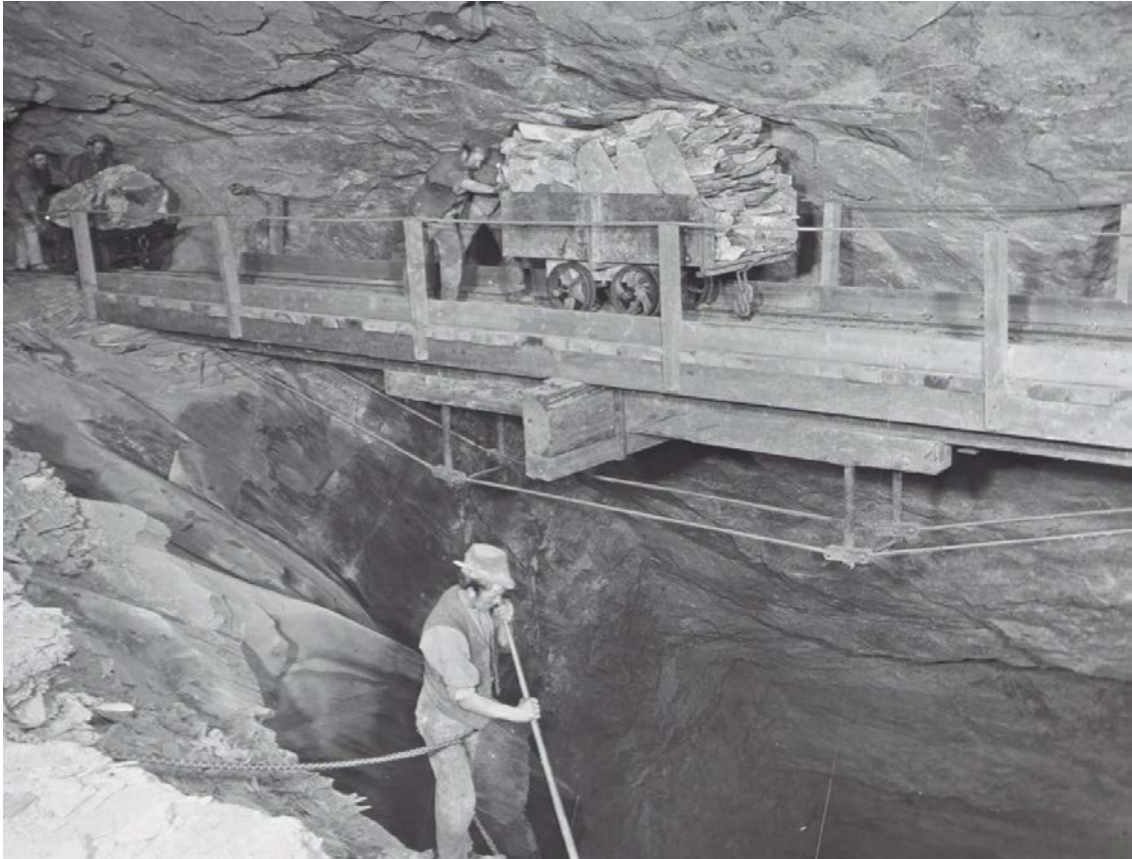


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SLATE INDUSTRY OF NORTH WALES

ARCHAEOLOGICAL ASSESSMENT OF UNDERGROUND FEATURES THEIR CONDITION AND PROTECTION

APPENDICES

for Gwynedd Council

August 2017

Govannon Report GC405

PENRHYN SLATE QUARRY UNDERGROUND WORKINGS

(Component part: Ogwen valley; event PRN: 45004)

PRN:	67518	SITE NAME:	Penrhyn Slate Quarry underground workings
NPRN:	546400	DATE CONSTRUCTED:	19 th century
SITE TYPE:	DRAINAGE LEVELS AND HAULAGE ROUTES		
NGR:	SH 62025 65426		
DESCRIPTION:			
A complex of drainage levels and haulage levels, partly accessible, forming part of Penrhyn slate quarry (NPRN: 40564; PRN: 20061). The drainage level continues to drain the quarry pit into the Ogwen river, but haulage has been discontinued since the 1960s. The levels connected the open pit workings with the foot of one or other of the eight water-balance shafts which formerly operated at the quarry.			
STATEMENT OF SIGNIFICANCE:		SIGNIFICANCE CATEGORY: AA	
Significant as a well-preserved relict area retaining unique artefacts, forming part of an historic slate quarry, illustrating the underground movement of raw material and rubble, and ingenious water-management systems, including water-balance shafts, two of which survive complete.			
BIBLIOGRAPHY:			
GAT report 154 (surface features only).			
Caernarfon Record Office: Penrhyn Quarry collection.			
GAT report 154 (surface features only).			
Plas Tan y Bwlch: Penrhyn archive.			
Hughes, H.D. 1866. <i>Hynafiaethau Llandegai a Llanllechid</i> . Bethesda, 107.			

Historical description

Penrhyn slate quarry dominated the Ogwen valley and was extensively developed from the late 18th century. From 1801 to the 1840s blocks and rubble were raised by inclined plane; these were replaced by a system of water-balance shafts, most of which fed a surface processing floor known as 'Red Lion'. The drainage level leads from 'George' gallery in the quarry pit to an outfall on the Ogwen river, a distance of 1.9 km. It was cut between 1840 and 1847. The shafts were sunk under the direction of families from the Staffordshire coal-field, the Salts and the Burgesses, and the tunnel cut by George Twigge and others. Some of the tunnel work was carried out by experienced miners from Merthyr Tydfil, who brought their Mormon faith to the Ogwen valley, and who departed for Salt Lake City at the end of the contract.

In 1859 and 1872 two hydraulic engines were installed on 'George' level to raise water in a series of bucket pumps from 'Lady'/'Edward' floor to drain out of the quarry to the Ogwen river, and in 1915, 1921, 1929 and 1932 various pumps were installed at the foot of the 'Princess May' water-balance shaft to raise water from the 'Princess May'/'Alice' gallery in the quarry pit to the foot of the bucket pumps on 'Lady'/'Edward' floor.

Site description

Penrhyn Slate Quarry is situated at SH 6200 6500 in the historic parish of Llandygai. It works veins in the Cambrian formation.

The five levels were driven through 'bastard' slate to the north of the main vein. They were named from the galleries they served; from the top downwards, these are 'Douglas', 'George', 'Lord' and 'Rushout', 'Lady' and 'Edward' and 'Princess May' and 'Alice' (the double names reflecting the fact that the quarry pit was formerly divided into two by a ridge and that galleries had different names on either side of the ridge).

The only level currently accessible is 'George'. This leads to a pump chamber which preserves a hydraulic engine.

PRN:	67519	SITE NAME:	George level:	Penrhyn Slate Quarry
NPRN:	546401		underground workings	
SITE TYPE:	DRAINAGE LEVEL AND HAULAGE LEVEL	DATE CONSTRUCTED:	19 th century	
NGR:	SH 6216 6509			
DESCRIPTION:	<p>'George' level is an underground drainage level and haulage level and associated features at approximately 122 metres AOD, draining to the north, in the underground workings of Penrhyn Slate Quarry (NPRN: 546400; PRN: 67518). The drainage level still carries water out of the workings but haulage ceased in the mid-1960s with the replacement of the railway system and the water-balances by road vehicles on the surface. The level is entered from 'George' gallery in the quarry pit at SH 6216 6509 as a tunnel broad enough for a double-track railway, leading to the foot of the 'George' water balance at SH 6204 6523; this is not now evident as a surface feature, but its foot is apparent. From here, the drainage level can be followed north to SH 6202 6540, where a slate slab is set into the channel to direct the flow, and the alignment changes to the north-north-west. The level was not investigated beyond this point for environmental reasons, but it is known that it continues to function. It drops on an average fall of only 1/1378, emerging to daylight at SH 6156 6686, and thereafter the water flows in an open channel to the Ogwen river.</p> <p>At SH 6202 6540 a level leads off the drainage level to the foot of the 'Sebastopol' water balance shaft (NPRN: 400729; PRN: 59998) at SH 62025 65426. The cage and its tank are evident here but obscured by 21st century detritus which has been thrown down the shaft.</p> <p>Slate and rubble to be raised in the 'Sebastopol' water balance was led along a haulage level from the quarry pit which is no longer accessible from the surface. It extends as far as SH 6212 6526, and retains a well-preserved double-track railway system with points and point levers. A cross-cut tunnel runs from this haulage level at SH 6207 6535 to an intermediate point in the 'Princess May' water-balance shaft (NPRN: 33616; PRN: 60020) at SH 62154 65372, at which point the tunnel opens out into a chamber believed to have been created in 1899 to house a De Winton water turbine-driven beam pump. A set of pipes from the Sinc Bach level in the shaft changes alignment at this point and are routed along the cross-cut to the low-head pump.</p> <p>To the north of the 'Sebastopol' water balance is a set of high-flow pumps at SH 6202 6544 which discharged into the drainage level; adjacent to it is the control mechanism for the drainage level dams. A railed tunnel leads from here into a pump chamber (NPRN: 546402; PRN: 67520).</p>			
STATEMENT OF SIGNIFICANCE:	SIGNIFICANCE CATEGORY: AA			
	Significant as a well-preserved area within the underground drainage and haulage routes at Penrhyn Slate Quarry.			
BIBLIOGRAPHY:				
	Caernarfon Record Office: XPQ/997.			

PRN:	67520	Pump chamber:	Penrhyn Slate Quarry underground workings
NPRN:	546402	DATE CONSTRUCTED:	1859
SITE TYPE:	PUMP HOUSE		
NGR:	SH 6203 6546		
DESCRIPTION:			
<p>A chamber in the underground workings of Penrhyn Slate Quarry (NPRN: 546400; PRN: 67518), orientated north-east to south-west hollowed within ‘bastard’ rock, and partly lined with brick, containing a water-pressure (hydraulic) engine coupled to three sets of buckets pumps in a shaft, and the cast-iron beams over a shaft which formerly supported another such engine.</p> <p>The surviving engine is located in the north-eastern end of the chamber. It is a triple-cylinder type on a triangular cast-iron frame which drove a crank axle on a decorated entablature, which in turn drove three sets of bucket pumps in a shaft, now flooded to just below the floor level. The engine is largely intact. A surge vessel and a control valve are evident immediately adjacent to it, near the point where the pipes enter the chamber from the tunnel connecting it with ‘Lord’ shaft.</p> <p>The other engine was located over another such shaft in the south-western part of the chamber, in which bucket pumps are also evident. This is again flooded to just below floor level.</p> <p>Both shafts are understood to have raised water from ‘Lady’/‘Edward’ level, a height of approximately 36 m. Both sets of pumps drained into the main drainage adit by means of a floor-level channel.</p> <p>A photograph at Penrhyn Quarry taken in 1988 shows a plate on the engine which has been removed reading ‘Amos and Francis Patent. Easton Amos & Sons Engineers London 1859’. Payment for the surviving engine is recorded in 1872.</p>			
STATEMENT OF SIGNIFICANCE:		SIGNIFICANCE CATEGORY: AA	
Significant as a well-preserved area within the underground drainage and haulage routes at Penrhyn Slate Quarry, and for the rare intact 19 th century water-pressure engine, built by a major supplier of hydraulic machinery, surviving <i>in situ</i> and associated with its water-feed systems and pumps.			
BIBLIOGRAPHY:			
Caernarfon Record Office: XPQ/997, XPQ/1086, XPQ/1051, XM4046/53.			
<i>Engineer</i> , 9 September 1859.			
Armstrong, W.G. ‘The History of the Modern Development of Water Pressure Machinery’, <i>Minutes of the Proceedings of the Institute of Civil Engineering</i> 49, 1876-7.			
Plas Tan y Bwlch: Penrhyn archive.			

PRN:	67521	SITE NAME:	Tunnel to 'Lord' water-balance shaft: Penrhyn Slate Quarry underground workings
NPRN:	546403	DATE CONSTRUCTED:	1866?
SITE TYPE:	TUNNEL		
NGR:			
DESCRIPTION:	<p>A tunnel in the underground workings of Penrhyn Slate Quarry (NPRN: 546400; PRN: 67518), connecting an intermediate level in 'Lord' water-balance shaft (NPRN: 33616; PRN: 67522) at SH 62095 65482 (which is flooded below this point) to the pump chamber (NPRN: 546402; PRN: 67520); this tunnel carries two intact sets of cast-iron pipes approximately 0.3 m diameter, with the trace of a third. These no longer carry water but descend the 'Lord' shaft from a header tank (no longer</p>		

visible) on 'Sling' level, and formerly powered the hydraulic engines in the pump chamber.

STATEMENT OF SIGNIFICANCE:

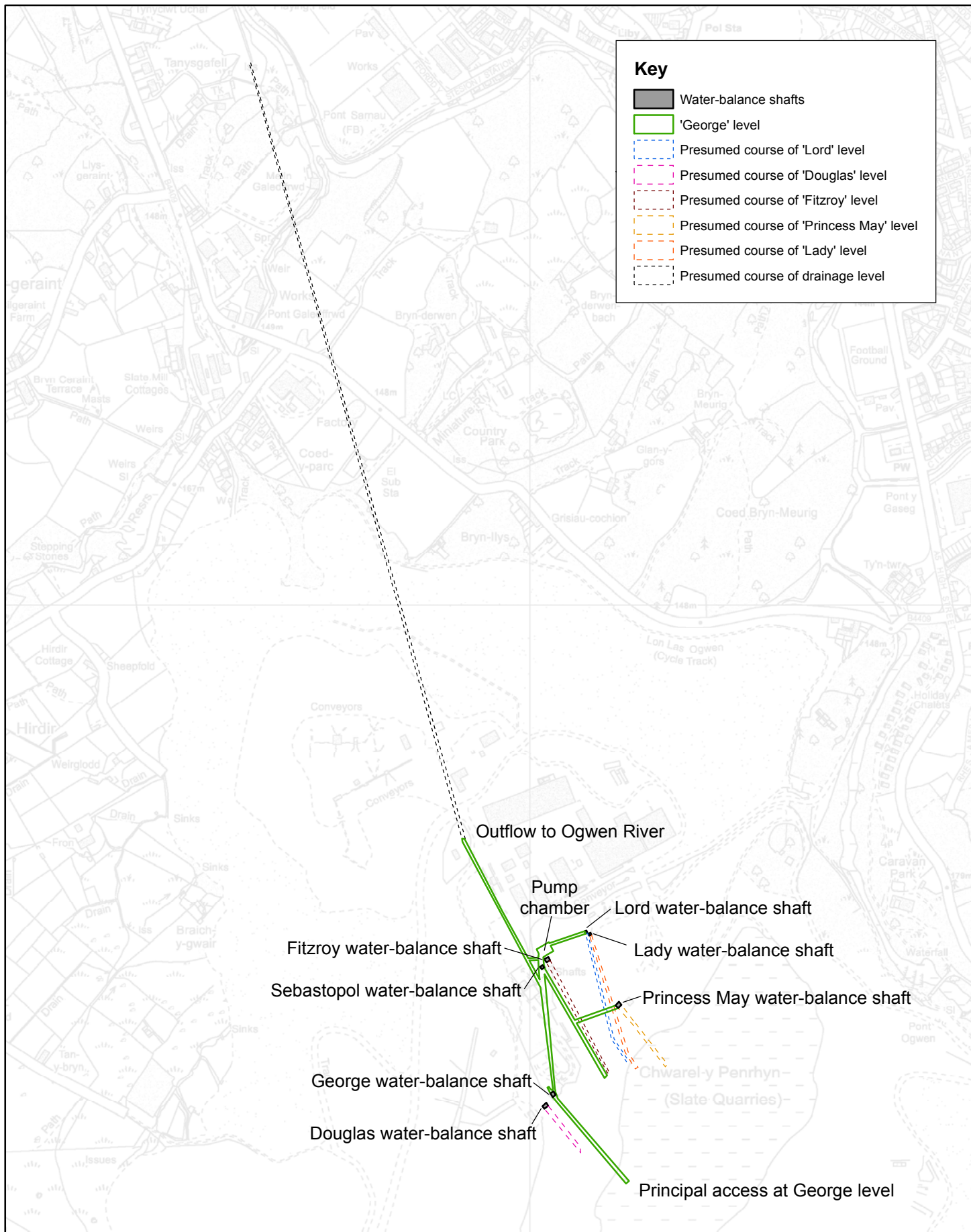
SIGNIFICANCE CATEGORY: AA

Significant as a well-preserved area within the underground drainage and haulage routes at Penrhyn Slate Quarry and for its association both with a water-balance shaft and a water-pressure engine and the pumps it powered.

BIBLIOGRAPHY:

Caernarfon Record Office: XPQ/997.

Plas Tan y Bwlch: Penrhyn archive.



Penrhyn Slate Quarry Underground Workings

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'George' level in Penrhyn Slate Quarry, showing the well-preserved railway system. NPRN: 546401; PRN: 67519.



The surviving hydraulic engine in the pump chamber, showing the vertical bucket pumps. Beyond the cylinders, the surge vessel and the tunnel to the 'Lord' water-balance shaft are evident. NPRN: 546403; PRN: 67521.

TAL Y SARN SLATE QUARRY: DRAINAGE LEVEL

(Component part: Nantlle; event PRN: 45004)

PRN:	67449	SITE NAME:	Drainage level: Tal y Sarn Slate Quarry
NPRN:	546404	DATE CONSTRUCTED:	19 th century
SITE TYPE:	DRAINAGE LEVEL		
NGR:	SH 4961 5326		
DESCRIPTION:			
A drainage system forming part of the Tal y Sarn Slate Quarry which drew water from several pits and channelled it into the Llyfni river.			
STATEMENT OF SIGNIFICANCE:		SIGNIFICANCE CATEGORY: AA	
Significant as an element in the Nantlle slate landscape and as one of the means by which Tal y Sarn quarry was kept free of water.			
BIBLIOGRAPHY:			
Plas Tan y Bwlch: Tal y Sarn archive.			

Historical description

The Tal y Sarn quarry forms part of the Nantlle group of slate quarries. It is likely that work began on the site in the late 18th century and was mechanised by Benjamin Smith, an engineer from the English West Midlands, in the 1820s.

Site description

The Tal y Sarn slate quarry (NPRN: 402462; PRN: 20025) is a pit working situated at SH 4950 5320 in the historic parish of Llandwrog on the north side of the Llyfni valley, to the west of Nantlle. The drainage level is situated at approximately 130 metres AOD and extends from SH 4948 5347 and SH 4968 5349, where there were once open workings now tipped over (Cloddfa'r Onnen and the lower pits of Blaen y Cae slate quarry respectively), and unite at SH 4965 5341 before running to the east of the main quarry pit just below the surface. Water drains into the system from the surface workings at SH 4968 5349. East of the pit, the system has been rerouted further to the east in order to avoid being broken into by quarry workings. At SH 4961 5326 there is evidence of a water-wheel pit (NPRN: 546401; PRN: 67450), which was a surface feature but due to tipping and re-routing of the Nantlle Railway, is now sub-surface and only accessible from the level. At SH 4961 5325 a level extends to the north-west, traceable as far as a brick wall and an area of collapse at SH 4959 52326; this may have been associated with a surface pumping feature, since there is evidence of a bell-crank base on the surface nearby. From SH 4961 5325 the level extends south and can be followed until a collapse at SH 4952 5298.

There is no evidence of rails having been laid in any part of the system, but possible rope-burn marks were identified between SH 4948 5347 and SH 4965 5341.

A feature of this system is a side tank from a locomotive, supported on timber beams over the level floor, adjacent to the water wheel pit, possibly used as a condenser for a stationary steam engine on the surface.

PRN:	67450	SITE NAME:	Water wheel pit: drainage level
NPRN:	546405	DATE CONSTRUCTED:	19 th century
SITE TYPE:	WHEEL PIT		
NGR:	SH 4961 5325		

DESCRIPTION:

A water wheel pit built of slate rubble located in the drainage level (NPRN: 546404; PRN: 67449) at Tal y Sarn slate quarry. An iron header tank survives and parts of the wheel. The wheel may have powered a surface pumping feature and haulage mechanism, and may itself have been a surface feature until the realignment of railway routes in its vicinity.

STATEMENT OF SIGNIFICANCE:**SIGNIFICANCE CATEGORY: AA**

Significant as an element in the Nantlle slate landscape and as evidence of the mechanism by which Tal y Sarn quarry was kept free of water.

BIBLIOGRAPHY:

Plas Tan y Bwlch: Tal y Sarn archive.

