

Report No. BC/MB/11.19.04.

**Site Investigation Report:
Land at 6 Criccieth Grove, Castle Park Estate,
Merthyr Tydfil.**

Prepared on behalf of:

Eco Valley Homes

By:



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Site Investigation Report: Land at 6 Criccieth Grove, Castle Park Estate, Merthyr Tydfil.

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List of Plans

Drawing No:		Scale:
BC/MB/11.19.04.01.	<i>General Location Plan.</i>	1:50,000.
BC/MB/11.19.04.02.	<i>Geology Plan.</i>	1:10,560.
BC/MB/11.19.04.03.	<i>Detailed Location Plan.</i>	1:1,250.
BC/MB/11.19.04.05.	<i>Borehole Location Plan.</i>	1:200.

Appendix

Graphic Logs of Boreholes 1-3.

Site Investigation Report: Land at 6 Criccieth Grove, Castle Park Estate, Merthyr Tydfil.

1 Introduction

This report has been prepared on behalf of our client:

*Eco Valley Homes,
17 Pembroke Close,
Castle Park,
Merthyr Tydfil,
CF48 1JF*

and relates to land at 6 Criccieth Grove on Castle Park Estate, where it is proposed to erect a detached dwelling. This report discusses the geology and mining history of the Site and the immediately surrounding area as they may affect the construction of the proposed dwelling and thereby assesses the mining risk to the proposed development. Recommendations are made on the appropriate foundation option.

The following sources of data were used in the compilation of this report:

- i) *The findings of the report, 'Mining Risk Assessment: Land at 6 Criccieth Grove, Castle Park Estate, Merthyr Tydfil' reference no. BC/MB/06.19.04, published by Blandford Consulting;*
- ii) *The findings of the site investigation programme carried out on the Site; and*
- iii) *the archive records of Blandford Consulting.*

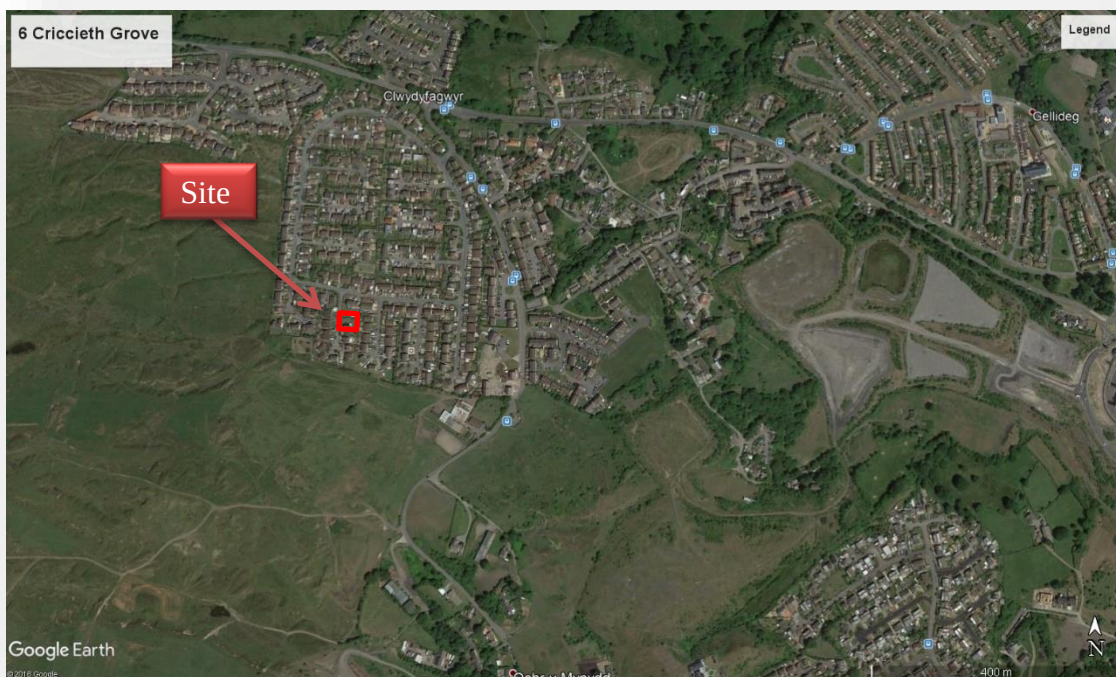
The findings of this report are necessarily based upon the data used in its compilation and may be amended in the future in the light of additional material information. The report must only be used in its entirety for its stated purpose.

