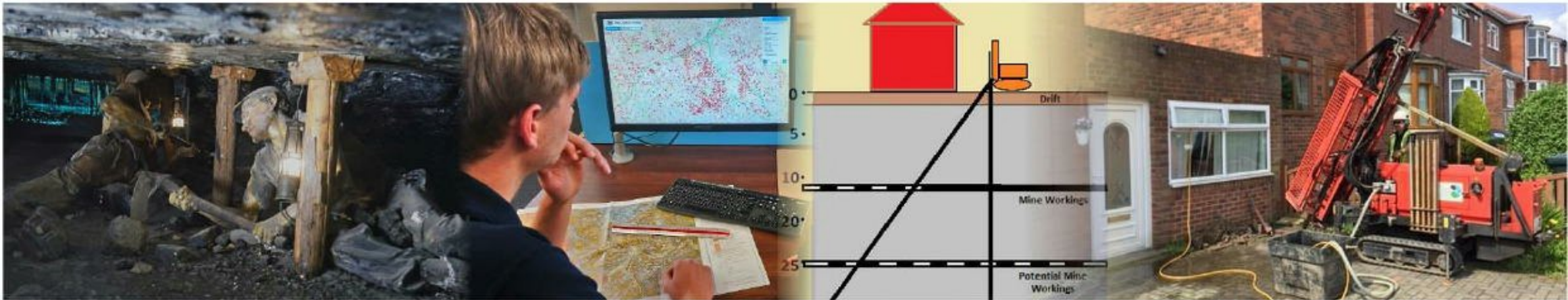




GEOLOGICAL
 GEOTECHNICAL
 GEOENVIRONMENTAL
 CONSULTANCY
 DRILLING & DATA ACQUISITION

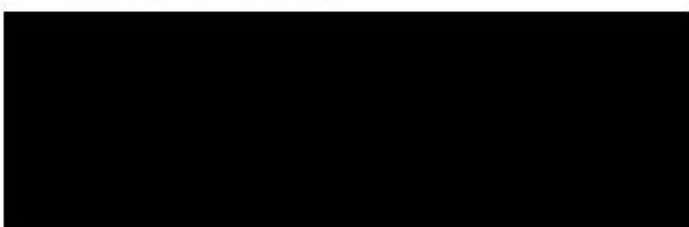


GEOINVESTIGATE LIMITED

Coal Mining Risk Assessment (CMRA)

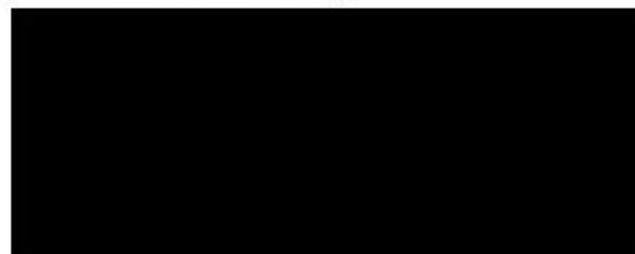
LOCATION	53 Greswold Street, West Bromwich, B71 1NX
ISSUE DATE	12 February 2021
FOR	Mr G. Nouri
CLIENT REF.	
OUR REF.	G21054

Prepared by



Thomas Goldring MGeol
 Geo-environmental Engineer

Checked by



Ross Nicolson BSc(Hons) MSc(Eng) CEng MIMMM
 Principal Geotechnical Engineer

SUMMARY FINDINGS

OUTCOME MITIGATION REQUIRED (YES/NO?)

YES. The proposed development is significantly impacted by mine shaft proximity hazard. In our opinion because of this the planning proposal as it stands is unlikely to receive favourable consideration.

In our opinion as it stands the new building is likely to require repositioning towards the northern end of the site beyond mine shaft ZOI.

In addition, drilling is needed to establish bedrock depth at the site this being an important factor in calculating ZOI and whether the re-positioned building is safe.

In our opinion even if the new building is repositioned a planning submission is unlikely to succeed until drilling has been carried out. Whether drilling is likely to be a necessary pre-requisite should be discussed with the Coal Authority.

WHAT TO DO NEXT

Obtain quotes for the intrusive site investigation works (if considered appropriate). The cost of the SI works should be a **"lump sum" fixed price**. Geoinvestigate can provide advice and assistance with helping you find suitable site investigation & drilling contractors. Call us on 01642 713779 or email enquiries@geoinvestigate.co.uk.

1. CMRA INTRODUCTION

Site Location and Description:

The approximate centre of this site is at National Grid Reference E 400071, N 292419 with an elevation of about 139m AOD. The boundary is shown RED on the Coal Authority (CA) report provided in Appendix A corresponds with the planning application area.

Site images are presented in Appendix B.

Google Satellite and Street View imagery shows the site is currently occupied by a metal roofed shed/garage and hardstanding on the west side of 53 Greswold Street. The garage and rear of the property is enclosed by a gated brick wall. The proposed development area was presumably originally side garden.

It is proposed to erect 2 new two-storey houses at the eastern end of the current terrace row, replacing the shed. Site location and development layout plans are provided in Appendix C.

The OS map record dating from 1886, shows the site is located close to 3 Old (coal) Shafts. Possible mine spoil heaps/embankments, Collieries and Iron works are present in the surrounding area. By 1904 the shafts are no longer shown. The housing row including No 53 was established by 1938. The site has changed little since.

The OS map record provides no evidence that the site itself has been subject to sand, clay or gravel pitting, stone quarrying or surface mining activity, though mining activity has occurred close by.

A brief, limited desk top inspection of buildings, roads and walls in the site vicinity using Google Street View found no obvious visible surface evidence indicative of mining subsidence.

Description & Layout of Proposed Development: It is proposed to erect a pair of semis to the side of 53 Greswold Street replacing the existing metal shed/garage. Site location and development layout plans are provided in Appendix C.

