
Pen yr Orsedd Slate Quarry



Archaeological Assessment

GAT Project No. G2035

Report No. 1058

August, 2008

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Prepared for Welsh Slate

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By
Andrew Davidson

Pen yr Orsedd Slate Quarry Nantlle

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PEN YR ORSEDD SLATE QUARRY

ARCHAEOLOGICAL ASSESSMENT (G2035)

1. INTRODUCTION

Welsh Slate has commissioned Gwynedd Archaeological Trust to carry out an archaeological assessment of Pen yr Orsedd Slate Quarry. This assessment updates a previous assessment undertaken in 1997 when the quarry was in the ownership of Alfred McAlpine Ltd.

2. ASSESSMENT BRIEF

A report was requested from the Gwynedd Archaeological Trust assessing the importance of all the archaeological remains, ranging from the Prehistoric to the Industrial period.

The basic requirement was for a desk-top study and field-search of the quarry permission area. The importance and condition of known archaeological remains were to be assessed and new sites identified. Measures to mitigate possible damage to the archaeological resource were to be suggested, in addition to general management recommendations .

Gwynedd Archaeological Trust's proposals for fulfilling these requirements were as follows:

- a) to identify and record the cultural heritage of the area
- b) to evaluate the importance of what was identified, both as a cultural landscape and as the individual items which make up that landscape
- c) to recommend ways in which the cultural heritage could be best managed.

3. METHODS AND TECHNIQUES

3.1 Desk-top study

Consultation of the quarry archive and other written records was carried out in the Caernarfon Record Office of the Gwynedd Archives Service. The Gwynedd Archaeological Trust's Sites and Monuments Record was also consulted, as were the relevant volume of the Royal Commission on Ancient and Historic Monuments (Wales) Inventory, Alun Richards *Gazeteer of the Welsh Slate Industry* and James Boyd's *Narrow Gauge Railways in North Caernarvonshire*.

3.2 Field Search

Field visits were undertaken by Trust staff on 8 and 11 July 2008. Features identified were marked on the current 1:2,500 ordnance survey map and photographed.

3.3 Consultation

For the 1997 report Dr Michael Lewis of the University of Hull was consulted and permission given to make use of the study carried out in connection with the Hull University/Snowdonia National Park Practical Industrial Archaeology courses carried out in 1996 and 1997. In addition the report also derived in part from discussion with former Pen yr Orsedd quarrymen and staff, including the late Dafydd Lisa Anne, Nantlle, Bobi Humphries, Maes Llyfnwy, Tal y Sarn, Jac Tomos, Bro Silyn, Peredur Hughes, Porthmadog, and Brynley Jones, Carmel. Dr Gwynfor Pierce Jones was consulted for the 2008 report, and accompanied Trust staff on one of the field visits.

3.4 Statutory protection and description.

Three of the cable ropeways, masts and engine houses on Level 8 are scheduled (Cn 208 A-D). In addition 24 of the sites are Listed Buildings, all of Grade II status.

The following table lists the scheduled ancient monuments and listed buildings according to the site numbers allocated in this report. The Listed Buildings are identified with red dots on the location plans, and the Scheduled Areas are bounded with a red line.

Site No	Listed Building	SAM
06	23736 Grade II	
07	23737 Grade II	
10	23734 Grade II	
11	23735 Grade II	
18	23738 Grade II	
30	23741 Grade II	
37	23729 Grade II	
38	23740 Grade II	
39	23732 Grade II	
40	23731 Grade II	
41	23739 Grade II	
44	23733 Grade II	
52	23675 Grade II	
55	23721 Grade II	Cn 208A
58	23676 Grade II	Cn 208B
59	23722 Grade II	Cn 208C (Excluding Engine House)
60	23674 Grade II	
62	23673 Grade II	Cn 208D (Engine House only)
63	23673 Grade II	Cn 208D
64	23672 Grade II	
65	23671 Grade II	
66	23724 Grade II	
67	23727 Grade II	
68	23725 Grade II	

Six areas which include hut circle settlements and field systems have also been Scheduled as Ancient Monuments in the area 1km to the east of the quarry, outside the quarry permission area.

3.5 Report

The features on the site were assessed and allocated to the categories listed below. These are intended to give an idea of the importance of the site, as an aid to identifying appropriate management recommendations. The criteria used for allocating sites to categories are based on those used by the Secretary of State when considering ancient monuments for scheduling. These are set out in Welsh Office Circular 60/96 Planning and Environment: Archaeology.

3.6 Definition of Site Importance/Rarity

‘This process should take account of all aspects of the distribution of a particular class of monument, both in a national and a regional context’ (Secretary of State. Annex 3. 1996.p15)

The following categories were used to define the importance of the archaeological resource:

Category A - Sites of national importance.

Scheduled Ancient Monuments, Listed Buildings and sites worthy of scheduling or listing *i.e.* those which would meet the criteria for scheduling (ancient monuments) or listing (buildings) or both.

Sites which are scheduled or listed have legal protection, and it is recommended that all Category A sites remain preserved and protected *in situ*.

Category B - Sites of regional or county importance.

Sites which would not fulfil the criteria for scheduling but might be considered for listing at Grade II, and which are of particular importance within the region.

Preservation *in situ* is the preferred option for Category B sites, but if damage or destruction cannot be avoided, appropriate detailed recording might be an acceptable alternative.

Category C - Sites of district or local importance.

Sites which are not of sufficient importance to justify a recommendation for preservation if threatened.

Category C sites nevertheless merit adequate recording in advance of damage or destruction.

Category D - Minor and damaged sites.

Sites which are of minor importance or so badly damaged that too little remains to justify their inclusion in a higher category.

For Category D sites, rapid recording, either in advance or, or during, destruction should be sufficient.

Category E - Sites needing further investigation.

Sites whose importance is as yet undetermined and which will require further work before they can be allocated to categories A-D are temporarily placed in this category, with specific recommendations for further evaluation. By the end of the assessment there should be no sites remaining in this category.

3.7 Definition of Site Condition/survival

‘The survival of a monument’s archaeological potential both above and below ground is a particularly important consideration and should be assessed in relation to its present condition and surviving features’ (Secretary of State. Annex 3.1996.p15)

For the purposes of this assessment, all archaeological features will be assigned a site condition/survival category as outlined below.

Category 1: Excellent condition - roof slates and timbers are wholly or mostly present if applicable.

Walls/structure is mostly complete. Signs of cultural heritage remain such as machinery, decoration, fittings etc. Structure/feature has deviated very little from when in use.

Category 2: Good condition - the majority of roof slates and beams remain. Walls/structure is for the most part complete with only minor collapse or listing. Some internal or related features of use may remain.

Category 3: Poor condition – less than 50% of the roof slates remain, and roof timbers are decaying or part fallen. Walls may be cracked or listing, or part collapsed. Structure/feature has degraded significantly.

Category 4: Very poor condition- structure has almost entirely subsided or collapsed. Structure/feature is nearing complete destruction via a total deterioration of structural integrity, burial or damage via external factors, or total subsidence.

Category 5: Unknown condition- further investigation is required to ascertain condition status.

3.8 Definition of Site Vulnerability/Fragility

‘There are existing standing structures of particular form and complexity whose value can again be severely reduced by neglect or careless treatment and which are similarly well suited by scheduled monument protection, even if these structures are already listed historic buildings’ (Secretary of State. Annex 3.1996.p15).

For the purposes of this assessment, all sites will be assigned a category to delineate their current level of vulnerability or fragility from external agents, as recorded during the fieldwork process.

LOW	In relatively stable condition with no immediate threat.
MEDIUM	Vulnerable from weathering, erosion or management change.
HIGH	Very vulnerable from weathering, erosion or management change.

3.9 Definition of Recording levels

Where a feature of archaeological significance is affected, mitigation measures will be included in accordance with current policies as recommended in Circular 60/96 for rescue archaeology.

The recording level defines the level of recording recommended for each structure, given the importance, status and nature of the structure. These recommendations would be appropriate if a programme of survey were to be undertaken in advance of management change. The levels are defined in *Understanding Historic Buildings: A guide to good recording practice* (English Heritage 2006). Four levels of recording are defined.

Level 1

Level 1 is essentially a **basic visual record**, supplemented by the minimum of information needed to identify the building’s location, age and type. This is the simplest record, not normally an end in itself but contributing to a wider aim. Typically it will be undertaken when the objective is to gather basic information about a large number of buildings – for statistical sampling, for area assessments or historic landscape characterisation, for a pilot project, to identify buildings for planning purposes, or whenever resources are limited and much ground has to be covered in a short time. It may also serve to identify buildings requiring more detailed attention at a later date.

Level 1 surveys will generally be of exteriors only, although they may include superficial interior inspection for significant features. Only if circumstances and objectives allow will any drawings be produced, and these are likely to take the form of sketches.

Level 2

This is a **descriptive record**, made in circumstances similar to those of Level 1 but when more information is needed. It may be made of a building which is judged not to require any fuller record, or it may serve to gather data for a wider project. Both the exterior and the interior will be viewed, described and photographed. The record will present conclusions regarding the building’s development and use, but will not discuss in detail the evidence on which these conclusions are based. A plan and sometimes other drawings may be made but the drawn record will normally not be comprehensive and may be tailored to the scope of a wider project.

Level 3

Level 3 is an **analytical record**, and will comprise an introductory description followed by a systematic account of the building’s origins, development and use. The record will include an account of the evidence on which the analysis has been based, allowing the validity of the record to be re-examined in detail. It will

also include all drawn and photographic records that may be required to illustrate the building's appearance and structure and to support an historical analysis.

The information contained in the record will for the most part have been obtained through an examination of the building itself. If documentary sources are used they are likely to be those which are most readily accessible, such as historic Ordnance Survey maps, trade directories and other published sources. The record will not normally discuss the building's broader stylistic or historical context and importance at any length. It may, however, form part of a wider survey – thematic or regional, for example – of a group of buildings, in which additional source material contributes to an overall historical and architectural synthesis. A Level 3 record may also be appropriate when the fabric of a building is under threat but time or resources are insufficient for detailed documentary research, or where the scope for such research is limited.

Level 4

Level 4 provides a **comprehensive analytical record** and is appropriate for buildings of special importance. Whereas Level 3 analysis and interpretation will clarify the building's history in so far as it may be deduced from the structure itself, the record at Level 4 will draw on the full range of available resources and discuss the building's significance in terms of architectural, social, regional or economic history. The range of drawings may also be greater than at other levels.

4. ARCHAEOLOGICAL FINDINGS AND RECOMMENDATIONS

4.1 Location

Pen yr Orsedd quarry is situated on the northern slopes of Dyffryn Nantlle, in the community (formerly civil parish) of Llandwrog at grid ref: SH51005380 within the county of Gwynedd. It is one of the major sites of the Nantlle slate district, extracting the rock from pits on the hillside slopes. Its workings and tips dominate the northern side of the valley, and the village of Nantlle was built to house the quarry's workforce.