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2 Brief Description of the Site

The parcel of land that is the subject of this report ('the Site') is located at the north-western margins of Merthyr Tydfil and is approximately 5.5 km north-west of the centre of the town (see Figure 1 and *General Location Plan, drawing no. BC/MB/11.19.04.01*). The Site is located on north-easterly facing slopes and is at an approximate elevation of 321m aod: it is rectangular in outline with approximate maximum dimensions of 25m and 12m (see *Detailed Location Plan, drawing no. BC/MB/11.19.04.03*). The Site lies within a mixed residential area where houses and bungalows are a mixture of terraced, semi-detached and detached. There are sports fields to the west and north-west of the Site.

Figure 1
Aerial View of Site



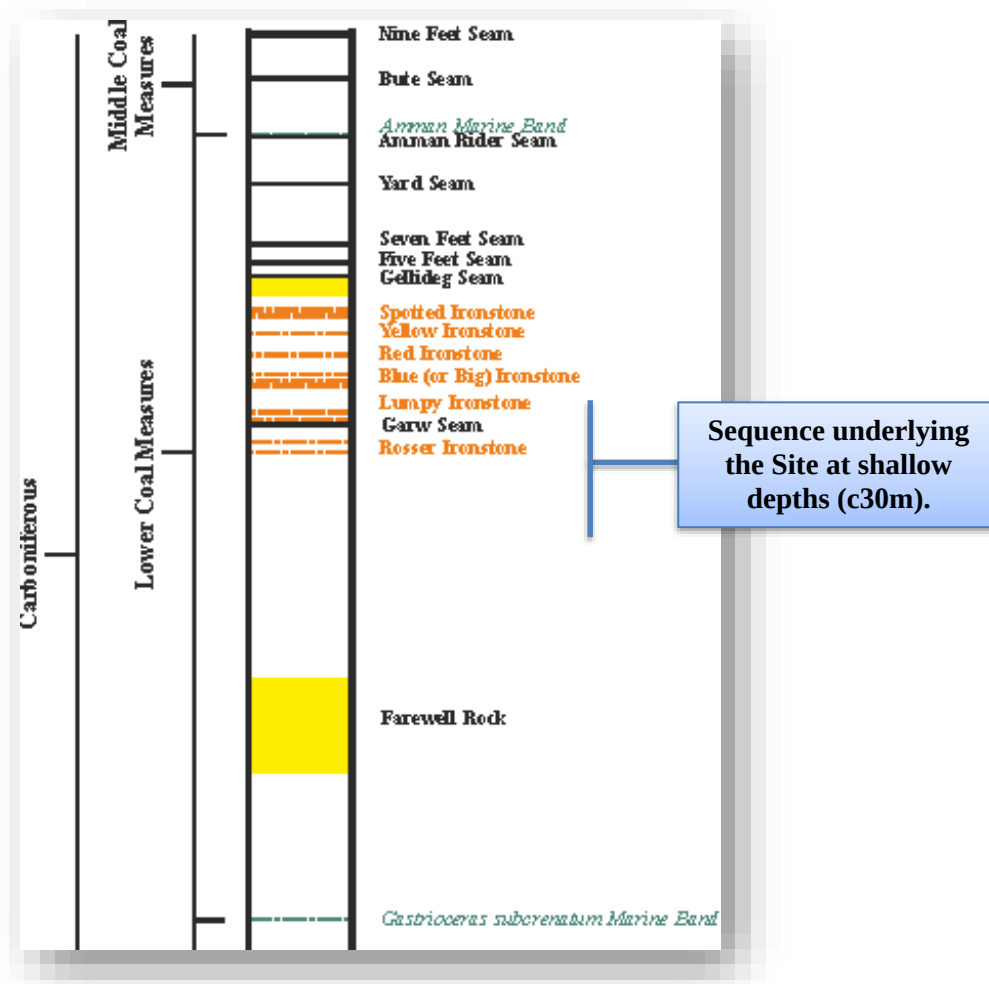
3 Geology of the Site

The earlier coal mining risk assessment report found that the Site is situated at the northern margin of the South Wales Coalfield and is underlain at shallow depths with strata assigned to the Lower Coal Measures. The outcrop of the Garw Seam lies approximately 50m

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north of the Site (see *Geology Plan, drawing no. BC/MB/11.19.04.02*); there are a series of ironstone veins above the Seam in the geological sequence and it is underlain by the Rosser Ironstone Veins (see Figure 2, Part of the Stratigraphic Column). There are no coal seams below the Garw Seam that are thick enough to have supported underground mining operations. The regional dip of the coal measures in this area is 1 in 12 towards the south-west such that the sequence containing the ironstone veins and the Garw Seam underlie the Site at shallow depths.

