

Appendix B

Previous Peat Reports

Afan Valley

Initial Peat Survey

Afan Valley Ltd

December 2017

Quality information

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Revision History

Revision	Revision date	Details	Authorized	Name	Position
0	13/12/2017	Final		Ivan Hodgson	Technical Director

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Appendices

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1. Introduction

AECOM, in partnership with Powell Dobson Architects developed feasibility options for a proposed new tourism development, near Cymmer, Port Talbot, South Wales for Afan Valley Ltd. According to the Concept Masterplan (April 2017), the current preferred option for the proposed development comprises holiday lodges, public open space and infrastructure associated with outdoor leisure activities. AECOM Ground Engineering has been commissioned to prepare an Initial Peat Survey Report for the proposed development, in order to provide the project designers and Local Planning Authority with information on the possible presence of peat at the site and to provide recommendations for the next phase of peat survey, if required. The information provided by the peat surveys will allow an assessment of the potential impact of the proposed end use on the peat.

AECOM Ground Engineering undertook a desk study of the publicly available data relating to the geology and current use of the site. This was followed by a walkover visit to the site by an engineering geologist to inspect the areas suspected to be underlain by peat and to make a reconnaissance level survey of the remainder of the site.

2. Available Data

- Google Earth was used as a source of aerial imagery
- AECOM WebGIS British Geological Survey (BGS) Website – Geology of Britain Viewer. Available: <http://mapapps.bgs.ac.uk/geologyofbritain/home.html>. Accessed on 27 November 2017
- BGS exploratory hole record(s): SS89SE25, SS89NE22 and SS89NW8, sourced from BGS website – <http://mapapps.bgs.ac.uk/geologyofbritain/home.html>. Accessed on 01 December 2017 GeoIndex online.
- NATMAP Soilscales dataset (Cranfield University)
- Cranfield University 2017. The Soils Guide. Available: www.landis.org.uk. Cranfield University, UK. Last accessed 27/11/2017 LandIS Soils Guide
- Afan Valley Coal Mining Assessment Report, AECOM (September 2017)
- Afan Valley Adventure Resort – EIA Scoping Report, Nineteen47 (August 2017)
- Scoping Opinion– Neath Port Talbot County Borough Council Ref. no. P2017/0825 (September 2017)
- Caerau Parc Afan Valley, Wales. Geo-Environmental Phase I Desk Study, BSP Consulting (February 2017)
- Concept Masterplan Rev E – Powell Dobson Architects (April 2017)

3. Site Location

The site is located on the southern side of the Afan Valley, south and southeast of Cymmer, Port Talbot, South Wales. The approximate National Grid Reference of the centre of the site is 285500E 195560N and it covers an area of approximately 130Ha. A site location plan is shown below.



Figure 3-1 Site location

4. Proposed Development

It is proposed to develop the site into the Afan Valley Adventure Resort. The development consists of a central leisure complex (Plaza), accommodation areas, a car park, a forest, alpine area and associated access roads. The proposed development is shown on the Concept Masterplan.

5. Published Information

The superficial and solid geology of the site has been established by reference to published maps, published geological memoirs and online resources comprising those detailed in Section 2.

Superficial Quaternary deposits comprising the following;

- Glaciofluvial deposits to the northwest of the site composed of glacially-derived unconsolidated sand and gravel
- Glacial Till to the north and south of the site composed of glacially-derived unsorted to poorly sorted and containing particles ranging in size from clay to boulders (Diamicton)
- Peat located predominantly east of the Cymmer Road (A4063) but also locally west of Cymmer Road and with only minor presence in the south east corner of the site. Composed of organic-rich clay or accumulation of wet, dark brown, partially decomposed vegetation

Rock of the Rhondda Member of the Upper Coal Measures underlies the site and is composed of green-grey Lithic Arenite with thin mudstone/siltstone and seatearth interbeds and, thin coal seams.

The BGS mapping indicate an area of peat is present to the south east of the site. This is described as an organic-rich clay or accumulation of wet, dark brown, partially decomposed vegetation. In Figure 6-1 Walkover Survey Observation Plan shows the peat deposits according to the BGS maps as well as other areas where it seems likely that peat may be present, such as ponds and boggy areas. the location of the peat, as extracted from the BGS maps is shown in relation to other features where peat may be present.