4.2 Historical background.

4.2.1 Pre-modern

Dyffryn Nantlle has seen human occupation since, in all probability, the Bronze Age, as there is a strong likelihood of the copper ores which outcropped at Drws y Coed having been exploited in Prehistory. Evidence of later Prehistoric occupation is to be found in the field systems on the western slopes of Mynydd Mawr, near Caeronwy, in hut circles and field systems identified between Pen yr Orsedd and Fron quarries, as well as at the hill-fort at Bryn Engan.

In the Medieval period it is known that the area of land known as Baladeulyn on the valley floor at the foot of the quarry formed one of the demesnes surrounding a *llys* of the Princes of Gwynedd, and became the property of the crown of England after the Conquest, being made over to Queen Eleanor of Castile. Edward I stayed there in 1284 for several weeks. Possibly the *llys* itself was situated near the sub-medieval house known as Ty Mawr at SH 5086 5333. The valley is mentioned several times in the fourth branch of the *Mabinogion*, not only Baladeulyn itself, where Gronw Pebyr transforms Lleu Llaw Gyffes back into the semblance of a man but also Dol Pebin, Maen Dylan and possibly Bryn Engan, which has been suggested as the site of Math fab Mathonwy's court of Caer Dathyl. However, in this time the valley appears to have been sparsely populated and comparatively remote, and it is thus that it is depicted in Richard Wilson's famous landscape, *Snowdon from Llyn Nantlle*, painted in the 1760s and preserved in the Walker art gallery.

4.2.2 Modern and Industrial period

Wilson's landscape shows no evidence of industrial activity, but it is known that the scale of local economic activity was beginning to intensify in the late eighteenth century, leading to the reopening of the copper mines at Drws y Coed, by this time part of Assheton Smith's Vaynol estate, and to the quickening pace of the local slate industry, which appears to have been in being since at least Pre-conquest times. Work had begun at Pen yr Orsedd by the end of the eighteenth century, and from 1816 onwards was prosecuted more vigorously by William Turner, a quarry entrepreneur from the lake district who had already had experience of slate and copper workings in Wicklow, Dyffryn Conwy and Blaenau Ffestiniog..

The construction of the Nantlle Railway, a 3' 6" gauge horse-worked public railway, to a terminus near the quarry in 1828 would have substantially reduced transport costs, even more so after a short extension was constructed to the quarry itself in perhaps 1832. This connected to an internal railway network, organised around a series of counter-balanced inclines, also to the 3' 6" gauge. There were also lines from the working faces to the *gwaliau* and the tips. There are hints that the first internal rails in the quarry was a cast-iron plateway, but by the 1860s movement of raw blocks and of rubble was being carried out on 2' gauge edge rails, such as were then commonplace throughout the Welsh slate industry.

There is little other evidence of technical development in the first half of the nineteenth century, however, and the quarry appears to have grown very little between the 1820s and the 1860s. At some stage, probably during the period when the manager was Miss Lydia Cane, a chain incline to raise wagons from the main working pit was installed, operated by a water-wheel; another water-wheel immediately adjacent may have pumped or may have offered augmented power to the chain incline. It is possibly that this was installed c. 1848 when an extensive water-powered system to serve Pen yr Orsedd's neighbour, Pen y Bryn quarry, was installed, whose supply leat passed through Pen yr Orsedd and certainly came to be used by them to power machinery. Chain inclines are effectively aerial ropeways steeply inclined from a working bank to a quarry pit along which a traveller carriage runs from which a dependent rope lifts a wagon, and were originated at Delabole slate quarry in Cornwall in perhaps the 1830s. The technology reached Dyffryn Nantlle in the early 1840s when a Cornishman by the name of Gullet arrived from Delabole to run Pen y Bryn quarry, and the example was not lost on neighbouring quarries.

The first serious change in the quarry's existence however, came in 1862, when a partnership of which W.A. Darbishire was a leading light took over the quarry from John Lloyd Jones, a notorious speculator who had acquired the lease in 1848. Darbishire came from a family that had recently settled at Pendyffryn near Penmaenmawr in the wake of the construction of the Chester and Holyhead Railway, of which his father had been secretary, and may have been involved in land-speculation along the route. William Darbishire was to leave his mark on the quarry in several different ways; as a Unitarian in religion and a Liberal in politics, he regarded business enterprise as a mutually beneficial relationship between capital and labour, and firmly believed that the workforce deserved proper treatment and housing. Accommodation for the quarrymen was constructed which took the form of a purpose-built village, grafted onto an existing development along the Pen y Groes to Rhyd Ddu road and also of barracks in the village and in the quarry itself. The dwellings in the village are an excellent example of a planned nineteenth century slate-quarrying community, contrasting with the more *ad-hoc* development of other settlements in the valley.

As an engineer, Darbishire seems to have believed also in an intensive factory approach to quarry management. The purchase of a lease by this new partnership therefore led to substantial investment in the quarry, reflected in the provision of mills making use of both water and steam power.

A map of Pen yr Orsedd prepared for W.A. Darbishire in 1862 (CRO Pen yr Orsedd 375) shows a quarry that had barely begun the process of mechanisation, in which the raw blocks of slate were processed entirely by hand in the traditional open booths, known in Welsh as *gwaliau*. This was soon to change. Pen yr Orsedd's first mill, intended to produce mechanically-sawn slabs, was under discussion in November 1867, when it was proposed to construct a steam-powered mill for two small tables on level 4. When it came into being the following year, it was slightly more ambitious; a new steam engine had been bought for it instead of the second-hand one they originally proposed to use, a Hunter saw had been ordered for £200 and a 9' by 5' planer for £100. This is now the oldest surviving quarry mill in the Nantlle valley.

Small independent slab mills may have existed from the early nineteenth century, and Melin Griffith at Dorothea was built c. 1840, but no trace survives of them.

In 1875 the DeWinton foundry in Caernarfon drew up plans for a two-gable mill to produce roofing slates on level 6, colloquially Bonc yr Offis, in which the blocks were to be mechanically sawn and dressed, though the process of splitting was to be carried out by hand. When it came into being, it was served by three longitudinal railways, and powered by a water-wheel set in its north-west gable end and an auxiliary steam engine. This complex was evidently in existence by 1877, when a further set of plans, once again from the DeWinton drawing office, shows an extension to the north-west, giving a large structure with a central power-source. The valuation of 1907 records a 30' water-wheel here, as well as a double cylinder 14" X 18" Robey steam engine, dating from 1903, and a boiler of 1899.

Very shortly afterwards, or contemporaneously with the Bonc yr Offis mill, a further roofing-slate mill on the level 4 was built next to the slab mill, and housed twenty-seven DeWinton hydraulic feed saw-tables and twenty-six dressers. It was initially powered by a wire rope transmission from the water-wheel and steam engine power-sources in the Bonc yr Offis mill, until after 1906, when electric motors were installed in the roof trusses. Its position downslope from the Bonc yr Offis mill would have made it ideally suited to the conventional water-power system whereby a sequence of water-wheels from the same flow could have operated them. However, Pen yr Orsedd suffered from a legal constraint, whereby water had to be delivered to the neighbouring Pen y Bryn quarry at a certain level; this lay above the level of the no. 4 mills, but below no. 6.

This building exemplifies the intensive factory approach to slate processing adopted at Pen yr Orsedd after the experimental mills of the period 1860 to 1874 elsewhere in the slate industry, in which the hand-processing work areas are not separated from the mechanical processing.

Other instances of mechanisation recorded in this period are the first members of what were to become a fleet of steam locomotives. *Starston* and *Baladeulyn* were experimental prototypes built by the Caernarfon firm of DeWinton, to whose products the quarry remained loyal for as long as they operated. Later steam locomotives came mostly from Hunslets of Leeds, and from 1945 the quarry also made use of diesels by Ruston Hornsby of Lincoln. Steam locomotives were used possibly as late as 1960, and all rail transport ceased in 1978-9.

By the end of the nineteenth century the focus of workings had shifted to the north, and the original pit worked in the 1860s was being tipped over to form a new working level known as Eureka or Bonc Brig, on which a mill was constructed in 1898. This remained in use until 1997. It was built to house thirty-three saw-tables and thirty-two dressers, and was powered by a compound condensing horizontal steam engine. It was substantially rebuilt with modern equipment in the late 1960s and was further altered after the abandonment of rail transport in 1978-9. In order to reach the workable slate, chain inclines and blondin ropeways were installed from this level.

In 1904-6 Pen yr Orsedd quarry was working on an extensive scale with 161 men working inside, and 362 outside and was undergoing a second wave of investment in new technology, which was effectively to see it through to 1978. Henceforth three-phase electrical power supplied by the North Wales Power and Traction Company's Cwm Dyli power station was to power the ropeway systems, the level 6 mill and the larger of the level 4 mills. The internal railway system continued to be operated by steam locomotives, and the exit railway from the stackyards by the mills to the standard gauge railway at Tal y Sarn station by horses, as it had been since 1832, and as it was to remain until 1963.

Similarly, hydraulic power remained important. Not only did a pressure system continue to drive the saw-tables in the mills, but a water-wheel continued to pump out William quarry. The other pits were drained by an extensive underground system driven in the 1870s, but for reasons which are not clear, William quarry was not connected to this. The same water-wheel also operated the chain incline which hauled out of Wern Ifan quarry, until it was replaced by an electrically-driven blondin in 1926.

Pen yr Orsedd quarry continued to work along much the same lines for the next seventy years. Use of the level 4 mills ceased during the second world war and of Bonc yr Offis in 1946, apart from some small-scale working into the 1960s. The last run of slate went down the remaining stub of the Nantlle Railway to Tal y Sarn station in 1963, and thereafter the quarry relied on road transport to take away the finished product. The 3' 6" gauge rails were lifted below the foot of the level 6 to Eureka incline in 1970. But the 2' gauge system, a short length of the 3' 6" gauge to a lorry loading bay, and the blondins remained in use until closure came in 1979, after the same company had run the quarry for 126 years.

Plans were discussed in 1976 to open a narrow-gauge railway museum on the site, and a number of locomotives and other heritage items were delivered, but further counsels led to their removal to Gloddfa Ganol in Blaenau Ffestiniog.

The quarry was bought by the Ffestiniog Slate Quarries Company Ltd trading as the Nantlle Slate Quarry Company Ltd in March 1979, and reopened making use of road vehicles from the working face to the Eureka mill, now equipped with substantial diamond saws.

Accommodation for the quarrymen was provided after the Darbishires arrived on the scene, in the form of a purpose-built village, grafted onto an existing development along the Pen y Groes to Rhyd Ddu road and also of barracks in the village and in the quarry itself. The dwellings in the village are an excellent example of a planned nineteenth century slate-quarrying community, contrasting with the more *ad-hoc* development of other settlements in the valley. The social concerns of the family are evident also in the provision of a handsome chapel, now demolished and in the absence of a pub in the village of Nantlle.

