

REF: 2520/PB/RepLet/mjs

Georgi Billington
By email
georgi@eco-readymix.co.uk

25th May 2021

Dear Georgi,

HILLCROFT, PENTRE BYCHAN: MINING INVESTIGATION

1.0 Introduction

Georgi Billington (GB) has recently purchased a plot of land that previously was part of the garden of the property Hillcroft, Pentre Bychan, Wrexham. GB proposes to construct a single house on the site.

A coal mining risk assessment was undertaken by BSP Consulting (BSPC) for the previous owners, Mr & Mrs Wigley in October 2019, whereafter an outline planning permission was granted for the erection of a detached bungalow. This report identified there was a previous shaft on site, which had been capped by the Coal Authority in 2001.

In addition, a full phase I & II contamination assessment was undertaken by Smith Grant Environmental Consultancy Partnership (SGP) in January 2021, which addressed the concerns of contamination and ground-gas, highlighted in the planning conditions, Reference 1.

Consequently, the new owner Georgi Billington has appointed GroundSolve Limited (GSL) to undertake a mining investigation to identify;

- The location of the existing mine shaft cap located on the property,
- To advise on geotechnical issues, including foundation design and the safest location for the development.

A desk study was not requested as part of this commission, however, a previous desk study by SGP has been provided, Reference 1.

This report presents the findings of the site investigation and gives firm geotechnical recommendations for the development and mining risk assessments to address the risks posed by the capped mine shaft.

2.0 The Site

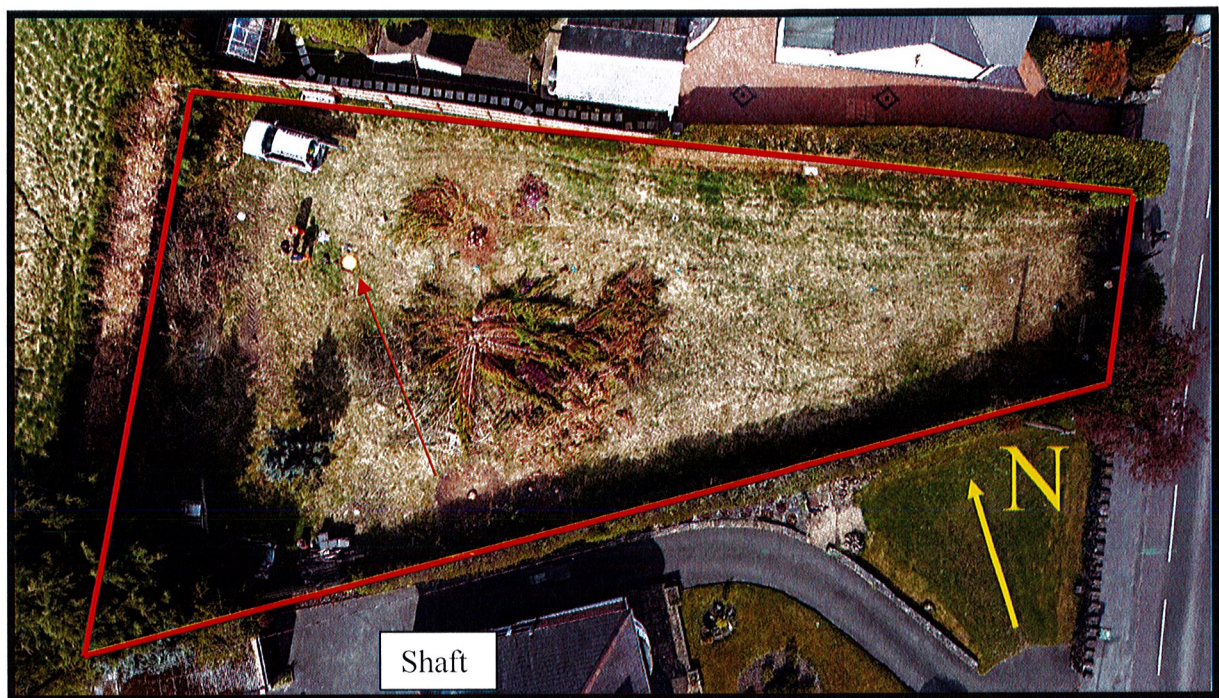
Site Location and Description

The site is located adjacent to the property Hillcroft off Wrexham Road, Pentre Bychan, at National Grid Reference SJ 302 474, see Figure 1.

It is bounded by Wrexham Road to the east, Hillcroft to the north, open fields to the west and a property to the south. It is enclosed within tall, mixed hedging with a wooden fence along the northern boundary, a wire mesh fence along the southern boundary and a stone block wall with wooden access gate on the eastern boundary, see Figure 2.

The site is roughly rectangular in shape and is approximately 45m long by 20m wide at its widest point. A topographical survey of the site shows it to gradually slope towards the east from 128.40mAOD in the west to 124.00mAOD, adjacent to Wrexham Road.

An aerial photograph taken during the site works is presented below showing the site vegetation cleared.



Aerial photograph of site.

Photographs of the site are presented in Appendix A.

3.0 Geology

The geology of the site has been studied on the 1: 50,000 scale geology plan, sheet 121, Wrexham.

This shows the site to be underlain by superficial glacial sands and gravels, deposited during the last ice age.

The underlying bedrock is the Cefn Rock member, which is Carboniferous in age and part of the larger Bettisfield Formation. This comprises massive, quartzose sandstone with subordinate and impersistent beds of mudstone and coal.

4.0 Mining

A Coal Authority CON29M report dated September 2020 has been provided, the findings of which are summarised below, with the report presented in full in Appendix B.

- The site is in the likely zone of influence from workings in one seam of coal at 90m to 440m depth, last worked in 1917,
- Ground movements should have ceased,
- There is one shaft on site, reference 330347-001, which was capped in 2001 by Wardell Armstrong, with a 6m by 6m reinforced concrete slab, 0.60m thick and set 1.00m below ground level, with a heavy-duty steel inspection cover set into the cap.

4.0 Proposed Development

It is proposed to construct a detached bungalow on site, with the proposed layout presented in Figure 2.

The foundation loads are not known at this stage, but based on experience are unlikely to exceed 50kN/m run, with floor slabs load not exceeding 5kN/m².

The following recommendations are based on these assumptions and should be reviewed and if necessary revised during the detailed design process.

