

Our Ref: 14-818.02L
Your Ref:

05 DEC 2014



Solum House
Unit 1 Elliott Court
St John's Road
Meadowfield
Durham
DH7 8PN

Mr & Mrs W G Gardner
The Stables
Paradise Farm
WOODLAND
County Durham
DL13 5RH

25th November 2014

Dear Mr & Mrs Gardner

RE: Shallow Coal Mining Assessment – Woodland.

Further to your recent request, please find below our evaluation on the likelihood of shallow coal workings being present below the above site. I have based my assessment on the following data sources:

- BGS Published Geology, Barnard Castle, 1 Inch Series (Solid & Drift Editions) Map Sheet 32
- Coal Authority Mining Report 51000697039001, 25th November 2014 (attached)
- Digital copy of geological plan showing outcrop of coal seams etc (attached)
- Historical Boreholes records from BGS, located in a similar geological setting (logs and location plan attached)

Site Geology

A summary of site geology is shown in the table below:

<u>MADE GROUND / FILL</u>	<u>Comments</u>
Type:	No Artificial Ground recorded on published geological plans
Thickness:	-
<u>DRIFT</u>	<u>Comments</u>
Type:	Published records indicate the site in an area "free from drift"
Thickness:	Archive borehole records suggest residual drift deposits vary from 2.74m to 4.16m locally
<u>SOLID</u>	<u>Comments</u>
Type:	Carboniferous Lower Coal Measures (LCM). Mainly sandstone at outcrop
Thickness:	c.>100m
Remarks:	Cyclical alternations of Sandstone, Ironstone, Mudrocks (siltstone, mudstone & shale), productive Coal Seams and Seat Earths/ Fire Clays deposited during the Carboniferous period.
Structural Faults or Abnormal Features:	According to published geological plans there are no structural faults or abnormal features within an influencing distance of the site.

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Shallow Coal Mining Assessment

A summary of recorded and inferred mining below the site is discussed below:

The site lies within a known mining area and productive coal seams are present within the Lower Coal Measures.

According to the Coal Authority (CA) report there are records of workings in 1 coal seam at shallow depth, and last worked in 1947. Shallow as defined by the Coal Authority is <30m from the surface. The site is also noted by the CA as within the boundary of an opencast site from which coal has been removed by opencast methods.

The CA have no records of mine entries on or within 20m of the site and no coal mining subsidence records with 50m.

According to the CA interactive map viewer, the site lies within a High Risk Development Area (HRDA).

Published BGS plans indicate an outcrop of the Brockwell seam on or close to the sites western boundary, trending east. This seam is the shallowest coal seam below the site and is stratigraphically underlain by the Victoria seam.

The generalised vertical section on published geological records note the separation between the Brockwell and Victoria seam is in the order of 24m. There are no other coal seams within 30m below the shallowest seam (Brockwell).

Historical borehole data very close to the site is not available, but several adjacent borehole and shaft details have been procured and copies of these are attached. Several BH/shaft details indicate the Brockwell as banded, with several leaves up to around 1m thick and a total thickness (including bands) of around 3.6m noted at BGS borehole NZ02NE22, located to the NE of the site.

BGS Borehole NZ02NE18, located to the south of the site indicates the separation between the Brockwell and Victoria seams at 24.8m, which ties in with published geological plans, with the Victoria noted at 0.15m thick.

Based on data from the adjacent borehole records, as well as outcrop patterns, it is interpolated that the following seams and thicknesses are present below the site:

Coal Seam	Depth below current ground levels (m)	Recorded thickness on published data (m)	Remarks
Brockwell	Noted to lie at or close to rockhead estimated depth c. 2m from ground levels	estimated thickness up to 3.6m extraction	This is likely to be recorded shallow worked seam as noted by CA. Based on limited rock cover "unsafe" conditions evident
Victoria	Noted to lie at least 24m below Brockwell seam estimated depth c. 26m from ground levels	estimated thickness 0.15m	No risk due to depth of seam

Coal Recovery Assessment

The site lies in the "active coalfield" as defined by the Coal Authority. From the above review it can be seen that the shallowest named coal seam is the Brockwell which is noted as at or close to rockhead on or close to the site. It is our opinion that any excavations for any potential new foundations may encounter this seam if any future development is envisaged, and it may be practical or viable to remove coal from below the site (if not already removed by former opencast works).