4.3 Archaeology of the quarry area.

Existing surveys by Gwynedd Archaeological Trust have identified Pen yr Orsedd quarry as an outstanding industrial landscape, and courses pursued jointly by the University of Hull and the Snowdonia National Park Studies Centre at Plas Tan y Bwlch have established the significance and function of certain of the features at the quarry, and have carried out some measured surveys. The quarry forms part of an area defined as a Landscape of Exceptional Historic Interest in the recent report (Kelly 1994) commissioned by the Countryside Council for Wales, Cadw and Icomos UK (International Council on Monuments and Sites) for its "prehistoric settlements and field systems, slate quarries and settlements, Mabinogi and poetic landscapes, Richard Wilson's Snowdon."

4.3.1 Extraction points and tip runs.

Pen yr Orsedd was observed to be typical of slate-quarry practice in the Nantlle district in that slate was extracted from deep sheer-sided pits and hauled up to the working levels by means of ropeways. The pits which remained in operation until 1997 show evidence of modern roadways having been constructed to the working faces, and generally reflect modern quarry practice. A substantial fall on the northern face has obliterated a number of features which survived until recently.

4.3.2 Processing

The archaeological and documentary record makes it clear that Pen yr Orsedd pioneered an intensive factory-style approach to the processing of slates, constructing extensive mill-buildings on a factory-basis, without making use of separate areas for splitters. Whilst slab mills have been a feature of the industry since Penrhyn Quarry's Felin fawr opened its doors in 1803, and integrated mills for the production of roofing slates were introduced from the 1850s onwards, Pen yr Orsedd appears to have been a leader in the field and its approach contrasts with the much more conservative approach adopted at Penrhyn quarry in the last decades of the nineteenth century, where practically no attempt was made to mechanise the production of roofing slates. Its mill buildings therefore constitute an important component of the historic landscape of the quarry.

4.3.3 Power

As well as the intensively engineered approach implied by the extensive mill buildings at the quarry, the power systems used illustrate the progression from standard nineteenth century power sources to the state of the art technology brought in by the North Wales Power and Traction Company. North Wales has been recognised as a world-leader in the field of electricity generation in the years 1900 to 1925, and Pen yr Orsedd was one of the first two industrial sites (with Oakeley quarry at Blaenau Ffestiniog) to make use of remotely-generated alternating current. In this respect its surviving archaeology is of international importance. However, this new technology went to work alongside elderly steam locomotives, horses and water-wheels, and the quarry's ingenious use of hydraulic power also adds to the importance of this site.

4.3.4 Transport

Internal transport was carried out from the very early nineteenth century to 1979 by a variety of narrow-gauge railway systems, which certainly included 2' and 3' 6" gauge edge railways and quite possibly a plateway system in the early days as well. Motive power was variously horse, hand, steam and petrol, and the quarry made extensive use of the DeWinton vertical boiler locomotives.

Transport of the raw blocks from the pit to the processing areas was also observed to be carried out by a variety of aerial ropeway systems, including the chain incline, introduced to the area from Cornwall in the 1840s, and the blondin ropeway, devised in the freestone quarries of Aberdeen from the 1870s onwards and introduced at Pen yr Orsedd from 1898. The survival of the three of these systems on level 8 adds very considerably to the importance of the site as a whole, and their significance has been recognised by their designation as Scheduled Ancient Monuments.

4.3.5 Ancillary structures

Pen yr Orsedd quarry was observed to contain a number of ancillary buildings, some in a good state of preservation. These included offices, carpenters' shops, a smithy and weighbridge houses. Pride of place, however, must go to the workshop complex on Bonc yr Offis, which contained until recently a remarkably fine array of early twentieth century machine tools, and remains a well-designed structure, a tribute to the skill and ingenuity of the craftsmen who worked in it.

4.3.6. Domestic structures

The few domestic structures constructed within the quarry itself are of a pleasing design, and the cottages on level 6 in particular are of national importance for their ornateness and their survival within the quarry landscape as a whole. The hospital is witness to the social concerns of the Unitarian management, also reflected in the buildings of Nantlle itself and Baladeulyn chapel.

4.4 Gazetteer of Archaeological Sites

Pen yr Orsedd Quarry has been worked from six major pits, known as Wern Ifan (SH 507 537 C), Green Quarry (SH 507 537 C, now buried), Arthur (SH 506 538 C), William (SH 505 539 C), Ellen (SH 506 541 C), Eureka (SH 507 542 C) and Twll Mawr or New Quarry (SH 509 543 C), as well as earlier workings, now buried such as at SH 509 541 C or long-disused, such as Ceunant y Glaw (SH 511 543 C). The processing and tipping levels were numbered in the quarry sequence from the bottom upwards, and this is used here; the main levels were 3 (the level of the Nantlle Railway), 4 (Bonc Isa'), 6 (Bonc yr Offis) and 8 (Bonc Brig).

01	Shaft-head	Extraction/tipping
Category of Importance (A-E):	C	Statutory protection: None
Site condition (1-5):	2	Site Vulnerability (L, M, H): Low
Management recommendation:	Level 2 Record	
<i>Site description in 1997</i>		
A shaft on the west side of the access road on the quarry's western drainage system; this leads from		

an opening south of the house known as Ty Mawr and which served Wern Ifan, Green Quarry, Arthur, William and Ellen. This was driven from the late 1870s, and it is believed that it can be followed for most of its length by suitably equipped personnel. The shaft head consists of a low slate wall retained by iron rails, with slate slabs laid across the opening.

Site description in 2008

The site lies within woodland alongside the quarry access road. No deterioration.

OS NGR: 250843 353495

02 Shaft-head

Extraction/tipping

Category of Importance (A-E): C

Statutory protection: None

Site condition (1-5): 4

Site Vulnerability (L, M, H): Low

Management recommendation: Level 2 Record

Site description in 1997

A depression in the ground at this point may correspond to a further shaft in the western drainage system; recent underground exploration by members of the Hull University/Plas Tan y Bwlch Practical Industrial Archaeology course suggests that there may be a danger of collapse here.

Site description in 2008

The location of the shaft is shown on the 1889 OS map 25m north of Site 04. The area is very overgrown, and two former water courses run past with paths on either side, making the site difficult to identify. A much larger depressions in the ground to the south is where the water was taken under the quarry tramway, in part to feed the water wheel at the end of structure 05.

OS NGR: 250779 353622

03 Marshalling Yard

Administration

Category of Importance (A-E): B

Statutory protection: None

Site condition (1-5): 3

Site Vulnerability (L, M, H): Medium

Management recommendation: Level 2 Record

Site description in 1997

The site of the former level 3 marshalling yard at the foot of the lower incline to level 4 of Pen yr Orsedd quarry. The railway access is believed to have been constructed in 1832 and remained in use

Site description in 2008

The site of the yard is now very overgrown, but lay up to and over the present quarry road.

OS NGR: 250762 353604

04 Structure

Transport

Category of Importance (A-E): B

Statutory protection: None

Site condition (1-5): 2/3

Site Vulnerability (L, M, H): Medium

Management recommendation: Level 3 Record

Site description in 1997

Situated to the south of the marshalling yard, orientated east to west, including a weighbridge house at its western end and a house on the eastern. It is built of sawn and unsawn slate blocks.

Site description in 2008

The structure is located on the north side of the main quarry tramway, close to the foot of the former incline from Level 4. The roof has largely gone, though some rafters and slates remain over the weighbridge. A large walled paddock lies to the north of the house, and was used partly as a garden.

OS NGR: 250767 353596

05 Stable Block

Transport

Category of Importance (A-E): B

Statutory protection: None

Site condition (1-5): 3

Site Vulnerability (L, M, H): Medium

Management recommendation: Level 3 Record

Site description in 1997

A substantial stable block, orientated east to west alongside (3), built out of unsawn slate slabs, now roofless and badly dilapidated, overgrown by deciduous woodland. The walls survive up to 2m high in places but the collapse of the south longitudinal wall seems imminent. A water-course passes the

western gable end, which may have powered a wheel, possibly for a chaff-cutter.

Site description in 2008

Part of the west gable end has collapsed, but the wheel pit is still visible. The site is very overgrown.

OS NGR: 250793 353592

06 Incline and Drumhouse

Transport

Category of Importance (A-E): B

Statutory protection: LB II 23736

Site condition (1-5): 2

Site Vulnerability (L, M, H): Medium/High

Management recommendation: Level 3 Record

Site description in 1997

The trace of a counterbalanced incline from level 3 to level 4 (Bonc Isa'); a roadway has been driven through the incline course, destroying the lower part, but the drumhouse survives in excellent condition, with its brake mechanism, drum and some rails in situ and its roof largely intact.

Site description in 2008

The majority of slates have now gone and the structure is more overgrown than described.

OS NGR: 250876 353654

07 Locomotive Shed

Transport

Category of Importance (A-E): B

Statutory protection: LB II 23737

Site condition (1-5): 3

Site Vulnerability (L, M, H): Medium/High

Management recommendation: Level 3 Record

Site description in 1997

Constructed in 1878 for the locomotive Kelso, and subsequently extended to hold a second locomotive. It is built out of slate blocks. Some of the roof timbers survive, but the slates have been removed. It is believed latterly to have been used as a garage for the manager's car.

Site description in 2008

A rectangular structure built of slate slabs. The principal opening is in the north-west gable. It is very overgrown, with the remaining roof timbers exposed and vulnerable.

OS NGR: 250887 353651

08 Structure

Transport

Category of Importance (A-E): D

Statutory protection: None

Site condition (1-5): 4

Site Vulnerability (L, M, H): High

Management recommendation: N/A

Site description in 1997

Built in two phases, perhaps in the 1920s, possibly a weighbridge house to record wagons coming down the incline from the higher level grafted on to a caban. Now roofless.

Site description in 2008

This building was demolished during widening of the quarry access road.

OS NGR: 250896 353656

09 Weighbridge House

Transport

Category of Importance (A-E): D

Statutory protection: None

Site condition (1-5): 1

Site Vulnerability (L, M, H): High

Management recommendation: Level 1 Record

Site description in 1997

A post-war structure, built out of breeze blocks with a monopitch roof. Part of an Avery weighbridge mechanism survives damaged by the door, and the weighbridge itself survives intact. This feature is believed to have been installed when lorries came to be used for transport of the finished slates.

Site description in 2008

The weighbridge remains as described, though is not in use. The modern weighbridge lies close by.

OS NGR: 250873 353687

10 Slab Mill

Processing

Category of Importance (A-E): A Statutory protection: LB II 23734
Site condition (1-5): 2 Site Vulnerability (L, M, H): Medium
Management recommendation: Level 4 Record

Site description in 1997

The floor 4 slab mill, roofed and substantially complete, containing a smithing hearth and the base of what may have been a crusher. It is the oldest surviving mill in Dyffryn Nantlle, and was built to house the planer which now survives in a lean-to on the large Bonc yr Offis mill as well as a Hunter patent saw. The mill exemplifies the experimental stage of mechanical slab processing in Nantlle. The building is intact and in good condition. There are some slipped slates on the roof, and part of the crusher base is becoming dilapidated. It was recorded by students on a Plas Tan y Bwlch/Hull University course in August 1996.