5.0 Site Investigations

5.1 Previous Investigations

BSP Coal Mining Risk Assessment October 2019:

A coal mining risk assessment was undertaken by BSPC for the previous owners, Mr & Mrs Wigley in October 2019, which concluded;

- There are no probable unrecorded shallow workings beneath the site (less than 30m depth),
- A mine shaft is located in the west of the site (ref. 330347-001) with BGS Borehole Records naming it as 'Pentre Bychan Colliery, Turnpike Pits, No. 8 Shaft' which was recorded extending to a depth of 89.61m, with no other information supplied,
- The shaft was capped in 2001 by Wardell Armstrong with a 6m by 6m square reinforced concrete slab 600mm thick, set 1m below ground level. A heavy-duty steel inspection cover was set into the cap,
- It is unknown whether the shaft has been drilled and grouted, or capped at rockhead,
- The shaft was first identified with upwelling water observed in the location now known to be that of the shaft. This was addressed by cutting a surface drainage run along the northern site boundary into the storm water drainage of Hillcroft.

SGP Site Investigation January 2021:

A full phase I & II contamination assessment was undertaken by SGP in January 2021, which addressed the concerns of contamination and ground-gas, highlighted in the planning conditions. The investigation comprised the following;

- Five window sample boreholes to 5.45m, with three ground gas monitoring standpipes installed,
- Chemical Testing of the made ground,
- Six gas monitoring visits from 10th December 2020 and 19th January 2021.

The boreholes confirmed the site is underlain by made ground to a potential maximum thickness of 2.10m, which generally comprised colliery spoil, most likely derived from the on-site shaft, overlying soft to firm, glacial till, with glacial deposits in the south of the site. The gas monitoring also confirmed the site is not affected by ground gas.

5.2 This Investigation

This site investigation was undertaken on the 14th April 2021, and comprised;

- Eight dynamic probe holes at 5.00m spacings, driven to a maximum depth of 11.50m to determine the depth to bedrock,
- Seven dynamic probe holes to determine the depth and extent of the existing shaft cap, with a hand dug pit to confirm the presence of concrete.

The work was supervised on a full-time basis by an engineer from GSL. The locations of the dynamic probe holes are shown on Figure 2, with the probe results presented in Appendix C.

6.0 Ground Conditions

The SGP investigation confirmed the following ground conditions:

BH Ref.	Made Ground (m)	Glacial Till (m)	Glacial Deposits (m)
WS1	0.00 – 1.15	1.15 – 3.20	3.20 – 5.00
WS2	0.00 – 1.20	2.50 – 5.00	1.70 – 2.50
WS3	0.00 – 0.75	0.75 – 5.00	N/E
WS4	0.00 – 1.50	1.50 – 5.00	N/E
WS5	0.00 – 2.10	2.10 – 5.00	N/E

Made Ground

The made ground comprised two layers, the upper layer comprised dark greyish brown, gravelly, silty topsoil with roots, with the gravel being fine to coarse of slate and coal. This overlies a firm, grey, gravelly, silty clay, with pockets of brown sand and black gravel, with ash, coal slate and clinker.

SPT 'N' values in the made ground ranged between 0 and 28, giving a very loose to dense consistency.

Glacial Till

The glacial till was described as firm to stiff, brown, slightly gravelly, sandy clay with occasional cobbles of sandstone and pockets of coarse brown sand, with the gravel being fine to coarse, with traces of coal.

SPT 'N' values in the glacial till ranged between 9 and 20, giving a firm to stiff consistency.

Glacial Deposits

Glacial deposits were encountered in WS01 and WS02 and were described as brown, slightly gravelly, coarse sand. Gravel is fine to coarse of mixed lithologies.

SPT 'N' values recorded in the glacial deposits ranged between 15 and 16, giving a medium dense consistency.

Groundwater

Wet strata was observed between 3.00 to 3.50m in WS01, WS02, WS03 and WS04, this is likely associated with a perched water table within the low permeability glacial till.

The findings of the GSL probes are presented below:

Probe Ref.	Probable Bedrock (m)
101	11.00
102	11.30
103	8.60
104	7.70
105	6.70
106	6.60
107	4.30
108	7.80

Shaft Investigation

Probes drilled around the shaft at 2.0m centres from the cap manhole, identified the top of concrete at 0.80m to the west, 0.40m to the north, 0.65m to the south and 0.60m to the east. Probes were then set at 4.00m centres where the cap was not encountered, confirming the cap to be 3.0m x 3.0m as stated in the Coal Authority Report.

The location of the shaft was determined by a man hole cover on site, which was lifted and photographs taken, see below:



Photograph 1: Showing manhole cover above shaft



Photograph 2: Looking down shaft manhole, dipped at 2.20m

A cross section of the site has been produced, showing the indicative bedrock profile, and depth of shaft cap, proven by the dynamic probing, see Figure 3. In addition, the shaft cap is shown in relation to the proposed development location.

7.0 Conclusions and Recommendations

Shafts

The previous desk study and site investigations have proved the shaft in the western section of the site to have been capped with a 6m by 6m diameter concrete cap, with an inspection chamber, see Photograph 2. However, the shaft cap has not been founded at rock head, with the dynamic probes adjacent to the shaft reaching refusal at a depth of around 11m.

It is not recorded if the shaft has been drilled and grouted, although the previous work confirmed that it had been backfilled to surface. However, it is considered unlikely to have been drilled and grouted, because:

- Lack of Coal Authority records,
- At the time of the capping the shaft was only in the back garden of Hillcrest, and did not threaten the property,
- The shaft backfill was subject to artesian water pressures, which would have made drilling and grouting very difficult,
- Drilling and grouting the shaft could have caused water to appear elsewhere.

There is therefore the possibility that the shaft backfill could settle with time, leaving a void beneath the shaft cap. However, the shaft will almost certainly have a brick/masonry liner to below rock head, as the ground conditions at depth comprise water bearing sand and gravel.

Therefore, if the shaft backfill settles it is unlikely to affect the site and the shaft cap will be supported off the liner. In any case, the manhole left above the shaft is a typical detail for such shafts, which haven't been drilled and grouted (CIRIA Report C758D, 2019), which allows the backfill to be monitored and topped up if required.

Foundations

When assessing a safe distance from a shaft it is normal practice to assume a 45° failure envelope.

In this case, such an envelope would comprise the proposed house location, which is currently shown 2m away from the edge of the cap, and therefore only 3.5m away from the shaft itself, see Figure 2.

To satisfy the Coal Authority any foundation solution will have to avoid surcharging the top of the shaft cap. This would mean that piled foundations would be required taken down to the underlying bedrock at depths of around 11.0m, reinforced concrete ground beams would then be required to span between the piles.

To obtain design parameters for the piles a piling contractor may accept the Dynamic probes, otherwise a borehole will be required for design purposes.

