Slate Industry of North Wales

World Heritage Site Nomination and Scheduling Criteria





Ymddiriedolaeth Archaeolegol Gwynedd Gwynedd Archaeological Trust

Slate Industry of North Wales: World Heritage Site Nomination

Scheduling Criteria: A Pilot Study

Project No.: G2398

Report No.: 1322

Prepared for: Cadw

Date: June 2016

Written by: David Hopewell

Illustration by: David Hopewell

Cyhoeddwyd gan Ymddiriedolaeth Achaeolegol Gwynedd Ymddiriedolaeth Archaeolegol Gwynedd Craig Beuno, Ffordd y Garth, Bangor, Gwynedd, LL57 2RT

Published by Gwynedd Archaeological Trust Gwynedd Archaeological Trust Craig Beuno, Garth Road, Bangor, Gwynedd, LL57 2RT

> Cadeiryddes/Chair - Yr Athro/Professor Nancy Edwards, B.A., PhD, F.S.A. Prif Archaeolegydd/Chief Archaeologist - Andrew Davidson, B.A., M.I.F.A.

SLATE INDUSTRY OF NORTH WALES - WORLD HERITAGE SITE NOMINATION.

SCHEDULING RECOMMENDATIONS - A PILOT STUDY (G2398)

1. INTRODUCTION

Gwynedd Council has produced a bid to have the slate industry of North Wales inscribed as a World Heritage Site. This document examines the potential for enhancing the management of the physical remains of the industry through scheduling. Current evidence suggests that the archaeological remains of the slate industry are under-represented on the schedule of ancient monuments. The criteria used to identify sites of national significance are examined in relation to slate quarrying remains, and their relationship with criteria used to establish Outstanding Universal Value is discussed. The criteria for scheduling are tested against an area of slate quarrying in Blaenau Ffestiniog.

2. COMPLEMENTARY STUDIES AND PUBLICATIONS

This project complements both former projects and a series of on-going initiatives which together help identify the attributes which define the outstanding universal value of the industry and the management of those attributes. The base data is largely derived from scheduling enhancement projects undertaken in the 1990's (GAT Reports 154 and 252), and supplemented by later assessments. The information contained within these studies which relates to the proposed WHS areas has been entered onto the Gwynedd Historical Environment Record as part of this project.

A number of reports have been produced in preparation for the World Heritage bid. These include:

Gwyn, D., 2012 Baseline study and technical evaluation: the slate industry of North Wales tentative World Heritage Site (Govannon Report 295)

Davidson, A., and Gwyn, D., 2014 Gwynedd Slate Industry Transport Routes (GAT Report 1207)

Gwyn, D., 2015a *DCMS Review of Slate Industry World Heritage Bid: Considerations* (Govannon Report GC 335)

Gwyn, D., 2015b Stone Quarries as World Heritage Sites (Govannon Report GC 335)

Gwyn, D., 2015c International Slate Quarrying Landscapes (Govannon Report GC 335)

Gwyn, D., 2015d Criteria for scheduling slate quarry tips as ancient monuments

Hopewell, D., 2016 *Slate Industry of North Wales: Scheduling Recommendations A Pilot Study* (GAT Report 1295)

Of particular relevance to this part of the project are the reports by Dr David Gwyn on the definition of attributes (Gwyn 2015a) and criteria for scheduling slate quarry tips as ancient monuments (2015d). Also of direct relevance is the recent publication by David Gwyn on the history and archaeology of Welsh slate - David Gwyn 2015e *Welsh Slate: Archaeology and History of an Industry* (RCAHMW).

In November 2015 Gwynedd Council submitted a Technical Evaluation to DCMS, and in return received an assessment of the evaluation (Gwynedd Council, 2015 *Slate Industry of North Wales, UK Tentative List of Future World Heritage Nominations: Submission for Technical Evaluation*).

Four additional programmes of work have either been completed or are in progress:

- A review of primary sources relating to the slate quarry industry (completed database held by Gwynedd Archaeological Trust).
- Enhancement of the Historic Environment Record (in progress).
- A review of extant mineral planning permissions (in progress).
- Enhancement of Scheduled Record (in progress).

3. CONSERVATION PRINCIPLES (WALES)

The management of heritage assets in Wales is guided by the principles set out in *Conservation Principles for the sustainable management of the historic environment in Wales* (Cadw 2011). There are six conservation principles, namely:

- 1. Historic assets will be managed to sustain their values
- 2. Understanding the significance of historic assets is vital
- 3. The historic environment is a shared resource
- 4. Everyone will be able to participate in sustaining the historic environment
- 5. Decisions about change must be reasonable, transparent and consistent
- 6. Documenting and learning from decisions is essential.

These principles are the approach recommended by Cadw for the management of historic assets, and are being fully embedded in current and forthcoming Welsh Government guidance documents.

The assessment of significance of a monument determines whether it is a suitable candidate for scheduling. The application of scheduling criteria (discussed in section 4 below) is the primary means by which the assessment is undertaken. However, when planning the future management of a site or monument it is considered best practice to compile a management plan, a key part of which is understanding significance. *Conservation Principles* (pp 16-18) identifies four component values to be considered: Evidential Value, Historical Value, Aesthetic Value and Communal Value. Assessment of these criteria would lead to a 'statement of significance'. Consideration of these component values component values of scheduling, though it is the scheduling criteria (below) which form the basis of any scheduling assessment.

4. CURRENT SCHEDULING LEGISLATION IN RELATION TO THE SLATE INDUSTRY OF NORTH WALES

4.1 Scheduling legislation in Wales

The protection of ancient monuments and archaeological remains of national importance in Wales is governed by the Ancient Monuments and Archaeological Areas Act 1979, with amendments introduced in the Historic Environment (Wales) Act 2016. The 1979 Act provides the legislative framework for the protection of ancient monuments, currently supported by guidance in Welsh Office Circular 60/96, though new guidance is forthcoming which takes into account changes introduced in the 2016 Act.

The circular 60/96 includes The Secretary of State's criteria for scheduling ancient monuments (Annexe 3) as follows:

'The following criteria (which are not in any order of ranking) are used for assessing the national [i.e. Welsh] importance of an ancient monument and considering whether scheduling is appropriate. The criteria should not however be regarded as definitive; rather they are indicators which contribute to a wider judgement based on the individual circumstances of a case.

(i) **Period**: All types of monuments that characterize a category or period should be considered for preservation.

(ii) **Rarity**: There are some monument categories which in certain periods are so scarce that all surviving examples which still retain some archaeological potential should be preserved. In general, however, a selection must be made which portrays the typical and commonplace as well as the rare. 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.

(iii) **Documentation**: The significance of a monument may be enhanced by the existence of records of previous investigation or, in the case of more recent monuments, by the supporting evidence of contemporary written records.

(iv) Group value: The value of a single monument (such as a field system) may be greatly enhanced by its association with related contemporary monuments (such as a settlement and cemetery) or with monuments of different periods. In some cases, it is preferable to protect the complete group of monuments, including associated and adjacent land, rather than to protect isolated monuments within the group.

(v) Survival/condition: 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.

(vi) Fragility/vulnerability: Highly important archaeological evidence from some field monuments can be destroyed by a single ploughing or unsympathetic treatment. Vulnerable monuments of this nature would particularly benefit from the statutory protection which scheduling confers. There are also existing standing structures of particular form or 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.

(vii) Diversity: Some monuments may be selected for scheduling because they possess a combination of high quality features, others because of a single important attribute.
(viii) Potential: On occasion, the nature of the evidence cannot be specified precisely, but it may still be possible to document reasons anticipating its existence and importance and so to demonstrate the justification for scheduling. This is usually confined to sites rather than upstanding monuments.'

4.2 The application of scheduling criteria

The process of scheduling is undertaken by Cadw, who are the advisors on the historic environment to the Welsh Government. They are able to fund programmes of work with the aim of identifying sites which meet the criteria for scheduling, and over the past 20 years have followed a strategy for funding national thematic assessments which meet this aim.

