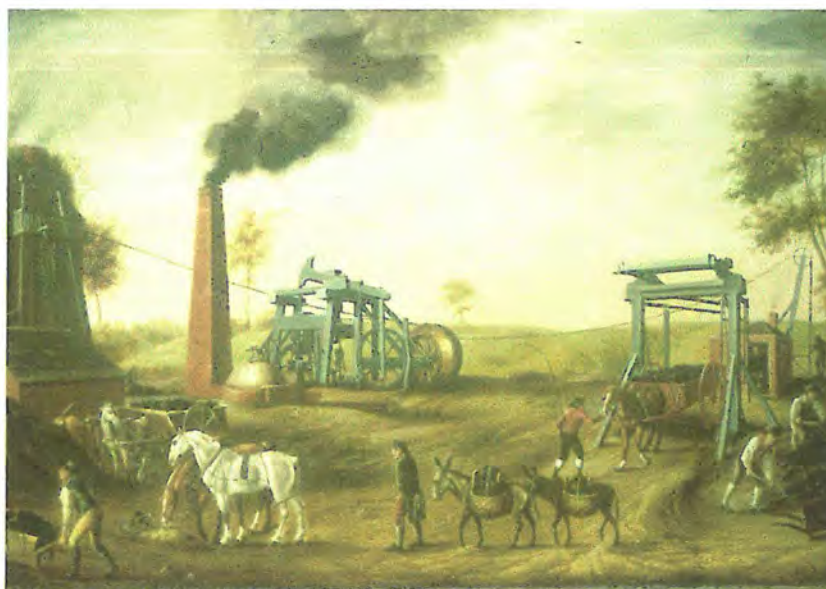


Anglesey Coal Mines

Archaeological Assessment



Report No. 408

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Cadw: Welsh Historic Monuments

by

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Event PRN 40535

ANGLESEY COAL MINES

Archaeological Assessment

Front cover: *A pit head*, British School, c. 1820. Though the location of this painting is unknown, it is nevertheless typical of small-scale collieries of this period, and it is unlikely that Penrhyn Mawr would have looked much different, even down to such details as the pump engine and the winder, the use of carts rather than rails for transport, and the virgin nature of the site.

Courtesy of Museums and Galleries on Merseyside.

Abbreviations.

The following abbreviations are standard:

- CRO: Caernarfon Record Office, Victoria Dock, Caernarfon
- GAS: Gwynedd Archives Service
- LIRO: Llangefni Record Office, Shire Hall, Llangefni, Ynys Môn
- NLW: National Library of Wales, Aberystwyth
- NMR: National Monuments Record, Aberystwyth
- PRO: Public Record Office, Kew, London
- RIGS: Regionally Important Geological Site
- UWB: University of Wales, Bangor

SUMMARY

*The present report identifies the sites and individual archaeological features which make up the Anglesey coal field. Thirteen individual sites were identified, of which two were considered to be of national (Welsh) importance. Appropriate management recommendations are made for each site in **Appendix 1** of the report.*

Each site contained between one and forty individual features. 155 individual features were identified, including open-casts, shafts, upcasts, engine houses, roads, offices and other administrative structures, ancillary buildings and dwellings. Nine features were assigned to the Medieval period (pre-1750). Most of the remaining features were assigned either to the nineteenth century, or, less specifically, to the Modern period.

The report concludes that despite the destruction of much of the archaeology of the coal-field, the surviving features demonstrate methods of winning coal in an area which failed to develop in the hey-day of the British coal industry.

Gwr llawen y talcennau, - o'ch o'i dasg
Yn llwch du'r peiriannau,
A diryf orthrymderau
O'i amgylch fel cylch y cau.

Gwilym Tilsli, 'Awdl foliant i'r Glowr.'

ANGLESEY COAL MINES

1 INTRODUCTION

This project has been grant-aided by Cadw: Welsh Historic Monuments in order to carry out an archaeological assessment of the Anglesey coalfield.

2 AIMS OF THE PROJECT

The aims of this project were to examine the documentary resource relating to the Anglesey coalfield and to follow this with a survey of the pits themselves, identifying the condition of the surviving elements of the industrial landscape and the level of threat to them. Management recommendations were to be made for each site as appropriate.

3 METHODOLOGY

3.1 Introduction

The specific aims of the project (as outlined in 2 above) allowed a structured approach to be adopted which took the following form:

1. An archive and literature search, accompanied by the creation of a bibliography
2. Fieldwork
3. Entry of the fieldwork data onto a computerised database
4. Analysis of the fieldwork data and bibliographic data
5. Incorporation of the results of the project into a final report

Discrete colliery sites were identified through the archive and literature search. Features identified in the course of fieldwork were assigned to one or other of a series of categories as laid out in the *Step 1 Report* of the Monuments Protection Programme for the coalfields of England. Sites and features were entered into a computerised database which forms *Appendix 1: Archaeological data* of the present report.

3.2 Criteria for assessing sites

On the evidence of archival research and fieldwork, sites were classified on a scale of 1 to 5 depending on the quantity and quality of archaeological features on the site. The five classifications were defined as follows:

1 *Sites or features of international archaeological importance.*

A nearly complete range of extraction points and structures, representing all stages of production. The presence of machinery and individual features of merit would be a strong factor in placing sites in this category.

2 *Sites or features of national (Welsh) archaeological importance.*

A range of extraction points, buildings and structures and some machinery, or individual features of particular merit.

3 *Sites or features of regional archaeological importance.*

A mine with extraction points and associated features, of which only foundations need to remain.

4 *Sites or features of local archaeological importance.*

Nearly all collieries which have worked commercially and which do not fall into the previous categories would come into this group.

5 *Sites or features too ruined or of too little significance to fall into Categories 1 - 4.*

These include colliery sites of which very few surface features are evident, or very small trials.

3.3 **Criteria for assessing individual features**

Individual features within the sites were assessed on the basis of the eight criteria for assessing the national importance of archaeological monuments as defined by *Planning and the Historic Environment: Archaeology* (Welsh Office Circular 60/96).

Consideration of a feature as a candidate for scheduling was based on an overall evaluation of all the relevant criteria and supported by a professional interpretation. Apart from **7 Diversity**, all are applied on a feature basis.

1 *Period*

This appears as **P** in the database which forms *Appendix 1*. On the basis of archival and archaeological evidence, features were assigned either to a century or to a broader Medieval/Modern classification. For the purpose of the present report, the Medieval period is assumed to have ended in the mid-eighteenth century, with the increasing mechanisation of the coal industry in Wales. Dating a feature to the Medieval period considerably enhances its value.

2 *Rarity*

This appears as **R** in the database which forms *Appendix 1*. This criterion was applied after completion of all the fieldwork. 1 means that the feature is a rare example of its type, 2 that it is a frequently-met example of an important feature type or that it is a comparatively rare example of a less common feature type, 3, that it is a frequently-met example of a common feature type.

3 *Documentation*

This appears as **DOC** in the database which forms *Appendix 1*. This criterion was applied both to individual features, and to the site as a whole. This criterion appears on the printouts as 1, 2, 3, with 1 being the preferred state in each case. No previous archaeological study of any Anglesey colliery site is believed to have been undertaken, and therefore this criterion applies to archival sources only.

This criterion was rated as follows:

- 1 – detailed estate papers *or* detailed internal company documents *or* detailed accounts in contemporary technical press.
- 2 – some surviving estate papers *or* some internal company documents *or* some reference in contemporary technical press.
- 3 – scattered references *or* OS maps.

4 *Group value*

This appears as **GV** in the database which forms *Appendix 1* and is used to describe the archaeological value of the inter-relationship of features. This criterion appears on the printouts as 1, 2, 3, if the feature adds archaeological value to another feature or to other features, and if the result of the relationship was greater than the value attributed to the two features independently, with 1 being the preferred state in each case.

5 *Survival/condition*

This appears as **S** and **C** in the database which forms *Appendix 1*. These two criteria were applied separately and were completed in the field. Survival was used to indicate how much survives of what is originally thought to have existed, whereas condition was used to indicate the physical condition of the site. Both were scored 1 (good), 2 (medium) or 3 (poor).

6 *Fragility/vulnerability*

This appears as **FR** and **V** in the database which forms *Appendix 1*. These two criteria were applied separately and were completed in the field. Fragility was used to describe the state of, and probability of, deterioration from natural erosion and weathering, whereas vulnerability was used to describe the likelihood of damage from human agency. Both were scored 1 (low), 2 (medium) or 3 (high).

7 *Diversity*

This appears as **D** in the database which forms *Appendix 1*. This criterion was applied on a *site* basis, by scoring each mine 1 (high), 2 (medium) or 3 (low), according to the following definitions:

- 1 – greater than the average number of expected component features present for the particular class of site under consideration.
- 2 – average number of expected component features present for the particular class of type under consideration.
- 3 – fewer than the average number of expected component features present for the particular class of site under consideration.

8 *Potential*

This appears as **POT** in the database which forms *Appendix 1*. This criterion appears on the printouts as 1, 2, 3, with 1 being the preferred state in each case, according to the degree of archaeological potential.

3.4 **Criteria for listing historic buildings**

The listing of historic buildings is carried out by the Secretary to the National Assembly for Wales, under the Planning (Listed Buildings and Conservation Areas) Act 1990, in accordance with Welsh Office Circular 61/96 *Planning and the Historic Environment: Historic Buildings and Conservation Areas* and Welsh Office Circular 1/98, *Planning and the Historic Environment: Directions by the Secretary of State for Wales*. The definition of a building suitable for listing is given as: Any building which is of special architectural or historic interest, which includes 'any structure or erection, and any part of a building, structure or erection but does not include any plant or machinery comprised in a building'. However section 1(5) of the Act treats as part of a building: a) any object or structure fixed to the building; and b) any object or structure within the curtilage of the building which, although not fixed to the building forms part of the land and has done so since before 1 July 1948.

The principles of selection are set out in Appendix 1 of DOE Circular 8/87, which until the adoption of PPG 15 by the Welsh Office forms the principal guidelines for listing, and are as follows:

1. All buildings built before 1700 that survive in anything like their original condition.
2. Selected buildings of 1700 to 1840.
3. Buildings dating from between 1840 and 1914 of definite quality and character; the selection is designed to include the principal works of the principal architects.
4. Selected buildings of high quality dating from between 1914 and 1939.

When buildings are selected for listing they are placed into one of three grades:

Grade I: Buildings of exceptional interest.

Grade II*: Particularly important buildings of more than special interest.

Grade II: Buildings of special interest, which warrant every effort being made to preserve them.

3.5 Archive and literature search

Archival sources were studied at the NLW, UWB archives, the LIRO and the Caernarfon branch of the Gwynedd archives. As much as possible, full references were collected for all sites. In addition, Public Record Office collections have been included although they were not visited for the direct purposes of this study. See **4.5 Documentary Resource** for a discussion of the sources used.

Opportunity was also taken within the project to compare the available secondary literature on the history and archaeology of the smaller and less technically advanced British coalfields – those of Staffordshire, where there were strong proprietary links with Anglesey, Scotland, the Orrell coalfield of Lancashire, the Tyrone coalfield and the collieries of West Cumberland – as well as studies of early phases of the coal industry's technical development. These are noted in the bibliography.

3.6 Fieldwork: Recording technique

All identified surface features associated with coal-working were recorded, and as far as possibly shaft-heads and up-casts were related to underground features established by desk-top work.

The on-site recording took the form of feature identification, location, and scoring for survival, condition, fragility and vulnerability. Notes were made for those structures where amplification was necessary. Selected features were photographed in colour transparency and slide film.

An A4 map (or series of maps) at a scale of 1:10,000 was prepared for all sites, on which the location of each feature was identified with an unique number. This feature number was then used on a simple recording form which was designed to allow for the rapid recording of the necessary information as described above.

4 RESULTS OF THE DESK-TOP STUDY

(Numbers in brackets refer to the gazetteer of features printed as *Appendix 1*)

4.1 Introduction

The British coal industry was not only the leading sector of the industrial revolution but also the means by which much of the distinctive technology of the Industrial and Modern period came to be adopted on a significant scale – the force pump, the atmospheric and the double-acting steam engine, the railway. The scale of development in Wales alone in the late nineteenth and early twentieth centuries, when Powell Duffryn became the largest coal combine in Europe, has tended to destroy much of the archaeology of earlier periods of working, particularly on the surface.

For this reason, the small Anglesey coalfield has repaid investigation, as an example of a coal-producing area where developments were sufficient to justify investment from the Medieval period through the nineteenth century, but not beyond. As such, it illustrates the technical evolution from hand-winding through the use of horse-whims to the early phases of high-pressure steam, but it missed out on developments such as fanhouses or mechanical breakers and screens at the heapstead, nor did it ever develop a large industrial community to house the workforce.

4.2 Location

The Anglesey coalfield is made up of a number of different pits of different periods, spread out over a considerable area along the geological fault which has yielded Cors Ddygái, the Malltraeth marsh (**Map 1**). Two main groupings can be identified, one along the south-eastern side of the marsh, the other along the north-western side. The various tenements on which the collieries were situated were in different ownership – Plas Newydd, Berw/Carreglwyd, Bodorgan, Plas Gwyn, Dinorben and Boston, amongst others – and whilst often leases were granted to the one company of adventurers for two adjacent areas in different ownership (or work trespassed from one to the other) it is best to consider each separate unit of landownership and tenancy as a separate colliery.

South-east side of the marsh.