Site description in 2008

The mill was built in 1868. It is constructed from regularly coursed slate slabs, with queen-post roof trusses supported on narrow pillars. The interior is divided by an inserted cross-wall towards the north end, with no internal access between the two parts. Access into the northern part is now difficult because of dumping outside the door, though this section includes the fireplace identified as a possible smithing hearth. The larger southern part is of five bays. A raised stone platform of unknown use remains in the south-west corner. Though still roofed, there are large holes where slates have now slipped off the roof, and the timbers are starting to deteriorate. Outside the south gable are remains of an inclined slide leading down from the level above, ending in a platform some 2m high which would have supported a crusher.

OS NGR: 250883 353692

11 Slate Mill

Processing

Category of Importance (A-E): B Statutory protection: LB II 23735
Site condition (1-5): 3 Site Vulnerability (L, M, H): High
Management recommendation: Level 3 Record

Site description in 1997

The floor 4 integrated slate mill, with a dual pitch roof, from which the slates have very recently been removed. A substantial structure; though the DeWinton hydraulic feed saw tables with which it was formerly equipped have been removed, the line shafting survives. It was recorded by students on a Plas Tan y Bwlch/Hull University course in August 1996. The substantial king-post trusses are listing badly to the north-west, and the north-west gable wall in particular is in danger of collapse above eaves height. There is a crack in the longitudinal wall near this point. Some of the purlins have

Site description in 2008

Within the floor of the eastern aisle is a brick-built pit for transferring goods to and from lorries. One of the timber central aisle supports has collapsed, causing a king-post truss to fall. Other timbers are deteriorating without any weather protection.

OS NGR: 250870 353727

12 Rope Support

Transport

Category of Importance (A-E): B Statutory protection: None
Site condition (1-5): 2 Site Vulnerability (L, M, H): Medium
Management recommendation: Level 2 Record

Site description in 1997

A slate and brick-built structure which formerly carried a sheave to transfer a wire-rope drive to (11 integrated slate mill) from (32: mill on floor six) by means of (13: sheave support). Though this feature still stands to its full height of 4m, there has been considerable dilapidation on the north corner. It was recorded by students on a Plas Tan y Bwlch/Hull University course in August 1996.

Site description in 2008

The structure survives as described.

OS NGR: 250886 353760

13 Sheave Support

Transport

Category of Importance (A-E): B Statutory protection: None
Site condition (1-5): 2 Site Vulnerability (L, M, H): Medium
Management recommendation: Level 3 Record

Site description in 1997

A slab-built sheave base to transfer power from (32) to (11) by means of (12). This feature stands up to its original height of 4m+ and appears stable.

Site description in 2008

The structure survives as described. It is some 5-6m high and 4m long by 2.5m wide. There is a slot some 1m deep and 0.25m wide running the full length through the top of the pillar.

OS NGR: 250937 353797

14 Structure

Unknown

Category of Importance (A-E): C Statutory protection: None
Site condition (1-5): 4 Site Vulnerability (L, M, H): High
Management recommendation: Level 2 Record

Site description in 1997

A slate-built structure, possibly a stable; not marked in 1862 but the use of heavy slates from the old pit suggests a construction date not long afterwards.

Site description in 2008

The roof of the building has completely collapsed, and the remains are becoming overgrown.

OS NGR: 250905 353765

15 Privy

Domestic

Category of Importance (A-E): C Statutory protection: None
Site condition (1-5): 2 Site Vulnerability (L, M, H): Medium
Management recommendation: Level 2 Record

Site description in 1997

A slate-built privy, substantially intact. A number of englynion have been scratched on the whitewash of the slab stalls.

Site description in 2008

This structure is as described. The mono-pitch roof of heavy slabs is supported on former rails. The foundations of other structures lie in undergrowth to the west, and a tramway to the adit passed the privy on the east side. The privy post-dates 1915 as it is not shown on the OS map of that date.

OS NGR: 250905 353783

16 Adit Mouth

Extraction/tipping

Category of Importance (A-E): B Statutory protection: None
Site condition (1-5): 2 Site Vulnerability (L, M, H): Medium
Management recommendation: Level 3 Record

Site description in 1997

A corbelled adit mouth; an excellent example of a type of construction extensively used in the slate industry.

Site description in 2008

The feature is as described. The adit was built between 1900 and 1915 according to the OS map evidence.

OS NGR: 250907 353811

17 Ropeway Winding House

Transport/Power

Category of Importance (A-E): B Statutory protection: None
Site condition (1-5): 3 Site Vulnerability (L, M, H): High
Management recommendation: Level 3 Record

Site description in 1997

This structure survives intact and roofed; it formerly housed a stationary steam engine for winding a chain incline ropeway into Wern Ifan quarry, immediately to its west. It exemplifies one method of

uphaulage commonly used in the Nantlle quarries, and one particular type of prime mover. The survival of the slab and concrete base for the engine illustrates the internal arrangements that prevailed here. The catslide extension on the north of this feature is built very near the edge of the pit, and the walls have cracked. The main engine house appears to be stable at the moment, but problems may arise if the made-up ground underneath crumbles any further.

Site description in 2008

The roof of very large slates has deteriorated - that over the catslide extension has gone, whilst the remainder is patchy. The roof timbers, supported on a central collar beam truss, are deteriorating, and the remaining parts of the roof are sagging.

OS NGR: 250783 353715

18 Ropeway Winding House

Transport

Category of Importance (A-E): B Statutory protection: LB II 23738

Site condition (1-5): 2/3 Site Vulnerability (L, M, H): High

Management recommendation: Level 3 Record

Site description in 1997

A slab-built structure dating from 1929, intact apart from a few slipped slates on the roof and a crack in the southern longitudinal wall. The concrete base for the electric motor that it housed, which wound the blondin ropeway from Wern Ifan quarry, survives intact, and makes clear how these features were installed. On the internal wall are three murals, each enclosed in a painted disc, one of a dog's head and a potted plant, one of a bird on a branch, one of a horse's head.

Site description in 2008

The building survives between two quarry roads which pass either side. It is overgrown, and access was not possible through the dense shrubs. More slates are missing off the roof.

OS NGR: 250826 353747

19 Water-wheel pit

Power

Category of Importance (A-E): B Statutory protection: None

Site condition (1-5): 2 Site Vulnerability (L, M, H): Low

Management recommendation: Level 3 Record

Site description in 1997

A slab-built pit dating from 1889 for a backshot water-wheel which formerly operated both a flat-rod system through cranks whose marks are visible on the exterior walls of the pit and a chain incline ropeway into Wern Ifan quarry by means of a winding drum whose housing survives integral with the pit. The stonework is substantially complete, though there is some cracking in the winding-drum housing, which appears to be later than the wheel pit itself, perhaps dating from 1897.

Site description in 2008

This area was not visited because of dense bracken.

OS NGR: 250704 353803

20 Launder Pillars

Structural

Category of Importance (A-E): B Statutory protection: None

Site condition (1-5): 2 Site Vulnerability (L, M, H): Low

Management recommendation: Level 3 Record

Site description in 1997

A row of six slab-built launder pillars to carry water to (19). These appear to be stable.

Site description in 2008

This area was not visited because of dense bracken.

OS NGR: 250702 353811

21 Flatrod Supports

Structural

Category of Importance (A-E): B Statutory protection: None

Site condition (1-5): 2 Site Vulnerability (L, M, H): Low

Management recommendation: Level 3 Record

Site description in 1997

A row of flatrod supports from (19), standing 1m+ high, thought to have been used at one time to operate a pump at Ellen quarry. These exemplify the variety of power-transmission methods used in this site. The condition of the surviving supports appears to be stable; the higher supports and the bellcrank base no longer survive.

Site description in 2008

This area was not visited because of dense bracken.

OS NGR: 250694 353812

22 Water-wheel Pit

Power

Category of Importance (A-E): B

Statutory protection: None

Site condition (1-5): 2

Site Vulnerability (L, M, H): Medium

Management recommendation: Level 3 Record

Site description in 1997

The upper water-wheel pit, constructed in 1878 to pump William quarry, later used to pump Ellen, Eureka and New quarry. The wheel was sold c. 1915-16. It is a three-sided wheelpit excavated into sloping ground, built out of slate slab.

Site description in 2008

The structure is as described. It lies on the north side of a modern quarry road.

OS NGR: 250604 353900

23 Structure

Unknown

Category of Importance (A-E): D

Statutory protection: None

Site condition (1-5): 4

Site Vulnerability (L, M, H): N/A

Management recommendation: N/A

Site description in 1997

A substantial slate-built structure, dilapidated and roofless, whose walls survive up to 5m high. A concrete machine base is evident.

Site description in 2008

The structure has been demolished to make way for a new quarry road.

OS NGR: 250624 353898

24 Structure

Unknown

Category of Importance (A-E): C

Statutory protection: None

Site condition (1-5): 4

Site Vulnerability (L, M, H): High

Management recommendation: Level 2 Record

Site description in 1997

A small, severely dilapidated structure, roofless, and which has suffered complete collapse of the eastern half.

Site description in 2008

No change.

OS NGR: 250646 353936

25 Structure

Unknown

Category of Importance (A-E): C

Statutory protection: None

Site condition (1-5): 4

Site Vulnerability (L, M, H): High

Management recommendation: Level 2 Record

Site description in 1997

A small structure whose slate-built walls survive up to 2m high, of uncertain function.

Site description in 2008

This roofless structure remains as described. It may have been an engine house for a wire rope system.

OS NGR: 250640 353928

26 Structure

Domestic

Category of Importance (A-E): D

Statutory protection: None

Site condition (1-5): 4

Site Vulnerability (L, M, H): High

Management recommendation: Level 2 Record

Site description in 1997

A small structure, roofless and dilapidated, possibly a caban. There are traces of rendering on the walls.

Site description in 2008

Only the south gable with doorway remains.

OS NGR: 250710 353923

27 Ropeway Anchorages

Transport

Category of Importance (A-E): C

Statutory protection: None

Site condition (1-5): 2/3

Site Vulnerability (L, M, H): High

Management recommendation: Level 2 Record

Site description in 1997

Anchorages for a blondin ropeway spanning Ellen quarry.

Site description in 2008

Three groups of anchorage points lie around the perimeter of an area demarcated by the quarry to the north and quarry roads around the other three sides.

OS NGR: 250652 353957

28 Locomotive Shed

Transport

Category of Importance (A-E): C

Statutory protection: None

Site condition (1-5): 3

Site Vulnerability (L, M, H): High

Management recommendation: Level 3 Record

Site description in 1997

A shed capable of accommodating two Hunslet saddle-tanks. An inspection pit was noted.

