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Manmoel Road
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NP12 0HY

08 April 2022

MINING RISK ASSESSMENT

LAND BEING PART OF THE PENYFAN CARAVAN PARK CURTILAGE.

This report has been prepared by M J Associates on behalf of Mr G Davies of Penyfan Caravan Park Ltd, the freehold owner of the property referred to. It can only be used by Mr G Davies in relation to that property and must not be copied, lent or disclosed to any third party without the permission of M J Associates.

On 05 April 2022, I was commissioned by Mr G Davies to research the relationship of land referenced as 'J FIELD' at Penyfan Caravan Park, to mine workings in the vicinity of that land. A walkover inspection of the land was undertaken on 06 April 2022. The National Grid co-ordinates of the centre of the site are E 318470, N 200740N.

PREAMBLE

The attached Site Plan refers to:

1. The outcrop of the Small Rider Seam shown dashed edged brown.
2. The outcrop of the Mynyddislwyn Seam shown edged brown.
3. A number of Level adits, being adits into the Mynyddislwyn seam for old Manmoel Colliery.
4. The proposal referred to, edged Red.

The proposal site comprises an area of un-developed land of approximately 6000 m².

The site is well vegetated with mature trees at its western edge.

The purpose of this Desk Top Study is to establish whether the site is affected by any mining works, and whether special precautions in terms of design should be considered to facilitate the site development for chalet type caravans.

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GEOLOGY

Our searches found that the extensive underground mining operations that have taken place in the district extend beneath the Site. Some of the old workings are at shallow depths, whilst others extend to approximately 630m depth beneath the Site. Our searches found a record of a number of disused mine entries associated with working the Mynyddislwyn, seam all downhill and to the West of the proposal.

Two Coal Seams outcrop in the vicinity of the property. The Small Rider seam immediately beneath the proposal and the Mynyddislwyn Seam which outcrops downhill and to the West of the proposal. The Small Rider is a thin coal not known to be more than 12" thick and is unworked within this area. The outcrop elevation of the Small Rider is around/about the level of the proposal and so the Small Rider is not considered in this report.

The Mynyddislwyn Seam is extensively worked in this area and can properly be described as shallow workings in the relation to the proposal.

The Mynyddislwyn Seam occurs at the base of the sandstone rock series known as the 'Grovesend Beds'. The Seam is, in fact, the acknowledged divisor between the Grovesend Beds and the subjacent Hughes Beds. These two beds comprise the Upper Pennant Sandstone Series of the Carboniferous Period. The Geological Memoirs for the area record that the Sandstones between the argillaceous roof strata of the Mynyddislwyn and the mudstones underlying the Small Rider vary in thickness between 15 and 30 metres through-out the area. This thickness is thought to be of the order of 25m thick in the area under consideration

The Section of the Mynyddislwyn Seam is shown on the Mine Workings Plan and is as listed below:

Description	Thickness	Remarks
Shale	912mm	
Coal	912mm	Top Coal
Clift	355mm	
Coal	711mm	Bottom Coal
Rashings	610mm	

The Shale overlying the Top Coal is a-typical of this seam and thicknesses of up to 7.6m have been recorded at other locations. The Rashings at the base of the Seam are probably a mixture of Seatearth interspersed with Coal particles and would be the floor of the developing roadways. Sandstone overlies and underlies the Section described. The above section is considered a true representation of the Seam underlying the area of investigation as this section is recorded on Abandoned Plan Reference 5460.

The Top Coal of the Mynyddislwyn Seam, being the better quality Coal of the two leaves, has been extensively worked. The poorer quality Bottom Coal was invariably

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only mined to facilitate roadways being driven in the seam. In some areas, later workings were undertaken in the Bottom Coal only as the Top Coal had been already worked. As the area under consideration seems to have experienced a number of episodes of mining over a period of time from prior to 1838 up to 1907 it is considered prudent to assume that where working has occurred, both leaves of the Seam have been excavated,

MINING HISTORY.

