston group which comprises the Linfit Lousey, Shertcliffe and Whinmoor Coal. Furthermore, it is known that the seam is also referred to as the Low Silkstone Coal.

3.5 Coal Mining Data

In respect of coal mining information, a CMRA was commissioned and the salient points have been reproduced below:

Underground Coal Mining

Past Workings- No past mining recorded.

Probable Unrecorded Shallow Workings- Yes

Seam	Mineral	Seam Workable	Distance to outcrop	Direction to outcrop	Bearing to outcrop
LOWER SILKSTONE	Coal	Yes	Within Site	N/A	N/A

Future underground mining - None recorded.

Coal mine licensing - None recorded within 200 metres of the enquiry boundary.

Mine Entries

There is one mine entry to the north west of the site, described as a “Shaft”, recorded by the coal mining authority.

Coal Mining Geology

No faults, fissures or breaklines recorded.

Opencast Coal Mining

None recorded within 500 metres of the enquiry boundary.

Coal Mining Subsidence

The Coal Authority has not received a damage notice or claim for the subject property, or any property within 50 metres of the enquiry boundary, since 31 October 1994. There is no current Stop Notice delaying the start of remedial works or repairs to the property. The Coal Authority is not aware of any request having been made to carry out preventive works before coal is worked under section 33 of the Coal Mining Subsidence Act 1991.

Mine Gas

None recorded within 500 metres of the enquiry boundary.

Hazards Related to Coal Mining

Remediated Sites - None recorded within 50 metres of the enquiry boundary.

Withdrawal of Support

The property is not in an area for which a notice of entitlement to withdraw support has been published. The property is not in an area for which a notice has been given under section 41 of the Coal Industry Act 1994, revoking the entitlement to withdraw support.

Shallow Mining

The site is underlain by the Shertcliffe/Low Silkstone Coal and the data suggests that this outcrops on the site. This may have been subject to unrecorded workings in the past.

4.0 Fieldworks

4.1 Site Investigation

All SI works were completed on 5th December 2020 under the supervision of a Geo-Environmental Engineer contracted from YE. In summary the investigation included:

- Two (2no.) Rotary probe boreholes (BH01 to BH02) were completed, by means of rotary drilling methods to depths of between 20m and 30mbgl. A third planned BH was not completed.
- The works were undertaken under Permit 19179 obtained from the coal authority by Peel Construction.

The positions of exploratory holes in relation to the existing site layout can be reviewed within [Appendix B](#). Borehole logs are located in [Appendix C](#).

5.0 Geology & Ground Conditions

A review of the ground conditions within the boreholes indicates the presence of variable Made Ground deposits to between 1.20m and 2.00m depth. The Made Ground comprised locally present concrete, brown and grey gravel of concrete and brick and mixed lithology.

Upon penetrating the made ground a sequence of brown sandstones and mudstones were recorded to full depth of the boreholes. Both boreholes recorded intact coal at 3.70mbgl, which was noted to be 200mm thick in BH01 and 400mm in BH02. Both seams were underlain by grey mudstone deposits. Of further note is a zone from 11.70mbgl to 13.70mbgl in BH01 and from 10.20mbgl to 14.50mbgl where the driller noted weak broken ground. In BH01 from 13.70mbgl to 14.10mbgl the driller reported Voids.

6.0 Groundwater Conditions

Ground water was noted at ground level the end of shift; however, it should be appreciated that the drilling flush would mask any water strikes.

It should be noted that groundwater levels are dependent upon seasonal variations and can change after periods of prolonged rainfall or drought.

7.0 Visual and Olfactory Observations

With the exception of general anthropogenic material identified, no visual and/or olfactory evidence of potential contamination was noted within any soils encountered as part of the investigative works undertaken.

9.0 Geotechnical Discussion

9.1 General

We understand that current redevelopment plans for the site are to include:

- Erection of a two two-storey residential properties.

