

Taylor Wimpey (UK) Ltd
Coal Mining Risk Assessment
For
Whiston Phase 3, Foxes Bank, Widnes
July 2026
REPORT NO: 24TAY072/CMRA

- *Desk Studies and Site Walkovers*
- *Intrusive Contaminated Land Investigations*
- *Geotechnical Appraisals and Ground Investigations*
- *Landfill Gas Assessments and Remedial Design*
- *Remediation Design and Implementation*
- *Remediation Project Management and Supervision*
- *Site Abnormal Assessments (Foundations and Contaminated Land)*

GEOTECHNICAL - CONTAMINATED LAND - FLOOD RISK

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DOCUMENT ISSUE RECORD

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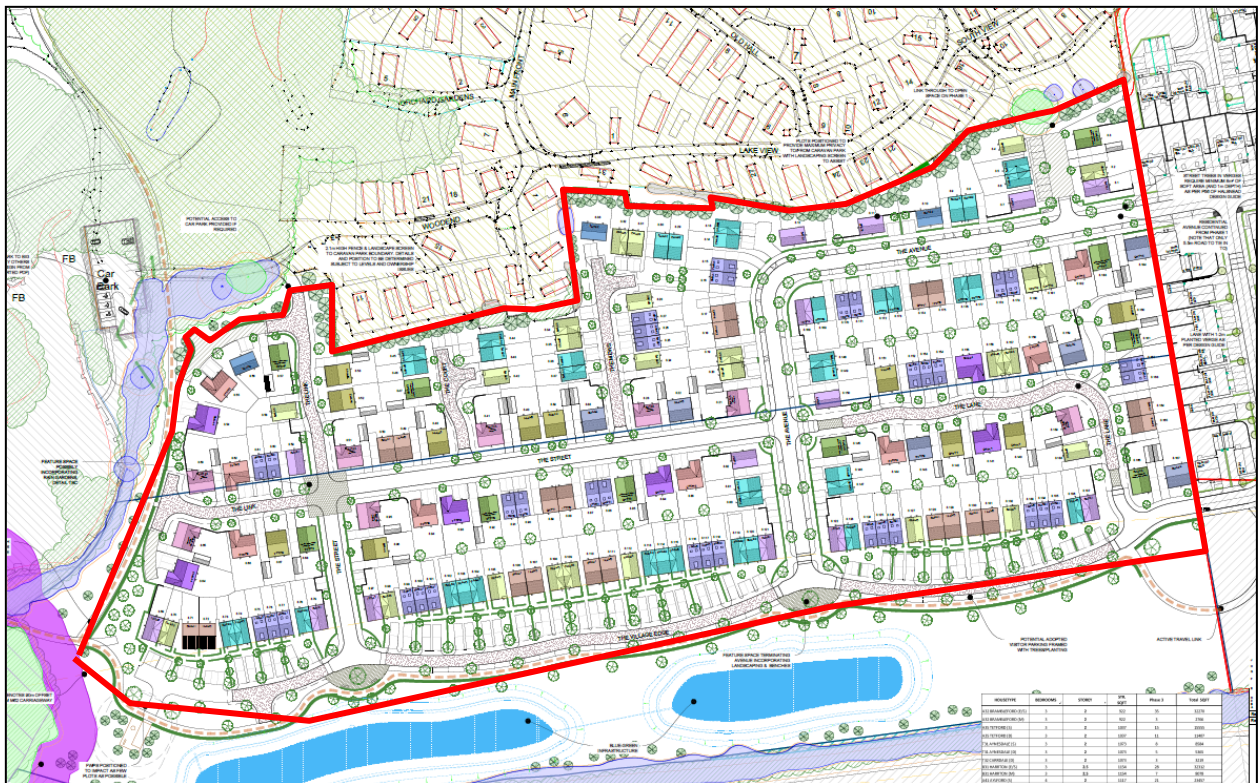
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1 SITE DESCRIPTION

1.1 Introduction

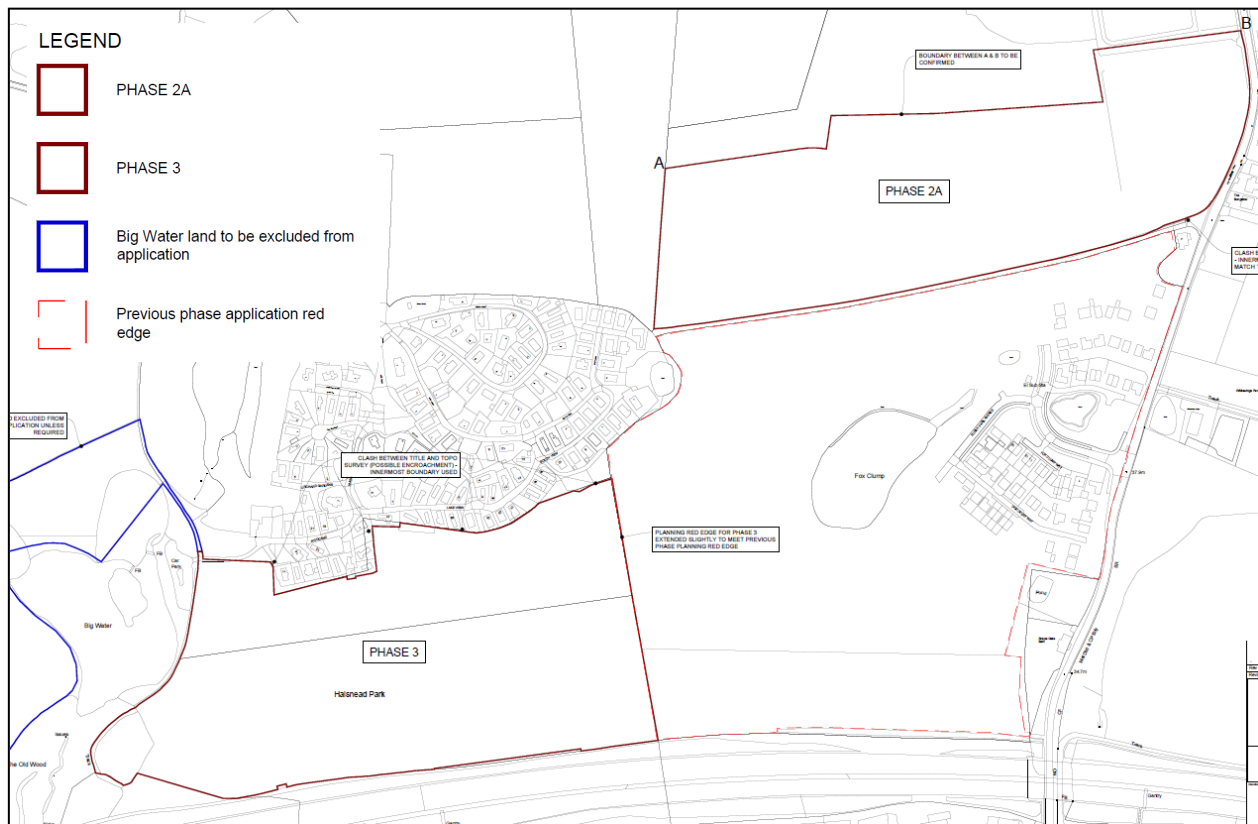
This investigation was carried out on the instruction of Taylor Wimpey. The purpose of the work was to carry out a Coal Mining Risk Assessment to provide a risk assessment information to support a planning application for a proposed residential development. A Proposed Site Layout can be seen below.



Previous reports available are as below, it should be noted that the phasing of these cross the boundaries of the subject planning red edge. For ease the logs for each of these have been extracted to allow this CMRA to be produced for the exact planning red edge.

- Report Ref Contract No: 19TAY055 Client: Taylor Wimpey Contract: Fox's Bank, Halshead Garden Village: Ground Investigation Report Revision 4 May 2026
- Report Ref 24TAY072 Client: Taylor Wimpey Contract: Phase 3, Whiston: Ground Investigation Report Revision 2 February 2026

This site fits in with the wider Whiston development as shown on the below extract:



1.2 Site Location

The site is located south of Lake View and north of the M62, Halshead Park, Whiston, nearest postcode L35 3SS. The coordinates on the National Grid Reference are 347236, 389888. The site is approximately 2.81 hectares in total. See Site Location Plan in Appendix A.

1.3 Site Description

1.3.1 On Site

Site was visited by a Geo-environmental engineer in January 2025 as part of the site investigation works and the following description outlines the main features of site. Photographs of the site can be seen in Appendix A.

Site comprises of one irregular elongated field immediately south of the existing Halshead static caravan park. There is no southern boundary with the field continuing on to the south section of the phase 3 area and is rough grass land, underfoot conditions were noted as very soft and wet. A large pile of fly tipped rubble and hedge trimmings/branches is located in the north-east of site. The west boundary abuts the neighbouring lake called Big Water with the east boundary a herras fence with the active Taylor Wimpey construction site beyond (access through the active phase 1 development). Site levels are higher in the east of site at around circa 45mAOD gradually dropping in the west of site to around 35mAOD. There

appears to be some limited encroachment of the static caravan gardens onto site along the north boundary.

1.3.2 Surrounding Area

Surrounding land uses for the site are as follows:

- **North** – 0 – 210m N is a static caravan park. Beyond is agricultural land.
- **East** – 0m – 230m E is agricultural land with a neighbouring phase of the Taylor Wimpey residential development beyond.
- **South** – 0 – 140m S is another parcel of land belonging to the phase 3 area (covered in the SI report referenced in Section 2.1 above). Beyond is the M62 and agricultural land.
- **West** – 0m – 210m W is woodland and a pond with a new residential development beyond.
-

2 SITE HISTORY

2.1 On site

Historical use on site is as follows.

The earliest available map of the site is the 1850 1:10,560 map which shows the site as undeveloped. An extract of this map is shown below;

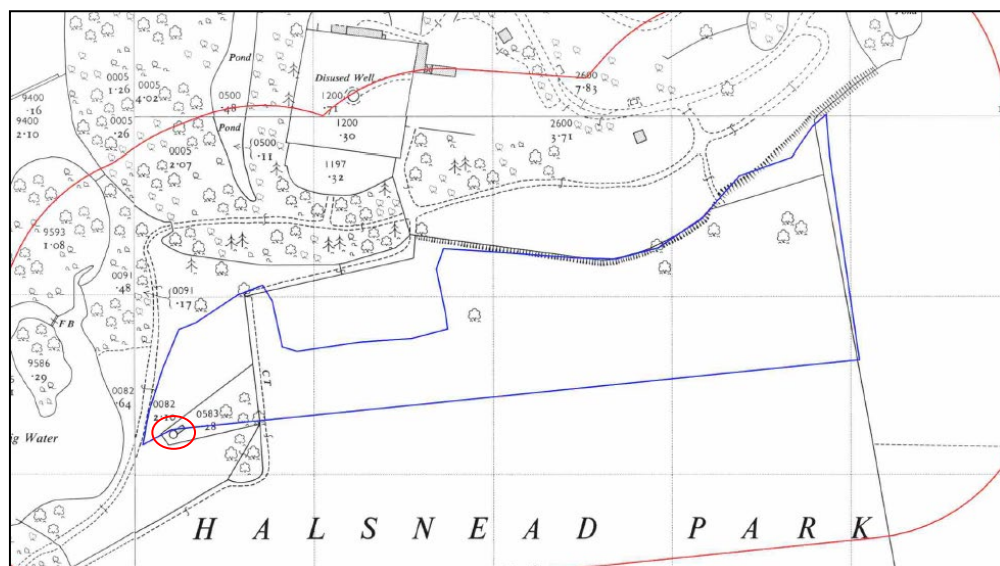
1850 1:10,560 map



No changes are shown to occur on site until circa 1891, where the site is now shown to be split across two (2 No) different field boundaries.

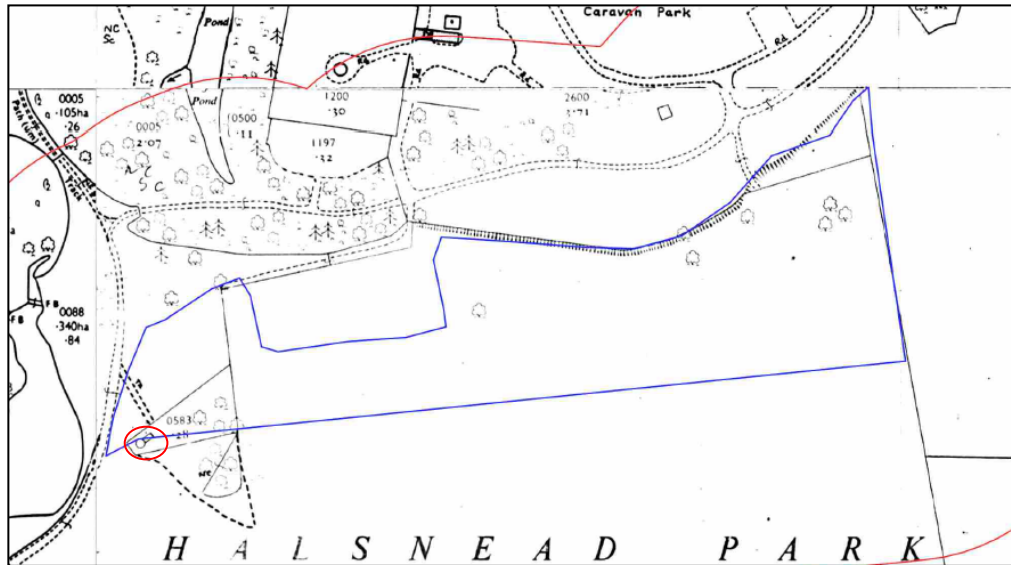
No further significant changes are shown to occur on site until circa 1959 where two (2 No) tracks are shown on site – one in the very north eastern area of site and one in the western area of site. Some sort of structure is also noted in the south western area of site as shown on the extract below;

1959 1:2,500 map



Circa 1980 - 1985, the track in the western area of site is no longer shown and has been relocated along the very western boundary edge and leads straight to the structure mentioned above. An extract of this map is shown below;

1980 - 1985 1:2,500 map



Circa 1981 – 1986, neither of the tracks previously located on site are now shown. Circa 1989 - 2023, the structure in the south western area of site is still present. This structure is only shown on the larger scale 1:2,500 & 1:1,250 mapping (which ends in 2003) and not the smaller scale 1:10,000 mapping therefore it cannot be determined when this structure disappeared from site. An extract of the 1:1,250 2003 mapping can be seen below;

2003 1:1,250 map



Satellite imagery from 2000 does show a similar feature on site. The Groundsure data set highlights this

feature to be a tank (see Environmental Data section below for further details).