PRN: 67523**SITE NAME:** **Stairway:** drainage level**NPRN:** 546406**DATE CONSTRUCTED:** 19th century**SITE TYPE:** STAIRWAY**NGR:** SH 4961 5326**DESCRIPTION:**

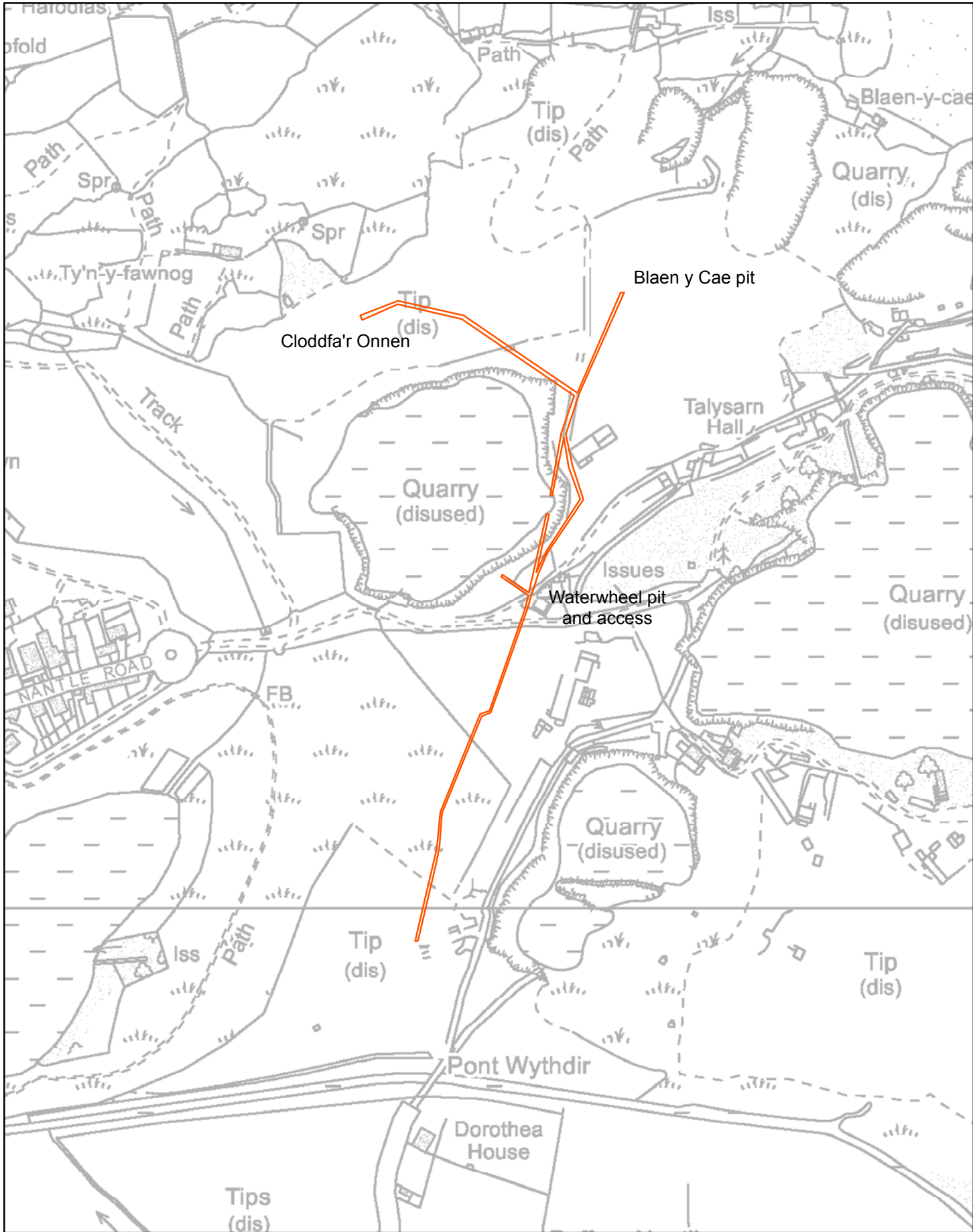
A staircase at a 45° angle from surface with a vertical rise of 5.2 m, giving access to the drainage level (NPRN: 546404; PRN: 67449) at Tal y Sarn slate quarry.

STATEMENT OF SIGNIFICANCE:**SIGNIFICANCE CATEGORY: AA**

Significant as evidence of the means by which Tal y Sarn quarry was kept free of water.

BIBLIOGRAPHY:

Plas Tan y Bwlch: Tal y Sarn archive.



Nantlle: Talysarn Underground Workings

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The water wheel formerly located in the pit (right) in the Tal y Sarn Slate Quarry drainage level powered a pump and may have powered a haulage system. NPRN: 546401; PRN: 67450.

CWMORTHIN SLATE QUARRY UNDERGROUND WORKINGS

(Component part: Ffestiniog; event PRN: 45004)

PRN:	67481	SITE NAME:	Cwmorthin Slate Quarry underground workings
NPRN:	546407	DATE CONSTRUCTED:	19 th -20 th century
SITE TYPE:	SLATE MINE		
NGR:	SH 6808 4639		
DESCRIPTION:	<p>Disused underground workings forming part of Cwmorthin Slate Quarry (NPRN: 40594; PRN: 20290), principally working the Old and Back veins in the Ordovician formation on 12 floors, formerly accessed from the surface by at least 7 locations; the principal means of access is currently Floor 1 (Lake Level) at SH 6795 4732. Below Floor 1, floors A to D have limited accessibility, whilst floor E has extensive access, preserves a number of historic features including intact inclines and railway systems, and permits a circular route through both veins. There is no Floor F, and Floor G is flooded. Above Floor 1, some floors have limited underground access but they are much degraded by late 20th century surface extraction.</p>		
STATEMENT OF SIGNIFICANCE:	SIGNIFICANCE CATEGORY: AA		
A well-preserved slate mine complex containing including intact inclines and railway systems.			
BIBLIOGRAPHY:			
Isherwood, G. 1996. <i>Cwmorthin Slate Quarry</i> . Mold: Adit.			
GAT report 154 (surface features only).			

Historical description

Cwmorthin Slate Quarry forms part of the extensive Blaenau Ffestiniog complex of slate workings. Some extraction took place in an open quarry but it was mostly worked as an underground mine. It operated from the early 19th century to 1939, and was extensively developed by the Cwm-Orthin Slate Co from 1861, when powered mills and a branch to the Festiniog Railway were built. The New Welsh Slate Company, lessees 1889-1900, developed five underground floors below the level of the adjacent lake, Llyn Cwmorthin, but continuing boundary disputes with their successors, the Oakeley Quarries Company, brought major work to a close. The quarry was equipped with two Tangye and Dean pumps, which were fed by a boiler that also fed an underground incline winder.

Cwmorthin was taken over by Oakeley quarry in 1900 and abandoned until the 1920s. In 1925 the Lower Mills and some of the railways were restored. In the early 1930s the flooded levels were drained and worked from the Oakeley side, but work ceased in 1939. Post-war attempts to un-top the surface rock failed, and the quarry was sold in 1970. Some working has taken place since, but sporadic working of the waste tips has destroyed many surface features.

A detailed study has been published of this site (Isherwood 1996).

Site description

Cwmorthin slate mine is situated at SH 6805 4605 in the historic parish of Ffestiniog. The underground workings exploited the Back Vein and the Old Vein in the Ordovician formation, divided by a drop fault running east to west; the angle is typically 28° and the strike south-west to north-east. The principal means of access is currently Floor 1 (Lake Level) at NGR SH 6795 4732. Below Floor 1, floors B to D are accessible and are in use for adventure tourism, whilst floor E has extensive access and permits a circular route through both veins. There is no Floor F, and Floor G is flooded.

Above Floor 1 some floors have limited specialist access but they are much degraded by late 20th century surface extraction.

Cwmorthin slate mine offers considerable potential for understanding and demonstrating slate extraction underground, despite the loss of surface features on this site.

PRN:	67482	SITE NAME:	Floor 1: Cwmorthin Slate Quarry underground workings
NPRN:	546408	DATE CONSTRUCTED:	19 th -20 th century
SITE TYPE:	SLATE MINE		
NGR:	SH 6807 4638		
DESCRIPTION:	<p>Floor 1 is a disused mine floor and the chambers worked off it at 322 metres AOD in Cwmorthin Slate Quarry's underground workings (NPRN: 546407; PRN: 67481). In use from the 1880s to the 1930s, it was the principal haulage floor, providing an outlet from both the Back Vein and Old Vein workings by means of their respective inclines from deeper floors (NPRN: 546415; PRN: 67489; NPRN: 546422; PRN: 67529), emerging to daylight on the main lake level at SH 6795 4732. Significant features on this floor include:</p> <ul style="list-style-type: none">• sections of ships' derricks re-used as supports on the level in the Back Vein in the vicinity of SH 6819 4650• bases for a steam winding engine and boiler at the head of an incline lifting from Floor E at SH 6820 4632• the base for an electric winder at the truncated head of an incline lifting from Floor E at SH 6807 4638• a timber launder• the remains of a underground saw from a 1980s re-working at SH 6808 4639• evidence (tyre tracks) for the use of a Land Rover underground in the 1980s at SH 6813 4639.		
STATEMENT OF SIGNIFICANCE:	SIGNIFICANCE CATEGORY: AA		
A well-preserved slate mine floor characterised by high artefactual survival.			
BIBLIOGRAPHY:			
Isherwood, G. 1996. <i>Cwmorthin Slate Quarry</i> . Mold: Adit.			

PRN:	67527	SITE NAME:	Floor A Back Vein: Cwmorthin Slate Quarry underground workings
NPRN:	546500	DATE CONSTRUCTED:	19 th -20 th century
SITE TYPE:	SLATE MINE		
NGR:	SH 6804 4643		
DESCRIPTION:	Floor A is a disused mine floor and the chambers worked off it at 322 metres AOD in Cwmorthin Slate Quarry's underground workings (NPRN: 546407; PRN: 67481). In use from the 1880s to the 1930s. The only currently accessible part of the floor is the chamber through which the stairway from floor C to floor 1 passes (NPRN: 546414; PRN: 67488).		
STATEMENT OF SIGNIFICANCE:	SIGNIFICANCE CATEGORY: AA		
A slate mine floor with limited access.			
BIBLIOGRAPHY:			
Isherwood, G. 1996. <i>Cwmorthin Slate Quarry</i> . Mold: Adit.			

PRN:	67483	SITE NAME:	Floor B Back Vein: Cwmorthin Slate Quarry underground workings
NPRN:	546409	DATE CONSTRUCTED:	19 th -20 th century
SITE TYPE:	SLATE MINE		
NGR:	SH 6806 4646		
DESCRIPTION:			
Floor B Back Vein is a disused mine floor and the chambers worked off it at 297 metres AOD in Cwmorthin Slate Quarry's underground workings (NPRN: 546407; PRN: 67481) and is now in re-use for adventure tourism. Artefactual survival is low.			
STATEMENT OF SIGNIFICANCE:		SIGNIFICANCE CATEGORY: AA	
A slate mine floor which now offers public access to underground workings.			
BIBLIOGRAPHY:			
Isherwood, G. 1996. <i>Cwmorthin Slate Quarry</i> . Mold: Adit.			

PRN:	67528	SITE NAME:	Floor C Back Vein: Cwmorthin Slate Quarry underground workings
NPRN:	546501	DATE CONSTRUCTED:	19 th -20 th century
SITE TYPE:	SLATE MINE		
NGR:	SH 6804 4646		
DESCRIPTION:			
Floor C is a disused mine floor and the chambers worked off it at 282 metres AOD in Cwmorthin Slate Quarry's underground workings (NPRN: 546407; PRN: 67481). It which exploited the Back Vein, and which is now in re-use for adventure tourism. Access is largely limited to the one chamber in which floor C to floor 1 stairway (NPRN: 546414; PRN: 67488) is located – C/1(W) (Back Vein). Artefactual survival is low.			
STATEMENT OF SIGNIFICANCE:		SIGNIFICANCE CATEGORY: AA	
A slate mine floor which now offers some public access to underground workings.			
BIBLIOGRAPHY:			
Isherwood, G. 1996. <i>Cwmorthin Slate Quarry</i> . Mold: Adit.			

PRN:	67486	SITE NAME:	Floor D Back Vein: Cwmorthin Slate Quarry underground workings
NPRN:	546412	DATE CONSTRUCTED:	19 th -20 th century
SITE TYPE:	SLATE MINE		
NGR:	SH 6805 4653		
DESCRIPTION:			
Floor D is a disused mine floor and the chambers worked off it at 265 metres AOD in Cwmorthin Slate Quarry's underground workings (NPRN: 546407; PRN: 67481), in the Back Vein including several chambers with a distinctive upward tapering shape, of which chamber D/5(W) (Old Vein) at SH 6809 4635, is a good example. It was developed in the late 19 th century, remained in production until the 1930s and is now in re-use for adventure tourism.			
STATEMENT OF SIGNIFICANCE:		SIGNIFICANCE CATEGORY: AA	
A slate mine floor which now offers public access to underground workings.			
BIBLIOGRAPHY:			
Isherwood, G. 1996. <i>Cwmorthin Slate Quarry</i> . Mold: Adit.			

PRN:	67487	SITE NAME:	Floor E: Cwmorthin Slate Quarry underground workings
NPRN:	546413	DATE CONSTRUCTED:	19 th -20 th century
SITE TYPE:	SLATE MINE		

NGR: SH 6828 4671

DESCRIPTION:

Floor E is a disused mine floor and the chambers worked off it at 253 metres AOD in Cwmorthin Slate Quarry's underground workings (NPRN: 546407; PRN: 67481). It united Cwmorthin Floor E with the underground workings of the Oakeley Slate Quarry (NPRN: 546423; PRN: 67496) Floor DE to the north-east, and is here referred to for convenience's sake as Floor E, being the identification applied by the Oakeley Company when they worked Cwmorthin. They unite at SH 6828 4671, where the difference in level is apparent in the form of a step. It is the most extensive of the accessible floors in Cwmorthin slate mine, providing access to Cwmorthin workings in both veins, part of which forms part of the Oakley Quarry. It was developed in the late 19th century and remained in production until the 1930s. It can be explored from SH 6840 4666 to SH 6803 4654. This floor is characterised by very high artefactual survival including:

- a base for a compressor and extant cooling water tanks in chamber DE/33 (OV) at SH 6836 4663
- the incline winding head in chamber DE/34 (OV) at SH 6833 4668; this incline lifted to floor DE from Oakeley Floor I with intermediate landings on Floors F and G but is now flooded below Floor G. It survives complete with winding drums and brine resistor used for speed control, and an adjacent cabin
- a level driven between chambers DE/31(N) (Old Vein) and DE/11(East) (Back Vein) (known as *Lefel Ffrench* because driven by a French company), to drain the Cwmorthin workings through Oakeley
- a reciprocating pump, partly underwater, at the foot of the back vein incline at SH 6803 4656, with adjacent switchgear
- an up-haulage incline from Floor G chamber DE/1(W) (BV) at SH 6803 4654, complete with motor, winding drum, reduction gearing and unique crane-type pulley support.

Floor G chamber DE/1(W) (BV) also contains wagons loaded with scrap machinery which were never taken to surface, and its rail system is intact.

STATEMENT OF SIGNIFICANCE:

SIGNIFICANCE CATEGORY: AA

A particularly well-preserved slate mine floor which retains intact inclines and railway systems, and which permits a circular route through the workings.

BIBLIOGRAPHY:

Isherwood, G. 1996. *Cwmorthin Slate Quarry*. Mold: Adit.

PRN: 67488

SITE NAME: **Stairway from floor C to floor 1, Back Vein:**
Cwmorthin Slate Quarry underground workings

NPRN: 546414

DATE CONSTRUCTED: 19th-20th century

SITE TYPE: STAIRWAY

NGR: SH 6805 4641

DESCRIPTION:

A stairway in the Back Vein of Cwmorthin Slate Quarry's underground workings (NPRN: 546407; PRN: 67481), from Floor C at SH 6804 4647 through floor B to Floor 1 at SH 6806 4638. The lowest part is in chamber C/1(W) (Back Vein). Three methods of construction are used; Floor C to Floor B - steps in roofing shaft, Floor B – Floor 1 initially built up in slate slab steps but higher up, this changes to slate slabs and timber set on pegs drilled into the rock face.

STATEMENT OF SIGNIFICANCE:

SIGNIFICANCE CATEGORY: AA

A well-preserved example of a feature once common in Ffestiniog slate mines.

BIBLIOGRAPHY:

Isherwood, G. 1996. *Cwmorthin Slate Quarry*. Mold: Adit.

PRN:	67489	SITE NAME:	Back Vein incline: Cwmorthin Slate Quarry underground workings
NPRN:	546415	DATE CONSTRUCTED:	19 th -20 th century
SITE TYPE:	INCLINED PLANE		
NGR:	SH 6806 4645		
DESCRIPTION:	<p>Known as the Back Vein incline or as the North Sinc incline, in Cwmorthin Slate Quarry's underground workings (NPRN: 546407; PRN: 67481), an inclined plane lifting from Floor E at SH 6804 4656 to Floor 1 at SH 6807 4638. Built after 1884, it originally ran to, and was wound from, a surface winding-engine house at SH 6809 4624, of which there is no evident trace, and down to floor E by 1900, but was later shortened to Floor 1, where the base for an electric winder exists. It is believed that the length from Floor E to Floor 1 it was reinstated in 1938, and the electric motor installed in the same year. The single-track rails remain <i>in situ</i> and one slab wagon is jammed part-way down. The clearance is extremely tight and the gradient changes considerably along the course of the incline. There is evidence that it connected with floors D, C, B (the NGR given above) and A.</p>		
STATEMENT OF SIGNIFICANCE:	SIGNIFICANCE CATEGORY: AA		
<p>A well-preserved example of a once-common feature; its tight clearances and variable gradient illustrate the challenges of driving an underground inclined rail system.</p>			
BIBLIOGRAPHY:			
<p>Isherwood, G. 1996. <i>Cwmorthin Slate Quarry</i>. Mold: Adit.</p>			

PRN:	67492	SITE NAME:	Winding gear: Back Vein incline
NPRN:	546416	DATE CONSTRUCTED:	19 th -20 th century
SITE TYPE:	WINDING GEAR		
NGR:	SH 6807 4638		
DESCRIPTION:			
The base for an electric winder on Floor 1 that powered the Back Vein incline (NPRN: 546415; PRN: 67489), installed in 1938.			
STATEMENT OF SIGNIFICANCE:	SIGNIFICANCE CATEGORY: AA		
An element of a once-common feature.			
BIBLIOGRAPHY:			
Isherwood, G. 1996. <i>Cwmorthin Slate Quarry</i> . Mold: Adit.			

PRN:	67491	SITE NAME:	Formation: Back Vein incline
NPRN:	546417	DATE CONSTRUCTED:	19 th -20 th century
SITE TYPE:	INCLINED PLANE		
NGR:	SH 6806 4645		
DESCRIPTION:			
The formation of the Back Vein incline/North Sinc incline (NPRN: 546415; PRN: 67489), built after 1884, and reinstated in 1938 from Floor E to Floor 1, SH 6804 4656 to SH 6807 4638. The single-track rails remain <i>in situ</i> and one slab wagon is jammed part-way down. The clearance is extremely tight and the gradient changes considerably along the course of the incline. There is evidence that it connected with floors D, C, B (the NGR given above) and A.			
STATEMENT OF SIGNIFICANCE:		SIGNIFICANCE CATEGORY: AA	
The tight clearances and variable gradient illustrate the challenges of driving an underground inclined rail system.			
BIBLIOGRAPHY:			
Isherwood, G. 1996. <i>Cwmorthin Slate Quarry</i> . Mold: Adit.			

PRN:	67544	SITE NAME:	Floor A Old Vein: Cwmorthin Slate Quarry
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underground workings
 NPRN: 546509 DATE CONSTRUCTED: 19th-20th century
 SITE TYPE: SLATE MINE
 NGR: SH 6826 4641
 DESCRIPTION:
 Floor A Old Vein is a disused mine floor and the chambers worked off it, accessible from the Old Vein incline (NPRN: 546502; PRN: 67529), at 311 metres AOD in Cwmorthin Slate Quarry's underground workings (NPRN: 546407; PRN: 67481). It is currently accessible from the point where it connected with an intermediate level on the Old Vein incline (NPRN: 546502; PRN: 67529) at SH 6819 4636 to SH 6834 4649, where it connects with the Floor C to Floor A stairway (NPRN: 546411; PRN: 67485).
 STATEMENT OF SIGNIFICANCE: SIGNIFICANCE CATEGORY: AA
 A slate mine floor which now offers public access to underground workings.
 BIBLIOGRAPHY:
 Isherwood, G. 1996. *Cwmorthin Slate Quarry*. Mold: Adit.

PRN: 67484 SITE NAME: **Floor C Old Vein:** Cwmorthin Slate Quarry
 underground workings
 NPRN: 546410 DATE CONSTRUCTED: 19th-20th century
 SITE TYPE: SLATE MINE
 NGR: SH 6805 4650
 DESCRIPTION:
 Floor C Old Vein is a disused mine floor and the chambers worked off it, accessible from the Old Vein incline (NPRN: 546502; PRN: 67529), at 282 metres AOD in Cwmorthin Slate Quarry's underground workings (NPRN: 546407; PRN: 67481). It is now in re-use for adventure tourism. A significant feature of this floor is the bridges across chambers where the floor has been worked from below; these are visible from Floor D Old Vein (NPRN: 546510; PRN: 67545).
 STATEMENT OF SIGNIFICANCE: SIGNIFICANCE CATEGORY: AA
 A slate mine floor which now offers public access to underground workings.
 BIBLIOGRAPHY:
 Isherwood, G. 1996. *Cwmorthin Slate Quarry*. Mold: Adit.