The proposed redevelopment plans for the site can be reviewed within **Appendix A**

9.2 Treatment of Mine workings

The investigation recorded voids and significant broken ground from 10.20mbgl. The CIRIA publication SP32 *Construction over abandoned mine workings*, indicates that 10 times the thickness of seam of competent rock is required above coal seams and workings. However, given the thickness and depth of broken ground and voided ground it is considered that there is likely to be insufficient cover in this instance. In view of this it is recommended that the area below the house and driveways is pressure grouted.

It is considered that before any scheme is undertaken a competent contractor should be used and the specification finalised however the following salient points should be included in the specification.

It is recommended that the scheme should include a series of treatment boreholes on a minimum 3m grid. A series of perimeter boreholes should be filled before infilling of the main areas.

Holes shall be drilled vertically unless otherwise agreed, and shall be a minimum 50mm diameter, to a depth of 1m below the targeted workings or coal seam. Where it is impractical to drill at the minimum diameter for the full depth, the diameter of the hole shall be increased, as appropriate. Gravel shall not be introduced into any hole of less than 75mm diameter.

Grouting works shall be carried out in accordance with CIRIA Document No.32, with grout introduced under pressure in all but perimeter holes and solid coal holes, to ensure that workings will fully receive grout to all interstices. The gauge reading pressure should not exceed 20kN/m² (3 PSI or 0.2 bar) to avoid ground heave. Where significant water is present within any borehole at the time of grout injection, the grout should be introduced from the base of the hole using a tremie pipe.

Grout shall be mixed to a ratio of 1:10, Cement : Pulverised Fuel Ash (PFA)

Cement shall be Ordinary Portland Cement (OPC) complying with BS EN 197-1 or sulphate resisting Portland Cement complying with BS 407

PFA shall be conditioned hopper ash, or dry powder ash of a type suitable as a constituent for grout and obtained from an approved supplier and conform to the requirements of BS 3892.

Sands shall comply with BS EN 12620, and be of a grading suitable for use within the works.

Pea gravel shall comply with BS EN 12620 and be of a grading which would be satisfactory for use in the works.

Cement shall be stored in a dry location and the sequence of deliveries recorded so that the cement can be used in rotation. Different brands of cement shall not be mixed together. PFA shall be kept covered and slightly damp to minimise nuisance of dust, but without affecting its performance.

Confidence Testing of the grout and materials should be undertaken.

On completion of the works, validation holes should be drilled at locations selected by the Engineer, to prove that the grout has filled interstices within the specified grid, to

ensure that the works have been implemented to a satisfactory standard, and that stabilisation of the voided or broken ground has been achieved.

9.3 Raft Foundations

Upon treatment of the works it is considered that raft foundations could be utilised through way of an edge thickened raft. In order to finalise foundation depths some additional investigation would be recommended by way of trial pitting or window sample boreholes.

9.4 Excavations

Where trench support/shoring is utilised an appropriately qualified and experienced engineer should design the support system. The shoring/support will require regular inspection in accordance with published guidelines to ensure that the support/shoring is adequate for the ground conditions present.

9.5 Groundworks Watching Brief

We would recommend that a watching brief be maintained during the course of the development, particularly during the ground works stage.

During construction works visual and olfactory appraisal of the underlying soils should be made. If during construction works any material is noted to show visual and/or olfactory signs of contamination an environmental consultant should be contacted to supervise/guide further works. This material should be stockpiled separately and tested prior to its appropriate removal off site or re-use as necessary.

If any landscaping materials are to be imported on site they should be tested to check that they are suitable for the intended use. Clean, uncontaminated rock, subsoil brick rubble, crushed concrete, ceramics and topsoil only should be permitted as infill material.

9.6 Muckaway

If any soils are to be removed off site, a copy of the laboratory results should be given to the waste contractors and/or landfill operators involved to ascertain their requirements with regards to removal of soils from this area of the site and the acceptance of the waste at landfill. It may be prudent to undertake Waste Acceptance Criteria (WAC) analyses on the soils to be removed.