Whilst there have been minor variations in the assessment methodology depending on the monument type, assessments have been typically undertaken in a consistent manner across Wales. When large numbers of sites were to be assessed the scheduling criteria were scored, usually within a 1-3 range, and the sum used as an indication of the overall value of a site. This was used to produce a generalised assessment of the sites in the field. A secondary written assessment was

produced by further examining the relative importance of the criteria in relation to each site before recommendations were made. Application of the criteria requires careful consideration and judgement, and the need to balance all factors. A high score for rarity might be significant in one case, whilst a low score in another might be balanced by the excellent survival of the feature.

In some cases additional criteria are applied in order to aid assessment of a particular site-type. The 1994-5 assessment of Gwynedd slate quarries, in addition to assessing individual features within each quarry, added *amenity value* and *visual amenity* as assessment criteria for each entire quarry.

The approach to scheduling in the past has typically involved the scheduling of individual features, with the presumption that this would preserve the areas between. The scheduling that resulted from the 1990s Gwynedd Slate Quarries Project reflects this with individual features scheduled in small discrete areas at both Dinorwic and Dorothea quarries, representing only a small percentage of the overall area. Though this approach would appear to leave significant areas unprotected, a rapid assessment of these two quarries would suggest there has been no development between the scheduled areas, suggesting the approach is suited to wider protection. However this rapid assessment has been unable to assess the potential of threats within these areas, and it might be that the areas have not been significantly threatened within the last twenty years. A different outcome might arise if the areas between the scheduled sites were of potential commercial interest.

More recent scheduling initiatives involving Roman fort environs, or early field systems, have emphasised the importance of the wider landscape, and an example of this in an industrial context is the recent scheduling of the Gorseddau Slate Quarry in its entirety, an area of 17.5 hectares (SAM Cn 303). Historic Environment Scotland scheduled a similar area of slate quarry workings on the island of Easdale in 2015 (http://portal.historicenvironment.scot/designation/SM10355)

This approach is particularly applicable to slate quarries, where features form an integrated whole, relating to the overall processes which were undertaken. Individual elements or features become considerably less significant if related features which form part of the same production process are removed. Group Value is therefore of particular relevance in this context.

4.3 Applying scheduling criteria to slate industry heritage

As discussed above previous programmes of work have identified the value of defining the application of scheduling criteria in relation to a specific site type or theme. The following section examines the application of the criteria to the scheduling of slate quarries. Consideration of a feature for scheduling will be based on an overall assessment of all the relevant criteria in relation the individual circumstances of each case.

Period

This criterion is of importance where a quarry contains features that are particularly early or characterise a particular period in the development of the slate industry or development of a particular technology or working practice. Most quarries are multi-period and those that preserve evidence of earlier workings and are not dominated by the latest period and the adoption of modern technology will have added interest. The Also of importance would be the survival of features which demonstrate technological development or change.

Rarity

Rarity is identified from the number of surviving examples of a particular feature, or groups of features demonstrating a particular process. Specific examples of the use of certain technologies will

be of significance, however it is also important to recognise the low-tech nature of the industry, and the skills of the quarrymen. Sites representative of the latter might leave very slight physical remains, but still be of particular significance. The chronology of application is also a factor to be taken into account, including comparison with the timing of its application both within other industries and across the slate industry.

Documentation

The significance of a site may be enhanced by contemporary documentation such as historic plans, written descriptions, and records of the working of the quarry. Recent archaeological records such as surveys or excavations are also significant. These can add to our ability to understand and interpret the archaeological remains of quarries, and identify changing strategies and processes.

Group Value

This criterion is of particular importance to the assessment of slate quarries for scheduling purposes. Individual elements may be important but they have considerable added value when considered in the context of the overall processes being undertaken. Each part of the process leaves its own archaeological traces, and the integrity of the archaeology is largely dependent on being able to demonstrate this interrelationship. A slate quarry would therefore score highly if the relationship between its various elements have been retained and are understandable. The scope of the potential archaeology of the slate industry is described in Gwyn 2015.

Features beyond the quarry boundaries such as transport routes, associated settlements and industries, and the landed estates of quarry owners also add greatly to group value.

Survival /Condition

Survival indicates how much survives of what is originally thought to have existed. This can apply at feature level or quarry/landscape level. However the very nature of quarrying meant rapid landscape change and regular construction and destruction of buildings. The survival of features that demonstrate both the development of the site and the integrity of its processes are of particular importance. Evidence for technological innovation and change may also be of major significance, as might features which demonstrate particular phases of development, but which have become disassociated from their original context.

Condition describes the physical state of the surviving features within a quarry. Assessment of condition needs take into account the rate of natural deterioration of structures. A proactive scheme of stabilisation and protection can aid the case for scheduling and conversely systematic damage for reuse of materials or space would have a negative impact. In practice, once an area has ceased to be operational, natural decay is most common.

Fragility/Vulnerability

Fragility reflects the physical stability of a feature, whereas vulnerability is a reflection of the likelihood of unsympathetic change usually through human, as opposed to natural, intervention.

The relevance of both these criterion for scheduling will depend upon the potential management gains. A very fragile feature which required remedial attention may benefit from being scheduled because it allows consolidation to be monitored. Sites which are vulnerable from future quarrying might be better protected by management agreements rather than scheduling, or by very selective scheduling of specific features.

Potential

Potential relates to the potential for the recovery of new information, either from physical remains or historic evidence. This could entail the use of archaeological investigative techniques or specialist archival research. It might also include potential for contributing to wider research, including enhancing our knowledge of the industry as a whole, from extraction to end use.

4.4 Conclusions

Application of the above will, with the benefit of professional judgement, allow identification of features and groups of features which meet the criteria for scheduling. By their very nature the appropriate use of group value will be particularly significant in identifying larger areas of related features which demonstrate either technological progress or the process-flow of production through the quarry, including the management of slate waste.

Underground workings are rarely included within the assessment process, despite their potential significance. The scheduling of underground features poses many difficulties which have yet to be resolved, and requires fuller discussion and treatment than can be allowed for here.

Whilst the tendency to limit scheduling to individual features is being re-examined in favour of larger areas, this can lead to difficulties of management, and in certain circumstances it might be better to examine alternative options, including management agreements, or the encouragement of sympathetic re-use. Similarly the sympathetic management of active quarries or those with existing mineral permissions will require a flexible approach, of which scheduling may only play a small role.

5. UNESCO REQUIREMENTS AND THE SLATE INDUSTRY OF NORTH WALES

5.1 Introduction

Operational Guidelines for the Implementation of the World Heritage Convention (WHC, 13/01 July 2013) Paragraph 98 states:

'Legislative and regulatory measures at national and local levels should assure the survival of the property and its protection against development and change that might negatively impact the Outstanding Universal Value, or the integrity and/or authenticity of the property. States Parties should also assure the full and effective implementation of such measures.'

It is understood that this means that an inscribed property should be afforded the highest level of statutory protection that the jurisdiction permits. The situation within Wales is described in the draft document *Managing Change in World Heritage Sites in Wales* (2015) produced by Cadw for Welsh Government. The three primary means of protection of World Heritage Sites are identified, namely: the statutory designation of elements of each site; the use of the spatial planning system; and the collaborative creation and implementation of World Heritage Site management plans (Cadw 2015, 7).

Whilst the present document is primarily concerned with scheduling as a means of statutory protection, there are two other statutory designations of direct relevance, namely Listed Buildings of special architectural or historic interest and Conservation Areas. Listed Buildings are placed into one of three grades of importance: I, II* or II. The criteria used to assess significance include architectural interest, historic interest, historical association and group value.

Other non-statutory designations include registered Historic Landscapes of Outstanding or Special historic interest in Wales; inclusion within the Register of Historic Parks and Gardens; National Parks; and Areas of Outstanding Natural Beauty. Criteria for assessing the significance of historic landscapes and parks and gardens are similar to those used for Listed Buildings.

There are many other area designations which, though not always primarily aimed at managing the historic environment, can have a positive impact on their management. These include sites of special scientific interest, special areas of conservation, and national nature reserves.