Figure 1
Part of the Stratigraphic Column.



The Site is not affected by large faults and is not affected by landslip conditions. The published geological sheet also shows the Site to be covered with glacial deposits of Boulder Clay.

/Cont....

4 Mining History

The earlier coal mining risk assessment identified a risk of shallow mine workings underlying the Site in the Garw Seam or in a number of the ironstone veins. The report recommended exploratory boreholes to examine the risk from shallow mine workings in greater detail. The report found no record of a disused shaft or adit within the confines of the Site or within 20m of its boundary. The Site has not been part of an opencast coal site, and there have been no opencast mining operations close enough to the Site to affect the structural integrity of the proposed development. There are no operating collieries within influencing distance of the Site.

5 Mine Gases

The earlier report identified a low risk from mine gases, but recommended monitoring the exploration boreholes for the presence of mine gases.

6 Site Investigation

6.1 Site Investigation Programme

A programme of three rotary percussive boreholes was planned for the Site; the boreholes were drilled to a maximum depth of 30m. The locations of the boreholes are shown on the *Site Investigation Plan*, drawing no. BC/MB/11.19.04.05 and the borehole logs are included in the Appendix. The boreholes were supervised by a Chartered Geologist and drilled by Apex Drilling Services using a Beretta T44 rig. The boreholes were monitored for the presence of mine gases.

6.2 Findings of the Site Investigation: Rotary Boreholes

All three boreholes encountered glacial till, Boulder Clay, the thickness of which was found to vary between 6.0m and 7.1m. Beneath the Boulder Clay coal measures were

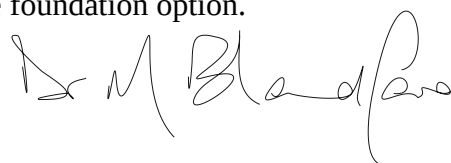
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proved to a maximum depth of 30m; the coal measures were found to be comprised variously of mudstone, sandstone, sandstone with mudstone bands, and ironstone. Old workings were encountered only in Borehole 3, where 0.8m of soft drilling, suspected to be old workings, was encountered at a depth of 21.0m. The thickness of coal measures above the suspected old workings was found to be 15.0m, resulting in a strata: void ratio of 18.8:1. A strata: void ratio of 10:1 is generally accepted as the limiting ratio where old workings might collapse as far as rockhead or the surface. The 18.8:1 ratio is much higher than the 10:1 ratio, resulting in a negligible risk of the old workings collapsing to the base of the superficial deposits.

The boreholes were monitored for mine gases throughout the drilling operations; the operations were monitored for the presence of methane, carbon monoxide, hydrogen sulphide and levels of oxygen outside the 20% - 21% range. None of the above mine gases were encountered and the readings of oxygen levels all fell within the above range.

7 Recommendations: Foundation Options

The risk of shallow mine workings collapsing to the surface at the Site can be considered to be negligible. In so far as the risk from past mining operations is concerned, shallow spread foundations, either conventional strip/trench or raft, will be appropriate. The soil conditions at the Site should be assessed before deciding on the appropriate foundation option.



**Dr Malcolm Blandford,
Chartered Geologist.**

Report Date: 13th February 2020.

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PLANS



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Geologists Working With The Environment....

Study on Land at 6 Criccieth Grove, Castle Park,
Merthyr Tydfil.

General Location Plan.

Plan Scale: 1:50,000.

Key to Symbols:



Approximate Position of Site.

Note:
North is at top of plan.

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Drawing No: BC/MB/11.19.04.01.

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Study on Land at 6 Criccieth Grove, Castle Park,
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Geology Plan.

Plan Scale: 1:10,560.

Key to Symbols:



Approximate Position of Site.