All types of pile will be suitable for the development with the advantages and disadvantage discussed below:

Driven Piles

This could take the form of either driven pre cast, or driven cast in situ piles.

This would involve driving the piles to refusal in the underlying bedrock.

The advantage of these types of pile are the lack of spoil and groundwater that needs to be disposed of off site.

The main disadvantages are vibration and noise, which may not only cause problems with the neighbours, but which may also cause settlement of the shaft backfill. However, this could be monitored through the inspection chamber on site, and the shaft topped up if necessary.

Bored Piles

These could take several forms, such as:

- Conventional bored piles,
- Contiguous Flight Auger (CFA) piles or Segmental flight auger piles,
- Ischebeck self-drilling piles.

Whilst such piles would probably get the required working loads before reaching bedrock, the proximity to the shaft means that taking a 45° line from rockhead the piles would still need to be taken to bedrock, see Figure 3.

The disadvantages of bored piles is the spoil and ground water that would require removal from site. However, noise and vibration will be less of an issue.

If bored piles are chosen as an option, then a borehole will be required, although the Ischebeck pile with subsequent verification testing may be an option, which may have cost benefits.

In conclusion, the location of the house in relation to the shaft requires piled foundations, however, if the house location was moved closer to Wrexham Road, then the foundation option could probably be changed to a raft foundation, designed to span potential voids of 3m and cantilever 1.5m at its edge.

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

Yours sincerely,



M J Scott

REFERENCES.

1. Stage 1 & 2 contamination investigation. (2021, January). Smith Grant Environmental Consultancy.

FIGURES



OS LICENSE No. 100030802

SCALE 1:50,000 @ A4

Figure Title

SITE LOCATION

FIGURE 1

330250E



330300E

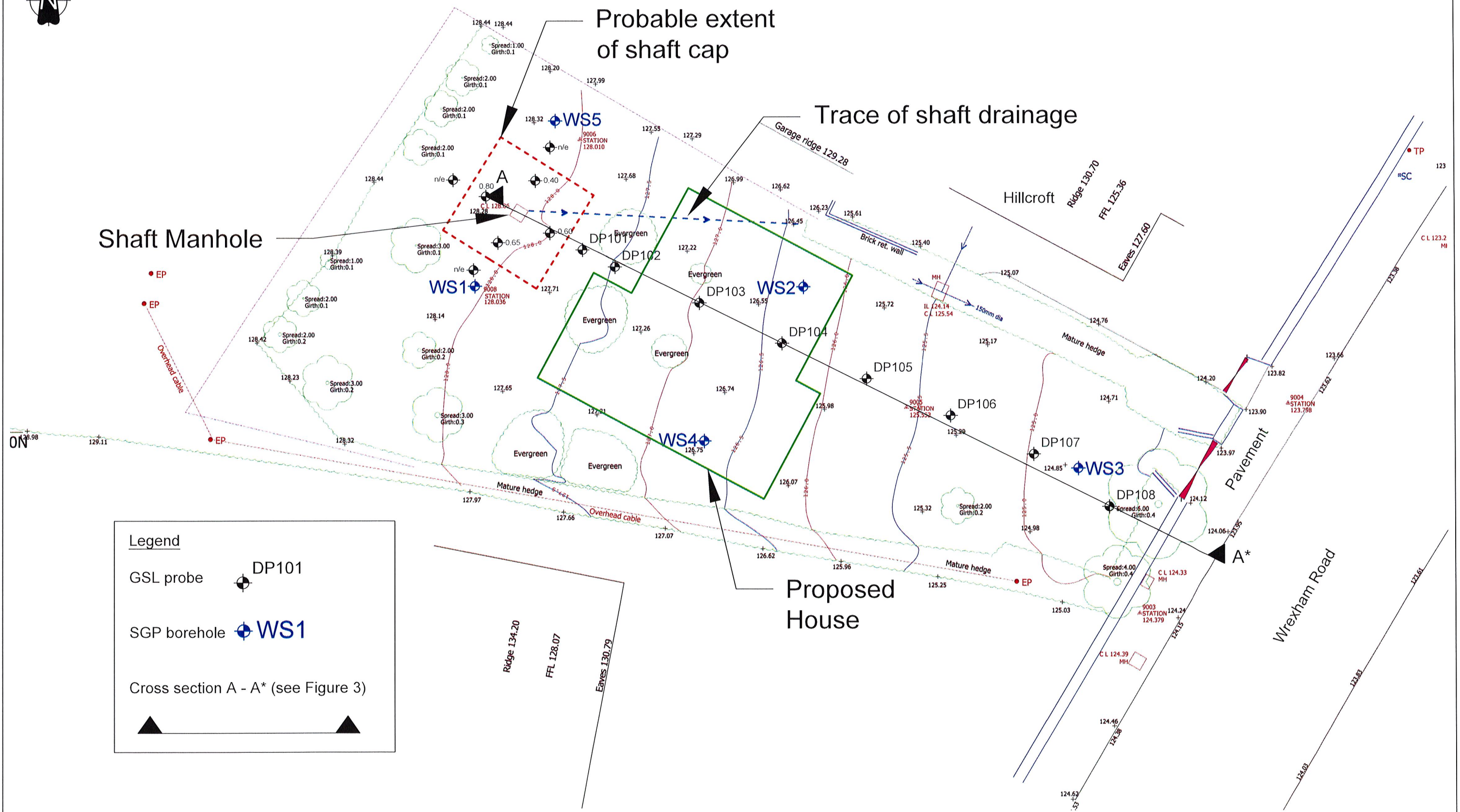
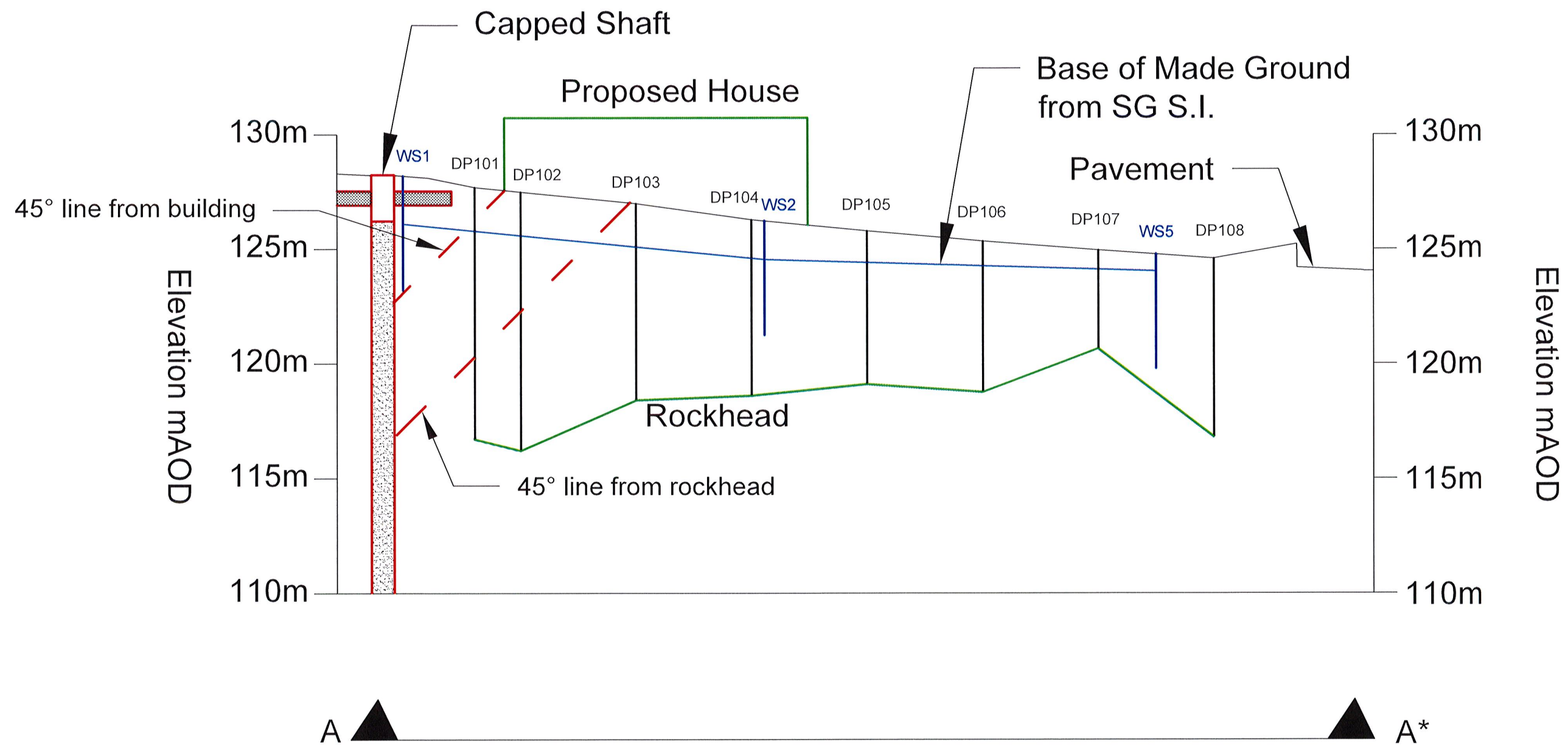