This document is primarily concerned with the interrelationship of scheduling with World Heritage Site inscription, and does not look in detail at other designations. Scheduling can provide statutory protection to fulfil the objective set out in paragraph 98 of the Operational Guidelines (as quoted above).

5.2 Outstanding Universal Value in relation to cultural heritage

Whilst scheduling and World Heritage Site inscription are two separate processes each of which make use of different assessment criteria to justify their inclusion, there are inevitably similarities between the two. World Heritage Sites are sites which are of Outstanding Universal Value. The latter is defined as possessing 'cultural and/or natural significance which is so exceptional as to transcend national boundaries and to be of common importance for present and future generations of all humanity. As such, the permanent protection of this heritage is of the highest importance to the international community as a whole.' *Operational Guidelines for the Implementation of the World Heritage Convention* (WHC 13/01, 2013, paragraph 49).

Paragraph 77 of the Operational Guidelines lists the criteria used to assign Outstanding Universal Value as:

(i) represent a masterpiece of human creative genius;

(ii) exhibit an important interchange of human values, over a span of time or within a cultural area of the world, on developments in architecture or technology, monumental arts, town planning or landscape design;

(iii) bear a unique or at least exceptional testimony to a cultural tradition or to a civilization which is living or which has disappeared;

(iv) be an outstanding example of a type of building, architectural or technological ensemble or landscape which illustrates (a) significant stage(s) in human history;

(v) be an outstanding example of a traditional human settlement, land-use, or sea-use which is representative of a culture (or cultures), or human interaction with the environment especially when it has become vulnerable under the impact of irreversible change;

(vi) be directly or tangibly associated with events or living traditions, with ideas, or with beliefs, with artistic and literary works of outstanding universal significance. (The Committee considers that this criterion should preferably be used in conjunction with other criteria).

The *Operational Guidelines* also stresses the importance of authenticity and integrity:

82: Depending on the type of cultural heritage, and its cultural context, properties may be understood to meet the conditions of authenticity if their cultural values (as recognized in the nomination criteria proposed) are truthfully and credibly expressed through a variety of attributes including:

- 1. form and design
- 2. materials and substance
- 3. use and function
- 4. traditions, techniques and management systems
- 5. location and setting
- 6. language and other forms of intangible heritage
- 7. spirit and feeling
- 8. other internal/external factors

Annex 5 states that the above types of attributes might be considered as conveying or expressing Outstanding Universal Value.

Para 89: For properties nominated under criteria (i) to (vi), the physical fabric of the property and/or its significant features should be in good condition, and the impact of deterioration processes controlled. A significant proportion of the elements necessary to express the totality of the value conveyed by the property should be included. Relationships and dynamic functions present in cultural landscapes, historic towns or other living properties essential to their distinctive character should also be maintained. Properties nominated as cultural landscapes, should contain key interrelated, interdependent and visually integral elements.

5.3 Outstanding Universal Value in relation to scheduling

The protection given to a site by scheduling would help ensure preservation of attributes 1 to 3 as listed within the operational guidelines (above 5.2), and also contribute to preservation attributes 4 and 5. Preservation of attributes 6-8 requires the application of different management techniques (as discussed in Gwyn 2015a).

The scheduling criterion of Group Value is of direct relevance to Outstanding Universal Value, as a reflection of the wholeness and intactness of the natural and/or cultural heritage. The desirability of identifying and preserving relationships is described within the Operation Guidelines (paragraph 89), as:

Relationships and dynamic functions present in cultural landscapes, historic towns or other living properties essential to their distinctive character should also be maintained. Properties nominated as cultural landscapes, should contain key interrelated, interdependent and visually integral elements (Operational Guidelines para. 89).

5.4 The Outstanding Universal Value of the North Wales Slate Industry

A draft statement of Outstanding Universal Value was submitted by Gwynedd Council to the Department of Culture, Media and Sport (DCMS) in 2010, and updated in the Technical Evaluation Report in 2015.

The latter proposes that the north Wales slate industry meets UNESCO criteria (ii), (iv) and (v), as defined in *Operational Guidelines* para.77. The details below are reproduced from Gwynedd Council 2015 *Slate Industry of North Wales: Submission for Technical Evaluation*.

Criterion (ii) - To exhibit an important interchange of human values, over a span of time or within a cultural area of the world, on developments in architecture or technology, monumental arts, town-planning or landscape design:

The slate industry of North Wales exhibits an important interchange of human values over a span of time on developments in architecture and technology. As the foremost global supplier of roofing slates and architectural slabs by the 19th century, it made possible the mass construction of the industrial era. It drew on technologies devised in other parts of the world, including the mining landscape of Cornwall. Its own technological advances were adopted in other quarrying industries, and its use of narrow gauge railways was emulated throughout the world.

Criterion (iv) - To be an outstanding example of a type of building, architectural or technological ensemble or landscape which illustrates (a) significant stage(s) in human history.

The slate quarries of North Wales form distinctive technological ensembles within a broader cultural landscape that illustrate a significant stage of human history, namely the principal period of the industrial revolution. Capital investment enabled industrialists to develop large quarries that had a massive impact on the landscape, to build innovative dedicated transport systems from quarries to coastal harbours and to adopt and develop efficient engineering systems in the quarries such as powered processing mills, aerial ropeways and pumping.

Criterion (v) - To be an outstanding example of a traditional human settlement, land-use, or sea-use which is representative of a culture (or cultures), or human interaction with the environment especially when it has become vulnerable under the impact of irreversible change:

The slate industry of North Wales is an outstanding example of a traditional human settlement and land use representative of human interaction with the environment. It was made possible by quarrymen's profound understanding of the geology of the rocks they worked. It was sustained by the settlements they and their families created, which are not only classic examples of industrial housing but also home to a vigorous culture and a strong minority language. Its water-power systems and its transport links show skilful use of the possibilities of the natural landscape in often challenging terrain.

5.5 Attributes relating to the North Wales Slate Industry

Attributes (Operations Guidelines para. 82) are the elements of a World Heritage Site which embody Outstanding Universal Value and which must therefore be managed appropriately to safeguard that value. Attributes relating to the slate industry have been discussed and listed by Gwyn in *DCMS Review of Slate Industry World Heritage Bid: Considerations for Gwynedd County Council* (2015a). Dr Gwyn further quotes from (and includes as appendix 1 of his report) a note by Christopher Pound, which differentiates between 'attributes' and 'heritage assets', and identifies three groups of attributes, namely: features and tangible properties; qualities of the properties; and abstract or intangible dimensions of a property (e.g. sacred dimensions) (C. Pound 2012 *Note 48: a discussion paper on attributes*). A list of 8 attributes (see 5.2 above) is identified within the Operational Guidelines, of which the first three relate to physical features and tangible property, and can therefore be considered for scheduling. A list of these relating to the slate industry of north Wales is given in Gwyn 2015a, and copied below:

Galleried quarries Extraction Pit quarries Tipping Mines adits • level t ips • seco ndary lev el tips • galleries • first level t ips • seco ndary lev el tips • adits • levels • drainage levels • chambers • shafts • paths • roads • bridges •railways• railway incline planes • engine sheds • aerial ropeways
Pit quarries Image: Tipping • first level t ips • secondary level tips Mines • adits • levels • drainage levels • chambers • shafts Transport • paths • roads • bridges •railways• railway incline planes • engine sheds • aerial ropeways
Mines Image: Image levels - chambers - shafts Image levels - shafts Image levels - shafts Image levels - shafts Image levels - shafts
Image: Staffs Image: Staffs Image: Staffs I
Transport • paths • roads • bridges •railways• railway incline planes • engine sheds • aerial ropeways
incline planes • engine sheds • aerial ropeways
engine house • boiler house • engine • steam
water-pumps • pumping shaft
nowder magazine • hlast wall
SLATE DROCESSING
Hand-processing sites Quarry shelter • gwgligu
Mechanical processing Slate mills slate ended ended a subscription of the state of
sites nrocessing blace mills, side mills • hav mills • multi -floor mills • mill tir
Machinery • swing saws • Greaves saws • Hunter saw
• diamond saws • trimming machinery • po
r
Power-generation • engine house • steam engine • water-wheel •
wheel pit
Slate yards Slate yards • slate yards • offices
Maintenance
Maintenance facilities • blacksmiths' workshops • engineering
workshops
Social/ health
Caban • caban
Hospital • hospital
SLATE TRANSPORT (overland)
Road transport sitesRouteways• paths • drove roads • toll-roads
Bridges • clapper bridges • beam bridges • arch bridges
Toll-houses • toll-houses
Water transport sitesRoute• river navigation • canal • canal feature • canal
building • canal embankment • quay • canal
office
Vessels • wrecks
Railway transport siteFormation• contour formations • railway cutting • railway
embankments •railway bridges • railway
inclined planes
Permanent way
 Railway stations, and railway engineering works railway workshop
raliway workshops • raliway station building
Locomotives and railway • motive power • state wagons • workers
All transport sites Inter modal exchange • rail exchange • read rail exchange
SLATE TRANSPORT (maritime)
Dock and harbour Port dock harbour equays • docks • harbours • slate sheds • port
installations quays quays - docks that boars - state sheds • port
vessels • wrecks containing slate cargo
SLATE COMMUNITIES - DOMESTIC
Settlement town • houses • places of worship • libraries • readin
rooms •town halls • market halls • public house

	village	 houses places of worship libraries reading
		rooms • public houses
	model settlement	 houses places of worship morphology
	squatter settlement	houses • places of worship • morphology
Country house estate		
Country nouse estate		• country nouse gardens • country nouses•
		estate wall • gate lodge
SLATE END USE		
Split slates	randoms/early roofs	 randoms/early roofs
	later roofs	later roofs
	wall hangings	wall hangings
	writing slates	 writing slates
Slabs	architectural	• architectural com po nents • walling m ate
	other	 slate fence (crawiau) gravestones

6. SCHEDULED ANCIENT MONUMENTS WITHIN THE PROPOSED QUARRY AREAS

6.1 Introduction and summary table

There are seven proposed areas for inclusion within the World Heritage Site. Some, such as Ffestiniog and Nantlle, contain several large quarries within the one area, whereas others contain a single quarry. The areas are shown on figure 1. There are seventeen Scheduled Ancient Monuments within the proposed areas. These vary in size and in the number of attributes they contain. The Cwm Ystradllyn area contains the Gorseddau quarry, Ynysypandy Slate Mill and Treforys settlement, and is the area with the largest density of scheduled monuments. Ffestiniog has no scheduled monuments at present, though the pilot study undertaken as part of this project identifies a significant area of Diffwys and Fotty and Bowydd as nationally significant, and therefore worthy of consideration for scheduling.

Area	SAM	SAM Name
Ogwen Valley	Cn 297	Slate Gwaliau at Felin Fawr
	Cn 380	Cegin Viaduct
Nant Peris	Cn 163	Dinorwic Quarry: Hafod Owen Winding Engine,
		Locomotive Shed, Main waterwheel
	Cn 177	Dinorwic Quarry Barracks 'A' Incline
	Cn 198	Vivian Slate Quarry, Inclines, Walia
	Cn 337	Dinorwic Quary : Upper terrace, lower terrace, inclines
		and associated features
Nantlle	Cn 302	Cloddfa'r Lon Slate Quarry
	Cn 301	Blaen y Cae Slate Quarry
	Cn 165	Dorothea Quarry Beam Engine
	Cn 199	Dorothea Quarry Pyramids, Inclines, Mill and Winding

Summary of existing Scheduled Monuments by area:

		houses.
	Cn 300	Ty Mawr East Slate Quarry Winding Engine House
	CII 208	Pen yr Orsedd Quarry Biondins and associated structures
Cwm Ystradlyn and Cwm Pennant	Cn 160	Gorseddau or Ynysypandy Slate Factory
	Cn 303	Gorseddau Slate Quarry
	Cn 321	Treforys Deserted Quarry Settlement
Ffestiniog, The Dwyryd and the		Slate Quays??
Festiniog Railway		
Bryneglwys, Abergynolwyn and	Me 185	Water Balance Incline
the Talyllyn Railway	Me 186	Water Powered chain incline at Bryneglwys
	Me 205	Alltwyllt Slate Quarry Incline

Appendix 1 contains a detailed list of the scheduled attributes, Appendix 2 contains maps of the current scheduled areas, whilst Appendix 3 assesses a selection of attributes within the Ffestiniog area for national significance.

7. CONCLUSIONS AND FUTURE WORK PROGRAMME

This report has examined the criteria for scheduling Ancient Monuments as they relate to the slate quarries of North Wales, and the relationship between scheduling criteria and Outstanding Universal Value as applied to the current nomination. The inclusion within the schedule of archaeological sites which lie within the proposed nominated areas would indicate strong support at national level for positive management of the nominated areas, and satisfy the requirements for the highest protection demanded of World Heritage Sites. However other management considerations may take precedence, and therefore alternatives strategies for preservation and management may need to be identified. The need to work closely with quarry owners and managers is identified as being of particular importance.

For the purposes of this project, future work programmes will concentrate on the analysis and mapping of extant mineral permissions, and the identification of sites of national significance within the nominated areas.

Proposed work programme

The proposed programme will include undertaking the following principal tasks within the seven nominated areas:

- A. Mineral Permissions
 - a. Identify current mineral planning permissions in the relevant areas, and assess their likely future impact

- b. Map the permissions
- B. Records enhancement
 - a. Identify relevant records and extract information this to be initially based on the information held at Plas Tan y Bwlch.
 - b. Incorporate into HER
- C. Scheduling enhancement
 - a. Undertake field visits, carry out level 1 survey, and identify features/areas suitable for proposed scheduling
 - b. Compile report
 - c. Enter information on to regional HER
- D. Nomination Gazetteer: Quarries
 - a. Site visits
 - b. Compilation of statements of significance
- E. Nomination Gazetteer: Transport Routes
 - a. Site visits
 - b. Compilation of statements of significance
 - c. HER enhancement.

APPENDIX I: Detailed list of Scheduled Ancient Monuments by area

Aberllefenni Scheduled Ancient Monuments

SAM_NO	SAM_NAME	NGR_X	NG	R_Y	COMMUNITY	SITE_TYPE	GENERAL_PE
ME185	Water Balance Incline at Aberllefenni Slate Quarry	276771	31	0102	Corris	Incline	Post- Medieval/Modern
Components recorded as: A) Aberllefenni Slate Quarry Incline (Incline, Rails, Tank Waggon) B) Aberllefenni Slate Quarry Drumhouse (Drumhouse, Brake-man's Shelter, Brake, Water Supply, Wire Rope)					I B belong to attr ays-inclines as pa port system – DR	ibute Quarryin art of an intern hG	n g / transport / al quarry rail

Bryneglwys Scheduled Ancient Monuments

SAM_NO	SAM_NAME	NGR_X	NGR_Y	COMMUNITY	SITE_TYPE	GENERAL_PE
ME186	Water Powered Chain Incline	269338	305213	Llanfihangel-	Water Power	Post-
	at Bryneglwys Slate Quarry			y-Pennant	System	Medieval/Modern
Compone	nts recorded as:		Belongs to	o attribute Qua	arrying / transp	ort / chain inclines
A) Bryneg	lwys Slate Quarry Waterwheel	Pits	as part of	an internal qu	arry transport s	ystem - DRhG
 (Waterwheel Pits, Rope Channel) B) Bryneglwys Slate Quarry Water Powered Chain Incline Strongpoints (Strongpoints, Landing Platform) C) Bryneglwys Slate Quarry Weighbridge House (Weighbridge House) D) Bryneglwys Slate Quarry Incline (Incline, Drum Housing) 						
ME205	Alltwyllt Slate Quarry Incline	268132	306559	Llanfihangel- v-Pennant	Incline	Post- Medieval/Modern
Compone A) Alltwyl Formatior Out)	nts recorded as: It Slate Quarry Incline (Incline n, Drum House, Brake Rods, Rai	Belongs to / incline a the Talylly	o attribute Tra as part of the q n Railway – DI	<u>nsport – overla</u> uarry's link witl RhG	nd / railway / route	