Note:
North is at top of plan.

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Drawing No: BC/MB/11.19.04.02.



Study on Land at 6 Criccieth Grove, Castle Park,
Merthyr Tydfil.

Detailed Location Plan.

Plan Scale: 1:1,250.

Key to Symbols:

 Approximate Site Boundary.

Notes:

North is at top of plan.

Drawing prepared from plan supplied by client.

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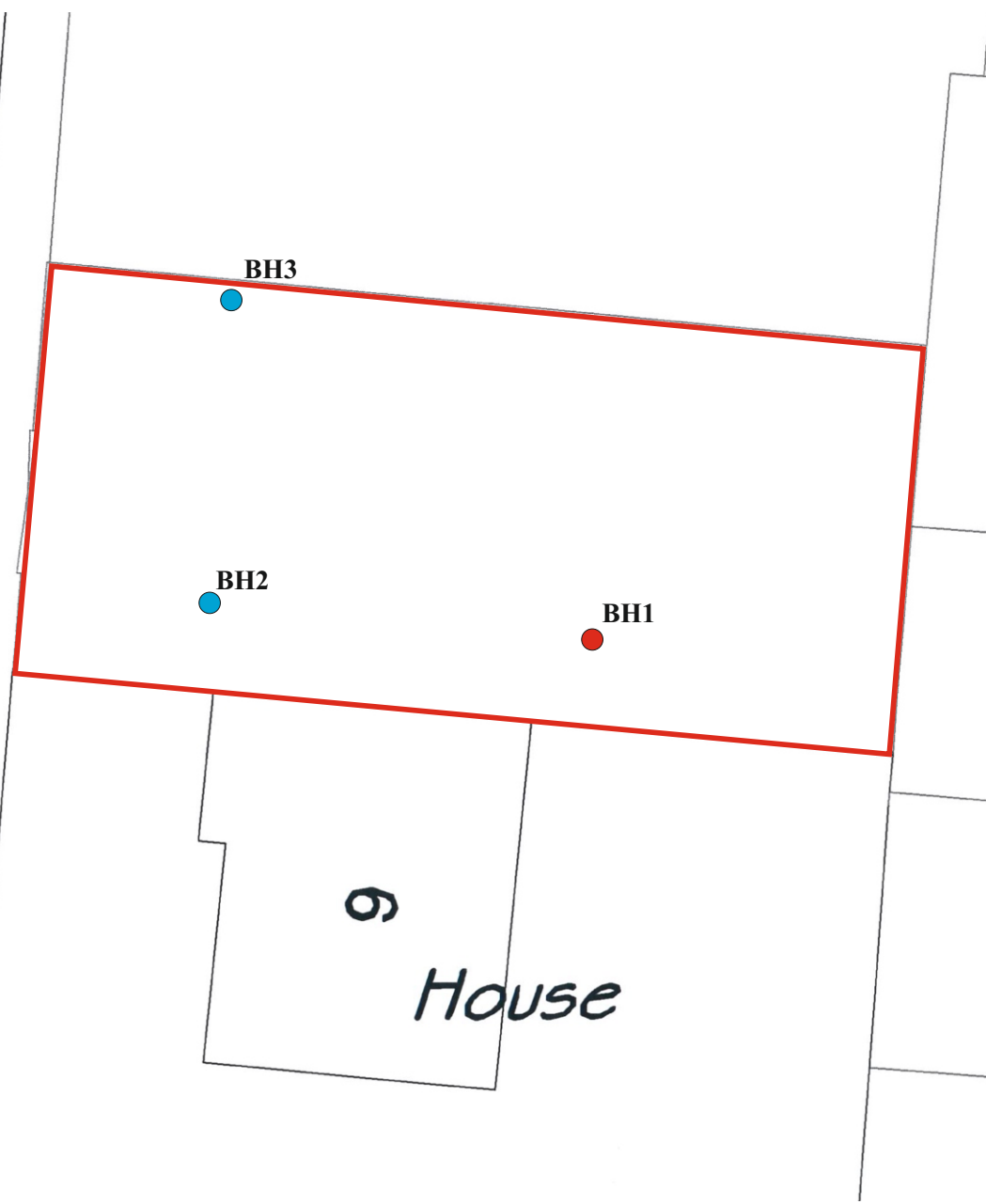
Drawing No: BC/MB/11.19.04.03.