The BGS boreholes consulted are all located outside of the site (location plan presented in Appendix B). The boreholes do not indicate any presence of peat.

Soilscape mapping, presented in Appendix C, identifies the whole site to be underlain by “very acid loamy upland soils with a wet peaty surface”.

The Ordnance Survey (OS) mapping indicates that the site has several springs and sinks that could be associated with a north–south trending fault in the west of the site. The locations of these features have been marked on Figure 6 1. There are two standing water pools located in the south east of the site; these are likely to be the pools identified in the scoping report.

The scoping report states that there is a presence of peat near two pools in impoverished marshy grasslands. The report also states that these peat deposits serve as carbon sinks. No further information on the location of the peat or ponds is provided in the scoping report.

6. Walkover Survey

6.1 Site Description and Methodology

A walkover survey of the site was completed by an AECOM engineering geologist on Thursday 6th December 2017. The walkover followed designated routes on the site and also involved identifying features of interest noted during the desk study.

The peat survey focused on observations of the following:

- Location of wet ground and associated organic rich soils/peat or vegetation
- Ground description including location of any rock outcrops
- Slopes and other pertinent features
- Observations of any site restrictions for future intrusive survey work
- Photographs of pertinent areas

No intrusive investigations were undertaken as part of the site walkover survey.

There are some areas of the site that were not accessible during the walkover due to the steepness of slopes and presence of springs and loose material which made it difficult and dangerous to climb down. These are shown in Figure 6-1 using red arrows. The red arrows indicate the parts of the slope that were steeper than 30°.

There were some areas that we not accessible due to water logging, the majority of these have been identified in Figure 6-1.

The observations discussed in the following section were limited by the near total coverage of the site with vegetation and trees.

Google Earth aerial photos indicate that in 2013 and earlier the majority of the site was covered with trees. The tree cover is currently reduced on the site to approximately 10 to 20 % of the area in the east central part of the site. This area was not readily accessible during the walkover. Tree stumps and felled branches cover approximately 20 to 30% of the site. These areas were generally inaccessible, as the stumps and branches are laid out in lines creating furrow- like structures. These can also be seen in Google Earth images (2017) on the west central part of the site.

The site comprises undulating high ground rising to a maximum height of 347m at the survey point close to the southern site boundary. Northern and western areas of the site slope down steeply towards the River Afan, located approximately 200m lower than the highest point at the site. The eastern part of the site gently inclines towards Maesteg/Cymer Road (A4063) which runs parallel to the eastern site boundary. The northern site boundary is marked by the A4107 (Brytwn Road), while, a built development at Cymer marks the north-eastern boundary. The southern site boundary is a continuation of farmland, woodland and undulating scrubland before encountering the village of Caerau. Similar to the southern site boundary, the western site boundary is a continuation of grassland/scrubland.

There is a water reservoir in the south east of the site that is fenced and gated; this is located on one of the high points of the site. There are numerous tracks crossing the site and two public access

tracks that start in the south west and are aligned to the north east. There are two streams located in the west of the site; these have a north and northwest flow.

As described in section 4.0 most of the coniferous and oak trees previously present on the site were cut down across the site and some were burnt during a forest fire.

Some of the tracks are constructed on a raised embankment keeping the tracks above the surrounding boggy ground. The embankments are up to 1.5m high and with side slopes up to 30 degrees. Where the tracks are at the same level as the surrounding area, they are covered in water, with hydrophilic plants growing on the tracks and around them.

There is a disused Cymmer Tunnel marked on the OS maps cutting across the central part of site trending NNE - SSW

6.2 Observations

The findings of the walkover survey are presented as a series of notes and comments presented in Table 6-1 that relate to numbered locations shown on Figure 6-1. The grid reference of each individual point was recorded using a GPS. Photographs of a number of the locations are presented in Appendix A.