PRN: 67545 SITE NAME: **Floor D Old Vein:** Cwmorthin Slate Quarry
 underground workings
 NPRN: 546510 DATE CONSTRUCTED: 19th-20th century
 SITE TYPE: SLATE MINE
 NGR: SH 6816 4642
 DESCRIPTION:
 Floor D Old Vein is a disused mine floor and the chambers worked off it, accessible from an intermediate point on the Old Vein incline (NPRN: 546502; PRN: 67529) at SH 6816 4642, at 265 metres AOD in Cwmorthin Slate Quarry's underground workings (NPRN: 546407; PRN: 67481). It can currently be explored between SH 6804 4629 to SH 6827 4652. From this floor the bridges across chambers in Floor C Old Vein (NPRN: 546410; PRN: 67484) are visible.
 STATEMENT OF SIGNIFICANCE: SIGNIFICANCE CATEGORY: AA
 A slate mine floor which now offers public access to underground workings.
 BIBLIOGRAPHY:
 Isherwood, G. 1996. *Cwmorthin Slate Quarry*. Mold: Adit.

PRN: 67485 SITE NAME: **Floor C to Floor A stairway, Old Vein:**
 Cwmorthin Slate Quarry underground
 workings
 NPRN: 546411 DATE CONSTRUCTED: 19th-20th century

SITE TYPE: SLATE MINE
 NGR: SH 6834 4651
 DESCRIPTION:
 A slate-slab stairway which connects two disused mine floors in Cwmorthin Slate Quarry's underground workings (NPRN: 546407; PRN: 67481) and which runs from SH 6834 4653 to SH 6834 4651. Located in chamber 8 east Old Vein.
 STATEMENT OF SIGNIFICANCE: SIGNIFICANCE CATEGORY: AA
 A well-preserved example of a feature once common in Ffestiniog slate mines.
 BIBLIOGRAPHY:
 Isherwood, G. 1996. *Cwmorthin Slate Quarry*. Mold: Adit.

PRN: 67490 SITE NAME: **I to E incline:** Cwmorthin Slate Quarry
 underground workings
 NPRN: 546418 DATE CONSTRUCTED: 1934
 SITE TYPE: INCLINED PLANE
 NGR: SH 6833 4668
 DESCRIPTION:
 A disused incline installed in Cwmorthin Slate Quarry's underground workings (NPRN: 546407; PRN: 67481) in 1934 which lifted from Oakeley Floor I to Floor E at SH 6833 4668 with intermediate landings on Floors F and G but which is now flooded below Floor G, located in chamber DE/34 (BV), complete with winding drums and brine resistor used for speed control and adjacent cabin.
 STATEMENT OF SIGNIFICANCE: SIGNIFICANCE CATEGORY: AA
 A well-preserved example of an incline built for electric haulage.
 BIBLIOGRAPHY:
 Isherwood, G. 1996. *Cwmorthin Slate Quarry*. Mold: Adit.

PRN: 67493 SITE NAME: **Winding gear:** I to DE incline
 NPRN: 546419 DATE CONSTRUCTED: 1934
 SITE TYPE: WINDING GEAR
 NGR: SH 6833 4668
 DESCRIPTION:
 The winding machinery for the I to DE incline (NPRN: 546418; PRN: 67490), complete with winding drums and brine resistor used for speed control and adjacent cabin, located in chamber DE/34 (BV),
 STATEMENT OF SIGNIFICANCE: SIGNIFICANCE CATEGORY: AA
 A well-preserved example of electrically-powered winding machinery on an incline.
 BIBLIOGRAPHY:
 Isherwood, G. 1996. *Cwmorthin Slate Quarry*. Mold: Adit.

PRN: 67494 SITE NAME: **Formation:** I to DE incline
 NPRN: 546420 DATE CONSTRUCTED: 1934
 SITE TYPE: INCLINED PLANE
 NGR: SH 6833 4668
 DESCRIPTION:
 The formation of the disused incline which lifted from Oakeley Floor I to Floor DE (NPRN: 546418; PRN: 67490), with intermediate landings on Floors F and G but which is now flooded below Floor G.
 STATEMENT OF SIGNIFICANCE: SIGNIFICANCE CATEGORY: AA
 A well-preserved example of an incline formation.
 BIBLIOGRAPHY:
 Isherwood, G. 1996. *Cwmorthin Slate Quarry*. Mold: Adit.

PRN: 67491 SITE NAME: **G to E incline:** Cwmorthin Slate Quarry

NPRN:	546421	underground workings	DATE CONSTRUCTED:	20 th century
SITE TYPE:	INCLINED PLANE			
NGR:	SH 6803 4654			
DESCRIPTION:	An uphaulage incline installed in 1938 in Cwmorthin Slate Quarry's underground workings (NPRN: 546407; PRN: 67481), running from Floor G to Floor E, chamber E/1(W) (BV), complete with motor, winding drum, reduction gearing and unique crane-type pulley support but flooded up to its summit at SH 6803 4654.			
STATEMENT OF SIGNIFICANCE:	SIGNIFICANCE CATEGORY: AA			
A well-reserved and near-complete example of a technology once common in the Ffestiniog slate industry, an electrically-powered underground up-haulage incline with some unique features, and has strong group value with the intact rail system and wagons.				
BIBLIOGRAPHY:	Isherwood, G. 1996. <i>Cwmorthin Slate Quarry</i> . Mold: Adit.			

PRN:	67495	SITE NAME:	Winding gear: G to E incline
NPRN:	546422	DATE CONSTRUCTED:	20 th century
SITE TYPE:	WINDING GEAR		
NGR:	SH 6803 4654		
DESCRIPTION:			
The winding mechanism on the G to E incline (NPRN: 546421; PRN: 67491) consisting of a motor, winding drum, reduction gearing and unique crane-type pulley support.			
STATEMENT OF SIGNIFICANCE:		SIGNIFICANCE CATEGORY: AA	
Significant for its electrically-powered machinery with unique features.			
BIBLIOGRAPHY:			
Isherwood, G. 1996. <i>Cwmorthin Slate Quarry</i> . Mold: Adit.			

PRN:	67529	SITE NAME:	Old Vein incline: Cwmorthin Slate Quarry underground workings
NPRN:	546502	DATE CONSTRUCTED:	19 th century
SITE TYPE:	INCLINED PLANE		
NGR:	SH 6815 4644 to SH 6820 4632		
DESCRIPTION:			
An uphaulage incline installed in the 19 th century in Cwmorthin Slate Quarry's underground workings (NPRN: 46407; PRN: 67481), running from Floor E to Floor 1.			
STATEMENT OF SIGNIFICANCE:		SIGNIFICANCE CATEGORY: AA	
Significant as an element in the underground workings of Cwmorthin Slate Quarry.			
BIBLIOGRAPHY:			
Isherwood, G. 1996. <i>Cwmorthin Slate Quarry</i> . Mold: Adit.			

PRN:	67530	SITE NAME:	Winding gear: Old Vein incline
NPRN:	546503	DATE CONSTRUCTED:	19 th century
SITE TYPE:	WINDING GEAR		
NGR:	SH 6820 4632		
DESCRIPTION:	Site only of the steam winding mechanism on the Old Vein incline (NPRN: 546502; PRN: 67529).		
STATEMENT OF SIGNIFICANCE:	SIGNIFICANCE CATEGORY: AA		
Significant as an element in the underground workings of Cwmorthin Slate Quarry.			
BIBLIOGRAPHY:			

Isherwood, G. 1996. *Cwmorthin Slate Quarry*. Mold: Adit.

PRN:	67531	SITE NAME:	Formation: Old Vein incline
NPRN:	546504	DATE CONSTRUCTED:	19 th century
SITE TYPE:	INCLINED PLANE		
NGR:	SH 6815 4644 to SH 6820 4632		

DESCRIPTION:

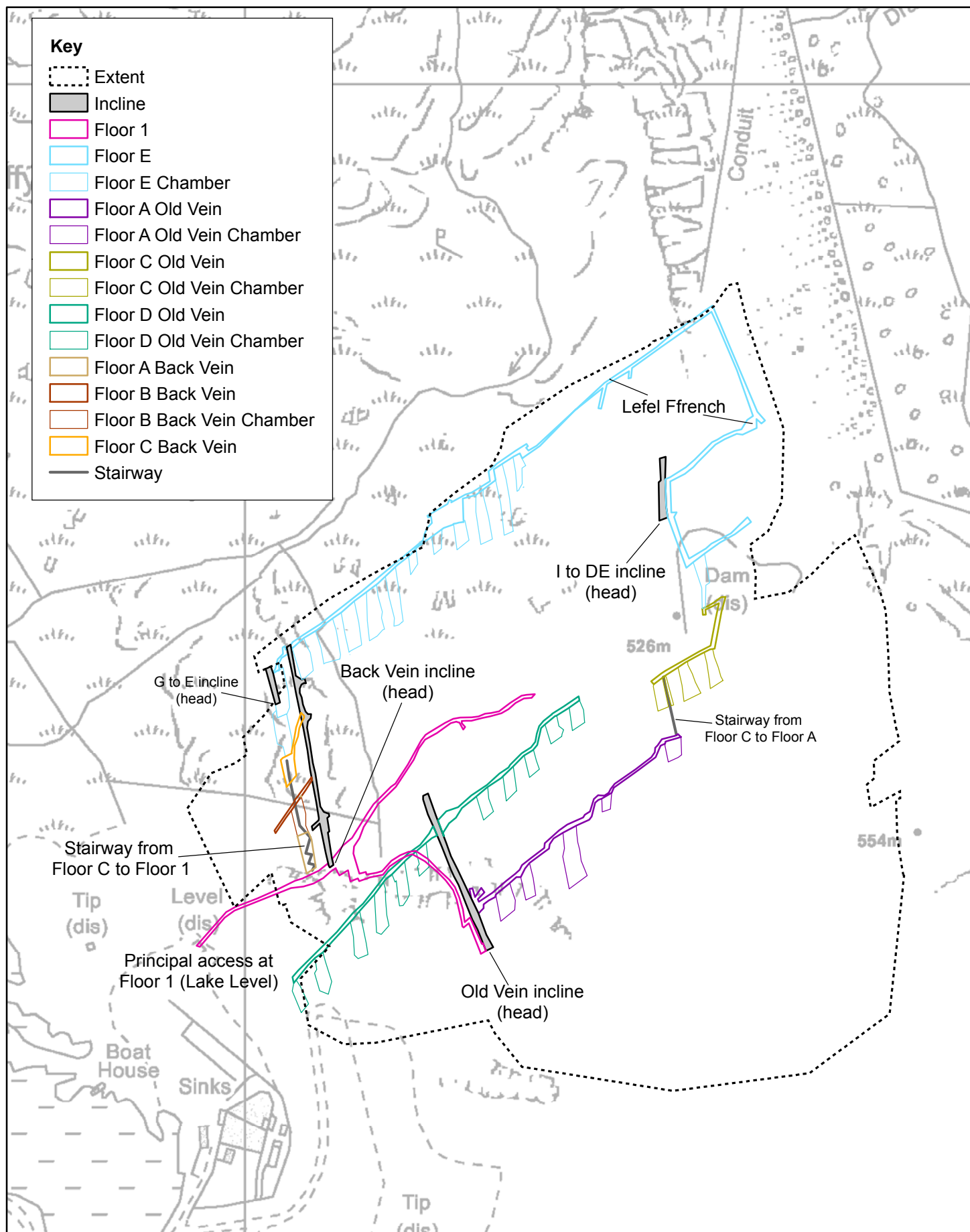
Formation only of the Old Vein incline (NPRN: 546502; PRN: 67529) of which the lowest point was on Floor E at SH 6815 4644 and which raised to Floor 1 at SH 6820 4632, with intermediate landings serving floors A and D, at SH 6826 4641 and SH 6816 4642 respectively.

STATEMENT OF SIGNIFICANCE: SIGNIFICANCE CATEGORY: AA

Significant as an element in the underground workings of Cwmorthin Slate Quarry.

BIBLIOGRAPHY:

Isherwood, G. 1996. *Cwmorthin Slate Quarry*. Mold: Adit.



Cwmorthin Slate Quarry Underground Workings

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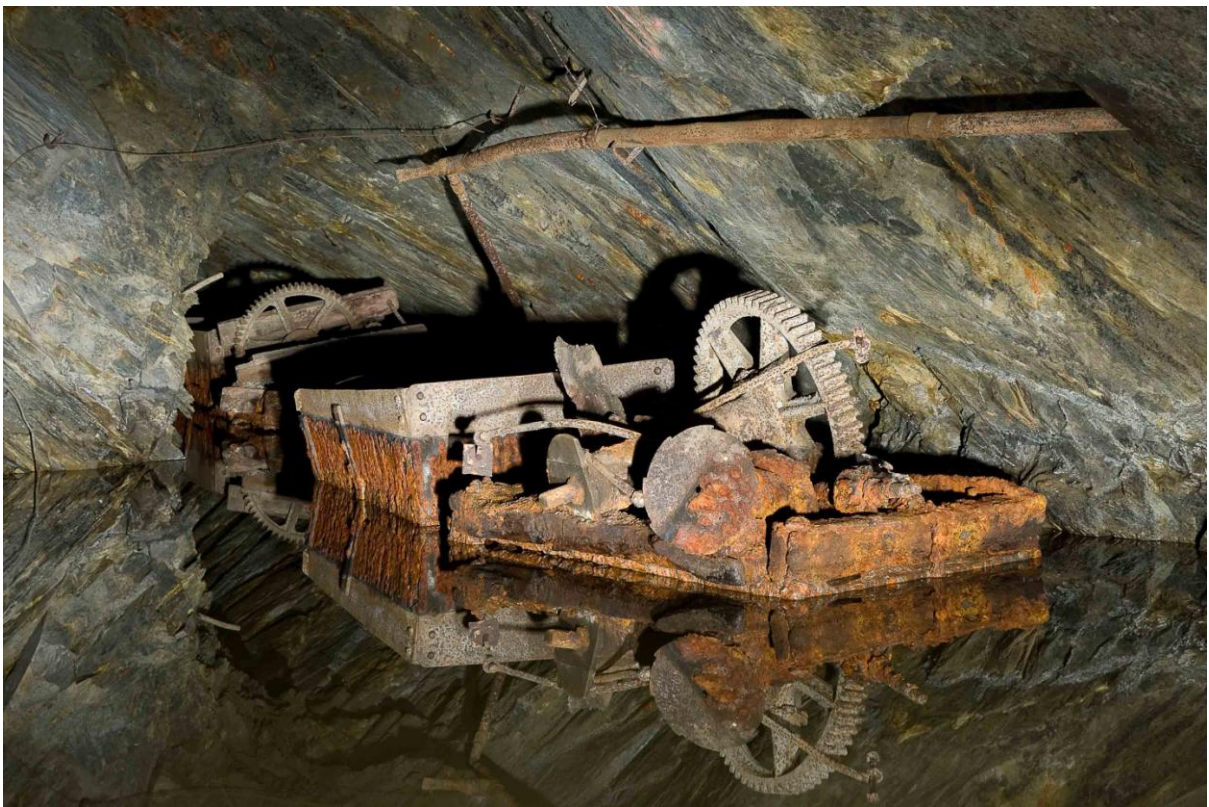




The slate-slab stairway connecting Floor C and Floor 1 in Cwmorthin Slate Quarry is a good example of a once-common feature. NPRN: 546414; PRN: 67488.



Chamber DE/1 (West) in the Back Vein demonstrates the wealth of artefactual survival underground, including the motor, winding drum, reduction gearing and unique crane-type pulley support for an up-haulage incline. NPRN: 546413; PRN: 67487.



Another feature of this chamber is wagons loaded with scrap which were never hauled to surface.



The Back Vein or North Sinc incline in Cwmorthin is unusual in that it is single track and on a variable gradient. NPRN: 546415; PRN: 67489.



Ships' derricks have been re-used as supports in Floor 1 in the Back Vein. NPRN: 546408; PRN: 67482.

LLECHWEDD SLATE QUARRY UNDERGROUND WORKINGS

(Component part: Ffestiniog; event PRN: 45004)

PRN:	67451	SITE NAME:	Llechwedd Slate Quarry underground workings
NPRN:	546424	DATE CONSTRUCTED:	19 th century
SITE TYPE:	SLATE MINE		
NGR:	SH 7001 4686		
DESCRIPTION:	<p>Disused underground workings forming part of Llechwedd slate quarry (NPRN: 400426; PRN: 20300), in which some chambers are given over to adventure tourism, some to an historical tour, some to speciality cheese storage, and the majority of the others are flooded or otherwise inaccessible. The currently accessible part of the mine includes floor 2, the new Ffridd incline, an uphaulage inclined plane which formerly raised to this floor from the now-flooded floor E, parts of floors A and B and a very substantial excavation which formerly housed pump rods and an inclined plane, operated from a surface water-wheel.</p>		
STATEMENT OF SIGNIFICANCE:	SIGNIFICANCE CATEGORY: AA		
<p>Significant as a well-preserved example of Ffestiniog underground slate workings which also retains some features unique within the industry such as shafts for pump rods.</p>			
BIBLIOGRAPHY:			
<p>GAT report 154 (surface features only).</p>			
<p>Dolgellau Record Office: JW Greaves archive.</p>			
<p>GAT report 154 (surface features only).</p>			
<p>Plas Tan y Bwlch: Llechwedd archive.</p>			

Historical description

Llechwedd slate quarry forms part of the extensive Blaenau Ffestiniog complex of slate workings. It was first worked by John Whitehead Greaves in 1846 and rapidly became one of the largest in the district. Initial working took place in an open quarry but underground extraction is indicated on maps of the quarry from the 1850s. All underground excavation effectively ceased in the 1970s other than some limited exploration.

From 1972 some of the upper workings have been used as a tourist facility, allowing visitors to enter an early level on Floor 2, to a series of underground chambers (Llechwedd Slate Caverns, PRN: 67543; NPRN 40597). Another tour was opened on floors A and B in 1979, which remains in operation but the 1972 development is now given over to adventure tourism.

Site description

Llechwedd slate mine is situated at SH 7001 4686 in the historic parish of Ffestiniog. It principally worked the New and Old veins in the Ordovician formation. The bedding plane varies from 25° to near-horizontal, on a strike of east-west. The quarry was much disturbed by rock-falls in the late 19th century, which has resulted in a complex underground site. Floors that were mainly on the surface were numbered 1 (the lowest, 247 metres AOD) to 9 (the highest, 387 metres AOD); those mainly underground, A (the highest, 232 metres AOD) to H (the lowest, 112 metres AOD). Floors went down almost to sea level along 32 km of tunnels. The tourist operations are on floors 2, A and B. Floor A is the lowest drainage level; a characteristic of Llechwedd is the persistent challenge from water entering the mine.

Much of the extensive mine is currently inaccessible due to flooding and rock-falls. Access to part of the workings is possible by means of floor 2, the first part of which leads to the adventure tourism operations in chambers 6 to 12. The level continues eastwards beyond this point to reach the head of a well-preserved long single-track up-haulage incline, the New Ffridd incline, built in 1910, which went down to Floor E, but which is now flooded below Floor B.

The New Ffridd incline enables access to chambers on floors A and B, which retain good examples of underground features including a caban, cranes, stairways, underground tipping points and rail systems.

Floor 2 also gives access to a chamber at the foot of a vertical shaft to the surface through which rods, powered by a surface water-wheel, operated pumps located lower down an inclined shaft. Part of the pump system is evident on the lower stretches of this inclined shaft, but the area around the bottom of the vertical shaft has seen considerable rock-falls which have largely obscured and possibly destroyed any arrangements here, and which extend for some way down the inclined shaft. The inclined shaft also accommodated an up-haulage incline, believed also to have been powered by the same surface water-wheel. Rock falls led to its abandonment and replacement by the New Fridd incline.

Though only a small part of Llechwedd slate mine is currently accessible, it provides considerable potential for understanding and demonstrating slate extraction underground, and is an important element of Llechwedd slate quarry, with its evidence for surface working and processing, and of the onward transport of the slate to its worldwide markets.

PRN:	67452	SITE NAME:	Floor 2: Llechwedd Slate Quarry underground workings
NPRN:	546425	DATE CONSTRUCTED:	19 th century
SITE TYPE:	SLATE MINE		
NGR:	SH 7025 4693		
DESCRIPTION:	<p>Floor 2 is a mine floor and the chambers worked off it at 259 metres AOD in Llechwedd Slate Quarry underground workings (NPRN: 546424; PRN: 67451), partly disused and otherwise given over to adventure tourism. It had been opened in the 1850s, but was not the first exploratory level, as sometimes stated. In 1972 it became the visitor attraction's 'Miners' tramway'. This tourist railway system was removed in 2013 to provide pedestrian access to 'Bounce Below', a trampoline in chamber 7 at SH 7011 4692. The floor extends from the foot of the Ffridd shaft at SH 7042 4720, past the head of the New Ffridd incline at SH 7039 4713 to daylight SH 6997 4703 at 259 metres AOD. On the way it passes through the <i>bôn</i>, an open working, at SH 7005 4701. From daylight to chamber 13 at SH 7025 4693, it forms part of the visitor attraction. The last underground extraction in Llechwedd Slate Quarry took place in chamber 25OV at SH 7029 4694 on this floor, where a short inclined plane powered by an air-winch survives.</p>		
STATEMENT OF SIGNIFICANCE:	SIGNIFICANCE CATEGORY: AA		
Significant as a well-preserved element of Llechwedd Slate Quarry's underground workings, with some public access.			
BIBLIOGRAPHY:			
Dolgellau Record Office: JW Greaves archive.			
Plas Tan y Bwlch: Llechwedd archive.			

