

HALTER INN WORKS, HOLCOMBE

DESK BASED COAL MINING
RISK ASSESSMENT

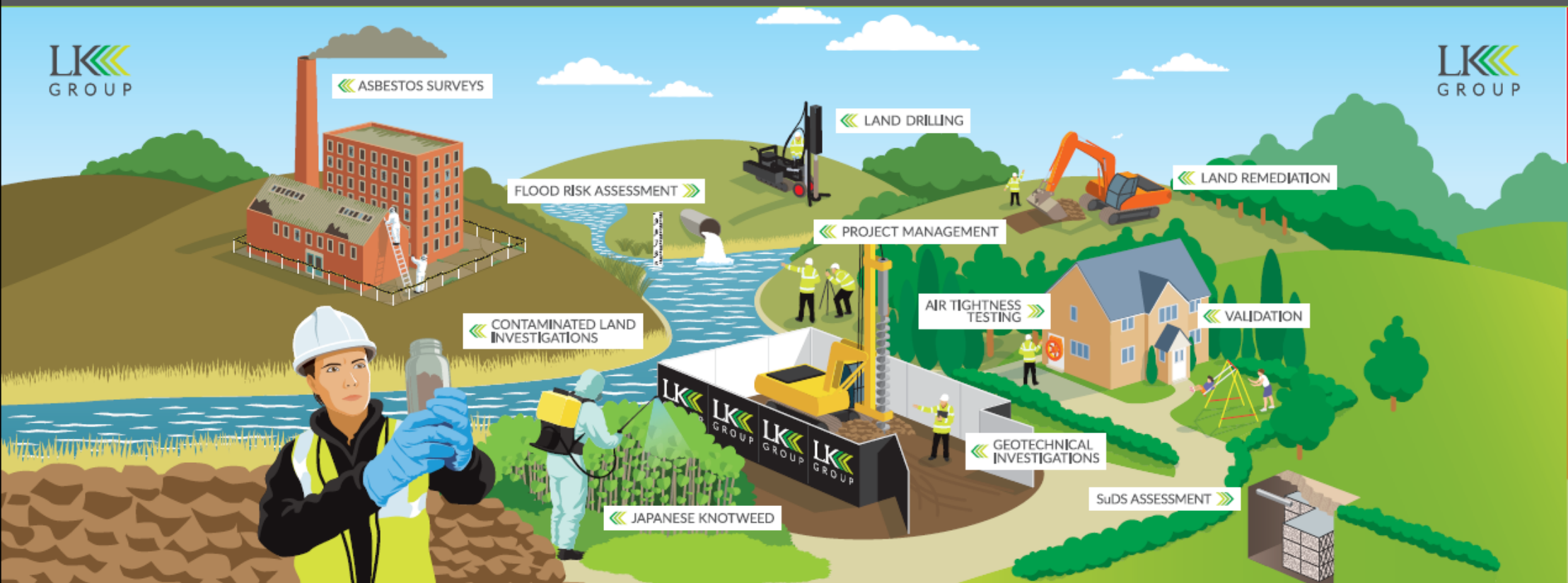
Job Number: LKC 23 1356
Date: June 2023
Client: Finishing Techniques Ltd



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LK Consult			
Document Verification			
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Report Title	Desk Based Coal Mining Risk Assessment		
Job Number	LKC 23 1356	Document Ref.	LKC 23 1356-A1-CMRA-Halter Inn Works
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It should be noted this report pertains solely to potential ground stability issues relating to potential shallow mining within the proposed planning boundary only.

Contents

1	Introduction	3
2	Review of Information	4
2.1	Information Sources	4
2.2	Geological Mapping	4
2.3	Coal Authority Consultants Coal Mining Report	6
2.4	Coal Authority Interactive Mapping	7
2.5	Historical BGS Logs	7
2.6	Historical Mapping	8
3	Coal Mining Risk Assessment.....	9
4	Conclusions and Recommendations.....	10

Figures

Figure 1: Site Location and Boundary Plan

Appendices

Appendix A: Geological Mapping
Appendix B: Coal Authority Consultants Coal Mining Report
Appendix C: Historical BGS Logs

1 Introduction

LK Consult Ltd (LKC) has been commissioned to carry out a Desk Based Coal Mining Risk Assessment Report (CMRA) for Halter Inn Works, Holcombe.

A Coal Mining Risk Assessment Report is required for a planning application within a designated 'Coal Mining Development High Risk Area'. 'Coal Mining Development High Risk Areas' are areas, based upon Coal Authority records, where the potential land instability and other safety risks associated with former coal mining activities are likely to be greatest. They include, for example, areas of known or suspected shallow coal mining, recorded mine entries and areas of former surface mining.

This assessment is based upon guidance provided by the Coal Authority¹ and comprises a review of available desk based information.

The scope of this Coal Mining Risk Assessment (as per Coal Authority guidance) is to:

- Present a desk-based review of all available information on the coal mining issues which are relevant to the application site.
- Use the above information to identify and assess the risks to the proposed development from coal mining legacy, including the cumulative impact of issues.
- Set out appropriate mitigation measures to address the coal mining legacy issues affecting the site, including any necessary remedial works and/or demonstrate how coal mining issues have influenced the proposed development.
- Demonstrate to the Local Planning Authority that the application site is, or can be made, safe and stable to meet the requirements of national planning policy with regard to development on unstable land.

Site details are provided in Table 1-1. Figure 1 shows the site location and boundary.

Site Location	West side of Redisher Croft, west of Bolton Road West, south of Holcombe Old Road, Ramsbottom. Centred at approximate National Grid Reference 377933E 415300N.
Approximate Area	1153m ² .
Topography	166 metres Above Ordnance Datum (AOD). Site slopes west to east.
Current Site Use	Small industrial building occupies the centre of the site with a hardstood concrete area in the south and a tarmacadam access road to the north of the building.
Purpose of Report	Planning.
Proposed Development	Residential dwellings including soft landscaping and car parking.

Table 1-1: Summary of site details

¹Risk Based Approach to Development Management. Guidance for Developers. Version 4 2017.

2 Review of Information

2.1 Information Sources

LKC have obtained and reviewed information from the following sources, which is summarised in Section 2:

- Review of Published BGS Geological Mapping including:
 - Lancashire Sheet 79SE Solid, Published 1925, Scale 1:10,560.
 - Rochdale Sheet 76 Solid, Published 1927, Scale 1:63,360.
 - Rochdale Sheet 76 Solid, Published 1948. Scale 1:63,360.
 - Rochdale Sheet 76 Solid, Published 1967. Scale 1:63,360.
 - Rochdale Sheet 76 Solid, Published 1971. Scale 1:63,360.
 - Rochdale Sheet 76 Bedrock, Published 2008, Scale 1:50,000.
 - SD71NE Solid and Drift map, Published 2007, scale 1:10,000.
 - Digital Geology, Published 2007, scale 1:10,000 (Appendix A).
- Geology of the Rochdale district, a brief explanation of the geological map Sheet 76 Rochdale.
- Coal Authority Consultants Coal Mining Report (Appendix B).
- Coal Authority Interactive Map Viewer².
- Coal Authority List of Combustible Coal Seams³.
- Historical BGS boreholes within the site vicinity⁴ (Appendix C).
- LKC previous intrusive investigation (CL-602-LKC 14 1496-02).

2.2 Geological Mapping

Artificial

No BGS recorded artificial deposits are recorded on site.

Superficial

The superficial geology is mapped as Devensian Till (Diamicton) across the south-west of the site. No superficial recorded across the north-east of the site.

Bedrock

The site primarily consists of Holcombe Brook Grit (Sandstone), with a small area of Millstone Grit subcropping in the south-west of site (Mudstone and Siltstone).

The 1925 1:10,560 sheet mapping shows horizontal strata on site and a dip of 10° southwest to the west of the site.

1:50,000 and 1:63,000 mapping shows a coal seam to subcrop offsite approximately 10m to the south-west of the site. This coal seam is anticipated to be the Holcombe Brook Coal Seam.

The *Cancelloceras Cancellatum* marine band is labelled approximately 70m south-west of the site.

² <http://mapapps2.bgs.ac.uk/coalauthority/home.html>

³ <https://www.gov.uk/government/publications/coal-seams-with-a-history-of-spontaneous-combustion>

⁴ <http://mapapps2.bgs.ac.uk/geoindex/home.html>

Lancashire Sheet 79SE Solid, Published 1925, Scale 1:10,560 also shows an un-named coal seam to subcrop on or close to the southwest site boundary. An extract is shown on Plate 2-1.



Plate 2-1: Extract from Lancashire Sheet 79SE Solid, Published 1925, Scale 1:10,560. Not to scale.
+ Approximate centre of site

The strata follows the shape of the valley to the northwest and the coal seams are shown to subcrop on both sides of the valley.

Based on the topography and dip of the strata, the Holcombe Brook coal seam is not expected to be present below the site. However, the un-named coal seam may subcrop below the site.

2.3 Coal Authority Consultants Coal Mining Report

The consultants coal mining report is summarised in Table 2-1.

Mining Activity and Geology	
Past underground mining	No past mining recorded.
Probable unrecorded shallow workings	None.
Spine roadways at shallow depth	No spine roadway recorded at shallow depth.
Mine entries (within 100m)	None recorded within 100m of the enquiry boundary.
Abandoned mine plan catalogue numbers	None available.
Outcrops	Unnamed (coal), workable seam, within site boundary, bearing 318°.
Geological faults, fissures and breaklines	No faults, fissures or breaklines recorded.
Opencast mines	None recorded within 500m of the enquiry boundary.
Coal Authority managed tips	None recorded within 500m of the enquiry boundary.
Investigative or Remedial Activity	
Site investigations	None recorded within 50m of the enquiry boundary.
Remediated sites	None recorded within 50m of the enquiry boundary.
Coal mining subsidence	Not received a damage notice or claim for the subject property, or any property within 50m, since 1994. No current Stop Notice delaying remedial works or repairs to property. Not aware of any request made to carry out preventative works before coal is worked.
Mine gas	None recorded within 500m of the enquiry boundary.
Mine water treatment schemes	None recorded within 500m of the enquiry boundary.
Licensing and Future Mining Activity	
Future underground mining	None recorded.
Coal mining licensing	None recorded within 200m of the enquiry boundary.
Court Orders	None recorded.
Section 46 notices	No notices have been given, stating that the land is at risk of subsidence.
Withdrawal of support notices	Not in an area where a notice to withdraw support has been given or where a notice has been given cancelling the entitlement to withdraw support.
Payments to owners of former copyhold land	Not in an area where a relevant notice has been published.

