

REF: 2110/CBA/GroutingRep/mjs

Mark Ithell

30th August 2018

Dear Mark,

RE: CAE BEDW, ACREFAIR: GROUTING REPORT

1.0 Introduction

Mr, Mark Ithell proposes to build two new houses on a plot of land off Cae Bedw in Acrefair.

Mr Ithell was informed that the site had already been drilled and grouted by nkc. However, only the initial drilling records were provided.

Consequently, Mr Ithell appointed GroundSolve Ltd (GSL) to design the grouting works and tender the works to a suitable grouting contractor. Following which Forkers Ltd were appointed to undertake the drilling and grouting works.

This report presents the findings of the previous investigation and the drilling grouting works and gives geotechnical recommendations for the development.

2.0 Site Location and Description

The site is located off Cae Bedw in Acrefair at National Grid Reference SJ 277 434, see Figure 1.

It is bounded by Cae Bedw to the north and housing to the east and west. A slope at the southern side of the site leads down to Bethania Road on the southern site boundary. An aerial photograph showing the site layout is presented below.

- It comprised two boreholes to 30m depth,
- Rotary probing searching for a mine shaft.

The location of the boreholes and the search area for the shaft is presented in Appendix C.

It recorded that the site was formerly the spoil heap for an adjacent mineshaft and no methane or carbon dioxide was recorded during drilling of the boreholes.

The following strata was recorded in the boreholes.

BH No	Made Ground (m)	Glacial Till (m)	Mudstone (m)	Coal /Old workings (m)	Firm Drilling (m)
1	0.0-4.5	4.5-6.5	6.5-14.80	14.8-15.5	15.5-30.0
2	0.0-4.5	4.5-6.5	6.5-15.0	15.0-17.0	17.0-30.0

The made ground was described as firm, grey shale, and based on exposures on site is colliery spoil. SPT's in the made ground recorded "N" values between 4 and 8 indicating a loose consistency.

The underlying glacial till was described as firm, brown, sandy clay, whilst the underlying bedrock was described as firm, grey shale.

The coals seam workings were recorded as being in the Yard Coal at depths between 15 and 17m. No further coal seams were recorded to the final borehole depth of 30m.

The report referred to a shaft some 15m east of the site, which was recorded on the 1873 OS plan and was part of Pen Bedw Colliery. An area some 7m wide was investigated by probe drilling to ensure the shaft did not encroach onto this site. The proposed layout at the time and the area searched for the shaft is presented in Appendix C.

The report recommended that the site be stabilised by drilling and grouting.

5.0 Proposed Development

Two plots are proposed on the site, Plots 1 and 2, the locations of which are shown on Figure 2.

6.0 The Works

Prior to undertaking the works permission was obtained from the Coal Authority, see Appendix D.

Forkers undertook the work between the 25th and 30th July 2018 under the part time supervision of an engineer from GSL.

The borehole positions were set out by GSL around the plot locations identified by Mr. Ithell. Perimeter boreholes were set out on a 3m grid, with infill boreholes on a 3 to 6m grid. It was intended to monitor the works and close up the grids, if required.

The boreholes were drilled by a Klemm drilling rig using water flush, see photographs in Appendix E. The borehole were all drilled to a depth of 18m having passed through the workings or grout/coal.

Some twenty boreholes were drilled for Plot 1, with sixteen drilled for Plot 2. All of the boreholes encountered either coal or grout in the working.

In Plot 1 seven of the boreholes encountered coal, with the remainder encountering grout, whilst nine borehole encountered coal in Plot 2. The drilling records and a summary are presented in Appendix F.

At no point was any flush loss recorded in the boreholes. For this reason, it was decided that proof drilling boreholes were not required.

The holes were all grouted with the holes filling up with the calculated volume per hole, with no holes taking any grout.

A summary of the grout records is presented in Appendix G.

7.0 Conclusions and Recommendations

From the works undertaken, it can be concluded that the site had indeed been grouted before, with no voids encountered and many boreholes encountering grout.

Due to the considerable thickness of loose colliery spoil beneath the site, and the low risk of residual voids in the ground, raft foundations are recommended for both plots, designed to span 3m and cantilevered 1.5m at the edges.

An allowable bearing pressure of 50kN/m² should be used to design the rafts, which should have a downstand extending 0.75m below final external ground levels.

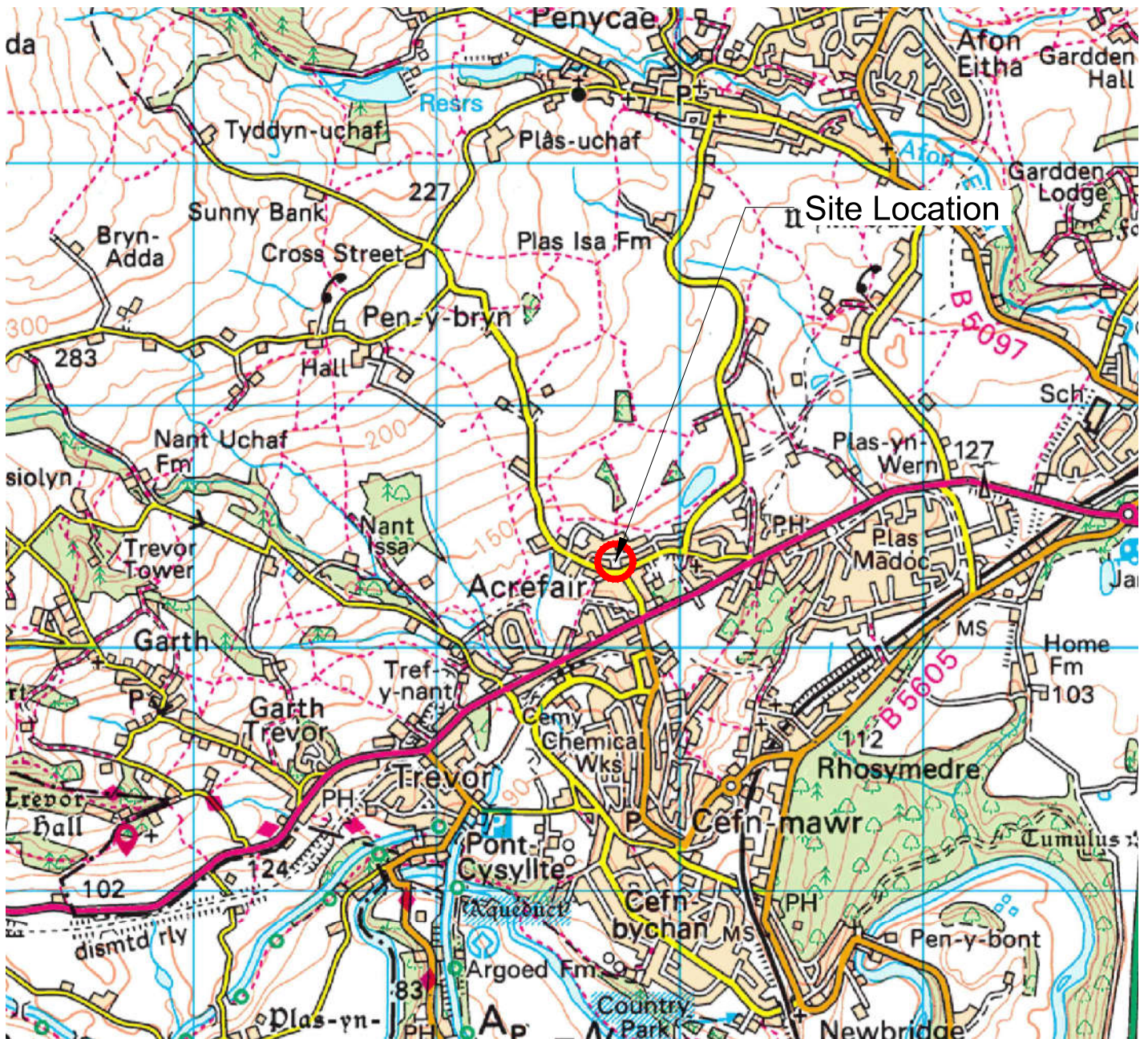
We trust this is satisfactory, should you have any queries please call Mike Scott on 01244 661361.