The Property will have been within the zone of influence of seven episodes of mining. Mine workings have occurred in the following Coal Seams:

SEAM	DEPTH
Mynyddislwyn	circa 30m
Brithdir	circa 245m
Four Feet	circa 518m
Six Feet	circa 545m
Nine Feet	circa 570m
Yard/Seven Feet	circa 606m
Five Feet / Gellideg	circa 630m

The last recorded workings were in the Five Feet/Gellideg seam from Markham Colliery. These workings were mined by the Longwall method of extraction and involve total caving of the waste area. Total caving involves the complete collapse of the void created by extracting mineral from a Longwall face and is considered to induce the most rapid and severe form of surface subsidence. Any subsidence effect as a result of Longwall Mining on superjacent seams of coal and the surface will manifest itself almost immediately but will be totally dissipated within 5 years of the date of the relevant mining. The extent of lowering of superjacent seams and the surface is directly proportional to the depth of the workings and the extracted section.

The last date of workings within influencing distance of the proposal is 1985, so any surface effect as a consequence of these workings will have already taken place. Even though the published Notification of Intention to Withdraw Support as required by Section 2 of the Coal Industry Act 1975 is still in force there are no known plans and certainly no facility to recommence mine workings in this area. Consequently any effect of mine workings from the Brithdir Seam downwards are extremely unlikely and can be ignored.

Possibly relevant Old Workings undertaken by Manmoel Colliery are in the Mynyddislwyn Seam of the Upper Coal Measures Series of the Carboniferous Period.

Workings in this Seam commenced some time before 1838, the exact date of commencement of Working being in-determinate. References have been found, dated 1804, relating to the Mineral Land Owner, Mrs Mary Llewelyn, leasing the Seam of Coal to Mr Berry Isaccs. The date of Abandonment of Manmoel Colliery was

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December 1907 and is annotated on Abandonment Plan Reference Number 5460. No workings are known to have been undertaken in this seam since this date.

The workings immediately subjacent to, and within influencing distance of the proposal are dated circa 1860 to 1862.

The method of Working used to extract coal at this Colliery was the Pillar and Stall System. This system involves driving Roadways in the coal seam and mining 'Stalls' to the flanks of the Roadways to win the majority of the Coal Production. Pillars of coal were left between adjacent Stalls to afford local support to the overlying strata. The width of the 'Stalls' worked in relation to the 'Pillars' to be left was defined by experience rather than calculation due to the lack of scientific knowledge as to the Strata Mechanics involved. This system of mining has been extensively utilised throughout the South Wales Coalfield.

EXTENT OF MINING INVESTIGATION / RESEARCH

This investigation comprises a 'Desk Top Study', mainly into the relationship of the Mynyddislwyn Seam to the property

Plans and Documents researched with detailed and extrapolated information incorporated into this document comprise the following:

- 1 1:10560 Scale Geological Survey Sheet of Great Britain referenced SHEET ST 29 NW
- 2 1:10000 Scale Topographical Survey Sheet of Great Britain referenced SHEET ST 29 NW
- 3 Geological Survey of Great Britain, GEOLOGY OF THE COUNTRY AROUND NEWPORT (MON) Third Edition 1969.
- 4 Research of M J Associates archives.

CONCLUSION

Any effect of mine workings from the lower Coal Measures would have been dissipated by now and can be ignored.

The Mynyddislwyn Seam has been fairly extensively worked beneath the site up to circa December 1907. There are no recorded workings in this seam in this area since the last recorded date of working in December 1907.

The density of extraction is of the order of 30% to 35% as an overall representation.

Using the accepted 'Rule of Thumb' of 10x the excavated height of workings for a safe thickness of rock cover above old Pillar and Stall workings would give a minimum required Rock Thickness of 20m.

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It has been assumed that the full seam section of 2m has been extracted for the purposes of this report. It is recorded that 0.912m of Shale is present over the seam and the rock above this shale is sandstone. Using the more scientific Rock Mechanics theory for calculating the height to which collapse will migrate before being fully supported by the bulking of the broken rock then the safe cover for an excavated width of 8m (the average of the excavated stall widths taken from the Mine Working Plan) could be calculated as follows:

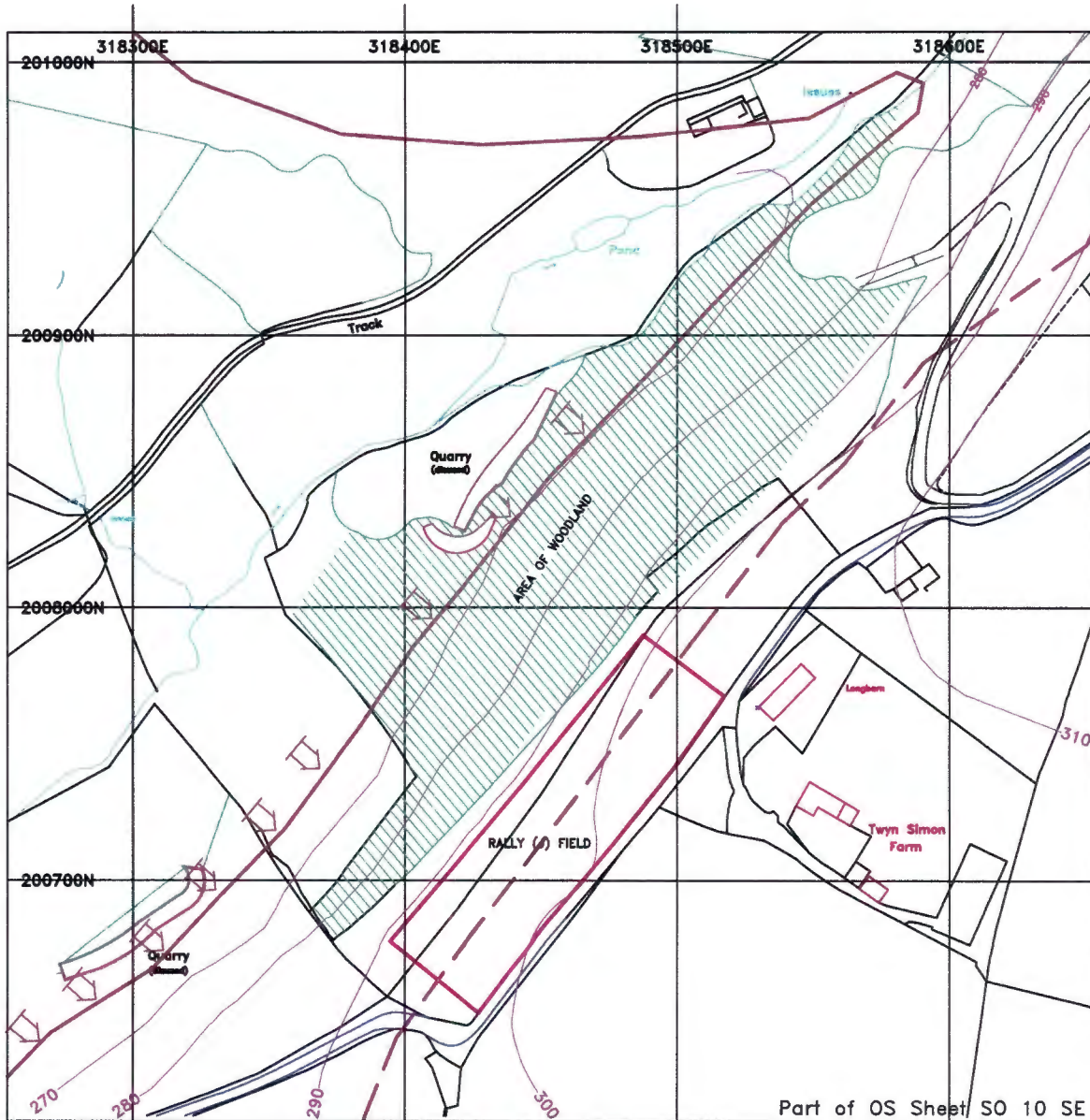
Rock Mechanics theory give the factor for shale to be $2 \div (1.2 - 1) = 10\text{m}$

Rock Mechanics theory give the factor for sandstone to be $2 \div (1.5 - 1) = 4\text{m}$.

It could therefore be argued that the area of shallow workings could be defined as those areas where the combined shale / sandstone 'solid' cover is circa 6m to 10m above the Mynyddislwyn Seam. Above this calculated cover line there would be no subsidence effect from the mining of the Mynyddislwyn Seam as the Solid Rock Cover Beam above this level would be self supporting.

It is therefore concluded that no special precautions as regards the deployment of Chalet Type Caravans on this property need be considered as a consequence of mining.

M J Jones
CONSULTANT.



LEDGEND

- Application area shown edged RED
- Surface contours shown
- Small Rider seam outcrop shown
- Mynyddislwyn seam outcrop shown
- Adits to Mynyddislwyn seam shown

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PLAN ACCOMPANYING
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SITE PLAN

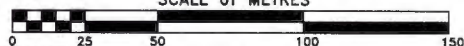
DATE: April 2022

SCALE: 1:2500

DRAWN BY: M Jones

Dwg. No: MJA/GD/0422/05

SCALE of METRES



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