Table 2-1: Summary of Coal Authority Consultants Coal Mining Report.

2.4 Coal Authority Interactive Mapping

Plate 2-2 shows the development high risk areas.

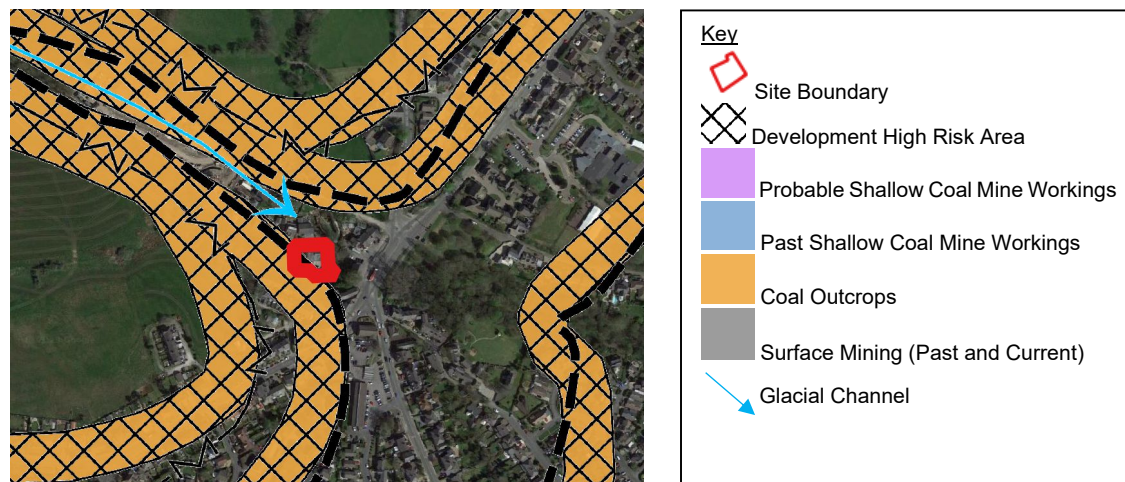


Plate 2-2: Development High Risk Area.

The south-western area of the site is within a Development High Risk Area, with the following features identified:

» Coal Outcrops present in the south-western side of site.

2.5 Combustible Coal Seams

Some coal seams have been known to suffer from occurrences of spontaneous combustion and are consequently regarded as at 'high risk' of succumbing to spontaneous combustion when being entered, worked or disturbed. The Coal Authority have produced a list of seams for different areas of the UK.

None of the coal seams listed are expected at shallow depth below the site. However, if roof coal has been left, this could also pose a risk.

2.6 Historical BGS Logs

One borehole was located 330m northwest of the site. An extract is provided in Plate 2-3. Coal was recorded at depths of 4.19-4.42mbgl, 12.65-12.95mbgl, 95.10-95.17mbgl, 127.60-127.67mbgl, 139.75-139.83mbgl and 141.43-141.50mbgl.

Ref: SD71NE9 330m northwest of site:

GEOLOGICAL FORMATION.	NATURE OF STRATA.	THICKNESS.		DEPTH.					
		Feet.	Inches.	Feet.	Inches.				
	Soil	1	3	0	08	0	08		
	Wash stone & shale	7	6	2	59	2	67		
	Wash stone shale & sand	1	14	1	14	3	81		
	Dark shale	17	3	0	38	4	19		
	COAL	9	3	0	23	4	42		
	Wash stone shale	3	3	0	99	5	41		
	Wash stone shale	23	4	7	24	12	65		
	COAL	1	4	0	30	12	95		
	Wash stone	1	4	0	31	13	26		
	Wash stone shale	1	4	0	91	14	17		
	Wash stone shale	1	4	0	31	14	48		
	Wash stone shale	1	4	1	22	15	70		
	Wash stone shale	1	4	1	75	17	45		
	Wash stone shale	1	4	2	51	19	96		
	Wash stone shale	1	4	1	53	21	49		
	Wash stone shale	1	4	1	52	23	01		
	Wash stone shale	1	4	1	98	24	99		
	Wash stone shale	1	4	0	39	25	38		
	Wash stone shale	1	4	1	44	26	82		
	Wash stone shale	1	4	1	22	28	04		
	Wash stone shale	1	4	0	31	28	35		
	Wash stone shale	1	4	0	23	28	58		
	Wash stone shale	1	4	0	76	29	34		
	Wash stone shale	1	4	0	53	29	87		
	Wash stone shale	1	4	1	83	31	70		
	Wash stone shale	1	4	0	91	32	61		
	Wash stone shale	1	4	0	61	33	22		
	Wash stone shale	1	4	0	46	33	68		
	Wash stone shale	1	4	2	44	36	12		
	Wash stone shale	1	4	0	76	36	88		

Plate 2-3: Extract from borehole record SD71NE9.

2.7 Historical Mapping

Available historical mapping has not identified any significant coal mining features within influencing distance.

2.1 Previous Site Investigation

The following report has been undertaken by LKC and pertinent information is summarised in the following section:

» Halter Inn Works, Holcombe, Geoenvironmental investigation report and remediation strategy, Ref: CL-602-LKC 14 1496-02, dated 2nd April 2015.

The investigation was undertaken in support of a planning application (Bury Council ref: 54975). The investigation comprised 4no. window sample boreholes and a supplementary hand dug trial hole.

The 4no. window sample boreholes refused at depths of between 2.39mbgl and 3.25mbgl on mudstone or shale. No coal was identified within any of the boreholes; however, the boreholes were only drilled to shallow depths and it cannot be ruled out that coal could be present at greater depths.

3 Coal Mining Risk Assessment

Table 3-1 below summarises the potential risks associated with coal mining legacy for the proposed development site.

Coal Mining Issue	Potential Risk	Risk Assessment
Underground coal mining (recorded at shallow depths)	X	No recorded past underground workings below the site. No further assessment required.
Underground coal mining (probable at shallow depths)	?	Probable underground shallow workings are not recorded by the Coal Authority. However, an outcrop is noted on site, associated with an un-named coal seam. The Coal Authority consider the seam to be 'workable'. If worked, there could be a risk of ground instability. Investigation work is recommended and a watching brief during groundworks.
Mine entries (shafts / adits)	?	No recorded mine entries within influencing distance of the site. However, there is also a risk of unrecorded mine entries as the site is within a coal mining area. No specific investigation work is advised. However, a watching brief should be undertaken during any intrusive investigation work and groundworks to check for any signs of unrecorded mine entries.
Coal mining geology (geological faults, fissures and breaklines)	X	Not recorded on Coal Authority data.
Record of past mine gas emissions	?	Not recorded on Coal Authority data. However, shallow potentially worked coal seams may be present below the site, which have the potential to be a source of ground gas.
Recorded coal mining surface hazard	X	No recorded coal mining surface hazard.
Surface mining (opencast workings)	X	No recorded surface mining (opencast workings).

Table 3-1: Potential Coal Mining Risks.

Notes:

✓ = Risk identified; X = No risk identified; ? = Possible risk identified

4 Conclusions and Recommendations

Summary

Based upon the available information, LKC have identified potential shallow coal mining risks which are summarised in Table 4-1.

Coal Mining Issue	Potential Risk
Underground coal mining (recorded at shallow depths)	X
Underground coal mining (probable at shallow depths)	?
Mine entries (shafts / adits)	?
Coal mining geology (fissures)	X
Record of past mine gas emissions	?
Recorded coal mining surface hazard	X
Surface mining (opencast workings)	X

Table 4-1: Summary of coal mining potential risks.

Site Investigation Recommendations

Considering the available information and guidance given in CIRIA C758⁵, LKC consider that intrusive investigation work should be carried out to confirm the risk associated with coal mining. The intrusive investigation works should be designed by a suitably qualified mining engineer; these works are likely to include the options detailed in Table 4-2.

Coal Mining Issue	Investigation Work
Underground coal mining (recorded at shallow depths)	N/A
Underground coal mining (probable at shallow depths)	Rotary drilling to confirm the depth to coal seams, the thickness of seams, signs of workings and evidence of treatment work. Watching brief during groundworks to check for any signs of mining related ground instability (see below).
Mine entries (shafts / adits)	No specific investigation work required. However, watching brief during intrusive investigation work and groundworks to check for any signs of mine entries (see below).
Coal mining geology (fissures)	N/A
Record of past mine gas emissions	Gas monitoring during mining investigation (rotary drilling). Depending on findings of mining investigation, possible precautionary gas protection measures or gas monitoring in line with CIRIA 665 ⁶ .
Recorded coal mining surface hazard	N/A
Surface mining (opencast workings)	N/A

Table 4-2: Summary of investigation requirements.

Investigation work should be carried out in line with CIRIA C758⁷ and Coal Authority guidance.

A Coal Authority Permit⁸ is required for intrusive activities which will disturb or enter any coal seams, coal mine workings or coal mine entries (shafts and adits).

⁵ CIRIA (2019). "Abandoned Mine Workings Manual". CIRIA C758

⁶ CIRIA (2007). "Assessing Risks Posed by Hazardous Ground Gases to Buildings". CIRIA C665.

⁷ CIRIA (2019). "Abandoned Mine Workings Manual". CIRIA C758

⁸ <https://www.gov.uk/get-a-permit-to-deal-with-a-coal-mine-on-your-property>

Watching Brief

A watching brief is recommended in all coal mining areas. This could be undertaken by experienced site staff on low risk sites or by a suitably qualified coal mining engineer or consultant on high risk sites. This site is considered to be a low risk at this stage as no mining has been recorded on site. However, this may need to be revised following the findings of the mining investigation.

The watching brief should cover the period in which any earthworks, reduce level dig or foundation excavation works are being undertaken. Particular care should be taken to identify any potential features which may indicate the presence of shallow coal mining hazards.

Such hazards may include, but not limited to, features such as unexplained depressions or voids, outcropping coal seams, localised areas of deep made ground (which could represent backfilled areas of coal mining related ground subsidence, crown holes or mine entries), or unexpected man-made items at depth (e.g. brickwork, concrete, timber or steelwork).