Conclusions

From the above review, it can be seen that the Coal Authority (CA) record the presence of shallow coal below the site that has been recorded as having been worked in the past. Published BGS geological plans and historical boreholes in a similar and relevant geological setting suggest the Brockwell is present at a shallow depth (estimated at or close to rockhead), with rock at or close to the surface in this area. The Brockwell is noted as banded, with several thick leaves noted.

There is also evidence to suggest the site was subject to opencasting and it may be that the Brockwell has been subsequently removed by surface extraction below the site. However, the records of the former opencast may also relate to an "opencast boundary", where opencasting did not extend below the site (perhaps due to practical excavation reasons so close to infrastructure etc).

In either case, whether shallow coal workings or opencast backfill is evident, on the basis of the data to hand, it is our opinion that there is a high risk of shallow coal or workings present below the site requiring mitigation measures and as such further investigation works and/or structural precautions are necessary.



I trust the above review is adequate for you, however, if you require any further information or clarification, please let me know.

Yours Sincerely

[Redacted signature]

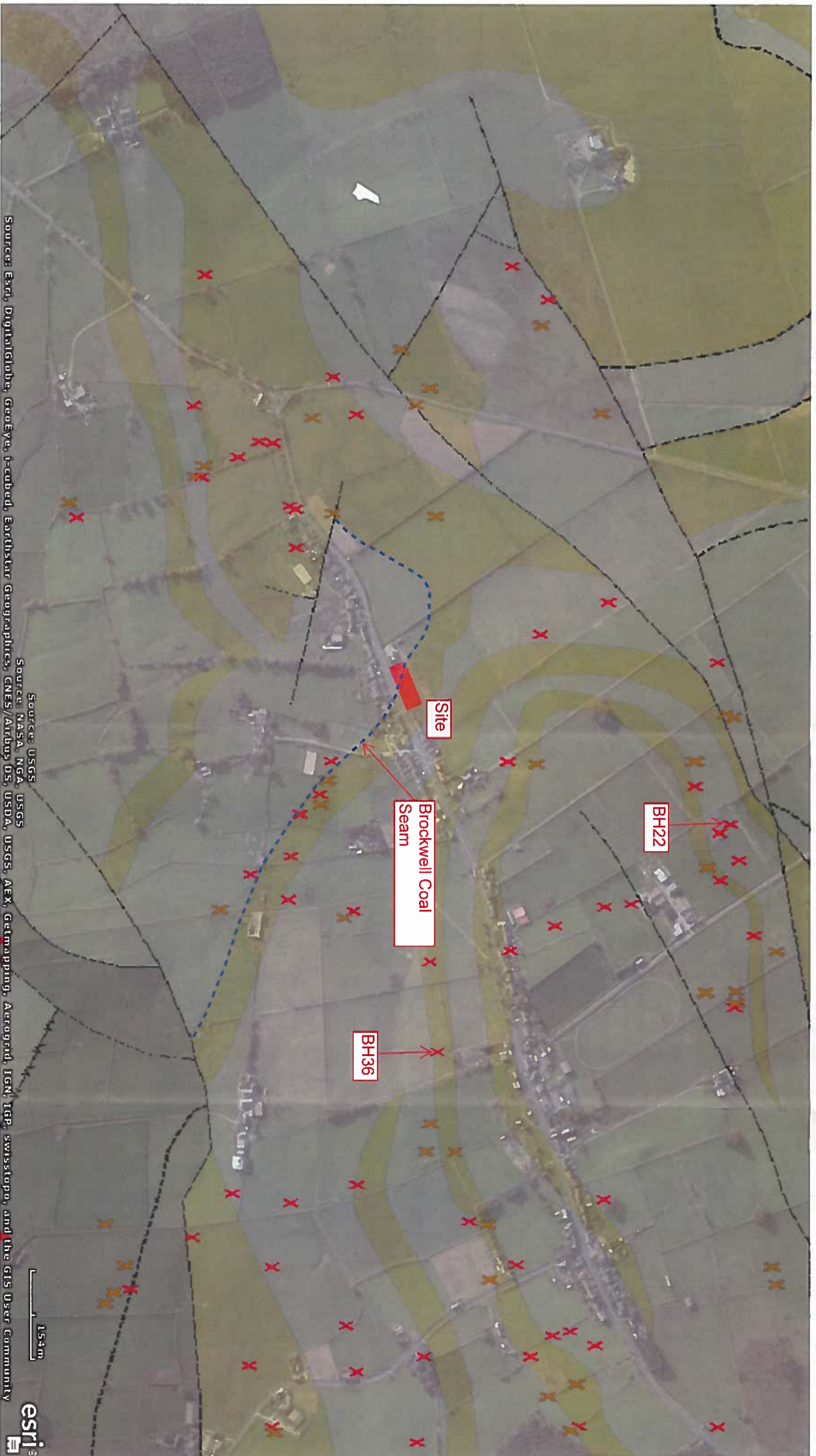
.....
For and on behalf of Arc Environmental Ltd
Kevin C. Moir
BSc (Hons) MSc CGeol CSci FGS MICE MCI
Director