Yours sincerely



M J Scott

FIGURES



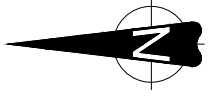
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SCALE 1:50,000 @ A4

Figure Title

SITE LOCATION

FIGURE 1



Legend

- Borehole where grouted workings were encountered



SCALE 1:200 @ A3

Figure Title
BOREHOLE LOCATIONS

APPENDIX A

Site Photographs



Photograph 1 Site from Cae Bedw



Photograph 2 level platform for drilling and grouting works



Photograph 3 Stone platform



Photograph 4 remnants of colliery spoil from old mine tip.



Photograph 5 Cae Bedw

APPENDIX B

Coal Authority Report

David Bellis Consulting Surveyors Ltd
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Regulated Coal Mining Search Report

Incorporating Cheshire Brine Enquiries



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15 Nov 17

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Incorporating Cheshire Brine Enquiries

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Client detail :

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(DX 720352 Harrogate)

Tel 01423 529911
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Search produced by M J Peace

Property details:

Land Adjoining 2 Morfa
Bowers Road
Acrefair
Wrexham
LL14 3TF

Your ref : 175081

Purchaser :

Vendor :

In accordance with your instructions received 10 Nov 2017 we have inspected plans and records of coal mine workings and have made enquiries with respect to Cheshire brine extraction in relation to the above property and can report as follows :

1. SEAM DETAILS FOR PAST UNDERGROUND COAL MINING : In relation to the property the undermentioned seam(s) have been worked within the likely zone of physical influence on the surface.

Seam	Depth (m)	Sect (cm)	Date	Remarks
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The property is situated in a past mining district in which 4 seams of coal have been worked from shallow depth prior to 1900.



2. SEAM DETAILS FOR CURRENT AND FUTURE UNDERGROUND COAL MINING : The undermentioned seam(s) are currently being worked, or licenses to work are being determined, or have been granted to work, within the likely zone of physical influence on the surface in relation to the property.

Seam	Depth (m)	Sect (cm)	Date	Remarks
				Coal in reserve - no workings currently planned.

3. UNDERLYING GEOLOGY :

The property is situated in an area of Boulder Clay over Coal Measures, shales and mudstones.



Serial Number 379193**4. OPENCAST COAL MINING :**

Past Opencast Workings : The property is not situated within the boundary of a former opencast coal mining site. ✓

Present Opencast Workings : The property is not situated within 200m of the boundary of a currently operating opencast coal mining site. ✓

Future Opencast Workings : The property is not situated within 800m of the boundary of an opencast site for which a license to extract coal by opencast methods has been granted or a license to do so is currently being determined. ✓

5. SHAFTS, ADITS (MINE ENTRIES) AND ADDITIONAL INFORMATION :

A review of the Coal Authority mine entry database indicates that one mine entry is located within 20 metres of the property or the boundary of the property. A plan is attached indicating the approximate position of the mine entry discovered. There are no recorded treatment details for the former mine entry. ✓

There are no tips or lagoons in the vicinity of the property. ✓

There are possible ancient coal mining workings within the likely zone of influence on the surface in the vicinity of the property, for which no accurate plans or records exist. ✓

If additional information is required regarding a mine entry disclosed in a residential coal mining report, a CoalSearchPlus+ Mine Entry Assessment Report can be provided for an additional fee of £75 plus vat. This will include an assessment of the risk of subsidence damage occurring due to the presence of the mine entry/entries. ✓

Please contact David Bellis Consulting Surveyors on 01423 529911 to order a Mine Entry Assessment Report and arrange payment. ✓

Further information regarding mine entries revealed in commercial/development coal mining reports can also be provided and reports will be tailored to client requirements. Please contact David Bellis Consulting Surveyors, on 01423 529911, to discuss the data that can be provided and agree the fee. ✓

6. NOTICES IN RELATION TO FUTURE COAL MINING ACTIVITY :

We have no knowledge of any intention to work coal by underground methods within influencing distance on the surface in the vicinity of the property for which section 46 notices have been issued under the Coal Mining Subsidence Act 1991. ✓

7. PAST COAL MINING RELATED SUBSIDENCE :

A review of the records held by the Coal Authority has shown no evidence of coal mining related subsidence claims in relation to the subject property since 31st October 1994. This is the period for which records are held by the Coal Authority. ✓

8. CONCLUSION (COAL MINING) : In the light of the above facts we conclude that in relation to coal mining :

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Old workings are present but all settlement is likely to have completed long ago.
In our opinion it is unlikely that coal will be worked in the foreseeable future.

COAL MINING RISK LEVEL : We recommend that the transaction is treated as :

Where this report is to be used for development purposes particular attention is drawn to the paragraphs below concerning the ownership of in situ coal, coal workings and the risks from mine gases.

Please note that the overall coal mining risk level above is based upon an assessment of the detailed information contained in the body of the report. The risk assessment must be used in conjunction with the detailed report.

If development of the property is being considered then all necessary enquiries and investigations should be completed prior to the commencement of works to ensure that proposals follow good engineering practice for development in mining areas. The Coal Authority has ownership of in situ coal, coal mines (both current and disused) and coal mine shafts and adits. Activities that intersect, enter or disturb any of the Coal Authority's interests require the written permission of the Authority.

Any development proposals should consider risks to the development, or adjacent property, of generating or displacing underground gases where coal seams or former mining works are disturbed. The need for effective measures to prevent gasses entering public properties should be assessed and properly addressed. These actions are necessary due to the public safety implications of development in these circumstances.

CHESHIRE BRINE EXTRACTION INFORMATION :

The property lies outside the Cheshire Brine Compensation District as prescribed by the Cheshire Brine Pumping (Compensation for Subsidence) Act 1952.

With respect to coal mining there is nothing to prevent a claim being made under the provisions of the Coal Mining Subsidence Act 1991 and subsequent legislation, but it must not be inferred that the Coal Authority or their licensees will necessarily accept that any damage has been caused as a result of mining subsidence.

If you require any further information please contact CoalSearchPlus+ on 01423 529911 or via our website www.coalsearch.plus.com.

This report is prepared in accordance with the CoalSearchPlus+ terms and conditions as published on the CoalSearchPlus+ website (www.coalsearch.plus.com) on the date of issue of this report.

This is a Coal Mining Search Report and is not to be interpreted as being part of an Environmental Assessment of the property.

We cannot be held responsible for the accuracy of the information provided to us by third party organisations.

The information and/or material supplied is composed from data based in many cases on measurements and records of various standards of reliability and age. We cannot be held responsible for the accuracy of such information.

This search report is based upon the privately owned CoalSearchPlus+ mining record database, data supplied to CoalSearchPlus+ under license from the Coal Authority, and plans and records held by the Coal Authority and made publicly available at the time of inspection which may include British Geological Survey and Ordnance Survey data. Organisations

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reserve the right to vary their proposals and intentions as to their future mining operations without prior notice save as provided in the Coal Mining (Subsidence) Act 1991 and the Coal Industry Act 1994.