Figure Title

Site Layout &
Exploratory Hole
Location Plan

FIGURE 2



Legend

GSL Probe
DP101

SGP Borehole
WS1

SCALE 1: 200 @ A3

Cross Section
A - A*

FIGURE 3

APPENDIX A

Site Photographs



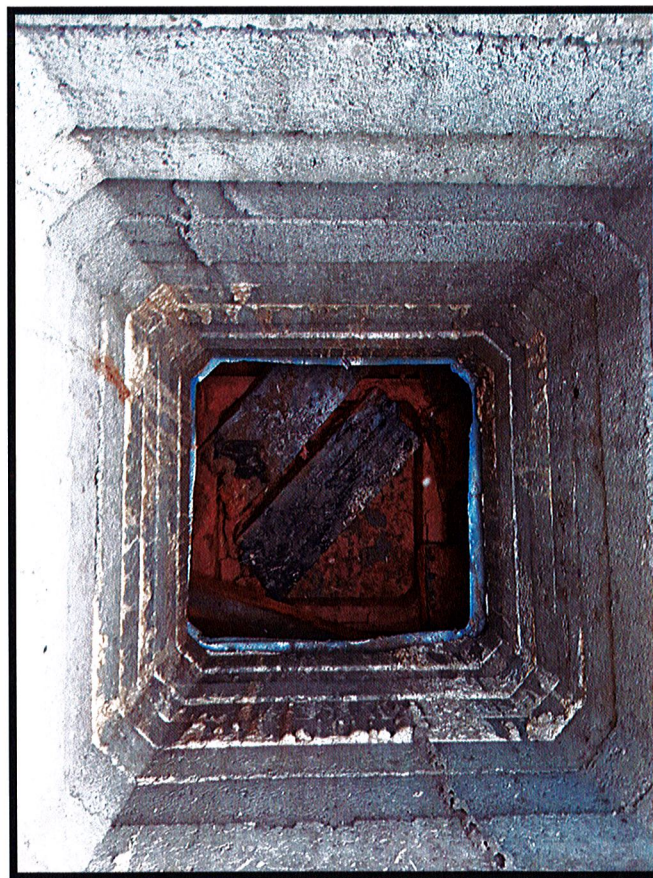
Photograph 1. Looking east across the site.



Photograph 2. Looking west across the site.



Photograph 3. Manhole chamber for shaft drainage.



Photograph 4. Shaft inspection chamber (2.00m deep).



Photograph 5. Looking east at site access off Wrexham Road.



Photograph 6. Looking east across the site.

APPENDIX B

CON29M Report



The Coal
Authority

CON29M

coal mining report

HILLCROFT, WREXHAM ROAD, PENTRE BYCHAN, LL14 4DT



Known or potential coal mining risks

Past underground coal mining	Page 4
Future underground coal mining	Page 4
Mine entries	Page 5
Hazards related to coal mining	Page 6



Further action

These additional reports can give further detail on the risks identified:

- Mine entry interpretive report
- Mine entry plan and data sheets
- Surface hazard incident report

For more information please see our **Further action reports** on page 10



Professional opinion

According to the official mining information records held by the Coal Authority at the time of this search, evidence of, or the potential for, coal mining related features have been identified. In view of the coal mining circumstances we would recommend that any planned or future development should follow detailed technical advice before beginning work on site. Please see **page 3** for further details on **Future development**.