All materials must be transported in compliance with the Duty of Care Regulations by authorising movements with Carrier's individually numbered Duty of Care conveyance notes, complete with the appropriate EWC Codes. All relevant dockets will need to be kept to provide evidence of the removal as these may be required as part of a Validation Report.

10.0 Limitations

YE have prepared this report with all reasonable skill, care and diligence. The work undertaken to provide the basis of this report comprised a study of available documented information from a variety of sources.

The opinions given in this report have been dictated by the finite data on which are they based and are relevant only to the purpose for which the report was commissioned.

Information reviewed should not be considered exhaustive and has accepted in good faith as providing true and representative data with respect to site conditions. Should additional information become available which may influence the opinion expressed in this report, YE

reserves the right to review such information and, if warranted, to alter the opinions accordingly.

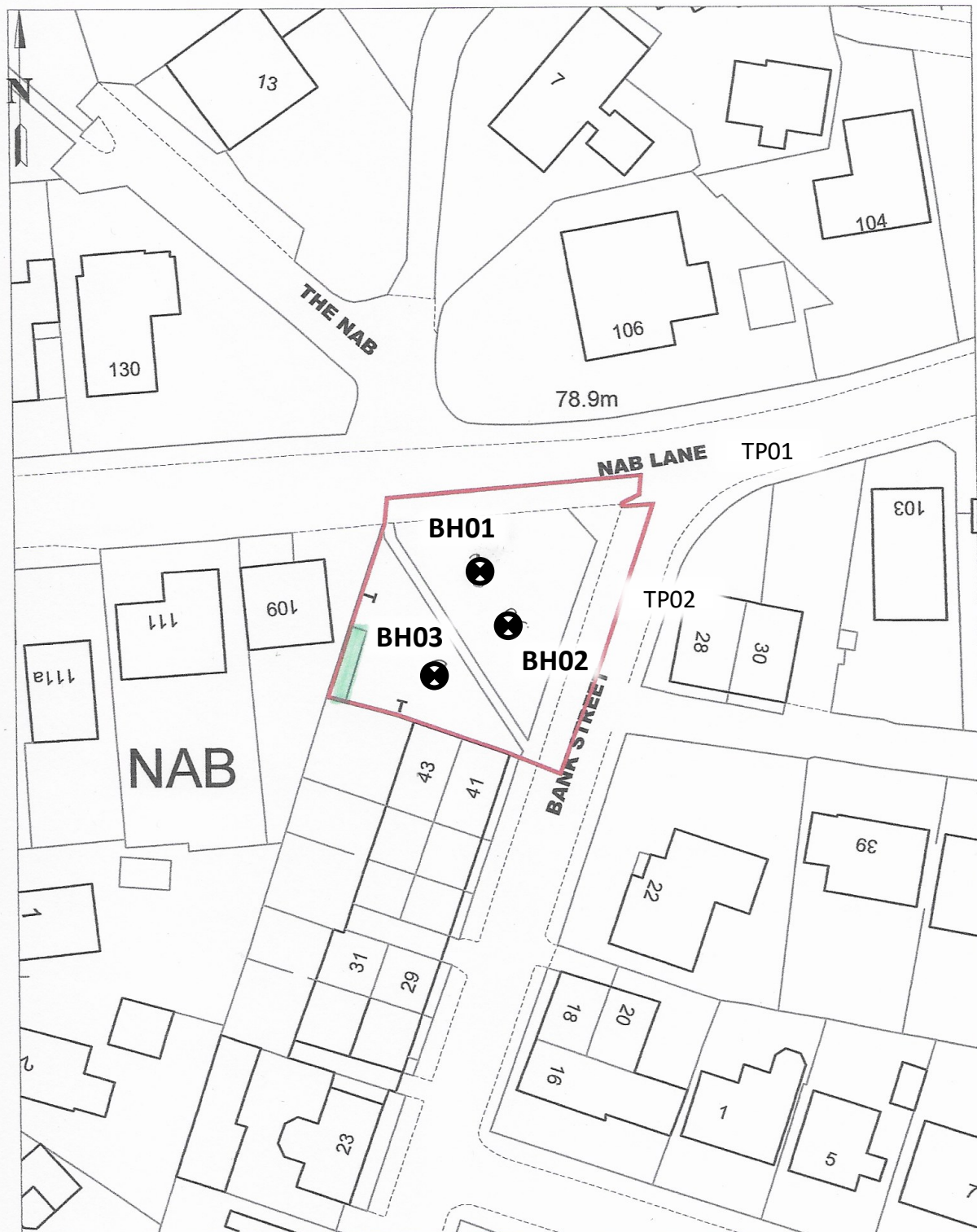
It should be noted that any risks identified in this report are perceived risks based on the information reviewed.