This report contains Data provided by the Coal Authority. Any and all analysis and interpretation of the Coal Authority Data in this report is made by David Bellis Consulting Surveyors Ltd trading as CoalSearchPlus+, and is in no way supported, endorsed or authorised by the Coal Authority. The use of the data is restricted to the terms and provisions contained in this report. Data reproduced in this report may be copyright of the Coal Authority and permission should be sought from David Bellis Consulting Surveyors Ltd prior to any re-use.

Coal Authority Address : The Coal Authority, 200 Lichfield Lane, Berry Hill, Mansfield, Nottinghamshire, HG18 4RG

British Geological Survey Address : British Geological Survey, Kingsley Dunham Centre, Keyworth, Nottingham NG12 5GG

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The information contained in this report relates to the property address given by the individual or organisation ordering the report. Where a plan indicating the property location and boundary is supplied with the instruction the report is based on that information. Where no plan is supplied the report is based on the property location as defined in publicly available mapping data. At all times it remains the responsibility of the instructing organisation or individual to define the boundary of the property.

Additional notes applicable to Residential Coal Mining Reports only:

David Bellis Consulting Surveyors Ltd is not aware of any personal or business relationship between the person conducting or preparing the search and any person involved in the sale of the property.

This report is a desk study of existing published geological and coal mining records, the CoalSearchPlus+ coal mining data base and data supplied under license by the Coal Authority. In order to compile this report enquiries have been made in relation to the following:

Past Coal Mining – the existence of any previously worked seams of coal within influencing distance on the surface in relation to the property including an indication of the depth and age of the workings.

A statement of shallow depth generally indicates records show that coal has been mined within 30m of the surface. In some circumstances coal classified as shallow may extend up to a depth of 50m.

A statement of moderate depth indicates records show that coal has been mined at between 30m and 500m depth.

A statement of 'at depth' indicates records show that coal has been mined at depths of over 500m.

Present Coal Mining - the existence of any currently worked seams of coal within influencing distance on the surface in relation to the property including an indication of the depth and age of the workings. The existence of coal that could be worked at some time in the future will be enquired into and detail of any relevant licenses disclosed where available.

Underlying Geology - the underlying geology of the property will be reviewed and briefly described in relation to coal mining.

Opencast Coal Mining - the existence of past present and future opencast coal mining, specifically :

- if the property is situated within the boundary of a former opencast site. In the case of old opencast workings it must be understood that the records are often unclear regarding the site boundary and or worked areas. Published records and data supplied under license by the Coal Authority will be reviewed to give our opinion of the existence of relevant former opencast coal workings.
- if the property is situated within 200m of the boundary of a currently operating opencast site.
- if the property is situated within 800m of the boundary of an opencast for which either a license to extract coal by opencast methods has been granted or a license to do so is currently being determined.

Shafts, Adits (Mine Entries) and Additional Information – the existence of any mine entries within 20m of the property or the boundary of the property and its associated land and buildings (the definition of the boundary of the property is the responsibility of the individual or organisation ordering this report). Where a mine entry is found to exist the approximate location of the mine entry will be indicated on a plan. The existence of unworked coal will be enquired into and our opinion regarding the likelihood of it being worked at some time in the past will be given where relevant.

It will be reported if mine gas emissions relating to the property are recorded by The Coal Authority.

It will be reported if The Coal Authority has carried out work in relation to the property after a report of an alleged coal mining related hazard under the Coal Authority's Emergency Hazard Call Out procedures.

Any other relevant coal mining related features discovered will be noted.

Notices in relation to future coal mining activity – the existence of notices indicating an intention to work coal by underground methods in the future.

Past coal mining related subsidence – if any publicly available records indicate coal mining related subsidence affecting the property since 31st October 1994.

Coal Mining Risk Level – the opinion of David Bellis Consulting Surveyors Ltd of the risk posed to the property from coal mining given all the information contained in the report. The risk to the property is given in relation to the majority of the housing stock in the immediate area.

Cheshire Brine – the location of the property in relation to the Cheshire Brine Compensation District and any available relevant information to the property regarding brine extraction.

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- Keep you informed by letter, telephone or e-mail, as you prefer, if we need more time.
- Provide a final response, in writing, at the latest within 40 working days of receipt.
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If you are not satisfied with our final response, or if we exceed the response timescales, you may refer the complaint to The Property Ombudsman scheme (TPOs):

Tel: 01722 333306, Website: www.tpos.co.uk, E-mail: admin@tpos.co.uk

We will co-operate fully with the Ombudsman during an investigation and comply with his final decision.

Complaints should be sent to:

Mr M. Peace, Director, David Bellis Consulting Surveyors Ltd, 8 Mornington Terrace, Harrogate, North Yorkshire, HG1 5DH
Tel : 01423 529911 Fax : 01423 529922 Email : contact@coalsearch.plus.com

Date : 15 Nov 2017

Signed :



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- sets out minimum standards which firms compiling and selling search reports have to meet
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TPOs Contact Details:

The Property Ombudsman scheme
Milford House
43-55 Milford Street
Salisbury
Wiltshire SP1 2BP
Tel: 01722 333306
Fax: 01722 332296
Website: www.tpos.co.uk
Email: admin@tpos.co.uk

You can get more information about the PCCB from www.propertycodes.org.uk.