Contractors Health and Safety Accreditation Scheme
Accredited Contractor
www.chas.gov.uk



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SSIP
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Source: Esri, DigitalGlobe, GeoEye, i-cubed, Earthstar Geographics, CNES/Airbus DS, USDA, USGS, AEX, Getmapping, Aerogrid, IGN, IGP, swisstopo, and the GIS User Community



154m

Site

Brockwell Coal Seam

BH22

BH36



Issued by:

The Coal Authority, Property Search Services, 200 Lichfield Lane, Berry Hill, Mansfield, Nottinghamshire, NG18 4RG
Website: www.groundstability.com Phone: 0845 762 6848 DX 716176 MANSFIELD 5

ARC ENVIRONMENTAL LTD
SOLUM HOUSE, UNIT 1 ELLIOTT
COURT
ST JOHNS ROAD
MEADOWFIELD
DURHAM
DURHAM
DH7 8PN

Our reference: 51000697039001
Your reference: 14-818
Date of your enquiry: 25 November 2014
Date we received your enquiry: 25 November 2014
Date of issue: 25 November 2014

This report is for the property described in the address below and the attached plan.

Non-Residential Coal Authority Mining Report

LAND AT WOODLAND, MIDDLETON ROAD, WOODLAND, DURHAM,

This report is based on and limited to the records held by, the Coal Authority, and the Cheshire Brine Subsidence Compensation Board's records, at the time we answer the search.

Coal mining	See comments below
Brine Compensation District	No

Information from the Coal Authority

Underground coal mining

Past

The property is in the likely zone of influence from workings in 1 seam of coal at shallow depth, and last worked in 1947.

Present

The property is not in the likely zone of influence of any present underground coal workings.

Future

The property is not in an area for which the Coal Authority is determining whether to grant a licence to remove coal using underground methods.

The property is not in an area for which a licence has been granted to remove or otherwise work coal using underground methods.

The property is not in an area that is likely to be affected at the surface from any planned future workings.

However, reserves of coal exist in the local area which could be worked at some time in the future.

No notice of the risk of the land being affected by subsidence has been given under section 46 of the Coal Mining Subsidence Act 1991.

Mine entries

There are no known coal mine entries within, or within 20 metres of, the boundary of the property.

Records may be incomplete. Consequently, there may exist in the local area mine entries of which the Coal Authority has no knowledge.

Coal mining geology

The Authority is not aware of any evidence of damage arising due to geological faults or other lines of weakness that have been affected by coal mining.

Opencast coal mining

Past

The property is within the boundary of an opencast site from which coal has been removed by opencast methods.

Present

The property does not lie within 200 metres of the boundary of an opencast site from which coal is being removed by opencast methods.

Future

The property is not within 800 metres of the boundary of an opencast site for which the Coal Authority is determining whether to grant a licence to remove coal by opencast methods.

The property is not within 800 metres of the boundary of an opencast site for which a licence to remove coal by opencast methods has been granted.

Coal mining subsidence

The Coal Authority has not received a damage notice or claim for the subject property, or any property within 50 metres, since 31st October 1994.

There is no current Stop Notice delaying the start of remedial works or repairs to the property.

The 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

There is no record of a mine gas emission requiring action by the Coal Authority within the boundary of the property.

Hazards related to coal mining

The property has not been subject to remedial works, by or on behalf of the Authority, under its Emergency Surface Hazard Call Out procedures.

Withdrawal of support

The property is not in an area for which a notice of entitlement to withdraw support has been published.

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

Working facilities orders

The property is not in an area for which an Order has been made under the provisions of the Mines (Working Facilities and Support) Acts 1923 and 1966 or any statutory modification or amendment thereof.