PRN:	67453	SITE NAME:	New Ffridd incline: Llechwedd Slate Quarry underground workings
NPRN:	546426	DATE CONSTRUCTED:	1909

SITE TYPE:	INCLINED PLANE
NGR:	SH 7039 4713
DESCRIPTION:	A well-preserved but disused underground inclined plane in Llechwedd Slate Quarry underground workings (NPRN: 546424; PRN: 67451) for uphaulage of slate blocks and rubble from the now-flooded floors E, D and C, and the accessible floors B and A, to floor 2 at SH 7039 4713. Built c. 1909 to supersede the tracks laid in the old Ffridd incline tunnel (NPRN: 67458; NPRN: 54610), it was electrically operated from the start and was used until the 1970s.
STATEMENT OF SIGNIFICANCE:	SIGNIFICANCE CATEGORY: AA
	Significant as a well-preserved element of Llechwedd Slate Quarry's underground workings.
BIBLIOGRAPHY:	
	Dolgellau Record Office: JW Greaves archive.
	Plas Tan y Bwlch: Llechwedd archive.

PRN:	67454	SITE NAME:	Winding house: New Ffridd incline
NPRN:	546427	DATE CONSTRUCTED:	1909
SITE TYPE:	WINDING GEAR		
NGR:	SH 7039 4713		
DESCRIPTION:	An intact set of winding machinery by Sandycroft Foundry at the head of the New Ffridd incline (NPRN: 546426; PRN: 67453), consisting of an electric motor and a single winding drum on steel beams supported by slate walls.		
STATEMENT OF SIGNIFICANCE:	SIGNIFICANCE CATEGORY: AA		
	Significant as a well-preserved element of Llechwedd Slate Quarry's underground workings.		
BIBLIOGRAPHY:			
	Dolgellau Record Office: JW Greaves archive.		
	Plas Tan y Bwlch: Llechwedd archive.		

PRN:	67455	SITE NAME:	Formation: New Ffridd incline
NPRN:	546428	DATE CONSTRUCTED:	1909
SITE TYPE:	INCLINED PLANE		
NGR:	SH 7039 4713		
DESCRIPTION:	The single track formation of the New Ffridd incline (NPRN: 546426; PRN: 67453), which emerges from the now-flooded floors below floor B to its summit on Floor2 at SH 7039 4713. The intermediate landing on floor A is well preserved, and includes rails, turntable and drainage pipes. Rails are evident along its whole length.		
STATEMENT OF SIGNIFICANCE:	SIGNIFICANCE CATEGORY: AA		
	Significant as a well-preserved element of Llechwedd Slate Quarry's underground workings which illustrates the operation of an intermediate incline landing.		
BIBLIOGRAPHY:			
	Dolgellau Record Office: JW Greaves archive.		
	Plas Tan y Bwlch: Llechwedd archive.		

PRN:	67456	SITE NAME:	Floor A: Llechwedd Slate Quarry underground workings
NPRN:	546429	DATE CONSTRUCTED:	19 th century
SITE TYPE:	SLATE MINE		
NGR:	SH 7037 4724		
DESCRIPTION:	Floor A is a disused mine floor working both Old and New veins, consisting of a level and the		

chambers worked off it at 232 metres AOD in Llechwedd Slate Quarry underground workings (NPRN: 546424; PRN: 67451), probably worked from the mid-19th century to the late 20th. The slate vein in parts is split into an upper and lower portion; consequently chambers shown in plan appear to be on top of each other. The vein is also less steeply inclined to the horizontal in this area.

Part of this floor is accessible in the abandoned section of the underground workings. Here it is characterised by high archaeological/artefactual survival, including:

- a lavatory on the main level
- a powered inclined plane to a working floor halfway up chambers 15 and 15a (a double chamber) at SH 7028 4716
- a railway system in situ in the well-preserved Chamber 16W at SH 7030 4705.
- evidence of back-filling Chamber 16E at SH 7032 4706.
- a chain-hoist and railway system in situ in the well-preserved Chamber 17 at SH 7034 4706.
- a caban, internally whitewashed, in Chamber 18 at SH 7035 4706.
- a water tunnel between the old and new Ffridd inclines

Another part of this floor forms part of the Deep Mine Tour, where artefactual survival is low. This part is accessed from its inclined plane (NPRN: 54611; PRN: 67459).

STATEMENT OF SIGNIFICANCE:

SIGNIFICANCE CATEGORY: AA

Significant as a well-preserved element of Llechwedd Slate Quarry's underground workings.

BIBLIOGRAPHY:

Dolgellau Record Office: JW Greaves archive.

Plas Tan y Bwlch: Llechwedd archive.

PRN:	67457	SITE NAME:	Floor B: Llechwedd Slate Quarry underground workings
NPRN:	546431	DATE CONSTRUCTED:	19 th century
SITE TYPE:	SLATE MINE		
NGR:	SH 7037 4732		

DESCRIPTION:

Floor B is a disused mine floor consisting of a level and the chambers in the New Vein and the Old Vein worked off it at 219 metres AOD in Llechwedd Slate Quarry underground workings (NPRN: 546424; PRN: 67451), probably worked from the mid-19th century to the late 20th.

Part of this floor is accessible in the abandoned section of the underground workings. Here it is characterised by high archaeological/artefactual survival, including:

- a triple-vaulted structure built of slate rags and engineering brick in chamber 19, built to support a winding motor for an incline on the north side (now flooded), which formerly wound from Floor C at SH 7045 4732.
- a flight of slate-slab steps up to Floor A, and a further flight of slate-slab steps from the now-flooded floor C in chamber 21 at SH 7048 4738.
- a plaque at SH 7048 4739 commemorating the switching off of the mine pumps on 11 October 1972.

Another part of this floor is accessible in the Deep Mine Tour, where artefactual survival is low. This part is accessed from its inclined plane (NPRN: 54611; PRN: 67459) at SH 6990 4710.

STATEMENT OF SIGNIFICANCE:

SIGNIFICANCE CATEGORY: AA

Significant as a well-preserved element of Llechwedd Slate Quarry's underground workings, with some public access.

BIBLIOGRAPHY:

Dolgellau Record Office: JW Greaves archive.

Plas Tan y Bwlch: Llechwedd archive.

PRN:	60307	SITE NAME:	Ffridd shaft:	Llechwedd	Slate	Quarry
			underground workings			
NPRN:	546432		DATE CONSTRUCTED:	1877		
SITE TYPE:	MINE PUMPING					
	SHAFT					
NGR:	SH 7042 4717					
DESCRIPTION:						
A square-plan vertical shaft in Llechwedd Slate Quarry underground workings (NPRN: 546424; PRN: 67451), for pump-rods and winding-ropes driven from a surface water-wheel, <i>olwyn goch</i> ('the red wheel', NPRN: 546412; PRN: 20301), sunk to the head of the old Ffridd incline shaft (NPRN: 54610; PRN: 67458). The rods operated pumps at the foot of this incline, and the winding-ropes raised and lowered wagons on the incline. Believed to have been sunk c. 1877 and to have functioned until rock falls necessitated the building of the New Ffridd incline c. 1909.						
STATEMENT OF SIGNIFICANCE:			SIGNIFICANCE CATEGORY: AA			
Significant as a well-preserved element of Llechwedd Slate Quarry's underground workings and as a feature now unique within the slate industry of North Wales, a vertical shaft for pump rods.						
BIBLIOGRAPHY:						
Dolgellau Record Office: JW Greaves archive.						
Plas Tan y Bwlch: Llechwedd archive.						

PRN:	67458	SITE NAME:	Old Ffridd incline shaft: Llechwedd Slate Quarry underground workings
NPRN:	546410	DATE CONSTRUCTED:	1877
SITE TYPE:	TUNNEL		
NGR:	SH 7043 4735 to SH 7042 4717		
DESCRIPTION:			
A wide inclined shaft in Llechwedd Slate Quarry underground workings (NPRN: 546424; PRN: 67451) which carried out two functions. One was to carry the lower section of the pump-rods which were installed in the Ffridd shaft (NPRN: 546432; PRN: 60307), the other to provide the formation of an uphaulage inclined plane which lifted from Floor B to the summit at Floor 2. Both the pump-rods and the inclined plane were powered by the surface water-wheel, <i>olwyn goch</i> ('the red wheel') now evident as a wheel pit (NPRN: 546412; PRN: 20301). Much of the upper part of this feature is obscured by rock-falls. There is no evidence of a fend-off bob where the alignment of the pump-rods changed from vertical to an incline at the summit. The tunnel is to have been sunk c. 1877 and to have functioned until the building of the New Ffridd incline c. 1909, which superseded it.			
STATEMENT OF SIGNIFICANCE:		SIGNIFICANCE CATEGORY: AA	
Significant as a well-preserved element of Llechwedd Slate Quarry's underground workings and as a feature now unique within the industry, a tunnel for an inclined plane and for pump rods.			
BIBLIOGRAPHY:			
Dolgellau Record Office: JW Greaves archive.			
Plas Tan y Bwlch: Llechwedd archive.			

PRN:	67459	SITE NAME:	Deep Mine Tour incline:	Llechwedd Slate Quarry underground workings
			DATE CONSTRUCTED:	1979
NPRN:	546411			
SITE TYPE:	INCLINED PLANE			

NGR: SH 6990 4710

DESCRIPTION:

An inclined plane originally built to raise blocks and rubble from floor C to floor 2 (NPRN: 546424; PRN: 67451). An incline on part of this site was in existence between floor A and floor 2 by the 1880s, but the present haulage equipment, of standard National Coal Board design, was installed for the opening of the Deep Mine Tour in 1979, with which it connects on Floor 2 at SH 6990 4710 from its head at SH 6990 4700

STATEMENT OF SIGNIFICANCE:

SIGNIFICANCE CATEGORY: AA

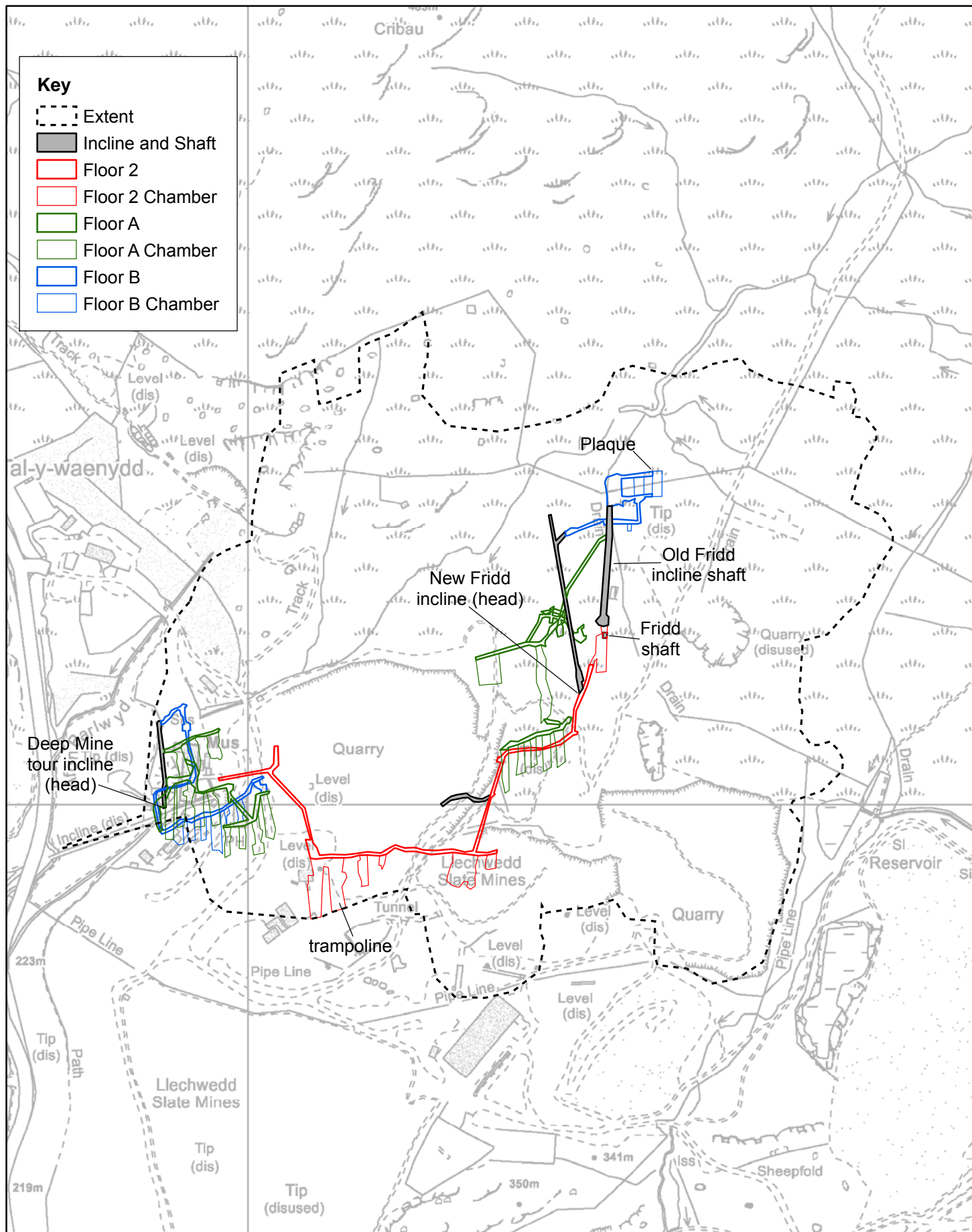
Significant as a passenger-carrying inclined plane on the site of a similar quarry feature of the 19th century.

BIBLIOGRAPHY:

Dolgellau Record Office: JW Greaves archive.

Plas Tan y Bwlch: Llechwedd archive.

Quarry Tours documentation.



Llechwedd Slate Quarry Underground Workings

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Floor 2 in Llechwedd Slate Quarry has been adapted for adventure tourism. Chamber 7 houses 'Bounce Below', a trampoline. NPRN: 546425; PRN: 67452.



The New Ffridd incline in Llechwedd Slate Quarry retains its state-of-the-art Sandycroft Foundry electric motor and winding drum of 1909. NPRN: 546427; PRN: 67454.



The intermediate landing which gave the New Ffridd incline access to floor A is a well-preserved example of how one inclined plane could be made to serve many floors in the underground slate workings of Ffestiniog. NPRN: 546428; PRN: 67455.



The Ffridd shaft in Llechwedd Slate Quarry connected with the underground workings and enabled a surface water wheel to operate pump rods. Rock-falls have obscured the arrangements here. NPRN: 546431; PRN: 60307.



A lavatory survives on floor A. NPRN: 546429; PRN: 67456.

MAENOFFEREN SLATE QUARRY UNDERGROUND WORKINGS

(Component part: Ffestiniog; event PRN: 45004)

PRN:	67460	SITE NAME:	Maenofferen Slate Quarry underground workings
NPRN:	546434	DATE:	19 th /20 th century
SITE TYPE:	SLATE MINE		
NGR:	SH 6808 4639		
DESCRIPTION:	Extensive disused underground workings forming part of Maenofferen slate quarry (NPRN: 400427; PRN: 20306), operational from the early-mid 19 th century to 1997, working the Old, Back and New Veins in the Ordovician formation on thirteen floors.		
STATEMENT OF SIGNIFICANCE:	SIGNIFICANCE CATEGORY: AA		
	Significant as the best-preserved and most extensive example of the distinctive Ffestiniog approach to slate-mining.		
BIBLIOGRAPHY:			
	GAT report 154 (surface features only).		
	Plas Tan y Bwlch: Maenofferen archive.		

Historical description

Maenofferen slate quarry (also known by its variant spellings including Maen-Offeren, Maen y Fferem and Maen Offeren) forms part of the extensive Blaenau Ffestiniog complex of slate workings. It extracted slate from an open quarry but mainly from an underground mine.

The historical development of early slate mining at Maenofferen is obscure. Some underground work had taken place even before the major developments following the formation of the Maenofferen Slate Quarry Company Ltd in 1861, when the site became connected to the railway system and powered sawing was introduced in surface mills. It is probable that the earliest accessible underground workings are those on Floor 2, but plans show levels and chambering extending as far west as SH 7107 4646 and SH 7100 4660.

It seems likely that Floor B and below initially used a tunnel known as Cooke's level as the main transport route out of the mine, with blocks going to a now-demolished mill near the then entrance in the region of SH 7090 4657. The construction of the back vein incline in the period 1877-1887 re-aligned the main process-flow to the slate mill complex developed at SH 71345 46598. Maenofferen slate mine remained operational until the late 1990s.

Site description

An underground slate mine, which worked two slate veins, the Old and the Back/Middle in the Ordovician formation. These are divided into eastern and western sections by the north-south running Bowydd fault. The veins strike approximately east-west, and dip around 20° to 35° to the south, the cleavage plane at around 45° to the south.

The floors are identified as Floor 3 (Mill Floor), Floor 2, Floor 1 and floors A to I in descending order. The mine is self-draining to Floor E, below which it is completely flooded. The underground workings are accessed by a powered inclined plane known as the 'back vein incline' from Floor B with intermediate landings on floors A, 1 and 2 to the surface on Floor 3 (Mill Floor) (NPRN: 546435; PRN:

67461). Other powered inclined planes are situated entirely underground. One is known from documentary sources but is now completely under water; it formerly lifted blocks and rubble from Floor I to Floor G. Those that are accessible, in whole or in part, are the B8OV incline (NPRN: 546443; PRN: 67469) which lifted blocks and rubble from Floor G to Floor B, the Floor A to Floor 3 incline (NPRN: 546436; PRN: 67462), the A17 incline (NPRN: 546505; PRN: 67532) and the B31 incline from Floor F to Floor B/Cooke's level (NPRN: 546440; PRN: 67466). The extensive workings to the east of the B31 incline are currently inaccessible. Cooke's level (NPRN: 546451; PRN: 67476) formerly led directly to the surface at SH 7108 4648, to give access to a now-demolished mill at SH 7988 4651 but is now blocked.

Accessible parts of the mine show that it was mostly worked in the typical Ffestiniog pattern of honeycomb chambers separated by walls (locally termed 'pillars') but several chambers on Floor 2 (NPRN: 546447; PRN: 67473) illustrate the earlier method of working in which the roof is supported by true pillars, effectively columns of un-worked slate rock; it is assumed that these represent early phases of working on this site, perhaps from the 1840s. This part of the mine also includes a chamber which housed a boring machine and there is also a length of machine-bored tunnel.

The principal means of access is Floor 3 (Mill Level) at SH 7141 4659, though this has been currently blocked to prevent unauthorised ingress. The extensive workings are accessible on Floors A, B, and E with more limited access on 3, 2, 1, C and D. The site is characterised by high levels of artefactual survival.

Maenofferen slate mine provides considerable potential for understanding and demonstrating slate extraction underground, and is an important element of Maenofferen slate quarry, with its evidence for surface processing, and the onward transport of the slate to its worldwide markets.

PRN:	67461	SITE NAME:	Floor 3 (Mill Floor): Maenofferen Slate Quarry underground workings
NPRN:	546435	DATE:	19 th /20 th century
SITE TYPE:	SLATE MINE		
NGR:	SH 7151 4654		
DESCRIPTION:	<p>Floor 3 (Mill Floor) is a disused slate mine floor and the chambers worked off it at 401 metres AOD in Maenofferen Slate Quarry's underground workings (NPRN: 546434; PRN: 67460), the highest of the underground working floors, accessed by a level from the main mill area, consisting of a tunnel from SH 7141 4659 to SH 7147 4660 which gives access to the head of the Back Vein incline, and branching off from this tunnel, a railed level and the chambers worked off it. Floor 3 was probably in production by the late 19th century and remained so into the 20th. Significant features on this floor include:</p> <ul style="list-style-type: none">• the tunnel from SH 7141 4659 to SH 7147 4660 with its intact railway and passing loop• the site of winding equipment in Chamber 7 at SH 7153 4655 for an inclined plane which hauled blocks and slate rubble to this level from Floor A• a dam at SH 7158 4656 which provided water for the surface mill.		
STATEMENT OF SIGNIFICANCE:	SIGNIFICANCE CATEGORY: AA		
Significant as a well-preserved working floor within Maenofferen Slate Quarry's underground workings and for its high artefactual survival.			
BIBLIOGRAPHY:	Plas Tan y Bwlch: Maenofferen archive.		