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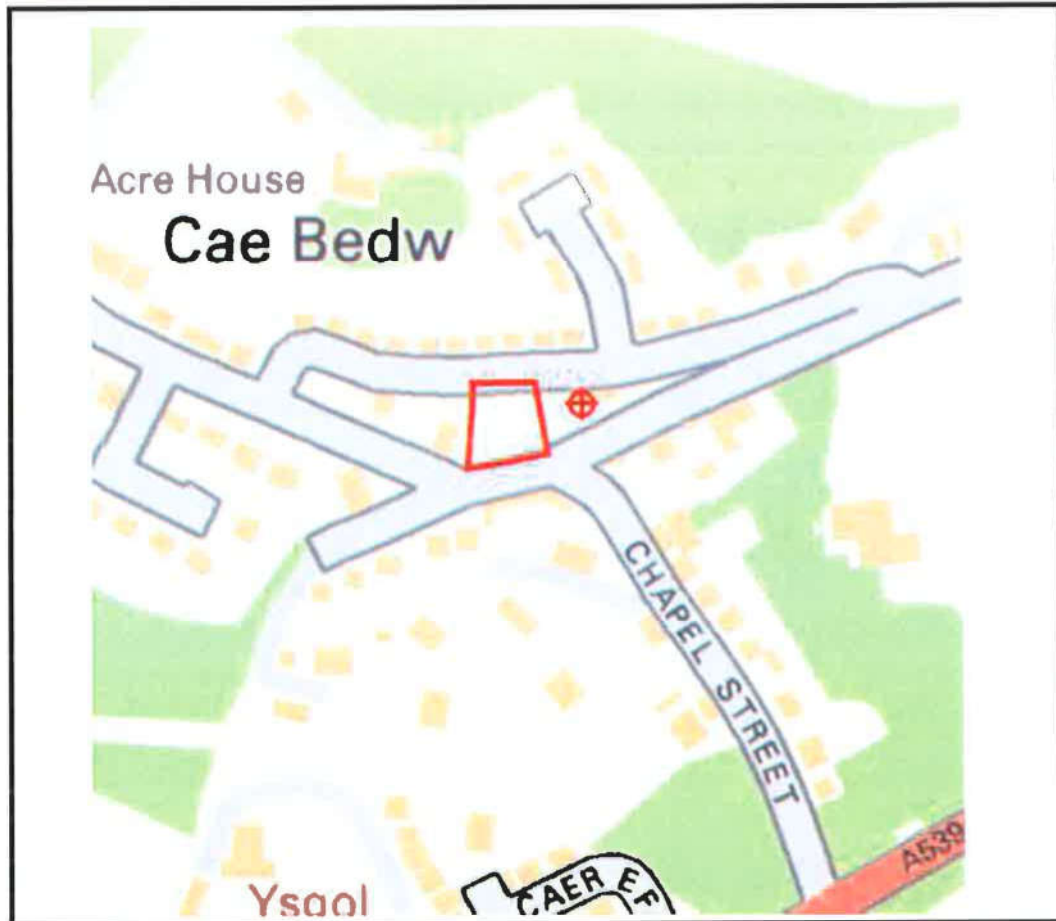
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35. If the Applicant shall pay in advance of receipt of the invoice, then the Applicant remains liable for any underpayment.
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37. The Applicant may cancel the Request in whole or in part at any time prior to Clause 27.
38. If the Applicant cancels the Request in whole or in part prior to Clause 27, the Applicant remains liable for all Fees, Taxes and Disbursements already accrued prior to the Cancellation.
39. CoalSearchPlus+ accept no liability for any loss incurred by the Applicant or the Applicants client where the Applicant is acting as an agent for a client, due to late fulfilment and delivery of the Request.
40. CoalSearchPlus+ accept no liability for any loss to the Applicant, or the Applicant's client where the Applicant is acting as an agent for a client, due to any negative outcome of a report provided in the process of the correct and accurate fulfilment of the Request.
41. Any disputes relating to the provision of coal mining search reports should be addressed to the Practice Principal, CoalSearchPlus+ in the first instance. Disputes will be settled according to the CoalSearchPlus+ complaints procedure detailed in each report.
42. Independent Dispute Resolution - If you make a complaint and we are unable to resolve it to your satisfaction you may refer the complaint to The Property Ombudsman scheme (website: www.tpos.co.uk email: admin@tpos.co.uk Tel: 01722 333306). We will cooperate fully with the Ombudsman during an investigation and comply with his final decision.
43. Third Party and subcontractor Terms and Conditions shall apply in addition to these clauses. Should any conflict arise between CoalSearchPlus+ Terms and Conditions and Third Party or Subcontractor Terms and Conditions, then CoalSearchPlus+ Terms and Conditions prevail unless and until CoalSearchPlus+ expressly states otherwise in writing and/or courts of England and Wales establish otherwise.
44. No variation to these Terms and Conditions is effective unless and until CoalSearchPlus+ expressly agrees in writing.
45. CoalSearchPlus+ reserves the right to alter these terms and conditions as appropriate, without notice, at any time. Such amended Terms and Conditions will become effective upon publication on the CoalSearchPlus+ website.
46. These Terms and conditions are subject to English Law and the exclusive jurisdiction of the courts of England and Wales.



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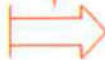
Outline of property boundary



Disused mine shaft



Disused adit



This plan shows the approximate position of the disused shaft or adit referred to in the attached Mining Search Report.

Symbols used on this plan are not drawn to scale.

Property owners have the benefit of the protection of the Coal Mining Subsidence Act 1991* in the event of the occurrence of damage from disused coal mine workings including disused coal mine entries.

Prior permission from the owner of a mine entry (usually the Coal Authority) must be sought before any physical investigation entering or disturbing it is undertaken.

If you have any questions or queries regarding the content of this coal mining report please contact David Bellis Consulting Surveyors Ltd.

The Coal Authority, regardless of responsibility and in conjunction with other public bodies, provide an emergency call out facility in coalfield areas to assess the public safety implications of mining features (including disused shafts and adits). The emergency telephone numbers at all times is (01623) 646333.

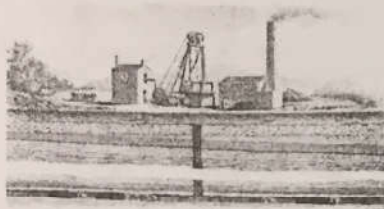
* Note The Coal Mining Subsidence Act 1991 does not apply where coal was worked or gotten by virtue of the grant of a gale in the Forest of Dean, or any other part of the Hundred of St. Briavels in the county of Gloucester.

8, Mornington Terrace, Harrogate, North Yorkshire, HG1 5DH - DX 720352 Harrogate
T: 01423 529911 F: 01423 529922 E: contact@coalsearch.plus.com W: www.coalsearch.plus.com



APPENDIX C

NKC report



Nkc Geotech Ltd

25 Grosvenor Road
Wrexham
LL11 1BT

tel

01352 762080

fax

01352 762081

email

neil@nkc.co.uk

Mining Investigation Report

Bethania Road, Acrefair

0101

13 February 2001

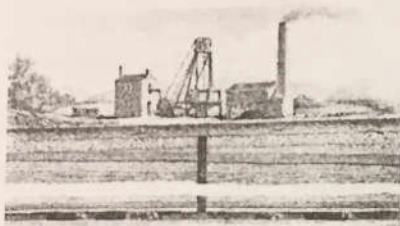
Mr H R Jones
Clwt Cottage
Gyfelia
Wrexham
LL13 OYL

contents

- 5 site description and investigation results
- 6 management of geotechnical hazards
- 7 foundation soils, gas testing and radiation results
- 8 borehole plan
- 9 drilling logs and section

extract

This report meets NHBC D5 Detailed Investigation requirements
The site is undermined by old workings in the Yard Coal



Site

A site for two dwellings, on Plot A and Plot B, at Bethania Road, Acrefair.

Investigation and site work by

Neil Catlow B.Sc F.G.S Engineering geologist.

Records inspected

Coal Authority at Mansfield.

Geological Survey.

My previous investigations in this vicinity.

Investigation results

Ground level

Unchanged throughout the investigation.

Site history

The site was formerly the spoil heap from an adjacent mineshaft and later the southern slope of an embankment for a mineral railway which ran over a bridge on Bethania Road, taking waste from the New British Ironworks 300m south-east of the site to a spoil heap 100m west of the site.

At the foot of the embankment, on the southern margin of the site on Bethania Road, a building known from mineplans as the Red Lion public house is shown on the Ordnance Survey. The proposed buildings do not extend over this area.

Contamination

The results of independent testing of the soil samples will follow when the results are available.

Gas testing

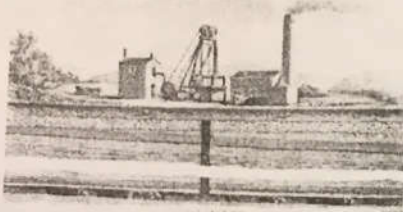
There were no methane or carbon dioxide emissions during the investigation period.

Foundation soils

Colliery derived shale fill upto 4.5m in thickness overlying brown sandy clay. Brown and grey shale rockhead lies at 6.5m.

Radon

The site lies in an area susceptible to radon. Radon can only be accurately detected over a three month test period, beyond the scope of this investigation. A snapshot of the background radiation was taken using a geiger counter, and the results show a typical background radiation level, but precautions against radon accumulation should be taken in the absence of evidence of no radon presence.



Shallow mineworkings

Open pillar & stall workings in a coal seam presumed to be the Yard Coal at 15.5m.
See logs for Bh1 and Bh2.

Disused mineshafts

There are records of one shaft 15m east of the site. The shaft was marked as an old shaft in an adjacent mineral royalty area on plans of Pen Bedw Colliery. This colliery worked an area north-west of the site upto 1912. The shaft is shown as open on the 1873 Ordnance Survey, but infilled on later editions. An area 7m wide adjacent to the shaft position was investigated by probe drilling to ensure the shaft lay off the site to the east.