Within the site boundary four areas have been identified as potential locations of peat or organic rich soil. These can be summarised as follows:

- Area A (observation points L1 to L4) – associated with two ponds and is adjacent to the area of peat shown on BGS mapping.
- Area B (observation point L7 and L8) – associated with spring and stream. Waterlogging, hydrophilic plants and decomposed organic material are present
- Area C (observation points L6 and L9) – similar to above
- Area D (observation point L12) – characterised by standing water in shallow depressions and hydrophilic plants

Table 6-1 Walkover Survey observations

Location Number	Observations and Comments
L1	Area of standing water characterised by vegetation such as ferns, tall reeds. Shallow scraping using a geological hammer revealed semi decomposed plant material
L2	Two ponds both approximately 40m in length, with a width varying from 10m to 15m. The ponds are surrounded by tall grasses and reeds. The land between the ponds is spongy/springy when pressure is applied. When scraped with a geological hammer black soft to firm clay with organic semi decomposed material was encountered. The ponds are in a low lying area with steep slopes (approximately 1v:2h to 1v:1h) at the edges. L1 and L2 are separated by a raised track constructed on an embankment with slopes of approximately 30 degrees.
L3	Appears to be a natural low lying area, which is continuous with the ponds but separated by a track that is at the same elevation. There is standing water on the track and in this low lying area black organic clay with decomposed plants and roots is present.
L4	Area is low lying in relation to the surrounding area, with burnt trees and steep embankment slopes on either side. The ground is undulating and composed of firm clay and decomposed plant material. There is a thick undergrowth of moss forming a continuous carpet over the soil.
L5	Exposed face of up to 1.5 m with what appears to be drift deposits comprising of cobbles and boulders in a slightly clayey sand matrix underlain by a coal seam at the bottom of the exposure
L6	A stream with a northeast flow passes under the raised track. Water ponds on either side of the track and was

Location Number	Observations and Comments
	about 0.30m deep. There are tall reeds surrounding the stream and along the track going northwest as well as decomposed plant material.
L7	Possible spring, with bog sheen on water surface. Track is water logged with moss and reeds. Water flows northeast following the track, shallow scraping revealed very soft to soft black clay with abundant decomposed organic material
L8	Waterlogged area following a stream, standing water along the track up to 0.2m deep. Reeds and tall grasses characterise this area. The ground was very springy. In areas without standing water, applying pressure causes water to be forced out of the ground.
L9	Area of standing water with vegetation such as brown ferns, tall reeds.
L10	Disused rock quarry
L11	Waterlogged area with thriving vegetation of reeds, and tall grasses. Ground spongy/springy with decomposed plant material
L12	Water logged area on a track and in the area around track track measuring about 10m to 15m in width. Area has tall reeds and grasses and standing water in shallow depressions
L13	Waterlogged area with thriving vegetation of reeds and tall grasses. Ground spongy/springy with decomposed plant material
L14	Rock outcrop
L15	Rock outcrop
L16	Rock outcrop
L17	Rock outcrop
L18	Mast and trig point
L19	Water reservoir
L20	Area of peat shown on the BGS geological mapping but not visible at the surface.