Cwmystradllyn Scheduled Ancient Monuments

SAM_NO	SAM_NAME	NGR_X	NGR_Y	COMMUNITY	SITE_TYPE	GENERAL_PE
CN160	Gorseddau or Ynysypandy	255052	343373	Dolbenmaen	Slate mill	Post-
	Slate Factory					Medieval/Modern
Compone A) Gorsed <i>Tramway</i>	nts recorded as: dau or Ynysypandy Slate Facto Terrace, Wheel Pit, Aqueduct I	ory (Slate Pillars)	Mill, p G a p	elongs to attribute rocessing site / m orsedda quarry w queduct pillars be rocessing site / m ower source to op	e Processing / n ill / radial mill a ere sawn; the w long to Process achinery / pow perate the saws	nechanical as where slabs from wheel pit and ing / mechanical er sources as the - DRhG
CN303	Gorseddau Slate Quarry	257252	345281	Dolbenmaen	Railway	Post-

SAM_NO	SAM_NAME	NGR_X	NGR_Y	COMMUNITY	SITE_TYPE	GENERAL_PE		
						Medieval/Modern		
Compone A) Gorsed Formation B) Gorsed Drum Hou C) Gorsed E) Gorsed Stacking V F) Gorsed G) Gorsed Faces, Rai H) Gorsed J) Gorsed Tip)	A) Gorseddau Slate Quarry Railway (Railway Formation, Culvert, Corbelled Wall) B) Gorseddau Slate Quarry Incline (Incline, Bridges, Drum House) C) Gorseddau Slate Quarry Slab Sleeper (Slab Sleeper) D) Gorseddau Slate Quarry Gwalliau (Gwal) E) Gorseddau Slate Quarry Stackyard (Stackyard, Stacking Walls) F) Gorseddau Slate Quarry Blast Shelter (Blast Shelter) G) Gorseddau Slate Quarry Working Faces (Quarry Faces, Railways, Drill Holes) H) Gorseddau Slate Quarry Drainage Adit (Drainage Adit, Drainage Ditch) I) Gorseddau Slate Quarry Waste Tips (Slate Waste Tip)			A belongs to attribute Transport – overland / railway route as part of the Gorsedda railway to the quay at Porthmadog B belongs to attribute Quarrying / galleried quarries / transport / railways/inclines as part of the quarry's internal transport system C belongs to attribute Quarrying / galleried quarries / transport / railways/inclines as part of the quarry's internal transport system (this is a distinctive and unusual type of pointwork using slab sleeper blocks) D belongs to attribute Processing / hand-processing sites / gwaliau as part of the quarry's slate-processing sites / gwaliau as part of the quarry's system for organising and storing finished slates. F – blast shelters need to be included in attributes; should form part of extraction . G belongs to attribute Quarrying / galleried quarries/ extraction / galleries and also railways/inclines as the quarry working face and its transport system H belongs to attribute Slate Quarrying / Galleried quarries / Extraction / drainage levels as part of the process of slate extraction (keeping workings free of water) I belongs to attribute Slate Communities – Domestic / Settlement – as part of the accommodation for quarry workers but note that barracks category needs to be introduced in Attributes list – for discussion?				
CN1221	Traforus Deserted Quarry	256000	245200	pping / first level	tips - DRhG	Post-		
CNSZI	Settlement	230098	545590	Doibeilinaen	Settlement	Medieval/Modern		
Components recorded as: A) Treforys Deserted Quarry Settlement (Cottages, Watercourses, Cardons, Walk, Streets)			B s, s, s,	Belongs to attribute Accommodation / nucleated settlement / estate sponsored settlements /				
watercou			u fa	families - DRhG				

Dyffryn Ogwen Scheduled Ancient Monuments

SAM_NO	SAM_NAME	NGR_X	NGR_Y	COMMUNITY	SITE_TYPE	GENERAL_PE				
CN297	Slate Gwaliau at Felin Fawr,	261481	366428	Llandygai	Wall	Post-				
	Penrhyn					Medieval/Modern				
Compone	Components recorded as: Belongs to attribute Processing / hand processing site									
A) Slate G	waliau at Felin Fawr, Penrhyn	(Walliau,	Slate /	gwaliau - DRhG						
Slabs)										
CN219	Ty'n Twr	262604	366011	Bethesda	Building	Medieval				
					(Unclassified)					
NOT RELEVANT TO WHS										
CN211	Fortified Hut Settlement	262831	367902	Llanllechid	Enclosed hut	Prehistoric				
	above Rachub				circle					

SAM_NO	SAM_NAME	NGR_X	NGR_Y	COMMUNITY	SITE_TYPE	GENERAL_PE
NOT RELE	VANT TO WHS					
CN380	Cegin Viaduct (Penrhyn Railroad)	259265	372391	Llandygai	Viaduct	Post- Medieval/Modern
NO FMW REPORT AVAILABLE – REFERRED TO SCHEDULING NOTICE ONLY Components: A) Cegin Viaduct (Penrhyn Railroad) (Viaduct, Multi- Arched Bridge, Cast-Iron Bails)				elongs to attribut oute as part of Pe ne sea - DRhG	e Transport – o v nrhyn quarry's i	verland / railway / nitial rail access to

Ffestiniog Scheduled Ancient Monuments

SAM_NO	SAM_NAME	NGR_X	NGR_Y	COMMUNITY	SITE_TYPE	GENERAL_PE
ME173	Hut Circle Settlement at Gelli Gonan	269238	345564	Ffestiniog	Unenclosed hut circle	Prehistoric
NOT RELE	VANT TO WHS					

Moel Tryfan Scheduled Ancient Monuments

No SAMs recorded

Nantlle Scheduled Ancient Monuments

SAM_NO	SAM_NAME	NGR_X	NGR_Y	COMMUNITY	SITE_TYPE	GENERAL_PE
CN265	Enclosed Hut Circle Settlement West of Votglas	249130	353677	Llanllyfni	Enclosed hut circle settlement	Prehistoric
NOT RELE	VANT TO WHS					
CN302	Cloddfa'r Lon Slate Quarry	250264	353350	Llanllyfni	Slate mill	Post- Medieval/Modern
Compone A) Cloddfa Chimney, Pillar, We B) Cloddfa (Cottages Animal Pe C) Cloddfa (Cottages Earth Clos D) Cloddfa Engine Ho Drum Hou E) Cloddfa (Bridge Al	nts recorded as: a'r Lon Slate Quarry Mill (Slate M Engine House, Boiler House, Rop ighbridge House) a'r Lon Slate Quarry Western Cot , Boundary Walls, Garden, Earth ens) a'r Lon Slate Quarry Eastern Cotta , Boundary Walls, Gardens, Anim sets) a'r Lon Slate Quarry Chain Incline buse, Boiler House, Chimney, Wir using, Chain Incline Landing Platfo a'r Lon Slate Quarry Bridge Abutr butments, Weighbridge House)	ill, beway tages Closets, ages al Pens, e (Winding oding orm) nents	A Slate I Ropewa process quarry's generat the qua generat engine (A Weigh Weighb system. B and C settlem quarry v be intro D belon (blondin internal generat power g E belon	Will, Chimney, y Pillar belong ing Sites / Slat s slate-processi ion • engine h rry's slate-proc ion / engine ho relocated to sl bridge House ridges as part belong to attri ent / houses a workers but no duced in Attrik gs to attribute ns and chain in transport syst ion / engine h generation nee gs to attribute	Engine House, B s to attribute Me e mills / radial n ing system, and t ouse • steam en cessing system, a buse-boiler hous ate museum)-fla belongs to Attrib of the quarry's in bute Settlement s part of the acci- te that barracks butes list – for dis Transport / aeri- aclines) as part o em and to attrib ouse / boiler ho ded to operate t Transport / brid	oiler House, echanical nills as part of the to Power- ogine as part of the swell as to Power e-engine-steam strods oute Transport / nternal transport t / squatter ommodation for category needs to scussion? al ropeways f the quarry's ute Power use as part of the he aerial ropeway. ges / railways

