PROPOSED WIND FARM, PARYS MOUNTAIN, AMLWCH, ANGLESEY

ARCHAEOLOGICAL FIELD EVALUATION

REPORT NO. 57

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Ymddiriedolaeth Archaeolegol Gwynedd
Gwynedd Archaeological Trust

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ARCHAEOLOGICAL FIELD EVALUATION

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for Anglesey Mining plc

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1. INTRODUCTION

1.1 Background to the proposal

Anglesey Mining plc have recently re-started mining activity on Parys Mountain, a large site intensively exploited for minerals during the 18th and 19th centuries. Existing planning consents connected with this cover a significant proportion of the mountain and include permissions for a large processing plant and an extensive tailings lagoon. New winding gear has already been erected on the north-west edge of the area, and the tailings lagoon will ultimately destroy a series of copper precipitation pits and ochre ponds of considerable importance. Gwynedd Archaeological Trust has already carried out a programme of survey and recording on these. Similarly, other small projects have been carried out in advance of various works, but the extensive remains are still in need of a full and detailed overall survey.

The proposed wind farm would supply power to run the mining activities, and any surplus would be sold to the national grid to help finance the mining work, which currently awaits re-financing. An application to Ynys Môn Borough Council (No. 1/11/C/77a) to build the wind farm has been turned down, and Anglesey Mining plc are appealing against this decision.

This evaluation has been prepared for submission with the appeal at the request of the Welsh Office Planning Inspectorate. This follows Welsh Office guidelines on the handling of archaeological matters in the planning process set out in Planning Policy Guidance 16: Archaeology and Planning. This confirms that archaeological remains are a material consideration in the planning process, and states that *"where nationally important archaeological remains, whether scheduled or not, and their settings, are affected by proposed development there should be a presumption in favour of their physical preservation"* (paragraph 8).

The evaluation attempts formally to assess the archaeological implications of the proposal, based on an appraisal of existing data and new fieldwork. It aims to give an objective view of the archaeology and offer proposals for minimising damage if permission for the development is granted. It does not make any planning recommendations, and should be read in conjunction with current planning policies.

Anglesey Mining plc has indicated its willingness to be flexible over the exact siting of installations, and recommendations made for minimising damage therefore suggest re-siting where appropriate.

1.2 History of the Site

Apart from the surviving industrial archaeological remains (see below), which are impressive enough in themselves, the history of the site is extremely important, locally, nationally and internationally. The process of obtaining copper by precipitation in pits or tanks, made possible by the unusual quality of the water draining from the spoil and workings on the mountain, is unique, and first experiments in this field are recorded as far back as 1579, when they were observed by no lesser personages than Leicester, Burghley and Walsingham (and Sir John Wynn of Gwydir, who recorded the event).

Towards the end of the 18th century, when the Parys mines were in the hands of Thomas Williams, a lawyer from Beaumaris, copper output was over 3,000 tons per annum and exceeded the total output of all other British mines. For a year the famous copper mines of Cornwall were put out of action, and at one point Parys was the largest copper mine in the world. Williams set up companies to smelt and refine the ores and even manufacture goods. Anglesey copper was used for sheathing Royal Navy warships, and Williams was instrumental in improving the design of this sheathing. Other activities were also carried out on the mountain, such as the production of brimstone and several kinds of vitriol. The copper-rich water from the mines was even sold for medicinal use.

Although mining activity declined throughout the 19th century, this was not a steady process and there were at least two periods of revival under the Cornishman John Treweek. Limited activity, principally concerned with the precipitation process, continued up to the middle of the present century.

1.3 Remains on the Site.

Although some of the buildings remaining on the site are in poor repair, many other features, including the windmill, Cornish engine house, numerous large and small tips, several areas of pits and tanks used in the copper precipitation process and the well-known Great Opencast, survive in good condition. Many of the surviving remains, including the buildings around the Mona yard, are unique. There are also over 100 mine-shafts, now sealed, and 13 miles of underground passages.

Apart from the visible remains of this intensive, relatively recent activity, there are indications of much earlier exploitation of the ore, and it is impossible to say how much evidence of early working may lie under the vast areas of 18th and 19th century spoil tips. Hammerstones, originally thought to be Roman, have been found in several locations on the mountain, and a recent excavation uncovered another 30 of these within a small waste tip containing charcoal which was dated by radiocarbon to the Early/Middle Bronze Age.

Definite evidence for Roman working remains elusive, although nine Roman 'copper cakes' (ingots) from Anglesey were listed by W. O. Stanley in 1873 and it is most probable that they were made of Parys copper. In addition, it is likely that evidence for Mediaeval exploitation might also be encountered. In summary, the evidence we have so far very possibly relates to either end of a 3,500-year continuum of mineral exploitation on Parys Mountain.