PRN:	67462	SITE NAME:	Floor A to Floor 3 (Mill Floor) incline:
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		Maenofferen Slate Quarry underground workings
NPRN:	546436	DATE: 20 th century
SITE TYPE:	INCLINED PLANE	
NGR:	SH 7153 4655	
DESCRIPTION:	An underground up-haulage incline which lifted slate blocks and rubble from Floor A (the incline foot) to Floor 3 (Mill Floor), now largely blocked, in Maenofferen Slate Quarry's underground workings (NPRN: 546434; PRN: 67460). This feature is believed to have been the first electrically-powered incline in the Maenofferen slate mine and as such probably dates from the early 20 th century. It is evident as the site of a winding gear in chamber 7 of the Floor 3 (Mill Floor) at SH 7153 4655 and of a formation which drops down from here to Floor A, but which is blocked part way down. The lowest part of the incline is also evident from its foot in 7 on Floor A at SH 7153 4668.	
STATEMENT OF SIGNIFICANCE:	SIGNIFICANCE CATEGORY: AA	
	Significant as an element within Maenofferen Slate Quarry's underground workings.	
BIBLIOGRAPHY:	Plas Tan y Bwlch: Maenofferen archive.	

PRN:	67463	SITE NAME:	Winding house: Floor A to Floor 3 (Mill Floor) incline
NPRN:	546437	DATE:	20 th century
SITE TYPE:	WINDING GEAR		
NGR:	SH 7153 4655		
DESCRIPTION:	The site of the winding gear of the Floor A to Floor 3 (Mill Floor) incline (NPRN: 546436; PRN: 67462) in chamber 7 of Floor 3 (Mill Floor).		
STATEMENT OF SIGNIFICANCE:	SIGNIFICANCE CATEGORY: AA		
	Significant as an element within Maenofferen Slate Quarry's underground workings.		
BIBLIOGRAPHY:	Plas Tan y Bwlch: Maenofferen archive.		

PRN:	67464	SITE NAME:	Formation: Floor A to Floor 3 (Mill Floor) incline
NPRN:	546438	DATE:	20 th century
SITE TYPE:	INCLINED PLANE		
NGR:			
DESCRIPTION:	The lowest part of the formation of this incline (NPRN: 546436; PRN: 67462) is evident from its foot in chamber 7 on Floor A at SH 7153 4668. The central part is blocked by a roof-fall. It becomes evident again below the site of the winding drum on Floor 3 at SH 7153 4655		
STATEMENT OF SIGNIFICANCE:	SIGNIFICANCE CATEGORY: AA		
	Significant as an element within Maenofferen Slate Quarry's underground workings.		
BIBLIOGRAPHY:	Plas Tan y Bwlch: Maenofferen archive.		

PRN:	60435	SITE NAME:	Back vein incline: Maenofferen Slate Quarry underground workings
NPRN:	416971	DATE:	19 th /20 th century
SITE TYPE:	INCLINED PLANE		
NGR:	SH 7149 4663		
DESCRIPTION:			

The 'back vein incline' or *inclên Idris*, after one of its operators, in Maenofferen Slate Quarry's underground workings (NPRN: 546434; PRN: 67460). It lifted slate blocks and rubble from Floor B (the incline foot) at SH 7154 4682 and Floor A (with which it connects by an intermediate landing) out of the mine to Floor 3, the surface mills level at SH 7149 4661. It emerges into daylight in what is either a worked-out open pit or a chamber worked to the surface. This feature is not shown on a plan of 1877 but is depicted on the first edition ordnance survey of 1887. This was latterly the principal haulage route out of the Maenofferen slate mine. It was the last incline worked in the slate industry of North Wales. Though its condition continues to deteriorate, it remains a well-preserved example both of the machinery used to haul slate blocks and rubble up a powered incline in the Ffestiniog slate industry and of the structures which housed them.

STATEMENT OF SIGNIFICANCE:

SIGNIFICANCE CATEGORY: AA

The best-preserved and most-nearly complete of a site-type once common to the Ffestiniog slate industry, the uphaulage inclined plane from underground to daylight which raised slate blocks for processing, and rubble for tipping.

BIBLIOGRAPHY:

Plas Tan y Bwlch: Maenofferen archive.

PRN: 60436/60437

SITE NAME: **Winding house:** back vein incline

NPRN: 416518

DATE: 19th/20th century

SITE TYPE: WINDING GEAR

NGR: SH 71483 46605

DESCRIPTION:

The winding house and associated structures of the back vein incline (NPRN: 416971; PRN: 60435) are constructed of slate rubble, are slate roofed, and form one contiguous whole. It was originally steam-powered; a reserve boiler was installed in 1897, and new boilers and chimney the following year. The steam engine was replaced by an electric motor in 1910. The boiler houses are evident, flanking the winding gear to east and to west (SH 71477 46614 and 71496 46605), and the footings for the steam engine survive in a building which now houses the rheostat frame (SH 71478 46605). A slate-built stack exhausted at SH 71463 46617. The electric motor is housed immediately to the east of the winding equipment at SH 71489 46606, which is located on a control bridge above the tracks at SH 71483 46605.

STATEMENT OF SIGNIFICANCE:

SIGNIFICANCE CATEGORY: AA

The best-preserved and most-nearly complete examples of the structures and machinery which powered a site-type once common to the Ffestiniog slate industry, the uphaulage inclined plane from underground to daylight which raised slate blocks for processing, and rubble for tipping.

BIBLIOGRAPHY:

Plas Tan y Bwlch: Maenofferen archive.

PRN: 67465

SITE NAME: **Formation:** back vein incline

NPRN: 546439

DATE: 19th/20th century

SITE TYPE: INCLINED PLANE

NGR: SH 7149 4663

DESCRIPTION:

This incline (NPRN: 416971; PRN: 60435) appears originally to have been double track, to have been tripled in 1894, quadrupled in 1895 and reduced to one track operation by the time it ceased working in the 1990s. It retains two sets of rails, ropes and rollers. Its foot is at SH 7154 4682, its head at SH 7149 4661.

STATEMENT OF SIGNIFICANCE:

SIGNIFICANCE CATEGORY: AA

The best-preserved and most-nearly complete example of the formation of a site-type once common to the Ffestiniog slate industry, the uphaulage inclined plane from underground to daylight which raised slate blocks for processing, and rubble for tipping.

BIBLIOGRAPHY:

Plas Tan y Bwlch: Maenofferen archive.

PRN:	67466	SITE NAME:	B31 incline: Maenofferen Slate Quarry underground workings
NPRN:	546440	DATE:	19 th /20 th century
SITE TYPE:	INCLINED PLANE		
NGR:	SH 7216 4711		
DESCRIPTION:	An underground inclined plane in Maenofferen Slate Quarry's underground workings (NPRN: 546434; PRN: 67460). It lifted slate blocks and rubble from Floors F (the incline foot at SH 7215 4715, now flooded), E, D and C (intermediate landings) to a winding house on Floor B, chamber B31OV (NPRN: 546441; PRN: 67467) at SH 7217 4702.		
STATEMENT OF SIGNIFICANCE:	SIGNIFICANCE CATEGORY: AA		
Significant as a well-preserved element within Maenofferen Slate Quarry's underground workings of a site-type once common to the Ffestiniog slate industry, the underground uphaulage inclined plane.			
BIBLIOGRAPHY:			
Plas Tan y Bwlch: Maenofferen archive.			

PRN:	67467	SITE NAME:	Winding house: B31 incline
NPRN:	546441	DATE:	19 th /20 th century
SITE TYPE:	WINDING GEAR		
NGR:	SH 7217 4702		
DESCRIPTION:	<p>The winding mechanism of the B31 incline (NPRN: 546440; PRN: 67466) is situated in chamber B31OV on Floor B. A rubble-built platform on either side of the tracks supports steel girders; on these a Peebles motor with double reduction gearing is located which powered three incline drums, though latterly only one was used. A manually-worked gantry crane was used to lift the motor for repair. A four-plate brine variable resistor survives with plastic barrels, but the whole winding gear has been badly vandalised.</p>		
STATEMENT OF SIGNIFICANCE:	SIGNIFICANCE CATEGORY: AA		
<p>Significant as a well-preserved component of a site-type once common to the Ffestiniog slate industry, the underground uphaulage inclined plane.</p>			
BIBLIOGRAPHY:			
<p>Plas Tan y Bwlch: Maenofferen archive.</p>			

PRN:	67468	SITE NAME:	Formation: B31 incline
NPRN:	546442	DATE:	19 th /20 th century
SITE TYPE:	INCLINED PLANE		
NGR:	SH 7216 4711		
DESCRIPTION:	<p>The foot of the B31 incline (NPRN: 546440; PRN: 67466) on Floor F at SH 7215 4715 is below the water-level but the intermediate landings on floors E, D and C are evident. The incline runs in a series of worked-out chambers which have been united to form a tunnel, large enough for three tracks, but only one track remains <i>in situ</i>, emerging from the flooded incline foot on Floor F and served by the intermediate landing on E. The removed tracks ran from the D and C landings. Its head is at SH 7217 4702</p>		
STATEMENT OF SIGNIFICANCE:	SIGNIFICANCE CATEGORY: AA		
Significant as a well-preserved component of a site-type once common to the Ffestiniog slate industry, the underground uphaulage inclined plane.			
BIBLIOGRAPHY:			

Plas Tan y Bwlch: Maenofferen archive.

PRN: 67469 SITE NAME: **B8OV incline:** Maenofferen Slate Quarry
underground workings
NPRN: 546443 DATE: 19th century
SITE TYPE: INCLINED PLANE
NGR: SH 7154 4679
DESCRIPTION:
An underground incline in Maenofferen Slate Quarry's underground workings (NPRN: 546434; PRN: 67460). It lifted slate blocks and rubble from floors G (the incline foot at SH 7154 4687), F, E, D and C (intermediate landings) to Floor B chamber B8OV in the Old Vein at SH 7155 4674. Initially steam-powered; the pay-sheets for 1892 record the removal of the old boiler and making the foundation for the new engine. The incline was subsequently electrified. It survives in good condition, complete with signalling gongs and a tensioner mechanism.
STATEMENT OF SIGNIFICANCE: SIGNIFICANCE CATEGORY: AA
Significant as a well-preserved element within Maenofferen Slate Quarry's underground workings of a site-type once common to the Ffestiniog slate industry, the underground uphaulage inclined plane.
BIBLIOGRAPHY:
Plas Tan y Bwlch: Maenofferen archive.

PRN: 67470 SITE NAME: **Winding house:** B8OV incline
NPRN: 546444 DATE: 19th/20th century
SITE TYPE: WINDING GEAR
NGR: SH 7155 4674
DESCRIPTION:
The double-drum winding mechanism on the B8OV incline (NPRN: 546443; PRN: 67469) is mounted on an imposing slab plinth accessed by a set of slab steps leading up to the control platform from which steel girders project as far as, and are anchored in, two rubble-built columns on either side which support an overhead crane. The winding mechanism is intact, together with the electric motor, which drove the drums through a David Brown worm and wheel gearbox. A variable resistor with three plastic barrels controlled the motor.
STATEMENT OF SIGNIFICANCE: SIGNIFICANCE CATEGORY: AA
Significant as a well-preserved component of a site-type once common to the Ffestiniog slate industry, the underground uphaulage inclined plane.
BIBLIOGRAPHY:
Plas Tan y Bwlch: Maenofferen archive.

PRN: 67471 SITE NAME: **Formation:** B8OV incline
NPRN: 546445 DATE: 19th/20th century
SITE TYPE: INCLINED PLANE
NGR: SH 7154 4679
DESCRIPTION:
The formation of the B8OV incline (NPRN: 546443; PRN: 67469) runs in a purposely-created tunnel driven under the 'hard' (the cherts above the slate horizons), and is flooded from its foot on Floor G at SH 7154 4687 to E Floor. Intermediate landings are evident on floors E, D and C. It is noticeably steeper at the bottom, particularly between E and D floors. It is a single-track system, though the formation is wide enough for double track. A pump is located underneath the formation. Its head is at SH 7155 4674.
STATEMENT OF SIGNIFICANCE: SIGNIFICANCE CATEGORY: AA
Significant as a well-preserved component of a site-type once common to the Ffestiniog slate industry, the underground uphaulage inclined plane.

BIBLIOGRAPHY:

Plas Tan y Bwlch: Maenofferen archive.

PRN:	67472	SITE NAME:	Winding gear: Floor B
NPRN:	546446	DATE:	20 th century
SITE TYPE:	WINDING GEAR		
NGR:	SH 7156 4675		
DESCRIPTION:			
A winding mechanism for hauling wagons on the level from the foot of the back vein incline (NPRN: 416971; PRN: 60435) to the head of the B8OV incline (NPRN: 546443; PRN: 67469) on Floor B (NPRN: 546450; PRN: 67475); it consists of an electrically-powered winch by Owen of Porthmadog in a steel framework.			
STATEMENT OF SIGNIFICANCE:		SIGNIFICANCE CATEGORY: AA	
Significant as a well-preserved element within Maenofferen Slate Quarry's underground workings.			
BIBLIOGRAPHY:			
Plas Tan y Bwlch: Maenofferen archive.			

PRN:	67473	SITE NAME:	Floor 2: Maenofferen Slate Quarry underground workings
NPRN:	546447	DATE:	19 th century
SITE TYPE:	SLATE MINE		
NGR:	SH 7148 4666		
DESCRIPTION:			
<p>Floor 2 is a disused slate mine floor and the chambers worked off it at 369 metres AOD in Maenofferen Slate Quarry's underground workings (NPRN: 546434; PRN: 67460). It formerly worked the Middle/Back Vein. These chambers may represent early phases of working at Maenofferen slate mine, perhaps from the 1840s, and it is possible that they formed part of a larger underground network extending much further to the west which is currently inaccessible. Floor 2 (west side) can be accessed from the formation of the Back Vein incline at SH 7148 4666. It consists of a bifurcated level which was clearly once much longer but has since been blocked on both forks, one of which points west, the other east. The western branch is probably the level which formerly reached daylight at SH 7141 4664, but which is now buried under the slate rubble on which the main mills (NPRN: 416517; PRN: 60447) are built. The east branch reaches chambers which formerly worked the Old Vein and the Back Vein. Significant features on this floor include:</p> <ul style="list-style-type: none">• a chamber at SH 7148 4658 where the roof is supported by a free-standing pillar, exemplifying the earliest method of working underground in Ffestiniog• a chamber at SH 7149 4660 which appears to have been set up for an adjacent Hunter boring/tunnelling machine.• traces of a rope drive from a surface prime mover on the walls of the level, and the chamber itself has been walled off, suggesting the need to frustrate industrial espionage• a circular-section tunnel bored by this Hunter machine - strongly suggesting that work continued into the 1860s at SH 7150 4661.			
STATEMENT OF SIGNIFICANCE:		SIGNIFICANCE CATEGORY: AA	
Significant as a well-preserved working floor within Maenofferen Slate Quarry's underground workings and for its high artefactual survival.			
BIBLIOGRAPHY:			
Plas Tan y Bwlch: Maenofferen archive.			

PRN:	67473	SITE NAME:	Floor A: Maenofferen Slate Quarry underground workings
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NPRN:	546448	DATE:	19 th /20 th century
SITE TYPE:	SLATE MINE		
NGR:			
DESCRIPTION:	<p>Floor A is a disused slate mine floor and the chambers worked off it at 360 metres AOD in Maenofferen Slate Quarry's underground workings (NPRN: 546434; PRN: 67460). The floor runs eastwards from the Back Vein incline and works chambers in the Middle/Back Vein and the Old Vein from SH 7153 4677 to SH 7218 4702, the eastern limit of current practical accessibility, though it formerly extended further to the east. It was probably in production by the 1860s, and remained so until the 1990s. Significant features on this floor include:</p> <ul style="list-style-type: none">• surviving 0.6 m gauge railway from the foot of the Back vein incline as far as chamber 12 at SH 7166 4675; some 'Hudson' type track is also evident• a length of railway re-gauged to approximately 1.2 m to act as a guideway for rubber-tired trolleys ex Royal Navy (some of which remain), from chamber 12 eastwards• the foot of the uphaulage incline from this floor to Floor 3 in chamber 7• an 'Eimco' rocker-shovel and a Hudson side-tip skip in chamber A14MV at SH 7172 4678.		
STATEMENT OF SIGNIFICANCE:	SIGNIFICANCE CATEGORY: AA		
Significant as a well-preserved working floor within Maenofferen Slate Quarry's underground workings and for its high artefactual survival.			
BIBLIOGRAPHY:	Plas Tan y Bwlch: Maenofferen archive.		

PRN:	67474	SITE NAME:	Floor A-Floor B walkway: Maenofferen Slate Quarry underground workings
NPRN:	546449	DATE:	19 th /20 th century
SITE TYPE:	SLATE MINE		
NGR:	SH 7155 4678		
DESCRIPTION:	A pedestrian walkway from Floor A (chamber A3) at SH 7155 4675 to Floor B (chamber B8BV) at SH 7155 4680 partly a sinuous pathway, partly made up of slab steps in Maenofferen Slate Quarry's underground workings (NPRN: 546434; PRN: 67460).		
STATEMENT OF SIGNIFICANCE:	SIGNIFICANCE CATEGORY: AA		
Significant as a well-preserved element within Maenofferen Slate Quarry's underground workings.			
BIBLIOGRAPHY:	Plas Tan y Bwlch: Maenofferen archive.		

PRN:	67475	SITE NAME:	Floor B: Maenofferen Slate Quarry underground workings
NPRN:	546450	DATE:	19 th /20 th century
SITE TYPE:	SLATE MINE		
NGR:	SH 7188 4683		
DESCRIPTION:	<p>Floor B is a disused slate mine floor and the chambers worked off it in the Back Vein and the Old Vein at 331 metres AOD in Maenofferen Slate Quarry's underground workings (NPRN: 546434; PRN: 67460). It was probably in production by the 1860s, and remained so until the 1990s. It extends from SH 7219 4702 to SH 7154 4682, the current limit of practical accessibility, though it extended considerably further to the east from here. Significant features on this floor include:</p> <ul style="list-style-type: none"> • chamber B8BV at SH 7155 4682, which contains switchgear by Johnson & Phillips, possibly dating to 1904, and Broom & Wade compressors possibly dating to the 1940s, as well as a 		

marshalling yard for the railway system

- chamber B8OV, where Cooke's level (NPRN: 546451; PRN: 67476) meets Floor B, and which is also the site of a dry for the quarrymen's clothes (complete with coat-hangers), and of the base for the steam engine which formerly wound the B8OV incline (NPRN: 546443; PRN: 67469)
- chamber 31, which contains the winding gear for the up-haulage B31 incline from Floor F (NPRN: 546440; PRN: 67466) and also houses a six-pole electric motor driving a Broom & Wade air compressor, and a receiver
- an electrically-powered ventilation fan which drew air from the lower floors and expelled it to Floor A, on the level between chambers 31 and 32.

STATEMENT OF SIGNIFICANCE:

SIGNIFICANCE CATEGORY: AA

Significant as a well-preserved working floor within Maenofferen Slate Quarry's underground workings and for its high artefactual survival.

BIBLIOGRAPHY:

Plas Tan y Bwlch: Maenofferen archive.

PRN: 67476 SITE NAME: **Cooke's level:** Maenofferen Slate Quarry
underground workings

NPRN: 546451 DATE: 19th/20th century

SITE TYPE: LEVEL

NGR: SH 7150 4672

DESCRIPTION:

Cooke's level is a disused but well-set out former haulage route and pedestrian access to and from Maenofferen Slate Quarry's underground workings (NPRN: 546434; PRN: 67460) at 331 metres AOD (the same horizon as Floor B, with which it is contiguous, joining it at SH 7154 4675. It formerly connected Floor B and the other underground workings to the surface at SH 7108 4648 (now blocked) and thence to a now-demolished mill at SH 7988 4651. It can only now be accessed from Floor B. Originally cut in the 1860s when floors B and below in the Maenofferen slate mine were being opened. It is floored with substantial slate slabs. It was subsequently used as pedestrian access to the mine until the surface entrance was blocked in the early 21st century. Significant features on this level include:

- chamber 7, which housed the boiler for the steam engine formerly located in chamber B8OV which would the incline, containing coal, ash and firebrick as well as a cast-iron fire-bar
- a pre-railway wheel-less sled

STATEMENT OF SIGNIFICANCE:

SIGNIFICANCE CATEGORY: AA

Significant as a well-preserved haulage route and pedestrian access within Maenofferen Slate Quarry's underground workings and for its high artefactual survival.

BIBLIOGRAPHY:

Plas Tan y Bwlch: Maenofferen archive.

PRN: 67477 SITE NAME: **Floor C:** Maenofferen Slate Quarry
underground workings

NPRN: 546452 DATE: 19th/20th century

SITE TYPE: SLATE MINE

NGR: SH 7176 4687

DESCRIPTION:

Floor C is a disused slate mine floor and the chambers worked off it at 314 metres AOD in Maenofferen Slate Quarry's underground workings (NPRN: 546434; PRN: 67460) which now difficult to access due to being cut through by later workings. It was probably in production by the 1860s,

and remained so until the 1990s. There is a fine arched tunnel underneath the A17 incline(NPRN: 546505; PRN: 67532). The grid given is this point.

STATEMENT OF SIGNIFICANCE:

SIGNIFICANCE CATEGORY: AA

Significant as a well-preserved working floor within Maenofferen Slate Quarry's underground workings and for its high artefactual survival.