Risk Methodology Applied: This document and the risk assessment methodology adopted herein is based on CA publication RISK BASED APPROACH TO DEVELOPMENT MANAGEMENT - GUIDANCE FOR DEVELOPERS Version 3, 2014 and Version 4 - 2017. The template contained therein is adopted with minor amendments made by Geoinvestigate Limited.

2. ASSESSMENT OF SITE SPECIFIC COAL MINING ISSUES

The table below summarises the potential risks associated with coal mining legacy for the proposed development site, identified from list sources of information.

Coal Mining Issues	Yes	No	Risk Assessment/Remarks
Past underground coal mining	Yes		2.1.1 (refer below)
Probable unrecorded shallow workings		No	2.1.2
Spine roadways at shallow depth		No	
Mine entries	Yes		2.1.3
Outcrop		No	
Geological faults, fissures and breaklines		No	
Opencast Mines		No	
Coal Mining Subsidence		No	
Mine Gas		No	2.1.4
Site investigations		No	

Note: For those coal mining issues above identified as "Yes" or highlighted "YELLOW" a more detailed discussion and assessment are made of the risks to the application site and the proposed development.

2.1 DETAILED DISCUSSION & ASSESSMENT RESPONSE

2.1.1 Past Underground Mining

According to the Coal Authority report in Appendix A, two (2) levels of recorded/past underground mine workings occur beneath the property at a depth of 113m and 120m. In our opinion, such workings lie too deep to significantly impact surface ground stability within the development area.

This does not mean that shallower unrecorded mine working does not exist beneath the site that the CA have no records of. Mine maps and other documents can get lost or destroyed over the years and if mining was very old there may be no records about it whatsoever and memories fade quickly.

Strata, coal seams and workings dip at 6.2 to 6.7 degrees South at this locality.

2.1.2 Probable Unrecorded Shallow Workings

According to the CA report, the site does **NOT** fall within an area of probable unrecorded shallow workings.

The CA define Probable Unrecorded Shallow Workings as "Areas where the Coal Authority believes there to be unrecorded coal working that exist at or close to the surface" (i.e., less than 30m)"

CA online interactive map information identifies the site as falling within an area where the CA believe probable mine working lie at **CONSIDERABLE** depth.

The location of the site is shown on the extract of BGS solid geology map presented in Appendix E. The tentative elevation of the site relative to the vertical geology column is shown below the map. The drift/soil horizon above the solid geology bedrock is not shown on the column.

The BGS geology map and column show that the site is underlain by an unknown thickness of Glacial Till (Diamicton) drift deposit. In turn this is underlain by the Etruria Formation comprising mudstone, conglomerate, sandstone, and thin coals. Typically coal mine working is absent in the Etruria Marl Formation. Coal Measure strata including coal seams underlie the Etruria Formation at an unknown depth, the boundary between the two being a geological unconformity.

The geology map also shows the site lies within an area of Made Ground/Fill. This composition and depth of this deposit is unknown.

In our opinion coal seams and unrecorded mine workings (if present) beneath the development are considered to lie too deep below the proposed new building to pose a surface ground stability risk to it and in this respect, we agree with the CA report that there is NO probable unrecorded shallow workings beneath the property.

BGS borehole log SP09SW/1020, located some 180m north of the site at a ground height of 139.57m AOD, records Made Ground to a depth of 2.70m, underlain by drift deposits extending to 12.2m followed in turn by mudstone bedrock. Similar drift/bedrock depth may occur within the site or bedrock could lie deeper or nearer surface. A copy of the borehole log is provided in Appendix F.

2.1.3 Mine Entries and ZOI

The CA identify 3 mine shafts 400292 - 042, 043 and 044 lying very close to the south east corner of the property and the proposed new buildings.

The "best fit" plotted positions of these shafts are shown on the plan in Appendix G together with their maximum zones of influence (ZOI) shown RED. ZOIs are calculated assuming drift thickness of 12.2m and 45° degrees draw angle through the drift + 5m departure/positional uncertainty + ½ shaft diameter of 1m. The ZOIs for all 3 shafts are circles of 18.2m radius from each shaft centre plot.

As no treatment details are provided for these shafts it is prudent to assume that they are untreated though they may have been haphazardly infilled. This, however, is speculation.

A 2nd plan showing revised ZOIs for shafts 042 and 043 is provided in Appendix H assuming that further intrusive site investigation in the curtilage/front garden of 53 Greswold Street shows that the shafts are absent from within the property but might still lie close to its front boundary. Drift depth is assumed to be unchanged at 12.2m but could be deeper increasing the ZOIs northwards and further into the development area.

Both interpretations in Appendices G & H show that the new building falls within mine shaft ZOI where ground instability could arise were the mine shaft to subside or collapse. However, such an event is according to the CA statistically LOW.

The 2nd plan shows that even if intensive intrusive drilling investigation is carried out and shows that the shafts do not lie within the boundary of 53 Greswold their ZOIs would still significantly impact the new development. So, in other words a favourable drilling outcome would not in this instance change the need to relocate the new building further north and outside the ZOI.

The CA are very reluctant to agree to or permit building development within the ZOI of a mine shaft. Therefore, the presence of mine shafts can seriously impact the development potential of a property as well as delaying planning applications.

In our opinion as it stands the development proposal for the site is not acceptable and the new building should be relocated towards the far northern end of the plot beyond mine shaft influence.

Because ZOI is dependent on drift/bedrock depth and increases if bedrock depth increases it is our opinion that drilling is required at the site to establish bedrock depth beneath the new building. If bedrock is found to lie deeper than 12m the ZOI will extend further into the site reducing its development potential even more.

Conversely the 3rd plan in Appendix I shows a reduced ZOI but only if drilling establishes that bedrock lies nearer surface, in this instance 6m rather than 12m within the site. In the 3rd case the proposed building would be safe if it were moved 1m or so north and 1m west.

So, establishing drift depth at the site is more critical with respect to the sites development potential and positioning the new building than confirming that mine shafts are absent within the property.