No further changes are shown to occur on site between 2003 – 2024.

No significant development on site or land features suggesting shallow coal mining

2.2 Off site

Historical use surrounding the site is as follows.

Date First Shown	Land Uses
1850	5m W - Large Pond (still present) 80m N – Halsnead Farm (no longer shown circa 1966. Shown as caravan park circa 1989) Within 250m – A few isolated farms (still present) 350m N – Coal Pit (no longer labelled circa 1891) 500m NW – Old collieries (no longer shown circa 1966)
1891	No significant changes
1906	No significant changes
1925	450m SW – Mineral Railway to Cronton Colliery (shown as dismantled circa 1990. No longer shown circa 2024) 480m S – Cronton Colliery (no longer shown circa 1989)
1938	No significant changes
1947	60m SE – Nursery (no longer shown circa 1966) 310m - >500m NE – Nursery (no longer shown circa 1989) 500m SE – Sewage Works & Brick Works (no longer shown circa 1955)
1956	No significant changes
1967	0 – 220m N – tracks built for caravan park development (still present) 330m – 430m NW – Residential development (still present)
1978	160m S – M62 (still present)
1990	0 – 220m N – Caravan park (still present)
2001 - 2010	No significant changed
2025	220m - >500m W - Residential development (still present) 300m – 500m E – Residential development (still present)

3 GEOLOGY

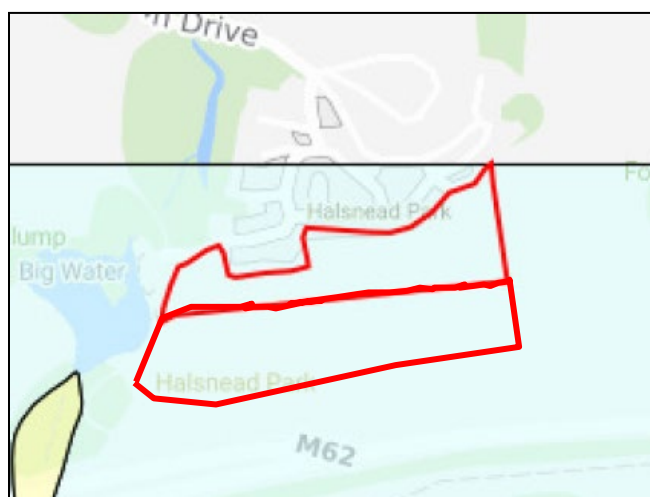
The following section details the published and available geological data available for the site and the surrounding area. All data is taken from the Groundsure Data report located in Appendix C unless otherwise stated. This report should be referred to for full details.

3.1 Published Geology

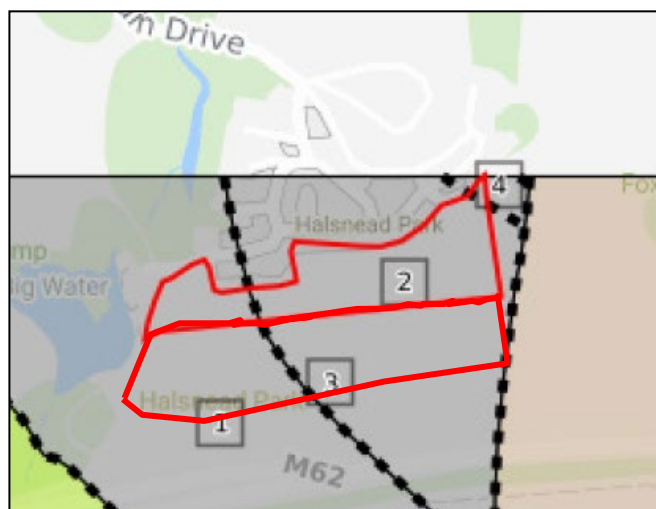
The documented geology of the site is summarised on the British Geological Survey map principally, with further site-specific details detailed below.

Geology	Artificial Ground & Land Slip	Drift	Solid
1:10,000	None recorded	Till Devensian – Sandy gravelly clay	Pennine Middle Coal Measures Formation – Mudstone, Siltstone and Sandstone

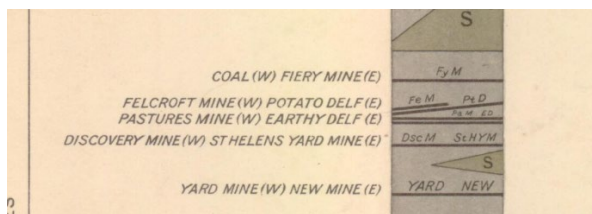
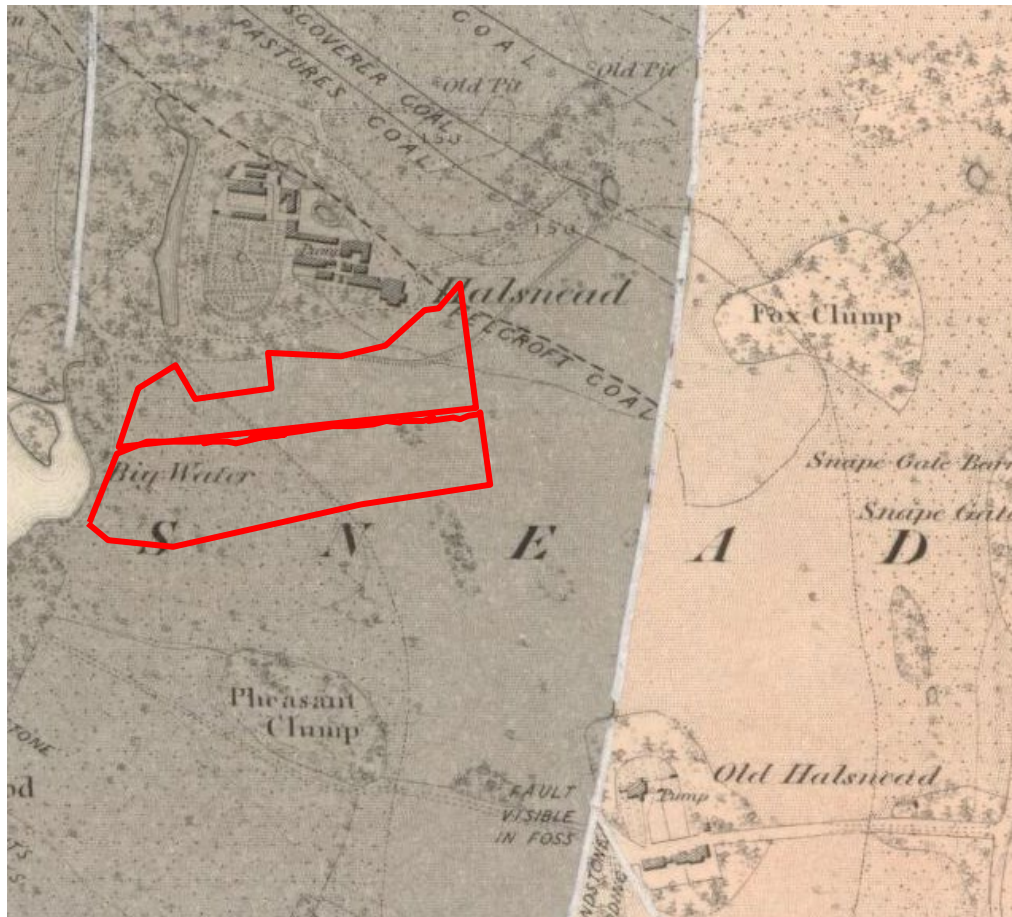
Superficial Geology



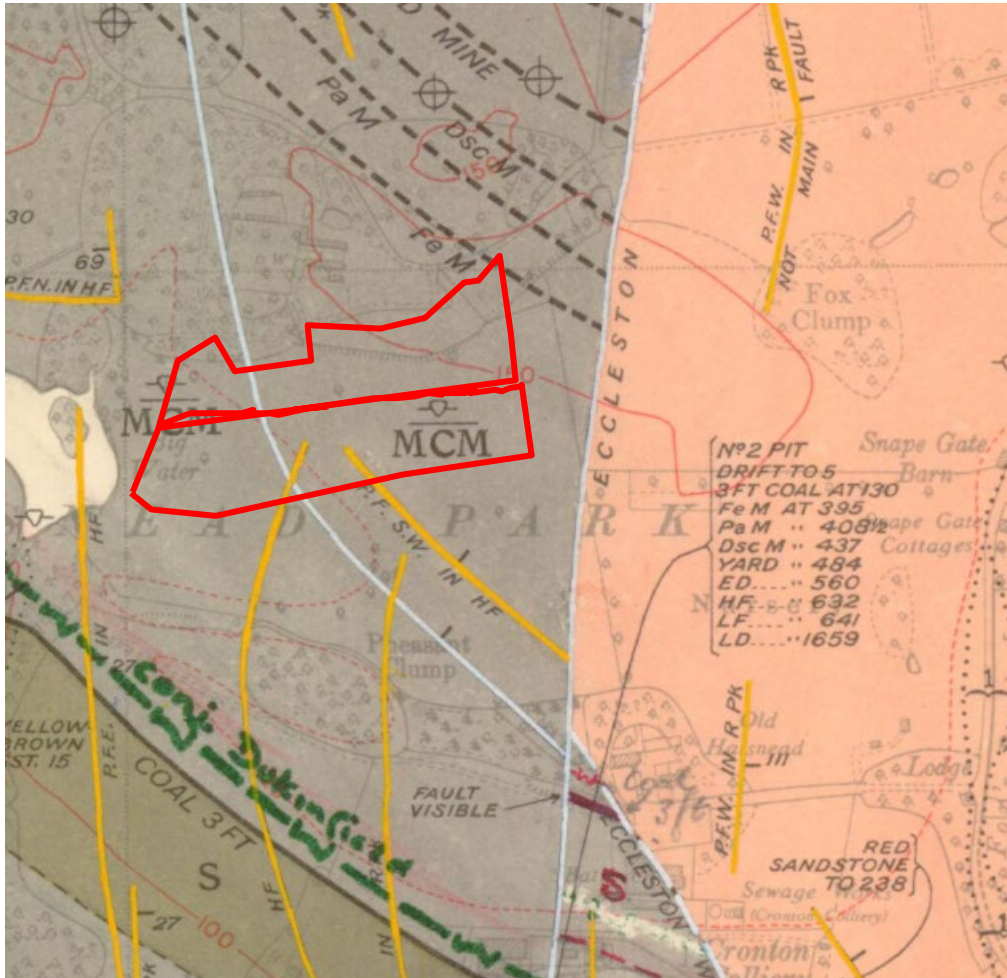
Bedrock Geology



The Geology map above is misleading and indicates two possible coal seams on site, however the line indicated by the number 3 on the plan above is in fact a fault line. A clearer geology map can be seen below showing the coal seam;



It is noted that the seam is conjectured to outcrop at this location on this map and the map on the following page. It is likely that this conjectured location is from dip of strata based within deeper recorded mines.



This newer map shows additional faulting observed in workings at depth. Given the major Eccleston fault immediately east and these additional faults in workings at depth it is anticipated that the area is going to be heavily faulted with interpretation of seams / dips likely to be very limited.

3.2 Coal Mining

The site is located within a Coal Mining High Risk Area therefore a Coal Authority/Mining Remediation Authority report was obtained for the site. Extracts of this report can be seen below. The full report can be seen in the Appendix.

Past underground mining

Colliery	Seam	Mineral	Coal Authority reference	Depth (m)	Direction to working	Dipping rate of seam worked (degrees)	Dipped direction of seam worked	Extraction thickness (cm)	Year last mined
unnamed	RAMS	Coal	3033	109	Beneath Property	12.7	South-West	180	1957
unnamed	RAMS	Coal	3032	110	North-West	11.3	South-West	180	1866
unnamed	HIGHER FLORIDA	Coal	3036	126	Beneath Property	12.3	South-West	180	1924
unnamed	HIGHER FLORIDA	Coal	3034	129	North	11.3	South	180	1869
unnamed	ST. HELENS YARD	Coal	302X	138	South	11.3	South-West	90	1930
unnamed	WIGAN FOUR FEET	Coal	3040	229	North	11.2	South	160	1902
unnamed	WIGAN FIVE FEET	Coal	303U	265	South-West	11.8	South-West	110	1945
unnamed	HAIGH YARD	Coal	304F	355	South	13.7	South-West	120	1949
unnamed	RUSHY PARK	Coal	304M	400	Beneath Property	10.9	South-West	130	1932
unnamed	RUSHY PARK	Coal	304K	415	Beneath Property	12.0	South	130	1896
unnamed	RUSHY PARK	Coal	304J	422	West	12.0	South	130	1889
unnamed	RUSHY PARK	Coal	304L	441	North-East	13.4	South-West	130	1896
unnamed	RUSHY PARK	Coal	304I	441	North	9.5	South	130	1886

Probable unrecorded shallow workings

Yes.