Mine entries may manifest during excavation works as circular, square or rectangular areas of deep Made Ground (typically several metres in size) set against the natural strata (e.g. Glacial Till or weathered rock). Mine shafts may also be covered with a large, thick concrete cap.

If any of the above features are identified during the course of the development works then work should be stopped to allow the mining engineer / consultant to assess them and if necessary design further or additional investigation and / or remediation works.

Mitigation Measures

Depending on the findings of the mining investigation, mitigation measures may be required. Table 4-3 provides possible mitigation options.

Coal Mining Issue	Mitigation Measures
Underground coal mining (recorded at shallow depths)	N/A
Underground coal mining (probable at shallow depths)	Move structures to 'safe' areas of the site. Stabilisation of the ground (i.e. grouting) and suitable foundations to be implemented.
Mine entries (shafts / adits)	Move structures to 'safe' areas of the site. Treat mine entry (backfill, cap). Follow The Coal Authority's 'Policy for Building Over or Within The Influencing Distance of A Mine Entry' ⁹ .
Coal mining geology (fissures)	N/A
Record of past mine gas emissions	Gas protection measures.
Recorded coal mining surface hazard	N/A
Surface mining (opencast workings)	N/A

Table 4-3: Summary of potential mitigation measures.

⁹ https://assets.publishing.service.gov.uk/government/uploads/system/uploads/attachment_data/file/363064/policy-for-building-over-or-within-the-influencing.pdf

Conclusions and Safe Development

At this stage the possibility for shallow workings can only be ascertained from site investigation; however, LKC consider that the site could be safely developed with regards to shallow mining subject to an appropriate site investigation and, if required, appropriate mitigation measures which may include some of those measures as detailed above.

Figures



Client: Finishing Techniques				Title: Site Location & Boundary Plan					
Site: Halter Inn Works, Holcombe				Scale (see scale bar): 1:25,000 & 1:1000 @ A4				Figure: 1	Revision:
Job No.: LKC 23 1356	Drawn By: CK	Checked By: HM	Drawn: June 2023						

Appendix A

Geological Mapping

Geology 1:10,000 Maps Legends

Artificial Ground and Landslip

Map Colour	Lex Code	Rock Name	Rock Type	Min and Max Age
	MGR	Made Ground (Undivided)	Artificial Deposit	Holocene - Holocene
	WGR	Worked Ground (Undivided)	Void	Holocene - Holocene
	WMGR	Infilled Ground	Artificial Deposit	Holocene - Holocene
	SLIP	Landslide Deposit	Unknown/Unclassified Entry	Quaternary - Quaternary

Superficial Geology

Map Colour	Lex Code	Rock Name	Rock Type	Min and Max Age
	ALV	Alluvium	Clay, Silt, Sand and Gravel	Flandrian - Pleistocene
	TILLD	Till, Devensian	Diamicton	Devensian - Ipswichian
	GFDUD	Glaciofluvial Deposits, Devensian	Sand and Gravel	Devensian - Ipswichian
	HEAD	Head	Diamicton	Quaternary - Ryazanian
	PEAT	Peat	Peat [Unlithified Deposits Coding Scheme]	Quaternary - Ryazanian
	HEAD	Head	Clay, Silt, Sand and Gravel	Quaternary - Ryazanian
	ALF	Alluvial Fan Deposits	Clay, Silt, Sand and Gravel	Quaternary - Ryazanian
	RTD1	River Terrace Deposits, 1	Sand and Gravel	Quaternary - Ryazanian

Bedrock and Faults

Map Colour	Lex Code	Rock Name	Rock Type	Min and Max Age
	GNR	Ganister Rock	Sandstone	Langsettian - Langsettian
	PLCM	Pennine Lower Coal Measures Formation	Mudstone, Siltstone and Sandstone	Langsettian - Langsettian
	PLCM	Pennine Lower Coal Measures Formation	Sandstone	Langsettian - Langsettian
	WH	Woodhead Hill Rock	Sandstone	Langsettian - Langsettian
	GAS	Great Arc Sandstone	Sandstone	Langsettian - Langsettian
	HER	Helpet Edge Rock	Sandstone	Langsettian - Langsettian
	MLRS	Milnrow Sandstone	Sandstone	Langsettian - Langsettian
	LH	Lower Haslingden Flags	Sandstone	Yeadonian - Yeadonian
	UH	Upper Haslingden Flags	Sandstone	Yeadonian - Yeadonian
	RR	Rough Rock	Sandstone	Yeadonian - Yeadonian

Map Colour	Lex Code	Rock Name	Rock Type	Min and Max Age
	ROSSE	Rossendale Formation	Mudstone and Siltstone	Yeadonian - Yeadonian
	HLBG	Holcombe Brook Grit	Sandstone	Marsdenian - Marsdenian
	BBS	Brooksbottoms Grit	Sandstone	Marsdenian - Marsdenian
	MARSD	Marsden Formation	Mudstone and Siltstone	Marsdenian - Marsdenian
	MG	Millstone Grit Group [See also Migr]	Mudstone and Siltstone	Namurian - Namurian
	Rock			
	Fault			



GROUP

Geology 1:10,000 Maps

This report contains geological map extracts taken from the BGS Digital Geological map of Great Britain at 1:10,000 scale and is designed for users carrying out preliminary site assessments who require geological maps for the area around a site. This mapping may be more up to date than previously published paper maps.

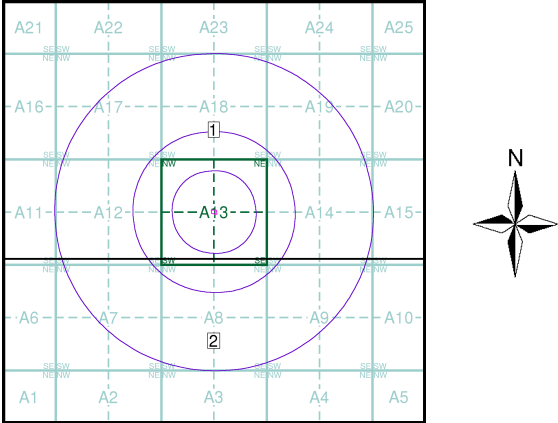
The various geological layers - artificial and landslip deposits, superficial geology and solid (bedrock) geology are displayed in separate maps, but superimposed on the final 'Combined Surface Geology' map. All map legends feature on this page.

Please Note: Not all of the layers have complete nationwide coverage, so availability of data for relevant map sheets is indicated below.

Geology 1:10,000 Maps Coverage

Map ID:	2	Map ID:	1
Map Name:	SD71SE	Map Name:	SD71NE
Map Date:	2007	Map Date:	2007
Bedrock Geology:	Available	Bedrock Geology:	Available
Superficial Geology:	Available	Superficial Geology:	Available
Artificial Geology:	Available	Artificial Geology:	Available
Faults:	Available	Faults:	Available
Landslip:	Available	Landslip:	Available
Rock Segments:	Available	Rock Segments:	Available

Geology 1:10,000 Maps - Slice A



Order Details

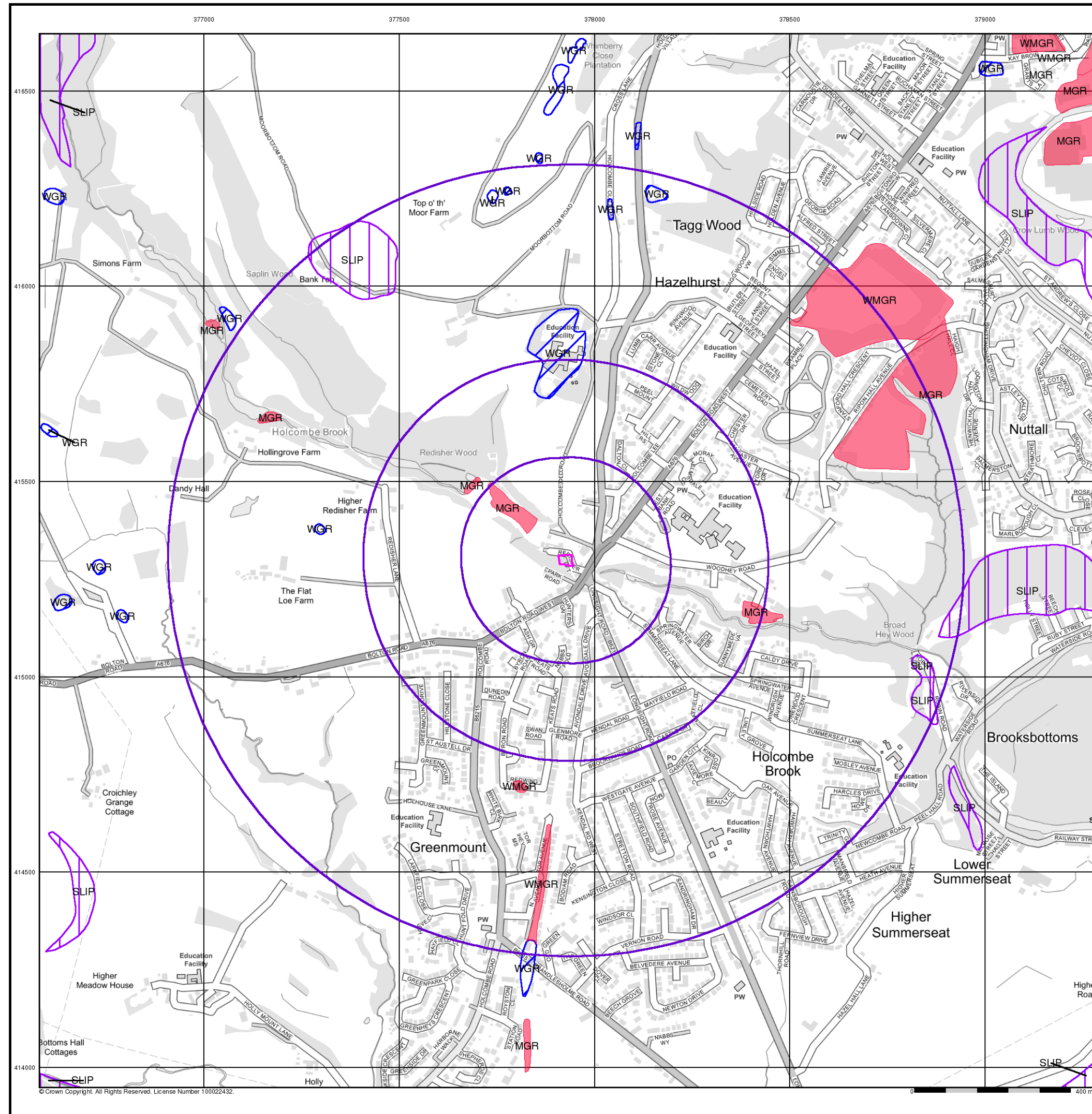
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Customer Ref:	LKC 23 1356
National Grid Reference:	377930, 415300
Slice:	A
Site Area (Ha):	0.09
Search Buffer (m):	1000

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Artificial Ground and Landslip

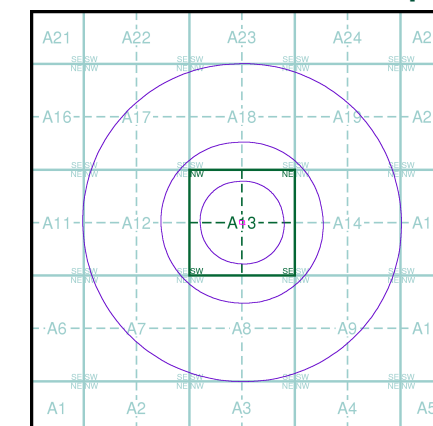
Artificial ground is a term used by BGS for those areas where the ground surface has been significantly modified by human activity. Information about previously developed ground is especially important, as it is often associated with potentially contaminated material, unpredictable engineering conditions and unstable ground.