Site description in 2008

A long rectangular shed, of at least two phases, the later phase characterised by the use of more regular squared slate slabs. The original structure was raised in height and lengthened to the south. The roof was of three bays, divided by A-frame trusses. The roof over the central bay has collapsed, and the remainder is vulnerable to collapse, though some slates still remain over part.

OS NGR: 250762 353910

29 Incline and Drumhouse

Transport

Category of Importance (A-E): C

Statutory protection: None

Site condition (1-5): 3

Site Vulnerability (L, M, H): High

Management recommendation: Level 3 Record

Site description in 1997

The drumhouse and trace of a counterbalance incline. The drumhouse has suffered severe dilapidation, and the collapse of the south-west facing gable seems imminent. Part of the brake mechanism survives in situ.

Site description in 2008

The drumhouse is as described, with no roof or drum surviving. The west wall has been twisted round by a machine, perhaps to remove the drum. It is still standing, though vulnerable. A large former stackyard lies to the west. The incline is barely visible, and very overgrown.

OS NGR: 250767 353900

30 Compressor House

Processing

Category of Importance (A-E): B

Statutory protection: LB II 23741

Site condition (1-5): 2

Site Vulnerability (L, M, H): Medium

Management recommendation: Level 3 Record

Site description in 1997

A compressor house dating from the 1920s, formerly used to supply air to William and Ellen, in good condition, with an intact roof. The concrete bases for a prime mover and the compressor itself survive, but the only ironwork to survive is the air receiving cylinder.

Site description in 2008

The building lies immediately alongside the quarry road. It remains in good condition as described.

The roof is of four bays on A frame trusses.

OS NGR: 250814 353846

31 Privy

Domestic

Category of Importance (A-E): C

Statutory protection: None

Site condition (1-5): 2

Site Vulnerability (L, M, H): Medium/High

Management recommendation: Level 3 Record

Site description in 1997

A six-stall privy, substantially complete, with an automatic flushing device in situ. Built after 1915.

Site description in 2008

The privy is very similar in construction to the one on the floor below (site 15), and the two must be of a comparable date. The roof of heavy slates is supported on former rails. Access to the interior was not possible, but it appeared similar to the layout of no. 15. Remains of the automatic flushing device remain *in situ* to the east of the privy. Launder pillars which carried the aqueduct to the mill lie immediately to the north.

OS NGR: 250955 353895

32 Slate Mill

Processing

Category of Importance (A-E): A

Statutory protection: None

Site condition (1-5): 3/4

Site Vulnerability (L, M, H): High

Management recommendation: Level 4 Record

Site description in 1997

An integrated slate mill built in stages from 1874, roofless and partly dilapidated, containing a water-wheel-pit, a mounting for a succession of steam engines and an electric motor, the remains of a hydraulic accumulator, a Caernarfon-made slate planer of 1867 in a lean-to, and a number of dressing-machine frames. Two of the mill's original hydraulic feed tables constructed by De Winton of Caernarfon in the 1870s have been removed very recently. These were left in situ when the mill equipment was scrapped in the 1970s. The north-western part of the mill has been demolished above foundation level. The south-eastern part stands partly up to eaves height, but there has been substantial collapse in the gable wall and in the north-east longitudinal wall, with the possibility of further deterioration. The lean-to which houses the planer has lost most of its roofing slates but otherwise the condition of the planer and of the other machinery appears stable. The trusses have been stacked against the longitudinal wall. A measured survey was carried out by students on a Snowdonia National Park/Hull University course in August 1996.

Site description in 2008

The masonry is in poor condition, though survives as previously described. The slate planer survives in a lean-to on the south gable of the mill, but no other machinery could be located.

OS NGR: 251003 353822

33 Launder Pillars

Transport

Category of Importance (A-E): B

Statutory protection: None

Site condition (1-5): 2

Site Vulnerability (L, M, H): Medium

Management recommendation: Level 2 Record

Site description in 1997

A series of launder pillars emerging from under a tip to supply water to the hydraulic saws and to the wheel in (32); by 1915 a branch had been built to serve (19). These structures appear to stand to their full original height and to be in a stable condition. A measured survey has been carried out by students on a Snowdonia National Park/Hull University course in August 1996.

Site description in 2008

As previously described.

OS NGR: 251039 353849

34 Carpenter's Shop

Ancillary

Category of Importance (A-E): B

Statutory protection: None

Site condition (1-5): 3

Site Vulnerability (L, M, H): Medium

Management recommendation: Level 3 Record

Site description in 1997

A group of buildings which may have seen more than one phase of use but which is described as carpenter's shop in 1867. At one stage it may have been a dwelling. Built of unsawn slate slab, dilapidated and roofless. The structure appears to be stable apart from one gable wall which is leaning over.

Site description in 2008

As previously described. Tall laundry pillars (part of 33) stand on either side.

OS NGR: 251019 353868

35 Smithy

Ancillary

Category of Importance (A-E): B

Statutory protection: None

Site condition (1-5): 3

Site Vulnerability (L, M, H): Medium

Management recommendation: Level 3 Record

Site description in 1997

A structure is marked smithy here in 1862, and the present extremely dilapidated and roofless structures may date in part from this period or earlier. It may have included a dwelling.

Site description in 2008

As previously described. Partially overgrown. There is a fireplace in the west gable, though this is not a smithing hearth. There is a large window in the south wall (the lintel is cracked), and the entrance is through the north gable. It appears to have had a monopitch roof.

OS NGR: 250988 353892

36 Gwaliau

Processing

Category of Importance (A-E): D

Statutory protection: None

Site condition (1-5): 4

Site Vulnerability (L, M, H): N/A

Management recommendation: N/A

Site description in 1997

Traces of the gwaliau which preceded (32), and which existed by 1862 were noted at this point.

Site description in 2008

These have now been cleared away.

OS NGR: 251032 353822

37 Workshops

Ancillary

Category of Importance (A-E): A

Statutory protection: LB II 23729

Site condition (1-5): 3

Site Vulnerability (L, M, H): Medium/High

Management recommendation: Level 4 Record

Site description in 1997

An exceptionally fine example of a well-equipped quarry workshops, containing tuyere hearths, woodworking equipment, an overhead gantry crane and a locomotive turntable. The slate rubble ranges date from 1937-8, though there were clearly buildings on the site before this date. The corrugated iron building of 1900 is a fine example of a barrel-roofed corrugated iron structure, but is becoming progressively more derelict. A measured survey has been carried out by students on a Snowdonia National Park/Hull University course in August 1996.

Site description in 2008

The buildings have been cleaned during asbestos removal, but they contain less equipment, and are considerably more dilapidated than previously described. Large holes occur in the roofs and the roof timbers are deteriorating.

OS NGR: 251007 353769

38 Hospital

Ancillary

Category of Importance (A-E): B

Statutory protection: LB II 23740

Site condition (1-5): 3

Site Vulnerability (L, M, H): Medium

Management recommendation: Level 3 Record

Site description in 1997

The late-nineteenth century quarry hospital, built on the main processing level. Constructed out of country rock with a brick chimney stack. This building is substantially complete but is losing its window frames and doors, and slates are slipping off the roof. Much of the internal plaster-work is intact. It has suffered recent damage from New Age Travellers. A measured survey was carried out by students on a Snowdonia National Park/Hull University course in August 1996.

The quarry war memorial formerly stood outside the hospital before its removal to Capel Baladeulyn. This is a particularly fine sculpture which includes carved scenes of the quarry at work.

Site description in 2008

No slates remain on the roof, otherwise the building is as described.

OS NGR: 250983 353749

39 Shed

Ancillary

Category of Importance (A-E): B Statutory protection: LB II 23732

Site condition (1-5): 2 Site Vulnerability (L, M, H): A

Management recommendation: Level 3 Record

Site description in 1997

Believed to have been constructed as a stores after August 1863; orientated north-west to south-east, the north-westerly half consists of open bays and the south-easterly is an enclosed office.

Site description in 2008

This building is still roofed, and in good condition, though some slates have slipped.

OS NGR: 250974 353792

40 Office

Administration

Category of Importance (A-E): A Statutory protection: LB II 23731

Site condition (1-5): 2/3 Site Vulnerability (L, M, H): Medium

Management recommendation: Level 3 Record

Site description in 1997

The quarry office, believed to have been built in two stages, the westerly north-south orientated portion after 1862, the easterly east-west orientated section between 1899 and 1907. The facing doors through which men went in and out to collect their wages are evident. This building is substantially complete but is losing its window frames and doors, and slates are slipping off the roof. Much of the internal plaster-work is intact. It has suffered recent damage from New Age Travellers. A measured survey was carried out by students on a Snowdonia National Park/Hull University course in

Site description in 2008

A 'T' shaped building, as described. Slates are being lost from the roof gullies, and occasionally elsewhere, but the majority remain. The walls of the earlier part were slate hung, but most of these are missing. The later part is built of slate blocks with brick window reveals.

OS NGR: 250970 353768

41 Barracks

Domestic

Category of Importance (A-E): A Statutory protection: LB II 23739

Site condition (1-5): 2/3 Site Vulnerability (L, M, H): Medium

Management recommendation: Level 3 Record

Site description in 1997

A decorated, almost suburban, dwelling, built in 1868 as barracks for quarry workers and their families. This building is substantially complete but is losing its window frames and doors, and slates are slipping off the roof. Much of the internal plaster-work is intact. It has suffered recent damage from New Age Travellers. To the north-west is a garden with a privy. A measured survey has been carried out by students on a Snowdonia National Park/Hull University course in August 1996.

Site description in 2008

The walls were originally slate-hung, but these have now all gone. Holes are appearing in the slate roof, particularly around the gullies and eaves. The interior is dilapidated, with many of the timber floors removed, and ceilings fallen. A cooking range survives on the east gable wall.