2.1.4 Mine Gas

No mine gas incident or remediation is recorded within 500m of the proposed development and typically, in the UK mine gas is Low risk. However, in this instance given the nearness of 3 mine shafts to the new development and

because mine entries can provide gas seepage pathways to the surface it is our opinion that in this instance the mine gas risk should be raised to **MODERATE** or perhaps High.

Because of the increased gas risk longer term gas monitoring may be required.

3. SUMMARY AND OUTCOME

This CMRA has identified that the proposed building development falls within mine shaft ZOI. As no building development is permitted in the ZOI the proposed building development must be moved north beyond it.

Drilling is required to establish bedrock depth at the site this being the most important factor in determining whether the site is developable at all. If bedrock depth is found to be appreciably deeper than 12m the site may not be developable at all.

Gas monitoring must be carried out during drilling and perhaps over the longer term the latter requiring special borehole gas well installations.

4. MITIGATION STRATEGY PROPOSED AND CONCLUSION

To properly determine the coal mining risk at this site it is proposed to drill 2 or 3 boreholes at the site to determine bedrock depth.

Gas monitoring **MUST** be carried out during drilling. These boreholes may be used for longer term gas monitoring.

Risks for Different Drilling Scenarios					
Air flush	Mist flush	Foam flush	Water flush	Mud flush	Additional controls
HIGH	HIGH / MED'M	HIGH / MED'M	LOW	LOW	<ul style="list-style-type: none"> Monitoring at rig and other open holes. Seal boreholes

A Coal Authority Permit needs to be obtained (ahead of) further intrusive exploratory drilling. Water Drill Flush to be used when drilling. Given the proximity of mine shafts the permit application must state **WATER ONLY DRILL FLUSH** for the safety of the public and drill crew.

On the basis of the CMRA work to date, we are of the opinion that the development proposal as it stands is unlikely to receive planning permission (or even conditional permission) until mine shaft ZOI is more reliably established at the site. This will require drilling to locate bedrock depth.

Appendices:

- A. CA Consultant's Coal Mining Report issued 9 February 2021 ref 51002350206001.
- B. Site images
- C. Site location & proposed development plan.
- D. Geoinvestigate's digital geology map.
- E. Extracts of BGS Geology Map, Sheet 168 - Birmingham at 1:50000 scale.
- F. BGS borehole logs.
- G. Mine shaft locations and ZOI.
- H. Revised mine shaft ZOI.
- I. Revised mine shaft ZOI.

APPENDIX A
COAL AUTHORITY REPORT



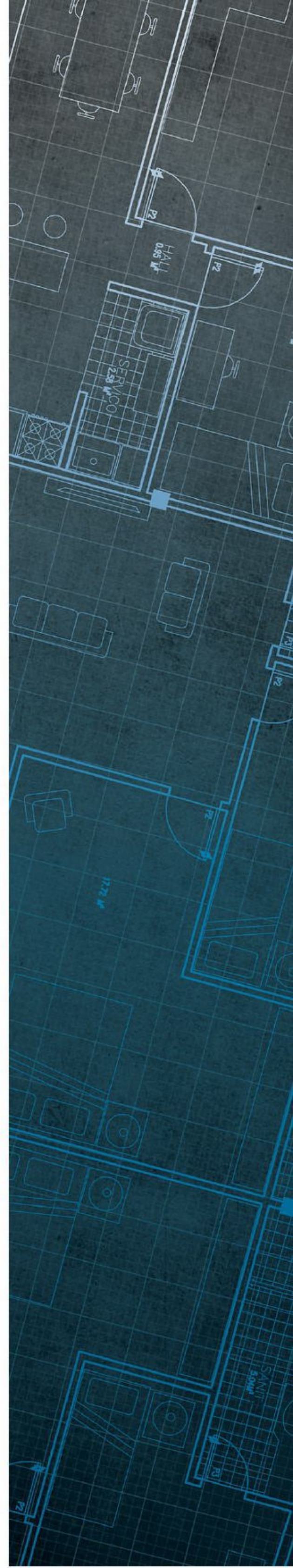
The Coal
Authority

Consultants Coal Mining Report

53 Greswold Street
West Bromwich
Sandwell
B71 1NX

Date of enquiry: 9 February 2021
Date enquiry received: 9 February 2021
Issue date: 9 February 2021