Artificial ground includes:

- Made ground - man-made deposits such as embankments and spoil heaps on the natural ground surface.
- Worked ground - areas where the ground has been cut away such as quarries and road cuttings.
- Infilled ground - areas where the ground has been cut away then wholly or partially backfilled.
- Landscaped ground - areas where the surface has been reshaped.
- Disturbed ground - areas of ill-defined shallow or near surface mineral workings where it is impracticable to map made and worked ground separately.

Mass movement (landslip) deposits on BGS geological maps are primarily superficial deposits that have moved down slope under gravity to form landslips. These affect bedrock, other superficial deposits and artificial ground. The dataset also includes founded strata, where the ground has collapsed due to subsidence.

Artificial Ground and Landslip Map - Slice A



Order Details

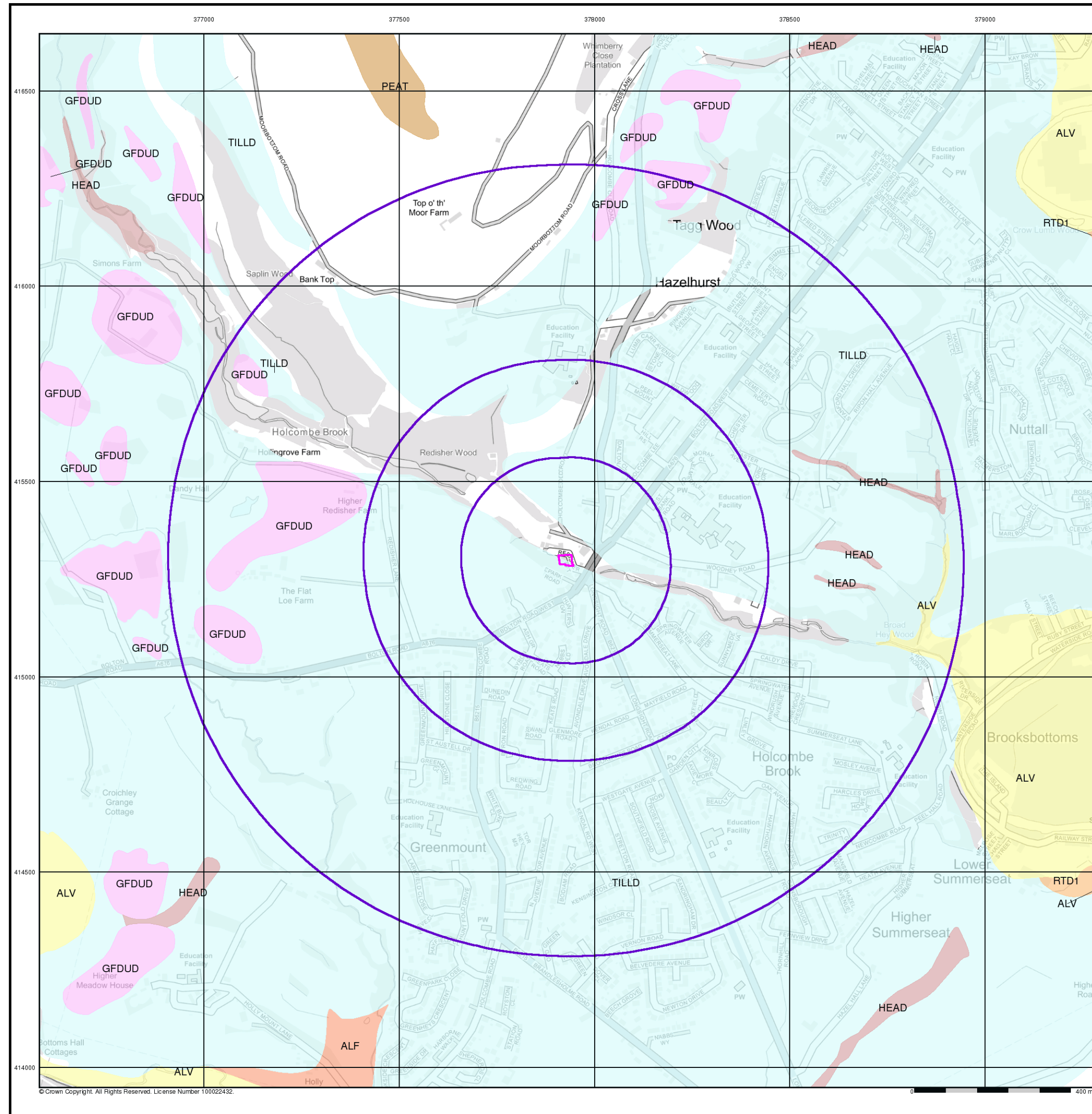
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Customer Ref: LKC 23 1356
National Grid Reference: 377930, 415300
Slice: A
Site Area (Ha): 0.09
Search Buffer (m): 1000

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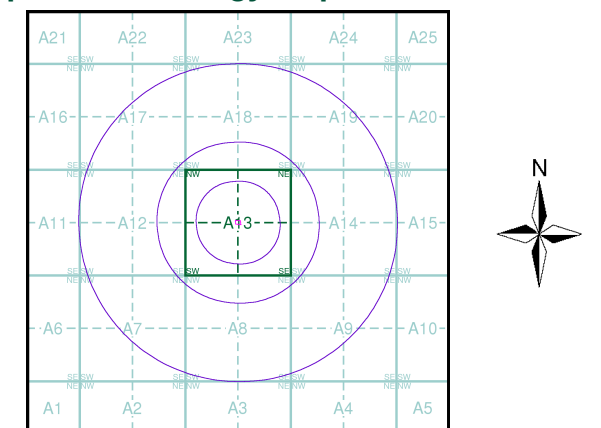
Superficial Geology

BGS 1:10,000 Superficial Deposits are the youngest geological deposits formed during the most recent period of geological time, which extends back about 1.8 million years from the present.

They rest on older deposits or rocks referred to as Bedrock. This dataset contains Superficial deposits that are of natural origin and 'in place'. Other superficial strata may be held in the Mass Movement dataset where they have been moved, or in the Artificial Ground dataset where they are of man-made origin.

Most of these Superficial deposits are unconsolidated sediments such as gravel, sand, silt and clay, and onshore they form relatively thin, often discontinuous patches or larger spreads.

Superficial Geology Map - Slice A



Order Details

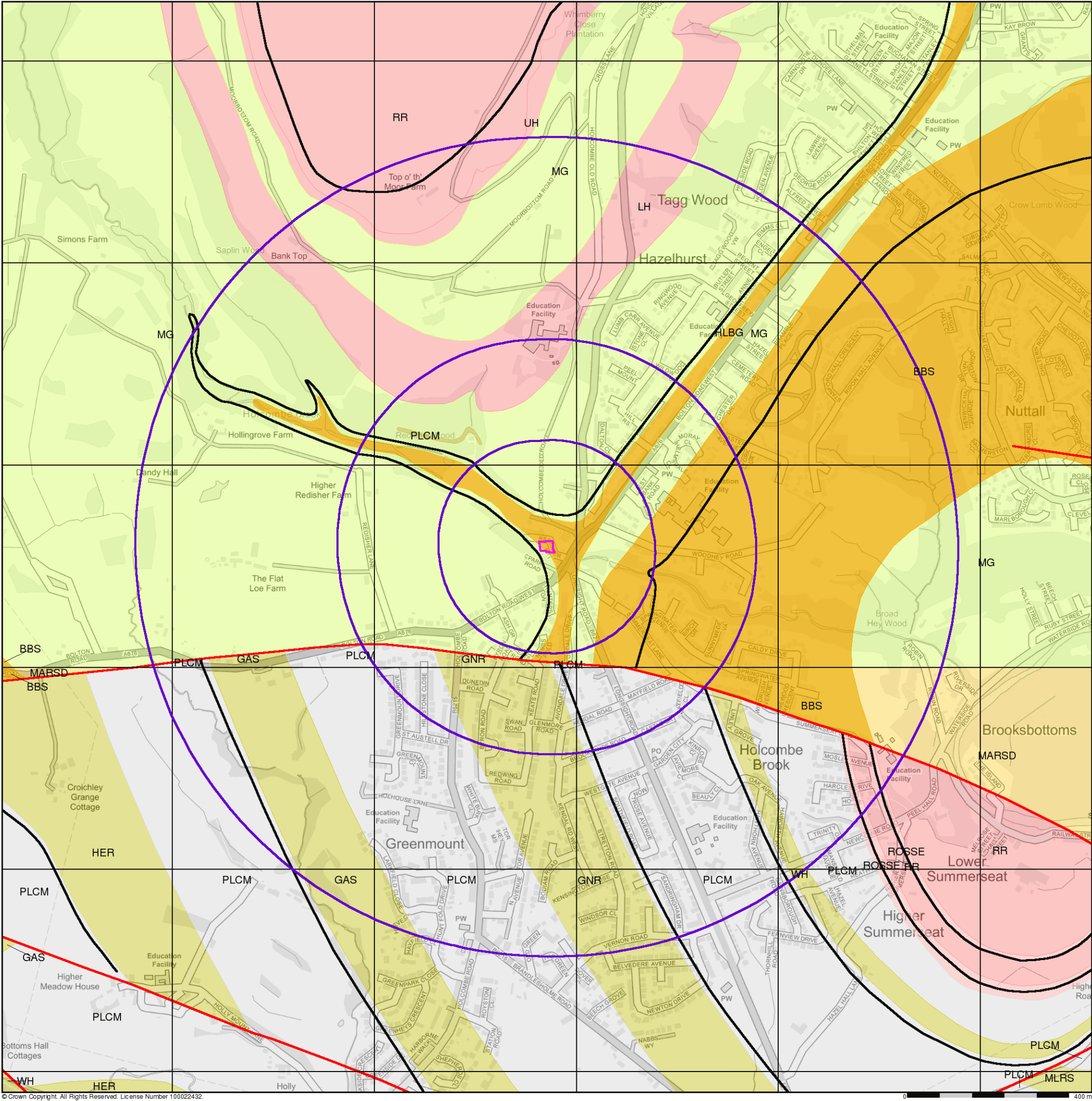
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National Grid Reference: 377930, 415300
Slice: A
Site Area (Ha): 0.09
Search Buffer (m): 1000