Your reference: **171/143248**
Our reference: **61002905513001**
Date: **10 September 2020**

Client name:
NLIS

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The Law
Society

Enquiry boundary

Key

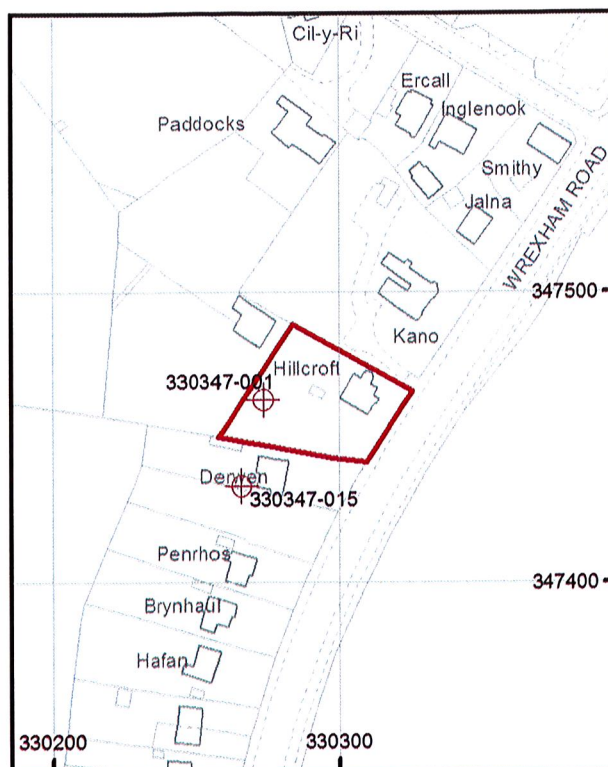
Approximate position of enquiry boundary shown



Disused mineshaft



We can confirm that the location is
on the coalfield



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This report is prepared in accordance with the latest Law Society's Guidance Notes 2018, the User Guide 2018 and the Coal Authority's Terms and Conditions applicable at the time the report was produced.



Accessibility

If you would like this information in an alternative format, please contact our communications team on 0345 762 6848 or email communications@coal.gov.uk.



What if this information changes?

If this report is for a residential property, insurance is included to cover any loss in property value caused by any changes in the information contained in this report. Please see the attached certificate of insurance for the terms and conditions of this insurance. The insurance does not cover non-residential property or further action reports.

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Professional opinion



Mine entries

The enquiry boundary shows the approximate location of the disused mine entry/entries referred to in this report. Property owners have the benefit of statutory protection (under the Coal Mining Subsidence Act 1991). This contains provision for the making good, to the reasonable satisfaction of the owner, of physical damage caused by disused coal mine workings including disused coal mine entries. A leaflet setting out the rights and obligations of either the Coal Authority or other responsible persons under the 1991 Act can be obtained by visiting www.coal.gov.uk. Please note this Act is not valid where coal was worked or extracted 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.

If you wish to discuss the relevance of any of the information contained in this report, you should seek the advice of a qualified mining engineer or surveyor. If you or your advisor wishes to examine the source plans from which the information has been taken, these are available to view, at our Coal Authority head office in Mansfield. To book an appointment please call **01623 637 225**. Should you or your advisor wish to carry out a physical investigation that may enter, disturb or interfere with any disused mine entry, prior permission must be sought from the owner. For coal mine entries, the owner will normally be the Coal Authority.

The Coal Authority, regardless of responsibility and in conjunction with other public bodies, provide an emergency, 24 hour call out facility in coalfield areas to assess the public safety implications of mining features (including disused mine entries). To report an emergency you can call **01623 646 333**.



Future development

If development proposals are being considered, technical advice relating to both the investigation of coal and former coal mines and their treatment should be obtained before beginning work on site. All proposals should apply specialist engineering practice required for former mining areas. No development should be undertaken that intersects, disturbs or interferes with any coal or coal mines without first obtaining the permission of the Coal Authority. Developers should be aware that the investigation of coal seams, mine workings or mine entries may have the potential to generate and/or displace underground gases. Associated risks both to the development site and any neighbouring land or properties should be fully considered when undertaking any ground works. The need for effective measures to prevent gases migrating onto any land or into any properties, either during investigation or remediation work, or after development must also be assessed and properly addressed.

If you are looking to develop, or undertake works, within a coal mining development high risk area your Local Authority planning department may require a Coal Mining Risk Assessment to be undertaken by a qualified mining geologist or engineer. Should you require any additional information then please contact the Coal Authority on **0345 762 6848** or email cmra@coal.gov.uk.

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Detailed findings

Information provided by the Coal Authority in this report is compiled in response to the Law Society's CON29M Coal Mining enquiries. The said enquiries are protected by copyright owned by the Law Society of 113 Chancery Lane, London WC2A 1PL.

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1 Past underground coal mining

The property is in a surface area that could be affected by underground mining in 1 seam of coal at 90m to 440m depth, and last worked in 1917.

Any movement in the ground due to coal mining activity associated with these workings should have stopped by now.

2 Present underground coal mining

The property is not within a surface area that could be affected by present underground mining.

3 Future underground coal mining

The property is not in an area where the Coal Authority has received an application for, and is currently considering whether to grant a licence to remove or work coal by underground methods.

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

The property is not in an area likely to be affected from any planned future underground coal mining.

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

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

4 Mine entries

Within, or within 20 metres of, the boundary of the property there are 2 mine entries, the approximate positions of which are shown on the enquiry boundary plot. For reasons of clarity, mine entry symbols may not be drawn to the same scale as the plan.

Our records disclose the following information:

330347-015. No treatment details.

330347-001. This entry was capped in 2001 by Wardell Armstrong with 6m square reinforced concrete slab 600mm thick set 1m b.g.l. A heavy duty steel inspection cover was set into the cap.

For an additional fee, the Coal Authority can provide a Mine Entry Interpretive Report. The report will provide a separate assessment for the mine entry/entries referred to in this report. It gives an opinion on the likelihood of mining subsidence damage caused from ground movement as a consequence of the mine entry/entries. It also gives details of the remedies available for subsidence damage where the mine entry was sunk in connection with coal mining.

Please note that it may not be possible to produce a report if the main building to the property cannot be identified from Coal Authority plans (ie for development sites and new build).

For further advice on how to order this additional information please visit www.groundstability.com.

5 Coal mining geology

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

6 Past opencast coal mining

The property is not within the boundary of an opencast site from which coal has been removed by opencast methods.

7 Present opencast coal mining

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

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8 Future opencast coal mining

There are no licence requests outstanding to remove coal by opencast methods within 800 metres of the boundary.

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.

9 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.

10 Mine gas

The Coal Authority has no record of a mine gas emission requiring action.

11 Hazards related to coal mining

The property has been subject to remedial works, by or on behalf of the Coal Authority, under its Emergency Surface Hazard Call Out procedures.

Statutory cover



Coal mining subsidence

In the unlikely event of any coal mining related subsidence damage, the Coal Authority or the mine operator has a duty to take remedial action in respect of subsidence caused by the withdrawal of support from land or property in connection with lawful coal mining operations.