Outcrops

Seam name	Mineral	Seam workable	Distance to outcrop (m)	Direction to outcrop	Bearing of outcrop
CROMBOUKE	Coal	Yes	35.1	North-East	125
LONDON DELPH (BIN)	Coal	Yes	Within	N/A	302

Mine entries

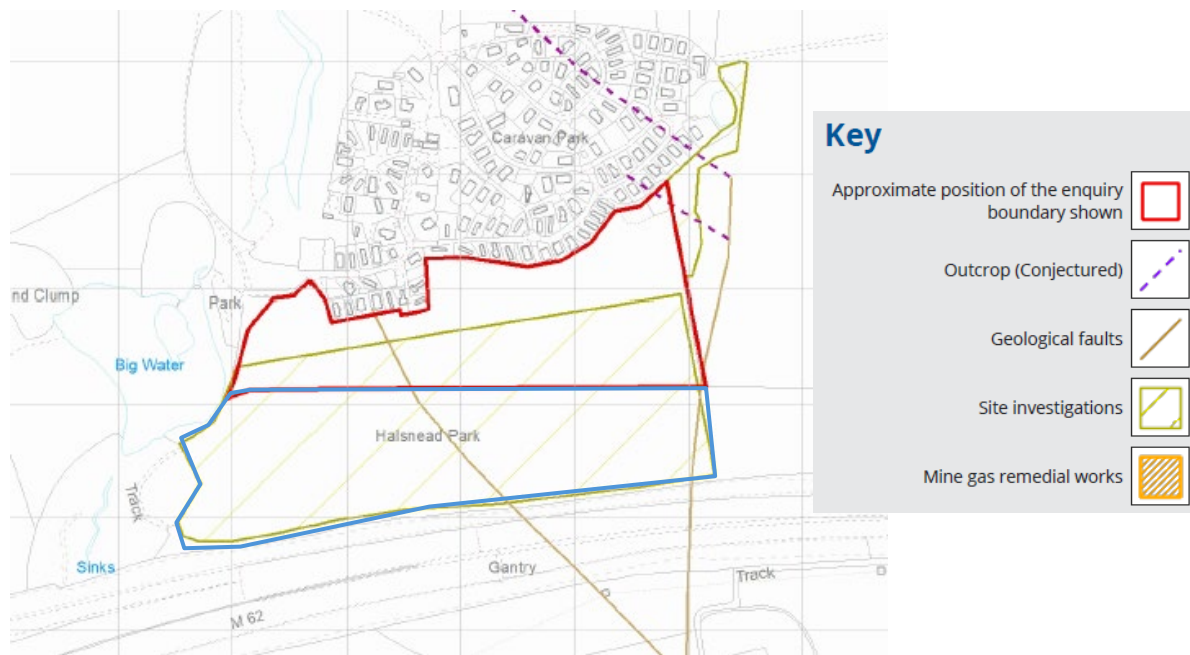
None recorded within 100 metres of the enquiry boundary.

Site investigations

Distance to site investigation (m)	Direction
Within	N/A
Within	N/A

Mine gas

Distance to gas incident/remediation (m)	Direction
458.1	South
481.0	South



This ties up with the published geology. The shallow possible workings are that of the Feldcroft Mine, to which no recorded workings exist, the MRA only having records of the much deeper workings.

When reviewing the 'Development High Risk Zone' the MRA have suggested this correlates with this seam dipping at 1:6 to the south west from the subcrop which just clips the far north eastern corner.

The geology is anticipated to be somewhat mixed due to the presence of the Eccleston Fault to the East and subsequent local smaller faults.

3.3 Intrusive Investigation

Betts Geo undertook the site investigations detailed on the adjacent site and the findings can be seen below.

Southern half (October 2019)

Betts Geo undertook sixteen (16 No) rotary boreholes across the site area in October 2019 to depths of between 15.00mbgl – 30.00mbgl under a Coal Authority permit. Several shallow holes were also drilled to prove the precise position of the Eccleston West Fault, these were not logged as they were for location purposes only.

"Whilst no coal thicker than 1.0m was encountered in the drilling on the majority of the site, a small area of shallow coal 1.0m thick was proved to be present in the close proximity of the Eccleston West Fault. This coal is within a faulted block dipping east at 1 in 10, close to the western wall of the fault and presumed to have been displaced downwards from higher in the Coal Measure succession. If this is the origin of the faulted block then the only known coal seam of a similar recorded thickness is the unworked Three Foot Coal, encountered close to outcrop in the Cronton Colliery No 2 Shaft and inferred to outcrop in the

extreme west of the site dipping to the south-west at 1 in 6.

Bh 16 in the west of the site was drilled to locate the Three-Foot Coal but the seam was proved to outcrop south-west of the site boundary.

The previous 2018 investigation north of the site also encountered minor faulting associated, and probably parallel, to the Eccleston West Fault. There was no evidence of any mining activity in any of the boreholes, the strata being consistently firm and hard with no soft drilling or loss of water flush. There is no evidence of any past shallow mining activity under the site.”

Eastern area (Sept 2018)

Betts Geo undertook sixteen (16 No) rotary boreholes across the site area in September 2018 to depths of 30.00mbgl under a Coal Authority permit.

“No coal thicker than 1.20m was encountered in the drilling. There was no evidence of any mining activity in any of the coal seams, with the strata being consistently firm and hard with no soft drilling or loss of water flush.

The seams are of good quality and extensively mined elsewhere in Whiston and Prescot. The lack of mining under the site is most likely due to the proximity and effect of the Eccleston East Fault. There are records of three shafts 50m north of site, however there are no mine plans of workings from the shafts with the shaft positions being derived solely from the First Edition Ordnance Survey.

There is no evidence of any past shallow mining activity under the site and the presence of the Eccleston East Fault and associated minor faulting would have deterred any early shallow mining.

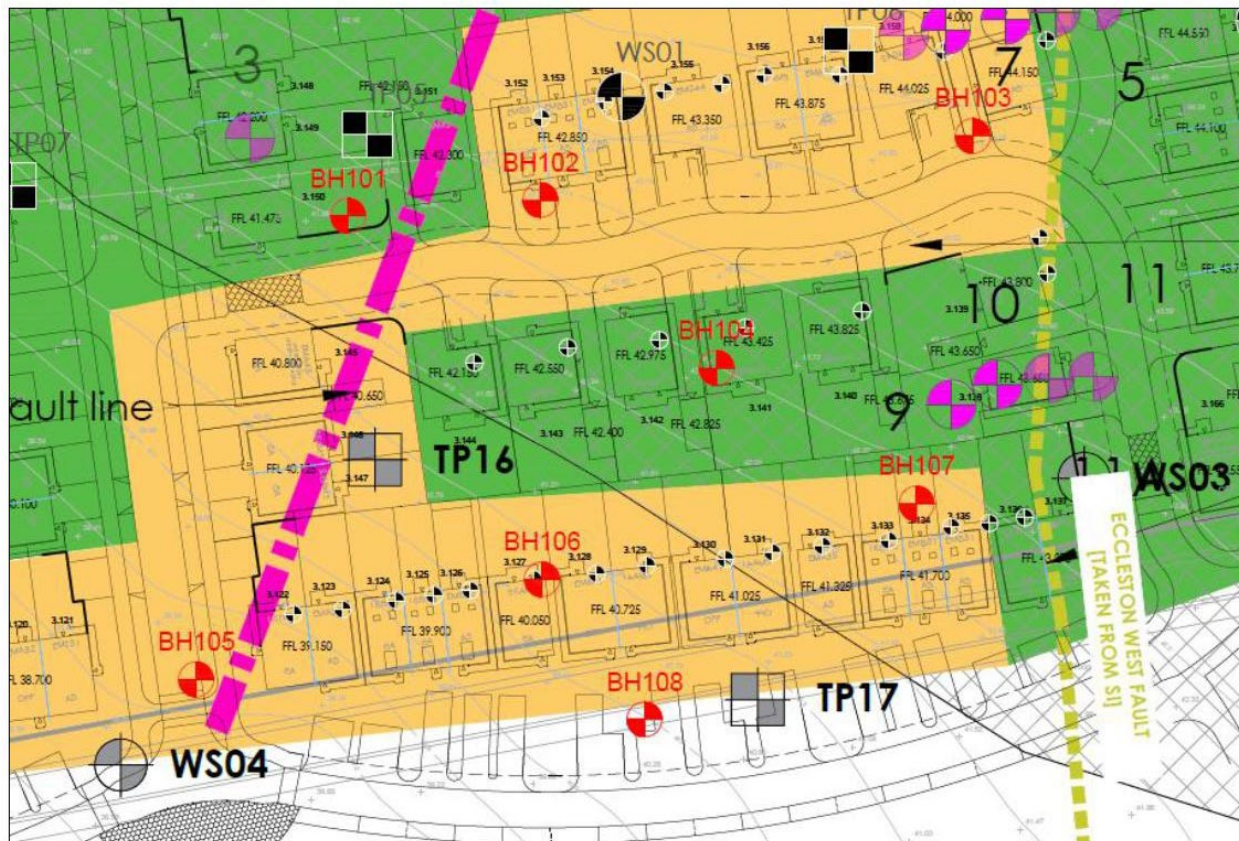
As with any former coal mining area, despite no evidence to suggest worked coal seams at shallow depth, site vigilance is advised during development/site strip to ensure no evidence of shallow excavations are evident.”

February 2026 additional boreholes (northern area)

As part of the previous investigation / foundations assessment recommendations additional rotary boreholes were undertaken by Betts Geo under MRA Permit to further explore the potential for coal seams and evidence of workings.

An additional eight (8 No.) rotary open boreholes (BH01 – BH08) were undertaken (under MRA permit) in the areas to better assess the risk to site by shallow coal previously discussed.

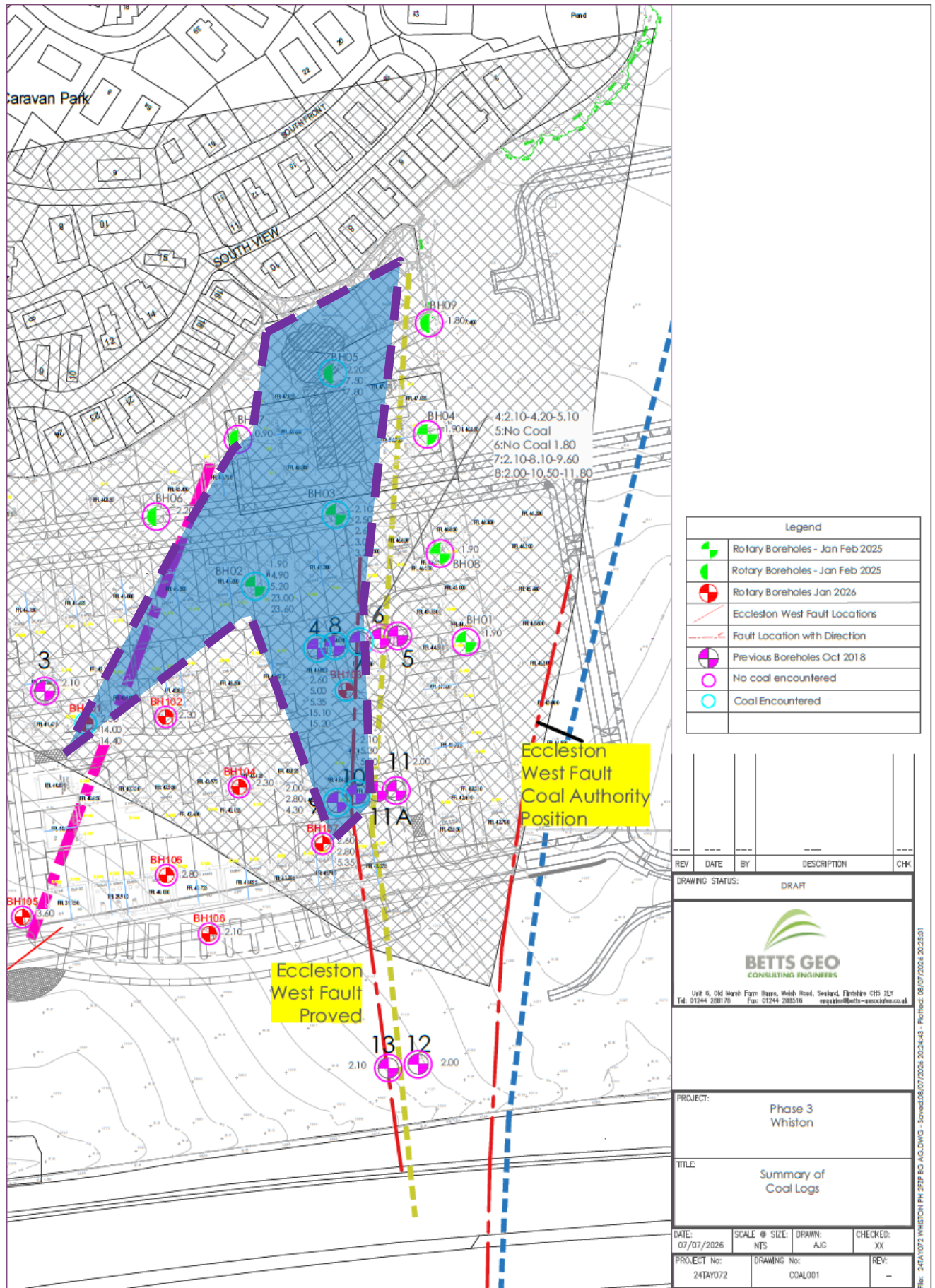
An additional eight (8 No.) rotary open boreholes (BH101 – 108) were undertaken (under MRA permit) to better assess the risk to site by shallow coal previously discussed.