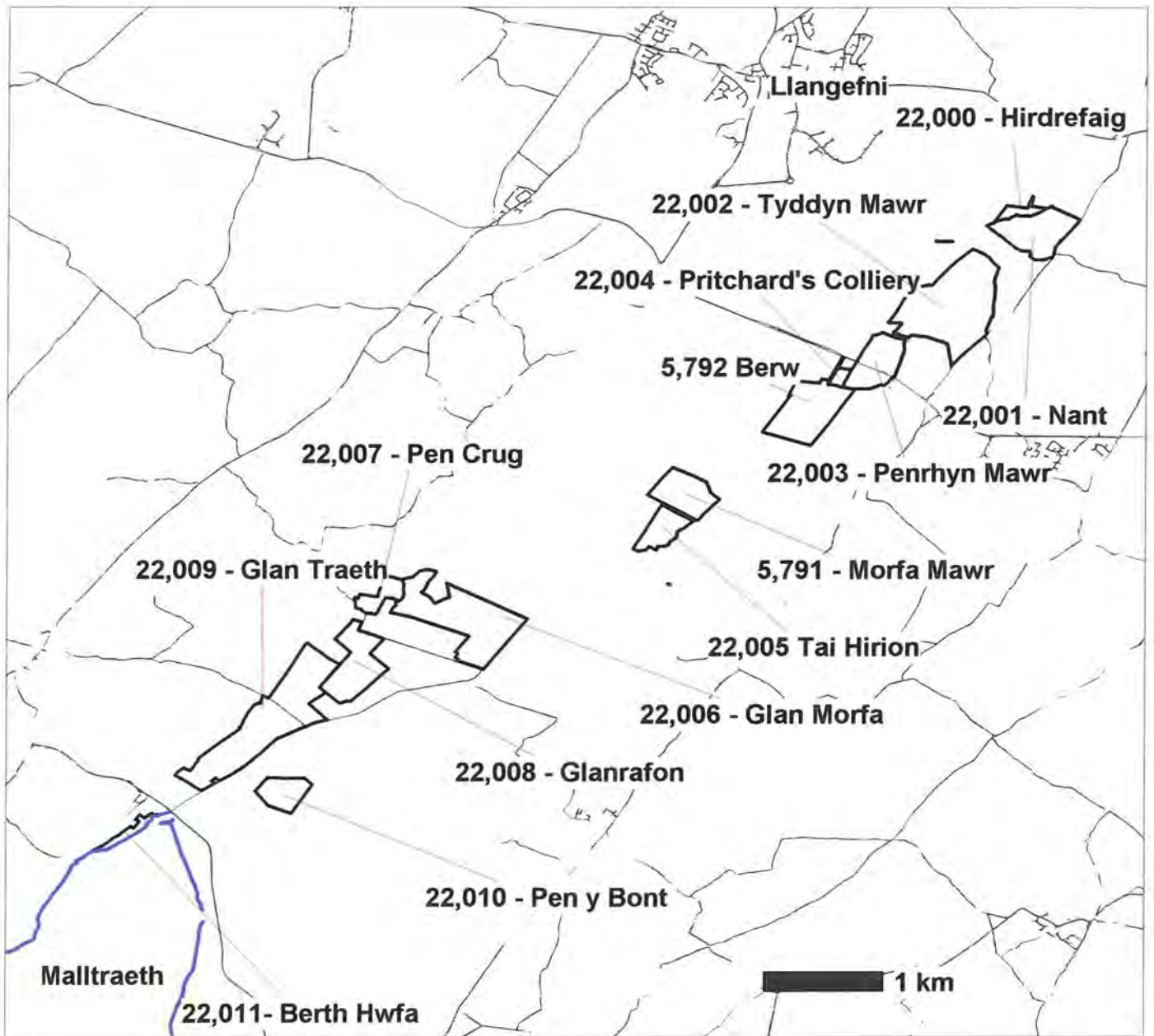
1. Hirdrefaig Colliery	SH 4815 7418	PRN: 22,000 ✓
2. Nant Colliery	SH 4792 7397	PRN: 22,001 ✓
3. Tyddyn Mawr Colliery	SH 4733 7335	PRN: 22,002 ✓
4. Penrhyn Mawr Colliery	SH 4680 7280	PRN: 22,003
5. Pritchard's Colliery	SH 4650 7265	PRN: 22,004
6. Berw Colliery	SH 4633 7247	PRN: 5,792
7. Morfa Mawr Colliery	SH 4540 7160	PRN: 5,791
8. Tai Hirion Colliery	SH 4500 7120	PRN: 22,005

North-west side of the marsh.

9. Glan Morfa Colliery	see below	PRN: 22,006
10. Pen Crug Colliery	SH 4250 7070	PRN: 22,007
11. Glanrafon Colliery	SH 4240 7000	PRN: 22,008
12. Glan Traeth Colliery	SH 4160 6960	PRN: 22,009

MAP 1

LOCATION



13. Pen y Bont Colliery SH 4170 6890 PRN: 22,010

14. Berth Hwfa Colliery SH 4040 6860 PRN: 22,011

Of these sites, Glan Morfa is unconfirmed. As discussed in 4.6.iv below, there is reason to believe that documentation relating to workings at Glan Morfa may in fact refer to Pen Crug Colliery, or possibly to Glan Traeth. Fieldwork has not established surface workings at Glan Morfa, but in view of the possibility of underground workings extending into the area of the holding, it is identified on **Map 1** and discussed in 4.6.iv, even though it does not appear in **Appendix 1: Archaeological data**.

4.3 Geology

The coalfield is made up of a syncline longitudinally bisected by a boundary fault; its seams run on both sides of a south-west to north-east alluvial inlet of the sea, the Malltraeth marsh (Cors Ddygái), now largely drained but which practically bisects Anglesey. Available information in regard to borings was collected by Edward Greenly, and published in *The Geology of Anglesey* in 1919, though a number of earlier surveys in some cases amplify Greenly or fill in the gaps in his account. A detailed geological survey by John Farey in 1812 shows the syncline extending as far north-east as Tyddyn Mawr colliery.¹ Nant and Hirdrefaig, further to the north-east, both worked a faulted coal, where the succession is uncertain. Tyddyn Mawr, Penrhyn Mawr and Pritchard's collieries, however, worked three seams running east-north-east to west-south-west. These were, from the surface, the five yard coal (this contained much shale), then the six foot coal and finally the three quarter (or 2' 3") coal, all of which outcrop to the north. They dip at between 18-20° to the south and can be traced as far as a fault running east-west to the west of the A5 at Pentre Berw.

Around Berw, Morfa Mawr and Tai Hirion collieries the geology is faulted and uncertain, and several different seams appear to have been worked in the Red Measures. At Berw, five seams are recorded, a 9', a 3', a 4', a 6' and a 2' 3" seam, though the 9' seam is said to lie in lumps and be unworkable. A number of shafts produced what is known in Anglesey as *glo pwcs*, 'intermittent coal'.

Between Pen Crug and Glan Traeth, the so-called Glan Traeth coal was worked in the millstone grit, though whether this was one 2' 3" seam or three appears uncertain. The Glan Traeth coal again dips to the south and outcrops near the northern edge of the marsh.

No information survives as to Berth Hwfa; a boring made down to a depth of perhaps 100' reached only ironstone. At Pen y Bont a boring carried out in 1912 to a depth of 1,309' encountered a number of coal seams, a 1' 5" seam at 234', a 2' 3" seam at 762', and a 2' 3" seam at 880', dipping at about 14°.²

4.4 Existing statutory protection

No site within the Anglesey coalfield has so far been scheduled as an Ancient Monument nor listed.

Two shaft upcasts have been proposed as RIGS.

4.5 Documentary resource

Most of the documentary sources for the Anglesey coal field were consulted by Messrs Bassett and James in the course of their researches in the 1960s, and subsequently referenced in their article in *TAAS* in 1969-70. Subsequent research has unearthed comparatively few sources which they missed. The greater part of the documentation consists of estate records – Plas Newydd, Llysduelas and Boston in the Manuscripts department of the University of Wales, Bangor, Carreglwyd at the National Library of Wales. In addition the papers of the Porth yr Aur and Poole legal practices contain much incidental detail relating to the Pen Crug and Penrhyn Mawr Collieries respectively. Greenly's *Geology of*

¹ UWB Mona Mine 1420, Bangor Ms 118A.

² Edward Greenly, *The Geology of Anglesey* (HMSO, 1919) pp. 812-22.

Anglesey also contains much incidental information about the workings of the mines, though he is not always reliable as an historian.

Four maps are preserved which show underground workings in some detail as well as surface features. Two form part of the Plas Newydd collection at UWB and show Penrhyn Mawr, and one is a chance survival in the UWB and shows Glan Traeth; the fourth, the abandonment plan of Glanrafon, survives in the British Coal Board's Mining Records Department (**Underground plan 1**). Two of these were scanned into MapInfo as part of the project, and proved useful in identifying the general development of the site, but in neither case was the original survey sufficiently accurate to allow all surface features to be identified with confidence. A reconstruction of the underground arrangements at Penrhyn Mawr and Pritchard's Collieries is shown in **Underground plan 2**. The archive map of Glanrafon which appears as **Underground plan 1** should be compared with **Underground plan 3**, which interprets the evidence of this map and the map of Glan Traeth in the light of field-work. The results are discussed in 5.1.2. but it is worth noting at this stage that directly reading such archive underground maps into modern surface maps often produces anomalous results, even when the archive survey was carried out by a competent engineer.

Internal documents – that is to say, papers from the mining companies and partnerships themselves – are almost entirely absent, a reflection of the small-scale and stop-go nature of the workings. Nor as yet has it proved possible to identify records relating to the Anglesey collieries in the archives of engineering firms which might have supplied them with machinery. For instance, of the six or more steam engines which pumped or wound in one or other of the collieries, none was built by Boulton and Watt, Neath Abbey or Fawcetts of Birkenhead.

A number of incidental references survive in the parish histories of Trefdraeth³ and of Berw,⁴ but otherwise the traditions of local history, so strong in the slate-quarrying areas and at Amlwch, tell us little. There are no known visual representations of the collieries at work, or even in the early stages of dereliction.⁵ The research of Mr Tomos Roberts has preserved many traditions relating to the history of the industry, but the near extinction of the industry in the mid-nineteenth century has meant that any other associations or inherited memories are now becoming very tenuous indeed. The colliers' song 'Os Torrith Cob Malltraeth' retains a certain currency in and around the parishes which border onto Cors Ddygái.

The mines did not survive long enough for official Home Office or other records to be kept. There is one reference in the *Inspector of Mines Report* to a fatality.

4.6 Summary history

4.6.1 *The British Coal Industry*

Though there is evidence for the use of coal as an industrial fuel in the Roman period, it is only in the thirteenth century that its use becomes common, largely as a consequence of the increasing scarcity of other fuels. London was certainly burning Tyneside coal from this period, and there is evidence for the use of coal for domestic heating amongst the wealthy. The larger collieries were already by the thirteenth century making use of pillar and stall-workings radiating from a central shaft, and at Coleorton in Leicestershire there is archaeological evidence of extensive underground workings from the mid-fifteenth century.⁶ However, for many centuries the prime fuels, both domestic and industrial, continued to be wood, charcoal and peat.

Accounts of the working methods in pre-Modern collieries are very rare. However, George Owen's *Description of Pembrokeshire*, written in 1602-3, records windlass pits being sunk to a depth of 20 fathoms, which might provide employment for between one and four diggers. There were, in addition,

³ Parch O. Hughes (Tyswyn), *Hanes Plwyf Trefdraeth* (Bangor, n.d. - ?1903).

⁴ John Williams, *The History of Berw, 1861* (Supplement to *TAAS*, May 1915).

⁵ With the possible saver on the painting reproduced on the front cover of the present report.

⁶ Edward Millard, and John Hatcher, *Medieval England: Towns, Commerce and Craft 1086-1348* (London and New York, 1995), pp. 63-7, Robert F. Hartley, 'The Tudor Miners of Coleorton, Leicestershire', *Mining Before Powder* pp. 91-101. It should be added that this article represents practically the only serious archaeological investigation of Medieval coal-working.