Payments to owners of former copyhold land

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

Comments on Coal Authority information

In view of the mining circumstances a prudent developer would seek appropriate technical advice before any works are undertaken.

Therefore 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 good engineering practice developed for mining areas. No development should be undertaken that intersects, disturbs or interferes with any coal or mines of coal without the permission of the Coal Authority. Developers should be aware that the investigation of coal seams/former mines of coal may have the potential to generate and/or displace underground gases and these risks both under and adjacent to the development should be fully considered in developing any proposals. The need for effective measures to prevent gases entering into public properties either during investigation or after development also needs to be assessed and properly addressed. This is necessary due to the public safety implications of any development in these circumstances.

Information from the Cheshire Brine Subsidence Compensation Board

The property lies outside the Cheshire Brine Compensation District.

Additional Remarks

This report is prepared in accordance with the Law Society's Guidance Notes 2006, the User Guide 2006 and the Coal Authority and Cheshire Brine Board's Terms and Conditions 2006. The Coal Authority owns the copyright in this report. The information we have used to write this report is protected by our database right. All rights are reserved and unauthorised use is prohibited. If we provide a report for you, this does not mean that copyright and any other rights will pass to you. However, you can use the report for your own purposes.

Issued by:	The Coal Authority, 200 Lichfield Lane, Mansfield, Nottinghamshire, NG18 4RG
Tax Point Date:	25 November 2014
Issued to:	ARC ENVIRONMENTAL LTD SOLUM HOUSE, UNIT 1 ELLIOTT COURT ST JOHNS ROAD MEADOWFIELD DURHAM DURHAM DH7 8PN
Property Search for:	LAND AT WOODLAND, MIDDLETON ROAD, WOODLAND, DURHAM,
Reference Number:	51000697039001
Date of Issue:	25 November 2014
Cost:	£59.00
VAT @ 20%:	£11.80
Total Received:	£70.80
VAT Registration	598 5850 68