BH108 encountered fast broken drilling at 29.6-30.10m with rock head at 2.1mbgl – 100% flush was maintained suggesting that this is possibly a fault. If it was deemed workings the depth and rock cover negates the risk to proposed dwellings.

No evidence of mining related disturbance was identified in any the holes in this investigation phase.

On the plan below the area where coal was identified is shown in Blue.



4 SUMMARY AND RECOMMENDATIONS

4.1 Summary

Shallow thin coal (300-400mm thick) has been identified within the depth where rockhead cover is insufficient, should it be worked. Is deemed unlikely that the shallow, thin coal has been worked given the complications of the known major fault line and lack of evidence of any workings within exploratory holes, however a small risk does still exist.

4.2 Recommendations

Whist the shallow thin coal identified was sporadic and of variable quality and no evidence of workings the possibility of crop working and or bell pits cannot be ruled out.

An inspection of the natural ground post site strip is advised to identify any mining ancient shallow mining features.

Foundations within the coal area marked blue should be reinforced as a precautionary measure.

Grouting is not advised given the lack of evidence of workings, however, as with any coal mining area site vigilance is advised during site strip to ensure no unrecorded shafts / trial shafts exist.

Once the layout is fixed it may be prudent to undertake plot specific rotary proving holes (6No would fill in gaps in the current layout)

5 REFERENCES

- 5.1 BS 5930:2015 *Code of Practice for Ground Investigation*.
- 5.2 Investigation of Potentially contaminated sites BS10175:2011 +A1:2013.
- 5.3 BS8576:2013 Guidance on investigations for ground gas.
- 5.4 R & D Publication CLR 8 (March 2002) *Assessment of Risks to Human Health from Land Contamination: An Overview of the Development of Soil Guideline Values and Related Research*. Environment Agency.
- 5.5 R & D Publication CLR 10 (March 2002) *The Contaminated Land Exposure Assessment Model (CLEA): Technical basis and algorithms*. Environment Agency.
- 5.6 *Contaminated Land Risk Assessment; a Guide to Good Practice*; CIRIA C552: 2001.
- 5.7 BRE 211 *Radon: guidance on protective measures for new buildings (including supplementary advice for extensions, conversions and refurbishment) (2007 edition)*.
- 5.8 *Assessment of risks to human health from land contamination: an overview of the development of guideline values and related research*. EA, 2002.
- 5.9 *Health and Safety in Construction, HSG150*, HSE, 1996.
- 5.10 Baker W (1987), *Investigation Strategy - lecture at City of Birmingham Development Department Symposium on Methane Generating Sites, 9 December 1987, Industrial Research Laboratories, Birmingham*.
- 5.11 NHBC Standards, Chapter 4.2, 2017 *Building Near Trees*.
- 5.12 'Guidance on Evaluation of Development Proposals on Sites Where Methane and Carbon Dioxide are Present', Report Edition No.04 March 2007 NHBC – designed for use with low rise residential properties.
- 5.13 CIRIA C665 'Assessing risks posed by hazardous ground gases for buildings' 2007 - for high rise residential / flats.
- 5.14 BS8485:2015 'Code of practice for the design of protective measures for methane and carbon dioxide ground gases for new buildings'.
- 5.15 BRE 414 'Protective measures for housing on gas-contaminated land' Roger Johnson, Parkman Environment 2001.
- 5.16 BS 8500-2:2015+A1:2016 'Concrete British Standard to BS EN 206. Specification for constituent materials and concrete'.
- 5.17 CLR11 'Model Procedures for the Management of Land Contamination' DEFRA 2004.
- 5.18 'Land Contamination Risk Management (LCRM)' Environment Agency (October 2020).
- 5.19 Ciria C758D *Abandoned mine workings manual (C758D)* September 2019
- 5.20 The Coal Authority App

APPENDIX A

- iii) Exploratory Hole Location Plan
- iv) Coal Report

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

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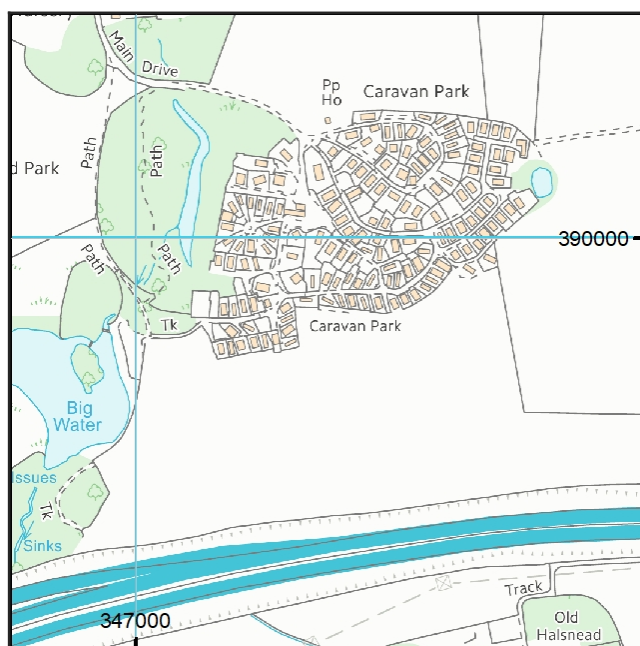
www.groundstability.com

 @coalauthority

 /company/the-coal-authority

 /thecoalauthority

 /thecoalauthority



Approximate position of property



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Section 1 – Mining activity and geology

Past underground mining

Colliery	Seam	Mineral	Coal Authority reference	Depth (m)	Direction to working	Dipping rate of seam worked (degrees)	Dipped direction of seam worked	Extraction thickness (cm)	Year last mined
unnamed	RAMS	Coal	3033	109	Beneath Property	12.7	South-West	180	1957
unnamed	RAMS	Coal	3032	110	North-West	11.3	South-West	180	1866
unnamed	HIGHER FLORIDA	Coal	3036	126	Beneath Property	12.3	South-West	180	1924
unnamed	HIGHER FLORIDA	Coal	3034	129	North	11.3	South	180	1869
unnamed	ST. HELENS YARD	Coal	302X	138	South	11.3	South-West	90	1930
unnamed	WIGAN FOUR FEET	Coal	3040	229	North	11.2	South	160	1902
unnamed	WIGAN FIVE FEET	Coal	303U	265	South-West	11.8	South-West	110	1945
unnamed	HAIGH YARD	Coal	304F	355	South	13.7	South-West	120	1949
unnamed	RUSHY PARK	Coal	304M	400	Beneath Property	10.9	South-West	130	1932
unnamed	RUSHY PARK	Coal	304K	415	Beneath Property	12.0	South	130	1896
unnamed	RUSHY PARK	Coal	304J	422	West	12.0	South	130	1889
unnamed	RUSHY PARK	Coal	304L	441	North-East	13.4	South-West	130	1896
unnamed	RUSHY PARK	Coal	304I	441	North	9.5	South	130	1886

Probable unrecorded shallow workings

Yes.

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

The following abandoned mine plan catalogue numbers intersect with some, or all, of the enquiry boundary:

NW836	14235	NW638
11564	NW535	10958
NW727	PO0	16820

Our records show we have more plans than those shown above which could affect the enquiry boundary.

Please contact us on 0345 762 6848 to determine the exact abandoned mine plans you require based on your needs.

Outcrops

Seam name	Mineral	Seam workable	Distance to outcrop (m)	Direction to outcrop	Bearing of outcrop
CROMBOUKE	Coal	Yes	35.1	North-East	125
LONDON DELPH (BIN)	Coal	Yes	Within	N/A	302

Geological faults, fissures and breaklines

Please refer to the 'Summary of findings' map (on separate sheet) for details of any geological faults, fissures or breaklines either within or intersecting the enquiry boundary.

Faults under or close to the property 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

Distance to site investigation (m)	Direction
Within	N/A
Within	N/A

See Section 4 for further information.

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

Distance to gas incident/remediation (m)	Direction
458.1	South
481.0	South

See Section 4 for further information.

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

The following potential risks have been identified and as part of your risk assessment should be investigated further.

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.

Development advice

The site is within an area of historical coal mining activity. Should you require advice and/or support on understanding the mining legacy, its risks to your development or what next steps you need to take, please contact us.

Site investigations

The site is within an area of previous interest. It is close to where the Coal Authority has received information relating to past site investigations.

The site requires further investigation and may influence how you approach your risk assessment.

Mine gas remedial works

The site is within an area of previous interest. It is close to where the Coal Authority has investigated and subsequently remediated the effects of mine or ground gas emissions following specific reported hazards.

The site requires further investigation and may influence your risk assessment. We recommend that you order the **Coal Authority Mine Gas Emission Report**, which will include more information about the hazard.

For further information on specific site or ground investigations in relation to any issues raised in Section 4, please call us on 0345 762 6848 or email us at groundstability@coal.gov.uk.

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.

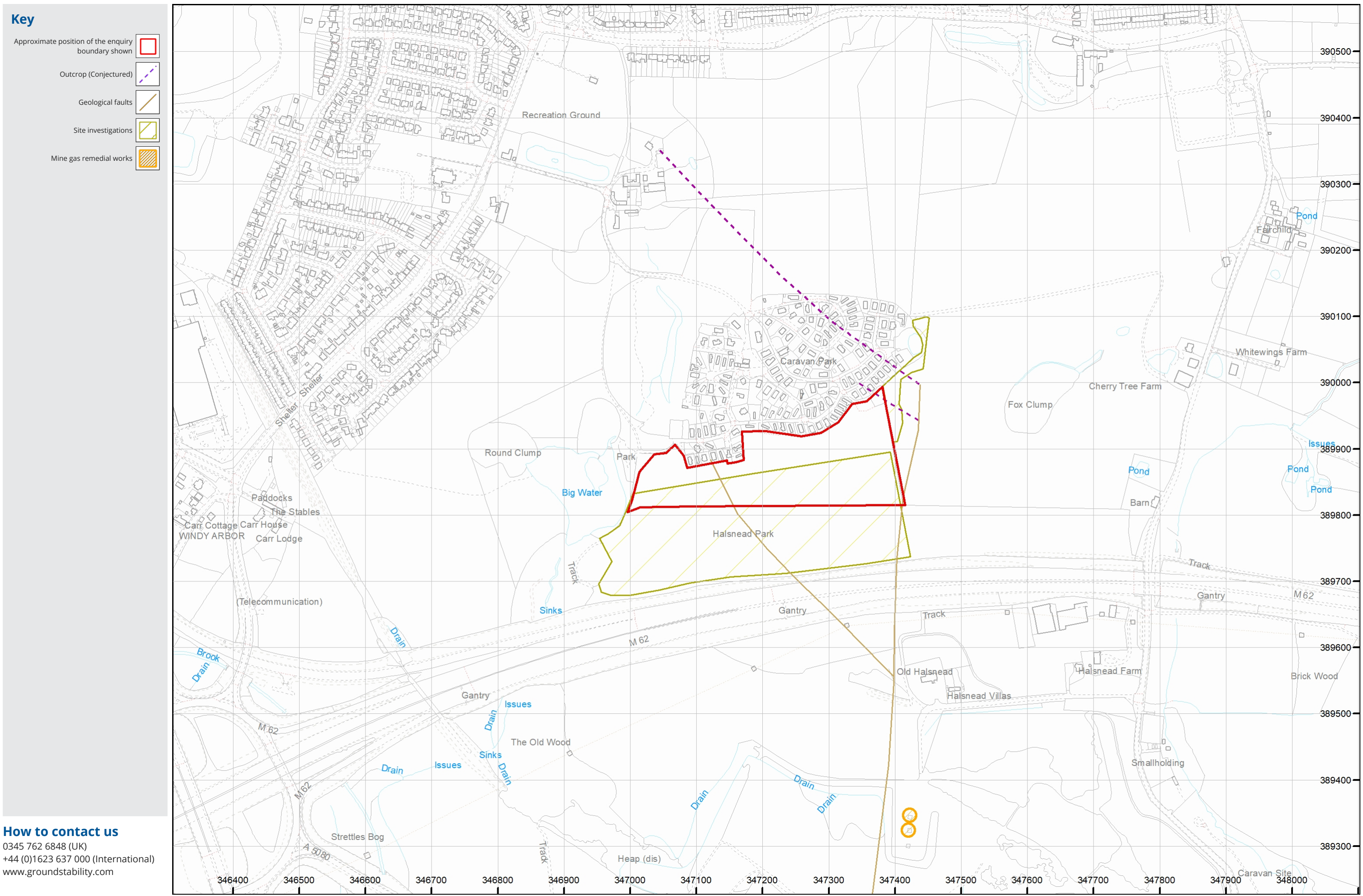
Withdrawal of support notices

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.