OS NGR: 250960 353750

- 42 Marhalling Yard** Administration
Category of Importance (A-E): C Statutory protection: None
Site condition (1-5): 3 Site Vulnerability (L, M, H): Medium
Management recommendation: Level 2 Record
Site description in 1997
The main quarry marshalling yard; the low slate walls against which the slates were stacked survive.
Site description in 2008
The yard survives as described.
OS NGR: 250971 353709
- 43 Coal Yard** Ancillary
Category of Importance (A-E): D Statutory protection: None
Site condition (1-5): 4 Site Vulnerability (L, M, H): N/A
Management recommendation: N/A
Site description in 1997
A walled coal yard, in which a central depression survives for a turntable. Two 3'6 wagons survive
Site description in 2008
This site has been removed during tip processing.
OS NGR: 250959 353689
- 44 Incline and Drumhouse** Transport
Category of Importance (A-E): B Statutory protection: LB II 23733
Site condition (1-5): 2 Site Vulnerability (L, M, H): Medium
Management recommendation: Level 3 Record
Site description in 1997
The intermediate exit incline on the 3'6 gauge system, constructed in the late 1860s or early 1870s, replacing an earlier axis. The drumhouse survives in excellent condition with the drum and the brake intact, and the course of the incline has been little damaged. Some rails survive in situ.
Site description in 2008
The site remains as described, though the roof is deteriorating. Tip processing to the south has removed part of the tip on which the drum house stands.
OS NGR: 250933 353694
- 45 Locomotive Shed** Transport
Category of Importance (A-E): C Statutory protection: None
Site condition (1-5): 3 Site Vulnerability (L, M, H): High
Management recommendation: Level 2 Record
Site description in 1997
Built between 1899 and 1907, and adapted for use as a gwal for tip contractors in the 1950s. Built out of slate rubble, the walls survive up to eaves height, but the roofing slates have gone, leaving only some roof timbers. There is danger of collapse in the south wall.
Site description in 2008
The east wall has collapsed, and so have the roof timbers. End gable walls and west wall survive to eaves height.
OS NGR: 251047 353728
- 46 Caban** Domestic
Category of Importance (A-E): B Statutory protection: None
Site condition (1-5): 2 Site Vulnerability (L, M, H): Medium
Management recommendation: Level 2 Record
Site description in 1997
Built between 1899 and 1907, adjacent to (44). Built of slate rubble with a pitched roof.
Site description in 2008
This structure survives with slate roof in tact. There is a fireplace in the south gable, and the entrance

is in the north gable. The roof is of three bays divided by king-post trusses. The masonry is cracking slightly, and the condition of the slate roof is deteriorating.

OS NGR: 251040 353729

47 Shaft-head

Transport

Category of Importance (A-E): C

Statutory protection: None

Site condition (1-5): 3

Site Vulnerability (L, M, H): High

Management recommendation: Level 2 Record

Site description in 1997

A water-balance shaft constructed by DeWinton's Union Ironworks, Caernarfon, for the quarry in 1866-7. The shaft itself has now been covered with iron plates weighted down with slabs, but it proved possible in August 1996 to descend it to a depth of 176', at which point it becomes full of tipped debris. The headframe consisted of a return sheave mounted on four cast-iron columns, substantially similar to the surviving water-balance headframes at Penrhyn Quarry but slightly smaller in scale. It is believed to have been scrapped in the 1960s. Though the ordnance survey maps refer to the feature as a pump shaft, there is no evidence that a pump was installed here. It reaches to the eastern drainage tunnel or great tunnel, dug from 1863 to 1866, and which formerly drained the now-buried workings by means of a culvert which opens in Nantlle village and which is believed to be

Site description in 2008

Considerable work is being undertaken around this feature, where tips are being removed and processed. Access was not possible, but the head frame has been demolished, though the shaft still is still thought to exist.

OS NGR: 251164 353887

48 Incline and Drumhouse

Transport

Category of Importance (A-E): C

Statutory protection: None

Site condition (1-5): 3

Site Vulnerability (L, M, H): High

Management recommendation: Level 3 Record

Site description in 1997

A substantial counter-balanced incline plane connecting levels 6 and 8, crossing over a level tip railway on level 7 by means of a timber bridge, still partly intact. At the foot of the incline some rails survive; it is believed that the two sets of rails were to 3'6 gauge but that one was gauntleted with 2' gauge track to allow the passage of locomotives from level to level. Constructed between 1900 and 1915, and last used in 1970. The drumhouse has been partly demolished.

Site description in 2008

The foot of the incline has now been buried, and tip material is being extracted to the south. The drumhouse survives as two parallel walls, of which the western one has been part demolished. A modern brick structure has been erected inside the drumhouse. A set of steps leads from level six to level eight west of the incline.

OS NGR: 251098 353990

49 Magazine

Ancillary

Category of Importance (A-E): C

Statutory protection: None

Site condition (1-5): 2

Site Vulnerability (L, M, H): Medium/High

Management recommendation: Level 3 Record

Site description in 1997

Built out of slate rubble with a pitched slate roof; locked and bolted. There is a baffle built of slate rubble on the west side.

Site description in 2008

As described, though the roof has deteriorated, and slates are missing, particularly at the south end. The quarry road passes close to one side, and processing of the tip is taking place on the other side.

OS NGR: 251093 353874

50 Incline and Drumhouse

Transport

Category of Importance (A-E): C

Statutory protection: None

Site condition (1-5): 3 Site Vulnerability (L, M, H): High
Management recommendation: Level 2 Record

Site description in 1997

Part of the original transport axis to the quarry, in existence by 1840, and disused between 1862 and 1889, probably by 1874. The drumhouse survives as two stone walls by the east side of the modern road to the top level in the quarry, which passes over the original crimp (landing platform); immediately to the west of the road are two low walls which may have been part of the brake arrangement. The incline itself is much degraded and appears to have been pierced by the launder pillars (33) to the Bonc yr Offis mill.

Site description in 2008

As described.

OS NGR: 251057 353934

51 Steps

Transport

Category of Importance (A-E): B Statutory protection: None
Site condition (1-5): 2 Site Vulnerability (L, M, H): Medium
Management recommendation: Level 2 Record

Site description in 1997

A set of slate steps connecting level 6 to level 8.

Site description in 2008

These are in poor condition, but still exist. Another set of steps survives further to the east, close to the incline (48).

OS NGR: 250896 353963

52 Slate Mill

Processing

Category of Importance (A-E): A Statutory protection: LB II 23675
Site condition (1-5): 2 Site Vulnerability (L, M, H): Medium
Management recommendation: Level 3 Record

Site description in 1997

The Eureka mill, constructed in 1896 and originally powered by a steam engine. Substantially adapted to accommodate diamond saws in the 1960s and once again to admit road vehicles in the period 1978-79, the core of the mill nevertheless remains a last-century building. Orientated north-west to south-east, it is a two-bay mill, each of which has a half-hipped pitched roof with skylights along the crown. The south-east facing gable is in danger of collapse and has been shored up.

Both bays were initially accessed by railways in the gable ends, and a doorway has been cut in the north-east facing longitudinal wall to admit tracked vehicles. A breeze-block extension with a corrugated-iron roof has been built to the north-east, uniting the mill building to a smaller structure with a monopitch slab roof built out of slab blocks.

The mill contains some modern Anderson Grice saws, and one slate dresser; the others have been removed. A conveyor belt has been installed to take trimming waste out through the south-east facing gable.

Site description in 2008

The modern saws have now been removed, and the mill is no longer used. The single slate dresser remains. There are some small holes in the roof, but the building is in generally good condition.

OS NGR: 250912 354020

53 Oil Tank

Ancillary

Category of Importance (A-E): D Statutory protection: None
Site condition (1-5): N/A Site Vulnerability (L, M, H): N/A
Management recommendation: N/A

Site description in 1997

An oil tank on a slate plinth.

Site description in 2008

The tank has been removed.
OS NGR: 250813 354058

54 Structure

Ancillary

Category of Importance (A-E): C Statutory protection: None
Site condition (1-5): 2 Site Vulnerability (L, M, H): Medium
Management recommendation: Level 3 Record

Site description in 1997

Possibly a caban; built of slate rubble with a slate roof, and in good condition.

Site description in 2008

This structure was possibly originally built as a winding house, though was subsequently used as an office and powder store. Small rectangular structure of slate rubble with slate roof. Some of the slates and ridge tiles are missing. There is an external chimney. Access to the interior was not possible.

OS NGR: 250828 354067

55 Ropeway System (SAM) and Engine House

Transport

Category of Importance (A-E): A Statutory protection: SAM Cn 208A; LB II 23721
Site condition (1-5): 3 Site Vulnerability (L, M, H): Medium
Management recommendation: Level 4 Record

Site description in 1997

A blondin ropeway system extending across the New Quarry to a lattice-work mast on level 8. At the foot of the mast (SH 5085 5407) a pulley set in steel frames turn the haulage ropes through 90o angles to a further set of pulleys whereby they reach the engine house at SH 5085 5404. This is of slate rubble construction, roofed and in substantially good condition. The winding drum is a substantial casting, formerly operated from a Bruce Peebles three-phase motor of 1906 through reduction gearing. The motor survives, as does the control mechanism and the liquid controller.

Site description in 2008

The mast has collapsed and lies alongside its former base. The sheaves and pulleys are still present. The engine house survives in good condition, with winding drum and motor as described.

OS NGR: 250849 354033

56 Weighbridge House

Transport

Category of Importance (A-E): B Statutory protection: None
Site condition (1-5): 2 Site Vulnerability (L, M, H): Medium
Management recommendation: Level 3 Record

Site description in 1997

A pitched roof weighbridge house, intact, whose weighbridge survives.

Site description in 2008

The weighbridge survives in good condition, with all of its machinery intact. It was used as a detonator store in its last phase of use.

OS NGR: 250875 354060

57 Transfer Shed

Transport

Category of Importance (A-E): C Statutory protection: None
Site condition (1-5): 2 Site Vulnerability (L, M, H): Medium
Management recommendation: Level 2 Record

Site description in 1997

A slate-built shed containing a loading platform from which slates were unloaded from 3' 6 gauge wagons into lorries; constructed after the quarry had ceased to make exclusive use of the Nantlle railway after the second world war.

Site description in 2008

As described.

OS NGR: 250885 354081

58 Ropeway System (SAM) and Engine House

Transport

Category of Importance (A-E): A Statutory protection: SAM Cn 208B; LB II 23676
Site condition (1-5): 2 Site Vulnerability (L, M, H): Medium
Management recommendation: Level 4 Record

Site description in 1997

A blondin ropeway system extending across the New Quarry to a lattice-work mast on level 8, at SH 5087 5414, operated by an engine house in direct alignment with the course of the rope at SH 5090 5412. The engine house is of slate rubble construction, roofed and in substantially good condition. The winding drum is a substantial casting, formerly operated from a Bruce Peebles three-phase motor of 1906 through reduction gearing. The motor survives, as does the control mechanism and the liquid controller.

Site description in 2008

The mast was subsequently re-erected back from the quarry edge (c. 2000), but has now collapsed and lies on the quarry edge. The engine house is in relatively poor condition, with holes in the roof, and timbers starting to rot. The machinery survives as described.

OS NGR: 250913 354118

59 Ropeway System (SAM)

Transport

Category of Importance (A-E): A Statutory protection: SAM Cn 208C; LB II 23722
Site condition (1-5): 2 Site Vulnerability (L, M, H): Medium
Management recommendation: Level 4 Record

Site description in 1997

A blondin ropeway system extending across the New Quarry to a lattice-work mast at SH 5096 5419 on level 8. The engine house is situated at SH 5097 5415 to the south-east of the modern quarry access road from y Fron, which has partly obliterated the rope channel. Recent spoil has been heaped against the north-west gable of the engine house, which otherwise survives in good condition. It is of slate rubble construction, roofed and in substantially good condition, though some of the roofing slates have slipped. The winding drum is a substantial casting, formerly operated from a Bruce Peebles three-phase motor of 1906 through reduction gearing. The motor survives, as does the control mechanism and the liquid controller.