Site Details

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Bedrock and Faults

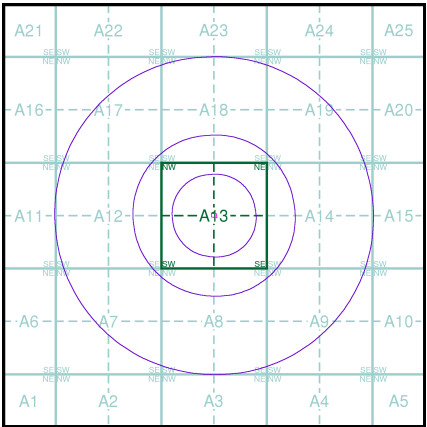
Bedrock geology is a term used for the main mass of rocks forming the Earth and are present everywhere, whether exposed at the surface in outcrops or concealed beneath superficial deposits or water.

The bedrock has formed over vast lengths of geological time ranging from ancient and highly altered rocks of the Proterozoic, some 2500 million years ago, or older, up to the relatively young Pliocene, 1.8 million years ago.

The bedrock geology includes many lithologies, often classified into three types based on origin: igneous, metamorphic and sedimentary.

The BGS Faults and Rock Segments dataset includes geological faults and thin beds mapped as lines such as coal seams and mineral veins. These are not restricted by age and could relate to features of any of the 1:10,000 geology datasets.

Bedrock and Faults Map - Slice A



Order Details

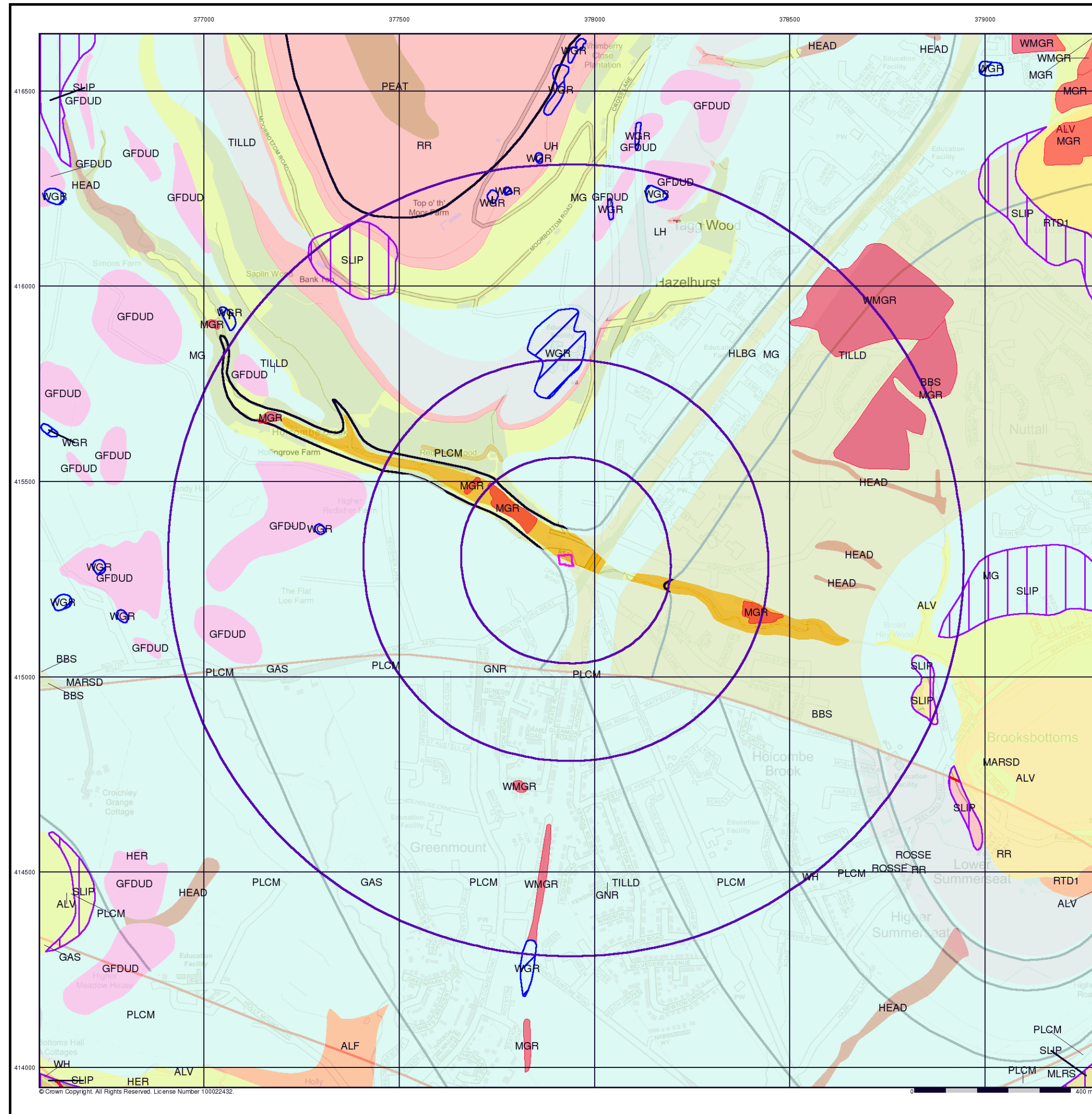
Order Number: 312709826_1_1
Customer Ref: LKC 23 1356
National Grid Reference: 377930, 415300
Slice: A
Site Area (Ha): 0.09
Search Buffer (m): 1000

Site Details

Finishing Techniques Ltd, Unit 1-2, Halter Inn Works,
Holcombe Brook, Bury, BL0 9SA



Tel: 0844 844 9952
Fax: 0844 844 9951
Web: www.envirocheck.co.uk



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Combined Surface Geology

The Combined Surface Geology map combines all the previous maps into one combined geological overview of your site.

Please consult the legends to the previous maps to interpret the Combined "Surface Geology" map.

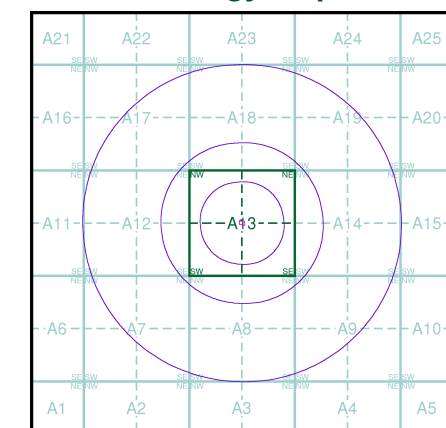
Additional Information

More information on 1:10,000 Geological mapping and explanations of rock classifications can be found on the BGS website. Using the LEX Codes in this report, further descriptions of rock types can be obtained by interrogating the 'BGS Lexicon of Named Rock Units'. This database can be accessed by following the 'Information and Data' link on the BGS website.

Contact

British Geological Survey
Kingsley Dunham Centre
Keyworth
Nottingham
NG12 5GG
Telephone: 0115 936 3143
Fax: 0115 936 3276
email: enquiries@bgs.ac.uk
website: www.bgs.ac.uk

Combined Geology Map - Slice A



Order Details

Order Number: 312709826_1_1
Customer Ref: LKC 23 1356
National Grid Reference: 377930, 415300
Slice: A
Site Area (Ha): 0.09
Search Buffer (m): 1000

Site Details

Finishing Techniques Ltd, Unit 1-2, Halter Inn Works,
Holcombe Brook, Bury, BL0 9SA



Tel: 0844 844 9952
Fax: 0844 844 9951
Web: www.envirocheck.co.uk

Appendix B

Coal Authority Consultants Coal Mining Report



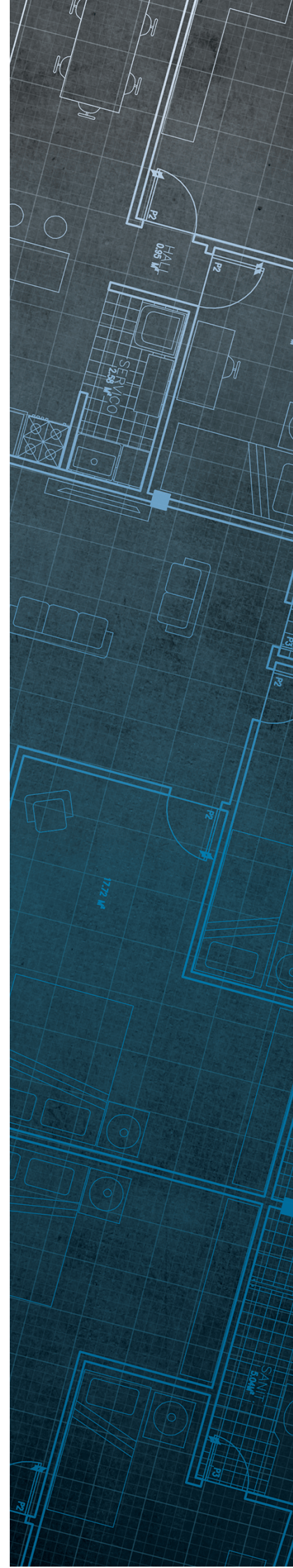
The Coal
Authority

Consultants Coal Mining Report

Finishing Techniques Ltd
1-2 Unit
Halter Inn Works
11 Redisher Croft
Ramsbottom
Bury
BL0 9SA

Date of enquiry:	13 June 2023
Date enquiry received:	13 June 2023
Issue date:	13 June 2023

Our reference:	51003360870001
Your reference:	LKC 23 1356



Consultants

Coal Mining Report

This report is based on and limited to the records held by the Coal Authority at the time the report was produced.