APPENDIX B

ii) Rotary Hole Logs

ROTARY TEST DRILLING Marshes Farm, Coach Road, off Wigan Road, Hart Common, West Houghton, Bolton BL5 2BT Tel: 01942 - 810348 Fax: 01942 - 840543				Site Whiston, Phase 3				Job No. 01/25			
				Client Betts Geo				Borehole RBH01			
				Date 21/01/25 - 22/01/25		O.D. Level		Page 1 of 1			

Day	Casing Depth	Strata Depth	Description of Strata	Legend	Inst.	Reduced Level	Flush Returns	Core Depths	TCR %	SCR %	RQD %
		G.L. 0.40	Grass over TOPSOIL (0.40)								
			Yellow/brown CLAYS (1.50)								
	3.1M	1.90	Weathered becoming strong red SANDSTONE, MARL bands (11.60)								
		13.50	Grey/dark grey MUDSTONE (3.00)								
		16.50	Light grey SANDSTONE & quartzite, very hard/slow drilling (0.60)								
		17.10	Grey MUDSTONE bands of SANDSTONE (12.90)								
		30.00	Base of Drillhole								

Symbols

TCR - TOTAL ROCK RECOVERY

SCR - SOLID ROCK RECOVERY

RQD - ROCK QUALITY DESIGNATION

Drilling Methods

Air mist

Remarks

Await access/induction, start setting up 10.30am

Gas = Normal/100% Flush

Backfill BH

ROTARY TEST DRILLING Marshes Farm, Coach Road, off Wigan Road, Hart Common, West Houghton, Bolton BL5 2BT Tel: 01942 - 810348 Fax: 01942 - 840543					Site Whiston, Phase 3					Job No. 01/25		
					Client Betts Geo					Borehole RBH02 Page 1 of 1		
					Date 22/01/25			O.D. Level				

Day	Casing Depth	Strata Depth	Description of Strata	Leg-end	Inst.	Reduced Level	Flush Returns	Core Depths	TCR %	SCR %	RQD %
	3.1M	G.L. 0.40	Grass over TOPSOIL (0.40)								
			Grey/brown CLAYS (1.50)								
		1.90	Grey MUDSTONE (3.00)								
		4.90	COAL (0.30)								
		5.20	Grey MUDSTONE & SANDSTONE (3.80)								
		9.00	Very hard grey/light grey SANDSTONE & QUARTZITE, slow drilling (1.60)								
		10.60	Grey MUDSTONE, bands of sandstone (12.40)								
		23.00	Black MUDSTONE & shaley COAL (0.60)								
		23.60	Grey SANDSTONE & MUDSTONE (6.40)								
			30.00	Base of Drillhole							

Symbols

TCR - TOTAL ROCK RECOVERY

SCR - SOLID ROCK RECOVERY

RQD - ROCK QUALITY DESIGNATION

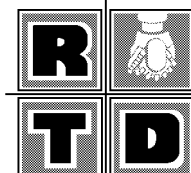
Drilling Methods

Air mist

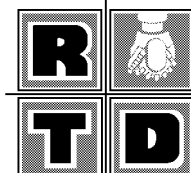
Remarks

Move air power with 8t excavator/unable to tow with rig, bogging
 Gas = Normal/100% flush throughout
 Backfill BH

ROTARY TEST DRILLING Marshes Farm, Coach Road, off Wigan Road, Hart Common, West Houghton, Bolton BL5 2BT Tel: 01942 - 810348 Fax: 01942 - 840543				Site Whiston, Phase 3 Client Betts Geo Date 22/01/25 - 23/01/25			Job No. 01/25 Borehole RBH03 Page 1 of 1				
Day	Casing Depth	Strata Depth	Description of Strata	Legend	Inst.	Reduced Level	Flush Returns	Core Depths	TCR %	SCR %	RQD %
		G.L. 0.40	Grass over TOPSOIL (0.40)								
			Yellow/brown CLAYS (1.70)								
		2.10	Clayey MUDSTONE (0.40)								
	3.1M	2.50	COAL (0.10)								
		2.60	Grey MUDSTONE (0.40)								
		3.00	COAL (0.20)								
		3.20	Grey MUDSTONE bands of hard quartzite rich SANDSTONE, hard/slow drilling in sandstone bands (26.80)								
		30.00	Base of Drillhole								
Symbols TCR - TOTAL ROCK RECOVERY SCR - SOLID ROCK RECOVERY RQD - ROCK QUALITY DESIGNATION											
Drilling Methods Air mist											
Remarks Very slow moving/bogging all plant inc. tracked dumper & rig Gas = Normal/100% flush Backfill BH											

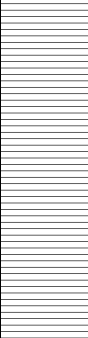
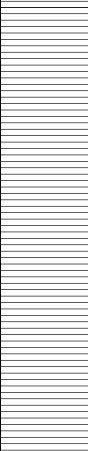


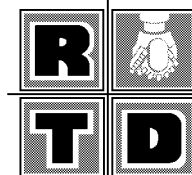
ROTARY TEST DRILLING Marshes Farm, Coach Road, off Wigan Road, Hart Common, West Houghton, Bolton BL5 2BT Tel: 01942 - 810348 Fax: 01942 - 840543				Site Whiston, Phase 3				Job No. 01/25			
				Client Betts Geo				Borehole RBH04 Page 1 of 1			
				Date 23/01/25 - 24/01/25		O.D. Level					
Day	Casing Depth	Strata Depth	Description of Strata	Leg- end	Inst.	Reduced Level	Flush Returns	Core Depths	TCR %	SCR %	RQD %
	3.1M	G.L. 0.40	Grass over TOPSOIL (0.40)								
		1.90	Brown CLAYS (1.50)								
		2.90	Weathered yellow SANDSTONE (1.00)								
			Grey MUDSTONE, bands of quartzite rich SANDSTONE upto 1.0m in thickness, slow progress in sandstone bands (27.10)								
		30.00	Base of Drillhole								
Symbols TCR - TOTAL ROCK RECOVERY SCR - SOLID ROCK RECOVERY RQD - ROCK QUALITY DESIGNATION											
Drilling Methods Air mist											
Remarks Take delivery of Bentonite 100% flush/Gas = normal 1.5Hrs moving/all plant bogging Backfill BH											



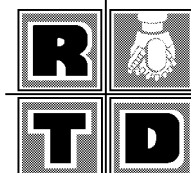
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ROTARY TEST DRILLING Marshes Farm, Coach Road, off Wigan Road, Hart Common, West Houghton, Bolton BL5 2BT Tel: 01942 - 810348 Fax: 01942 - 840543						Site Whiston, Phase 3						Job No. 01/25	
						Client Betts Geo						Borehole	
						Date 28/01/25 - 29/01/25			O.D. Level			RBH06	
												Page 1 of 1	
Day	Casing Depth	Strata Depth	Description of Strata	Leg-end	Inst.	Reduced Level	Flush Returns	Core Depths	TCR %	SCR %	RQD %		
		G.L. 0.40	Grass over TOPSOIL (0.40)										
			Yellow/brown CLAYS (1.80)										
	3M	2.20											
		2.90	yellow/grey SANDSTONE (0.70)										
			Grey MUDSTONE bands of light grey quartz rich SANDSTONE, slow progress in sandstone (6.60)										
		9.50	Grey MUDSTONE (12.50)										
		22.00	Dark grey and black MUDSTONE (5.00)										
		27.00	Black MUDSTONE (3.00)										
		30.00	Base of Drillhole										
Symbols TCR - TOTAL ROCK RECOVERY SCR - SOLID ROCK RECOVERY RQD - ROCK QUALITY DESIGNATION													
Drilling Methods Water flush													
Remarks Very slow moving 100% flush/gas = normal throughout Backfill BH													
R T D													

ROTARY TEST DRILLING Marshes Farm, Coach Road, off Wigan Road, Hart Common, West Houghton, Bolton BL5 2BT Tel: 01942 - 810348 Fax: 01942 - 840543				Site Whiston, Phase 3 Client Betts Geo Date 29/01/25 - 30/01/25				Job No. 01/25 Borehole RBH07 Page 1 of 1			
Day	Casing Depth	Strata Depth	Description of Strata	Leg-end	Inst.	Reduced Level	Flush Returns	Core Depths	TCR %	SCR %	RQD %
		G.L. 0.40 0.90	Grass over TOPSOIL (0.40)								
			Yellow/brow CLAYS (0.50)								
			Orange SANDSTONE with IRONSTONE (2.00)								
	3M	2.90	Grey MUDSTONE bands of very hard light grey quartz rich SANDSTONE (9.20)								
		12.10	Dark grey and black MUDSTONE (5.90)								
		18.00	Grey MUDSTONE bands of SANDSTONE (12.00)								
		30.00	Base of Drillhole								
Symbols TCR - TOTAL ROCK RECOVERY SCR - SOLID ROCK RECOVERY RQD - ROCK QUALITY DESIGNATION											
Drilling Methods Water flush											
Remarks Gas = normal/100% flush 2.5Hrs moving plant/rig Backfill BH											

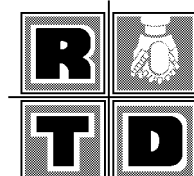


ROTARY TEST DRILLING Marshes Farm, Coach Road, off Wigan Road, Hart Common, West Houghton, Bolton BL5 2BT Tel: 01942 - 810348 Fax: 01942 - 840543				Site Whiston, Phase 3				Job No. 01/25			
				Client Betts Geo				Borehole RBH08			
				Date 31/01/25 - 04/02/25		O.D. Level		Page 1 of 1			
Day	Casing Depth	Strata Depth	Description of Strata	Leg- end	Inst.	Reduced Level	Flush Returns	Core Depths	TCR %	SCR %	RQD %
	3M	G.L. 0.45	Grass over TOPSOIL (0.45)								
			Grey/brown CLAYS (1.45)								
		1.90	Yellow ad grey SANDSTONE, quartzite bands (3.10)								
		5.00	Grey MUDSTONE bands of light grey SANDSTONE (4.00)								
		9.00	Grey SANDSTONE very hard light grey/white quartzite rich bands (2.50)								
		11.50	Dark grey & black MUDSTONE (3.50)								
		15.00	Grey MUDSTONE bands of SANDSTONE (15.00)								
		30.00	Base of Drillhole								
Symbols TCR - TOTAL ROCK RECOVERY SCR - SOLID ROCK RECOVERY RQD - ROCK QUALITY DESIGNATION											
Drilling Methods Air mist											
Remarks 100% flush/gas = normal throughout 3.5Hrs moving plant/rig, drilling rig bogging											



ROTARY TEST DRILLING Marshes Farm, Coach Road, off Wigan Road, Hart Common, West Houghton, Bolton BL5 2BT Tel: 01942 - 810348 Fax: 01942 - 840543 Site Whiston, Phase 3 Client Betts Geo Date 04/02/25 - 05/02/25 O.D. Level					Job No. 01/25						
					Borehole RBH09						
					Page 1 of 1						
Day	Casing Depth	Strata Depth	Description of Strata	Leg-end	Inst.	Reduced Level	Flush Returns	Core Depths	TCR %	SCR %	RQD %
	3M	G.L.									
		0.50	Grass over TOPSOIL (0.50)								
			Brown/grey CLAYS (1.30)								
		1.80	Orange/yellow SANDSTONE & IRONSTONE (1.70)								
		3.50	Grey MUDSTONE bands of light grey quartzite rich SANDSTONE, slow progress in SANDSTONE (18.00)								
		21.50	Dark grey & black MUDSTONE (5.50)								
		27.00	Grey MUDSTONE & SANDSTONE (3.00)								
		30.00	Base of Drillhole								
Symbols TCR - TOTAL ROCK RECOVERY SCR - SOLID ROCK RECOVERY RQD - ROCK QUALITY DESIGNATION											
Drilling Methods Water flush											
Remarks 100% Flush/Gas = Normal Backfill BH De-mob plant from field, 3.5Hrs, rig bogging Wash down all plant ready for transport 1.5Hr											

ROTARY TEST DRILLING Marshes Farm, Coach Road, off Wigan Road, Hart Common, West Houghton, Bolton BL5 2BT Tel: 01942 - 810348 Fax: 01942 - 840543				Site Whiston, TW				Job No. 01/26			
				Client Betts geo				Borehole BH105 Page 1 of 1			
				Date 12/01/26 - 13/01/26		O.D. Level					
Day	Casing Depth	Strata Depth	Description of Strata	Leg- end	Inst.	Reduced Level	Flush Returns	Core Depths	TCR %	SCR %	RQD %
	4.5M	G.L.	Grass/vegetation over topsoil over brown/grey CLAY (2.60)								
		2.60	Grey GRAVEL/broken rock? (1.00)								
		3.60	Grey MUDSTONE (3.40)								
		7.00	Very hard grey/white quartz rich SANDSTONE, bands of grey MUDSTONE (23.60)								
		30.60	Base of Drillhole								
Symbols TCR - TOTAL ROCK RECOVERY SCR - SOLID ROCK RECOVERY RQD - ROCK QUALITY DESIGNATION											
Drilling Methods Water flush											
Remarks 2.5Hrs moving/100% flush. Gas = normal throughout Backfill BH											