UNDERGROUND PLAN 1:

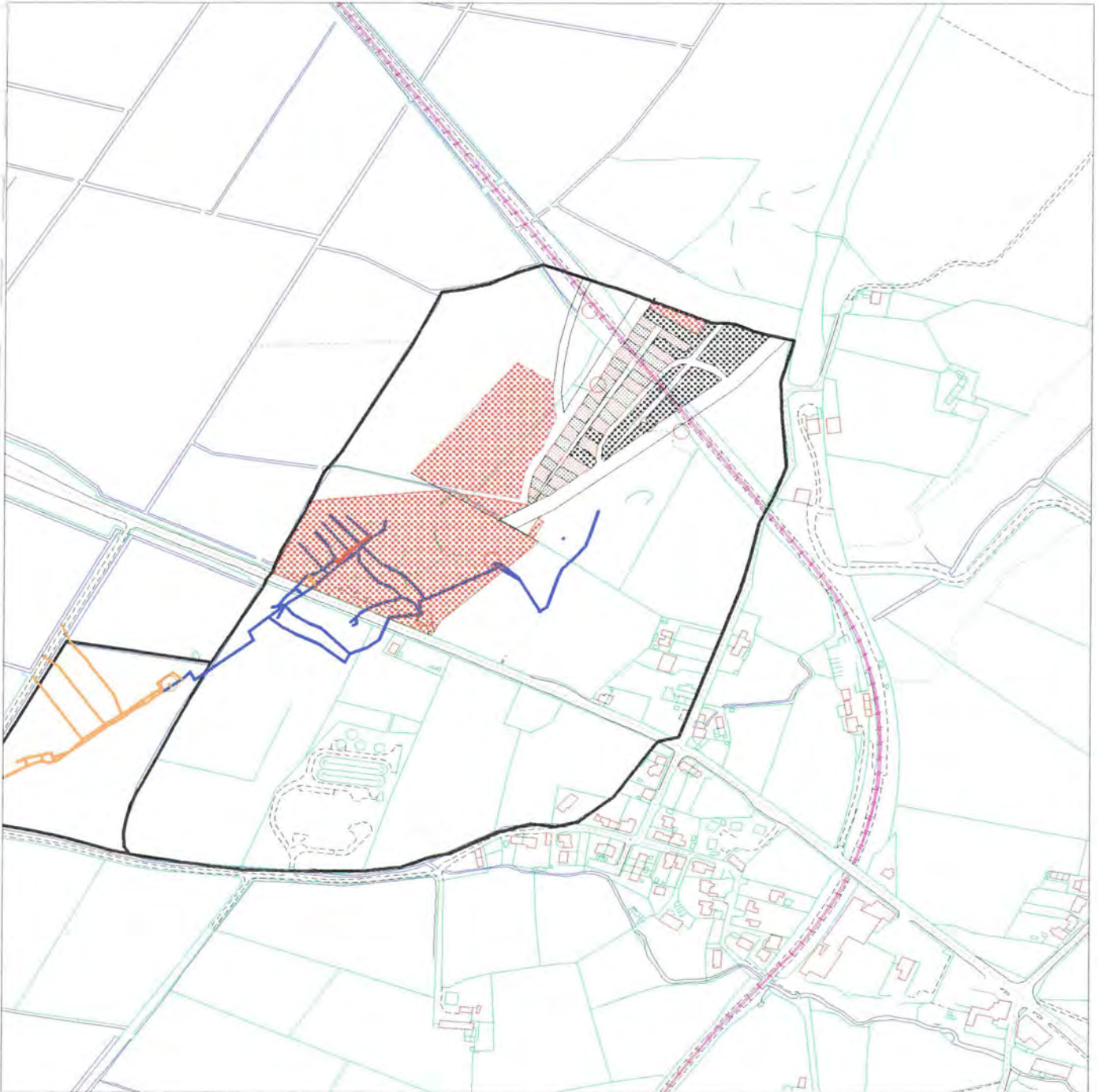
GLANRAFON COLLIERY



Coal Authority Mining Records 866, Parcel F1 Glanrafon Colliery

UNDERGROUND PLAN 2: PRN: 22,003 and 22,004

PENRHYN MAWR COLLIERY AND PRITCHARD'S COLLIERY



**Scale: 1/5,000; based on UWB Plas Newydd III 5122
(survey of mid-nineteenth century - red blocks represent
coal raised before July 1847, black blocks represent coal
raised from 1848)**

boys, who would carry coal in a basket for a maximum of six fathoms, before exchanging it with one of their workmates, as well as other workers. A typical set-up might employ three diggers with pick-axes, seven bearers, one filler, four winders and two riddlers for each shaft – a description which suggests that even in an outlying coal-field, working had progressed beyond bell-pits and that the underground levels might stretch a fair way.⁷

The sixteenth century saw increasing demand for coal both domestic and industrial purposes. By 1622 it is probable that the combined out-put of the Tyneside pits was well over half a million tons a year. Powered drainage systems are recorded here as early as 1492, and by the early seventeenth century such devices, known as 'coal mills', were becoming common. Longwall working, previously thought to have been originated in Staffordshire in the late seventeenth century, was certainly practised at Coleorton in the 1620s, and may possibly have originated in the late Elizabethan period.⁸ Certainly, Huntingdon Beaumont, the son of the squire of Coleorton when he took himself off to the north-east on his ill-fated ventures around 1605, took longwall mining with him to the north-east, as well as other forms of technology – the use of boring-rods, and crucially, the railway. He appears to have been responsible for what may be regarded as Britain's first railway, in the Wollaton coalfield in Nottinghamshire in 1604, and for the first Tyneside railways, at Bedlington around 1608 and at Cowpen and Bebside before 1614.⁹

Though the Savery 'Miner's friend' steam pump was patented in 1698, the major technical innovations belong to the eighteenth century. Explosives became common in the coal industry in this period. The atmospheric engine for pumping appeared in 1712, and the rotary engine towards the end of the century. Horse-powered winding, though it had been a feature of continental European practice since the late Medieval period, became commonplace in Britain around this time, first in the form of the cog-and-rung gin, later of the whim-gin.

Thereafter, the history of the British coal industry until the twentieth century is one of expansion, as one of the leading sectors of an imperial economy. The needs of the coal industry themselves created a need for machines which depended on coal – winding engines, pumps, railway locomotives. The move from sailing vessels to steam-ships in the nineteenth century and early twentieth century also contributed substantially to the industry's development. By 1913 Powell Duffryn alone employed 13,600 men, out of a Welsh total workforce of 249,082, one Welshman in every four, three out of every four in the Valleys, producing an annual output of 60,000,000 tons. Extensive coal-preparation and washing plants were by this stage a feature of many of the larger collieries, and electricity now began to supplant steam as a prime mover in the collieries themselves.

The decline in the industry becomes apparent from the 1920s, with worsening labour relations culminating in the climacteric of 1926, not palliated by nationalisation of all but the smallest pits in 1947. Increased investment and rationalisation in the 1960s meant the disappearance of many traditional work practices, and though the material circumstances of coal workers was never higher than in the following decade, the 1980s saw the virtual obliteration of the industry with the closure of all but a small number of now-privatised pits.

4.6.ii *Background to the development of the coal industry in North Wales.*

The Anglesey coalfield forms a small, self-contained group of collieries at a considerable distance from other coal workings. Unless we count a number of unsuccessful trials in Caernarfonshire, all the other collieries in North Wales were to be found in the north-east, within an area bounded by Talacre/Point of Ayr, Chirk, Wrexham and Hawarden. Here, coal was being actively mined in the fourteenth century, possibly much earlier. Capitalists such as Sir Hugh Myddleton (1560-1631) and his nephew Sir Thomas (1586-1666), Sir Richard Grosvenor and Sir Roger Mostyn (1673-1734) did much to develop the industry, and by the early eighteenth century it had developed on a significant scale. Technically an outpost of the coal industry of the English Midlands, the collieries of Denbighshire and Flintshire were

⁷ George Owen's *Description of Pembrokeshire*, (ed. By Dillwyn Miles, Gomer Press, 1994), pp. 91-3.

⁸ Robert F. Hartley, 'The Tudor Miners of Coleorton, Leicestershire', *Mining Before Powder*, p. 94.

⁹ Richard S. Smith, 'England's first rails: a reconsideration', *Renaissance and Modern Studies* 4 (1960), pp. 119-34.

making use of water-driven pumps by 1684,¹⁰ of the Newcomen engine by 1715¹¹ and of wooden railways by 1740.¹² From 1703, as well as exporting coal, the local collieries were also providing fuel for the lead smelters at Gadlys and elsewhere. The development of foundries and ironworks, claypits, brickworks and limestone quarries offered further uses for coal, and by the beginning of the nineteenth century it scarcely lagged behind South Wales in terms of manpower and technical sophistication.

The Anglesey coalfield was a poor relation to the main coal-producing areas of North Wales – even so, its history stretches from the fifteenth century to 1914. Its comparative remoteness and distance from external markets has preserved its distinctive archaeology. As such, it represents a ‘land-sale’ coal-field – that is to say, one which sells largely, though by no means exclusively, to domestic or small-scale industrial users in the immediate hinterland, rather than exploiting the export or ‘sea coal’ market. This decision was taken deliberately by some of the wealthier Anglesey proprietors and was doubtless forced on some of the humbler tenants by lack of capital.¹³ Its comparatively small reserves were in consequence worked in a way which did not eradicate traces of earlier workings and methods.

4.6.iii Early coal working in Anglesey

There are records of coal-working on Anglesey from Medieval times onwards, but archival evidence does not make it clear precisely where these workings are situated. Fieldwork evidence has confirmed that these are likely to be in the Tyddyn Mawr Colliery, just above the marsh (22,002: and 2 – see also **Map 2** and **Map 3**).

The first record appears to be a farm of the township of Ysceifiog in 1441-2 to John Pykemere and Hywel ap Llywelyn ap Dafydd ab Ieuan for £7 5s 8d.¹⁴ A licence to mine for coal was granted to Llewelyn ap Rhys ap Tudur and other customary tenants as of the township of Esceifiog as coal-miners in 1450. This lapsed in 1532, when Henry VIII granted the township of Ysceifiog to William Sackville, groom of the Royal Chamber, ‘with lycens to take and sell the seacoles within the said Townshippe’¹⁵ – implying an existing export market. In 1551 Sackville acquired rights over fifteen messuages in the township of Hirdrefaig, to the north-east.¹⁶

Sackville’s original lease ran out in 1571 but already by 1565 Sir Nicholas Bagnall had made sure of the reversion.¹⁷ The lease which he then secured, which included the obligation to keep in repair all ‘Banks Shores and Seawalls’, was converted by Letters Patent to a reversion in fee simple. However, his hold was threatened by a lease of the township of Esceifiog made by Henry Harvey, one of Elizabeth I’s gentleman pensioners, to commence from the end of Bagnall’s term in 1592, and which had been purchased by Owen Holland of Berw.¹⁸ In order to avoid litigation, in 1596 Sir Henry Bagnall granted Owen Holland the right to dig coal pits in the moiety of the township of Esceifiog, and Holland similarly granted Bagnall permission for the remainder of the township.¹⁹

The relationship between the Plas Newydd interest²⁰ on the one hand and the Hollands of Berw and their descendants the Griffiths on the other, complicated the history of the mines for as long as they

¹⁰ Thomas Dinely, *The account of the official progress of Henry ... Duke of Beaufort through Wales* (London, 1884) shows a rag-and-chain pump at Mostyn colliery.

¹¹ LTC Rolt and JS Allen, *The Steam Engine of Thomas Newcomen* (Ashbourne, 1997) p. 146.

¹² M.J.T. Lewis, *Early Wooden Railways* (London, 1970), p. 253.

¹³ It was observed in 1843 ‘For merely a landsale coalpit, the capital required may be very trifling, a few hundred pounds’ – quoted in A.J. Taylor, *The Staffordshire Coal Industry* (Stafford 1981), p. 98.

¹⁴ A.D. Carr, *Medieval Anglesey* (Llangefni, 1982) pp. 107-8, PRO SC6/1153/5 m. 1b.

¹⁵ Edward Greenly, *The Geology of Anglesey* vol. 2 (Memoir of the Geological Survey, 1919, London, 1919), p. 812.

¹⁶ John Williams, *The History of Berw, 1861* (Supplement to *T.A.S.* May 1915) p. 23.

¹⁷ NLW Carreglwyd I 2191, lease from crown to Sir Nicholas Bagnall of ‘Eskvyiocke’ and certain messuages in Hirdrefaig, for 25 years with liberty to dig and sell coal.

¹⁸ *Historical Manuscripts Commission* 5th reprint, Appendix p. 416.

¹⁹ T.M. Bassett, Geraint James ‘Coalmining in Anglesey’, *Transactions of the Anglesey Antiquarian Society* 1969-1970, p. 137-8. The grant of 1596 is recorded in UWB Plas Newydd V 1431 and NLW Carreglwyd I 1750, 2109 and 2113; this transaction took place in the context of an assignment by Owen Holland to Griffith Bagnall (younger son of Henry Bagnall) of the township for thirty years from 8 August 1596 and a grant by Henry Bagnall to Owen Holland of reversion in fee farm of the residue of the township. UWB Plas Newydd V 1432 is a bond in £200 to perform all the covenants specified in the indenture.

²⁰ The Plas Newydd interest here means the Bagnall family and their successors the Bayleys and the Pagets, ennobled first as Baron Paget of Beaudesert, as Earl of Uxbridge of the second creation in 1784 and as Marquis of Anglesey in 1815.

were active. Plas Newydd and Berw properties were intermingled along the south-east side of Malltraeth marsh, through which the veins of coal ran. In the main the relationship between the two houses seems to have been a mutually beneficial one. In 1621 Griffith Bagnall proposed leasing a number of his tenements to Thomas Holland of Berw, with right to mine coal,²¹ and there is little evidence of any rivalry between them.

These early workings were clearly regarded as part of the agricultural economy by landowners and farmers alike; coal might be mined on much the same basis that a farmer might dig peat, as a seasonal occupation with minimal capitalisation.²² Sackville, for instance reserved service of 'two laborers for one day yerely in the somer tyme to worke in the cole pitts at Eskyviog upon a warning' and 'no pitt shall be dug in a cornfield, without warning the tenant before the corn is sown.'²³ It has been suggested that these workings are represented by spoil heaps 'along the line of the fifty foot contour under Hirdrefaig and near to Llanfihangel Church and Tyddyn Mawr'.²⁴ Greenly and Williams record that as early as 1610 coal pits were flooded as a result of the diversion of the river.²⁵ This was the doing of Thomas Chedle, at this stage the Baron Hill agent, with whom Holland's relations were soured by personal and religious differences, and suggests strongly that the sites at Tyddyn Mawr (22,002: 1 and 2) were the ones concerned. Documentary references intermittently record operations until 1648.

It is possible that workings on the north-western side of the Malltraeth marsh are also pre-Modern in origin. At Glan Traeth and Glan Morfa the coal outcrops on the surface, and a map of 1727 shows 'coal works' at this point (22,009:35).²⁶ Shallow outcrop surface diggings are probably the earliest form of extraction, and it is possible that these areas were exploited in the Medieval period.