Our reference: 51002350206001
Your reference: G21054



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

GEOINVESTIGATE

Enquiry address

53 Greswold Street
West Bromwich
Sandwell
B71 1NX

How to contact us

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

200 Lichfield Lane
Mansfield
Nottinghamshire
NG18 4RG

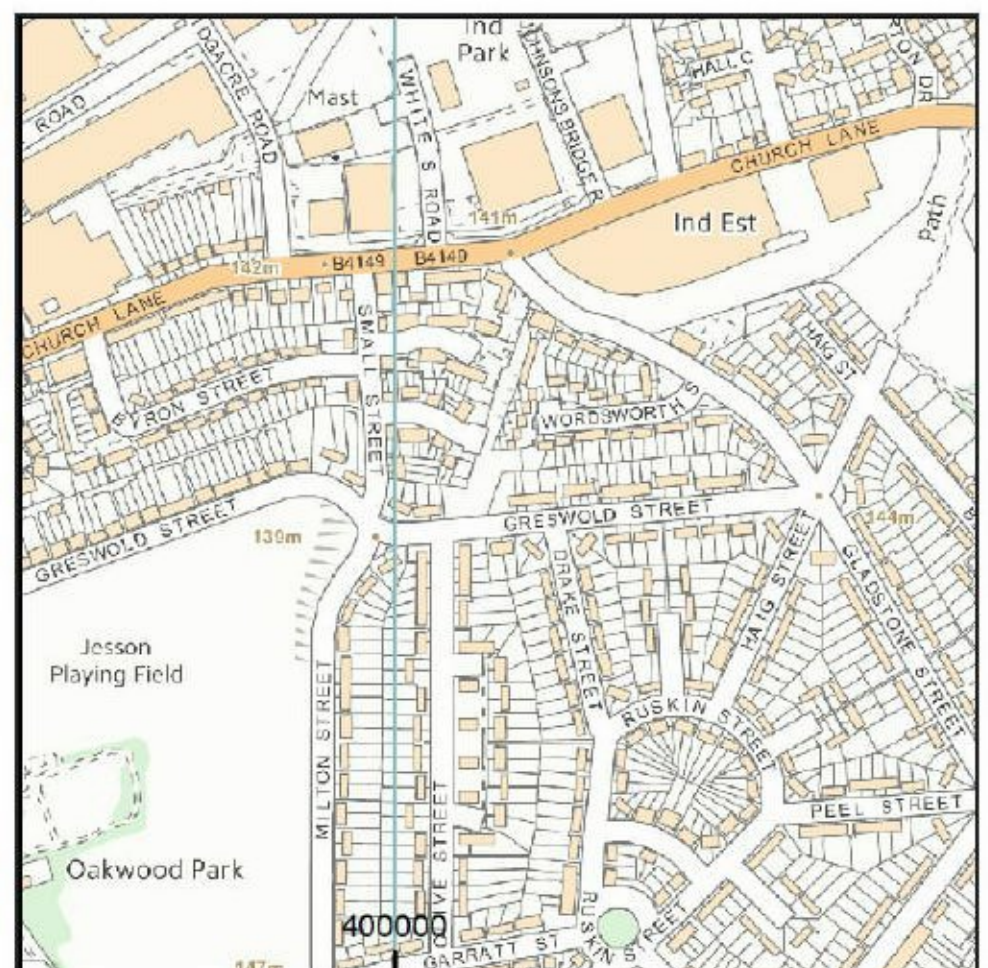
www.groundstability.com

 @coalauthority

 /company/the-coal-authority

 /thecoalauthority

 /thecoalauthority



Approximate position of property



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Section 1 – Mining activity and geology

Past underground mining

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	THICK	Coal	23CH	113	Beneath Property	6.7	South	640	1889
Unnamed_duplicate	THICK	Coal	2BT3	116	West	4.4	South	730	1896
unnamed	HEATHEN	Coal	23AS	120	Beneath Property	6.2	South	100	1890
unnamed	NEW MINE COAL	Coal	23B4	140	South	0.0	East	228	1860

Probable unrecorded shallow workings

None.

Spine roadways at shallow depth

No spine roadway recorded at shallow depth.

Mine entries

Entry type	Reference	Grid reference	Treatment description	Mineral	Conveyancing details
Shaft	400292-042	400090 292407		Coal	
Shaft	400292-043	400082 292400		Coal	
Shaft	400292-044	400078 292392		Coal	

Abandoned mine plan catalogue numbers

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

3602	6028	1488
14827	WM642	14824
2303	1980	wm713

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

No outcrops recorded.

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

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

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.

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.

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.



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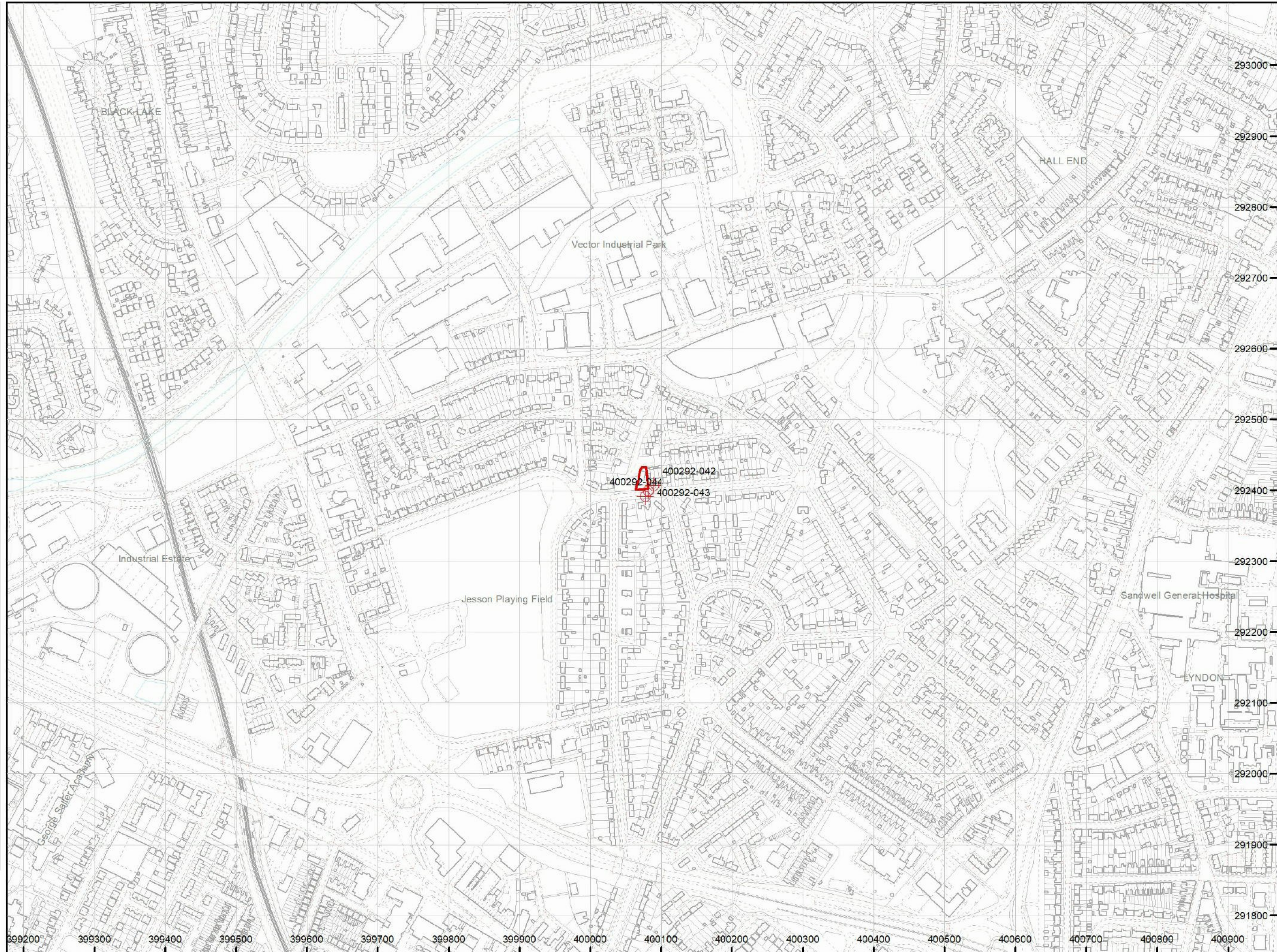
VAT receipt