ROTARY TEST DRILLING Marshes Farm, Coach Road, off Wigan Road, Hart Common, West Houghton, Bolton BL5 2BT Tel: 01942 - 810348 Fax: 01942 - 840543					Site Whiston, TW				Job No. 01/26		
					Client Betts geo				Borehole BH104 Page 1 of 1		
					Date 13/01/26 - 14/01/26		O.D. Level				

Day	Casing Depth	Strata Depth	Description of Strata	Leg-end	Inst.	Reduced Level	Flush Returns	Core Depths	TCR %	SCR %	RQD %
		G.L.	Grass/vegetation over topsoil over brown CLAY/Gravel (2.30)								
	3.1M	2.30	Grey/brown MUDSTONE (12.70)								
		15.00	Hard grey SANDSTONE, slow progress (11.00)								
		26.00	Grey MUDSTONE, bands of SANDSTONE (4.60)								
		30.60	Base of Drillhole								

Symbols

TCR - TOTAL ROCK RECOVERY

SCR - SOLID ROCK RECOVERY

RQD - ROCK QUALITY DESIGNATION

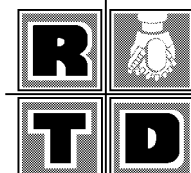
Drilling Methods

Water flush

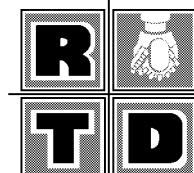
Remarks

2.0Hrs moving/collecting water
Gas = normal, 100% flush throughout
Backfill BH

ROTARY TEST DRILLING Marshes Farm, Coach Road, off Wigan Road, Hart Common, West Houghton, Bolton BL5 2BT Tel: 01942 - 810348 Fax: 01942 - 840543					Site Whiston, TW				Job No. 01/26		
					Client Betts geo				Borehole BH101 Page 1 of 1		
					Date 15/01/26 - 16/01/26		O.D. Level				
Day	Casing Depth	Strata Depth	Description of Strata	Leg- end	Inst.	Reduced Level	Flush Returns	Core Depths	TCR %	SCR %	RQD %
	3.1M	G.L.	Grass/vegetation over topsoil over brown gravelly CLAY (2.30)								
		2.30	Brown very shalet CLAY/clayey MUDSTONE (0.70)								
		3.00		Grey MUDSTONE (3.10)							
		6.10	Very hard grey quartz rich SANDSTONE bands of MUDSTONE, slow progress (6.90)								
		13.00									
		14.00	Grey MUDSTONE (1.00)								
		14.40	Bright COAL, intact (0.40)								
			Grey MUDSTONE & SANDSTONE (16.20)								
			30.60	Base of Drillhole							
Symbols TCR - TOTAL ROCK RECOVERY SCR - SOLID ROCK RECOVERY RQD - ROCK QUALITY DESIGNATION											
Drilling Methods Water flush											
Remarks 2.0Hrs moving/collecting water Gas = Normal, 100% flush throughout Backfill BH											



ROTARY TEST DRILLING Marshes Farm, Coach Road, off Wigan Road, Hart Common, West Houghton, Bolton BL5 2BT Tel: 01942 - 810348 Fax: 01942 - 840543				Site Whiston, TW				Job No. 01/26			
				Client Betts geo				Borehole BH102 Page 1 of 1			
				Date 16/01/26 - 19/01/26		O.D. Level					
Day	Casing Depth	Strata Depth	Description of Strata	Legend	Inst.	Reduced Level	Flush Returns	Core Depths	TCR %	SCR %	RQD %
	3.1M	G.L.	Grass/vegetation over TOPSOIL, over brown/grey CLAY, GRAVEL (2.30)								
		2.30	Grey/brown very clayey MUDSTONE/shaley CLAY (0.80)								
		3.10	Grey MUDSTONE, bands of very hard SANDSTONE (27.50)								
		30.60	Base of Drillhole								
Symbols TCR - TOTAL ROCK RECOVERY SCR - SOLID ROCK RECOVERY RQD - ROCK QUALITY DESIGNATION											
Drilling Methods Water flush											
Remarks 100% Flush/Gas = normal throughout 2.5Hr moving/collecting water, backfill BH											



Marshes Farm, Coach Road, off Wigan Road,
Hart Common, West Houghton, Bolton BL5 2BT
Tel: 01942 - 810348 Fax: 01942 - 840543

Date	19/01/26 - 20/01/26
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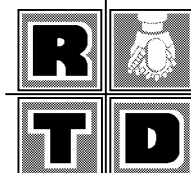
Page 1 of 1

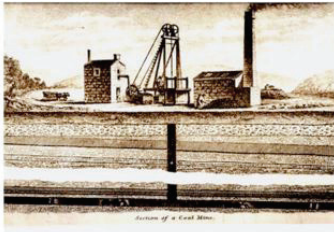


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ROTARY TEST DRILLING Marshes Farm, Coach Road, off Wigan Road, Hart Common, West Houghton, Bolton BL5 2BT Tel: 01942 - 810348 Fax: 01942 - 840543				Site Whiston, TW Client Betts geo Date 06/01/26 - 07/02/26 O.D. Level				Job No. 01/26 Borehole BH108 Page 1 of 1			
Day	Casing Depth	Strata Depth	Description of Strata	Leg- end	Inst.	Reduced Level	Flush Returns	Core Depths	TCR %	SCR %	RQD %
		G.L.	Grass/vegetation over TOPSOIL over brown/grey shaley CLAY (2.10)								
	3.1M	2.10 2.90	Grey very shaley CLAY/very clayey MUDSTONE (0.80) Grey MUDSTONE, bands of dark grey MUDSTONE (23.60)								
		26.50	Hard drilling grey quartz rich SANDSTONE & MUDSTONE (3.10)								
		29.60 30.10	Fast broken drilling, 100% flush, broken SANDSTONE/MUDSTONE (0.50) Grey MUDSTONE & SANDSTONE (1.50)								
		31.60	Base of Drillhole								
Symbols TCR - TOTAL ROCK RECOVERY SCR - SOLID ROCK RECOVERY RQD - ROCK QUALITY DESIGNATION											
Drilling Methods Water flush											
Remarks Collect water/de-frosting flush hoses 2.5Hr 100% flush/Gas = normal throughout Backfill BH											





Bh 1

REF 1946
Bh 1

SITE
CLIENT

TITLE

ORIGIN

Mullin's Land, Halsnead
Betts Geo-Environmental

n/a

printout direct from rig on site
drilled & logged by Neil Catlow

PRINTOUT 19 Nov 2019
SCALE 1:200
GL AOD
RIG Montabert Hydrofore
ORIENTATION vertical
FLUSH river water bowser supply
BIT 75mm T/C

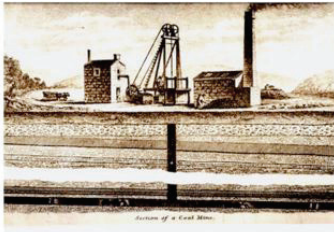
	DEPTH	STRATA	GRAPHIC	DESCRIPTION	SPT N value	INTERPRETATION
0.0	0.0	clay		brown, sandy, firm	not taken	ground level
0.5						
1.0						
1.5						
2.0						
2.5	2.5	shale		grey, firm drilling occasional thin black shales		rockhead
3.0						
3.5						
4.0						
4.5						
5.0						
5.5						
6.0	6.1	sandstone		brown, firm drilling with black shale layers		
6.5						
7.0						
7.5						
8.0						
8.5						
9.0						
9.5						
10.0	10.3	shale		black, firm drilling grey shale layers		
10.5						
11.0						
11.5						
12.0	12.0	coal		black, firm drilling, thin		
12.5	12.2	shale		black, firm drilling grey shale layers		
13.0						
13.5						
14.0						
14.5						
15.0						
15.5						
16.0	16.0	shale		dark grey, firm drilling		
16.5						
17.0						
17.5						
18.0						
18.5						
19.0	19.3	sandstone		brown, firm drilling with black shale layers		
19.5						
20.0						
20.5						
21.0						
21.5						
22.0						
22.5						
23.0						
23.5						
24.0						
24.5						
25.0						
25.5						
26.0						
26.5						
27.0						
27.5						
28.0						
28.5						
29.0						
29.5						
30.0	30.0			bottom of hole		

drilled and logged by
Neil Catlow B.Sc FGS

IN HOLE GAS TESTING

% O2	20.6
% CH4	0.0
% CO2	0.0
% LEL	0.0
ppm H2S	0.0
ppm CO	0.0

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Bh 2

REF 1946
Bh 2

SITE
CLIENT Mullin's Land, Halsnead
Betts Geo-Environmental

TITLE
n/a

ORIGIN
printout direct from rig on site
drilled & logged by Neil Catlow

PRINTOUT
SCALE 19 Nov 2019
1:200

GL AOD

RIG
ORIENTATION Montabert Hydrofore
vertical
FLUSH river water bowser supply
BIT 75mm T/C

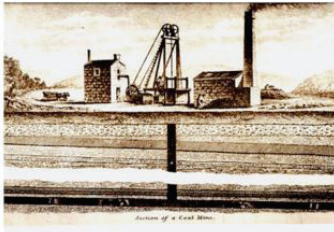
DEPTH	STRATA	GRAPHIC	DESCRIPTION	SPT N value	INTERPRETATION
0.0	0.0	clay	brown, sandy, firm	not taken	ground level
0.5					
1.0					
1.5					
2.0	2.1	shale	black, firm drilling		rockhead
2.5					
3.0					
3.5	3.5	shale	grey, firm drilling		
4.0					
4.5					
5.0					
5.5					
6.0					
6.5					
7.0					
7.5					
8.0	8.1	shale	dark grey, firm drilling		
8.5					
9.0					
9.5					
10.0	10.0	sandstone	brown, firm drilling		
10.5					
11.0					
11.5					
12.0	12.2	shale	dark grey, firm drilling		
12.5					
13.0					
13.5					
14.0	14.2	shale	black, firm drilling		
14.5					
15.0					
15.5					
16.0	16.3	sandstone	brown, firm drilling thin black shale layers		
16.5					
17.0					
17.5					
18.0					
18.5					
19.0					
19.5					
20.0					
20.5					
21.0					
21.5					
22.0					
22.5					
23.0					
23.5					
24.0					
24.5					
25.0					
25.5					
26.0					
26.5					
27.0					
27.5					
28.0					
28.5					
29.0					
29.5					
30.0	30.0		bottom of hole		

drilled and logged by
Neil Catlow B.Sc FGS

IN HOLE GAS TESTING

% O2	20.6
% CH4	0.0
% CO2	0.0
% LEL	0.0
ppm H2S	0.0
ppm CO	0.0

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Bh 3

REF 1946
Bh 3

SITE
CLIENT

Mullin's Land, Halshead
Betts Geo-Environmental

TITLE

n/a

ORIGIN

printout direct from rig on site
drilled & logged by Neil Catlow

PRINTOUT

20 Nov 2019

SCALE

1:200

GL AOD

RIG

Montabert Hydrofore

ORIENTATION

vertical

FLUSH

river water bowser supply

BIT

75mm T/C

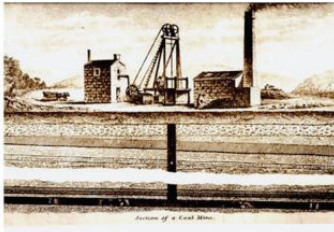
DEPTH	STRATA	GRAPHIC	DESCRIPTION	SPT N value	INTERPRETATION
0.0	0.0		brown, sandy, firm	not taken	ground level
0.5					
1.0					
1.5					
2.0	2.1		brown, firm drilling		rockhead
2.5					
3.0					
3.5					
4.0	4.0		dark grey, firm drilling		
4.5	4.3		brown, firm drilling		
5.0					
5.5					
6.0					
6.5					
7.0					
7.5					
8.0					
8.5					
9.0	9.1		dark grey, firm drilling		
9.5					
10.0					
10.5					
11.0					
11.5					
12.0					
12.5					
13.0					
13.5					
14.0					
14.5	14.8		grey, hard drilling		
15.0			thin grey shale layers		
15.5					
16.0					
16.5					
17.0					
17.5					
18.0					
18.5					
19.0					
19.5					
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20.5					
21.0					
21.5					
22.0					
22.5					
23.0					
23.5					
24.0					
24.5					
25.0					
25.5					
26.0					
26.5					
27.0					
27.5					
28.0					
28.5					
29.0					
29.5					
30.0	30.0		bottom of hole		

drilled and logged by
Neil Catlow B.Sc FGS

IN HOLE GAS TESTING

% O2	20.6
% CH4	0.0
% CO2	0.0
% LEL	0.0
ppm H2S	0.0
ppm CO	0.0

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REF 1946
Bh 4

SITE
CLIENT

TITLE

ORIGIN

Mullin's Land, Halsnead
Betts Geo-Environmental

n/a

printout direct from rig on site
drilled & logged by Neil Catlow

PRINTOUT 21 Nov 2019
SCALE 1:200
GL AOD
RIG Montabert Hydrofore
ORIENTATION vertical
FLUSH river water bowser supply
BIT 75mm T/C