Geologists Working With The Environment...





CRICCIETH GROVE



Study on Land at 6 Criccieth Grove, Castle Park,
Merthyr Tydfil.

Borehole Location Plan.

Plan Scale: 1:200.

Key to Symbols:

-  Approximate Site Boundary.
-  Borehole that Encountered No Old Workings.
-  Borehole that Encountered Old Workings.

Notes:

North is at top of plan.

Drawing prepared from plan supplied by client.

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Geologists Working With The Environment...

Drawing No: BC/MB/11.19.04.05.

APPENDIX

GRAPHIC LOGS OF BOREHOLES 1-3



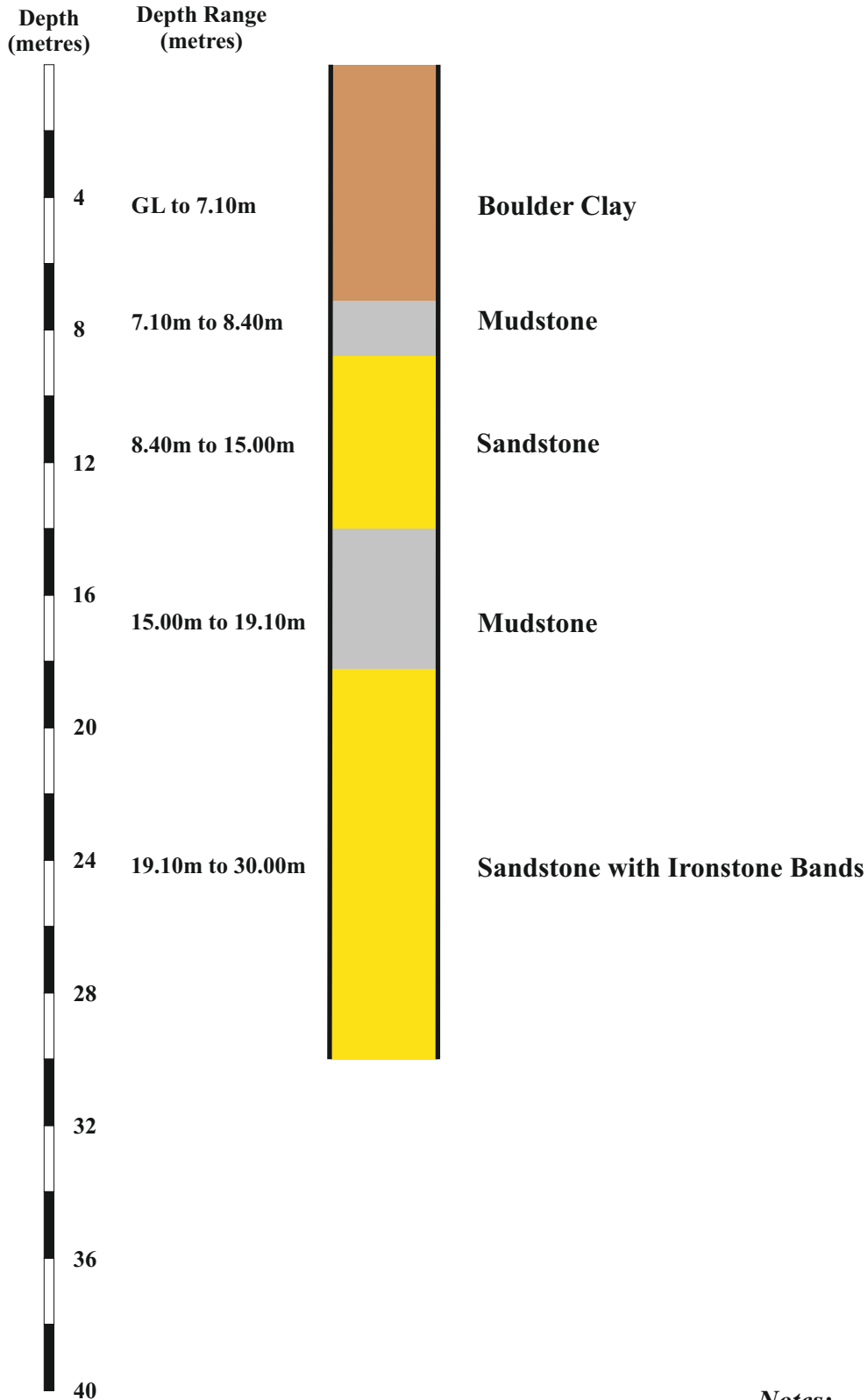
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Study on Land at 6 Criccieth Grove