BIBLIOGRAPHY:

Plas Tan y Bwlch: Maenofferen archive.

PRN:	67478	SITE NAME:	Floor D: Maenofferen Slate Quarry underground workings
NPRN:	546453	DATE:	19 th /20 th century

SITE TYPE: SLATE MINE

NGR: SH 7165 4687

DESCRIPTION:

Floor D is a disused slate mine floor and the chambers worked off it at 291 metres AOD in Maenofferen Slate Quarry's underground workings (NPRN: 546434; PRN: 67460). It was probably in production by the 1860s, and remained so until the 1990s. Significant features on this floor include: pipes in Chamber D9OV, associated with a pump systems from the lower flooded floors; a fan on the level; a pack-wall in Chamber D4MV. It can currently be accessed between SH 7154 4683, where it connects with the B8 Back Vein incline by means of an intermediate level, and SH 7176 4695, where it connects with the A17 incline by means of an intermediate level. It extended considerably further to the east, and the intermediate points by which it connected with the B3 incline are also visible.

STATEMENT OF SIGNIFICANCE:

SIGNIFICANCE CATEGORY:

Significant as a well-preserved working floor within Maenofferen Slate Quarry's underground workings and for its high artefactual survival.

BIBLIOGRAPHY:

Plas Tan y Bwlch: Maenofferen archive.

PRN:	67479	SITE NAME:	Floor E: Maenofferen Slate Quarry underground workings
NPRN:	546454	DATE:	19 th /20 th century

SITE TYPE: SLATE MINE

NGR: SH 7215 4716-7154
4688

DESCRIPTION:

Floor E is a disused railed slate mine floor and the chambers worked off it in the Middle Vein and the Old Vein at 270 metres AOD in Maenofferen Slate Quarry's underground workings (NPRN: 546434; PRN: 67460). It was probably in production by the late 19th century, and remained so until the 1990s. This is a well-preserved part of the mine with a largely intact rail system, and artefactual survival is good. Many of the graffiti here date to the 1940s. Though it clearly extends further to the east, it is currently accessible between SH 7215 4716, where it joins the B31 incline by means of an intermediate landing, and SH 7154 4688, where it joins the B8 Back Vein B31 incline by means of an intermediate landing. Significant features on this floor include:

- surviving 0.6 metre gauge track on much of the floor
- a shallow powered incline worked by a winch at its foot in an un-numbered chamber at SH 7155 4689
- an intact ropeway system in chamber E15OV at SH 7174 4695
- a *caban* next to a pile of discarded rock in chamber E18OV at SH 7180 4701
- a smithy in chamber E13OV at SH 7166 4693
- a stairway from Floor F in chamber E11OV at SH 7160 4689

STATEMENT OF SIGNIFICANCE:	SIGNIFICANCE CATEGORY: AA
Significant as a well-preserved working floor within Maenofferen Slate Quarry's underground workings and for its high artefactual survival.	
BIBLIOGRAPHY:	
Plas Tan y Bwlch: Maenofferen archive.	

PRN:	67524	SITE NAME:	Chamber 12 incline: Maenofferen Slate Quarry underground workings
NPRN:	546455	DATE:	19 th /20 th century
SITE TYPE:	INCLINED PLANE		
NGR:	SH 7163 4682		
DESCRIPTION:			
An uphaulage incline from Floor D at SH 7163 4686 to Floor B (chamber 12) at SH 7163 4679 in Maenofferen Slate Quarry's underground workings (NPRN: 546434; PRN: 67460).			
STATEMENT OF SIGNIFICANCE:		SIGNIFICANCE CATEGORY: AA	
Significant as a well-preserved element within Maenofferen Slate Quarry's underground workings.			
BIBLIOGRAPHY:			
Plas Tan y Bwlch: Maenofferen archive.			

PRN:	67525	SITE NAME:	Winding equipment: Chamber 12 incline
NPRN:	546456	DATE:	19 th /20 th century
SITE TYPE:	INCLINED PLANE		
NGR:	SH 7163 4679		
DESCRIPTION:			
Only remains are the walls of the drumhouse and a crane for lifting motors.			
STATEMENT OF SIGNIFICANCE:		SIGNIFICANCE CATEGORY: AA	
Significant as a component of a site-type once common to the Ffestiniog slate industry, the underground uphaulage inclined plane.			
BIBLIOGRAPHY:			
Plas Tan y Bwlch: Maenofferen archive.			

PRN:	67526	SITE NAME:	Formation: Chamber 12 incline
NPRN:	546457	DATE:	19 th /20 th century
SITE TYPE:	INCLINED PLANE		
NGR:	SH 7163 4682		
DESCRIPTION:			
The formation of the chamber 12 incline from SH 7163 4686 to SH 7163 4679; no rails or equipment survive.			
STATEMENT OF SIGNIFICANCE:		SIGNIFICANCE CATEGORY: AA	
Significant as a component of a site-type once common to the Ffestiniog slate industry, the underground uphaulage inclined plane.			
BIBLIOGRAPHY:			
Plas Tan y Bwlch: Maenofferen archive.			

PRN:	67532	SITE NAME:	A17 incline: Maenofferen Slate Quarry underground workings
NPRN:	546505	DATE:	19 th /20 th century
SITE TYPE:	INCLINED PLANE		
NGR:	SH 7176 4699 to SH 7177 4677		
DESCRIPTION:			

An uphaulage incline in Maenofferen Slate Quarry's underground workings (NPRN: 46434; PRN: 67460). It hauled blocks and rubble from Floor G at SH 7176 4699 to Floor A, but is now flooded below Floor D at SH 7177 4677.

STATEMENT OF SIGNIFICANCE:

SIGNIFICANCE CATEGORY:

Significant as a well-preserved element within Maenofferen Slate Quarry's underground workings of a site-type once common to the Ffestiniog slate industry, the underground uphaulage inclined plane.

BIBLIOGRAPHY:

Plas Tan y Bwlch: Maenofferen archive.

PRN:	67533	SITE NAME:	Winding equipment: A17 incline
NPRN:	546506	DATE:	19 th /20 th century
SITE TYPE:	INCLINED PLANE		
NGR:	SH 7177 4677		

DESCRIPTION:

The stone walls and timber supports for the winding equipment survives together with a crane for lifting the winding motors and signalling equipment.

STATEMENT OF SIGNIFICANCE:

SIGNIFICANCE CATEGORY: AA

Significant as a well-preserved component of a site-type once common to the Ffestiniog slate industry, the underground uphaulage inclined plane.

BIBLIOGRAPHY:

Plas Tan y Bwlch: Maenofferen archive.

PRN:	67534	SITE NAME:	Formation: A17 incline
NPRN:	546507	DATE:	19 th /20 th century
SITE TYPE:	INCLINED PLANE		
NGR:	SH 7176 4699 to SH 7177 4677		

DESCRIPTION:

The formation of the double track A17 uphaulage incline from SH 7176 4699 to SH 7177 4677 includes a fine arched tunnel on Floor C, which is otherwise inaccessible. Some rails survive.

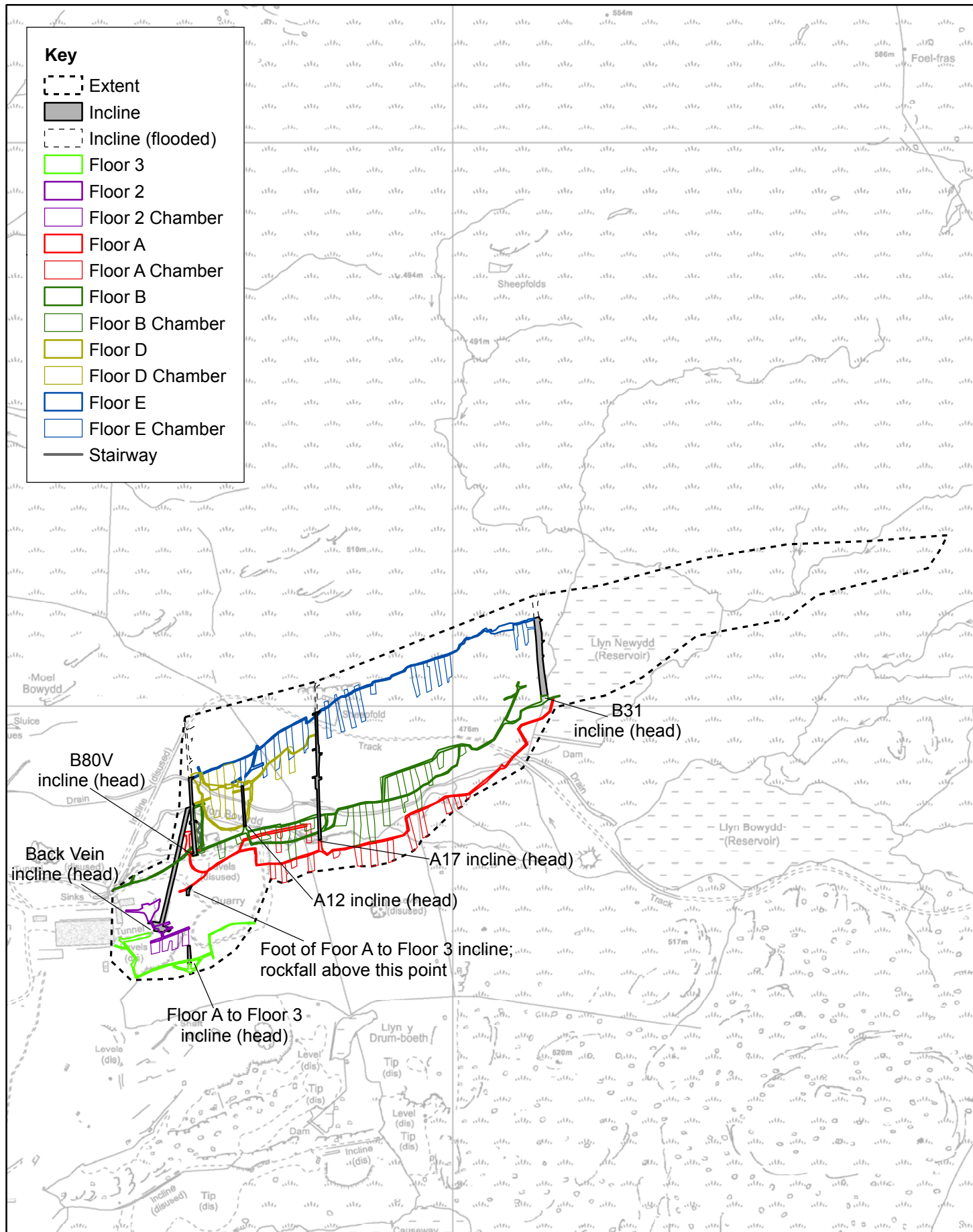
STATEMENT OF SIGNIFICANCE:

SIGNIFICANCE CATEGORY: AA

Significant as a well-preserved component of a site-type once common to the Ffestiniog slate industry, the underground uphaulage inclined plane.

BIBLIOGRAPHY:

Plas Tan y Bwlch: Maenofferen archive.



Maenofferen Slate Quarry Underground Workings

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The Back Vein incline gave access to the underground workings at Maenofferen Slate Quarry and was known to the quarrymen as inclên Idris after one of its operators. It is the best surviving example of a once-common technology in the Ffestiniog slate industry, an up-haulage incline raising blocks and rubble to daylight. NPRN: 54615; PRN: 67462.



A Peebles motor with double reduction gearing and the three drums provided the winding gear of the B31 incline in Maenofferen. It has been vandalised. NPRN: 546441; PRN: 67467.



Floor 2 in Maenofferen is the only known location in Gwynedd where the early method of supporting the chamber roof on a free-standing pillar is evident. NPRN: 546447; PRN: 67473.



A circular section tunnel on floor 2 has been cut by a Hunter boring machine. NPRN: 546447; PRN: 67473.



The B8 incline winding gear survives largely intact. NPRN: 546443; PRN: 67469.

BRYNEGLWYS SLATE QUARRY: UNDERGROUND WORKINGS

(Component part: Bryneglwys Quarry, Abergynolwyn Village and Talyllyn Railway; event PRN: 45004)

PRN:	67497	SITE NAME:	Bryneglwys Slate Quarry underground workings
NPRN:	546458	DATE:	19 th /20 th century
SITE TYPE:	SLATE MINE		
NGR:	SH 6930 0530		
DESCRIPTION:	<p>Disused underground workings forming part of Bryneglwys slate quarry (NPRN: 40589; PRN: 4947), operational from the early-mid 19th century to the 1940s, which worked two beds of Ordovician slate in a way that demonstrates the decision to change from methods evolved in the open pit quarries of the Nantlle slate belt of Gwynedd to underground mining.</p> <p>STATEMENT OF SIGNIFICANCE: SIGNIFICANCE CATEGORY: AA</p> <p>A slate mine which shows the transition from open pit working, and the influence of quarrymen from the Nantlle district of Gwynedd, to underground working.</p> <p>BIBLIOGRAPHY:</p> <p>Holmes A and S Eade 2013. <i>Slates from Abergynolwyn</i>. Caernarfon: Gwynedd Archives Service.</p> <p>GAT report 154 (surface features only).</p> <p>Plas Tan y Bwlch: Bryneglwys archive.</p>		

Historical description

Bryneglwys quarry extracted slate from an open quarry and in an underground mine. Levels had been driven to reach the slate by 1847, when the Daylight level was in existence, connecting the mills to open workings in the Narrow Vein, but extraction of slate underground probably reflects the acquisition of the quarry lease by the Aberdovey Slate Co. (the McConnel brothers of Manchester) in 1864, and their decision to pursue the slate by mining rather than the surface-working which had prevailed hitherto.

Site description

Bryneglwys slate mine is situated at SH 6930 0530 in the historic parish of Talyllyn, and forms part of Bryneglwys slate quarry (NPRN: 40589; PRN: 4947). It worked two beds of Ordovician slate, the Narrow Vein and the Broad Vein, both of which cross the Gwernol valley on a strike of south-west to north-east. The Narrow Vein dips at between 50° and 60°, with near-vertical cleavage, and was worked on seven floors, numbered, in descending order, 5, 10, 15, 20, 25, 50 and 75, as well as from an open pit from which a chain incline system raised blocks and slate rubble. Floor 20 (NPRN: 546460; PRN: 67499) is accessible from the Daylight level (NPRN: 546459; PRN: 67498); Floor 15 (NPRN: 546462; PRN: 67500) is accessible from Floor 20. The quarry numbered chambers according to the floor and according to whether they were on Cantrybedd farm (C) to the south-west of the Gwernol stream or on Bryneglwys farm to the north-east (B).

Bryneglwys slate mine provides considerable potential for understanding and demonstrating different strategies for slate extraction, reflecting the movement of specialists within the slate industry of North Wales, and is an important element of Bryneglwys slate quarry, with its evidence for surface processing, and the onward transport of the slate to its worldwide markets.

PRN:	67498	SITE NAME:	Daylight level: Bryneglwys Slate Quarry underground workings
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NPRN:	546459	DATE:	19 th /20 th century
SITE TYPE:	LEVEL		
NGR:	SH 6933 0528-6939 0521		
DESCRIPTION:	<p>A mining level from the main mills area of Bryneglwys slate quarry (NPRN: 40589; PRN: 67497), which accesses the open pit in the Narrow Vein and the underground workings on Floor 20. It had been driven to reach the slate vein by 1847, connecting open workings in the Narrow Vein to the mills; it later served the underground workings driven off the open quarry. It is a wide level at 236m AOD, capable of taking a double line of rails, though archaeological evidence for only one set of tracks is now evident.</p>		
STATEMENT OF SIGNIFICANCE:	SIGNIFICANCE CATEGORY: AA		
A component of the Bryneglwys slate mine			
BIBLIOGRAPHY:	<p>Holmes A and S Eade 2013. <i>Slates from Abergynolwyn</i>. Caernarfon: Gwynedd Archives Service. Plas Tan y Bwlch: Bryneglwys archive.</p>		

PRN:	9261	SITE NAME:	Chain incline:	Bryneglwys Slate Quarry
			underground workings	
NPRN:	275918	DATE:	19 th /20 th century	
SITE TYPE:	AERIAL ROPEWAY			
NGR:	SH 6930 0520			
DESCRIPTION:				
<p>A water wheel driven chain incline which wound blocks from Narrow Vein open workings to Floor 20, as well as rubble to higher levels, and which also included a railed incline from Floor 75 to Floor 20 to raise blocks and rubble. Believed to have been built in the early 1860s when Bryneglwys slate quarry (NPRN: 40589; PRN: 4947) was being run and worked by a group of Nantlle men, who introduced this typical example of current Nantlle technology to the quarry. Water-powered chain inclines were used at Pen yr Orsedd and other Nantlle quarries but this is the only surviving example within the slate industry of North Wales of the type. The haulage platform is evident as a projecting stone structure on the edge of the open pit in the Narrow Vein. The timber framing for the ropes is no longer evident. Adjacent to the haulage platform are rubble-built pits for two water-wheels and the haulage drums. This feature is becoming overgrown.</p>				
STATEMENT OF SIGNIFICANCE:		SIGNIFICANCE CATEGORY: AA		
<p>A good surviving example of a water-driven chain incline system, exemplifying a technology once typical of the Nantlle slate area, and technology-transfer within the slate industry of North Wales.</p>				
BIBLIOGRAPHY:				
<p>Holmes A and S Eade 2013. <i>Slates from Abergynolwyn</i>. Caernarfon: Gwynedd Archives Service. Plas Tan y Bwlch: Bryneglwys archive.</p>				

PRN:	9261	SITE NAME:	75 to 20 incline: Bryneglwys Slate Quarry underground workings
NPRN:	275918	DATE:	19 th /20 th century
SITE TYPE:	INCLINED PLANE		
NGR:	SH 6930 0520		
DESCRIPTION:	<p>A railed incline in Bryneglwys Slate Quarry's underground workings (NPRN: 546458; PRN: 67497), which wound blocks and rubble from Floor 75 to the open workings and the Daylight Level on Floor 20 in the Narrow Vein; this was powered by the water-wheels (NPRN: 546508; PRN: 9261) which also powered the chain incline system (NPRN: 275918; PRN: 9261). It is believed to have been built in the early 1860s when Bryneglwys quarry was being run and worked by a group of Nantlle men.</p>		

The incline is now only visible as an inaccessible opening on the southern side of the open pit in the Narrow Vein. A channel for the haulage rope is evident in NPRN: 275918; PRN: 9261.

STATEMENT OF SIGNIFICANCE:

SIGNIFICANCE CATEGORY: AA

An example of the way in which a water-driven prime mover was made to carry out different tasks in the slate industry of North Wales.

BIBLIOGRAPHY:

Holmes A and S Eade 2013. *Slates from Abergynolwyn*. Caernarfon: Gwynedd Archives Service.

Plas Tan y Bwlch: Bryneglwys archive.

PRN: 67499 SITE NAME: **Floor 20:** Bryneglwys Slate Quarry
underground workings

NPRN: 546460 DATE: 19th/20th century

SITE TYPE: LEVEL

NGR: SH 6903 0478-6939
0521

DESCRIPTION:

Floor 20 consists of a railed level in Bryneglwys Slate Quarry's underground workings (NPRN: 546458; PRN: 67497), running south-west to north-east along the strike of the Narrow Vein and the chambers worked off it running at 236m AOD from the vicinity of SH 6903 0478 to SH 6939 0521, where it reaches the open pit and connects to the daylight adit. The accessible level runs south-west from the open pit in the Narrow Vein to serve six chambers, all now blocked off except for the last, Chamber 1C. The level is in places partly blocked by silt and debris, and is in places flooded to waist height. At SH 6933 0515 it opens onto the main shaft. A gap in the pillar between chambers 10 and 11 provides access to Floor 15. The driving of this level, and the opening of chambers along it, probably reflects the acquisition of the quarry lease by the Aberdovey Slate Co. (the McConnel brothers of Manchester) in 1864, and their decision to pursue the slate by underground mining.

STATEMENT OF SIGNIFICANCE:

SIGNIFICANCE CATEGORY: AA

A component of the Bryneglwys slate mine

BIBLIOGRAPHY:

Holmes A and S Eade 2013. *Slates from Abergynolwyn*. Caernarfon: Gwynedd Archives Service.

Plas Tan y Bwlch: Bryneglwys archive.

PRN: 9344 SITE NAME: **Main shaft:** Bryneglwys Slate Quarry
underground workings

NPRN: 546461 DATE: 19th/20th century

SITE TYPE: SHAFT

NGR: SH 6933 0514

DESCRIPTION:

A near-vertical shaft in Bryneglwys Slate Quarry's underground workings (NPRN: 546458; PRN: 67497), from the surface connecting to floors 20, 25 and 50 in the Narrow Vein, allowing the workings to drain through *lefel fawr*, a drainage level on Floor 50. There is no trace of any winding apparatus on the surface and its purpose is not fully understood. The sinking of this shaft probably reflects the acquisition of the quarry lease by the Aberdovey Slate Co. (the McConnel brothers of Manchester) in 1864, and their decision to pursue the slate by underground mining.

STATEMENT OF SIGNIFICANCE:

SIGNIFICANCE CATEGORY: AA

A component of the Bryneglwys slate mine.