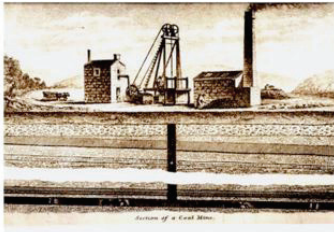
DEPTH	STRATA	GRAPHIC	DESCRIPTION	SPT N value	INTERPRETATION
0.0	0.0		brown, sandy, firm	not taken	ground level
0.5					
1.0					
1.5					
2.0	2.1		brown, firm drilling		rockhead
2.5					
3.0					
3.5					
4.0	4.2		black, firm drilling		? Three Foot Coal
4.5					
5.0	5.1		dark grey, firm drilling		
5.5			thin black shale layers		
6.0					
6.5					
7.0					
7.5					
8.0					
8.5					
9.0					
9.5					
10.0					
10.5	10.6		brown, firm drilling		
11.0					
11.5					
12.0					
12.5					
13.0	13.2		grey, firm drilling		
13.5			thin black shale layers		
14.0			and thin grey sandstones		
14.5					
15.0					
15.5					
16.0					
16.5					
17.0					
17.5					
18.0					
18.5					
19.0					
19.5					
20.0					
20.5					
21.0					
21.5					
22.0					
22.5					
23.0					
23.5					
24.0					
24.5					
25.0					
25.5					
26.0					
26.5					
27.0					
27.5					
28.0					
28.5					
29.0					
29.5					
30.0	30.0		bottom of hole		

drilled and logged by
Neil Catlow B.Sc FGS

IN HOLE GAS TESTING

% O2	20.6
% CH4	0.0
% CO2	0.0
% LEL	0.0
ppm H2S	0.0
ppm CO	0.0

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Bh 5

REF 1946
Bh 5

SITE
CLIENT Mullin's Land, Halsnead
Betts Geo-Environmental

TITLE
n/a

ORIGIN
printout direct from rig on site
drilled & logged by Neil Catlow

PRINTOUT 22 Nov 2019
SCALE 1:200
GL AOD
RIG Montabert Hydrofore
ORIENTATION vertical
FLUSH river water bowser supply
BIT 75mm T/C

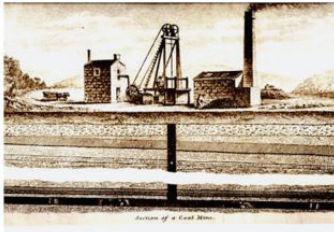
DEPTH	STRATA	GRAPHIC	DESCRIPTION	SPT N value	INTERPRETATION
0.0	0.0		brown, sandy, firm	not taken	ground level
0.5					
1.0					
1.5					
2.0					
2.5					
3.0	3.1		pink, firm drilling with thin red marl layers		rockhead
3.5					
4.0					
4.5					
5.0					
5.5					
6.0					
6.5					
7.0					
7.5					
8.0					
8.5					
9.0					
9.5					
10.0					
10.5					
11.0					
11.5					
12.0					
12.5					
13.0					
13.5					
14.0					
14.5					
15.0					
15.5					
16.0					
16.5					
17.0					
17.5					
18.0					
18.5					
19.0					
19.5					
20.0					
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21.0					
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22.0					
22.5					
23.0					
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24.0					
24.5					
25.0					
25.5					
26.0					
26.5					
27.0					
27.5					
28.0					
28.5					
29.0					
29.5					
30.0	30.0		bottom of hole		

drilled and logged by
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IN HOLE GAS TESTING

% O2	20.6
% CH4	0.0
% CO2	0.0
% LEL	0.0
ppm H2S	0.0
ppm CO	0.0

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Bh 6

REF 1946
Bh 6

SITE
CLIENT Mullin's Land, Halshead
Betts Geo-Environmental

TITLE
n/a

ORIGIN
printout direct from rig on site
drilled & logged by Neil Catlow

PRINTOUT 22 Nov 2019
SCALE 1:200
GL AOD

RIG Montabert Hydrofore
ORIENTATION vertical
FLUSH river water bowser supply
BIT 75mm T/C

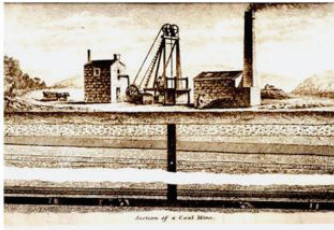
DEPTH	STRATA	GRAPHIC	DESCRIPTION	SPT N value	INTERPRETATION
0.0	0.0		brown, sandy, firm	not taken	ground level
0.5					
1.0					
1.5					
2.0	1.8		pink, firm drilling with thin red marl layers		rockhead
2.5					
3.0					
3.5					
4.0					Triassic Sandstone
4.5					
5.0					
5.5					
6.0					
6.5					
7.0					
7.5					
8.0					
8.5					
9.0					
9.5					
10.0					
10.5					
11.0					
11.5					
12.0					
12.5					
13.0					
13.5					
14.0					
14.5					
15.0	15.0		bottom of hole		
15.5					
16.0					
16.5					
17.0					
17.5					
18.0					
18.5					
19.0					
19.5					
20.0					
20.5					
21.0					
21.5					
22.0					
22.5					
23.0					
23.5					
24.0					
24.5					
25.0					
25.5					
26.0					
26.5					
27.0					
27.5					
28.0					
28.5					
29.0					
29.5					
30.0					

drilled and logged by
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IN HOLE GAS TESTING

% O2	20.6
% CH4	0.0
% CO2	0.0
% LEL	0.0
ppm H2S	0.0
ppm CO	0.0

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Bh 7

REF 1946
Bh 5

SITE
CLIENT

TITLE

ORIGIN

Mullin's Land, Halsnead
Betts Geo-Environmental

n/a

printout direct from rig on site
drilled & logged by Neil Catlow

PRINTOUT 22 Nov 2019
SCALE 1:200
GL AOD
RIG Montabert Hydrofore
ORIENTATION vertical
FLUSH river water bowser supply
BIT 75mm T/C

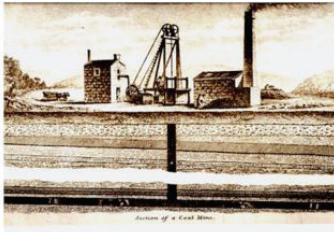
	DEPTH	STRATA	GRAPHIC	DESCRIPTION	SPT N value	INTERPRETATION
0.0	0.0	clay		brown, sandy, firm	not taken	ground level
0.5						
1.0						
1.5						
2.0	2.1	sandstone		brown, firm drilling		rockhead
2.5				grey shale layers		
3.0						
3.5						
4.0						
4.5						
5.0						
5.5						
6.0						
6.5	6.6	shale		black, firm drilling		
7.0						
7.5						
8.0	8.1	coal		black, firm drilling		? Three Foot Coal
8.5						
9.0						
9.5	9.6	shale		dark grey, firm drilling		
10.0				thjin black shale layers		
10.5						
11.0						
11.5						
12.0						
12.5						
13.0						
13.5						
14.0						
14.5	14.6	sandstone		brown, firm drilling		
15.0				grey shale layers		
15.5						
16.0						
16.5						
17.0	17.0	shale		dark grey, firm drilling		
17.5				thin sandstone layers		
18.0						
18.5						
19.0						
19.5						
20.0						
20.5						
21.0						
21.5						
22.0						
22.5						
23.0						
23.5						
24.0						
24.5						
25.0						
25.5						
26.0						
26.5						
27.0						
27.5						
28.0						
28.5						
29.0						
29.5						
30.0	30.0			bottom of hole		

drilled and logged by
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IN HOLE GAS TESTING

% O2	20.6
% CH4	0.0
% CO2	0.0
% LEL	0.0
ppm H2S	0.0
ppm CO	0.0

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Bh 8

REF 1946
Bh 8

SITE
CLIENT

TITLE

ORIGIN

Mullin's Land, Halsnead
Betts Geo-Environmental

n/a

printout direct from rig on site
drilled & logged by Neil Catlow

PRINTOUT 22 Nov 2019
SCALE 1:200
GL AOD
RIG Montabert Hydrofore
ORIENTATION vertical
FLUSH river water bowser supply
BIT 75mm T/C

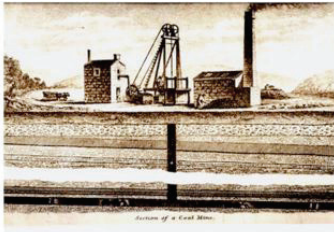
DEPTH	STRATA	GRAPHIC	DESCRIPTION	SPT N value	INTERPRETATION
0.0	0.0		brown, sandy, firm	not taken	ground level
0.5					
1.0					
1.5					
2.0	2.0		grey, firm drilling		rockhead
2.5			occasional thin black shales		
3.0					
3.5	3.6		brown, firm drilling		
4.0					
4.5					
5.0					
5.5					
6.0					
6.5					
7.0					
7.5	7.6		dark grey, firm drilling		
8.0					
8.5	8.7		black, firm drilling		
9.0					
9.5					
10.0					
10.5	10.5		black, firm drilling		? Three Foot Coal
11.0					
11.5					
12.0	11.8		black, firm drilling		
12.5					
13.0					
13.5					
14.0					
14.5					
15.0					
15.5					
16.0					
16.5					
17.0					
17.5					
18.0	18.3		brown, firm drilling		
18.5					
19.0					
19.5					
20.0					
20.5					
21.0	21.0		bottom of hole		
21.5					
22.0					
22.5					
23.0					
23.5					
24.0					
24.5					
25.0					
25.5					
26.0					
26.5					
27.0					
27.5					
28.0					
28.5					
29.0					
29.5					
30.0					

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IN HOLE GAS TESTING

% O2	20.6
% CH4	0.0
% CO2	0.0
% LEL	0.0
ppm H2S	0.0
ppm CO	0.0

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Bh 9

REF 1946
Bh 9

SITE
CLIENT

TITLE

ORIGIN

Mullin's Land, Halsnead
Betts Geo-Environmental

n/a

printout direct from rig on site
drilled & logged by Neil Catlow

PRINTOUT 26 Nov 2019
SCALE 1:200
GL AOD
RIG Montabert Hydrofore
ORIENTATION vertical
FLUSH river water bowser supply
BIT 75mm T/C

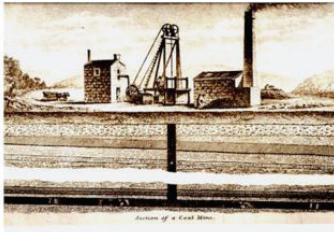
DEPTH	STRATA	GRAPHIC	DESCRIPTION	SPT N value	INTERPRETATION
0.0	0.0	clay	brown, sandy, firm	not taken	ground level
0.5					
1.0					
1.5					
2.0	2.0	shale	black, firm drilling		
2.5					
3.0	2.8	coal	black, firm drilling		? Three Foot Coal
3.5					
4.0	4.3	shale	dark grey, firm drilling thjin black shale layers		
4.5					
5.0					
5.5					
6.0					
6.5					
7.0					
7.5					
8.0					
8.5					
9.0	9.2	sandstone	brown, firm drilling grey shale layers		
9.5					
10.0					
10.5					
11.0					
11.5					
12.0					
12.5					
13.0					
13.5					
14.0					
14.5					
15.0	15.0		bottom of hole		
15.5					
16.0					
16.5					
17.0					
17.5					
18.0					
18.5					
19.0					
19.5					
20.0					
20.5					
21.0					
21.5					
22.0					
22.5					
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24.5					
25.0					
25.5					
26.0					
26.5					
27.0					
27.5					
28.0					
28.5					
29.0					
29.5					
30.0					

drilled and logged by
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IN HOLE GAS TESTING

% O2	20.6
% CH4	0.0
% CO2	0.0
% LEL	0.0
ppm H2S	0.0
ppm CO	0.0

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Bh 10

REF 1946
Bh 10

SITE
CLIENT

TITLE

ORIGIN

Mullin's Land, Halsnead
Betts Geo-Environmental

n/a

printout direct from rig on site
drilled & logged by Neil Catlow

PRINTOUT 26 Nov 2019
SCALE 1:200
GL AOD
RIG Montabert Hydrofore
ORIENTATION vertical
FLUSH river water bowser supply
BIT 75mm T/C

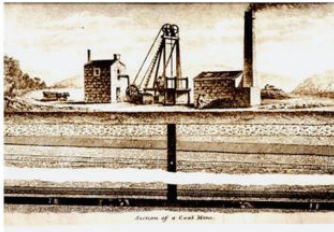
DEPTH	STRATA	GRAPHIC	DESCRIPTION	SPT N value	INTERPRETATION
0.0	0.0		brown, sandy, firm	not taken	ground level
0.5					
1.0					
1.5					
2.0	2.1		dark grey, firm drilling with thin black shale layers		
2.5					
3.0					
3.5					
4.0					
4.5					
5.0	5.2		black, firm drilling		? Three Foot Coal
5.5					
6.0					
6.5	6.5		dark grey, firm drilling thjin black shale layers		
7.0					
7.5					
8.0					
8.5					
9.0					
9.5					
10.0					
10.5					
11.0					
11.5					
12.0					
12.5	12.7		brown, firm drilling grey shale layers		
13.0					
13.5					
14.0					
14.5					
15.0					
15.5					
16.0					
16.5					
17.0					
17.5					
18.0	18.0		bottom of hole		
18.5					
19.0					
19.5					
20.0					
20.5					
21.0					
21.5					
22.0					
22.5					
23.0					
23.5					
24.0					
24.5					
25.0					
25.5					
26.0					
26.5					
27.0					
27.5					
28.0					
28.5					
29.0					
29.5					
30.0	30.0		bottom of hole		

drilled and logged by
Neil Catlow B.Sc FGS

IN HOLE GAS TESTING

% O2	20.6
% CH4	0.0
% CO2	0.0
% LEL	0.0
ppm H2S	0.0
ppm CO	0.0

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Wrexham
LL11 1BT
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REF 1946
Bh 11