1.4 Importance of the Site

The whole mountain and part of the surrounding area is an industrial archaeological site of major, national and international, importance. The scale of the archaeological remains on Parys Mountain, the fact that many of them are unique, and their historical context are such that the site has been recently listed by the International Council for Conservation of the Industrial Heritage as an industrial archaeological site of world importance. It was also considered as a possible World Heritage Site, ranking alongside Ironbridge Gorge, Caernarfon Castle etc.

Some parts of the site (see map) have been scheduled as monuments of national importance, but these are not necessarily the best-preserved or most important features on the site and their scheduling is no indication that other parts of the site are of lesser value. Scheduling of the whole area was not deemed practicable, and, scheduling having been carried out fairly recently, there were areas of existing planning consent within which nothing was considered (scheduling of industrial archaeological remains in North Wales lags far behind scheduling of remains from other periods, and less than 3% of the scheduled ancient monuments in Gwynedd belong to this period). However, the point cannot be too forcibly made that the site should be seen as a whole integrated landscape, not as a collection of isolated features, and that much of its historical importance lies in the sheer scale of the undertaking.

2. THE PRESENT PROPOSAL

The proposal under consideration is for the building of eight wind turbines on the mountain, with connecting tracks and cable trenches. Full details of the construction of tracks and trenches are not available at the time of writing, but routes between turbines will follow existing tracks (which would require no improvement) where possible.

The turbines are set on concrete bases which require holes 9m x 9m x 1m deep. They are 32m high and the blades rotate in a vertical circle with a diameter of 34.8m.

The proposed sites of the turbines (see map) are as follows. Tracks are also marked on the map but information as to cable trench routes is not available. Some difficulty in locating the exact sites of the turbines was experienced due to lack of precise information and accurate large-scale plans, the presence of numerous tracks not shown on maps and so on, so comments at this stage remain general.

Turbine 1. Close to windmill on highest point of Parys Mountain.

Comment. This appears to be an area of small tips, largely overgrown. It is close to the site of Charlotte Yard and an unnamed building marked on old maps, and is not far from the Oxen Quarry where the prehistoric spoil heap was located. The turbine site appears from the map to be within 25m of the windmill. Much apparently recent destruction in the area increases the value of what remains. Accessible by extant track.

Turbine 2. Around 50m north-west of 1.

Comment. Again an area of overgrown small tips. This is very close to the edge of Oxen Quarry and is certainly an area where signs of prehistoric activity may be expected. Accessible by extant track.

Turbine 3. About 60m west-north-west of 2.

Comment. This too is an area of small, old tips, and is still fairly close to Oxen Quarry. There is no extant track; a new one would have to be sited carefully to avoid shafts and other remains on the route.

Turbine 4. South-west of windmill, north of eastern end of Great Opencast.

Comment. This area consists of tips and other features which appear to have been partly levelled. There are remnants of old walling. Some new track would have to be made, but mostly crossing areas which have already been much disturbed.

Turbine 5. 60 or 70m due north of the Great Opencast, west-north-west of site 4.

Comment. An area of larger tips. An L-shaped feature shown on the map next to the turbine site probably represents the remains of structures associated with relatively early workings. There are also shafts in the immediate area. The approach track to this turbine would need to cross spoil tips, but we are advised that no excavation would be involved.

Turbine 6. About 80m north-west of 5.

Comment. This appears to be an area of large, 18th- and 19th-century spoil tips. It was impossible to pinpoint the exact site of the turbine due to lack of identifying features, but it is clear that the access track would have to cross spoil tips.

Turbine 7. About 100m west of the Great Opencast, 300m or more south-west of 6.

Comment. Again this appears to be on top of a large, relatively recent spoil tip, which the access track would have to cross.

Turbine 8. About 350m west of 7, on the other side of the B5111 and close to the new mine headgear recently erected.

Comment. This site was not visited but is in grassland outside the area of old surface workings.

We are advised that the access track follows the route of a new road already constructed (presumably to the north of the B5111). The track linking it with the main area of the wind farm would have to cross an area of copper pits.

Once the wind farm is operational, no further threat to the archaeology is envisaged, but the situation will need to be monitored periodically to check that no further ground disturbance is taking place. During construction, apart from the necessary excavation, there would be potential for damage from large vehicles on the site, dumping of excavated material and surface storage of materials.

It also seems possible that holes only 1m deep may prove to be insufficient for the turbine bases, given the loose material of which spoil tips are composed, so that more extensive consolidation work would need to be undertaken.

