

REF: 2165/BGR/ShaftSearch/mjs

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Dear Dafydd,

RE: BRYN GLAS RHOS: MINING STUDY-SHAFT SEARCH

1.0 Introduction

It is proposed to develop a site in Bryn Glas in Rhos, Wrexham. This will involve demolition of the existing bungalow on site, which will be replaced with three new houses.

However, the Local Authority Planning Department have requested further information on the risk of shallow mining at the site following concerns raised by the Coal Authority.

Blueprint Architectural Services (BAS) are the architects for the scheme and they have appointed GroundSolve Ltd on behalf of the client to investigate the mining risk at the site and give recommendations on what investigation/remedial measures need to be undertaken.

Consequently, a desk study was undertaken, which was presented in December 2018. The conclusions of this report are presented below:

Shaft

There is a possibility that the shaft identified by the desk study is not present on site, or is a trial shaft, the fact that it is on the Coal Authority records means that it will be necessary to search for the shaft to prove its existence. This should be undertaken following demolition of the existing building, either by drilling or excavation with a tracked excavator.

Shallow Abandoned Mine Workings

If the superficial deposits are as thick as suggested by the nearby boreholes then it is considered unlikely that the underlying coals and their associated fireclays have been worked. If this is the case the seams beneath fireclay sequence would be at considerable depth and would not present any risk to the development.

However, it will be necessary to prove the negative and drill boreholes to prove the sequence beneath the site. These should be rotary percussive boreholes that will penetrate the superficial deposits and then drill the rock to prove the coal seam depths.

Since submission of the desk study report, the client has requested that some investigation be undertaken prior to demolition of the property to assess the likelihood of the shaft actually being present. Evidence of the shaft being provided by:

- Brick/masonry liner to the shaft,
- Colliery spoil present around the shaft,
- Other spoil that may have been derived from excavations for the shaft construction.

This report presents the findings of a site investigation at the site, and gives comments on the likelihood of the shaft being present. It should be read in conjunction with the desk study letter report.

2.0 Site Investigation

The site investigation comprised five machine excavated trial pits around the existing building to a maximum depth of 1.80m, using a 3T excavator provided by the client. The pits were only excavated to prove the underlying natural ground, as the shaft would have had to pass through this material.

The work was supervised on a full-time basis by a chartered geologist from GSL. The location of the trial pits is presented in Figure 1, along with the plotted location of the shaft, with the trial pit logs presented in Appendix A.

3.0 Ground Conditions

The findings of the trial pits are summarised in the table below:

TP No	Topsoil (m)	Made Ground (m)	Old topsoil layer (m)	Glacial Till (m)
1		0.0 – 0.60		0.60-1.00
2		0.0-0.90	0.90-1.10	1.10-1.35
3	0.0-0.30			0.30-0.55
4	0.0-0.30			0.30-0.55
5		0.0-1.10	1.10-1.50	1.50-1.80

Made Ground

In TP 1 a thin layer of sub base overlay a dark grey to brown, silty clay, with a little gravel and tiles. Roots were also observed, suggesting the sub base had been placed on the previous surface level.

TP 2 was excavated in the raised area at the front of the property. It encountered demolition debris, described as loose, brown and orange, brick and tile fragments, in a sandy gravelly matrix. This layer sat on a thin layer of sub base, resting on the old topsoil layer. This proved conclusively that this fill was placed following construction of the property.

TP 3 and 4 were excavated at the rear of the property and encountered topsoil resting directly on the glacial till.

TP 5 excavated at the front of the property, where the fill was thickest, encountered 1.10m of demolition debris, comprising loose, bricks and masonry, overlying the old topsoil layer and the glacial till.

Glacial Till

The glacial till was proved in all of the pits and was described as firm to stiff, orange brown, silty clay, with a little to some sub angular to sub rounded fine to coarse gravel.

4.0 Discussion and Conclusions

The site investigation failed to reveal any evidence for the shaft, with all of the fill being demolition debris and placed following construction of the property. This ties in well with examination of the other fill at the turning head to the cul de sac, which also revealed evidence of demolition debris.

The back of the house proved topsoil over the glacial till and the rest of the site is considered to have similar ground conditions based on examination of the topography. No colliery spoil or evidence of the shaft itself was encountered.

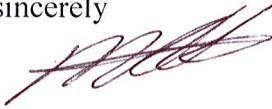
It must be therefore concluded that the chance of the shaft being at its recorded position, or on the site itself is very low. If colliery spoil had been present and removed, it would have been used for the construction of the turning head and raising the ground levels at the front of the property.

However, during the site's redevelopment excavations should be closely monitor for signs of the recorded shaft and any unrecorded shafts.

The recommendations for the shallow mining risk still stand, and it will be necessary to undertake drilling to prove the depth to any coal seams.

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

Yours sincerely



Mike Scott

FIGURES

APPENDIX A

Trial Pit Logs

TRIAL PIT 1

Depth (m)	Strata
0.00 – 0.10	Loose cream fine to coarse GRAVEL (SUB-BASE)
0.10 – 0.60	Dark grey changing to brown silty CLAY with a little gravel, tiles etc, with roots near surface (MADE GROUND)
0.60 – 1.00	Firm to stiff orange brown silty CLAY with a little to some sub angular to sub rounded fine to coarse gravel (Weathered GLACIAL TILL)



TRIAL PIT 2

Depth (m)	Strata
0.00 – 0.75	Loose brown and orange BRICK & TILE fragments in a sandy gravelly matrix (MADE GROUND)
0.75 – 0.90	Loose cream sub angular fine to coarse GRAVEL (SUB BASE)
0.90 – 1.10	Soft brown slightly organic CLAY with traces of old roots and gravel (OLD TOPSOIL LAYER)
1.10 – 1.35	Firm to stiff orange brown silty CLAY with a little to some sub angular to sub rounded fine to coarse gravel (Weathered GLACIAL TILL)



TRIAL PIT 3

Depth (m)	Strata
0.0 – 0.30	TOPSOIL
0.30 – 0.55	Firm to stiff orange brown silty CLAY with a little to some sub angular to sub rounded fine to coarse gravel (Weathered GLACIAL TILL)



TRIAL PIT 4

Depth (m)	Strata
0.0 – 0.30	TOPSOIL
0.30 – 0.55	Firm to stiff orange brown silty CLAY with a little to some sub angular to sub rounded fine to coarse gravel (Weathered GLACIAL TILL)



TRIAL PIT 5

Depth (m)	Strata
0.00 – 1.10	Loose BRICKS and MASONRY in a sand gravel matrix (MADE GROUND-Demolition Debris)
1.10 – 1.50	OLD TOPSOIL LAYER
1.50 – 1.80	Firm to stiff orange brown silty CLAY with a little to some sub angular to sub rounded fine to coarse gravel (Weathered GLACIAL TILL)