Client name

The LK Group

Enquiry address

Finishing Techniques Ltd
1-2 Unit
Halter Inn Works
11 Redisher Croft
Ramsbottom
Bury
BL0 9SA

How to contact us

0345 762 6848 (UK)
+44 (0)1623 637 000 (International)

200 Lichfield Lane
Mansfield
Nottinghamshire
NG18 4RG

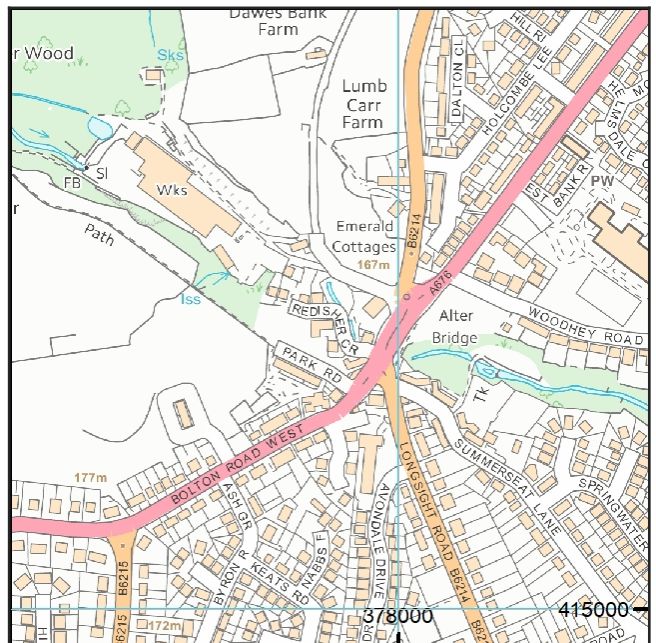
www.groundstability.com

 @coalauthority

 /company/the-coal-authority

 /thecoalauthority

 /thecoalauthority



Approximate position of property



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Section 1 – Mining activity and geology

Past underground mining

No past mining recorded.

Probable unrecorded shallow workings

None.

Spine roadways at shallow depth

No spine roadway recorded at shallow depth.

Mine entries

None recorded within 100 metres of the enquiry boundary.

Abandoned mine plan catalogue numbers

None available.

Outcrops

Seam name	Mineral	Seam workable	Distance to outcrop (m)	Direction to outcrop	Bearing of outcrop
UNNAMED 1	Coal	Yes	Within	N/A	318

Geological faults, fissures and breaklines

No faults, fissures or breaklines recorded.

Opencast mines

None recorded within 500 metres of the enquiry boundary.

Coal Authority managed tips

None recorded within 500 metres of the enquiry boundary.

Section 2 – Investigative or remedial activity

Please refer to the 'Summary of findings' map (on separate sheet) for details of any activity within the area of the site boundary.

Site investigations

None recorded within 50 metres of the enquiry boundary.

Remediated sites

None recorded within 50 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.

Mine water treatment schemes

None recorded within 500 metres of the enquiry boundary.

Section 3 – Licensing and future mining activity

Future underground mining

None recorded.

Coal mining licensing

None recorded within 200 metres of the enquiry boundary.

Court orders

None recorded.

Section 46 notices

No notices have been given, under section 46 of the Coal Mining Subsidence Act 1991, stating that the land is at risk of subsidence.

Withdrawal of support notices

The property is not in an area where a notice to withdraw support has been given.

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

Payments to owners of former copyhold land

The property is not in an area where a relevant notice has been published under the Coal Industry Act 1975/Coal Industry Act 1994.

Section 4 – Further information

Based on the responses in this report, no further information has been highlighted.

Future development

If development proposals are being considered, technical advice relating to both the investigation of coal and former coal mines and their treatment should be obtained before beginning work on site. All proposals should apply specialist engineering practice required for former mining areas. No development should be undertaken that intersects, disturbs or interferes with any coal or coal mines without first obtaining the permission of the Coal Authority.

MINE GAS: Please note, if there are no recorded instances of mine gas within 500m of the enquiry boundary, this does not mean that mine gas is not present within the vicinity. The Coal Authority Mine Gas data is limited to only those sites where a Mine Gas incident has been recorded. Developers should be aware that the investigation of coal seams, mine workings or mine entries may have the potential to generate and/or displace underground gases. Associated risks both to the development site and any neighbouring land or properties should be fully considered when undertaking any ground works. The need for effective measures to prevent gases migrating onto any land or into any properties, either during investigation or remediation work, or after development must also be assessed and properly addressed. In these instances, the Coal Authority recommends that a more detailed Gas Risk Assessment is undertaken by a competent assessor.

Section 5 – Data definitions

The datasets used in this report have limitations and assumptions within their results. For more guidance on the data and the results specific to the enquiry boundary, please **call us on 0345 762 6848** or **email us at groundstability@coal.gov.uk**.

Past underground coal mining

Details of all recorded underground mining relative to the enquiry boundary. Only past underground workings where the enquiry boundary is within 0.7 times the depth of the workings (zone of likely physical influence) allowing for seam inclination, will be included.

Probable unrecorded shallow workings

Areas where the Coal Authority believes there to be unrecorded coal workings that exist at or close to the surface (less than 30 metres deep).

Spine roadways at shallow depth

Connecting roadways either, working to working, or, surface to working, both in-seam and cross measures that exist at or close to the surface (less than 30 metres deep), either within or within 10 metres of the enquiry boundary.

Mine entries

Details of any shaft or adit either within, or within 100 metres of the enquiry boundary including approximate location, brief treatment details where known, the mineral worked from the mine entry and conveyance details where the mine entry has previously been sold by the Authority or its predecessors British Coal or the National Coal Board.

Abandoned mine plan catalogue numbers

Plan numbers extracted from the abandoned mines catalogue containing details of coal and other mineral abandonment plans deposited via the Mines Inspectorate in accordance with the Coal Mines Regulation Act and Metalliferous Mines Regulation Act 1872. A maximum of 9 plan extents that intersect with the enquiry boundary will be included. This does not infer that the workings and/or mine entries shown on the abandonment plan will be relevant to the site/property boundary.

Outcrops

Details of seam outcrops will be included where the enquiry boundary intersects with a conjectured or actual seam outcrop location (derived by either the British Geological Survey or the Coal Authority) or intersects with a defined 50 metres buffer on the coal (dip) side of the outcrop. An indication of whether the Coal Authority believes the seam to be of sufficient thickness and/or quality to have been worked will also be included.

Geological faults, fissures and breaklines

Geological disturbances or fractures in the bedrock. Surface fault lines (British Geological Survey derived data) and fissures and breaklines (Coal Authority derived data) intersecting with the enquiry boundary will be included. In some circumstances faults, fissures or breaklines have been known to contribute to surface subsidence damage as a consequence of underground coal mining.

Opencast mines

Opencast coal sites from which coal has been removed in the past by opencast (surface) methods and where the enquiry boundary is within 500 metres of either the licence area, site boundary, excavation area (high wall) or coaling area.

Coal Authority managed tips

Locations of disused colliery tip sites owned and managed by the Coal Authority, located within 500 metres of the enquiry boundary.

Site investigations

Details of site investigations within 50 metres of the enquiry boundary where the Coal Authority has received information relating to coal mining risk investigation and/or remediation by third parties.

Remediated sites

Sites where the Coal Authority has undertaken remedial works either within or within 50 metres of the enquiry boundary following report of a hazard relating to coal mining under the Coal Authority's Emergency Surface Hazard Call Out procedures.

Coal mining subsidence

Details of alleged coal mining subsidence claims made since 31 October 1994 either within or within 50 metres of the enquiry boundary. Where the claim relates to the enquiry boundary confirmation of whether the claim was accepted, rejected or whether liability is still being determined will be given. Where the claim has been discharged, whether this was by repair, payment of compensation or a combination of both, the value of the claim, where known, will also be given.

Details of any current 'Stop Notice' deferring remedial works or repairs affecting the property/site, and if so the date of the notice.

Details of any request made to execute preventative works before coal is worked under section 33 of the Coal Mining Subsidence Act 1991. If yes, whether any person withheld consent or failed to comply with any request to execute preventative works.

Mine gas

Reports of alleged mine gas emissions received by the Coal Authority, either within or within 500 metres of the enquiry boundary that subsequently required investigation and action by the Coal Authority to mitigate the effects of the mine gas emission. Please note, if there are no recorded instances of mine gas reported, this does not mean that mine gas is not present within the vicinity. The Coal Authority Mine Gas data is limited to only those sites where a Mine Gas incident has been recorded.

Mine water treatment schemes

Locations where the Coal Authority has constructed or operates assets that remove pollutants from mine water prior to the treated mine water being discharged into the receiving water body.

These schemes are part of the UK's strategy to meet the requirements of the Water Framework Directive. Schemes fall into 2 basic categories: Remedial – mitigating the impact of existing pollution or Preventative – preventing a future pollution incident.

Mine water treatment schemes generally consist of one or more primary settlement lagoons and one or more reed beds for secondary treatment. A small number are more specialised process treatment plants.

Future underground mining

Details of all planned underground mining relative to the enquiry boundary. Only those future workings where the enquiry boundary is within 0.7 times the depth of the workings (zone of likely physical influence) allowing for seam inclination will be included.

Coal mining licensing

Details of all licenses issued by the Coal Authority either within or within 200 metres of the enquiry boundary in relation to the under taking of surface coal mining, underground coal mining or underground coal gasification.

Court orders

Orders in respect of the working of coal under the Mines (Working Facilities and Support) Acts of 1923 and 1966 or any statutory modification or amendment thereof.