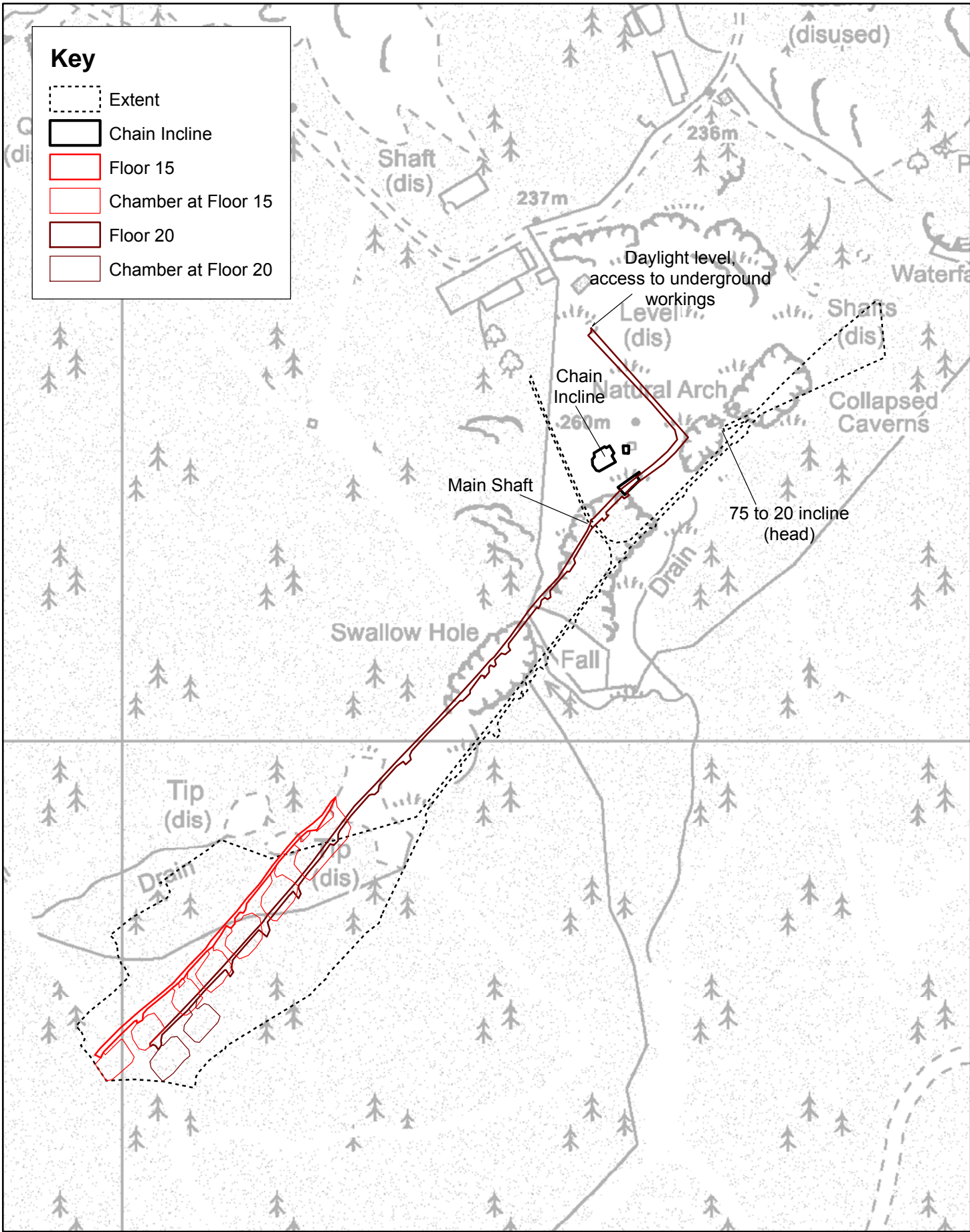
BIBLIOGRAPHY:

Holmes A and S Eade 2013. *Slates from Abergynolwyn*. Caernarfon: Gwynedd Archives Service.

Plas Tan y Bwlch: Bryneglwys archive.

PRN: 67500 SITE NAME: **Floor 15:** Bryneglwys Slate Quarry

NPRN:	546462	underground workings	
SITE TYPE:	LEVEL	DATE:	19 th /20 th century
NGR:	SH 6998 0479-6919 0500		
DESCRIPTION:			
<p>Floor 15C consists of a railed level in Bryneglwys Slate Quarry's underground workings (NPRN: 546458; PRN: 67497), running south-west to north-east in the Narrow Vein at 243m AOD from the vicinity of SH 6998 0479 to a now-blocked opening at SH 6919 0500, and the seven chambers worked off it. The point at which it reached daylight is now blocked and it can currently be accessed only by climbing up from Floor 20 (NPRN: 546460; PRN: 67499) or down from Floor 10C. Artefactual survival is high, including winches, rails, point-work and wagons. The driving of this level, and the opening of chambers off it, probably reflects the acquisition of the quarry lease by the Aberdovey Slate Co. (the McConnel brothers of Manchester) in 1864, and their decision to pursue the slate by underground mining. A slideway down which blocks were lowered from the next floor up, 10C, to Floor 15C is evident in chamber 12C. Graffiti are evident.</p>			
STATEMENT OF SIGNIFICANCE:		SIGNIFICANCE CATEGORY: AA	
A component of the Bryneglwys slate mine, with surviving rails, wagons and hand-winches.			
BIBLIOGRAPHY:			
Holmes A and S Eade 2013. <i>Slates from Abergynolwyn</i> . Caernarfon: Gwynedd Archives Service.			
Plas Tan y Bwlch: Bryneglwys archive.			



Bryneglwys Slate Quarry Underground Workings

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0 0.2 Km





Floor 15 in the underground workings of Bryneglwys Slate Quarry preserves wagons, rails and point-work. NPRN: 546462; PRN: 67500.



Early workings at Bryneglwys involved a surface pit from which material was wound by a chain incline ropeway system typical of Nantlle practice, evident here as the bastion on the horizon. Before long, the quarry was being worked underground. NPRN: 275918; PRN: 9261.

ABERLLEFENNI SLATE MINES: UNDERGROUND WORKINGS

(Component part: Aberllefenni; event PRN: 45004)

PRN:	67501	SITE NAME:	Ceunant Ddu slate mine
NPRN:	546470	DATE:	19 th century
SITE TYPE:	SLATE MINE		
NGR:	SH 7685 1000		
SUMMARY:			
Ceunant Ddu slate mine forms one of three discrete areas of underground extraction within Aberllefenni slate quarry, along with Hen Gloddfa and Foel Grochan slate mines. It is located on the south-west side of Nant Llefenni. Limited access is possible by specialists, but a fall which took place prior to 1866 has preserved Ceunant Ddu as a sealed context of early 19 th century slate mining techniques.			
STATEMENT OF SIGNIFICANCE:		SIGNIFICANCE CATEGORY: U	
Significant as a sealed context of early 19 th century slate mining techniques.			
BIBLIOGRAPHY:			
GAT report 154 (surface features only)			
Plas Tan y Bwlch: Aberllefenni archive.			
Papers in private possession.			

Historical description

Ceunant Ddu slate mine forms a discrete area of underground extraction within Aberllefenni slate quarry, and worked the narrow vein in the Ordovician formation on eight floors. The majority of workings here were cut or lost in a fall prior to 1866 which has preserved the site as a sealed context.

Site description

Ceunant Ddu slate mine forms one of three discrete areas of underground extraction within Aberllefenni slate quarry (NPRN: 40584; PRN: 20487), along with Hen Gloddfa (NPRN: 546472; PRN: 67503) and Foel Grochan slate mines (NPRN: 546481; PRN: 67512). It is located on the south-west side of Nant Llefenni. A fall which took place prior to 1866 has preserved Ceunant Ddu as a sealed context of early 19th century slate mining techniques.

Ceunant Ddu slate mine was formerly accessed from the surface on at least six floors, and drains on its lowest floor. Limited access is possible by specialists, by means of a level at SH 7663 0985 from where a series of roped descents are required.

PRN:	67502	SITE NAME:	Chamber 1/2: Ceunant Ddu slate mine
NPRN:	546471	DATE:	19 th century
SITE TYPE:	SLATE MINE		
NGR:	SH 7655 0980		
SUMMARY:			
A single abandoned working chamber within Ceunant Ddu slate mine (NPRN: 546470; PRN: 67501), disused following a fall in 1866. It forms a single disused slate-mine chamber at its higher levels, but which splits into two lower down. It contains four wooden-framed hand-winches, and other evidence of early haulage systems which are not fully understood but are thought to date from the 1840s or earlier. A turntree platform projects out into the chamber in a similar manner to those shown in historic paintings of Mynydd Parys copper mine. Extensive historic graffiti are evident.			

Remains of a railed inclined plane or a slide-way are evident, together with a wooden-framed rail wagon. At a lower horizon, the chamber exhibits the classic Aberllefenni method of a chamber working down around a central shaft.

STATEMENT OF SIGNIFICANCE:

SIGNIFICANCE CATEGORY: U

Significant as an element in Cenant Ddu slate mine.

BIBLIOGRAPHY:

Plas Tan y Bwlch: Aberllefenni archive.

Papers in private possession.

PRN: 67503

SITE NAME: **Hen Gloddfa slate mine**

NPRN: 546472

DATE: 19th/20th century

SITE TYPE: SLATE MINE

NGR: SH 7677 1012

SUMMARY:

Hen Gloddfa is a slate mine which forms one of three discrete areas of underground extraction within Aberllefenni slate quarry (NPRN: 40584; PRN: 20487), along with Ceunant Ddu and Foel Grochan slate mines, and worked the narrow vein in the Ordovician formation on eight floors. It is located on the south-west side of Nant Llefenni.

STATEMENT OF SIGNIFICANCE:

SIGNIFICANCE CATEGORY: U

Significant as a well-preserved area of a slate mining complex.

BIBLIOGRAPHY:

Plas Tan y Bwlch: Aberllefenni archive.

Papers in private possession.

Historical description

The name *Hen Gloddfa* ('old digging') suggests that this is one of the earliest areas in Aberllefenni slate quarry to be worked, but underground extraction is unlikely to precede the 19th century.

Site description

Hen Gloddfa slate mine forms a discrete area of underground extraction within Aberllefenni slate quarry, and worked the narrow vein in the Ordovician formation on eight floors. It was formerly accessed from the surface on seven floors, with one further floor, accessed from the level above by an underground incline. The floors are numbered 1 to 8 in descending order. The principal means of access is currently chamber 5 at SH 7662 0987 whence a series of roped descents are required. The mine drains to Floor 7 with Floor 8 being flooded. Other than Floor 8, the entire mine is accessible to specialists. Significant features are chambers AIV, 2, 4, 5, 6 and 7 which have high artefactual survival. Floors 6 and 7 are also noted here because they have high artefactual survival outwith the chambers they served.

PRN: 67504

SITE NAME: **Chamber 7: Hen Gloddfa slate mine**

NPRN: 546473

DATE: 19th/20th century

SITE TYPE: SLATE MINE

NGR: SH 7644 0985

SUMMARY:

An abandoned chamber within Hen Gloddfa slate mine (NPRN: 546472; PRN: 67503), rising from Floor 2 to the surface. On Floor 1 there is a very primitive timber crane, consisting of a tree trunk with a chain wrapped around it.

STATEMENT OF SIGNIFICANCE:

SIGNIFICANCE CATEGORY: U

Significant as an element within Hen Gloddfa slate mine.

BIBLIOGRAPHY:

Plas Tan y Bwlch: Aberllefenni archive.
Papers in private possession.

PRN: 67505 SITE NAME: **Chamber 6:** Hen Gloddfa slate mine
NPRN: 546474 DATE: 19th/20th century
SITE TYPE: SLATE MINE
NGR: SH 7646 0987

SUMMARY:

An abandoned chamber within Hen Gloddfa slate mine (NPRN: 546472; PRN: 67503). It originally rose approximately 191m from Floor 7 to surface, although it is now partly filled with fall and tip. On Floor 6 immediately outside the chamber, tally marks have been engraved on the wall. Nearby is a survey mark.

STATEMENT OF SIGNIFICANCE: SIGNIFICANCE CATEGORY: U

Significant as an element within Hen Gloddfa slate mine.

BIBLIOGRAPHY:

Plas Tan y Bwlch: Aberllefenni archive.
Papers in private possession.

PRN: 67506 SITE NAME: **Chamber 5:** Hen Gloddfa slate mine
NPRN: 546475 DATE: 19th/20th century
SITE TYPE: SLATE MINE
NGR: SH 7662 0987

SUMMARY:

A series of chambers and shafts rising from Floor 7 to surface over 190m above, within Hen Gloddfa slate mine (NPRN: 546472; PRN: 67503). This is the principal means of access to Hen Gloddfa. Floor 1 contains a wooden-framed winch and a small *caban*/blast shelter. Floor 3 contains two winches, one hand-powered and one powered by compressed air.

STATEMENT OF SIGNIFICANCE: SIGNIFICANCE CATEGORY: U

Significant as an element within Hen Gloddfa slate mine.

BIBLIOGRAPHY:

Plas Tan y Bwlch: Aberllefenni archive.
Papers in private possession.

PRN: 67507 SITE NAME: **Chamber 4:** Hen Gloddfa slate mine
NPRN: 546476 DATE: 19th/20th century
SITE TYPE: SLATE MINE
NGR: SH 7650 0994

SUMMARY:

An abandoned chamber within Hen Gloddfa slate mine (NPRN: 546472; PRN: 67503), rising from Floor 7 to 2 and then again from Floor 1 to surface. Floor 2 contains a wooden framed winch with a pulley wheel mounted separately above it. This is part of a haulage system which is not fully understood.

STATEMENT OF SIGNIFICANCE: SIGNIFICANCE CATEGORY: U

Significant as an element within Hen Gloddfa slate mine.

BIBLIOGRAPHY:

Plas Tan y Bwlch: Aberllefenni archive.
Papers in private possession.

PRN: 67508 SITE NAME: **Chamber 1 and 2:** Hen Gloddfa slate mine

NPRN:	546477	DATE:	19 th /20 th century
SITE TYPE:	SLATE MINE		
NGR:	SH 7657 0998		
SUMMARY:	An abandoned single chamber within Hen Gloddfa slate mine (NPRN: 546472; PRN: 67503), rising from Floor 7 to surface over approximately 150m. Floor 3 contains a winch set in a recess at the side of the chamber. A further winch is in the level adjacent to the chamber on Floor 3.		
STATEMENT OF SIGNIFICANCE:	SIGNIFICANCE CATEGORY: U		
	Significant as an element within Hen Gloddfa slate mine.		
BIBLIOGRAPHY:			
	Plas Tan y Bwlch: Aberllefenni archive.		
	Papers in private possession.		

PRN:	67509	SITE NAME:	Chamber AIV: Hen Gloddfa slate mine
NPRN:	546478	DATE:	19 th /20 th century
SITE TYPE:	SLATE MINE		
NGR:	SH 7665 0906		
SUMMARY:	An abandoned chamber from Floor 7 to Floor 5 within Hen Gloddfa slate mine (NPRN: 546472; PRN: 67503). On Floor 5 there is a wooden-framed hand-winch of the standard regional (Corris/Dulas valley) pattern, and an air-powered electric light. Between Floor 5 and Floor 6 is a recess containing a small wooden-framed hand-winch.		
STATEMENT OF SIGNIFICANCE:	SIGNIFICANCE CATEGORY: U		
	Significant as an element within Hen Gloddfa slate mine.		
BIBLIOGRAPHY:			
	Plas Tan y Bwlch: Aberllefenni archive; papers in private possession.		

PRN:	67510	SITE NAME:	Floor 6: Hen Gloddfa slate mine
NPRN:	546479	DATE:	19 th /20 th century
SITE TYPE:	SLATE MINE		
NGR:	SH 7676 0909		
SUMMARY:	An abandoned level within Hen Gloddfa slate mine (NPRN: 546472; PRN: 67503), originally open to surface but now blocked by a fall. There is much evidence of pillar robbing, as chambers 2, 3 and 4 and chambers 5 and 6 have been quarried to form two separate voids.		
STATEMENT OF SIGNIFICANCE:	SIGNIFICANCE CATEGORY: U		
	Significant as an element within Hen Gloddfa slate mine.		
BIBLIOGRAPHY:			
	Plas Tan y Bwlch: Aberllefenni archive.		
	Papers in private possession.		

PRN:	67511	SITE NAME:	Floor 7: Hen Gloddfa Slate Mine
NPRN:	546480	DATE:	19 th /20 th /21 st century
SITE TYPE:	SLATE MINE		
NGR:	SH 7677 1012		
SUMMARY:	An abandoned level within Hen Gloddfa slate mine (NPRN: 546472; PRN: 67503), originally open to surface but now lost in fall/tip. It preserves the head of an uphaulage incline from Floor 8 with electric winder manufactured by John Mills of Llanidloes <i>in situ</i> and an air receiver. There is considerable evidence of pillar-robbing, with many chambers worked together.		
STATEMENT OF SIGNIFICANCE:	SIGNIFICANCE CATEGORY: U		

Significant as an element within Hen Gloddfa slate mine.

BIBLIOGRAPHY:

Plas Tan y Bwlch: Aberllefenni archive.

Papers in private possession.

PRN:	67512	SITE NAME:	Foel Grochan slate mine
NPRN:	546481	DATE:	19 th /20 th /21 st century
SITE TYPE:	SLATE MINE		
NGR:	SH 7689 1023		

SUMMARY:

Foel Grochan slate mine forms one of three discrete areas of underground extraction within Aberllefenni slate quarry (NPRN: 40584; PRN: 20487), along with Ceunant Ddu slate mine (NPRN: 546470; PRN: 67501) and Hen Gloddfa (NPRN: 546472; PRN: 67503); it worked the narrow vein in the Ordovician formation Slate on nine floors. It is accessed from the surface on the north-east side of Nant Llefenni on eight floors, some of which pass through Foel Grochan to emerge in Cwm Ratgoed, and chambers pass vertically up through Foel Grochan and in some cases to daylight above. The geology and working methods were similar in many ways to slate quarries in the Loire valley, and French slate quarry engineers described the quarry after a visit in the 1880s. It was also considered important enough to be the subject of a paper by HM Inspector of Mines in 1882. It closed in 2003.

STATEMENT OF SIGNIFICANCE:

SIGNIFICANCE CATEGORY: AA

Significant as a slate mine site with a unique method of extraction and as one which attracted the interest of French slate quarry engineers.

BIBLIOGRAPHY:

Plas Tan y Bwlch: Aberllefenni archive.

Papers in private possession.

'Voyage aux Ardoisières du Pays de Galles', *Annales des Mines* (Novembre-Décembre 1884).

Archives départementales du Maine-et-Loire, FR AD 49, 15 J 414 (Juillet 1883), Pierre Larivière, Gustave Larivière, *Notes d'un voyage aux ardoisières du Pays de Galles*.

Le Neve Foster, C. 1882. *Notes on Aberllefenny Slate Mine*. Penzance.

Historical description

Foel Grochan slate mine was actively developed from the middle of the 19th century. Levels run south-west to north-east through Foel Grochan to emerge in Cwm Ratgoed, and pass vertically up through Foel Grochan to daylight above. Working methods attracted the attention of French engineers from the Loire slate quarries in the 1880s. Foel Grochan was the last part of the Aberllefenni slate quarry to cease production, in 2003.

Site description

Foel Grochan slate mine forms a discrete area of underground extraction within Aberllefenni slate quarry and like the rest of the quarry, worked the narrow vein in the Ordovician formation. It worked nine floors, numbered 1 to 9 from the highest, which run south-west to north-east through the Foel Grochan ridge from the Llefenni valley to Cwm Ratgoed. Floors 1 to 8 are accessed from the surface, and Floor 9 can only be reached underground from Floor 8. The highest workings are 170m above the floor of the Llefenni valley; the vertical chambers which reach to daylight from the levels are a spectacular feature of the site. The mine drains to Floor 8; Floor 9 is flooded.

PRN:	67513	SITE NAME:	Chamber 1: Foel Grochan slate mine
NPRN:	546482	DATE:	19 th /20 th /21 st century

SITE TYPE: SLATE MINE
NGR: SH 7600 1036

SUMMARY:

An abandoned chamber in Foel Grochan slate mine (NPRN: 546481; PRN: 67512), probably first exploited in the 19th century, approximately 100m high, rising from a *sinc* below Floor 8 to surface. Surviving artefacts include an aerial ropeway with former steam winch converted to run on compressed air on floor 8, and a hand winch which were used to operate it, and a slab wagon.

STATEMENT OF SIGNIFICANCE: SIGNIFICANCE CATEGORY: AA

Significant as an element within Foel Grochan slate mine.

BIBLIOGRAPHY:

Plas Tan y Bwlch: Aberllefenni archive.

Papers in private possession.