4.6.iv Site histories

Hirdrefaig Colliery

PRN: 22,000

Parish: Llanffinan

Hirdrefaig Colliery is situated immediately to the north of the Afon Ceint at the north-eastern extremity of the coal-field (**Map 2**). The grant of 1551 to Sackville of fifteen messuages in the township of Hirdrefaig is the earliest reference to mining coal at this point.²⁷ It is likely that the sixteenth century pits were on the site of later workings, but all is silence thereafter until the nineteenth century. One source records that once assurances had been received that the proposed railway of 1811 would carry coal from all the workings in the area, Col. Edwards of Nanhoron, who had come by the estate, started sinking a shaft here in about 1813-4, but stopped work by 1815.²⁸ However a map of c. 1811 shows a number of shafts on Hirdrefaig land near the Ceint,²⁹ suggesting that work had been going on here for some time.

Nant Colliery

PRN: 22,001

Parish: Llanfihangel Esceifiog

The Nant farm, formerly part of the Plas Newydd estate, extends for much of the way from Ceint, and the effective north-eastern extremity of the coalfield on the south side of the Afon Ceint, effectively facing Hirdrefaig (**Map 2**). It was probably the location of at least some of the mining carried out in the sixteenth and seventeenth century.

The Nant Colliery was revived in the nineteenth century. In 1827 T.W. Jones and Hugh Pritchard

²¹ NLW Carreglwyd I 2133. The tenements were Tyddyn Morrys ap hoell, Tyddyn Pwll budron, Tyddyn forgan ap hoell, Tyddyn bryn y 'baye, Tyddyn Ty Pigin, Tyddyn Alltbenogoch.

²² NLW Carreglwyd I 2133.

²³ John Williams, *op. cit.*, p. 23, p. 25.

²⁴ T.M. Bassett, Geraint James, *TAAAS* 1969-70, pp. 137-8.

²⁵ Edward Greenly, *Geology of Anglesey*, p. 812, Williams, *op. cit.*, pp. 38.

²⁶ UWB Bodorgan B1589.

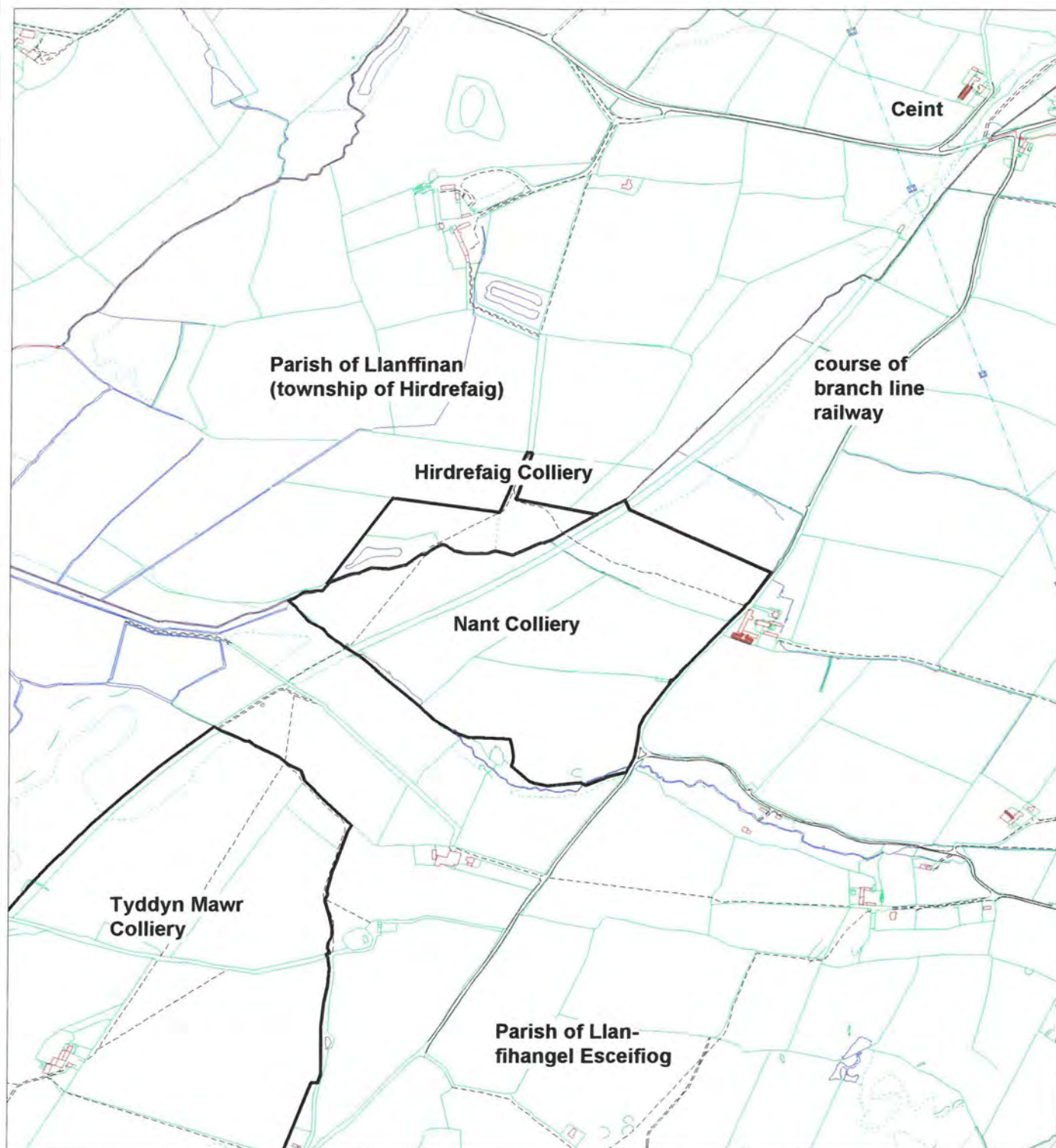
²⁷ John Williams, *The History of Berw, 1861* (Supplement to *TAAAS*, May 1915) p. 23.

²⁸ Bassett and James, *op. cit.*, pp. 144, p. 153.

²⁹ UWB Bangor ms 118a.

MAP 2: PRN: 22,000 AND 22,001

HIRDREFAIG AND NANT COLLIERIES



Scale: 1/10,000

applied to work for coal at Waen y Nant.³⁰ Thomas Hughes of Wrexham, who was involved in Penrhyn Mawr and possibly Tyddyn Mawr, tried to obtain a lease here in 1839.³¹ Whether or not he was successful, operations had ceased by 1847. Thereafter one Hugh Roberts was at work, who went bankrupt, and transferred his rights to Mr Roberts of Lledwigan and Hugh Hughes, a name which crops up time and time again in the later phases of Anglesey coal-mining.³² They too had gone by November 1853, and in 1855 T. Wynne Jones of Henblas and Hugh Prichard of Maengwyn, Gaerwen were asking for a lease after carrying out successful trials. They seem to have been successful, and in 1857 Nant Coal was tried at Beaumaris gasworks, apparently with some success.³³ A stray reference gives the amount of coal sold by the 'Nant Coal Co.' from November 1859 to June 1860.³⁴

Tyddyn Mawr Colliery (Llanvehanal Colliery)

PRN: 22,002

Parish: Llanfihangel Esceifiog

Tyddyn Mawr and Penrhyn Bach farms form a slight eminence on the south-east side of the marsh (Map 3), and made up part of the Berw estate, though surrounded on nearly all sides by Plas Newydd land. As 4.6.iii suggests, this area is almost certainly the focus of some of the Medieval mining carried on in Anglesey, and was active in the late eighteenth century. Holland Griffith, its then owner, claimed in the early nineteenth century that his father had lost substantial sums there, implying that considerable development work had gone on in the previous generation.³⁵ However, a map of the late eighteenth century shows no workings on the farm other than what it describes as 'Y Trensens', glossed as 'Entrenchments', which may indicate surface workings,³⁶ and which is confirmed by fieldwork evidence of early shafts (22,002:1) and a linear feature which may be an open excavation (22,002:2 – see Plate 1). Tyddyn Mawr featured in the grand plans for a colliery partly on Berw, partly on Plas Newydd lands, which were under discussion in the period 1811-1813. A steam pump engine which was at work in 1812 may have been erected on Tyddyn Mawr.³⁷ This was a recent development; the engine had not been put up in a document also dated, on internal evidence, to 1812,³⁸ but was there by October of that year, when it recorded as associated with a pump-shaft being sunk to 109 yards,³⁹ probably site 22,002.18, a substantial shaft-mound which is shown on the 1" o.s. of 1839-41. A map of this period shows an 'Old Level' extending north-east to south west from Penrhyn Mawr and Nant and a 'New Level' in the 6' coal, parallel to the other, and extending from Penrhyn Mawr almost to Ceint bridge.⁴⁰ If these were actually cut, they imply a level of co-operation which other sources do not suggest. In any event, after the failure of the joint plans with the Plas Newydd interest, Holland Griffith offered a lease of Tyddyn Mawr, as 'Llanvehangel' Colliery, in 1814, and claimed that the coal was good for 'caking' (sic).⁴¹ Not long afterwards Holland Griffith leased out one of his collieries to the Anglesey Coal Company – though Griffith himself describes them as 'only a group of farmers'. It is possible that they were at work at Berw Colliery rather than Tyddyn Mawr. Very little is known about this venture, which ran on from 1815 to 1828, but it is believed to have made use of four shallow

³⁰ UWB Mona Mine Records 1827.

³¹ UWB Plas Newydd Series I part iv 3208.

³² For Hugh Hughes, an active local businessman and a leading light of local Methodism, see R. Hughes, *Enwogion Môn* (Dolgellau, 1913), pp. 56-7. A photograph of Hugh Hughes survives as LIRO WDD/2112.

³³ Bassett and James, *op. cit.*, pp. 152-3. E.A. Williams, *The Day Before Yesterday* (Beaumaris, 1988 – translation of *Hanes Môn*, [Llangefni, 1927]) p. 137.

³⁴ UWB Plas Newydd III 5129.

³⁵ Bassett and James, *op. cit.*, p. 143.

³⁶ NLW map of Carreglwyd estate.

³⁷ UWB Mona Mine 1421, Evans, *The Beauties of England and Wales* (part 1) (1812) p. 260 remarks 'obstructions from water are removed by a powerful steam engine' within the context of a trial carried out in the region of Pentre Berw by the Earl and 'Mr Meyrick' – presumably an error for Holland Griffith.

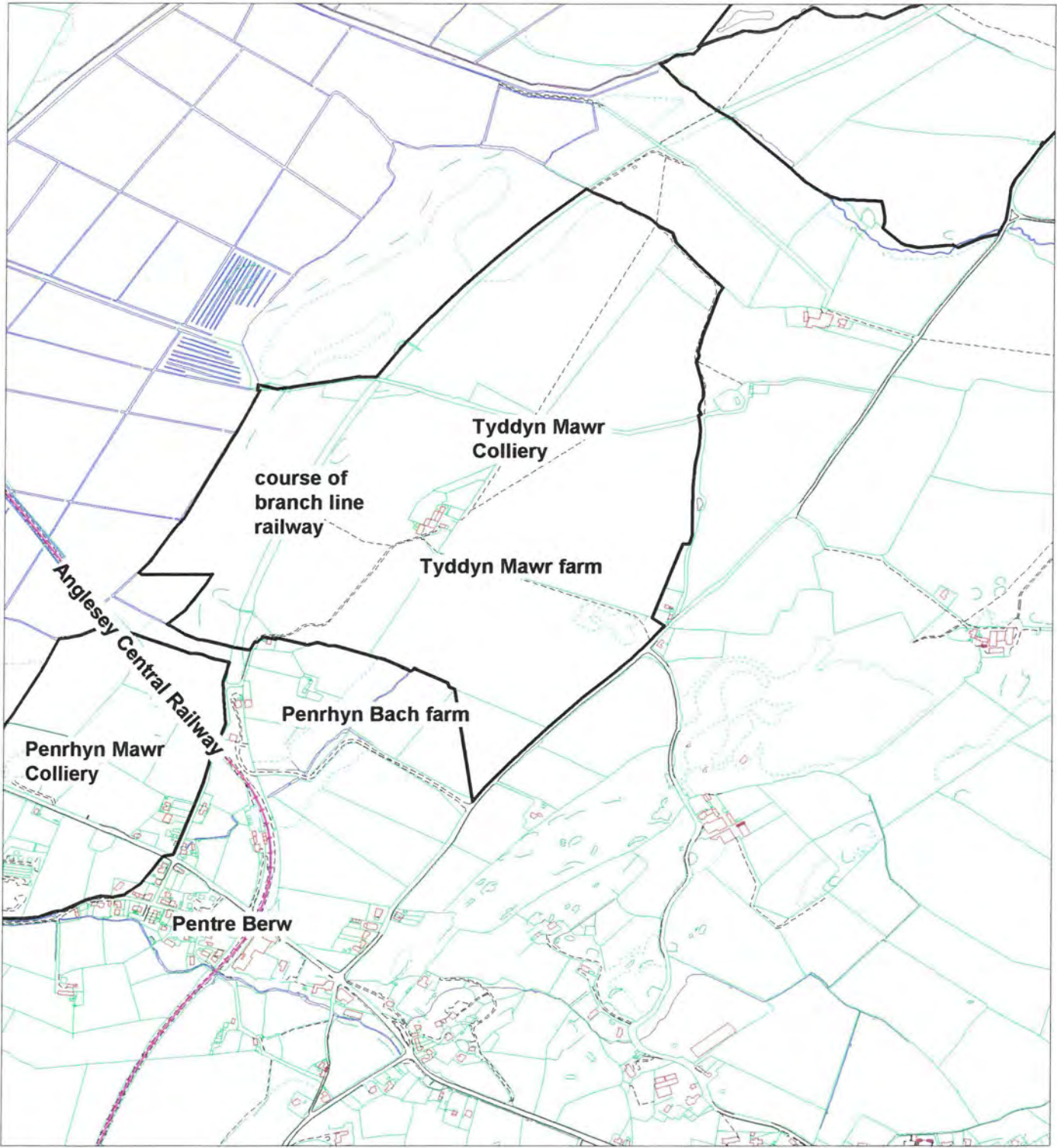
³⁸ UWB Plas Newydd 5vi J202.