Site description in 2008

This is the best preserved ropeway system and engine house, and the only one with the mast still standing. The engine house lies below the road to the south, and the cables pass under the road and through to the mast. The engine house is in good condition, though with a few slates off the roof and from the ridge. The mast and winding mechanisms appear sound, though must be vulnerable to collapse given lack of maintenance and the exposed conditions. The engine house is Listed but not Scheduled. The remainder of the cableway and masts are scheduled.

OS NGR: 250969 354122

60 Drying House

Ancillary

Category of Importance (A-E): B Statutory protection: LB II 23674
Site condition (1-5): 2 Site Vulnerability (L, M, H): Medium
Management recommendation: Level 3 Record

Site description in 1997

A drying house for the quarrymen's clothes built out of slate rubble with a slate roof. The roof and the central stove survive, though the pegs have gone from the walls. The building is in generally good condition though some slates have slipped.

Site description in 2008

The roof is now considerably worse, and large holes are present. The stove and flue survive. The interior was slightly changed when the building was incorporated into a film set, and new pegs date from then.

OS NGR: 250912 354142

61 Shaft

Extraction

Category of Importance (A-E): C Statutory protection: None
Site condition (1-5): 2 Site Vulnerability (L, M, H): Medium

Management recommendation: Level 2 Record

Site description in 1997

A trial shaft of uncertain depth.

Site description in 2008

The area is overgrown, and the shaft covered over.

OS NGR: 250896 354138

62 Ropeway System and Engine House (SAM)

Transport

Category of Importance (A-E): A Statutory protection: SAM Cn 208D; LB II 23673

Site condition (1-5): 2 Site Vulnerability (L, M, H): Medium

Management recommendation: Level 4 Record

Site description in 1997

A collapsed blondin ropeway system extending across the New Quarry to the site of a lattice-work mast on level 8. This survives as a slate plinth and some ironwork at SH 5097 5424; the mast itself lies between (58) and (59). The engine house does not lie in direct alignment with the ropeway but is situated at SH 5097 5418, and return sheaves were used to change the direction of the ropes. The engine house alone is a Scheduled Ancient Monument; it is of slate rubble construction, roofed and in substantially good condition. The winding drums are substantial castings, operated from a Bruce Peebles three-phase motor of 1906 through reduction gearing. The motor survives, as does the control mechanism and the liquid controller. The engine house is integral with (60) below.

Site description in 2008

The site is as described. The roof of the engine house has deteriorated.

OS NGR: 250974 354188

63 Compressor House

Power

Category of Importance (A-E): A Statutory protection: SAM Cn 208D; LB II 23673

Site condition (1-5): 2/3 Site Vulnerability (L, M, H): Medium/High

Management recommendation: Level 4 Record

Site description in 1997

A monopitch building constructed out of slate rubble and with a slate roof, containing an electric motor and a horizontal single-cylinder Ingersoll Sargeant air compressor and receiving chamber. The building is in good condition but some of the roofing slates have slipped.

Site description in 2008

The building is built onto the Engine House (62). The roof of this building has deteriorated considerably, to the extent that the slates have now completely gone, and the roof timbers collapsed. This has encouraged vegetation to grow within the building, and also means the compressor has no protection from the weather.

OS NGR: 250978 354183

64 Transformer House

Power

Category of Importance (A-E): A Statutory protection: LB II 23672

Site condition (1-5): 2 Site Vulnerability (L, M, H): Medium

Management recommendation: Level 3 Record

Site description in 1997

A transformer house, built in 1906 for the first a.c. supply from Cwm Dyli power station. It is constructed of slate rubble with a pitched slate roof surmounted by two gabled dormers set across the ridge at each end of the building. Externally it appears to be in excellent condition, and is locked and boarded up.

Site description in 2008

As described.

OS NGR: 251003 354179

65 Locomotive Shed

Transport

Category of Importance (A-E): B Statutory protection: LB II 23671

Site condition (1-5): 2 Site Vulnerability (L, M, H): Medium

Management recommendation: Level 3 Record

Site description in 1997

A substantial locomotive shed built out of slate rubble and with a pitched slate roof. Constructed post-1916 for development work.

Site description in 2008

As described.

OS NGR: 251054 354194

66 Incline and Winding House

Transport

Category of Importance (A-E): B Statutory protection: LB II 23724

Site condition (1-5): 2 Site Vulnerability (L, M, H): Medium

Management recommendation: Level 3 Record

Site description in 1997

A slate-built engine house for an uphaulage incline from the old pit onto level 8; this feature is thought to date from 1923 or shortly thereafter. The electric motor survives intact as does the uphaulage drum. Horizontal sheaves were noted to the west of the building but the incline itself has been quarried away below the lip.

Site description in 2008

As described. The building remains in good condition, though there is a crack in the masonry in the south-west facing wall. The horizontal sheave south-west of the building survives, but the incline is either buried or quarried away.

OS NGR: 251021 354015

67 Locomotive Shed

Transport

Category of Importance (A-E): B Statutory protection: LB II 23727

Site condition (1-5): 2 Site Vulnerability (L, M, H): High

Management recommendation: Level 3 Record

Site description in 1997

A two-road locomotive shed, built out of slate rubble and with a pitched slate roof, built between 1900 and 1915. An inspection pit was noted inside the building, and it is possible that one of the lengths of rail was for a coal wagon. The east-facing gable end wall of the shed is bowing out, and is in danger of collapse.

Outside the shed is an iron tank on a slate plinth for supplying the locomotives with water.

Site description in 2008

As described.

OS NGR: 251125 354009

68 Weighbridge House

Transport

Category of Importance (A-E): B Statutory protection: LB II 23725

Site condition (1-5): 2 Site Vulnerability (L, M, H): Medium

Management recommendation: Level 3 Record

Site description in 1997

A weighbridge house immediately to the east of (64) in which the bridge itself survives as does the balance mechanism in the building.

Site description in 2008

This building survives in good condition, as does the machinery which includes the balance mechanism and bridge. A short section of track is preserved outside, with a wagon on it.

OS NGR: 251133 354001

69 Road

Category of Importance (A-E): C Statutory protection: None

Site condition (1-5): Site Vulnerability (L, M, H):

Management recommendation: Level 1 Record

Site description in 1997

Modern road access to the quarry from y Fron.

Site description in 2008

As described.

OS NGR: 251024 354219

70 Ropeway System

Transport

Category of Importance (A-E): A Statutory protection: None

Site condition (1-5): 3 Site Vulnerability (L, M, H): Medium/High

Management recommendation: Level 4 Record

Site description in 1997

A collapsed blondin ropeway system extending across the New Quarry to the site of a mast above level 8. Hand-winchs were noted at the north-western end, probably to adjust the ropes periodically.

Site description in 2008

As described. The mast with its head gear lies fallen beside the plinth. The engine house was removed to Llanberis Slate Museum.

OS NGR: 251009 354231

71 Area of Trial Workings

Extraction

Category of Importance (A-E): C Statutory protection: None

Site condition (1-5): 3 Site Vulnerability (L, M, H): Low

Management recommendation: Level 2 Record

Site description in 1997

An area pock-marked by trial workings, in the form of shafts and open trenches probably cut to establish the breadth of the slate vein at the end of the nineteenth century. Two contour leats run

Site description in 2008

As described, though features were obscured by dense vegetation.

OS NGR: 250697 354552

72 Field Boundary

N/A

Category of Importance (A-E): D Statutory protection: None

Site condition (1-5): 2 Site Vulnerability (L, M, H): Low

Management recommendation: Level 2 Record

Site description in 1997

The trace of a possible field-boundary, possibly of pre-Modern date.

Site description in 2008

Part of a series of field boundaries which cross this part of the site, and relate to pre-quarry phases of farming.

OS NGR: 250554 354425

73 Adit Mouth

Extraction

Category of Importance (A-E): C Statutory protection: None

Site condition (1-5): 3 Site Vulnerability (L, M, H): Low

Management recommendation: Level 2 Record

Site description in 1997

The mouth of a collapsed adit, formerly connecting the Bonc yr Offis mills with the pits.

Site description in 2008

Not visible because of dense vegetation, but believed to be as described.

OS NGR: 250804 353864

74 Adit Mouth

Extraction

Category of Importance (A-E): C Statutory protection: None

Site condition (1-5): 3 Site Vulnerability (L, M, H): Low

Management recommendation: Level 2 Record

Site description in 1997

The mouth of a collapsed adit, formerly connecting the Bonc Isa' mills with the pits.

Site description in 2008

Not visible because of dense vegetation, but believed to be as described.

OS NGR: 250742 353747

75 Bridge Abutments

Transport

Category of Importance (A-E): D

Statutory protection: None

Site condition (1-5): 3

Site Vulnerability (L, M, H): Medium

Management recommendation: Level 2 Record

Site description in 1997

The abutments of a bridge that carried a tip railway.

Site description in 2008

Not visible because of dense vegetation, but believed to be as described.

OS NGR: 250742 353814

76 Buried Features

Category of Importance (A-E): E

Statutory protection: None

Site condition (1-5):

Site Vulnerability (L, M, H):

Management recommendation:

Site description in 1997

It is clear from archive maps that many features from earlier phases of the quarry's history may be buried under subsequent workings. For instance, it is possible that remains of a ropeway base and the waterwheel pits which powered it may survive under the site of the present Eureka mill, though at a considerable depth. It is possible also that one of the locomotives may survive under slate rubble tipped at Bonc yr Offis. Should any attempt be made to remove the tips they should be monitored for buried features.

Site description in 2008

Current tip working is being undertaken on Level 6 on the site of the incline (48) and pump shafts (47). Work has also been undertaken, though now stopped, alongside the incline (44).

OS NGR: 0 0

5. MANAGEMENT ISSUES AND MITIGATION

The following sections discuss a number of the issues involving the management of the heritage resource, and could, if required, be used to form the basis of a series of policies to make up a full Management Conservation Plan.

5.1 Balancing competing priorities

Objective: To ensure that the conservation of historic structures and archaeological remains are given full consideration and appropriate weight in relation to the future planning of the quarry and its management.

Issues: Conservation of the heritage resource is one of only several issues which have to be taken into account when considering the future management of the quarry. It is, however, a significant factor, and made more significant by the presence of a high number of buildings with statutory protection. The stability and condition of historic structures is threatened in various ways, including lack of care and maintenance, structural instability, vegetation growth, and unsympathetic alterations. These problems can all be found within the quarry, particularly as all the buildings are currently out of use, with no on-going programme of maintenance. However there is also the need to continue to work the quarry, whether for new slate or processing the waste tips for hardcore. Structures have, in the past, been removed in order to make way for desired improvements, whilst others have been stripped of fittings.

Mitigation: It is important that future management of the quarry takes into full account the importance and significance of the heritage resource, by ensuring appropriate mitigation is undertaken. This is discussed further below, but can range from preservation *in situ* to undertaking a basic photographic record.

Scheduled Ancient Monuments and Listed Buildings are protected by statute, and appropriate procedures as laid down in government guidelines must be followed if their character is to be affected.