Borehole No. 1

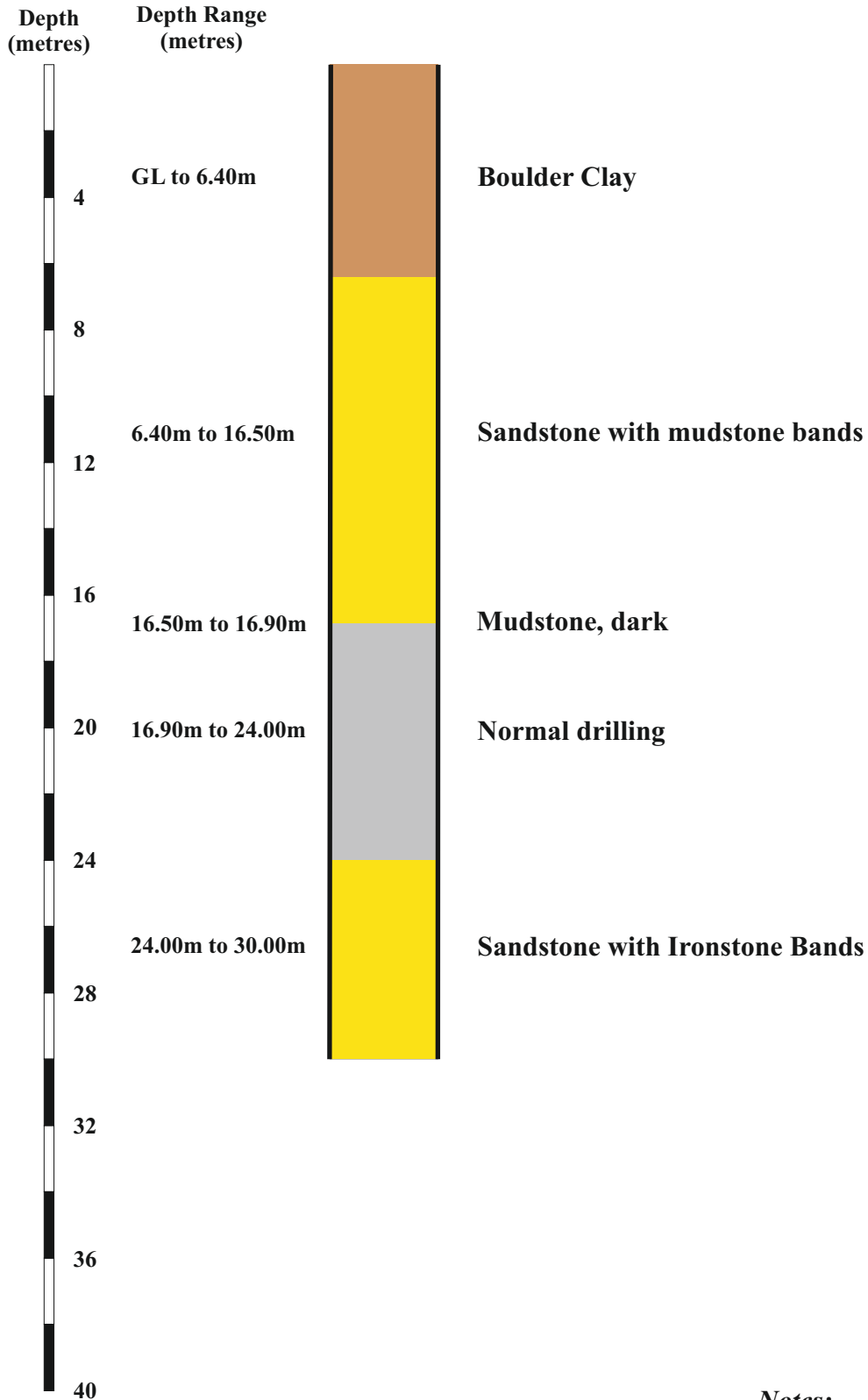


Notes:

1. *Driller's Descriptions*
2. *Borehole dry.*
3. *Total depth of borehole, 30.00m.*