³⁹ UWB Plas Newydd 5vi J204. A pump shaft 109 yards deep, in process of being driven, is marked on UWB Mona Mine 1420; the relation of the shafts to each other in this document make it possible to identify this as the missing cross-section referred to on Farey's map of 1812 and to identify the pump shaft as shaft 96, 'new pit' (UWB Bangor mss 118a). Confusingly, a map of c. 1811 shows an 'Intended Eng. Shaft' to the east of Tyddyn Mawr farmhouse (where there is now no evidence for a shaft), suggesting that plans had to be revised – UWB Mona Mine 1421.

⁴⁰ UWB Mona Mine 1421.

⁴¹ *North Wales Gazette* 21 April 1814 p. 3 col. a states that 'Llanvenal' colliery lay 1½ miles from Ceint, which suggests Tyddyn Mawr rather than Berw, the other Holland Griffith colliery, which lay in the parish of Llanidan in any case. See also *North Wales Gazette* 28 April 1814, p. 1 col. a.

TYDDYN MAWR COLLIERY



Scale: 1/10,000

shafts.⁴² E.A. Williams speaks of Tyddyn Mawr as employing 'a few workers' in the late nineteenth century,⁴³ but the colliery is marked as 'exhausted' on the 1" o.s. of 1839-41.

Penrhyn Mawr Colliery

PRN: 22,003

Parish: Llanfihangel Esceifiog

Penrhyn Mawr Colliery, the most successful and productive of the Anglesey pits, is situated on what was in Medieval times a promontory of solid land in the marsh, and is still visible as a slight eminence (**Map 4**). The first record of mining which can be identified as taking place here dates from 1734. Penrhyn Mawr was then owned by Sir Nicholas Bayley of Plas Newydd. Bayley, significantly, was not only a very wealthy man, with the reserves that enabled him to develop industrial concerns, he was also part-owner of the Penrhyn Du lead mine on the Llyn peninsula and of Mynydd Parys, where in the later eighteenth century copper ore was to be extracted with such conspicuous success. He was also owner of collieries in Staffordshire, and there is evidence for the movement of personnel and technology between all these sites.⁴⁴

A lease of 1742 to one Samuel Oldham from Sir Nicholas included Penrhyn Uchaf, as well as other fields, namely Penrhyn Isaf, Ty Hen and Tyddyn Shôn Llywelyn. Ty Hen formed part of what was later known as Penrhyn Mawr⁴⁵ whereas Tyddyn Llywelyn (as it is now known) lies immediately to the east.

Sir Nicholas sold Oldham some mining equipment, including a horse-whimsey, a whimsey-rope forty fathoms long, and three hand-windlasses.⁴⁶ The probability is that the horse whim was for the deeper seams, and the windlasses for shallower shafts. Horse-whims were a common method of uphaulage from deeper shafts from the seventeenth century, either in the form of the cog-and-rung gin (in which the horse walks around the shaft-head), or of the whim-gin (in which the horse-circle is to one side of the shaft-head).⁴⁷ A distinction between a deeper and a shallower set of workings seems to have underlain Bayly's problems with his miners in 1755, who objected to working in the 'main pit' and preferred the 'paltry pits'.⁴⁸

In 1747 Sir Nicholas, together with Robert Williams of Pwllcrochan, leased the mines of Llanfihangel Esceifiog to John Cartwright of Newcastle, Staffordshire, described as a bricklayer, for fifteen years.⁴⁹ Thereafter, a Mr Burslem (whose name suggests that he might have had Staffordshire connections) offered to take Sir Nicholas into partnership if he were prepared to co-operate on the construction of a canal to the mine or a 'frame road' (railway) in 1759⁵⁰ – the earliest known proposal for a railway in North-west Wales. Penrhyn is the first site at which we hear of the use of explosives, in 1768, when Cartwright delivered 'Cakes of Powder for Blasting for the use of Sir Nich^s Bayly B^t. from Penrhyn Coalliery'.⁵¹

Penrhyn Mawr was probably the mine described in 1794 the 'only one coal pit, as yet discovered in the island' by George Kay in his *General View of the Agriculture of North Wales*,⁵² and it was still active in 1806. It was then being worked by means of two whimseys, implying two shafts, and an 'engine shaft' was projected.⁵³ Within a few years, preliminary discussion was taking place for a lease to one W.W.

⁴² UWB Plas Newydd III 4422. Bassett and James, *op. cit.*, pp. 146-8, p. 153.

⁴³ E.A. Williams, *The Day Before Yesterday* (Beaumaris, 1988 – translation of *Hanes Môn*, [Llanfenni, 1927]) p. 137.

⁴⁴ Buckley, in North-east Wales, similarly became a Staffordshire colony – A.H. Dodd, 'The North Wales Coal Industry During the Industrial Revolution', *Archaeologia Cambrensis* LXXXIV 2 (December 1929), p. 205.

⁴⁵ See UWB Mona Mine 1421.

⁴⁶ UWB Plas Newydd IV 8484.

⁴⁷ David Cranstone, 'Early Surface Features of Metal Mining: Towards a Typology', *Mining Before Powder* (Matlock Bath, 1994), p. 145.

⁴⁸ Bassett and James, *op. cit.*, p. 141.

⁴⁹ UWB Plas Newydd 8483.

⁵⁰ UWB Plas Newydd series VII, 3132.

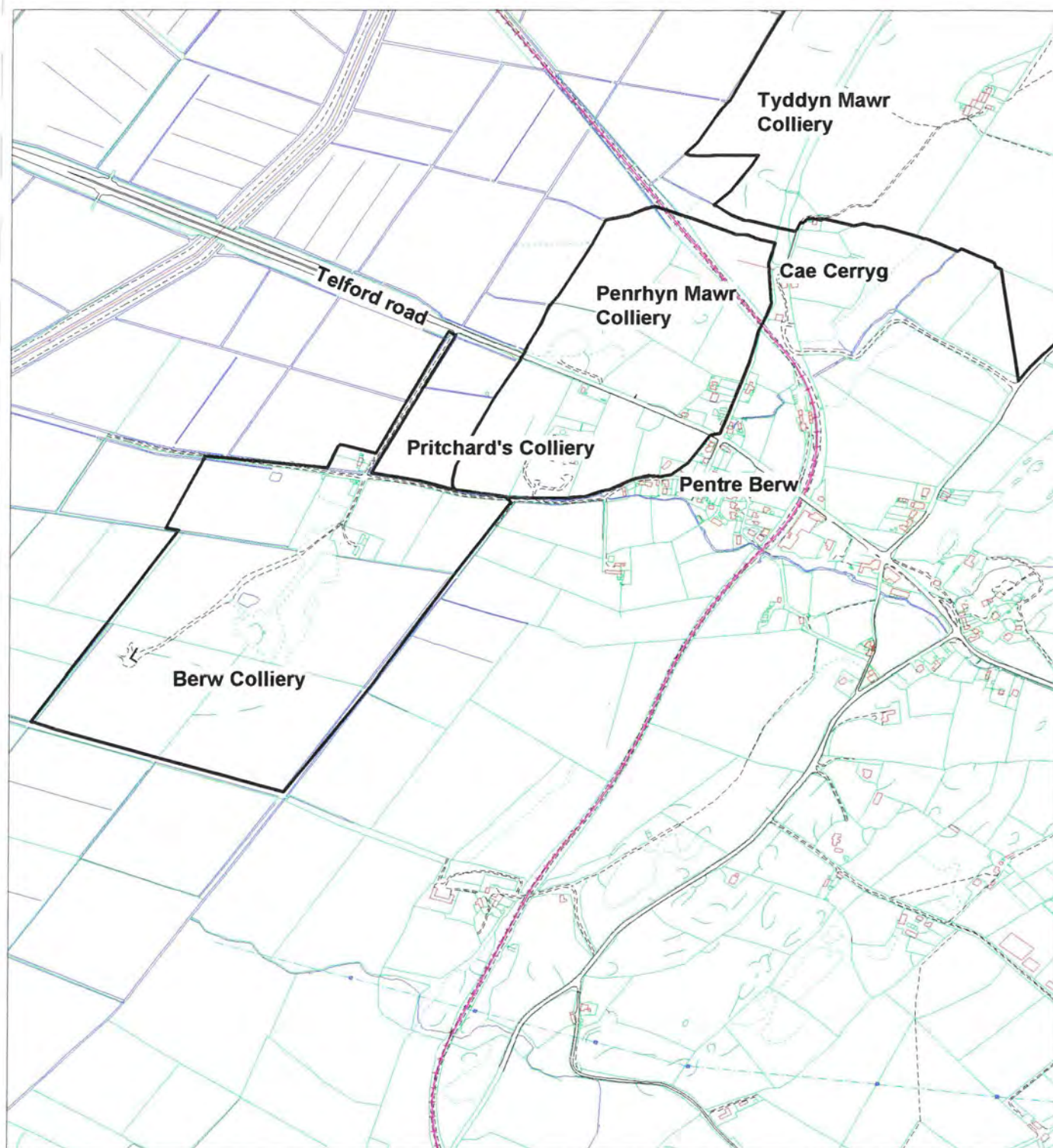
⁵¹ UWB Mona Mine 3534, p. 25.

⁵² George Kay, *General View of the Agriculture of North Wales* (Edinburgh, 1794) p. 17.

⁵³ Bassett and James, *op. cit.*, p. 142 state that the whimseys were worked by water. This seems very unlikely; the word 'whimsey' always denotes a horse- or occasionally a steam-operated feature, and whilst water-balance shafts were already an established feature of coal-mining by this date, they could only work in self-draining pits, which Penrhyn Mawr certainly is

MAP 4: PRN: 22,003, 22,004 AND 5792

PENRHYN MAWR, PRITCHARD'S AND BERW COLLIERIES



Scale: 1/10,000

Bailey of near Tamworth, who is said to have spent £1,000 boring and sinking a shaft. A steam engine was installed here in 1815, and first set in motion on 6 March.⁵⁴ A second steam engine was set up in 1817.⁵⁵ Unfortunately it is not clear from documentation which engine pumped and which wound (22,003: 1 and 3).⁵⁶

The Earl inserted an advertisement in the *North Wales Gazette* offering Penrhyn Mawr Colliery on a lease for a royalty of 1/5 and a dead rent of £1,000 – very disadvantageous terms for a group of adventurers.⁵⁷ Lengthy discussions took place between the Plas Newydd interest and Holland Griffith of Berw in order to establish whether there was a possibility of working the reserves under the two estates as one colliery. An intensive correspondence dragged on between Bailey and Farey, Griffith's mineral agent, evidently a prickly individual, with a low opinion of Bailey's competence and probity, and matters were not resolved to anyone's satisfaction.⁵⁸ The map which Farey prepared at this time is one of the major sources for the Llanfihangel Esceifiog pits.⁵⁹ The Earl of Uxbridge indicated that whilst he was prepared to consider joint working with a view to supplying the export market, the other option so far as he was concerned was to work his own colliery on a smaller scale purely to supply local needs. Admiral Aylmer, the Earl's agent, informed Holland Griffith that his Lordship viewed the undertaking 'as a task intrusted upon him, solely for the good of the County, he will not, at least at first have any other plan but, merely supply Anglesea (*sic*) or Carnarvonshire at most.'⁶⁰ In 1810 Gwallter Mechain had complained that Anglesey imported rather than exported coal,⁶¹ and this remained the state of affairs throughout the nineteenth century, despite the need to fuel copper-ore smelters at Amlwch and brickworks at Porthwen and Cemmaes.

The inability to agree on a joint plan also put paid to a scheme that Bailey was urging on the Earl, for a railway connection to the sheltered haven at Red Wharf, and the construction of a dock.⁶² A survey was carried out, aided by James Greenfield, agent of the Penrhyn Slate Quarry,⁶³ and an act was obtained in 1812 for a public 'Railway or Tram Road'.⁶⁴ Since Bailey hailed from the English Midlands, this would almost certainly have been a plateway; Bailey refers to it as 'a Cast Metal Road' at one point.⁶⁵

A further possible consequence of Farey's distrust of Bailey was that Bailey did not become a partner with the Earl in the Penrhyn Mawr colliery, though his advice continued to be sought for a good many years. It is not clear whether, and if so by whom, the Penrhyn Mawr Colliery continued to be worked in the period immediately after the debacle. It probably remained inactive, in that a letter from Holland Griffith to the Marquess (as he had by now become) in 1828 informs his Lordship that the miners on Griffith's own land were about to relinquish their agreement with him. Since the Marquess had undertaken not to work his own colliery for as long as Holland Griffith could himself supply Anglesey with coal, Griffith now felt obliged to inform the Marquess that he was at liberty to re-open his own workings should he choose.⁶⁶ Bailey wrote up a report for the Marquess's agent,⁶⁷ and the next recorded

not. More probably the whimsies hauled up water in bags or kibbles, as at Mynydd Parys. The 'engine shaft' projected at this time does not necessarily imply a steam-engine, but far more probably refers to the pumps in it, which could be worked by steam or by horse-whim.