5.2 Knowledge and understanding

Objective: To ensure that recent and future changes to the quarry are documented and retained within an archive; to ensure that new information derived from this process is contextualised and contributes to an increased understanding of the development and nature of the slate quarrying industry.

Issues: All management plans have to be based upon a sound knowledge of the nature and development of the components covered by the plan. Whilst the slate quarry industry has been well-studied (see Gwyn 2006 and references) each individual structure is able to contribute information on both a micro and a macro level. That is, the archaeological information gained by careful study of a component and its setting not only contributes to our understanding of that feature and its role, but also leads to an increased understanding of the development of the quarry, and of the slate quarrying industry as a whole. Loss of features without study causes irreparable loss to this pool of knowledge.

Mitigation: The quarry, in association with other relevant organisations (this might include Cadw, the county archivist, the National Museum and Galleries of Wales, the Royal Commission on Ancient and Historic Monuments of Wales) should maintain an archive and develop a formal process to achieve this end.

5.3 Use of historic buildings

Objective: To ensure that historic buildings and structures are occupied and maintained in use for purposes which are compatible with their character and significance.

Issues: None of the buildings and structures is currently in use, and this lack of use contributes to their risk of degradation. At the same time inappropriate use could potentially damage their fabric and character. The buildings were built for use within the slate quarrying industry, and for the extraction, processing and transportation of slate and slate products. Whilst the cessation of quarrying for new slate does not lessen the heritage value of the structures, it does create significant management issues for their maintenance and future.

Mitigation: New uses should be encouraged that are compatible with the existing structures, their character and their significance.

5.4 Maintenance of historic fabric

Objective: To ensure that the historic fabric is appropriately cared for so that its historic character remains intact.

Issues: The issues associated with this objective are similar to those associated with the use of the buildings. If the buildings are not in use, it is difficult to justify expenditure on their maintenance, yet without regular maintenance their deterioration will increase, eventually to the point where renovation and use is barely feasible.

Mitigation: Historic buildings within the quarry need to be regularly and appropriately maintained. Finding new uses may aid this process. A detailed survey of the quarry, recording all sites to Level 2 specification, would provide some mitigation against future deterioration, and a level platform for future research.

5.5 New development and alterations

Objective: To ensure that new development takes account of the need to enhance rather than detracts from historic buildings and structures.

Issues: New developments may be required for the undertaking of new or changing business ventures, and any these have the potential to conflict with the existing historic buildings and structures.

Mitigation: Ensure new buildings and functional areas take account of the setting of historic buildings and structures.

5.6 Archaeology and recording

Objective: To ensure that historic buildings or structures which are removed or altered are recorded; to ensure that below ground archaeology is taken into account when development proposals are considered.

Issues: Changes in management and operation will inevitably mean alteration and occasionally removal of existing structures. Similarly below ground remains, including former quarrying operations buried by later working, might be uncovered by new developments.

Mitigation: The significance of the heritage resource is indicated in the gazetteer of this resource, and this should be respected when drawing up new management plans. There is a presumption in favour of retaining archaeological deposits and historic structures, especially those of national importance. All historic buildings should be assessed and recorded at an appropriate level prior to impact, and the significance of underground deposits (including slate tips) should be assessed for their archaeological potential, and appropriate mitigation put in place. As identified in 5.4 above general weathering and deterioration are an additional factor, and an overall Level 2 survey would provide some mitigation for this.

6. GENERAL MITIGATION RECOMMENDATIONS

6.1 Introduction

The gazetteer which accompanies this report identifies each of the principal buildings and structures, identifies its importance as an archaeological feature, and recommends an appropriate level of recording based upon the importance of the feature and its potential for contributing to archaeological research. As identified in section 5 above, however, there are other issues involved, in particular natural erosion and degrading of sites by neglect and weathering, which this process does not take into account.

This document is not being prepared in advance of identifiable impacts caused by management change, and therefore any recommendations can only be of a general nature.

6.2 Summary of site importance

Government and county council guidelines state that there is a presumption in favour of the preservation *in situ* of archaeological sites, in particular for those identified as nationally important, but also for those identified as regionally important. Where necessary, if impact is unavoidable, sites, particularly those of regional importance, can be preserved 'by record'. That is a full record is made prior to impact upon the site. Thirteen sites have been identified as nationally important: of these five are scheduled and all but two of the remainder listed. The mast and base (70) is not currently listed or scheduled, nor is the mill on Level 6 (32). This latter, though in dilapidated condition, is archaeological significant.

There has been deterioration of the scheduled sites over the past ten years. Two of the masts have collapsed, one has been re-erected and collapsed again, and one is left standing. The condition of the winding houses is deteriorating, and machinery is vulnerable to vandalism and theft. One additional winding house (that served mast 70) has been moved to the slate museum in Llanberis.

A level 4 record of these sites would provide a level of mitigation against further degradation.

As identified in 4.3.2 above, the mills constitute an important component of the heritage resource. Two are still roofed, one stands to eaves height but the slates have been removed, and one is ruinous. The mill on Level 8 (feature 52) is one of the best preserved mills of its size still standing within the north Wales slate industry, and would benefit from regular maintenance to avoid further deterioration. The slab mill (10) is of national importance and is also still roofed, though deteriorating. The large De Winton designed mill on Level 6 (32) contains considerable archaeological potential, though is the most dilapidated.

Thirty sites are identified as regionally important, of which thirteen are listed. The sites are distributed throughout the quarry, and cover all categories. These include the water wheel pit and associated launder pillars and flatrod supports (19, 20, 21) on the west side of the quarry, in an area which though overgrown is not as vulnerable to management change as the areas closer to later extraction.

There are 23 sites of local importance, which consist mainly of lesser structures, or partially ruined structures. There are nine sites categorised as ‘other’, of which five are the sites of features destroyed between 1997 and 2008. None of these were significant sites, but it is unfortunate that no comprehensive record was undertaken prior to their removal.

6.3 General recommendations

The following recommendations are made based on the assessment of features and present knowledge of proposed impact.

- Prepare a full Conservation Management Plan based upon this assessment.
- Undertaken a full Level 2 Record of all the structures within the quarry.
- Undertake a Level 4 Record of those features identified as nationally important and of high vulnerability. These include the wire rope systems (‘blondins’), which are vulnerable to natural degradation and the four mill buildings.
- Undertake measures to record and protect machinery of particular importance. This includes the De Winton planer purchased in 1867 presently stored in the lean-to structure against the gable end of the mill on Level 6 (32) and the compressor (63) which lies *in situ* in the lean-to against the winding house (62).
- Ensure a programme of archaeological assessment and recording accompanies the removal of existing slate tips.

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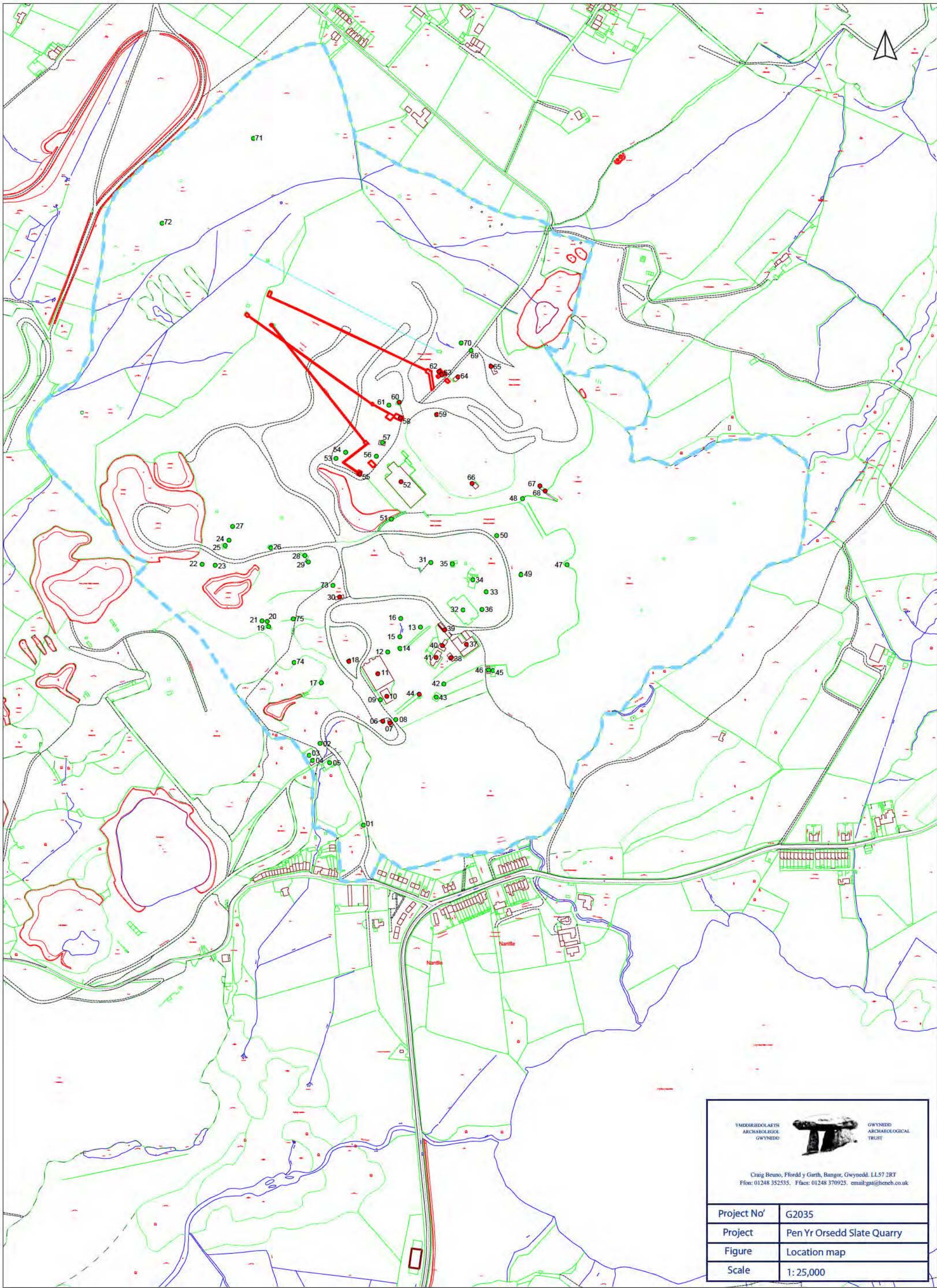
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Craig Beuno, Ffordd y Garth, Bangor, Gwynedd, LL57 2RT
Ffon: 01248 352535. Ffacs: 01248 370925. email: gat@beneb.co.uk

Project No'	G2035
Project	Pen Yr Orsedd Slate Quarry
Figure	Location map
Scale	1: 25,000



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Craig Beuno, Ffordd y Garth, Bangor, Gwynedd. LL57 2RT
Ffon: 01248 352535. Ffacs: 01248 370925. email: gat@heneb.co.uk