Issued by	The Coal Authority 200 Lichfield Lane Mansfield Nottinghamshire NG18 4RG
Tax point date	09 February 2021
Issued to	GEOINVESTIGATE TERRY DICKEN INDUSTRIAL ESTATE TERRY DICKEN INDUSTRIAL ESTATE, ELLERBECK WAY STOKESLEY NORTH YORKSHIRE TS9 7AE
Property search for	53 GRESWOLD STREET WEST BROMWICH SANDWELL B71 1NX
Reference number	51002350206001
Date of issue	09 February 2021
Cost	£112.13
VAT @ 20%	£22.43
Total received	£134.56
VAT registration	598 5850 68

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 
- Disused mine shaft 



How to contact us

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

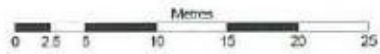
APPENDIX C

SITE LOCATION & PROPOSED DEVELOPMENT PLAN

NATIONAL
MAP CENTRE

OS Plan B&W

B|B|A|L|B



Scale: 1:500



Supplied By:
Licence number
Produced:
Serial number:

Birmingham Business &
100031961
02/12/2020
2292690

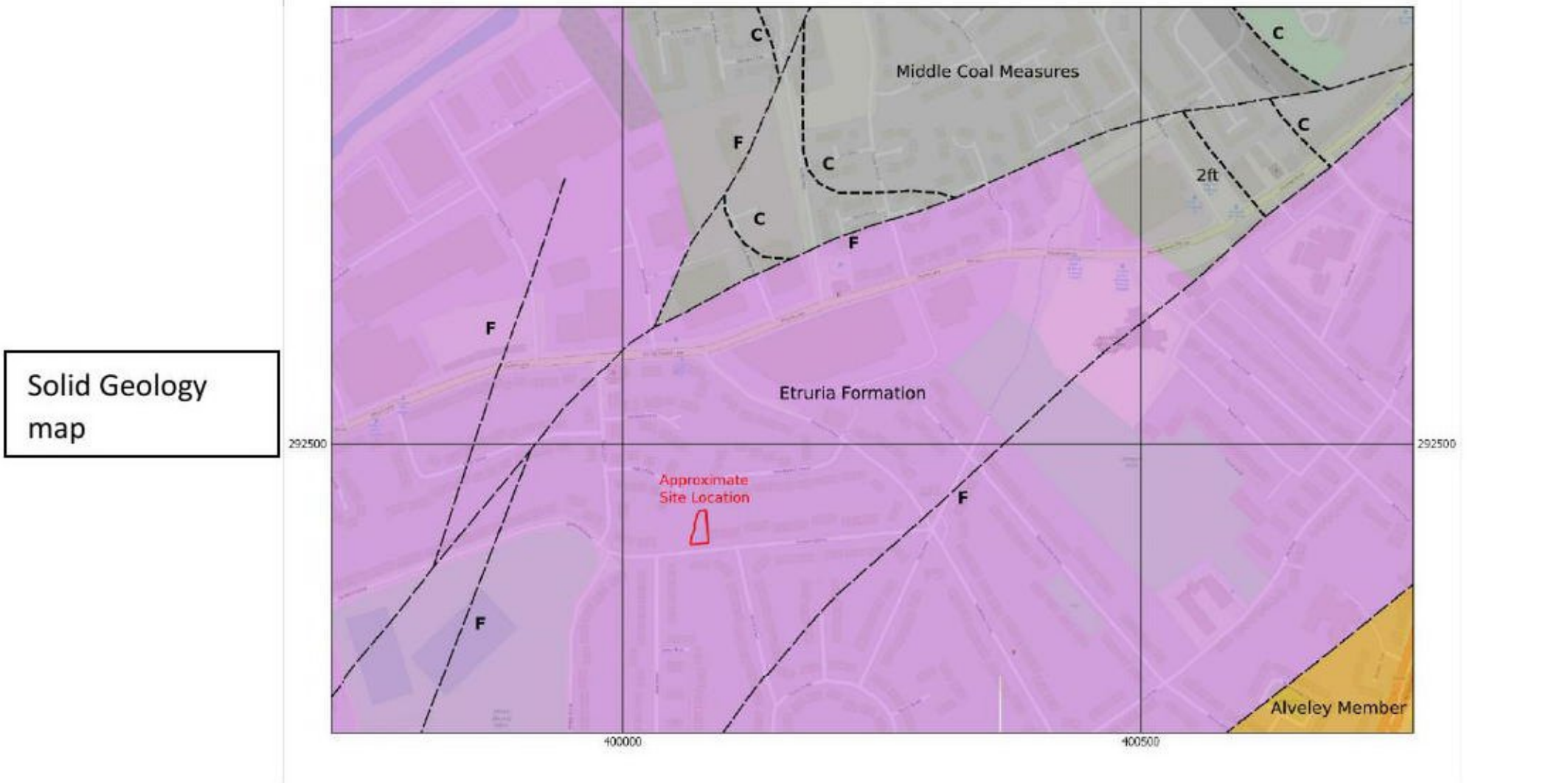
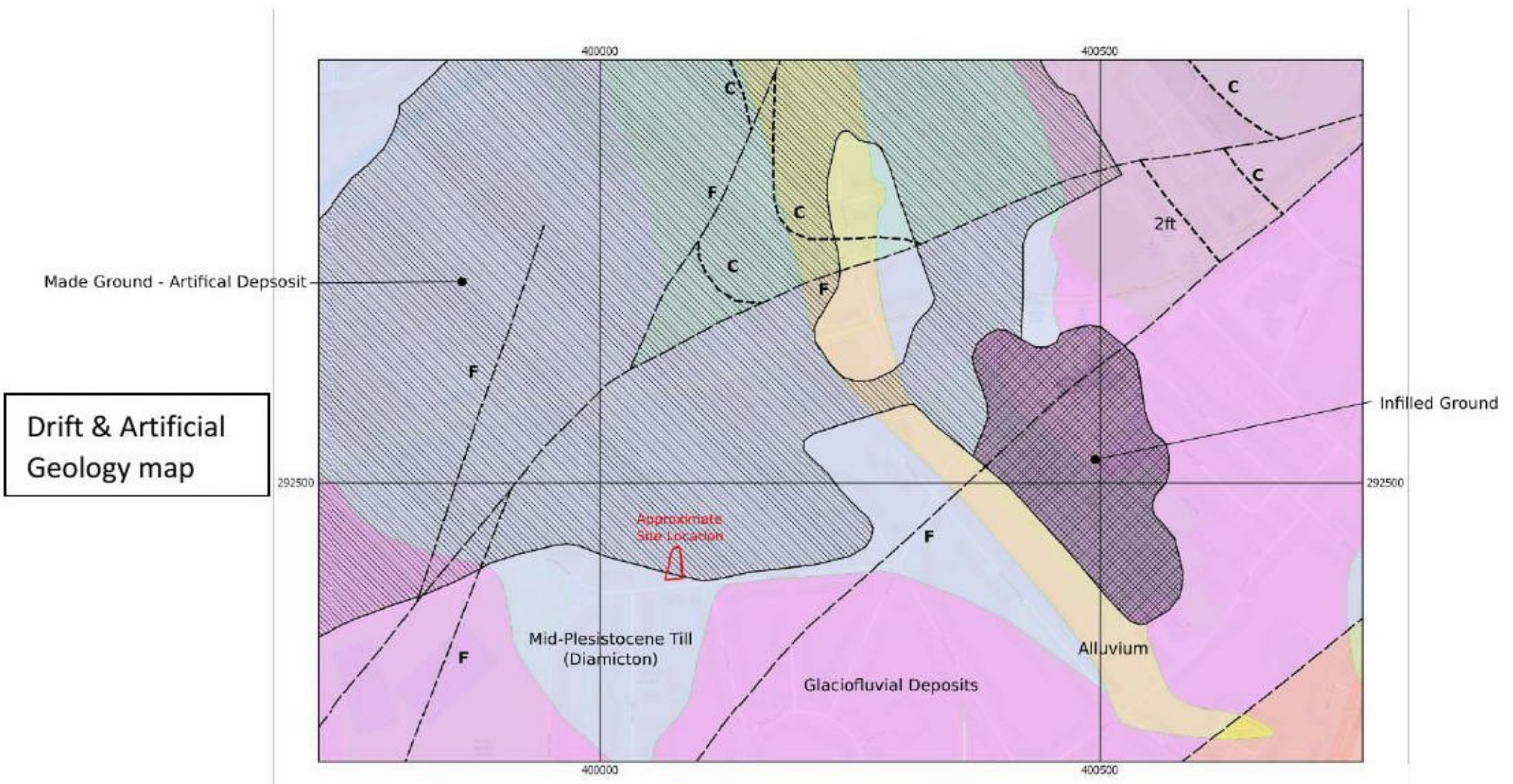
Land adjacent to
53 Greswold Street
West Bromwich
B71 1NX