SAM_NO	SAM_NAME	NGR_X	NGR_Y	COMMUNITY	SITE_TYPE	GENERAL_PE		
			weighbridges as part of the quarry's internal/external railway system.					
			- DRhG					
CN301	Blaen y Cae Slate Quarry	249780	353664	Llanllyfni	Unclassified site	Post- Medieval/Modern		
Compone	nts recorded as:		A belongs to attribute Quarrying / pit quarry / transport					
A) Blaen y	Cae Slate Quarry Steam Winder	(Steam	/ blondi	ns as part of a	n internal transp	ort system		
Winding E	ingine, Winding Drum, Water Pip	e)	B belon	gs to attribute	Quarrying / pit	quarry / transport		
B) Blaen y	Cae Slate Quarry Railway Embar	nkment	/ railway as part of an internal transport system					
(Embankn	nent) Carl Clata Quarra Davana Davat	_	C belon	gs to attribute	Quarrying / pit	quarry / transport		
C) Blaen y	Cae Slate Quarry Ropeway Rout	e	/ biondi	/ blondins as part of an internal transport system				
(Ropeway	Cao Slate Quarry Blondin Mast /	Plandin	/ blond	gs to attribute	Quarrying / pit	quarry / transport		
Mast Sho	aves Landing Plate)	ыопап	F belong	ns to attribute	Quarrying / nit	nuarry /		
F) Blaen v	Cae Slate Quarry Pit (Quarry Pit	Quarry	extracti	on as part of the	e quarry workir	audity /		
Face)		Quarry	- DRhG		ie quarry workin	.82		
CN165	Dorothea Quarry Beam Engine	249729	353120	Llanllyfni	Engine house	Post-		
						Medieval/Modern		
Compone	nts recorded as:		Belongs	to attribute Q	uarrying / pit qu	arry / pumping		
A) Doroth	ea Quarry Beam Engine (<i>Pump H</i>	ouse,	/steam pumping engine / transmission system as the					
Boiler Hou	ise, Fuel Hopper, Ramp with Bea	m	main pu	main pumping system in the quarry - DRhG				
Pumping I	Engine, Boilers, Windlass, Slate C	hute)						
CN199	Dorothea Quarry, Pyramids,	250011	353059	Llanllyfni	Engine house	Post-		
	Inclines, Mill & Winding					Medieval/Modern		
	Houses, etc							
Compone	nts recorded as:		A belongs to attribute Quarrying / pit quarries /					
A) Doroth	ea Quarry Winding Engine House	e A (Engine	transport / chain inclines as part of the internal					
House, Ch	imney, Boiler, Engine, Tank, Timl	ber	transport system in the quarry.					
Headgear	Supports, Shelter)	D (Engling	transport / chain inclines as part of the internal					
B) Doroth	ea Quarry Winding Engine House	е в (Engine	transport system in the guarry.					
C) Doroth	ea Quarry Locomotive House (Lo	comotive	C belongs to attribute Quarrying / pit quarries /					
Shed)		comotive	transport / loco facilities as part of the quarry's internal					
D) Doroth	ea Quarry Winding Engine House	e D	transport system					
, (Transpor	ter Incline Engine House)		D belongs to attribute Quarrying / pit quarries /					
E) Doroth	ea Quarry Winding Engine House	E (Chain	transport / railways/inclines as part of a quarry internal					
Incline En	gine House)		transport system					
F) Doroth	ea Quarry Winding Engine House	F (Cable	E belongs to attribute Quarrying / pit quarries /					
Incline Wi	nding House, Lean-to, Machinery	v Bases,	transport / chain inclines as part of a quarry internal					
Water Tai	nk Supports, Chimney)		transport system					
G) Dorothea Quarry Cable Incline Pyramid (Cable			r beioligs to attribute Quarrying / pit quarries /					
Incline Pyramia, Timber Heaagear Supports,			transport system					
(Transporter Incline, Possible Winding Gear, Steps			G belongs to attribute Ouarrying / nit quarry /					
Structure)			extraction / chain incline as part of the quarry's internal					
I) Dorothea Quarry Contractors' Shelters			transport system					
(Contractors' Shelters, Pits, Dumps, Shelters)			H belongs to attribute? Quarrying / pit quarry /					
J?			extraction / railways/inclines as part of the quarry's					
K) Dorothea Quarry Dorothea Large Mill (Slate Mill,			internal transport system, and also to Quarrying / pit					
Engine Houses, Central Belt Bearing, Tramway,			quarry / tipping /secondary level tipping as part of the					
Buttresses, Slate Room Dividers, Workshops,			system of dumping waste rock					
Ancillary Buildings, Traditional Slate Splitting			I belongs to attribute Processing / hand-processing site					

SAM_NO	SAM_NAME	NGR_X	NGR_Y	COMMUNITY	SITE_TYPE	GENERAL_PE	
 Shint_ind Shin			NGR_YCOMMUNITYSITE_TYPEGENERAL_PEgwaliau / as part of the secondary reworking of tipsK belongs to attribute Processing / mechanicalprocessing / mill / longitudinal mill as where slateblocks were sawn and splitL belongs to attribute Quarrying / pit quarries /transport / railways/inclines as part of a quarry internaltransport systemM belongs to attribute Quarrying / pit quarries /transport / (but not sute if railed incline or aerialropeway as part of a quarry internal transport systemN belongs to attribute Quarrying / pit quarries /transport / chain inclines as part of a quarry internaltransport systemO belongs to attribute Quarrying / pit quarries /transport / blondin as part of a quarry internal transportsystemP belongs to attribute Quarrying / pit quarries /transport / blondin as part of a quarry internal transportsystemQ belongs to attribute Quarrying / pit quarries /transport / chain inclines as part of a quarry internaltransport / chain inclines as part of a quarry internaltransport / blondin as part of a quarry internaltransport / chain inclines as part of a quarry internaltransport / chain inclines as part of a quarry internaltransport systemQ belongs to attribute Quarrying / pit quarries /transport / railways-inclines as part of a quarry internaltransport / railways-inclines as part of a quarry internaltransport / system				
CN300	Ty Mawr East Slate Quarry Winding Engine House	249900	352565	Llanllyfni	Engine house	Post- Medieval/Modern	
Components recorded as: A) Ty Mawr East Slate Quarry Winding Engine House (Boiler House, Engine Base, Drum Base, Rope Slot, Chimney)			Belongs to attribute Quarrying /transport /shafts as part of the quarry's internal transport system and to attribute Quarrying / power generation / engine house, boiler house - DRhG				
CN208	Pen-yr-Orsedd Quarry, Blondins and Associated Structures	250898	354120	Lianiiytni	Engine nouse	Post- Medieval/Modern	
Components recorded as: A) Pen-yr-Orsedd Quarry Blondin Engine House Etc (Engine House, Pylon, Main Pylon Anchor, Control Cables between Engine House and Pylon, Main Cable Across Quarry, Anchor Point) B) Pen-yr-Orsedd Quarry Blondin Engine House Etc (Engine House, Pylon, Main Stay and Anchor, Control Cable, Anchor Across Quarry) C) Pen-yr-Orsedd Quarry Blondin Etc (Engine House, Pylon, Main Stay and Anchor, Control Cable Mechanism, Main Cable) D) Pen-yr-Orsedd Quarry Engine House For Blondin (Engine House, Pylon, Main Stay and Anchor, Control Cable Mechanism, Main Cable, Anchor Across Quarry)			All belor / blondi system -	ng to attribute ns as part of tl DRhG	Quarrying / pit he quarry's inter	quarry / transport nal transport	