When the works are the responsibility of the Coal Authority, our dedicated public safety and subsidence team will manage the claim. The house or land owner ("the owner") is covered for these works under the terms of the Coal Mining Subsidence Act 1991 (as amended by the Coal Industry Act 1994). Please note, this Act 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.

If you believe your land or property is suffering from coal mining subsidence damage and you need more information on what to do next, please use the following link to our website which sets out what your rights are and what you need to consider before making a claim.

www.gov.uk/government/publications/coal-mining-subsidence-damage-notice-form



Coal mining hazards

Our public safety and subsidence team provide a 24 hour a day, 7 days a week hazard reporting service, to help protect the public from hazards caused by past coal workings, such as a mine shaft or shallow working collapse. To report any hazards please call **01623 646 333**. Further information can be found on our website: www.gov.uk/coalauthority.

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On behalf of the insurer

Coal Mining Report Insurance Policy Schedule

Policy number: 28716930

The insurer: Liberty Legal Indemnities – underwritten by Liberty Mutual Insurance Europe SE

Binding Authority contract number: RNMFP2003841

Property: HILLCROFT, WREXHAM ROAD, PENTRE BYCHAN, LL14 4DT

Report reference number: 61002905513001

Limit of cover: £50,000.00

Dated: 10 September 2020

This policy and schedule shall be read together and any word or expression to which a specific meaning has been attached in either shall bear such meaning wherever it may appear.

Where a Coal Mining Report has been obtained in connection with a sale of the property, cover is provided for the benefit of a purchaser and their lender; in the case of a re-mortgage or where the existing owner chooses to obtain a Coal Mining Report, cover is provided for the benefit of the owner and their lender.

The policy offers protection against loss sustained by the owner of the property if any new problems or adverse entries are revealed in a subsequent Coal Mining Report which were not revealed by the original report to which the policy was attached.

The insured shall at all times comply with the requirements of the Conditions of this Policy.

Coal Mining Report Terms and Conditions can be viewed online at this link:

<https://www.groundstability.com/insurance/terms/20190404/terms.html>

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Glossary



Key terms

adit - horizontal or sloped entrance to a mine

coal mining subsidence - ground movement caused by the removal of coal by underground mining

Coal Mining Subsidence Act 1991 - the Act setting out the duties of the Coal Authority to repair damage caused by coal mining subsidence

coal mining subsidence damage - damage to land, buildings or structures caused by the removal of coal by underground mining

coal seams - bed of coal of varying thickness

future opencast coal mining - a licence granted, or licence application received, by the Coal Authority to excavate coal from the surface

future underground coal mining - a licence granted, or licence application received, by the Coal Authority to excavate coal underground. Although it is unlikely, remaining coal reserves could create a possibility for future mining, which would be licensed by the Coal Authority

mine entries - collective name for shafts and adits

payments to owners of former copyhold land - historically, copyhold land gave rights to coal to the copyholder. Legislation was set up to allow others to work this coal, but they had to issue a notice and pay compensation if a copyholder came forward

shaft - vertical entry into a mine

site investigation - investigations of coal mining risks carried out with the Coal Authority's permission

stop notice - a delay to repairs because further coal mining subsidence damage may occur and it would be unwise to carry out permanent repairs

subsidence claim - a formal notice of subsidence damage to the Coal Authority since it was established on 31 October 1994

withdrawal of support - a historic notice informing landowners that the coal beneath their property was going to be worked

working facilities orders - a court order which gave permission, restricted or prevented coal mine workings



Further action reports

Mine entry interpretive report - assesses the risk of ground movement from mine entries in, or within 20 metres of, the property boundary. To order this report, use the same boundary as the CON29M report, then draw the building on the additional map screen.

For more information and to order this report please visit:

<https://www2.groundstability.com/interpretive-report>

Mine entry plan and data sheets - give additional information on mine entries recorded on a piece of land. To order this report use the same boundary as the CON29M report and a member of our team will contact you to confirm the mine entries to include in this bespoke report.

For more information and to order this report please visit:

<https://www2.groundstability.com/plan-and-data-sheets>

Surface hazard incident report - gives copies of documents from the incident file from the Coal Authority archives. To order this report, use the same boundary as the CON29M mining report.

For more information and to order this report please visit:

<https://www2.groundstability.com/surface-hazard-incident>

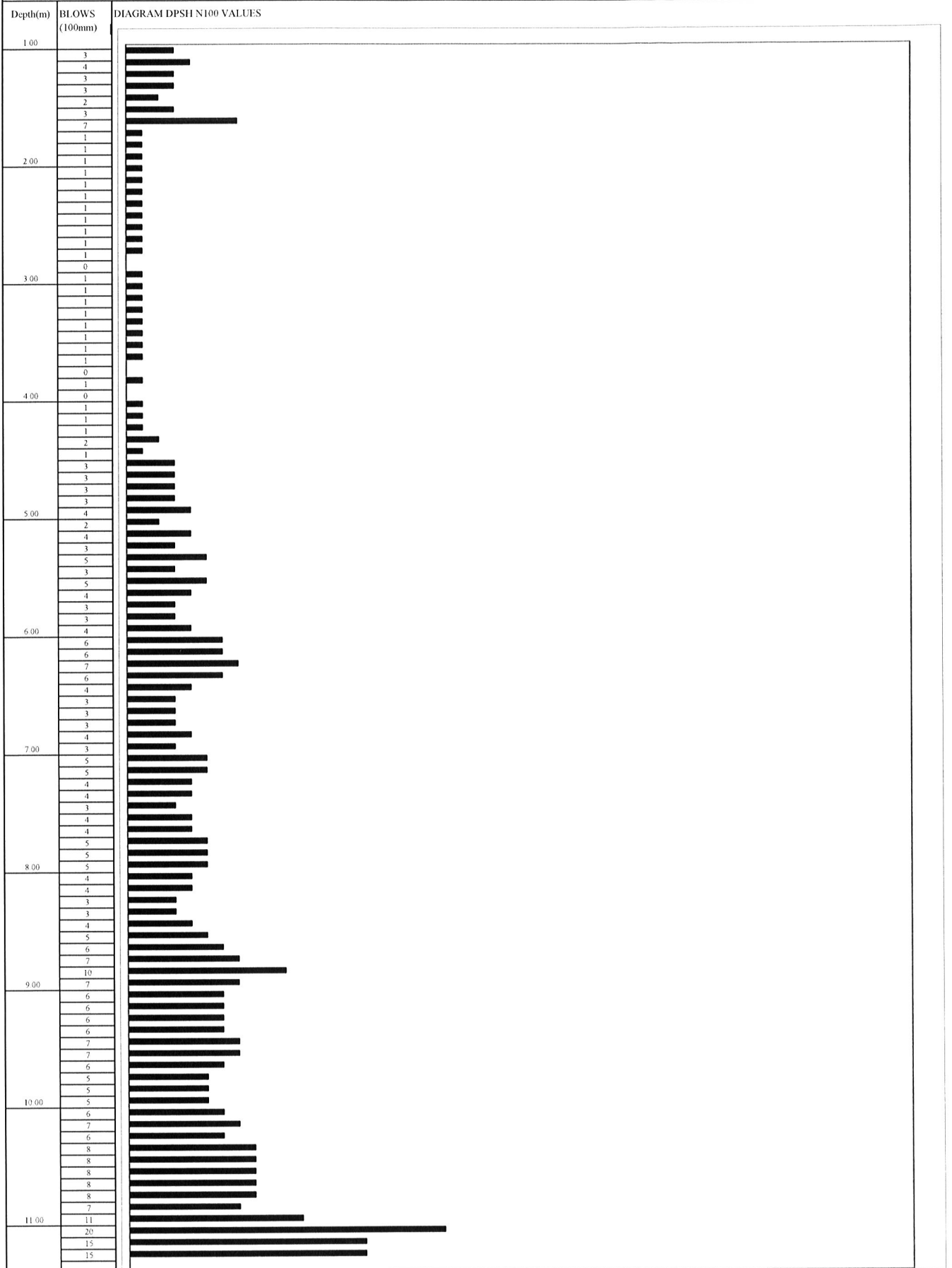
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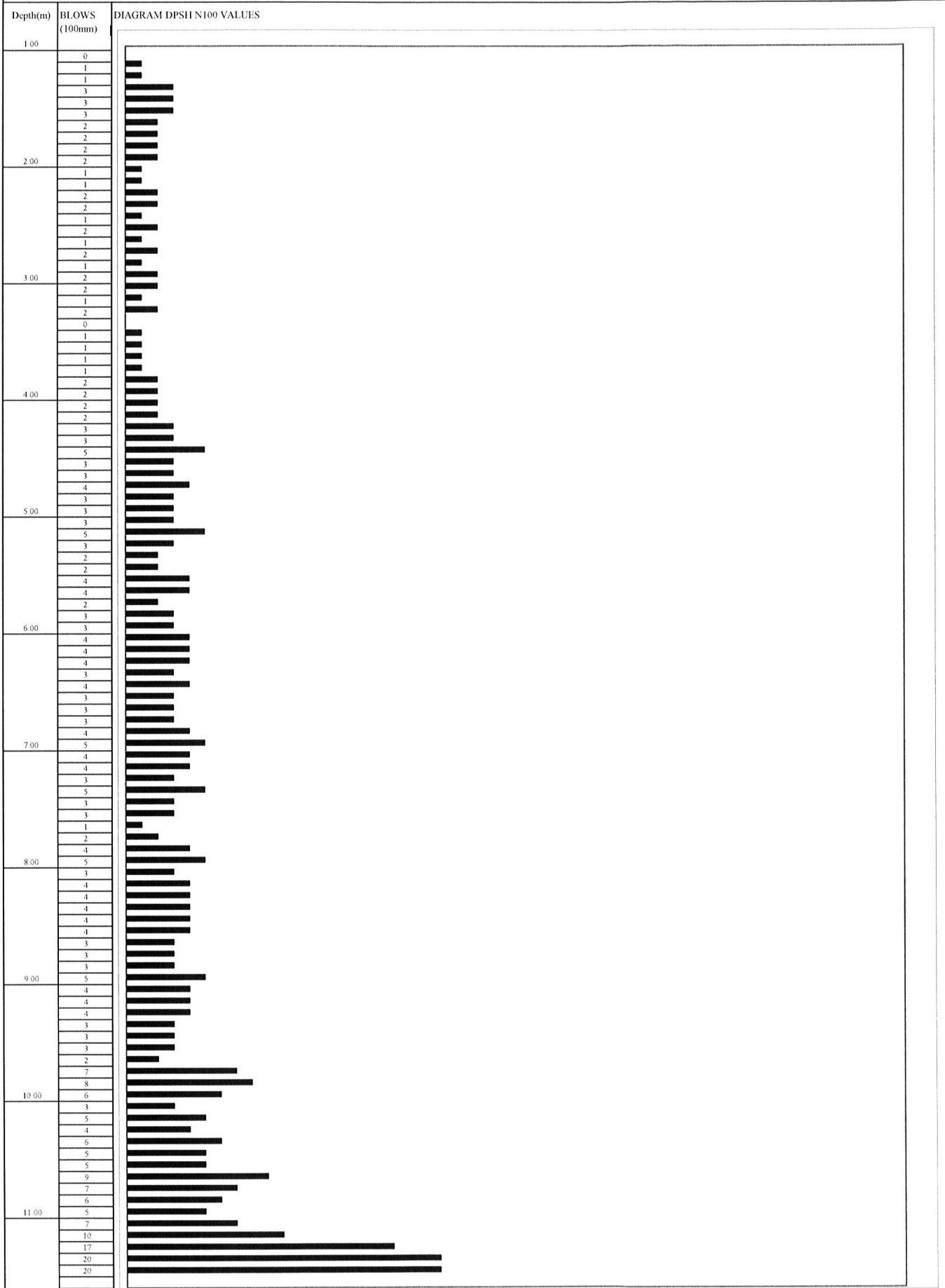
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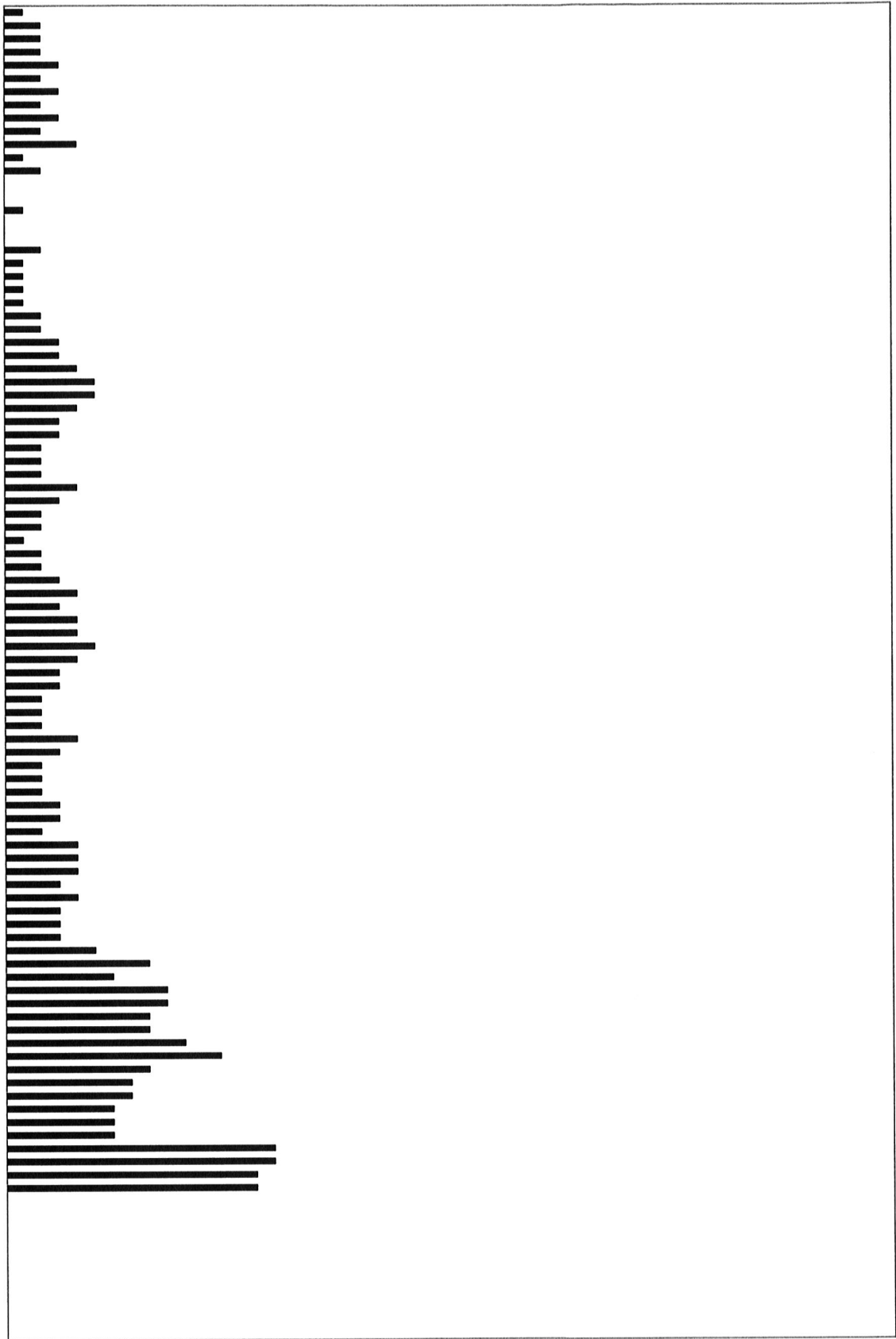
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APPENDIX C