Plot centre co-ordinates: 400053,292414
Download file: han b711nx r.zip
Project name: han b711nx r

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APPENDIX D

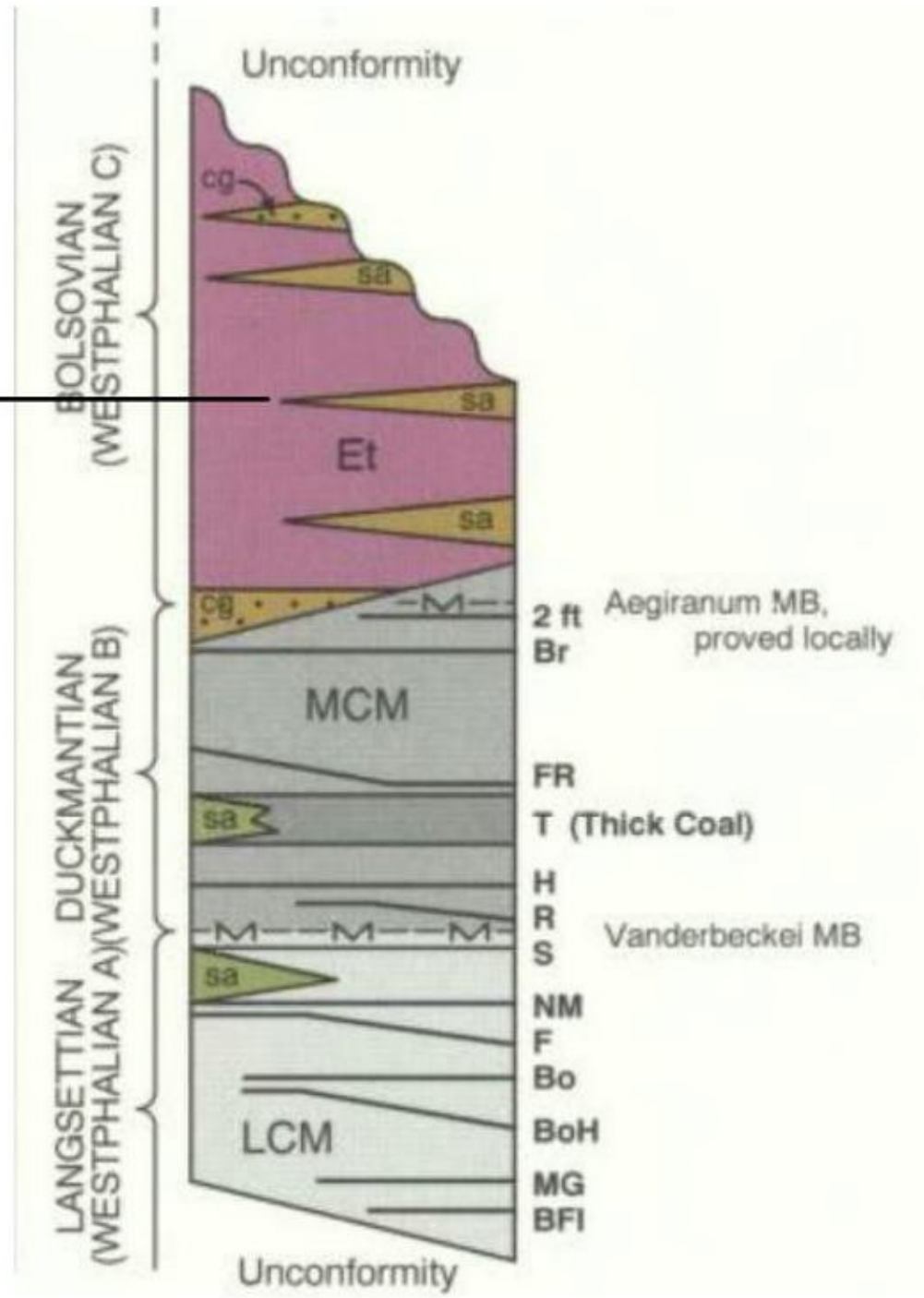
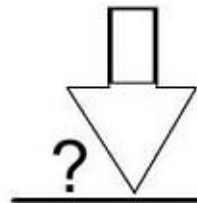
GEOINVESTIGATE DIGITAL GEOLOGY MAP



APPENDIX E

EXTRACTS OF BGS GEOLOGY MAP

Tentative elevation of site
relative to vertical
geology section



APPENDIX F

BGS LOG

SUB SURFACE LTD <small>SITE INVESTIGATION AND SPECIALIST GEOTECHNICAL CONSULTANTS 3 Peel Street, Preston, PR2 2QS. Tel. (0772) 561135 Fax (0772) 204807</small>						Site VECTOR INDUSTRIAL ESTATE, PLOT 9, WEST BROMWICH.		Booklet Number 7	
Boring Method LIGHT CABLE PERCUSSIVE		Diameter 150mm Cased to 10.50m		Ground Level (mOD) 139.57		Client ARCO LIMITED.		Job Number M1463	
Location 969E 1017N		Dates 30/01/95 - 31/01/95		Engineer D.H.V. (UK) LIMITED.		Sheet 1/2			
Depth m	Samples / Tests	Casing Depth m	Water Depth m	Field Records	Level (mOD)	Depth (Thickness) m	Description	Legend	Water
0.20	D						MADE GROUND: stiff grey sandy clay with some fine to coarse subangular and angular gravel of brick		
0.50-0.95	CPT N=39			7,7,9,11,10,9					
0.50-0.95	D								
1.00-1.45	CPT N=77			8,8,16,19,20,22		(2.70)			
1.00-1.45	D								
1.00-1.45	B								
2.00-2.45	CPT N=25			4,5,6,6,7,6					
2.00-2.45	D								
2.00-2.45	B								
2.80	D				136.87	2.70	Firm dark grey slightly sandy silty CLAY with some fine to coarse subangular gravel		
3.00-3.40	U C=41kPa								
3.50	D								
3.80	D								
4.00-4.45	SPT N=10			1,2,2,2,3,3		(3.00)below 4.00m becoming very sandy		
4.00-4.45	D								
4.80	D								
5.00-5.50	U C=73kPa								
5.50	D								
5.80	D				133.87	5.70	Stiff dark grey brown sandy silty CLAY with some fine to coarse subangular gravel		
6.00-6.45	SPT N=20			1,2,5,5,4,6		(1.30)			
6.00-6.45	D								
7.00	D				132.57	7.00	Firm grey brown sandy silty CLAY with occasional fine to coarse subrounded gravel		
7.50-8.00	U					below 7.50m becoming stiff to very stiff		
8.00	D								
8.50	D								
9.00-9.45	CPT N=21			4,4,4,5,6,6					
9.00-9.45	D								
9.00-9.45	B					(5.20)			
10.00	D								
Remarks See key sheet for symbols and abbreviations							Scale (approx) 1:50	Logged By PB/JP	Figure No. M1463.7



SUB SURFACE LTD

SITE INVESTIGATION AND SPECIALIST GEOTECHNICAL CONSULTANTS
3 Peel Street, Preston, PR2 2QS. Tel: (0772) 561135 Fax (0772) 204907

Site
VECTOR INDUSTRIAL ESTATE, PLOT 9, WEST BROMWICH.