The Brassey Coal workings are shallow and other old unrecorded shafts may be present beneath the fill.

Hazard management

There are old and unrecorded mineworkings present in the Brassey Coal. Subsidence of these workings could cause crown holes to be formed on the site, with dimensions of upto 1.5m deep and 1.9m diameter. There may also be old and unrecorded mineshafts upto 2.0m in diameter present under the fill.

Ground improvement

Stabilise the mineworkings by grouting to prevent further void migration under the proposed buildings.

and

Specialist foundations

Use a structural foundation designed to span 3.0m in case there are old infilled crown holes and unrecorded shafts present.

For Nkc Geotech Ltd

Neil Catlow, B.Sc. F.G.S



Details of foundation soils

<u>Location</u>	<u>depth</u>	<u>SPT N values</u>	<u>sample descriptions</u>
Bh 1	1.0	6	grey shale fill
	2.0	8	grey shale fill
	3.0	8	grey shale fill
	4.0	6	grey shale fill
Bh 2	1.0	5	grey shale fill
	2.0	6	grey shale fill
	3.0	8	grey shale fill
	4.0	4	grey shale fill

Gas testing results

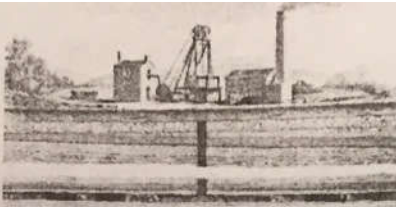
Atmospheric pressure 1021 mb

<u>Location</u>	<u>% methane</u>	<u>% oxygen</u>	<u>% LEL</u>	<u>% CO2</u>
Bh1	0.0	19.5	0.0	1.5
Bh2	0.0	19.9	0.0	1.0

Radiation samples

<u>Location</u>	<u>counts/min</u>	<u>% average background radiation</u>
Bh1	20	80





REF	0101	SITE	Bethania Road, Acrefair	DATE	13 February 2001
Bh	1	CLIENT	Mr H R Jones	SCALE	1:200
			printout direct from rig on site drilled & logged by Neil Catlow	HOLE FLUSH BIT	vertical water 1/c 75mm
DEPTH	STRATA	GRAPHIC	DESCRIPTION	SPT N value	SECTION
0.0	0.0	fill	xxxxxxx		ground level
0.5			xxxxxxx	6 @ 1.0m	
1.0			xxxxxxx		
1.5			xxxxxxx	8 @ 2.0m	
2.0			xxxxxxx		
2.5			xxxxxxx	8 @ 3.0m	
3.0			xxxxxxx		
3.5			xxxxxxx	6 @ 4.0m	
4.0			xxxxxxx		
4.5	4.5	clay	-----		
5.0			-----		
5.5			-----		
6.0			-----		rockhead
6.5	6.5	shale	-----		
7.0			-----		
7.5			-----		
8.0			-----		
8.5			-----		
9.0	9.2	shale	-----		
9.5			-----		
10.0			-----		
10.5			-----		
11.0			-----		
11.5			-----		
12.0			-----		
12.5			-----		
13.0			-----		
13.5			-----		
14.0			-----		
14.5	14.8	shale	■■■■■■■		
15.0			■■■■■■■		
15.5	15.5	cavity			old workings in Yard Coal
16.0					
16.5					
17.0	17.0	shale	-----		
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		bottom of hole

Nkc Geotech Ltd
25 Grosvenor Road
Wrexham
LL11 1BT

www.nkc.co.uk



REF 0101
Bh 2

SITE
CLIENT

Bethania Road, Acrefair
Mr H R Jones

DATE
SCALE

13 February 2001
1:200

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

HOLE
FLUSH
BIT

vertical
water
1/c 75mm

DEPTH

STRATA

GRAPHIC

DESCRIPTION

SPT
N value

SECTION

0.0	0.0	fill	xxxxxxx	grey shale, firm		
0.5			xxxxxxx			
1.0			xxxxxxx			
1.5			xxxxxxx		5 @ 1.0m	
2.0			xxxxxxx		6 @ 2.0m	
2.5			xxxxxxx		8 @ 3.0m	
3.0			xxxxxxx		4 @ 4.0m	
3.5			xxxxxxx			
4.0			xxxxxxx			
4.5	4.5	clay	-----	brown, sandy, firm		
5.0			-----			
5.5			-----			
6.0			-----			
6.5	6.5	shale	-----	brown and grey, firm drilling		rockhead
7.0			-----			
7.5			-----			
8.0			-----			
8.5			-----			
9.0			-----			
9.5			-----			
10.0	10.2	shale	-----	dark grey, firm drilling		
10.5			-----			
11.0			-----			
11.5			-----			
12.0			-----			
12.5			-----			
13.0			-----			
13.5			-----			
14.0			-----			
14.5			-----			
15.0	15.0	cavity	-----	presumed old workings		
15.5			-----			
16.0			-----			
16.5			-----			
17.0	17.0	shale	-----	grey, firm drilling		old workings in Yard Coal
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		bottom of hole

Nkc Geotech Ltd
25 Grosvenor Road
Wrexham
LL11 1BT

www.nkc.co.uk

APPENDIX D

Coal Authority Permission



The Coal
Authority

Permit to Enter or Disturb Coal Authority Mining Interests

Permit Reference Number 16330

Name and Address of Permit Holder:

Mark Ithell

Site Location:

*Land at Bethania road
Wrexham
LL14 3TT*

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

The drilling and pressure grouting of shallow former mineworkings in accordance with established industry best practice guidance at the above site (Plot 2 for proposed new residential bungalow and new access) to create a safe and stable development platform across the whole development site area, all within the Authority's mining interests at the identified site location for the period of 12 months from the granted date shown below. The granting of this Permit does not constitute advice given by the Authority in relation to the proposed operations. It is the Applicant's responsibility to obtain appropriate health, safety, environmental, technical and legal advice.

Signed: *Leigh Sharpe* Granted Date: **18/07/2018**

For and on behalf of The Coal Authority

Nominated Representative: Leigh Sharpe, Permitting Manager;

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

Tel: 01623 637320; E-Mail: permissions@coal.gov.uk

APPENDIX E

Photographs of the Works



Photograph 1 Klemm Drilling rig



Photograph 2 Grout casings in Plot 1



Photograph 3 grouting plant

APPENDIX F

Drilling Summary

	Superficial		Rock		Grout/Coal		Rock		
Plot 1	From	To	From	To	From	To	From	To	
A1	0.0	4.5	4.5	15.0	15.0	16.3	16.3	18.0	C
A2	0.0	4.5	4.5	15.5	15.5	17.0	17.0	18.0	G
A3	0.0	4.5	4.5	16.8	16.8	18.5	18.5	19.5	G
A4	0.0	4.5	4.5	17.0	17.0	18.5	18.5	19.5	G
B1	0.0	4.5	4.5	15.0	15.0	16.5	16.5	21.0	C
C1	0.0	4.5	4.5	14.8	14.8	16.3	16.3	18.0	G
C2	0.0	4.0	4.0	15.3	15.3	16.8	16.8	18.0	C
C4	0.0	4.0	4.0	16.0	16.0	18.0	18.0	19.0	G
D1	0.0	4.5	4.5	14.5	14.5	16.0	16.0	18.0	G
D4	0.0	4.0	4.0	17.2	17.2	18.5	18.5	19.5	C
E1	0.0	4.5	4.5	14.0	14.0	16.0	16.0	18.0	G
E2	0.0	4.0	4.0	15.5	15.5	17.0	17.0	18.0	G
E3	0.0	4.0	4.0	16.5	16.5	17.5	17.5	18.5	G
E4	0.0	4.0	4.0	17.0	17.0	18.5	18.5	19.5	C
F1	0.0	4.5	4.5	14.5	14.5	16.0	16.0	18.0	G
F4	0.0	4.0	4.0	16.5	16.5	18.5	18.5	19.5	G
G1	0.0	4.5	4.5	14.5	14.5	16.0	16.0	18.0	C
G2	0.0	4.5	4.5	14.5	14.5	15.8	15.8	18.0	G
G3	0.0	4.5	4.5	15.5	15.5	17.0	17.0	18.0	C
G4	0.0	4.3	4.3	16.5	16.5	18.0	18.0	19.0	G