⁵⁴ *North Wales Gazette*, 9 March 1815 p. 3 col. b, cf 14 May 1821.

⁵⁵ *North Wales Gazette*, 14 June 1821 p. 2, col. 3.b.

⁵⁶ If the pump engine were first, and installed in 1815, then it was a 16 h.p. machine, and the winder of 1817 a 5 h.p. engine. It is possible that the pump engine installed at Tyddyn Mawr in 1812 had been removed by this stage.

⁵⁷ This advertisement first appeared on 1 October 1812, p. 1 col. c and continued to be published until June 1813.

⁵⁸ NLW Carreglwyd I 604-624. John Farey senior (1766-1826) was a geologist, former Land Steward to the Duke of Bedford, and a regular contributor to the scientific and popular press. See A.P. Woolrich, 'John Farey, Jr, technical author and draughtsman: his contribution to Rees's *Cyclopaedia*', *Industrial Archaeology Review* 20 (1998), pp. 49-67.

⁵⁹ UWB Bangor mss 118a.

⁶⁰ NLW Carreglwyd 1614.

⁶¹ Walter Davies, ('Gwallter Mechain'), *General View of the Agriculture and Domestic Economy of North Wales* (London, 1810) p. 363.

⁶² Kenneth Brown, 'Anglesey's Ghost Railway', *TAAS* 1941, pp. 39-42.

⁶³ CRO X/Poole 5198

⁶⁴ LIRO WM/641/1. As well as the Pagets, the promoters were Holland Griffith, Rev. Dr Richard Trygarn Griffith, John Aylmer, John Sanderson, Thomas Jones of Bryntirion, Owen Anthony Poole, the Llangefni solicitor and William Price Poole – all of them men with considerable commercial experience in copper mining at Parys and Beddgelert and in slate quarrying at Cilgwyn.

⁶⁵ NLW Carreglwyd I 621.

⁶⁶ UWB Plas Newydd III 4422.

lease of Penrhyn Mawr is accordingly dated 31 March 1831, to Thomas Hughes, licensed victualler, and a group of colliers, all of Cefnmawr near Wrexham.⁶⁸

Bailey, clearly still retained as a consultant, had already made a number of comments on the intended lease. The prospective tenants clearly proposed to erect two pump engines – suggesting that the engines of 1815 and 1817 might have been removed – and he observes that it is of no consequence to the Marquis how many engines there were, so long as the objective was achieved. The pump shaft was to be 70 yards deep in the first instance. Intriguingly, the lessees had asked that coal might be allowed to power an engine on other land ‘now there is an Engine near the place which may drain our Mine if we can agree for the same, which will prove as well as erecting others.’ Bailey argued that the engine must be erected on Plas Newydd land in the first instance as the barrier between the two properties could not be cut until the 70 yard coals were worked, and then only on condition that the lessees covenant to work a deeper seam. An engine could not be allowed coal if it was operating for the benefit of anyone other than the Marquess.⁶⁹ Where precisely this engine was, or was to be erected, is difficult to say – whether it represents an otherwise unrecorded phase of working at Berw Colliery or Tyddyn Mawr, whether the 1812 engine at Tyddyn Mawr was still in situ and in working order, whether, more probably, it represents preliminary negotiations for a lease of Pritchard’s Colliery.

All was not well at Penrhyn Mawr, and in 1838 matters reached such a head that the Marquess offered the lease for sale over the tenants’ heads. Machinery included a Boulton and Watt steam pumping engine, two steam winders, weigh-bridge, pit frames and rails.⁷⁰ Hughes and company appear to have been allowed to remain in possession, as Hughes wrote to the Marquess’s agent in February of the following year complaining mightily that other tenants were being invited to mine coal on the Plas Newydd estate, and stating that he and his partners were treating for Nant and for Ty Newydd (Glanrafon Colliery, on the north side of the marsh).

In 1844, Exuperius Pickering, an industrialist involved in collieries, ironworks and quarries in the Llangollen-Rhiwabon area, prepared a report in which he pointed out that the partners had driven a level 200 yards long in an attempt to connect the old and new workings. This had the effect of draining not only the colliery they leased from the Marquess but also the others they had connected to the Marquess’s upper colliery.⁷¹ It is not clear from his description which collieries these were, though probably they were Penrhyn Mawr and Pritchard’s Colliery. In any event, eventually the tenants were served with an injunction to desist from cutting the pillar of coal in the 5’ vein, as the support for ‘the pit or shaft known as Mine Engine Pit or Shaft.’⁷² A report of 1847 speaks of the coal having been mainly worked on the west side of Penrhyn Mawr farm, over an area of 40 acres, and that the coal on the east side was not proven. The consultant complained that the engines were badly constructed.⁷³

The 1841 1” ordnance survey shows the north-eastern reaches of the mine as ‘Exhausted Colliery’ and marks a shaft near the road as ‘Engine’ (22,003: 1), suggesting that the focus of working was by then immediately to the north-east of the Telford road.

A document dated 1845 in the Plas Newydd collection at UWB identifies two shafts in this area, one called ‘Engine shaft’ (22,003: 1) from which workings ran a short distance westwards into pillar and stall workings, and the other ‘2 shaft’ (22,003: 3), from which a drift ran in a twisting alignment to further pillar and stall workings to the north-east.⁷⁴ Both shafts were operated by a steam beam engine, one a ‘lifting engine’ (*i.e.*, to operate a pump-system) with a 32” cylinder, powered by one tubular boiler and two ‘circular boilers’ (presumably haystack boilers), the other a single-cylinder rotative engine. These were valued in 1847 as worth £308 2/4d or £190 15/7d, and £114 6/11d or £53 5/3d

⁶⁷ CRO XM/342 Report by W.W. Bailey on Penrhyn Mawr Colliery, 1830.

⁶⁸ CRO X/Poole 5190-3.

⁶⁹ CRO X/Poole 5193.

⁷⁰ *Caernarvon and Denbigh Herald* p. 2, col. f. The fact that the engine is described as a Boulton and Watt product does not necessarily mean that it was a product of the Soho foundry, but is more likely to imply that it was a double-acting steam pump engine.

⁷¹ UWB Plas Newydd Series I part iv 3215.

⁷² LIRO WM/328/2.

⁷³ UWB Plas Newydd Series I part iv 3303.

⁷⁴ UWB Plas Newydd I 3261, map of workings, 1845.

respectively, by assessors who were unimpressed with their condition and workmanship.⁷⁵ Other machinery on site included pumps, pump rods, capstans and sheer legs (presumably to raise the pump rods from the shaft for repair or replacement), and 'pit waggons'.⁷⁶ The documentation strongly suggests a worn-down and ill-equipped venture.

The pit was out of action by 1847. A new set of adventurers took over in 1849, working 'Pwll yr engine fawr', of which it is said 'its spoil heap possibly lies alongside the A5 just beyond the village on the Holyhead side'.⁷⁷ This agrees with the site of the 'Engine shaft' as marked in 1841 and 1845,⁷⁸ but work was over by 1852. They appear to have been given permission to use the stonework for the previous lessee's engine house for their own engine.⁷⁹ The venture was short-lived, and the machinery was sold as scrap in 1852.

The last attempt to work any of the Penrhyn Mawr pits appears to have begun in 1865 when one Captain Rowlands of Plas Penmynydd worked Cae Cerryg, on the Tyddyn Mawr side of the railway (22,003: 9), then under construction, with twenty men working between three shifts. They broke into older workings. It is stated that the machinery was then old and insufficient capital was available to replace it. The seam produced *glo pwcs*, 'spasmodic coal', because it petered out suddenly.⁸⁰ How long Captain Rowlands remained at work is unclear, but on 11 July 1874 Rowland Owen met his death by falling down 'Ninevah' (*sic*) shaft,⁸¹ which local tradition identifies as one of the shafts near the site of the railway (possibly 22,003: 11).⁸²

Pritchard's Colliery

PRN: 22,004

Parish: Llanfihangel Esceifiog

A very small scale operation was conducted for a number of years on a pocket of land in the marsh (**Map 4**) belonging to Pritchard's Dinam estate.⁸³ Possibly the discussion which went on in 1831 about a steam engine which would drain Penrhyn Mawr but which would not be on the Marquess's land, reflects an early phase of working here.⁸⁴ In 1839 Pritchard granted a lease to the company working the Penrhyn Mawr Colliery to work on his own land; over the next few years they broke through the geological fault between Pritchard's reserves of coal and those of the Plas Newydd estate.⁸⁵ Though they thereby came across a good seam of coal, there were suspicions that one colliery was pumping out both sets of pits, and that there was at least no proper record of where coal was produced.⁸⁶ In 1843 both Mr Pritchard and Plas Newydd officials were complaining that the underground boundaries were very poorly observed, and that a winder be appointed to check what coal came from where.⁸⁷ In 1844 it was observed that workmen had stopped working Penrhyn Mawr in order to work 'adjoining mines',⁸⁸ and an undated plan of underground workings shows a shaft (presumably 22,004: 4) and a roadway here, as well as tunnels which appear to connect Pritchard's Colliery not only with Penrhyn Mawr and ultimately Tyddyn Mawr but also with Berw Colliery.⁸⁹

⁷⁵ UWB Plas Newydd I 3302, 3303, 3307, 3310, 3311.

⁷⁶ UWB Plas Newydd I 3312.

⁷⁷ Bassett and James, *op. cit.*, p. 151.

⁷⁸ In which case it is difficult to agree with Messrs Bassett and James (*op. cit.*, p. 151) that they did not work the pit abandoned by the previous group nor took over its machinery, since this area was surely the focus of the previous lessees' work.

⁷⁹ Bassett and James, *op. cit.*, p. 152.

⁸⁰ Bassett and James, *loc. cit.*, quoting E.A. Williams, *Hanes Môn yn y Bedwaredd Ganrif ar Bymtheg*, p. 149.

⁸¹ *Report of Inspectors of Mines*, 1874, p. 302.

⁸² Pers. comm., John Pritchard, Pentre Berw.

⁸³ Its outlines are indicated on NLW Carreglwyd I 1773.

⁸⁴ CRO X/Poole 5193.

⁸⁵ UWB Plas Newydd III 6649.

⁸⁶ UWB Plas Newydd III 6642, 6643, 6649.

⁸⁷ Plas Newydd III 6572.

⁸⁸ UWB Plas Newydd I 3228. Other documents in the series date from between 1852 and 1856.

⁸⁹ UWB Plas Newydd III 5131.

Berw Colliery is situated on marshland drained by the Malltraeth enclosure (**Map 4**). After the failure of Holland Griffith and Plas Newydd interest to agree on any plan for joint operations at Berw in 1811, the initiative passed to Holland Griffith. Work had been going on here on a small scale since perhaps the end of the eighteenth century, perhaps a consequence of the draining of the marsh; a map of the period 1790-1800, though it shows no workings, nevertheless marks some of the fields as 'Pwll George' and 'Pwll Dyfrig'.⁹⁰

Though it is possible that the Berw site may have formed part of the 'Llanvehangel' Colliery which Holland Griffith offered on lease in 1814, and that the grandly-styled Anglesey Coal Company was at work here, rather than Tyddyn Mawr, from 1815 to 1828,⁹¹ the first evidence of activity comes in 1837. Discussions with a new group of prospective lessees began that year,⁹² but were held up owing to Holland Griffith's death. In 1839 Richard Trygarn Griffith, the then owner of the estate, confirmed the lease to Henry Pritchard esq. of Bryngola and Owen Williams of Gaerwen Fawr for 31 years. The map which forms part of this document shows no existing workings on the site,⁹³ suggesting that earlier work had indeed been very small-scale. They were able to extend the area of their interest by leasing from Lord Boston a small parcel of land he owned in 1840.⁹⁴

They took over the 'pits, gins and engines' already on the site but soon began to sink a pit which came to be known as the New Berw Mine.⁹⁵ Possibly the capital here had come from a company known as the Anglesey Coal and Coke Company, who acquired an interest in the venture, and which gave it its colloquial name of Gwaith y Saeson or Pwll y Saeson ('Englishmen's pit').⁹⁶ Hugh Roberts, one of the last of the Anglesey miners, born in 1839 and still alive in 1927, recalled a Captain Durant, who installed a 240 h.p. steam engine, almost certainly around this time.⁹⁷ Durant, he said, did a good job then sold out to 'a man from Northampton' – possibly the Mr Laurie who offered to buy a moiety of the colliery in 1860, then defaulted. By this stage miners were beginning to leave the colliery for Flintshire.⁹⁸

Incidental references suggest that the main shaft (5,792: 6) was being sunk from about 1844 – on 27 February that year and on 10 March the year following Lord Boston paid small doles to the widows of men killed at the colliery, and in 1845 he was also paying a 'tallyman' to compute the amount of coal raised under his strip of land.⁹⁹

In 1861 John Williams referred to a 'very large and powerful Steam Engine, which has its energies well taxed to keep the mines free of water – let alone to lift the coal' and lamented that the Company to whom it was leased had not had the success they deserved because of the 'inky, stinking water' which frequently invaded the workings.¹⁰⁰ In 1863 they disposed of their interest in the colliery to the Anglesey Colliery Company, whose shareholders were mainly professional men in the Home Counties. This was liquidated in 1865 and wound up in 1868.¹⁰¹ Tradition preserves a memory of a night of torrential rain, when miners were summoned to the Collier's Arms to be given their instructions for

⁹⁰ UWB Carreglwyd and Berw 7043. UWB Lligwy Add. 1322-7 also gives references to 'Pwll y glo' in Llanidan parish in the eighteenth century.