The recommendations contained in this report represent our professional opinions. These opinions were arrived at in accordance with currently accepted industry practices at this time and as such are not a guarantee that the study site is free of hazardous conditions.

This report has been prepared solely for the use of the named client, and may not be relied upon by other parties without written consent from YE. YE disclaim any responsibility to the client and others in respect of any matters outside the agreed scope of the work.

APPENDIX B: Site Investigation Plan





STRATEGIC ASSETS

Plan No: 18-0174a
Scale: 500

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Title: **Investigation Location Plan**



Site Name:
41-43 Bank Street, Mirfield

Job No:
YG 0146-20

APPENDIX C: Borehole Logs





The Coal
Authority

Permit to Enter or Disturb Coal Authority Interests

Permit 19179

Name and Address of Permit Holder:

*Peel Construction
2A Pennine Way
Scissett
Huddersfield
HD8 9JB*

Site Location:

*Land at
Bank Street & Nab Lane
Mirfield
WF14 9QF*

This certificate hereby grants the above named Permit Holder a Permit to carry out:-

Ground investigation by up to three boreholes to 30m to determine presence of shallow mine workings within the Authority's interests at the identified site location above as shown on the Grant Permit Boundary (overleaf) for the period of 12 months from the granted date shown below. *The granting of this Permit does not constitute advice given by the Authority in relation to the proposed operations. It is the Permit Holder's responsibility to obtain appropriate health, safety, environmental, technical and legal advice.*

Conditions:

- *Water flush*
- *Gas Monitoring CO, CH₄, CO₂, O₂, H₂S at borehole and rig*
- *Operators undertaking the work must be in possession of this certificate and the Permit boundary plan at the time of works*

Signed: *Jake Morris* Granted Date: *20/11/2019*

For and on behalf of The Coal Authority

Nominated Representative: Paul Heap, Permitting Manager;

The Coal Authority, Permitting Office, 200 Lichfield Lane, Mansfield, Notts, NG18 4RG

Tel: 01623 637450; E-Mail: permissions@coal.gov.uk



The Coal
Authority

Granted Permit Boundary

Site Location:

Permit Ref: 19179

Overview map



Permit Boundary:



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Borehole Log

Borehole No.

BH01

Sheet 1 of 3

Project Name: Bank Street.

Project No.
YG0146-20

Co-ords:

Hole Type
RO

Location: Mirfield, WF14 9QF.

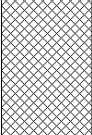
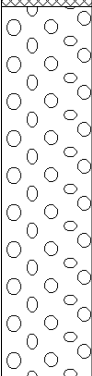
Level:

Scale
1:50

Client: Peel Construction.

Dates: 02/12/2019

Logged By
Ace Drilling Services.