	Superficial		Rock		Grout/Coal		Rock		
Plot 2	From	To	From	To	From	To	From	To	
A1	0.0	4.0	4.0	16.5	16.5	17.5	17.5	18.5	G
A2	0.0	4.5	4.5	17.5	17.5	19.0	19.0	20.0	G
A3	0.0	4.5	4.5	18.0	18.0	19.5	19.5	20.5	C
A4	0.0	4.5	4.5	18.3	18.3	20.3	20.3	21.3	G
B2	0.0	4.0	4.0	17.5	17.5	19.0	19.0	20.0	G
B4	0.0	4.5	4.5	18.3	18.3	20.3	20.3	21.3	C
C3	0.0	4.0	4.0	17.5	17.5	19.0	19.0	20.0	C
C4	0.0	4.5	4.5	18.0	18.0	20.3	20.3	21.3	G
D2/3	0.0	4.0	4.0	18.5	18.5	19.5	19.5	20.5	C
D4	0.0	4.5	4.5	17.8	17.8	19.5	19.5	20.5	C
E1	0.0	4.0	4.0	18.0	18.0	19.0	19.0	20.0	C
E3	0.0	4.0	4.0	18.2	18.2	19.7	19.7	21.0	C
E4	0.0	4.5	4.5	18.0	18.0	20.0	20.0	21.0	G
G1	0.0	4.0	4.0	18.0	18.0	19.5	19.5	20.5	C
G3	0.0	4.3	4.3	18.0	18.0	19.5	19.5	20.5	C
G4	0.0	4.5	4.5	18.3	18.7	20.2	20.2	21.2	G

Foreman's Daily Journal – Rotary Percussive Drilling

X/C/000/AP19

Forkers Ltd

SCOTLAND

Civil & Ground Engineering Contractors

19-20 Central Dock Road, Grangemouth FK3 8UB • Tel: 01324 666777 • Email: scotland@forkers.com

Contract:

BETHESIA ROAD
AENE FIELD

Contract No:

F90

Date:

25.7.18

Date Commenced:

Sheet No:

Ground Level (m):

Drilling Method:

RP

Drilling Equipment / Rig No:

B 60303

Drilling / Casing Diam (mm):

76

100

Bit Type:

B

Flush Type:

Water

Borehole No	Angle of Hole	Strata Thickness (m)		Description of Strata	Depth of Casing (m)	Flush Return (%)	Final Depth Borehole (m)
		From	To				
Plot 1							
E1	7	0	450	OVERBURDEN	450	100	1800
		450	1400	MST S&S BDI		100	
		1400	1600	CLAY		100	
		1600	1800	S&S		100	
G2	7	0	450	OVERBURDEN	450	100	1800
		450	1450	MST S&S BDI		100	
		1450	1580	CLAY		100	
		1580	1800	S&S		100	
G3	7	0	450	OVERBURDEN	450	100	1800
		450	1550	MST S&S BDI		100	
		1550	1700	CLAY		100	
		1700	1800	MST		100	
G4	3	0	450	OVERBURDEN	450	100	1900
		450	1650	MST S&S BDI		100	
		1650	1800	CLAY		100	
		1800	1900	S&S		100	
F4	V	0	400	OVERBURDEN	400	100	1950
		400	1650	MST S&S BDI		100	
		1650	1850	CLAY		100	
		1850	1950	S&S		100	

Gas Readings

Remarks: Hours Worked / Standing Time / Weather Conditions / Groundwater etc:

Signed for Forkers Ltd:

[Signature]

Signed for Client

O₂

%

CO

%

H₂S

%

CH₄

%

CO₂

%

Foreman's Daily Journal – Rotary Percussive Drilling

X/C/000/AP19

Forkers Ltd

SCOTLAND
Civil & Ground Engineering Contractors

19-20 Central Dock Road, Grangemouth FK3 8UB • Tel: 01324 666777 • Email: scotland@forkers.com

Contract: BETHUNIA ROAD ACRIFAIR		Contract No: F901	Date: 25.7.18	Sheet No:	Ground Level (m):
			Date Commenced:		
Drilling Method: RP	Drilling Equipment / Rig No: KLEMM B6C3C3	Drilling / Casing Diam (mm): 76	1c1	Bit Type: B	Flush Type: Water

Borehole No	Angle of Hole	Strata Thickness (m)		Description of Strata	Depth of Casing (m)	Flush Return (%)	Final Depth Borehole (m)
		From	To				
Plot 1							
B1	7	0	4.50	OVERBURDEN	4.50	100	21.00
		4.50	13.00	MST SST BDD		100	
		13.00	16.50	COAL		100	
		16.50	21.00	SST MST BDD		100	
C1	7	0	4.50	OVERBURDEN	4.50	100	18.00
		4.50	14.80	MST SST BDD		100	
		14.80	16.30	LEAST COAL TRACES		100	
		16.30	18.00	SST		100	
D1	7	0	4.50	OVERBURDEN	4.50	100	18.00
		4.50	14.50	MST SST BDD		100	
		14.50	16.00	LEAST		100	
		16.00	18.00	SST		100	
F1	7	0	4.50	OVERBURDEN	4.50	100	18.00
		4.50	14.50	MST SST BDD		100	
		14.50	16.00	LEAST COAL TRACES		100	
		16.00	18.00	SST		100	
G1	7	0	4.50	OVERBURDEN	4.50	100	18.00
		4.50	14.50	MST SST BDD		100	
		14.50	16.00	COAL		100	
		16.00	18.00	MST		100	

Gas Readings		Remarks: Hours Worked / Standing Time / Weather Conditions / Groundwater etc:	Signed for Forkers Ltd:
O ₂	%		
CO	%		
H ₂ S	%		
CH ₄	%		
CO ₂	%		
			Signed for Client:

Foreman's Daily Journal – Rotary Percussive Drilling

X/C/000/AP19

Forkers Ltd

SCOTLAND

Civil & Ground Engineering Contractors

19-20 Central Dock Road, Grangemouth FK3 8UB • Tel: 01324 666777 • Email: scotland@forkers.com

Contract:

BETHENIA ROAD

ACROSS F. 509

Contract No:

P901

Date:

25.7.18

Date Commenced:

Sheet No:

Ground Level (m):

Drilling Method:

RP

Drilling Equipment / Rig No:

B 6303

Drilling / Casing Diam (mm):

76

101

Bit Type:

B

Flush Type:

WATER

Borehole No	Angle of Hole	Strata Thickness (m)		Description of Strata	Depth of Casing (m)	Flush Return (%)	Final Depth Borehole (m)
		From	To				
Plot 1 E4	V	0	400	OVERBURDEN	400	100	1950
		400	1700	MST SST BDS		100	
		1700	1850	CCAL		100	
		1850	1950	MST		100	
D4		0	400	OVERBURDEN	400	100	1950
		400	1700	MST SST BDS		100	
		1700	1850	CCAL		100	
		1850	1950	SST		100	
E3		0	400	OVERBURDEN	400	100	1850
		400	1650	MST SST BDS		100	
		1650	1750	GRAVEL		100	
		1750	1850	SST		100	
E2		0	400	OVERBURDEN	400	100	1800
		400	1550	MST SST BDS		100	
		1550	1700	GRAVEL		100	
		1700	1800	SST		100	
C2		0	400	OVERBURDEN	400	100	1800
		400	1550	MST SST BDS		100	
		1550	1650	CCAL		100	
		1650	1800	SST		100	

Gas Readings

Remarks: Hours Worked / Standing Time / Weather Conditions / Groundwater etc:

Signed for Forkers Ltd:

MWD

Signed for Client

O₂

%

CO

%

H₂S

%

CH₄

%

CO₂

%

Foreman's Daily Journal – Rotary Percussive Drilling

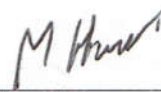
X/C/000/AP19

Forkers Ltd

SCOTLAND

Civil & Ground Engineering Contractors

19-20 Central Dock Road, Grangemouth FK3 8UB • Tel: 01324 666777 • Email: scotland@forkers.com

Contract:		BETHENIA. ROAD ACADEMY		Contract No:	F90	Date:	26.7.18	Sheet No:		Ground Level (m):		
Drilling Method:		RP		Drilling Equipment / Rig No:		76		100	Bit Type:	B	Flush Type:	WATER
Borehole No	Angle of Hole	Strata Thickness (m)		Description of Strata		Depth of Casing (m)	Flush Return (%)	Final Depth Borehole (m)				
Plot 1		From	To									
A1	7	0	450	OVERBURDEN		450	100	1800				
		450	1500	MST SST BOD			100					
		1500	1650	CCAC			100					
		1650	1800	SST			100					
A2	7	0	450	OVERBURDEN		450	100	1800				
		450	1550	MST SST BOD			100					
		1550	1700	GROUT			100					
		1700	1800	SST			100					
A3	9	0	450	OVERBURDEN		450	100	1950				
		450	1680	MST SST BOD			100					
		1680	1850	GROUT			100					
		1850	1950	SST			100					
A4	9	0	450	OVERBURDEN		450	100	1950				
		450	1700	MST SST BOD			100					
		1700	1850	GROUT			100					
		1850	1950	SST			100					
C4		0	400	OVERBURDEN		400	100	1900				
		400	1600	MST SST BOD			100					
		1600	1800	GROUT			100					
		1800	1900	SST			100					
Gas Readings		Remarks: Hours Worked / Standing Time / Weather Conditions / Groundwater etc:						Signed for Forkers Ltd:				
O ₂	%											
CO	%											
H ₂ S	%											
CH ₄	%											
CO ₂	%											
								Signed for Client				

Foreman's Daily Journal – Rotary Percussive Drilling

X/C/000/AP19

Forkers Ltd

SCOTLAND

Civil & Ground Engineering Contractors

19-20 Central Dock Road, Grangemouth FK3 8UB • Tel: 01324 666777 • Email: scotland@forkers.com

Contract:

BETA 214 ROAD
ACRIFAIR

Contract No:

F901

Date:

24.7.18

Sheet No:

Ground Level (m):

Date Commenced:

Drilling Method:

RP

Drilling Equipment / Rig No:

B60603

Drilling / Casing Diam (mm):

76

101

Bit Type:

B

Flush Type:

WATER

Borehole No	Angle of Hole	Strata Thickness (m)		Description of Strata	Depth of Casing (m)	Flush Return (%)	Final Depth Borehole (m)
		From	To				
Plot 2							
A1	V	0	400	OVERBURDEN	600	100	1850
		400	1650	MST SST BANDS		100	
		1650	1750	Grout		100	
		1750	1850	SST		100	
A4	7	0	450	OVERBURDEN	600	100	2130
		450	1830	MST SST BDS		100	
		1830	2030	COAL + Grout		100	
		2030	2130	SST		100	
B4	7	0	450	OVERBURDEN	450	100	2130
		450	1830	MST SST BDS		100	
		1830	2030	COAL		100	
		2030	2130	SST		100	
C4	7	0	450	OVERBURDEN	450	100	2130
		450	1800	MST SST BDS		100	
		1800	2030	Grout		100	
		2030	2130	SST		100	
D4	7	0	450	OVERBURDEN	450	100	2050
		450	1780	MST SST BDS		100	
		1780	1950	COAL		100	
		1950	2050	SST		100	

Gas Readings

Remarks: Hours Worked / Standing Time / Weather Conditions / Groundwater etc:

Signed for Forkers Ltd:

M/W

Signed for Client

O₂

%

CO

%

H₂S

%

CH₄

%

CO₂

%

Foreman's Daily Journal – Rotary Percussive Drilling

X/C/000/AP19

Forkers Ltd

SCOTLAND

Civil & Ground Engineering Contractors

19-20 Central Dock Road, Grangemouth FK3 8UB • Tel: 01324 666777 • Email: scotland@forkers.com

Contract:

BETHENIA ROAD
ACABFIELD

Contract No:

F901

Date:

26.7.18

Sheet No:

Ground Level (m):

Drilling Method:

RP

Drilling Equipment / Rig No:

KLEIN B 60303

Drilling / Casing Diam (mm):

76 101

Bit Type:

Flush Type:

Borehole No	Angle of Hole	Strata Thickness (m)		Description of Strata	Depth of Casing (m)	Flush Return (%)	Final Depth Borehole (m)
		From	To				
PLOT 2							
E4	7	0-	450	OVERBURDEN	450	100	2100
		450	1800	MST SST BDS		100	
		1800	2000	GRAVEL		100	
		2000	2100	SST		100	
A2	7	0-	450	OVERBURDEN	450	100	2000
		450	1750	MST SST BDS		100	
		1750	1900	GRAVEL		100	
		1900	2000	SST		100	
A3	7	0-	450	OVERBURDEN	450	100	2050
		450	1800	MST SST BDS		100	
			1950	GRAVEL		100	
			2050	SST		100	
B2		0-	400	OVERBURDEN	400	100	2000
		400	1750	MST SST BDS		100	
		1750	1900	GRAVEL COALTIMBER		100	
		1900	2000	SST		100	
C3		0-	400	OVERBURDEN	400	100	2000
		400	1750	MST SST BDS		100	
		1750	1900	GRAVEL		100	
		1900	2000	SST		100	

Gas Readings

Remarks: Hours Worked / Standing Time / Weather Conditions / Groundwater etc:

Signed for Forkers Ltd:

MMA

Signed for Client

O ₂	%
CO	%
H ₂ S	%
CH ₄	%
CO ₂	%

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Foreman's Daily Journal – Rotary Percussive Drilling

X/C/000/AP10

Forkers Ltd

SCOTLAND

Civil & Ground Engineering Contractors

19-20 Central Dock Road, Grangemouth FK3 8UB • Tel: 01324 666777 • Email: scotland@forkers.com

Contract:

BETHUNIA ROAD

ACACFIELD

Contract No:

F901

Date:

27.7.18

Sheet No:

Ground Level (m):

Date Commenced:

Drilling Method:

RP

Drilling Equipment / Rig No:

60303

Drilling / Casing Diam (mm):

76

10

Bit Type:

B

Flush Type:

WATER

Borehole No

PLOT 2

Angle of
Hole

Strata Thickness (m)

From

To

Description of Strata

Depth of
Casing
(m)Flush
Return
(%)Final Depth
Borehole
(m)