In the case of Turbine 1, if sited as close to the windmill as planned, steps would need to be taken to ensure that no damage to the windmill ensued from vibration or noise when in operation; and the possibility of vibration damage to shafts and other underground workings should be borne in mind. All these potential threats to the archaeological remains should be taken into consideration.

3. CONCLUSIONS

On the basis of the above, it is clear that any development must cause damage to certain aspects of the archaeological interest of Parys Mountain. Some of this potential damage (i.e. to possible buried remains relating to earlier periods) is unquantifiable.

However, it can certainly be argued that the wind farm will not destroy the site, and that the irreparable damage is limited and can be mitigated by full archaeological recording of those areas to be affected. It can also be argued that the present proposal represents a clean, modern and relatively non-destructive (i.e. compared to the dumping of waste over the site, for which permission already exists) phase in the continuing exploitation of the mountain by man. On the other hand, development of the mountain has to stop somewhere if any archaeological interest is to be preserved.

Much depends on the exact siting of the turbines and associated work. If the development does go ahead, as the company have said that the turbines can be moved from the proposed locations to less sensitive ones if necessary, it should be possible, with discussion between Anglesey Mining plc and archaeologists, to site them with a lower level of damage than would be caused by the current layout. It would still be necessary to ensure the availability of funds to carry out the full programme of archaeological recording that must precede and accompany the development if it goes ahead.

Turbines 1, 2 and 3 are all planned for a particularly sensitive area, where evidence for the earliest copper extraction on the mountain has been found, and significant remains from later periods are also in evidence - most notably, of course, the windmill, which is a landmark for miles around apart from its historical importance.

Turbine 4 would appear to affect an area which has already been levelled, but spoil heaps and walling might still be at risk.

Turbine 5 may threaten some early structures as well as tips.

Turbines 6 and 7 would probably only damage tips, and if these do not have to be cut into the damage should be limited. As the tips are integral parts of the site, recording prior to *any* damage will still be required.

Turbine 8 appears not to threaten any archaeology, but the route of the track leading to it

directly affects some sites of interest.

There are certain to be many as yet unrecognised and unrecorded features associated with the extraction and processing of ores on almost any part of the mountain chosen for development. These might include the sequence of tipping and stratigraphy of working (an underdeveloped aspect of industrial archaeology), which would need to be recorded, as well as the existence of features such as early kilns and flues.

The question of the setting of the monument is an extremely difficult one with regard to the entire mountain as a monument of industrial archaeological importance. It should be the subject of a separate Visual Impact Study, to which Cadw would contribute on the Scheduled Ancient Monuments and other bodies on the landscape aspects. It could be argued, as above, that the scheme will not cause unacceptable damage to the site, much less in fact than some activities which already have planning permission; and that such damage as may be caused will be offset by a programme of recording work carried out in advance. However, with regard to the particular monument of the windmill, the siting of Turbine 1 as planned at present could hardly fail to be extremely damaging - possibly to the fabric as well as the setting.

4. RECOMMENDATIONS FOR MITIGATORY ACTION

Taking all the above into account, Gwynedd Archaeological Trust's recommendations to Anglesey Mining would be as follows:

4.1 Re-design

1. That the sites of Turbines 1, 2 and 3 be moved, in accordance with the company's stated willingness to be flexible, as far away as possible from Oxen Quarry and the windmill. The present siting of 1 and 2 in particular severely threatens the archaeological remains. The final positions should be agreed with Gwynedd Sites and Monuments Record, acting as Curator.

2. That Turbine 5 be sited so as to avoid, if possible, any structural remains. Again, final position to be agreed with Gwynedd Sites and Monument Record.

3. That Turbine 4 be sited on the area already levelled, and any structural remains threatened be investigated (see below).

4. That existing trackways are utilised wherever possible, and the routes of all unavoidable new tracks are agreed in advance with Gwynedd Sites and Monuments Record.

5. That the cable trenches are made as shallow as possible, and the routes agreed in advance with Gwynedd Sites and Monuments Record.

6. That no ancillary works (temporary compounds etc.) are built on the mountain.

7. That spoil excavated from the holes for the turbine bases and elsewhere be disposed of outside the area of archaeological interest.

4.2 Recording

We would recommend that Anglesey Mining secure a full programme of archaeological recording prior to and during construction, to ensure the preservation by record of all archaeological information that is to be destroyed. Specifically, we recommend that:

8. The whole area to be affected be the subject of a full topographical and photographical survey prior to any work commencing, so that all subsequent work can be placed in its proper

context.

9. The holes for turbines 1, 2, 3 and 5, unless moved to approved new sites, be excavated and recorded by archaeologists.