PRN: 567514 SITE NAME: **Chamber 1A:** Foel Grochan slate mine
NPRN: 546483 DATE: 19th/20th/21st century

SITE TYPE: SLATE MINE

NGR: SH 7711 1033

SUMMARY:

An abandoned chamber in Foel Grochan slate mine (NPRN: 546481; PRN: 67512), which contains, on Floor 8, the head of an up-haulage incline from the now-flooded floor 9. The haulage winch was air-powered. Between Floor 8 and Floor 7 there survives a wooden framed hand winch.

STATEMENT OF SIGNIFICANCE: SIGNIFICANCE CATEGORY: AA

Significant as an element within Foel Grochan slate mine.

BIBLIOGRAPHY:

Plas Tan y Bwlch: Aberllefenni archive.

Papers in private possession.

PRN: 67542 SITE NAME: **9-8 incline:** Foel Grochan slate mine
NPRN: 546507 DATE: 19th/20th/21st century

SITE TYPE: INCLINED PLANE

NGR: SH 7711 1033

SUMMARY:

An air-powered haulage winch, in chamber 1A in Foel Grochan slate mine (NPRN: 546481; PRN: 67512), for winding the up-haulage incline from the now-flooded floor 9. The incline itself is flooded and inaccessible.

STATEMENT OF SIGNIFICANCE: SIGNIFICANCE CATEGORY: AA

Significant as an element within Foel Grochan slate mine.

BIBLIOGRAPHY:

Plas Tan y Bwlch: Aberllefenni archive.

Papers in private possession.

PRN: 67515 SITE NAME: **Chamber 2 & 3, 'Alma':** Foel Grochan slate mine

NPRN: 546484 DATE: 19th/20th/21st century

SITE TYPE: SLATE MINE

NGR: SH 7705 1045

SUMMARY:

An abandoned chamber in Foel Grochan slate mine (NPRN: 546481; PRN: 67512), believed to have been named after the battle of Alma (1854), though it was probably worked before this. It rises vertically 150m from Floor 9 to surface. Floor 4 contains a large wooden crane. A gantry-type steel framed crane survives on Floor 8.

STATEMENT OF SIGNIFICANCE:	SIGNIFICANCE CATEGORY: AA
Significant as an element within Foel Grochan slate mine.	
BIBLIOGRAPHY:	
Plas Tan y Bwlch: Aberllefenni archive.	
Papers in private possession.	

PRN:	67516	SITE NAME:	Chamber 5: Foel Grochan slate mine
NPRN:	546485	DATE:	19 th /20 th /21 st century
SITE TYPE:	SLATE MINE		
NGR:	SH 7713 1053		
SUMMARY:			
A chamber in Foel Grochan slate mine (NPRN: 546481; PRN: 67512), with high artefactual survival, including a derrick crane on floor 8 manufactured by Butters of Glasgow, and air-receiver together with excellent example of stitch drilling being used to extract blocks. Immediately to the south-west of this chamber is a slab wagon. Between Floor 5 and Floor 4 climbing pegs remain in situ.			
STATEMENT OF SIGNIFICANCE:		SIGNIFICANCE CATEGORY: AA	
Significant as an element within Foel Grochan slate mine.			
BIBLIOGRAPHY:			
Plas Tan y Bwlch: Aberllefenni archive.			
Papers in private possession.			

PRN:	9305	SITE NAME:	Foel Grochan slate mine: Chamber 8
NPRN:	546486	DATE:	19 th /20 th /21 st century
SITE TYPE:	SLATE MINE		
NGR:	SH 7719 1061		
SUMMARY:			
A chamber in Foel Grochan slate mine (NPRN: 546481; PRN: 67512), rising from floor 8 to surface at SH 7719 1061.			
STATEMENT OF SIGNIFICANCE:		SIGNIFICANCE CATEGORY: AA	
Significant as an element within Foel Grochan slate mine.			
BIBLIOGRAPHY:			
Plas Tan y Bwlch: Aberllefenni archive.			
Papers in private possession.			
Brooks I and J Price 1999, <i>Dyfi Archaeological Assessment</i>			

PRN:	9304	SITE NAME:	Chamber 9: Foel Grochan slate mine
NPRN:	546487	DATE:	19 th /20 th /21 st century
SITE TYPE:	SLATE MINE		
NGR:	SH 7723 1063		
SUMMARY:			
An abandoned chamber in Foel Grochan slate mine (NPRN: 546481; PRN: 67512), rising approximately 140m from Floor 8 to daylight above floor 4 at SH 7723 1063. It contains a former steam winch converted to run on compressed air on Floor 4. In a sub-level between Floor 4 and Floor 5 is a hand-winch from Bryn Eglwys slate quarry together with a ladder, explosives and other tools.			
STATEMENT OF SIGNIFICANCE:		SIGNIFICANCE CATEGORY: AA	
Significant as an element within Foel Grochan slate mine.			
BIBLIOGRAPHY:			
Plas Tan y Bwlch: Aberllefenni archive.			
Papers in private possession.			
Brooks I and J Price 1999. <i>Dyfi Archaeological Assessment</i> .			

PRN:	9303	SITE NAME:	Chamber 10: Foel Grochan slate mine
NPRN:	546488	DATE:	19 th /20 th /21 st century
SITE TYPE:	SLATE MINE		
NGR:	SH 7726 1065		

SUMMARY:
A chamber in Foel Grochan slate mine (NPRN: 546481; PRN: 67512), rising from floor 6 to surface.

STATEMENT OF SIGNIFICANCE: SIGNIFICANCE CATEGORY: AA
Significant as an element within Foel Grochan slate mine.

BIBLIOGRAPHY:
Plas Tan y Bwlch: Aberllefenni archive.
Papers in private possession.
Brooks I and J Price 1999, *Dyfi Archaeological Assessment*

PRN:	9302	SITE NAME:	Chamber 11: Foel Grochan slate mine
NPRN:	65717	DATE:	20 th century
SITE TYPE:	SLATE MINE		
NGR:	SH 7724 1063		

SUMMARY:
An abandoned chamber in Foel Grochan slate mine (NPRN: 546481; PRN: 67512), worked below Floor 8, the last chamber worked underground in any Welsh slate mine, now partly below water. A ladder, 40 m high, is mainly below water. A steel gantry spans the chamber to give access to the anchorage of air powered cableway. The cableway is complete with air winches used to operate it, one of which was supplied by G. Dusterloh of Germany. There is evidence in the form of the chamber sides of the chain-saw which was latterly used to extract blocks.

STATEMENT OF SIGNIFICANCE: SIGNIFICANCE CATEGORY: AA
Significant as an element within Foel Grochan slate mine.

BIBLIOGRAPHY:
Plas Tan y Bwlch: Aberllefenni archive.
Papers in private possession.
Brooks I and J Price 1999, *Dyfi Archaeological Assessment*

PRN:	9301	SITE NAME:	Chamber 12: Foel Grochan slate mine
NPRN:	546489	DATE:	19 th /20 th /21 st century
SITE TYPE:	SLATE MINE		
NGR:	SH 7731 1067		

SUMMARY:
An abandoned chamber in Foel Grochan slate mine (NPRN: 546481; PRN: 67512), rising from floor 8 to surface on floor 5, now partly filled with tip and worked together with chamber 11 to form a very large chamber between floors 7 and 6. Below Floor 5 is a Derrick Crane by Rushworth of Colne, used to lift blocks from underground to daylight in Cwm Ratgoed for onward transport to the mill by road.

STATEMENT OF SIGNIFICANCE: SIGNIFICANCE CATEGORY: AA
Significant as an element within Foel Grochan slate mine.

BIBLIOGRAPHY:
Plas Tan y Bwlch: Aberllefenni archive.
Papers in private possession.
Brooks I and J Price 1999, *Dyfi Archaeological Assessment*

PRN:	9298	SITE NAME:	Chamber 13: Foel Grochan slate mine
NPRN:	546490	DATE:	19 th /20 th /21 st century
SITE TYPE:	SLATE MINE		

NGR: SH 7738 1072

SUMMARY:

An abandoned chamber and shaft in Foel Grochan slate mine (NPRN: 546481; PRN: 67512), from floor 7 to surface; adjoining a shaft from floor 8 to floor 7, now in collapse.

STATEMENT OF SIGNIFICANCE: SIGNIFICANCE CATEGORY: AA

Significant as an element within Foel Grochan slate mine.

BIBLIOGRAPHY:

Plas Tan y Bwlch: Aberllefenni archive.

Papers in private possession.

Brooks I and J Price 1999, *Dyfi Archaeological Assessment*

PRN: 9298

SITE NAME: **Chamber 14:** Foel Grochan slate mine

NPRN: 546511

DATE: 19th/20th/21st century

SITE TYPE: SLATE MINE

NGR: SH 7738 1072

SUMMARY:

An abandoned chamber, now filled with slate rubble, and shaft in Foel Grochan slate mine (NPRN: 546481; PRN: 67512), from floor 8 to surface, opening at SH 77380 10720, where the remains of an internal combustion winch survive.

STATEMENT OF SIGNIFICANCE: SIGNIFICANCE CATEGORY: AA

Significant as an element within Foel Grochan slate mine.

BIBLIOGRAPHY:

Plas Tan y Bwlch: Aberllefenni archive.

Papers in private possession.

Brooks I and J Price 1999, *Dyfi Archaeological Assessment*

PRN: 67535

SITE NAME: **Chamber 15:** Foel Grochan slate mine

NPRN: 546491

DATE: 19th/20th/21st century

SITE TYPE: SLATE MINE

NGR: SH 7740 1073

SUMMARY:

A small abandoned chamber in Foel Grochan slate mine (NPRN: 546481; PRN: 67512), between floor 7 and floor 8, which contains a ladder-way 25m high and a former steam winch converted to run on compressed air. In the level immediately to the south-west of this chamber is an Eimco rocker shovel.

STATEMENT OF SIGNIFICANCE: SIGNIFICANCE CATEGORY: AA

Significant as an element within Foel Grochan slate mine.

BIBLIOGRAPHY:

Plas Tan y Bwlch: Aberllefenni archive.

Papers in private possession.

PRN: 67536

SITE NAME: **Floor 1:** Foel Grochan slate mine

NPRN: 546492

DATE: 19th/20th/21st century

SITE TYPE: SLATE MINE

NGR: SH 7703 1048

SUMMARY:

The topmost level in Foel Grochan slate mine (NPRN: 546481; PRN: 67512), at 281 metres AOD; now abandoned but accessible by specialists; runs from the vicinity of SH 7703 1048.

STATEMENT OF SIGNIFICANCE: SIGNIFICANCE CATEGORY: AA

Significant as an element within Foel Grochan slate mine.

BIBLIOGRAPHY:

Plas Tan y Bwlch: Aberllefenni archive.
Papers in private possession.

PRN: 67537 SITE NAME: **Floor 2: Foel Grochan slate mine**
NPRN: 546493 DATE: 19th/20th/21st century
SITE TYPE: SLATE MINE
NGR: SH 7702 1045
SUMMARY:
The second level from the top in Foel Grochan slate mine (NPRN: 546481; PRN: 67512), at 266 metres AOD; now abandoned but accessible by specialists; runs from an opening in the hillside at SH 7702 1045.
STATEMENT OF SIGNIFICANCE: SIGNIFICANCE CATEGORY: U
Significant as an element within Foel Grochan slate mine.
BIBLIOGRAPHY:
Plas Tan y Bwlch: Aberllefenni archive.
Papers in private possession.

PRN: 67538 SITE NAME: **Floor 3: Foel Grochan slate mine**
NPRN: 546494 DATE: 19th/20th/21st century
SITE TYPE: SLATE MINE
NGR: SH 7702 1044
SUMMARY:
An abandoned level in Foel Grochan slate mine (NPRN: 546481; PRN: 67512), at 252 metres AOD; now abandoned but accessible by specialists; runs from an opening in the hillside at SH 7702 1044.
STATEMENT OF SIGNIFICANCE: SIGNIFICANCE CATEGORY: U
Significant as an element within Foel Grochan slate mine.
BIBLIOGRAPHY:
Plas Tan y Bwlch: Aberllefenni archive.
Papers in private possession.

PRN: 65739 SITE NAME: **Floor 4: Foel Grochan slate mine**
NPRN: 546495 DATE: 19th/20th/21st century
SITE TYPE: SLATE MINE
NGR: SH 7700 1042
SUMMARY:
An abandoned level in Foel Grochan slate mine (NPRN: 546481; PRN: 67512), at 232 metres AOD starting in the open-fronted 'Alma' chamber and continuing along the strike to chamber 7. In the 'Alma' chambers 2/3 and chamber 4 the level does not run in the underlying hard but in the vein and in chamber 1 it is on a built-up ledge partly supported on iron spikes. Any timber bridges which it would have used to cross the chambers are not now evident. This level is blocked by a fall in chamber 4. Currently only accessible by specialists, by abseiling from floor 3.
STATEMENT OF SIGNIFICANCE: SIGNIFICANCE CATEGORY: U
Significant as an element within Foel Grochan slate mine.
BIBLIOGRAPHY:
Plas Tan y Bwlch: Aberllefenni archive.
Papers in private possession.

PRN: 9296 SITE NAME: **Floor 5: Foel Grochan slate mine**
NPRN: 546496 DATE: 19th/20th/21st century
SITE TYPE: SLATE MINE

NGR: SH 7729 1068

SUMMARY:

An abandoned level in Foel Grochan slate mine (NPRN: 546481; PRN: 67512), at 188 metres AOD; worked from the south-west to the north-east, and evident as at opening in the hillside at SH 7729 1068.

STATEMENT OF SIGNIFICANCE:

SIGNIFICANCE CATEGORY: U

Significant as an element within Foel Grochan slate mine.

BIBLIOGRAPHY:

Plas Tan y Bwlch: Aberllefenni archive.

Papers in private possession.

PRN: 9296

SITE NAME: **Floor 6:** Foel Grochan slate mine

NPRN: 546497

DATE: 19th/20th/21st century

SITE TYPE: SLATE MINE

NGR: SH 7729 1068

SUMMARY:

An abandoned level in Foel Grochan slate mine (NPRN: 546481; PRN: 67512), at 164 metres AOD; evident as an opening in the hillside at SH 7729 1068.

STATEMENT OF SIGNIFICANCE:

SIGNIFICANCE CATEGORY: U

Significant as an element within Foel Grochan slate mine.

BIBLIOGRAPHY:

Plas Tan y Bwlch: Aberllefenni archive.

Papers in private possession.

PRN: 67540

SITE NAME: **Floor 7:** Foel Grochan slate mine

NPRN: 546498

DATE: 19th/20th/21st century

SITE TYPE: SLATE MINE

NGR: SH 7696 1029

SUMMARY:

An abandoned level in Foel Grochan slate mine (NPRN: 546481; PRN: 67512), at 145 metres AOD; evident as an opening in the hillside at SH 7696 1029

STATEMENT OF SIGNIFICANCE:

SIGNIFICANCE CATEGORY: AA

Significant as an element within Foel Grochan slate mine.

BIBLIOGRAPHY:

Plas Tan y Bwlch: Aberllefenni archive.

Papers in private possession.

PRN: 67541

SITE NAME: **Floor 8:** Foel Grochan slate mine

NPRN: 546499

DATE: 19th/20th/21st century

SITE TYPE: SLATE MINE

NGR: SH 7690 1027

SUMMARY:

An abandoned level in Foel Grochan slate mine (NPRN: 546481; PRN: 67512), at 120 metres AOD containing 15 chambers with surviving 0.686m (2'3") gauge rail system, compressed-air pipework and electrical cabling. This level cannot be accessed directly from the former entrance at SH 7690 1027 since it has been blocked, but a ladder provides access from Floor 7. The remains of winding equipment and a sheave to haul from Floor 9 (now flooded) are evident at SH 7698 1033.

STATEMENT OF SIGNIFICANCE:

SIGNIFICANCE CATEGORY: AA

Significant as an element within Foel Grochan slate mine.

BIBLIOGRAPHY:

Plas Tan y Bwlch: Aberllefenni archive.

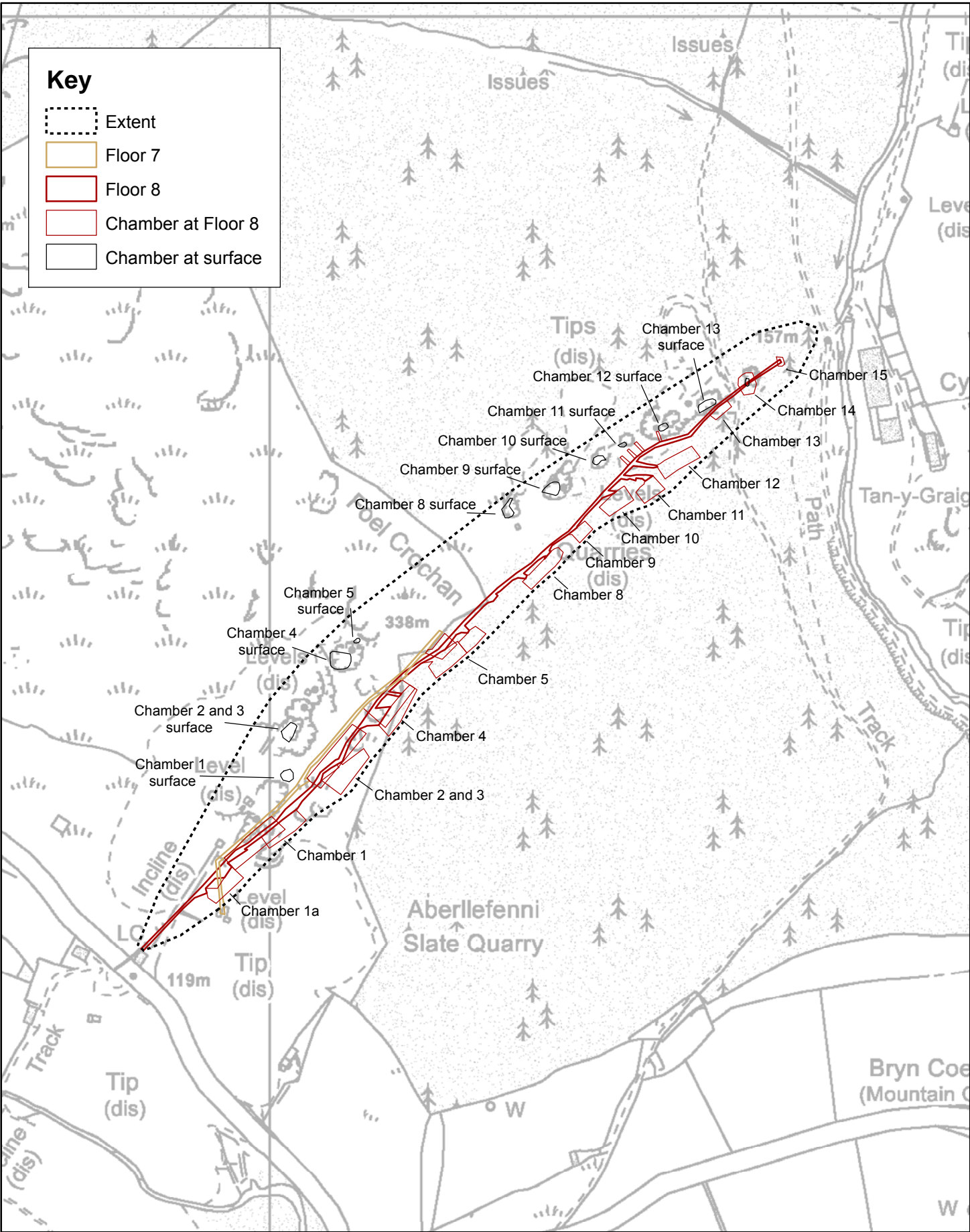
Papers in private possession.

PRN:	67546	SITE NAME:	Floor 9: Foel Grochan slate mine
NPRN:	546500	DATE:	19 th /20 th /21 st century
SITE TYPE:	SLATE MINE		
NGR:	SH 7698 1033		

SUMMARY:
An abandoned level in Foel Grochan slate mine (NPRN: 546481; PRN: 67512), at 111 metres AOD, now flooded, formerly accessed by an incline from Floor 8 at SH 7698 1033.

STATEMENT OF SIGNIFICANCE: SIGNIFICANCE CATEGORY: NR
Significant as an element within Foel Grochan slate mine.

BIBLIOGRAPHY:
Plas Tan y Bwlch: Aberllefenni archive.
Papers in private possession.



Aberllefenni Slate Quarry: Foel Grochan Underground Workings

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Mae'r map hwn yn seiliedig ar ddeunydd y Arolwg Ordnans gyda chaniatâd Arolwg Ordnans ar ran Rheolwr Llyfrfa Eri Mawrhydi © Hawffraint y Goron. Mae atgynhyrchu heb ganiatâd yn torri hawffraint y Goron a gall hyn arwain at erlyniad neu achos sifil. Rhif trwydded: 100022206.

0 0.2 Km





Hen Gloddfa chamber 1 and 2 shows the nature and scale of workings at Aberllefenni. NPRN: 546477; PRN: 67508.



Ceunant Ddu Chamber 1/2 contains a wealth of early/ mid-19th century artefacts, including this turntree platform. NPRN: 546471; PRN: 67502.



Large-scale late 20th century engineering at Aberllefenni is represented by this derrick crane in Foel Grochan chamber 5. NPRN: 546485; PRN: 9301.