E3

0

400

OVERBURDEN

400

100

2100

400

1800

MST SSTRBM

100

1800

1900

CCAL

100

1900

2100

MST

100

G4

7

0

450

OVERBURDEN

450

100

2100

450

1800

MST SSTRBM

100

1800

2000

Gravel

100

2000

2100

SST

100

G3

3

0

430

OVERBURDEN

430

100

2050

430

1800

MST SSTRBM

100

1800

1950

CCAL

100

1950

2050

SST

100

G1

0

400

OVERBURDEN

400

100

2050

400

1800

MST SSTRBM

100

1800

1950

CCAL

100

1950

2050

SST

100

E1

0

400

OVERBURDEN

400

100

2000

400

1800

MST SSTRBM

100

1800

1900

CCAL

100

1900

2000

SST

100

Gas Readings

Remarks: Hours Worked / Standing Time / Weather Conditions / Groundwater etc:

Signed for Forkers Ltd:

Signed for Client

O₂

%

CO

%

H₂S

%

CH₄

%

CO₂

%

APPENDIX G

Grout Records

Grout Quantities

	Plot 1	Plot 2
A1	0.1	0.1
A2	0.1	0.1
A3	0.1	0.1
A4	0.1	0.1
B1	0.1	
B2		0.1
B3		
B4		0.1
C1	0.1	
C2	0.1	
C3		0.1
C4	0.1	0.1
D1	0.1	
D2		
D2/3		0.1
D3		
D4	0.1	0.1
E1	0.1	0.1
E2	0.1	
E3	0.1	0.1
E4	0.1	0.1
F1	0.1	
F2		
F3		
F4	0.1	
G1	0.1	0.1
G2	0.1	
G3	0.1	0.1
G4	0.1	0.1
Total	2	1.6

Grand Total 3.6 Tonnes

Date: 30/07/2018

Golds Green Cae Bedw, Wrexham

 Contract No:
F901

 Sheet No: G 1
Copy No:

Grouting Method and Plant/Equipment in use

DD4 MIXER

 Cement Type SRC
OPC X

Hole Nos. Or Sewer Lengths	Grout Mixes						
	PFA	Cement	Sand	Pea Gravel	Additives	W/S Ratio	
Primary Grid	10	1					

 Water Supply:
Standpipe

Materials Delivered

Ticket No.	Quantity (T)	Total (T)
------------	--------------	-----------

PFA	C/F	
-----	-----	--

YARD		5
------	--	---

Borehole No., Type, Position, Diameter, Depth or Sewer Length, Size and Manhole Nos.	Depth of Grout Tube or Rods or Casing B.G.L. (M)	Tonnage Pumped Today Per Hole (T)	Borehole or Sewer filled up Yes or No	Previous Total Per Hole (T)	New Total Per Hole (T)
PLOT 1 E 1		0.1	YES	0	0.1
G 2		0.1	YES	0	0.1
G 3		0.1	YES	0	0.1
G 4		0.1	YES	0	0.1
F 4		0.1	YES	0	0.1
B 1		0.1	YES	0	0.1
C 1		0.1	YES	0	0.1
D 1		0.1	YES	0	0.1
F 1		0.1	YES	0	0.1
G 1		0.1	YES	0	0.1
E 4		0.1	YES	0	0.1
D 4		0.1	YES	0	0.1
E 3		0.1	YES	0	0.1
E 2		0.1	YES	0	0.1
C 2		0.1	YES	0	0.1

Del:	5.00
------	------

Stock:	5.00
--------	------

Used:	1.36
-------	------

Total Left:	3.64
-------------	------

Cement	C/F	
--------	-----	--

YARD		1
------	--	---

Del:	1.00
------	------

Stock:	1.00
--------	------

Used:	0.14
-------	------

Total Left:	0.86
-------------	------

Sand	C/F	0.00
------	-----	------

Grout Pumped Today (T)	1.5	Total Grout Pumped on Site (T)	1.5
------------------------	-----	--------------------------------	-----

Standing Time			Approximate Quantities left on Site at end of Shift		Total Quantities Delivered to Site			
From	To	Total	PFA (T)	3.64	5			
			Cement (T)	0.86	1.00			
			Sand (T)	0.00	0.00			
Hours worked on site			Testing:	Cubes:				
				Flow:	500	&	485	
				Bleed:	2hr	1%	8hr	2%
From	To	Total	Checks on Manholes for Grout Ingress:					
			All OK					
			Holes pressurised to 2Bar YES					

Del:	0.00
------	------

Stock:	0.00
--------	------

Used:	0.00
-------	------

Total Left:	0.00
-------------	------

Foreman Grouter:

M HOMER

Client Signature:

N.B ALL TONNAGES PUMPED ARE APPROXIMATE QUANTITIES ONLY

Forkers Ltd Civil & Structural Engineering Contractors Golds Green House, Shaw Street, West Bromwich, West Midlands B70 0TX Tel: 0121 505 1010 - Fax: 10215023828										Date: 30/07/2018	
Contract: Cae Bedw, Wrexham						Contract No: F901		Sheet No: G 2			
						Copy No:					
Grouting Method and Plant/Equipment in use DD4 MIXER								Cement Type		SRC ☐	
								OPC ☒		X ☐	

Hole Nos. Or Sewer Lengths		Grout Mixes						Water Supply: TANK			
		PFA	Cement	Sand	Pea Gravel		Additives				W/S Ratio
Primary Grid		10	1								
Borehole No., Type, Position, Diameter, Depth or Sewer Length, Size and Manhole Nos.		Depth of Grout Tube or Rods or Casing B.G.L. (M)		Tonnage Pumped Today Per Hole (T)		Borehole or Sewer filled up Yes or No		Previous Total Per Hole (T)		New Total Per Hole (T)	
PLOT 1 - A 1				0.1		YES		0		0.1	
A 2				0.1		YES		0		0.1	
A 3				0.1		YES		0		0.1	
A 4				0.1		YES		0		0.1	
C 4				0.1		YES		0		0.1	
PLOT 2- A 1				0.1		YES		0		0.1	
A 4				0.1		YES		0		0.1	
B 4				0.1		YES		0		0.1	
C 4				0.1		YES		0		0.1	
D 4				0.1		YES		0		0.1	
E 4				0.1		YES		0		0.1	
A 2				0.1		YES		0		0.1	
A 3				0.1		YES		0		0.1	
B 2				0.1		YES		0		0.1	
C 3				0.1		YES		0		0.1	
Grout Pumped Today (T)		1.50		Total Grout Pumped on Site (T)				3.00			
		Approximate Quantities left on Site at end of Shift		Total Quantities Delivered to Site							
Standing Time From To Total		PFA (T)		2.28		5					
		Cement (T)		0.72		1.00					
		Sand (T)		0.00		0.00					
		Testing:		Cubes:							
				Flow:		510		&		485	
				Bleed: 2hr		2%		6hr		3%	
Hours worked on site From To Total		Checks on Manholes for Grout Ingress:									
		All OK									
		Holes pressurised to 2bar YES									

Materials Delivered		
Ticket No.	Quantity (T)	Total (T)
PFA	C/F	5.00
Del:		
Stock:		3.64
Used:		1.36
Total Left:		2.28
Cement	C/F	1.00
Del:		
Stock:		0.86
Used:		0.14
Total Left:		0.72
Sand	C/F	0.00
Del:		0.00
Stock:		0.00
Used:		0.00
Total Left:		0.00
Foreman Grouter:		
M HOMER		
Client Signature:		

N.B ALL TONNAGES PUMPED ARE APPROXIMATE QUANTITIES ONLY

[illegible]