Nantperis Scheduled Ancient Monuments

SAM_NO	SAM_NAME	NGR_X	NGR_Y	COMMUNITY	SITE_TYPE	GENERAL_PE
CN163	Dinorwic Quarry: Hafod Owen	258530	360220	Llanddeiniolen	Wheelhouse	Post-

SAM_NO	SAM_NAME	NGR_X	NGR_Y	COMMUNITY	SITE_TYPE	GENERAL_PE	
	Winding Engine, Locomotive Shed, Main Waterwheel and Housing					Medieval/Modern	
Components recorded as: A) Dinorwic Quarry Workshop Complex with Ancillary Buildings and Structures (Waterwheel, Pelton Wheel, Table Incline, Waterpipe and Aqueduct)			A Workshops complex belongs to Attribute Maintenance / Maintenance facilities / workshops as part of the quarry's maintenance facilities A Waterwheel, pelton wheel, waterpipe and aqueduct belongs to Attribute Power generation / water channels-waterwheel-wheel pit as part of the quarry's power-generation system but this category arguably needs to expanded to include peltons, a form of waterwheel, for which hydraulic power site (NMR term) is not necessarily appropriate. A Table Incline belongs to Attribute Transport /paths / railway incline planes as part of the quarry's internal transport system This needs further discussion; I am not clear which locomotive shed is scheduled, and the Hafod Owen winding house belongs to Attribute Transport /paths / railway incline planes as part of the quarry's internal transport system This needs further discussion; I am not clear which locomotive shed is scheduled, and the Hafod Owen winding house belongs to Attribute Transport /paths / railway incline planes as part of the quarry's internal transport system but has been relocated – DRhG				
CN177	Dinorwic Quarry Barracks 'A' Incline	258840	360171	Llanddeiniolen	Barracks	Post- Medieval/Modern	
A) Dinorwic Quarry Barracks (Barracks, Chimneys, Latrines, Graffiti, Possible Foreman's House) B) Dinorwic Quarry Slate Haulage Incline (Incline, Brake-drum Houses, Rails, Rollers, Cable, Track, Iron Bridge, Truck)			houses as part of the quarry's social infrastructure as part of the accommodation for quarry workers but note that barracks category needs to be introduced in Attributes list – for discussion? B belongs to Quarrying / galleried quarries / transport / railways/inclines as part of the quarry's internal transport system – DRhG				
CN198	Vivian Slate Quarry, Inclines, Walia & associated structures	258635	360666	Llanddeiniolen	Incline	Post- Medieval/Modern	
Components recorded as: A) Vivian Slate Quarry Incline (Incline, Winding Houses, Pit, Trucks, Rails, Steps) B) Vivian Slate Quarry Walia (Waliau) C) Vivian Slate Quarry Winding Houses (Winding Houses, Drums, Cables, Mechanisms) D) Vivian Slate Quarry Cabans (Cabans) E) Vivian Slate Quarry Blast Shelters (Blast Shelters, Internal Seating, Wall Niches)			A belongs to Quarrying / galleried quarries / transport / railways/inclines as part of the quarry's internal transport system B belongs to attribute Processing / hand processing site / gwaliau as where blocks were split and trimmed C belongs to Quarrying / galleried quarries / transport / railways/inclines as part of the quarry's internal transport system D belongs to social/health / caban part of the quarry's social infrastructure E is a category not identified in the attributes and should be. – DRhG				
CN337	Dinorwic Quarry	259798	360548	Llanddeiniolen	Slate mill	Post- Medieval/Modern	
Components recorded as:			A Australia Mill belongs to Mechanical processing				

SAM_NO	SAM_NAME	NGR_X	NGR_Y	COMMUNITY	SITE_TYPE	GENERAL_PE	
A) Dinorwic Quarry Upper Terrace (Australia Mill)			Sites / Slate mills, slate processing works / longitudinal				
(Retaining wall, Girder Bridge, Mill, Buildings			mills / Machinery / Greaves saws and to Hand-				
B) Dinorwic Quarry Lower Terrace (Buildings of			processi	ing sites / Quarr	y shelter / gw	aliau and to	
– Uncerta	n Function, Locomotive Sheds and	Water	power _, s	ources / power	transmission	as part of the	
Tank, Gwa	lliau, Compressor House, Water		quarry's	slate-processing	g system.		
Diact Shall	s) Uncertain Functions, Locomotive	Snea,	A Retaining Wall is a category not identified in the				
	fice Caban Plandin System)	innage	attributes and should be.				
C) Dinorw	ic Quarry Inclines and Associated Fe	atures	auarrie	/ transport / h	ridges as nart	of the quarry's	
(Inclines	Steps Wagons Drumhouses (some	atares	internal	transport system	n n	or the quarty s	
includina	drum, rope, brake and rails). Underc	around	A Buildi	ngs – uncertain –	- depends on l	ouildings	
Winding L)rum (including drum, crimp, brake	and	B Locom	notive sheds belo	ongs to Quarry	ing / galleried	
brakesma	n's shelter), Associated Buildings)		quarries	s / transport / ra	ilways as part	of the quarry's	
			internal	transport system	n		
			B Water	Tank, Compress	sor House, Wa	ter Tank/Pipes	
			belongs	to Quarrying /	galleried quar	ries / Power	
			generation / water channels /compressor house				
			as part o	of the quarry's sy	stem for gene	erating power for	
			extracting the rock.				
			B gwallau belong to attribute Slate Processing / Hand-				
			system for processing the rock				
			B Weighbridge House belongs to Attribute Slate				
			Quarrying / Galleried guarries / transport /				
			Weighbridges as part of the quarry's system of				
			recordir	ng the output tha	at was being m	noved.	
			B Caban	belongs to Slate	e processing /	Social - health	
			Caban /	'<i>caban</i> as part o	f the social inf	rastructure of the	
			quarry.				
			B Blondi	in System belong	gs to Attribute	Slate Quarrying /	
			Gallerie	d quarries / aeri	ial ropeways (blondins and	
			chain in	clines) as part of	r the system fo	or moving material	
			around the site.				
				s to Quarrying	rt of the quar	rv's internal	
			transpo	ysymemics as pa rt system	int of the qual	ry sinternal	

Note: Components are recorded on Cadw AM107 forms under Archaeological Item Information. Where this has had to be extracted from the description the components are written in italics. Notes have also been added in italics.

APPENDIX 2: Maps of Scheduled Ancient Monuments by area



Location of Nominated Areas



Aberllefenni Quarry



Bryneglwys Quarry, Abergynolwyn



Dyffryn Ogwen Area (North)



Dyffryn Ogwen Area (South)



Ffestiniog Area (North)



Cwmystradlyn and Cwm Pennant (Gorseddau Quarry, Treforys, tramways and slate mill)



Nantlle area



Nantperis (Dinorwic Quarry, Vivian Quarry and Deiniolen)

APPENDIX 3 APPLICATION OF SCHEDULING CRITERIA: FFESTINIOG QUARRIES EAST: MAENOFFEREN AND DIFFWYS (CASSON)

The following is a pilot scheduling proposal and should initially be seen as a draft for discussion. A large area is proposed for scheduling following application of the criteria discussed in the previous section. A holistic approach is adopted, considering the quarrying landscape in its entirety as opposed to a series of isolated features.

An area of 115.8 hectares in the eastern part of the quarry complex to the north-east of Blaenau Ffestiniog is proposed for scheduling. This comprises areas of Maenofferen, Diffwys Casson, Fotty and Bowydd quarries along with leats, dams, and part of the Rhiwbach tramway in open moorland to the north and north-east of the quarries. The proposed scope of the scheduling is in two approximately equal adjoining areas cut by a band of modern workings (Fig. 1). Fig 2 shows the area recommended for scheduling in relation to the 4th edition 6" ordnance survey mapping (revised 1914). This provides an overview of the extent of the quarries prior to disturbance by modern workings.