Well	Water Strikes	Sample and In Situ Testing			Depth (m)	Level (m)	Legend	Stratum Description	
		Depth (m)	Type	Results					
					0.20			TOPSOIL: Brown silty CLAY. (As per drillers description).	
					1.20			MADE GROUND: Brown and grey GRAVEL. Gravel is fine to coarse of concrete, brick and mixed lithology. (As per drillers description).	1
								LOWER PENINE COAL MEASURES: Recovered as brown sandstone. (As per drillers description).	2
					3.70				3
					3.90			Black COAL. (As per drillers description).	
								LOWER PENINE COAL MEASURES: Recovered as light grey mudstone. (As per drillers description).	4
					4.50				
					4.70			LOWER PENINE COAL MEASURES: Recovered as dark grey mudstone. (As per drillers description).	
								LOWER PENINE COAL MEASURES: Recovered as brown sandstone. (As per drillers description).	5
									6
									7
									8
									9
									10
Continued on Next Sheet									

Remarks

Water level at 0.00m at end of shift.
Cased to 14.10m.







Borehole Log

Borehole No.

BH02

Sheet 1 of 2

Project Name: Bank Street.

Project No.
YG0146-20

Co-ords:

Hole Type
RO

Location: Mirfield, WF14 9QF.

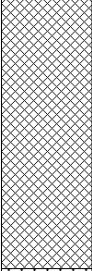
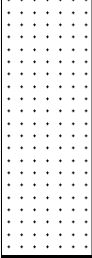
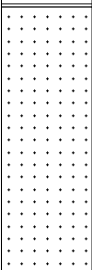
Level:

Scale
1:50

Client: Peel Construction.

Dates: 05/12/2019

Logged By
Ace Drilling Services.

Well	Water Strikes	Sample and In Situ Testing			Depth (m)	Level (m)	Legend	Stratum Description	
		Depth (m)	Type	Results					
					0.20			(As per drillers description).	
					2.00			MADE GROUND: Brown and grey GRAVEL. Gravel is fine to coarse of concrete, brick and mixed lithology. (As per drillers description).	1
								LOWER PENINE COAL MEASURES: Recovered as brown sandstone. (As per drillers description).	2
					3.70			Black COAL. (As per drillers description).	3
					4.10			LOWER PENINE COAL MEASURES: Recovered as light grey mudstone. (As per drillers description).	4
					4.80			LOWER PENINE COAL MEASURES: Recovered as brown sandstone. (As per drillers description).	5
									6
									7
									8
									9
									10
Continued on Next Sheet									

Remarks

Water level at 2.30m at end of shift.
Cased to 2.70m.




YourGeotechnical BH02

Borehole Log

Borehole No.

BH02

Sheet 2 of 2

Project Name: Bank Street.

Project No.
YG0146-20

Co-ords:

Hole Type
RO

Location: Mirfield, WF14 9QF.

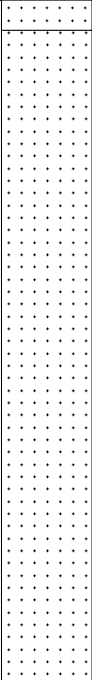
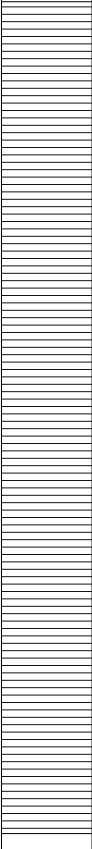
Level:

Scale
1:50

Client: Peel Construction.

Dates: 05/12/2019

Logged By
Ace Drilling Services.

Well	Water Strikes	Sample and In Situ Testing			Depth (m)	Level (m)	Legend	Stratum Description	
		Depth (m)	Type	Results					
					10.20			LOWER PENINE COAL MEASURES: Recovered as brown sandstone. (As per drillers description). LOWER PENINE COAL MEASURES: Recovered as brown sandstone. (WEAK BROKEN GROUND). (As per drillers description).	11
									12
									13
									14
					14.50			LOWER PENINE COAL MEASURES: Grey silty mudstone. (As per drillers description).	15
									16
									17
									18
									19
									20
					20.00			End of Borehole at 20.00m	

RemarksWater level at 2.30m at end of shift.
Cased to 2.70m.