Location map



Approximate position of property

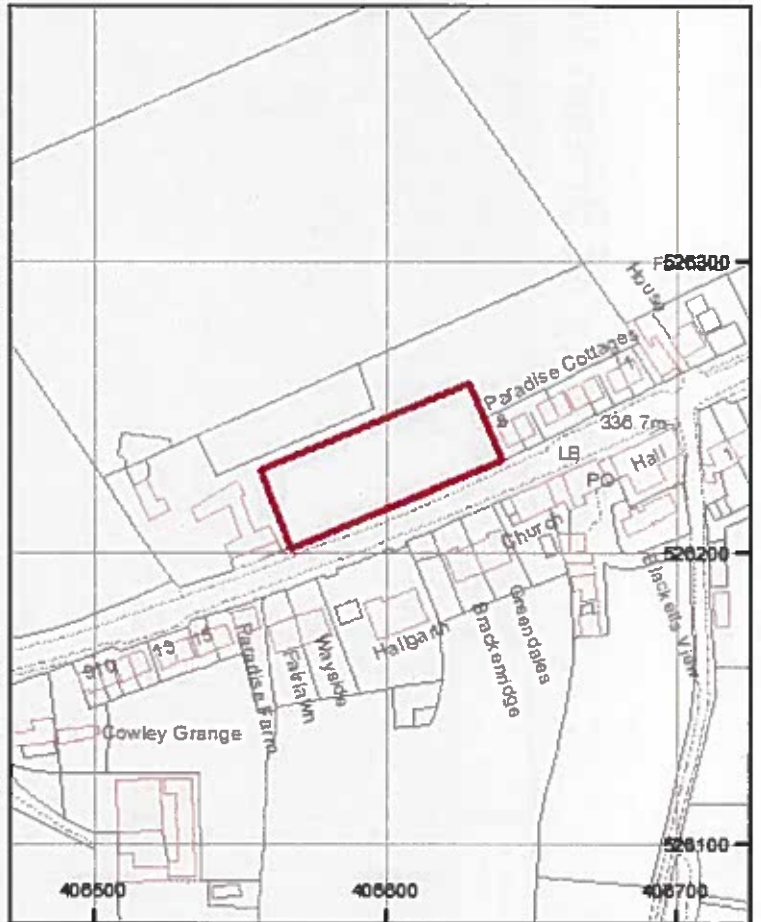


Enquiry boundary

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Key

Approximate position of enquiry boundary shown





More BGS map viewers

Go to Location

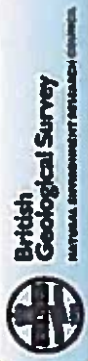
Switch Basemap

100%

Geology Transparency

Grid Ref: 465248, 527179

Geology of Britain viewer



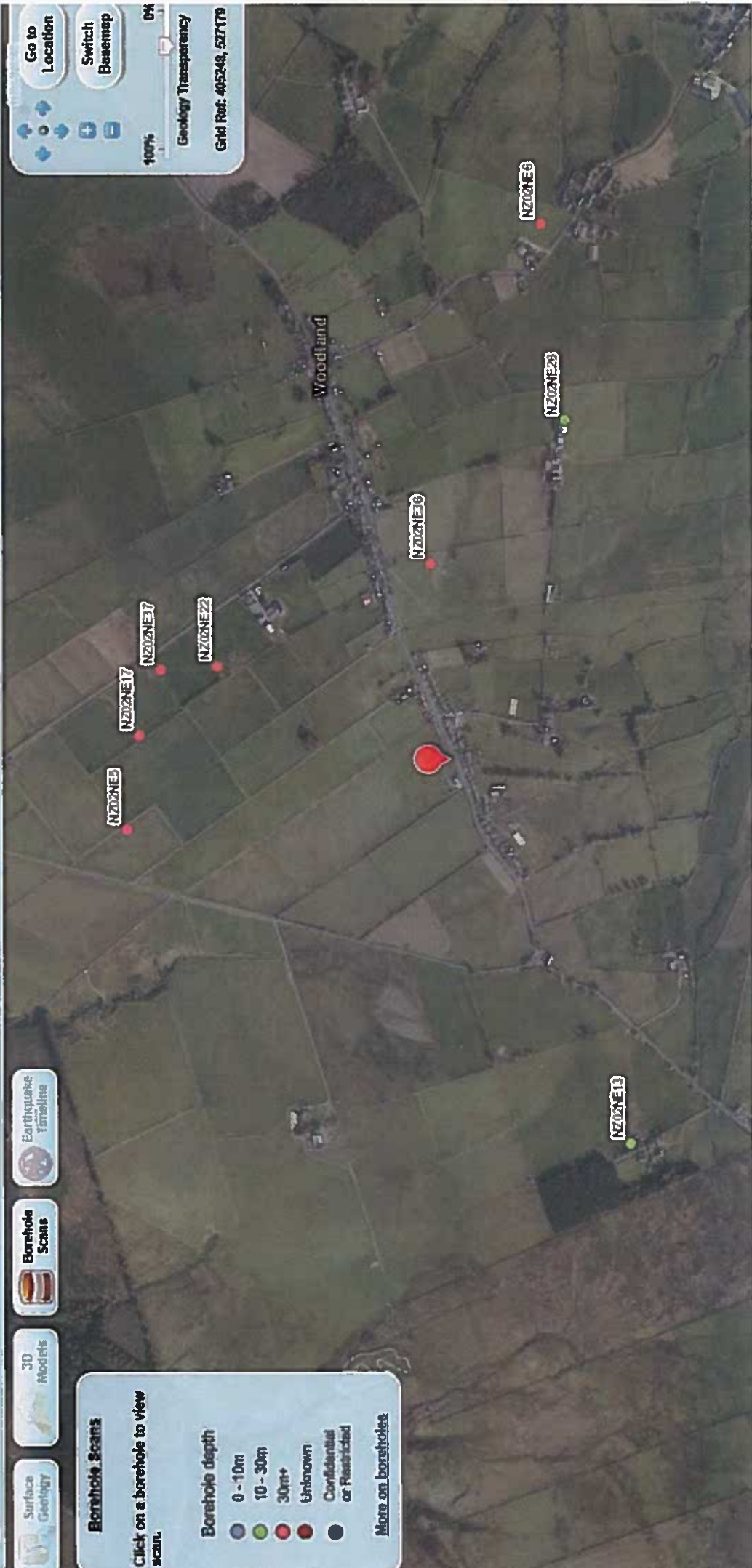
Borehole Scans

Click on a borehole to view scan.

Borehole depth

- 0 - 10m
- 10 - 30m
- 30m+
- Unknown
- Confidential or Restricted

[More on boreholes](#)



GEOLOGICAL SURVEY OF GREAT BRITAIN

RECORD OF SHAFT OR BORE FOR MINERALS

(For Survey use only)

6-inch Map Registered No.