Section 46 notices

Notice of proposals relating to underground coal mining operations that have been given under section 46 of the Coal Mining Subsidence Act 1991.

Withdrawal of support notices

Published notices of entitlement to withdraw support and the date of the notice. Details of any revocation notice withdrawing the entitlement to withdraw support given under Section 41 of the Coal Industry Act 1994.

Payment to owners of former copyhold land

Relevant notices which may affect the property and any subsequent notice of retained interests in coal and coal mines, acceptance or rejection notices and whether any compensation has been paid to a claimant.

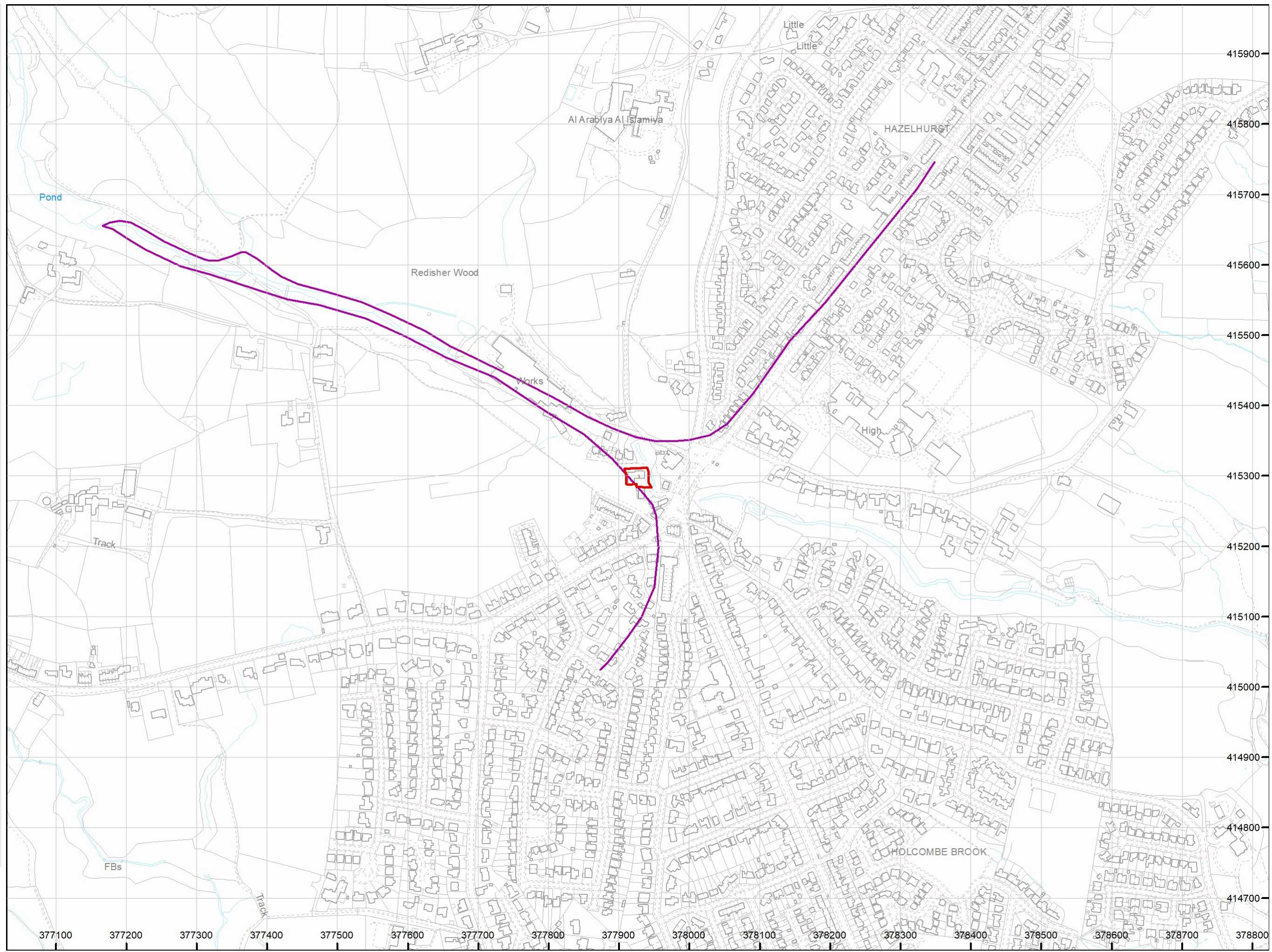
The map highlights any specific surface or subsurface features within or near to the boundary of the site.

Key

Approximate position of the enquiry boundary shown 

Outcrop (Proven) 

How to contact us
0345 762 6848 (UK)
+44 (0)1623 637 000 (International)
www.groundstability.com



Appendix C

BGS Borehole Data



NGR 7765 1546 *Reister Works Holmby Brook*

WELL BORING at *Reister Works Holmby Brook* County *Lincoln*

Geol. map 1 in. map New Series

6 in. map *745E*

Made by

Date

Sunk

feet.

Bored

feet.

Communicated by *Thos. Matthews Esq.*

Height above Ordnance Datum *550.*

Rest level of water *100 ft.*

Yield

Quality (with copy of analysis on separate sheet)

SD 71 NE/9
County

6" Quarter Sheet

GEOLOGICAL FORMATION.	NATURE OF STRATA.	THICKNESS.		DEPTH.		THICKNESS		DEPTH	
		Feet.	Inches.	Feet.	Inches.	metric	metric	metric	metric
	<i>Soil</i>	1	3	1	3	0	08	0	08
	<i>loose sand & shale</i>	1	3	2	6	2	59	2	67
	<i>loose sand shale & sand</i>	1	3	3	9	1	14	3	81
	<i>dark shale</i>	1	3	4	12	0	38	4	19
	<i>COAL</i>	1	3	5	15	0	23	4	42
	<i>v. hard grey shale</i>	1	3	6	18	0	99	5	41
	<i>grey grit shale</i>	1	3	7	21	7	24	12	65
	<i>COAL</i>	1	3	8	24	0	30	12	95
	<i>v. hard shale</i>	1	3	9	27	0	31	13	26
	<i>hard grey shale finely</i>	1	3	10	30	0	91	14	17
	<i>laminated shale</i>	1	3	11	33	0	31	14	48
	<i>finely grey sandstone</i>	1	3	12	36	1	22	15	70
	<i>grey finely grit shale</i>	1	3	13	39	1	75	17	45
	<i>grey finely grit shale</i>	1	3	14	42	2	51	19	96
	<i>grey finely grit shale</i>	1	3	15	45	1	53	21	49
	<i>grey finely grit shale</i>	1	3	16	48	1	52	23	01
	<i>grey finely grit shale</i>	1	3	17	51	1	98	24	99
	<i>laminated grey shale joints</i>	1	3	18	54	0	39	25	38
	<i>finely grey shale joints</i>	1	3	19	57	1	44	26	82
	<i>v. hard grey shale</i>	1	3	20	60	1	22	28	04
	<i>shale</i>	1	3	21	63	0	31	28	35
	<i>shale</i>	1	3	22	66	0	23	28	58
	<i>shale</i>	1	3	23	69	0	76	29	34
	<i>shale</i>	1	3	24	72	0	53	29	87
	<i>shale</i>	1	3	25	75	1	83	31	70
	<i>shale</i>	1	3	26	78	0	91	32	61
	<i>shale</i>	1	3	27	81	0	61	33	22
	<i>shale</i>	1	3	28	84	0	46	33	68
	<i>shale</i>	1	3	29	87	2	44	36	12
	<i>shale</i>	1	3	30	90	0	76	36	88
	<i>shale</i>	1	3	31	93	0	46	37	34
	<i>shale</i>	1	3	32	96	1	22	38	56
	<i>shale</i>	1	3	33	99	2	13	40	69
	<i>shale</i>	1	3	34	102	3	35	44	04
	<i>shale</i>	1	3	35	105	2	75	46	79
	<i>shale</i>	1	3	36	108	1	22	48	01
	<i>shale</i>	1	3	37	111	0	45	48	46
	<i>shale</i>	1	3	38	114	1	83	50	29
	<i>shale</i>	1	3	39	117	4	27	54	56
	<i>shale</i>	1	3	40	120	3	50	58	06
	<i>shale</i>	1	3	41	123	0	93	58	98
	<i>shale</i>	1	3	42	126	1	74	60	73
	<i>shale</i>	1	3	43	129	5	41	66	14
	<i>shale</i>	1	3	44	132	0	92	67	06



GEOLOGICAL SURVEY AND MUSEUM. BOREHOLES AND SHAFTS.

Folio

2

County

6 in. Map

County

6" Quarter Sheet

Description.

Freemantle's log.

THICKNESS.

Feet.

Inches.

DEPTH.

Feet.

Inches.

THICKNESS

metric

DEPTH

metric

21 *hard dark shale*

2

212

0

61

67

67

22 *U. hard dark grey gneiss, pinkish
broken grey gneiss
grey gneiss*

2

214

0

76

68

43

23 *hard dark shale thin gneiss beds*

1

215

0

30

68

73

24 *hard dark shaly shale*

7

233

1

29

71

02

25 *hard dark shaly shale*

5

248

4

57

75

59

26 *hard dark shaly shale*

8

256

2

44

78

03

27 *hard dark shale*

4

260

1

22

79

25

27-28 *hard dark shale thin beds of gneiss gneiss*

10

270

3

20

82

45

28 *hard dark shale massive nodular, pinkish & white*

8

278

2

44

84

89

28 *hard dark shale*

10

288

3

05

87

94

28 *hard dark shale*

10

298

3

19

90

83

28 *hard dark shale*

5

303

1

52

92

35

28 *hard dark shale*

9

312

2

75

95

10

29 *shaly gneiss*

3

312

0

07

95

17

29 *grey gneiss beds of shaly gneiss.*

7

319

2

11

97

38

29 *grey gneiss*

10

330

3

20

100

58

29 *thin beds of gneiss & shale*

12

352

3

86

107

44

30 *hard dark shale thin beds of gneiss*

6

359

1

98

109

42

30 *hard dark shale*

10

369

3

20

112

62

30 *grey gneiss & shale*

14

383

4

27

116

89

31 *grey gneiss*

6

384

1

83

118

72

31 *grey gneiss*

9

399

2

90

121

62

32 *hard shale with beds of grey gneiss*

4

405

1

98

123

60

32 *COAL*

3

405

0

07

123

67

32 *hard shale with gneiss beds*

12

408

3

74

127

41

33-36 *grey gneiss*

40

458

12

34

139

75

36-37 *shale & beds of gneiss*

4

458

0

08

139

83

36 *grey gneiss*

1

462

1

22

141

05

36 *COAL*

3

464

0

38

141

43

36 *grey gneiss*

6

464

0

07

141

50

37 *grey gneiss shale joints*

1

470

1

76

143

26

37 *U. hard grey gneiss shale joints.*

1

471

0

45

143

71

37 *V. hard gneiss*

2

473

0

76

144

17

37 *dark shale thin beds of gneiss*

3

476

0

92

145

09

37 *V. hard grey gneiss.*

6

482

1

98

147

07

37 *grey gneiss (Aug. 20th. 1934)*

1

483

0

30

147

37

Messrs. Charles Ainsworth & Co., Radcliffe Works.