Dynamic Probes





Depth(m)	BLOWS (100mm)	DIAGRAM DPSH N100 VALUES
1.00	1	
	2	
	2	
	2	
	3	
	2	
	3	
	2	
	3	
	2	
2.00	4	
	1	
	2	
	0	
	0	
	1	
	0	
	0	
	2	
	1	
3.00	1	
	1	
	2	
	2	
	3	
	3	
	4	
	5	
	5	
	4	
4.00	3	
	3	
	2	
	2	
	2	
	4	
	3	
	2	
	2	
	1	
5.00	2	
	2	
	3	
	4	
	3	
	4	
	4	
	5	
	4	
	3	
6.00	3	
	3	
	2	
	2	
	2	
	4	
	3	
	2	
	2	
	2	
7.00	3	
	3	
	2	
	4	
	4	
	4	
	3	
	4	
	3	
	3	
8.00	3	
	5	
	8	
	6	
	9	
	9	
	8	
	8	
	10	
	12	
9.00	8	
	7	
	7	
	6	
	6	
	6	
	15	
	15	
	14	
	14	
10.00		
REMARKS		PROBE NUMBER: 103
CONTRACT 2520 Pentre Bychan		DATE: 14/04/2021
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DYNAMIC PROBE RECORD

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	DATE: 14/04/2021
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DYNAMIC PROBE RECORD

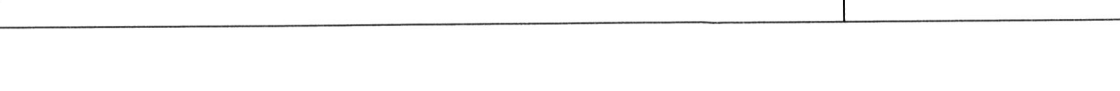
REMARKS	PROBE NUMBER: 105
	DATE: 14/04/2021
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DYNAMIC PROBE RECORD

REMARKS

CONTRACT: 2520 Pentre Bychan

PROBE NUMBER: 106
DATE: 14/04/2021
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Depth(m)	BLOWS (100mm)	DIAGRAM DPSH N100 VALUES
	1	
	1	
	3	
	3	
	4	
	0	
	0	
	0	
	0	
1.00	0	
	0	
	0	
	0	
	0	
	0	
	0	
	0	
	0	
	1	
	3	
2.00	3	
	4	
	3	
	3	
	2	
	2	
	3	
	3	
	4	
	4	
3.00	4	
	4	
	4	
	4	
	3	
	3	
	6	
	5	
	5	
	6	
4.00	8	
	7	
	8	
	12	
	14	
	18	
	16	
	16	
	16	
	15	
5.00	15	
6.00		
7.00		
8.00		
9.00		
10.00		

REMARKS

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Depth(m)	BLOWS (100mm)	DIAGRAM DPSH N100 VALUES
1.00	1	
	1	
	2	
	2	
	2	
	2	
	2	
	2	
	2	
	2	
2.00	2	
	2	
	0	
	1	
	0	
	0	
	1	
	4	
	5	
	5	
3.00	6	
	6	
	6	
	6	
	6	
	5	
	5	
	4	
	3	
	3	
4.00	3	
	3	
	3	
	3	
	3	
	4	
	4	
	4	
	5	
	4	
5.00	5	
	7	
	7	
	6	
	6	
	5	
	4	
	4	
	4	
	5	
6.00	5	
	6	
	6	
	6	
	6	
	6	
	6	
	7	
	5	
	5	
7.00	4	
	5	
	7	
	7	
	6	
	6	
	6	
	6	
	6	
	5	
8.00	5	
	8	
	12	
	11	
	10	
	10	
	13	
	14	
	14	
	15	
9.00	12	
	13	
	13	
	13	
	12	
	17	
	17	
	17	
10.00		

REMARKS

CONTRACT 2520 Pentre Bychan

PROBE NUMBER: 108

DATE: 14/04/2021

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