⁹¹ UWB Plas Newydd III 4422, Bassett and James, *op. cit.*, pp. 146-8, p. 153.

⁹² NLW Carreglwyd I 1086-7.

⁹³ NLW Carreglwyd I 1773.

⁹⁴ UWB Lligwy 1312.

⁹⁵ There were fatalities here in November and December 1847 – *North Wales Chronicle* 7 December 1847.

⁹⁶ John Owen of Newent, Gloucestershire and others established the Anglesea Coal Compant Ltd in 1855 (PRO BT41/17/92). Owen was joined by Durant with whom he set up the Anglesey Coal and Coke Company in 1857, for which a liquidator was appointed in 1863 (PRO BT31/239/777). The liquidator set up the Anglesey Colliery Company Ltd in an attempt to sell the colliery in 1863, but this company itself went into liquidation in 1865 (PRO BT31/807/562C).

⁹⁷ E.A. Williams. *The Day Before Yesterday* (Beaumaris, 1988 – translation of *Hanes Môn*, [Llangefni, 1927]) p. 138.

⁹⁸ Bassett and James, *op. cit.*, p. 155.

⁹⁹ UWB Boston 137, disbursement of 27 February 1844, Boston 138, disbursements of 10 March and 2 September 1845.

¹⁰⁰ John Williams, *op. cit.*, p. 63.

¹⁰¹ Bassett and James, *op. cit.*, p. 155.

working the engine pumps, only to find the mine overwhelmed by the flood.¹⁰² Local knowledge¹⁰³ suggests that the chimney for the steam engine was subsequently used for ventilation. In that it was not demolished when the engine house was taken down, it is possible that it was adapted for this purpose in the later period of the mine's history, perhaps when it was on a 'care and maintenance' basis.

Morfa Mawr (Berw Uchaf) Colliery

PRN: 5,791

Parish: Llangaffo

SH 453 716 C

The Morfa Mawr colliery is situated to the south west of the Berw mine, in the low-lying marshland drained in the early nineteenth century (**Map 5**). Its history is poorly documented. The land here belonged to Lord Dinorben, the owner of the moiety of Mynydd Parys and of the Pen yr Orsedd slate quarry in Nantlle. Hugh Hughes, Cefnmawr, who was working on the north-western side of the marsh, obtained a lease in November 1847 and was at work until 1860; the map which accompanies his lease shows tunnels, shafts and buildings.¹⁰⁴ He is credited with having sold out to his English partners a week before water overwhelmed the workings.¹⁰⁵ Greenly describes the pit as working from about 1859 to 1875.¹⁰⁶

Tai Hirion Colliery

PRN: 22,005

Parish: Llangaffo

SH 450 713 C

Immediately adjacent to Morfa Mawr Colliery is the Tai Hirion Colliery (**Map 5**), the property of Lord Boston. Production figures suggest that operations went on from 1852 to 1867 under Hugh Hughes and son.¹⁰⁷ It is possible that Tai Hirion was worked as one site with Morfa Mawr.¹⁰⁸ E.A. Williams refers to prospecting here in the late nineteenth century, but curiously adds 'If there is coal here, it remains to be exploited.'¹⁰⁹

Fferam (Glan y Morfa) Colliery

PRN: 22,006

Parish: Llangristiolus

In 1743 Richard Hughes senior of Castellior acquired a lease on the part of Glan Morfa which was on Fferam land with permission to mine for coal and set up engines.¹¹⁰ A lease from William Griffith Williams of Cefn Cwmwd granted Thomas Bulgen of Bangor the right to work coal on Fferam Fawr and to build a road 24' wide to join the public road.¹¹¹ It is not clear whether these works represent work at Pen Crug Colliery or elsewhere.

Pen Crug (and Fferam Paradwys) Colliery

PRN: 22,007

Parish: Llangristiolus

SH 426 707

Pen Crug Colliery is situated at the break of slope on the northern edges of Malltraeth marsh, near to the old course of the Afon Cefni before it was canalised as part of the drainage of the marsh in the late eighteenth and early nineteenth centuries (**Map 6**). It was active by the end of the eighteenth century. In 1793 William Lloyd, shopkeeper of Llangefni and Robert Squire, yeoman of Ty Main took out a lease on of Pencrug Bach from John and Margaret Williams of Bodelwyddan.¹¹² There may also have been workings going on immediately adjacent, in that in 1794 it is reported that Paul Panton had a

¹⁰² Pers. comm., John Pritchard

¹⁰³ Pers. comm., Tomos Roberts.

¹⁰⁴ UWB Llysduelas 137.

¹⁰⁵ R. Hughes, *Enwagion Môn* (Dolgellau, 1913), pp. 56-7.

¹⁰⁶ Greenly, op. cit., p. 813.

¹⁰⁷ UWB Boston 147-161 (estate rentals 1866-7).

¹⁰⁸ Bassett, James p. 156.

¹⁰⁹ E.A. Williams, *The Day Before Yesterday* (Beaumaris, 1988 – translation of *Hanes Môn*, [Llangefni, 1927]) p. 138.

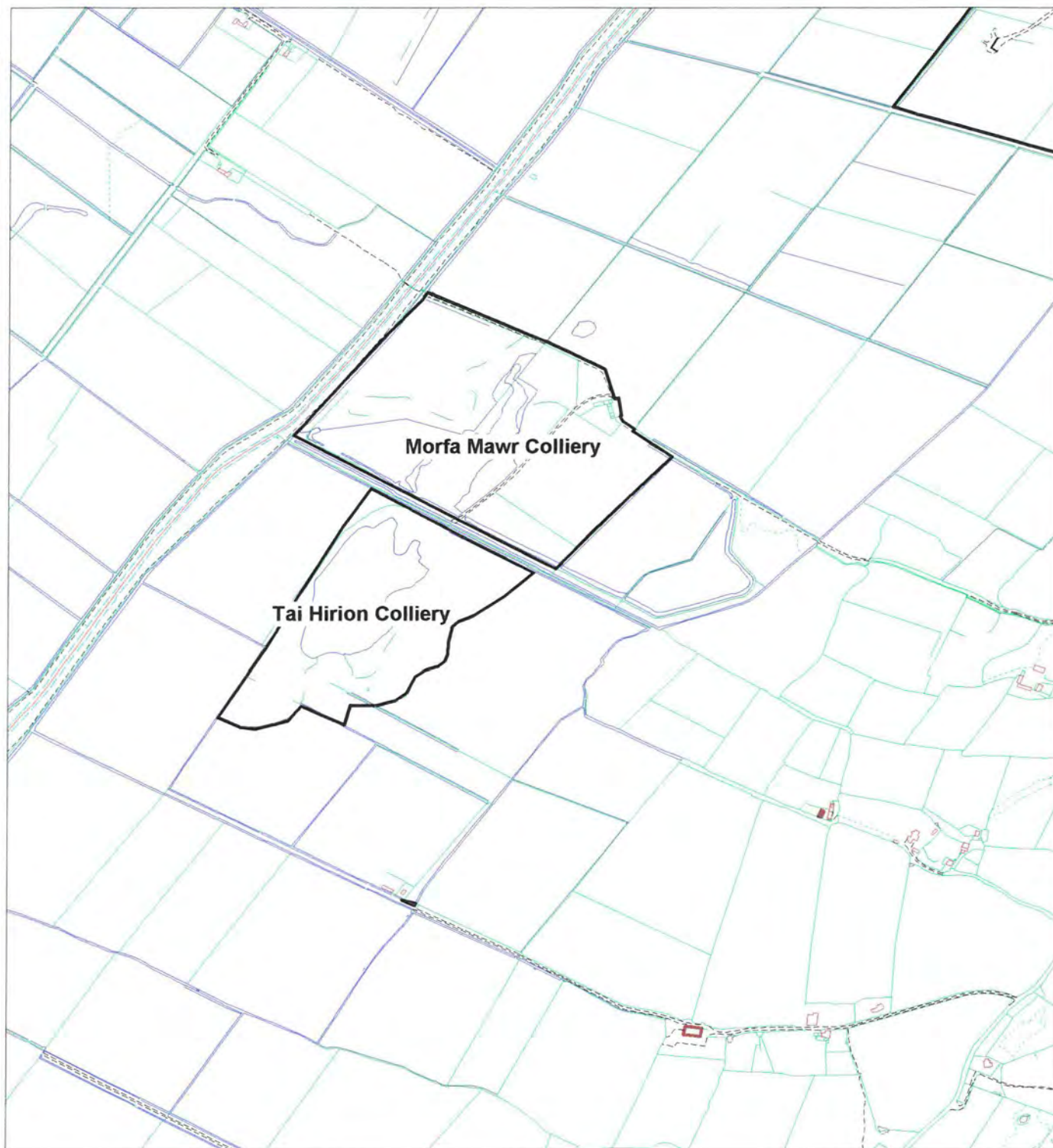
¹¹⁰ UWB Henllys 348.

¹¹¹ UWB Porth yr Aur 305826.

¹¹² UWB Tynygongl 131.

MAP 5: PRN: 5791 AND 22,005

MORFA MAWR AND TAI HIRION COLLIERY



Scale: 1/10,000

seam of coarse coal 'which answers for burning limestone on the spot; but, from its quality, will not bear the expense of carriage any distance. Were that pit sunk deeper, there is little doubt of finding a better seam of coal, which would be of great advantage to the county, where fuel is so scarce and very dear.'¹¹³ Panton of Plas Gwyn, Pentraeth, was the owner of Pen y Crug in 1814, when he leased it out to a group of local men,¹¹⁴ who may have been trespassing at Paradwys and Criw by 1818.¹¹⁵ The 1839-41 1" o.s. map shows it as 'Old Pit'. Tyswyn speaks of a company of Englishmen near Pen Crug in the period 1869-1870.¹¹⁶ In the late nineteenth century Rev. Evan Jones and others investigated the potential of Paradwys.¹¹⁷

Glanrafon (Ty Newydd, Fferam Bailey, Gwaith Caernarfon, Marquess) Colliery PRN: 22,008

Parish: Llangristiolus

SH 423 700 C

Glanrafon Colliery is situated on low-lying flatlands drained by the enclosure of the Malltraeth marsh in the late eighteenth and early nineteenth centuries (**Map 6**). In 1839 Thomas Hughes, tenant of Penrhyn Mawr, informed the Marquess's mineral agent that they had already started sinking a shaft at Ty Newydd (Glanrafon), one of the farms allotted to the Plas Newydd estate on the north-west side of Cors Ddygái. They hoped to erect a steam engine next spring.¹¹⁸ An undated map in the Plas Newydd collection showing allotments in the marsh shows a 'Proposed place for Sinking to get coals for the Engine, about 35 yds deep' near '* Where the Coals was proved' (22,008: 8).¹¹⁹ Presumably Hughes and his partners worked on take-notes initially, as no lease was granted until 1853, and the mine continued to be worked until 1879. It is said latterly to have had three shafts, two of which were connected.¹²⁰ Tyswyn states that this was worked in conjunction with the Pen Crug pit, but that 'gwaith Caernarfon' out-last-ed Pen Crug, and was the last coal working of any importance in the parish.¹²¹ Whether this means that there was an underground connection between the two is not clear, but certainly the plan of Glanrafon pit shows work proceeding in the direction of Pen Crug and possible tunnels between them.¹²² Local tradition preserves the name of the lessees as a family of the name Griffith, who as they grew old took less of an interest in the increasingly care-worn machinery, which eventually gave up the ghost.¹²³

Glan Traeth (Bodorgan) Colliery

PRN: 22,009

Parish: Trefdraeth

SH 418 697

Glan Traeth Colliery covers an extensive area on the north-western side of the canalised Afon Cefni (**Map 7**). The workings extend over not only the areas drained in the late eighteenth and early nineteenth centuries but also up to and slightly above the break of slope to the north-west, to what would have been dry land before the drainage. The site is now bisected by the *Lôn glo* ('coal road'), which runs from the village of Trefdraeth down the slope to the valley floor and thence to the road along the present banks of the Cefni.

This was the most extensive and probably the longest-lived of the collieries on the north side of the marsh, though its history is uncertain, as it extended over several different tenements and two estates. It may have seen the last coal-mining in the area, in the very early years of the twentieth century.

Lewis Morris's map of the Bodorgan estate shows work going on just above the break of slope on the lands of both of the two farms on either side of the *Lôn glo*, Glan Traeth to the south-west and Glan y

¹¹³ George Kay, *General View of the Agriculture of North Wales* (Edinburgh, 1794) p. 17.

¹¹⁴ UWB Porth yr Aur 30586.

¹¹⁵ UWB Porth yr Aur 30528 and 30528a.

¹¹⁶ Parch O. Hughes (Tyswyn), *Hanes Plwyf Trefdraeth* (Bangor, n.d. - ?1903), t. 85.

¹¹⁷ E.A. Williams, *The Day Before Yesterday* (Beaumaris, 1988 - translation of *Hanes Môn*, [Llangefni, 1927]) p. 138.

¹¹⁸ UWB Plas Newydd Series I part iv 3208.

¹¹⁹ UWB Plas Newydd III 5130.

¹²⁰ Bassett and James, *op. cit.*, pp. 160-1.