Visited and sited on Lancs 79 SE-E.

Never used. Very little water obtained.

OD. C. 550.

24.6.56 P.M.

(Supply piped from 79 SE/4 in dry periods)

SD 71 NE 9

GEOLOGICAL SURVEY AND MUSEUM. BOREHOLES AND SHAFTS.

As H.
Pitshanger Works
Horseshoe Brook

Folio

County

6 in. Map

James
74 SE

5

Description.	THICKNESS.		DEPTH.	
	Fest.	Inches.	Fest.	Inches.
Notes in core.				
LSM, large thin shales & sand } (not seen)			12	6
dark shale			13	9
COAL			14	6
hard grey shale } (not seen)			17	9
sandstone, false bedded, wavy bedding, fossiliferous			41	6
in places, grey shales, micaceous.			42	6
COAL } (not seen)			43	6
hard shale } (not seen)				
1 sandstone in grey, rather coarse in texture, fossiliferous	?	15		
concretion	all	10		
2 sandy micaceous shales plant fragments	-	4		
3 thin siliceous sandstones and shaly shales	-	3		
4 false-bedded shales & thin sandstones, fossiliferous	-	6		
5 dark thin-bedded sandstone and shaly shale				
6 dark grey siliceous sandstone	?	3		
7 sandy micaceous shales				
8 thin bedded sandstones & dark shales		4-5		
9 sandy shales		4-10		
10 brown sandy shales, plant fragments	?	6-7		
11 shales, rather sandy	?	6-8		
12 siliceous sandstone		1		
13 sandy shale		3		
14 shales flat massive nodules	?	9		
15 shales and mudstones	?	12		
16 thin shales	?	12		
17 thin shales, occasional massive nodules	?	40		
18 dark shales	?	4-12		
19 shales	?	10		
20 dark shales small nodules	all	4		
21 shales, splintery		5		
22 grey		12		
23 shales with thin sandstone beds		20		
24 sandy mudstones	?	6		
25 bedded shales	?	6		
26 sandy mudstones	?	10		
27 sandy mudstones, more shaly	?	15		
28 shales and sandy shales	?	30		
29 grey, false-bedded	?	30		
30 sandy shales & grey interbedded, wavy bedded in places	?	30		
31 grey	?	10		
32 sandy shales and grey	?	20		
33 coarse grey	all	6		
34 grey		20		
35 hard micaceous sandstone & mudstones	?	4		
36 grey	?	12		
37 grey and shaly sandstone	?	4		

SD71NE9

SD 71 NE/9

SD 7766 1546

SD 71/9 59

WELL BORING at *Res. Charles Deaneville & Co. Redwood Jack*

Geed map

1 in. map New Series

Made by

Sunk

fact.

Date _____

fact

Communicated by *Thos. Muller's list.*

Height above Ordnance Datum *C550*.

Rest level of water

Yield

Quality (with copy of analysis on separate sheet)

GEOLOGICAL FORMATION.		NATURE OF STRATA.		THICKNESS.		DEPTH.	
				Feet.	Inches.	Feet.	Inches.
		Dark		1	3	1	3
		Wax shale & shale		2	6	2	6
		Wax shale shale & shale		3	9	3	9
		Dark shale		4	12	4	12
		COAL		5	15	5	15
		v. hard grey shale		6	18	6	18
		grey qtz. shale		7	21	7	21
		COAL		8	24	8	24
		v. hard shale		9	27	9	27
		hard grey shale, sandy		10	30	10	30
		broken shale, sandy		11	33	11	33
		sandy grey sandstone, crystalline		12	36	12	36
		very sandy qtz. shale		13	39	13	39
		sandy grey sandstone, sandy parts		14	42	14	42
		sandy grey sandstone		15	45	15	45
		grey sandstone		16	48	16	48
		very qtz. shale		17	51	17	51
		broken grey qtz. shale, joints		18	54	18	54
		sandy grey qtz. shale, joints		19	57	19	57
		v. hard grey qtz. shale		20	60	20	60
		shaly qtz. shale		21	63	21	63
		shaly qtz. shale		22	66	22	66
		sandy qtz. shale		23	69	23	69
		dark grey qtz. shale		24	72	24	72
		shale with dark grey beds		25	75	25	75
		hard shale		26	78	26	78
		grey qtz. shale		27	81	27	81
		hard shaly qtz. shale, joints		28	84	28	84
		broken shaly qtz. shale		29	87	29	87
		very grey qtz. shale		30	90	30	90
		hard shale with thin beds of qtz.		31	93	31	93
		hard shale & qtz. shale		32	96	32	96
		hard dark shale with thin beds of qtz.		33	99	33	99
		sandy hard shale, thin beds of qtz.		34	102	34	102
		broken shale		35	105	35	105
		v. hard shale broken		36	108	36	108
		v. hard sandy shale		37	111	37	111
		hard dark shale		38	114	38	114
		dark shale		39	117	39	117
		hard dark shale		40	120	40	120
		broken dark shale		41	123	41	123
		dark shale		42	126	42	126
		dark shale		43	129	43	129
		dark shale		44	132	44	132
		dark shale		45	135	45	135
		dark shale		46	138	46	138
		dark shale		47	141	47	141
		dark shale		48	144	48	144
		dark shale		49	147	49	147
		dark shale		50	150	50	150
		dark shale		51	153	51	153
		dark shale		52	156	52	156
		dark shale		53	159	53	159
		dark shale		54	162	54	162
		dark shale		55	165	55	165
		dark shale		56	168	56	168
		dark shale		57	171	57	171
		dark shale		58	174	58	174
		dark shale		59	177	59	177
		dark shale		60	180	60	180
		dark shale		61	183	61	183
		dark shale		62	186	62	186
		dark shale		63	189	63	189
		dark shale		64	192	64	192
		dark shale		65	195	65	195
		dark shale		66	198	66	198
		dark shale		67	201	67	201
		dark shale		68	204	68	204
		dark shale		69	207	69	207
		dark shale		70	210	70	210
		dark shale		71	213	71	213
		dark shale		72	216	72	216
		dark shale		73	219	73	219
		dark shale		74	222	74	222
		dark shale		75	225	75	225
		dark shale		76	228	76	228
		dark shale		77	231	77	231
		dark shale		78	234	78	234
		dark shale		79	237	79	237
		dark shale		80	240	80	240
		dark shale		81	243	81	243
		dark shale		82	246	82	246
		dark shale		83	249	83	249
		dark shale		84	252	84	252
		dark shale		85	255	85	255
		dark shale		86	258	86	258
		dark shale		87	261	87	261
		dark shale		88	264	88	264
		dark shale		89	267	89	267
		dark shale		90	270	90	270
		dark shale		91	273	91	273
		dark shale		92	276	92	276
		dark shale		93	279	93	279
		dark shale		94	282	94	282
		dark shale		95	285	95	285
		dark shale		96	288	96	288
		dark shale		97	291	97	291
		dark shale		98	294	98	294
		dark shale		99	297	99	297
		dark shale		100	300	100	300

Top of Carboniferous zone
Gr. M. section

Massive brown quartz

Difficult to correlate lower and Foreman's long barometer.

GEOLOGICAL SURVEY AND MUSEUM
JERNYH STREET, LONDON S.W. 1.

(B10619). W. 35824-3122. 2500. 11/20. Gp. 140 O.A.

Handwritten: Melchester Works
Helmshore Park.

GEOLOGICAL SURVEY AND MUSEUM. BOREHOLES AND SHALTS.

Folio 2

County
6 in. Map

SD 71/9
76/595

Description.	THICKNESS.		DEPTH.	
	Feet.	Inches.	Feet.	Inches.
21. hard dark shale	2		212	
22. { v. hard dark grey grit, finely lenses grey grit grey grit	2 1 1	1 1 1	214 215 216	6 6 6
23. hard dark shale thin grey beds	7	1	223	
24. hard dark shaly shale	5		228	
25. hard dark shaly shale	8		236	
26. dark grey shaly shale	4		240	
27. hard dark shale	10	6	250	6
27-28. hard dark shale thin beds of grey grit	8		258	6
28. { hard dark shale massive, finely & lenticular hard dark shale hard dark shale	10 5 9	6 6 6	268 273 282	6 6 6
COAL			291	
29. { shaly grit grey grit beds of shaly grit. thin beds of grey & shale	7 10 12	3 6 6	298 308 320	3 6 6
30. { hard dark shale thin beds of grey grey grit & shale	6 10 14	6 6 6	326 336 350	6 6 6
31. { grey grit hard & shaly with beds of grey grit	6 9 4	6 6 6	356 365 370	6 6 6
32. { COAL hard shale with grey beds	13 40	3 6 3	384 424 430	6 6 6
33-36. { grey grit COAL			436 442 448 454	6 6 6 6
37-38. { shale & beds of grey grey grit	4 1	3 3	460 464	4 4
39. { grey grit shale, fossils v. hard grey grit shale fossils.	6 1	6 6	468 470	6 6
40. { v. hard grey dark shale thin beds of grey v. hard grey grit.	2 3 6	6 6 6	471 473 476	6 6 6
	1		482	6
			483	

Messrs Charles Ainsworth & Co. Roadster Works
Visited and noted on lanes 79 SE-E
never used. Very little water obtained.
ODC550. 2 links. 56. Rm.
(Supply piped from 79 SE/6 in dry periods)

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