10. The excavations of the holes for the remainder of the turbines, plus the above if moved, be the subject of an archaeological watching brief, with provision made for recording as appropriate.

11. Any excavation of spoil tips or consolidation for trackways be the subject of an archaeological watching brief, with provision made for recording as appropriate.

4.3 Monitoring

Once the wind farm is operational, monitoring is essential to ensure that no subsequent damage to archaeological remains occurs. We recommend:

12. That an archaeologist visit the site on an annual basis to check the apparatus and associated workings, and report to the Gwynedd Sites and Monuments Record.

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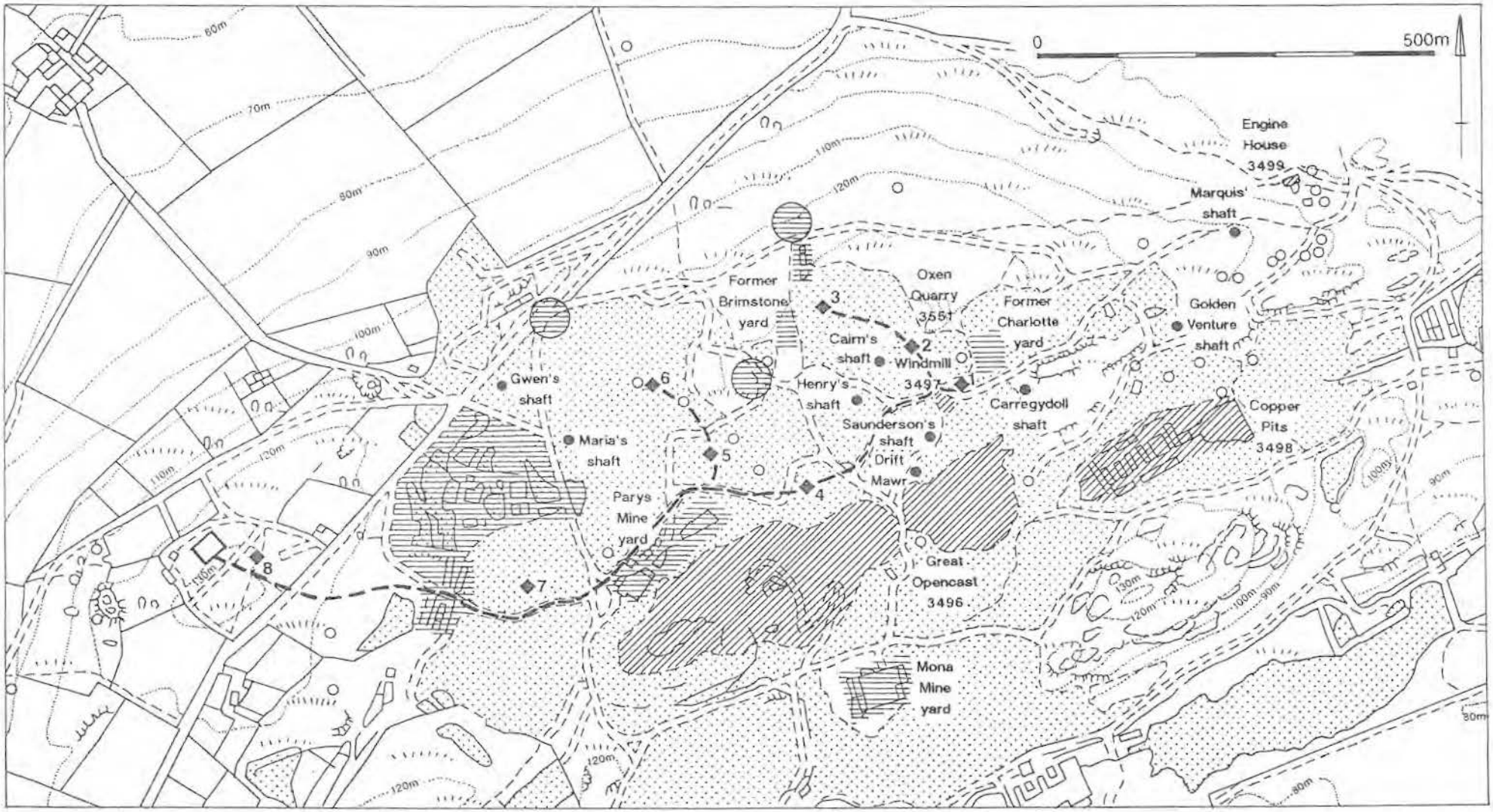

scheduled ancient monuments (with PRN's)

other archaeological sites of particular interest

hammerstone finds

wind turbine sites

linking tracks

mineshafts of particular interest

mineshafts