Study on Land at 6 Criccieth Grove

Borehole No. 2

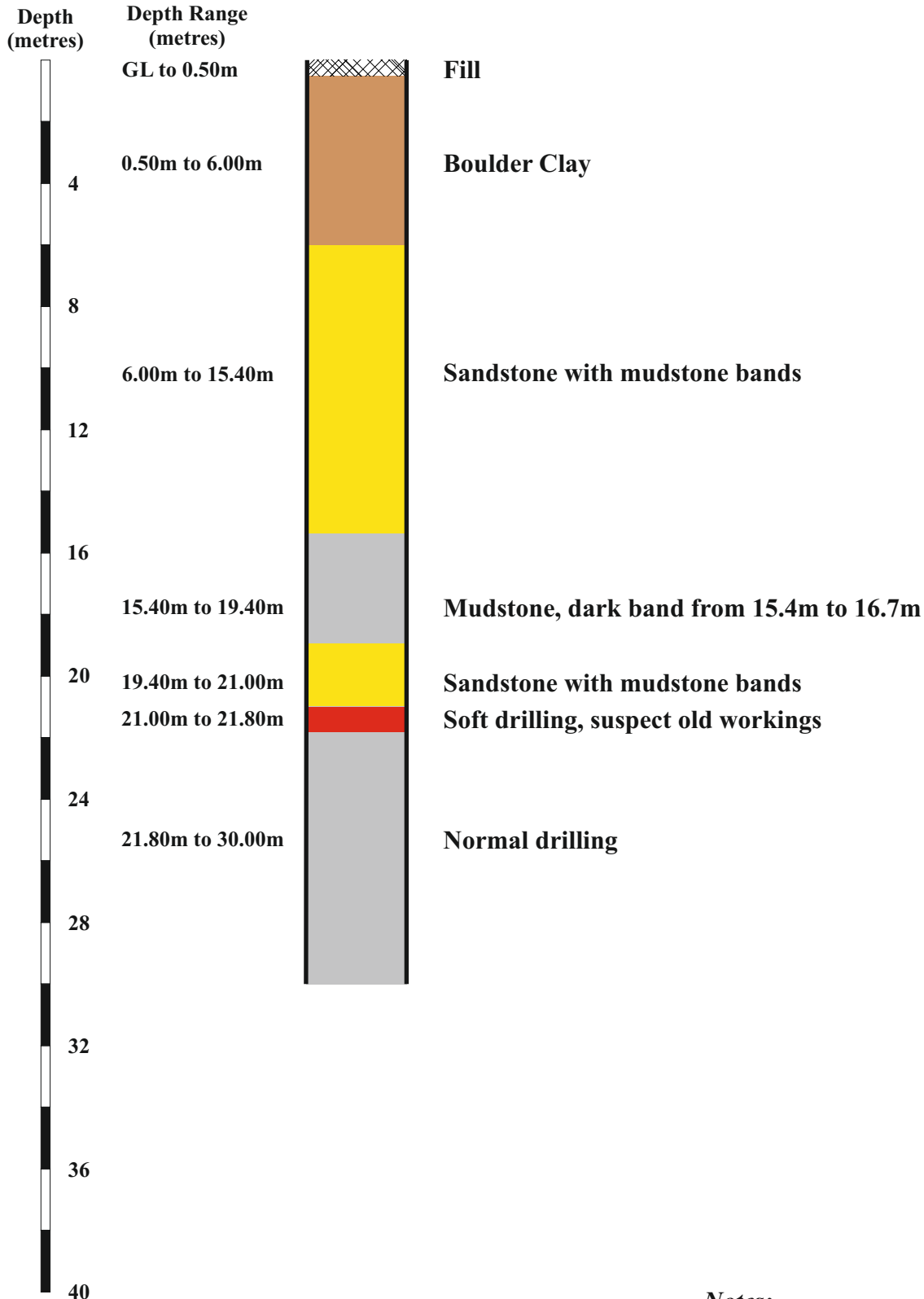


Notes:

1. *Driller's Descriptions*
2. *Borehole dry.*
3. *Total depth of borehole, 30.00m.*

Study on Land at 6 Criccieth Grove

Borehole No. 3



Notes:

1. Driller's Descriptions
2. Borehole dry.
3. Total depth of borehole, 30.00m.