Borehole Number
7

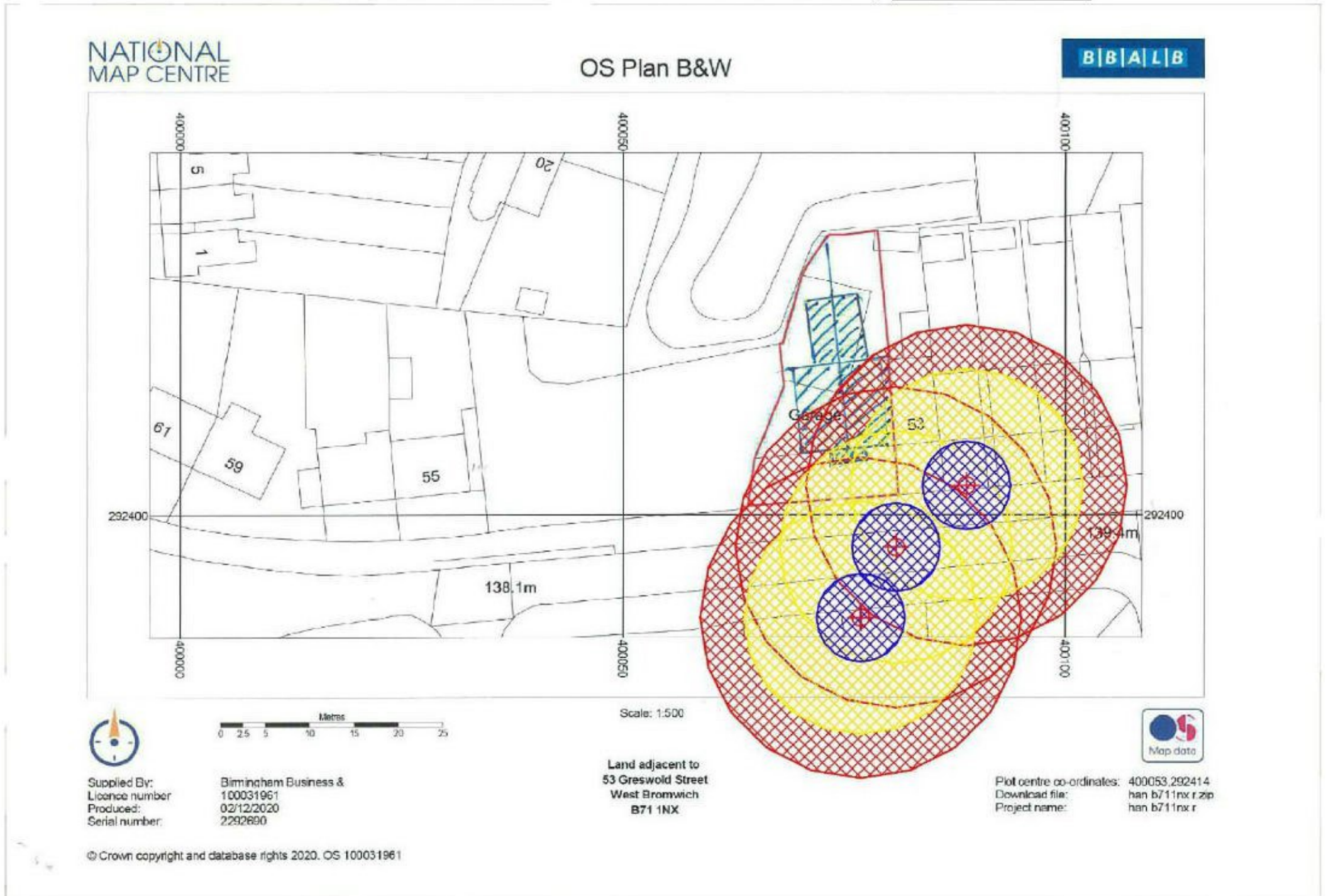
Boring Method LIGHT CABLE PERCUSSIVE	Diameter 150mm Cased to 10.50m	Ground Level (mOD) 139.57	Client ARCO LIMITED.	Job Number M1463
	Location 969E 1017N	Dates 30/01/95 - 31/01/95	Engineer D.H.V. (UK) LIMITED.	Sheet 2/2

Depth m	Samples / Tests	Casing Depth m	Water Depth m	Field Records	Level (mOD)	Depth m (Thickness)	Description	Legend	Water
10.50-10.95 10.50-10.95	SPT N=31 D			4,4,7,8,8,8			Stiff to very stiff grey brown sandy silty CLAY with occasional fine to coarse subrounded gravel		
11.50	D								
12.00-12.30 12.00-12.30	SPT 75/205 D			3,4,12,13,50/55	127.37	12.20	Grey slightly weathered MUDSTONE		
13.00	D					(1.30)			
13.50 13.50	CPT 50*/60 D			50/60 31/01/95:DRY	126.07	13.50	Borehole completed at 13.50m		

Remarks Chiselling on mudstone from 13.00m to 13.50m Borehole grouted	Scale (approx) 1:50	Logged By PB/JP
See key sheet for symbols and abbreviations	Figure No. M1463.7	

APPENDIX G

MINE SHAFT LOCATIONS AND ZOIs, 12m DRIFT



LEGEND



- CA Mine shaft

Red hash/circle – ZOI radii 18.2m.

Yellow hash/circle – ZOI if departure considered to be 0m, radii 13.2m.

Blue hash/circle – Departure area for mine respected mine shaft.

APPENDIX H

MINE SHAFT ZOIs, 12m DRIFT & AFTER SI SHOWS No 53 CLEAR OF MINE ENTRIES.

NATIONAL
MAP CENTRE

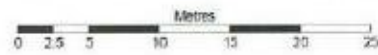
OS Plan B&W

B|B|A|L|B



Supplied by:
Licence number:
Produced:
Serial number:

Birmingham Business &
100031961
02/12/2020
2292690



Scale: 1:500

Land adjacent to
53 Greswold Street
West Bromwich
B71 1NX



Plot centre co-ordinates: 400053,292414
Download file: han b711nx.r.zip
Project name: han b711nx.r

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LEGEND



- CA Mine shaft



- Mine shaft **if** considered to occur 5m NW, due to departure.

Red hash/circle – ZOI radii 13.2m.

APPENDIX I

MINE SHAFT ZOIs, 6m DRIFT & AFTER SI SHOWS No 53 CLEAR OF MINE ENTRIES.



LEGEND



- CA Mine shaft



- Mine shaft if considered to occur 5m NW, due to departure.

Red hash/circle – ZOI radii 7m, if 6m depth to