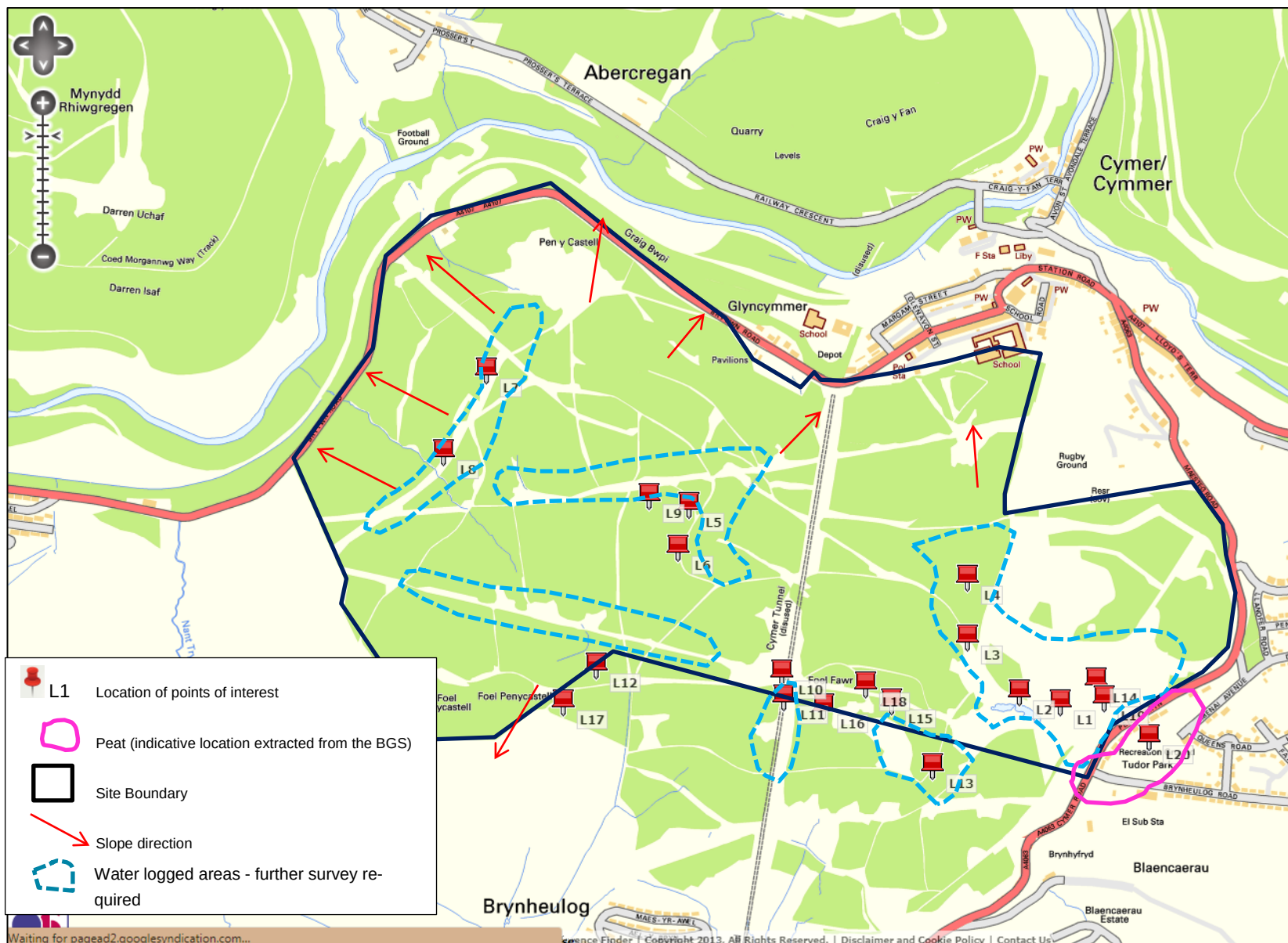


Figure 6-1 Walkover survey observation plan

7. Recommendations for Further Study

The Scoping Opinion provided by Neath Talbot County Borough Council indicated that the expectation is that areas of deep peat will be retained. They stated that in Wales deep peat is defined as greater than 500mm thick.

The walkover survey has identified four areas within the site which seem most likely to be underlain by peat or organic rich soil. Further investigation is required to establish the presence and thickness of any peat in these areas and to define the lateral extent of any peat deposits that may be present. It is proposed that two phases of intrusive investigations are undertaken as below.

7.1 Phase 1 Intrusive Investigation

To carry out the first phase of investigations the following is proposed:

- An initial day for a geologist and technician/labourer using a Macprobe and shovel to explore the extent of areas suspected to be underlain by peat as shown on Figure 6-1.
- This will be carried out by a combination of probing, excavation of shallow hand dug pits, sampling and description of the soil encountered
- If appropriate a small number of laboratory tests may be carried out.

This phase will allow the boundaries of the areas located in the walkover survey to be better defined.

7.2 Phase 2 Intrusive Investigation

The amount of time and extent of the second phase would be dependent on the findings on the first phase. The second phase is likely to involve the following:

- One to two days of an intrusive investigation supervised by a geologist
- Investigation probably using a mini-excavator and/or window sampler to check the thickness of any peat, describe the material and, if appropriate, take samples for testing.

The findings from the investigation will be reported in a Peat Survey Report. This report will include mapping indicating locations on the site where peat has been found to be thicker than 0.5m.

Appendix A Site Walkover Photographs

L1 facing north west



L1 facing west



L2 facing north- west towards L3



L2 facing north



L4 facing north-east



L4 – material under the moss