Period

The area contains workings from a wide date range. Diffwys is the earliest and is celebrated as the *mam-chwarel* (mother quarry) of Ffestiniog, and was the first to work for export c. 1760. The remains are complex being an amalgamation of four different extraction sites (see Gwyn 2015 Diffwys (Casson) Slate Quarry Prn: 20305). The earliest workings were at Hen Waith (SH71124627c) and continued in use from the 1760s until the 20th century and early features have not survived. The upper eastern part of the works dating from the early 19th century are better preserved and contain numerous *gwaliau* surrounded by distinctive fine waste indicating hand processing. A rail connection and an incline link this area to the floor 6 mill.

The steam powered floor 6 mill, the earliest parts of which date from the late 1850s, is a very early example of an integrated mill. This represented a technological innovation, allowing all processes in the production of roofing slates to take place under one roof.

The quarry survives as a series of 8 working levels with a further four mills surviving on the western slopes along with a well-developed transport system that was connected to the Rhiwbach railway in 1862 and then to the Festiniog railway in 1864. The level of activity in the quarry was low from the 1880s to its closure in 1925. This has resulted in the very good preservation of 19th century features. There has been relatively minor disturbance to some northern areas by modern workings.

Maenofferen remained in use until the 1990s and the remains are therefore somewhat more fragmented. The early water system consisting of reservoirs, aqueducts, and leats which powered the mills at Maenofferen, Fotty and Bowydd is well preserved as are transport links in the form of railways and inclines. The mill and an extant hydroelectric generator house retain evidence for the progression from water to steam and electric power.

Only a small area of Fotty and Bowydd is recommended for inclusion in the scheduled area much of the quarry and associated infrastructure has been destroyed by recent workings.

The survival of coherent early features at Dyffwys and multiperiod remains demonstrating the development of technology at Maenofferen indicate a high value for the period criterion.

Rarity

The quarry complex as a whole is a rare example of an industrial system that has resulted in major landscape, social and economic change.

Individual features with a high rarity value include the early steam-powered integrated mill at Dyffwys (PRN 60258; Plate 1) and a counterbalance incline with a remote drumhouse at Maenofferen (PRN 60435 and 60437).

The range and coherence of the various elements of the quarries, ranging from complex and sometimes innovative technology to simple or commonplace features such as gwaliau (plate 2) and slate tips is of primary significance. The complete quarry has a high rarity value as an integrated landscape.

Documentation

The development of the quarries is well documented and can be traced via plans and ordnance survey mapping. There are extant archives and extensive secondary studies by the Plas Tan y Bwlch industrial archaeology group along with reports by Gwynedd Archaeological Trust (GAT report 154, 1995) and a detailed report examining areas of Diffwys in relation to current proposals for extraction (Govannon forthcoming). The archaeology and history of the Welsh Sate industry is examined in detail in Gwyn 2015.

The surveys have not been integrated into the regional Historic Environment Record and therefore formal advice offered in the event of mineral or planning applications is likely to be made without knowledge of these records.

Group Value

The inter-relationship and coherence of the features within the proposed area allows full interpretation of the processes being undertaken. This is particularly true of Diffwys quarry, where there have been few changes since the closure of the quarry, allowing the movement of slate to be traced from its extraction points via railways and inclines to mills or tips. The export route of finished products can also be traced. The integrity of the water power system and transport links are of particular importance at Maenofferen. The group value of the features, many of them of minor value when considered in isolation, is therefore very high.

This also applies to the wider landscape beyond the quarry boundary. Group value with the town of Blaenau Ffestiniog, transport links by narrow gauge and standard gauge railway, road, river and sea are all high.

Survival /Condition

The survival of features across the area proposed for scheduling is high. This does not apply across the whole Ffestiniog quarry landscape; areas immediately to the north-western side of the proposed scheduled area comprising much of the Fotty and Bowydd quarries have been removed by modern workings. In contrast the survival of features in Dyffwys quarry is very high. A comparison of modern aerial photographic coverage and the 1899 and 1919 25" Ordnance Survey maps (Fig. and xx) show a high level of survival within the quarry. Recent haul roads and quarrying, post-dating the aerial photograph have disturbed a small area.

The adjoining Maenofferen quarry has a slightly lower level of survival. The roof of the upper underground workings was removed to allow removal of otherwise unobtainable slate in supporting

pillars and conversion of the area into an opencast site (untopping). This only affected a discrete area but destroyed both above- and under-ground workings.

The 19th century mill and associated buildings and counterbalance incline survive adjacent to the recent works as do the majority of the transport links and the leats, remains of aqueducts and reservoirs that provided the water to power earlier phases of the quarry.

The condition of these remains is to some extent a function of when they were last used. Almost all of the features in Dyffwys have decayed to a point of moderate stability and deterioration is slow but ongoing. The mill and other buildings at Maenofferen (plate 4 are, in contrast, well preserved being partially roofed and with some intact machinery. This area was, however, in use until the 1990s and is in a state of rapid decay and some smaller buildings have been demolished and machinery has been plundered for scrap.

Fragility/Vulnerability

Threat levels are very high within a working quarry. Buildings and machinery are both fragile and vulnerable in the context of modern quarrying practices. This has been clearly demonstrated at both Dyffwys and Maenofferen. The untopping of underground workings was very destructive and demonstrates an obvious threat.

The unregulated construction of haul roads poses a less obvious threat but has caused limited though significant damage to Maenofferen. Three buildings adjacent to the road passing in front of the mill have been demolished, apparently with little justification. In addition roads cutting into the northern and eastern parts of Dyffwys have damaged some features and have undermined others thus increasing their fragility (Plate 3). Other threats include removal of machinery for scrap and reuse of tips for crushed slate.

The presence of existing mineral planning permissions conveys a very high level of risk and vulnerability to much of the proposed area. Some areas, depending on the geology, are more likely to be targeted for extraction than others.

Overall levels of fragility and vulnerability must be seen as very high.

Potential

The Ffestiniog quarries have been studied in some detail by RCAHMW, the Plas Tan y Bwlch group and GAT. There is scope for research into the quarry's technical and economic role within the global slate and building industry but the potential for yielding significant levels of additional historic information is probably low to medium.

Conclusions

The proposed scheduled area encompasses a significant part of a slate quarrying complex that charts major landscape, social and economic change. For these reasons alone it would score highly on the rarity criteria. The proposed area demonstrates a high level of survival of inter-related industrial features. Some individual features should be seen as having a high rarity value but most are relatively common. Their significance is derived from their group value. The processes of production, including extraction, transport, processing to finished product, waste removal and power generation can be easily understood throughout the proposed area (Fig 3). There is also good evidence for the development of the quarry; superimposed changes in power generation and transport systems are preserved and understandable.

Group value with settlement and transport systems in the surrounding landscape is also of great importance. Slate extraction has shaped the area around Blaenau Ffestiniog to a point where the pre-industrial landscape has been largely obliterated and the quarries and associated settlement dominate the area. The development of transport systems in the form of narrow and standard gauge railways are also a direct result of slate extraction.

Threat levels and fragility are demonstrably very high. Ongoing extraction has caused limited but significant damage and has the potential to reduce the value of the quarries in relation to several scheduling criteria.

In order to preserve the integrity of the quarry and the physical remains of the quarrying processes an area of 155 ha has been recommended for scheduling. This will clearly be a challenge within a working quarry, and will need to be carried out in consultation with the quarry owners, taking into account their proposals for future extraction, and their mineral extraction permissions. Combining scheduling with both listing and management agreements might be the most appropriate response.



Figure 1: Diffwys and Maenofferen Quarries - proposed scheduling area



Figure 2: Proposed scheduled area (OS 6" 1924)



Figure 3: Diffwys and Maenofferen Quarries



Western Diffwys quarry OS 25" 1913



Western Diffwys quarry aerial photograph (Bluesky 2006)



Plate 1: Mill, Diffwys Quarry



Plate 3: Threat from quarry road, Diffwys Quarry



Plate 2: Gwaliau, Diffwys Quarry



Plate 4: Mill, Maenofferen



Gwynedd Archaeological Trust Ymddiriedolaeth Archaeolegol Gwynedd



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