NZ02NE/22

Name of Shaft or Bore given by Geological Survey:

Woodland Colliery Shaft

Name and Number given by owner:

Nat. Grid Reference

NZ 0683 2679

For whom made Woodland Colliery

Town or Village at Woodland County Durham

Exact site

Attach a tracing from a map, or a sketch-map, if possible.

1" N.S. Map No.

32

1" O.S. Map No.

84

Confidential or not

Purpose for which made Coal

Ground Level at shaft base relative to O.D. 5.1150 If not ground level give O.D. of beginning of shaft bore

Made by

Date of sinking

Information from B & S 2322 (Vol S-T 231)

Date received

Examined by

SPECIMEN NUMBERS AND ADDITIONAL NOTES

For details see B & S 2322.

(For Survey use only) GEOLOGICAL CLASSIFICATION	DESCRIPTION OF STRATA	Thickness		Depth	
		FT.	IN.	FT.	IN.
	Drift at top of				
	Lower Coal Measures				
	Tilly 24 ft at top of				
	Bushy coal 4 ft				
	hard 5 ft				
	Coal 4 ft at top of				
	Blue Buckram coal, 2 ft 3 in				
	Blue coal 4 ft				
	Coal 33 ft				
	hard 4 ft				
	Coal 37 ft at top of				
	Total Depth			142	4

GEOLOGICAL SURVEY OF GREAT BRITAIN
RECORD OF SHAFT OR BORE FOR MINERALS

(For Survey use only)
6-inch Map Registered No.
NZ02 NE/18

Name of Shaft or Bore given by Geological Survey:
Cowby Shaft

Name and Number given by owner:

For whom made Woodland Colliery

Town or Village Woodland County Derham

Exact site ca Attach a tracing from a map, or a sketch-map, if possible.

Purpose for which made Coal

Ground Level at shaft ca 98ft relative to O.D. If not ground level give O.D. of beginning of shaft bore

Made by B. & S. No 3086 (Self. Vol. 1552) Date of sinking 1896

Information from B. & S. No 3086 (Self. Vol. 1552) Date received

Examined by

1" N.S. Map No.	1" O.S. Map No.	Confidential or not
32	84	

SPECIMEN NUMBERS AND ADDITIONAL NOTES

For full details see B. & S. 3086.

(For Survey use only) GEOLOGICAL CLASSIFICATION	DESCRIPTION OF STRATA	THICKNESS		DEPTH	
		Ft.	IN.	Ft.	IN.
	Drift to 46ft 8in				
	MIDDLE COAL MEASURES				
	Coal 9in at 47ft 5in				
	Hutton 4in (Bottom Hutton) at 59ft 8in				
	Judith (Bony), 7in at 98ft 3in (coal sand)				
	LOWER COAL MEASURES (at 167ft 10in)				
	Coal 6in at 168ft 4in				
	Hony 2 1/2in at 202ft 11in				
	1 1/2ft s. 130ft at 248ft				
	Bracknell				
	Coal sand 2in				
	Coal 4in				
	Road 8in				
	Coal 4 1/2in at 269ft				
	7. Victoria, coal 6in at 281ft 5in				
	Total depth 356ft 5in			356	5

GEOLOGICAL SURVEY OF GREAT BRITAIN
RECORD OF SHAFT OR BORE FOR MINERALS

(For Survey use only)
6-inch Map Registered No.
NZ02 NE / 36

Name of Shaft or Bore given by Geological Survey:
Shaft near Woodland

Name and Number given by owner:
-

For whom made:
-

Town or Village Woodland County Dorset

Exact site S. of Royal Hotel (PH) Woodland *Attach a tracing from a map, or a sketch-map, if possible.*

Purpose for which made Coal

Ground Level at shaft bore relative to O.D. c. 1156 If not ground level give O.D. of beginning of shaft bore

Made by: _____ Date of sinking: _____

Information from Old Sta. No. 115 standard (1) Date received: _____

Examined by: _____

SPECIMEN NUMBERS AND ADDITIONAL NOTES

GEOLOGICAL CLASSIFICATION	DESCRIPTION OF STRATA	Thickness		Depth	
		FT.	IN.	FT.	IN.
	<u>Bandwidth coal at shaft</u>				