SITE
CLIENT Mullin's Land, Halshead
Betts Geo-Environmental

TITLE
n/a

ORIGIN
printout direct from rig on site
drilled & logged by Neil Catlow

PRINTOUT 26 Nov 2019
SCALE 1:200
GL AOD
RIG Montabert Hydrofore
ORIENTATION vertical
FLUSH river water bowser supply
BIT 75mm T/C

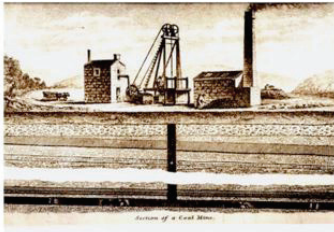
DEPTH	STRATA	GRAPHIC	DESCRIPTION	SPT N value	INTERPRETATION
0.0	0.0		brown, sandy, firm	not taken	ground level
0.5					
1.0					
1.5					
2.0	2.0		pink, firm drilling		rockhead
2.5			thin red marl layers		
3.0					
3.5					
4.0					
4.5					
5.0					
5.5					
6.0					
6.5					
7.0					
7.5					
8.0					
8.5					
9.0					
9.5					
10.0					
10.5					
11.0					
11.5					
12.0					
12.5					
13.0					
13.5					
14.0					
14.5					
15.0	15.0		bottom of hole		
15.5					
16.0					
16.5					
17.0					
17.5					
18.0					
18.5					
19.0					
19.5					
20.0					
20.5					
21.0					
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22.5					
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24.5					
25.0					
25.5					
26.0					
26.5					
27.0					
27.5					
28.0					
28.5					
29.0					
29.5					
30.0					

drilled and logged by
Neil Catlow B.Sc FGS

IN HOLE GAS TESTING

% O2	20.6
% CH4	0.0
% CO2	0.0
% LEL	0.0
ppm H2S	0.0
ppm CO	0.0

Nkc Geotech Ltd
25 Grosvenor Road
Wrexham
LL11 1BT
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REF 1946
Bh 12

SITE
CLIENT Mullin's Land, Halshead
Betts Geo-Environmental

TITLE
n/a

ORIGIN
printout direct from rig on site
drilled & logged by Neil Catlow

PRINTOUT 27 Nov 2019
SCALE 1:200
GL AOD
RIG Montabert Hydrofore
ORIENTATION vertical
FLUSH river water bowser supply
BIT 75mm T/C

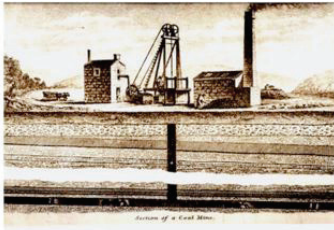
DEPTH	STRATA	GRAPHIC	DESCRIPTION	SPT N value	INTERPRETATION
0.0	0.0		brown, sandy, firm	not taken	ground level
0.5					
1.0					
1.5					
2.0	2.0		pink, firm drilling		rockhead
2.5			thin red marl layers		
3.0					
3.5					
4.0					
4.5					
5.0					
5.5					
6.0					
6.5					
7.0					
7.5					
8.0					
8.5					
9.0					
9.5					
10.0					
10.5					
11.0					
11.5					
12.0					
12.5					
13.0					
13.5					
14.0					
14.5					
15.0	15.0		bottom of hole		
15.5					
16.0					
16.5					
17.0					
17.5					
18.0					
18.5					
19.0					
19.5					
20.0					
20.5					
21.0					
21.5					
22.0					
22.5					
23.0					
23.5					
24.0					
24.5					
25.0					
25.5					
26.0					
26.5					
27.0					
27.5					
28.0					
28.5					
29.0					
29.5					
30.0					

drilled and logged by
Neil Catlow B.Sc FGS

IN HOLE GAS TESTING

% O2	20.6
% CH4	0.0
% CO2	0.0
% LEL	0.0
ppm H2S	0.0
ppm CO	0.0

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REF 1946
Bh 13

SITE
CLIENT Mullin's Land, Halshead
Betts Geo-Environmental

TITLE
n/a

ORIGIN
printout direct from rig on site
drilled & logged by Neil Catlow

PRINTOUT 27 Nov 2019
SCALE 1:200
GL AOD

RIG Montabert Hydrofore
ORIENTATION vertical
FLUSH river water bowser supply
BIT 75mm T/C

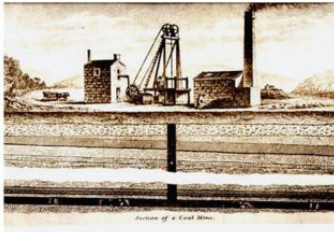
DEPTH	STRATA	GRAPHIC	DESCRIPTION	SPT N value	INTERPRETATION
0.0	clay		brown, sandy, firm	not taken	ground level
0.5					
1.0					
1.5					
2.0	shale		grey, firm drilling		rockhead
2.5			occasional black shale layers		
3.0					
3.5					
4.0					
4.5					
5.0					
5.5					
6.0					
6.5					
7.0					
7.5					
8.0					
8.5	sandstone		brown, firm drilling		
9.0					
9.5					
10.0					
10.5					
11.0					
11.5					
12.0	shale		grey, firm drilling		
12.5			occasional black shale layers		
13.0					
13.5					
14.0					
14.5					
15.0					
15.5					
16.0	shale		grey, firm drilling		
16.5			occasional black shale layers		
17.0					
17.5					
18.0					
18.5					
19.0					
19.5					
20.0					
20.5					
21.0					
21.5					
22.0					
22.5					
23.0					
23.5					
24.0					
24.5					
25.0					
25.5					
26.0					
26.5					
27.0					
27.5					
28.0					
28.5					
29.0					
29.5					
30.0			bottom of hole		

drilled and logged by
Neil Catlow B.Sc FGS

IN HOLE GAS TESTING

% O2	20.6
% CH4	0.0
% CO2	0.0
% LEL	0.0
ppm H2S	0.0
ppm CO	0.0

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REF 1946
Bh 14

SITE
CLIENT Mullin's Land, Halsnead
Betts Geo-Environmental

TITLE
n/a

ORIGIN
printout direct from rig on site
drilled & logged by Neil Catlow

PRINTOUT
SCALE 28 Nov 2019
1:200

GL AOD

RIG
ORIENTATION Montabert Hydrofore
vertical
FLUSH river water bowser supply
BIT 75mm T/C

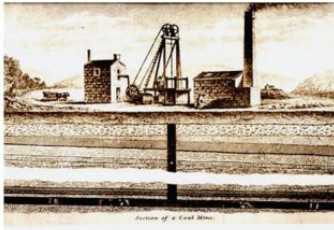
DEPTH	STRATA	GRAPHIC	DESCRIPTION	SPT N value	INTERPRETATION
0.0	0.0	clay	brown, sandy, firm	not taken	ground level
0.5					
1.0					
1.5					
2.0					
2.5	2.3	sandstone	dark grey, firm drilling very occasional thin black shale layers		rockhead
3.0					
3.5					
4.0					
4.5					
5.0					
5.5					
6.0					
6.5	6.6	shale	dark grey, firm drilling		
7.0					
7.5					
8.0					
8.5					
9.0	9.1	sandstone	grey, firm drilling with thin black shale layers		
9.5					
10.0					
10.5					
11.0					
11.5					
12.0					
12.5					
13.0					
13.5					
14.0	14.0	shale	grey, firm drilling thin brown sandstone layers		
14.5					
15.0					
15.5					
16.0					
16.5					
17.0					
17.5					
18.0					
18.5					
19.0					
19.5					
20.0					
20.5					
21.0					
21.5					
22.0					
22.5					
23.0					
23.5					
24.0					
24.5					
25.0					
25.5					
26.0					
26.5					
27.0					
27.5					
28.0					
28.5					
29.0					
29.5					
30.0	30.0		bottom of hole		

drilled and logged by
Neil Catlow B.Sc FGS

IN HOLE GAS TESTING

% O2	20.6
% CH4	0.0
% CO2	0.0
% LEL	0.0
ppm H2S	0.0
ppm CO	0.0

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REF 1946
Bh 16

SITE
CLIENT Mullin's Land, Halshead
Betts Geo-Environmental

TITLE
n/a

ORIGIN
printout direct from rig on site
drilled & logged by Neil Catlow

PRINTOUT 29 Nov 2019
SCALE 1:200
GL AOD

RIG Montabert Hydrofore
ORIENTATION vertical
FLUSH river water bowser supply
BIT 75mm T/C

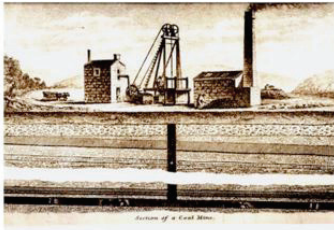
DEPTH	STRATA	GRAPHIC	DESCRIPTION	SPT N value	INTERPRETATION
0.0	0.0	clay	brown, sandy, soft	not taken	ground level
0.5					
1.0					
1.5					
2.0					
2.5	2.4	sandstone	brown, firm drilling		rockhead
3.0					
3.5					
4.0					
4.5					
5.0					
5.5					
6.0					
6.5					
7.0					
7.5					
8.0					
8.5					
9.0					
9.5					
10.0					
10.5					
11.0	10.8	shale	dark grey, firm drilling occasional black shale layers		
11.5					
12.0					
12.5					
13.0					
13.5					
14.0					
14.5					
15.0					
15.5					
16.0					
16.5					
17.0					
17.5					
18.0	18.2	shale	grey, firm drilling thin black shale layers		
18.5					
19.0					
19.5					
20.0					
20.5					
21.0					
21.5					
22.0					
22.5					
23.0					
23.5					
24.0					
24.5					
25.0					
25.5					
26.0					
26.5					
27.0					
27.5					
28.0					
28.5					
29.0					
29.5					
30.0	30.0		bottom of hole		

drilled and logged by
Neil Catlow B.Sc FGS

IN HOLE GAS TESTING

% O2	20.6
% CH4	0.0
% CO2	0.0
% LEL	0.0
ppm H2S	0.0
ppm CO	0.0

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Bh 15

REF 1946
Bh 15

SITE
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Betts Geo-Environmental

TITLE
n/a

ORIGIN
printout direct from rig on site
drilled & logged by Neil Catlow

PRINTOUT 28 Nov 2019
SCALE 1:200
GL AOD
RIG Montabert Hydrofore
ORIENTATION vertical
FLUSH river water bowser supply
BIT 75mm T/C

DEPTH	STRATA	GRAPHIC	DESCRIPTION	SPT N value	INTERPRETATION
0.0	clay		brown, sandy, firm	not taken	ground level
0.5					
1.0					
1.5					
2.0	shale		grey, firm drilling with thin black shale lsyers		rockhead
2.5					
3.0					
3.5					
4.0	sandstone		brown, firm drilling with thin black shale lsyers		
4.5					
5.0					
5.5					
6.0					
6.5					
7.0					
7.5					
8.0					
8.5					
9.0					
9.5					
10.0					
10.5					
11.0					
11.5					
12.0	shale		grey, firm drilling with thin black shale lsyers		
12.5					
13.0					
13.5					
14.0					
14.5					
15.0					
15.5					
16.0					
16.5					
17.0					
17.5	sandstone		brown, firm drilling with thin black shale lsyers		
18.0					
18.5					
19.0					
19.5					
20.0					
20.5	shale		grey, firm drilling with thin black shale lsyers		
21.0					
21.5					
22.0					
22.5					
23.0					
23.5					
24.0					
24.5					
25.0					
25.5					
26.0					
26.5					
27.0					
27.5					
28.0					
28.5					
29.0					
29.5					
30.0			bottom of hole		

drilled and logged by
Neil Catlow B.Sc FGS

IN HOLE GAS TESTING

% O2	20.6
% CH4	0.0
% CO2	0.0
% LEL	0.0
ppm H2S	0.0
ppm CO	0.0

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APPENDIX C
ii) Notes on Limitations

APPENDIX E

(i) Notes on Limitations

The desk study report includes examination and provision of historical maps and an environmental database search covering geology, hydrogeology, historical, land use, water abstractions, groundwater source protection zones, landfill sites, radon, trade directory entries, petrol filling stations and nature reserves for the site and surrounding area. A Coal Authority Report has been obtained as part of the investigation.

This report does not consider ecological impacts (e.g. bats) or botanical risks (e.g. Japanese knotweed). It is recommended that these are considered as part of the assessment of development constraints for the site.

The assessment and judgements given in this report are directed by both the finite data on which they are based and the proposed works to which they are addressed. The data essentially comprised a study of available documented information from various sources together with discussions with relevant authorities and other interested parties. There may also be circumstances at the site that are not documented. The information reviewed is not exhaustive and has been accepted in good faith as providing representative and true data pertaining to site conditions. If additional information becomes available which might impact our environmental conclusions, we request the opportunity to review the information, reassess the potential concerns and modify our opinion if warranted.

It should be noted that any risks identified in this report are perceived risks based on the available information. Actual risks can only be assessed following a physical investigation of the site.

This report was prepared by Betts Geo Environmental Ltd for the sole and exclusive use of the client specified at the beginning of this report with response to particular instructions. Any other parties using the information contained in this report do so at their own risk and any duty of care to those parties is excluded.

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