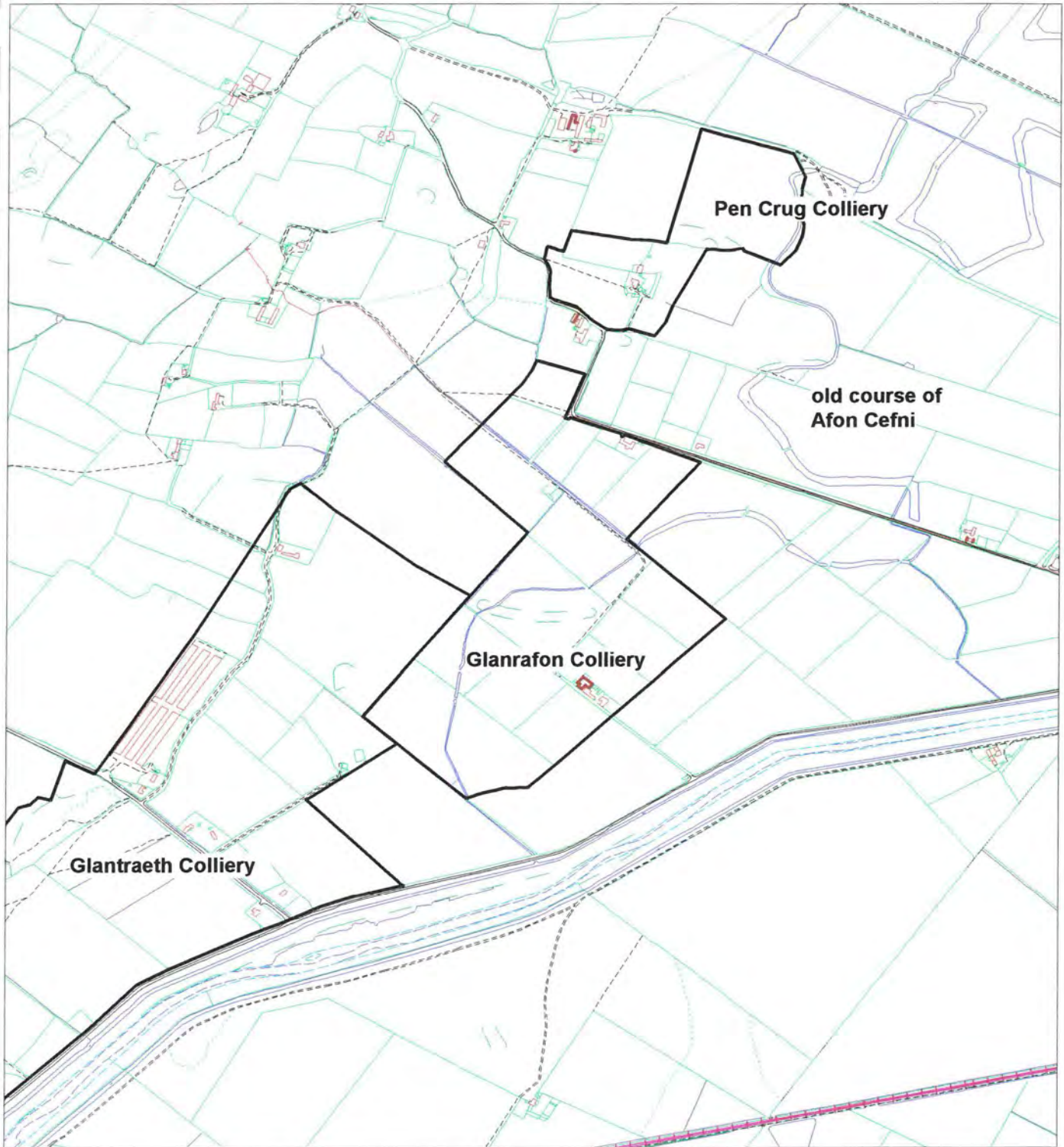
¹²¹ Parch O. Hughes (Tyswyn), *Hanes Plwyf Trefdraeth* (Bangor, n.d. - ?1903), t. 85.

¹²² Coal Authority Mining Records, Burton on Trent 866, Parcel F1, plans of Pont Marquis Colliery.

¹²³ Pers. comm., Richard Hughes of Glanrafon

MAP 6: PRN: 22,007 AND 22,008

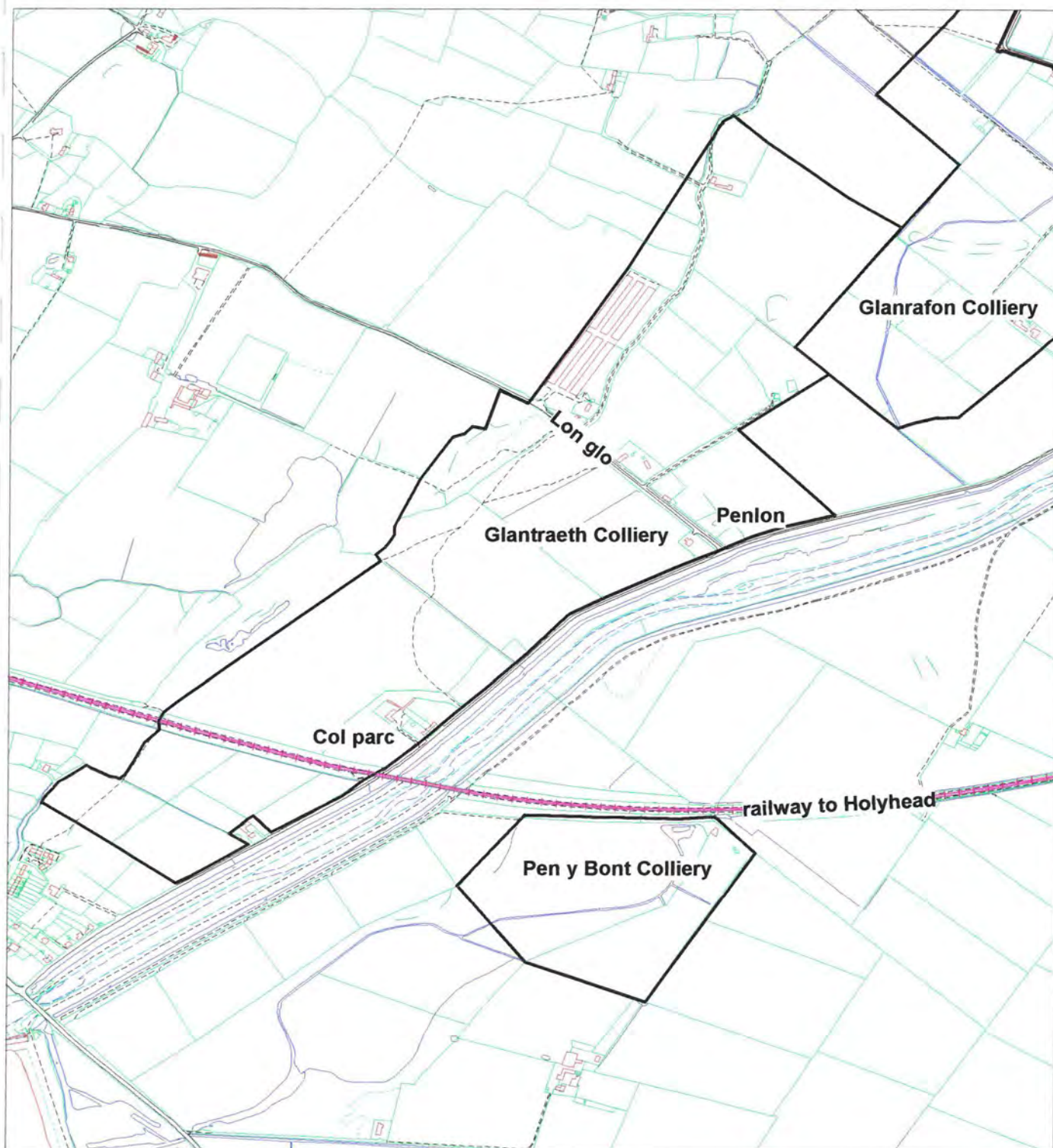
PEN CRUG AND GLANRAFON COLLIERIES



Scale: 1/10,000

MAP 7: PRN: 22,009 AND 22,010

GLAN TRAETH and PEN Y BONT COLLIERIES



Scale: 1/10,000

Morfa to the north-east, in the 1720s,¹²⁴ slightly above the break of slope at the edge of what was then still a marsh (22,009: 35). One or both of these were probably the site of 'digging for Coals' referred to by Henry Rowlands in 1723.¹²⁵ In 1793 Glan Traeth farm and colliery were leased to William Lloyd, shopkeeper of Llangefni and Robert Squire, yeoman of Ty Main.¹²⁶ They worked in the area known as col parc ('coal enclosure'), the south-western extremity of the eventual lease, traditionally the first underground working in the parish, and spent heavily on machinery.¹²⁷

A 'Bodorgan Coal Mine' was offered on lease in 1812, when it was stated that the coal lay within 30 yards of the surface and half a mile from the north-western end of the Malltraeth embankment,¹²⁸ suggesting that col parc remained the focus. However, in 1827 Hughes of Kinnel leased seventeen acres of land on the marsh around Parc Mawr – the north-eastern limits of the colliery area as shown on **Map 7** – to William Edwards druggist and William Owen, draper, both of Llangefni. They added adjacent lands belonging to the Bodorgan estate the following year, which gave them the rights to all the coal as far as col parc.¹²⁹ Though the partnership went through a number of changes at this stage, in 1833 they sold out to Henry Prichard of Trescawen and others – effectively the group running Berw Colliery. They added another piece of Bodorgan land in 1837 and were confirmed in their original lease of Parc Mawr in 1844.¹³⁰ Hugh Hughes, who later opened Morfa Mawr colliery, was one of the partners here, and came to own the whole operation, at great profit to himself, for twenty years, before he sold out.¹³¹ A map which shows the whole of their permission as it was in 1838 curiously suggests that the coal in the Bodorgan lease was largely worked out, and that the focus of working was on Llysduas land.¹³² They appear nonetheless to have set about working with a will, having already established drainage tunnels and moved a pump-engine to Penlon (22,009: 6) from col parc – a task which required every horse in the parish to move the boiler. Here, once the new pit was producing, offices were erected and the farmers came in their carts and the poor with their mules to buy coal for their hearths.¹³³ It may be significant that the 1839-41 1" o.s. map shows col parc as 'Old Pit' and shows three shafts in the north-eastern extremity of the lease (22,009: 1, 2-3 and 36) – though curiously it gives these the name of 'Pen-y-crug Colliery'. These operations yielded no royalty after 1859,¹³⁴ but were probably the site of the small-scale working which went on into the twentieth century.¹³⁵

Pen y Bont (Gwaith Davies y Bont)

PRN: 22,010

Parish: Trefdraeth

SH 417 690 C

Pen y Bont Colliery is situated in the low-lying area drained by the construction of the Malltraeth Cob (**Map 7**). It was allotted by the enclosure act to the Owen family of Orielson in Pembrokeshire, owners of land at Malltraeth, and the first reference to the possibility of coal comes in 1789.¹³⁶ Undated references in the Owen correspondence to one John Hughes, who 'had brought over some other Miners to Anglesea (*sic*) who are to be his Partners', and who were only to be granted a lease after carrying out trials, suggest that a number of miner-adventurers had turned up at some stage, possibly mine-tenants of the Owen family in Pembrokeshire.¹³⁷ In the late eighteenth century, Sir John Owen was in negotiation with a group of miners to sink shafts on his land, and a shaft is indicated in the 1838 survey

¹²⁴ UWB Bodorgan B1589.

¹²⁵ Henry Rowlands, *Mona Antiqua Restaurata* (Dublin, 1723) p. 16.

¹²⁶ Bassett, James, *op. cit.*, p. 157.

¹²⁷ Parch O. Hughes (Tyswyn), *Hanes Plwyf Trefdraeth* (Bangor, n.d. - ?1903), t. 83.

¹²⁸ *North Wales Gazette* 3 December 1812 p. 1 col. b.

¹²⁹ UWB Llysduas 78-80 (lease of Parc Mawr area), Bodorgan 1028-9, 1583, 1590.

¹³⁰ UWB Llysduas 80. Lease of unadjoining tenements, including Tyddyn Waen Hir, to Henry Pritchard esq. of Brynsyda, Thomas Lewis of Treddafydd, Owen Williams of Gaerwen, William Edwards of Llangefni, and Hugh Hughes of Malltraeth, yeomen, from 12 May 1844 for 21 years.

¹³¹ Parch O. Hughes (Tyswyn), *Hanes Plwyf Trefdraeth* (Bangor, n.d. - ?1903), t. 84 and R. Hughes, *Enwogion Môn* (Dolgellau, 1913), pp. 56-7.

¹³² UWB M/C Misc. 4/112.

¹³³ Parch O. Hughes (Tyswyn), *Hanes Plwyf Trefdraeth* (Bangor, n.d. - ?1903), t. 84.

¹³⁴ Bassett and James, *op. cit.*, p. 160.

¹³⁵ Pers. comm., Tomos Roberts.

¹³⁶ CRO X/Poole 1737.

¹³⁷ CRO X/Poole 1140-1.

of Glan Traeth Colliery.¹³⁸

In the nineteenth century workings in this area were known as Gwaith Davies y Bont, after the then tenant of Pen y Bont farm. It may be significant that a shaft marked on the 25" ordnance survey of 1920 is not marked in 1900, which may imply twentieth century exploration – or may equally simply indicate cartographers' carelessness. This operation is probably to be identified with a shaft, now only visible occasionally as a flooded depression, on Pen y Bont farm (22,010: 1).¹³⁹

Berth Hwfa (Gwaith y Morfa) Colliery

PRN: 22,011

Parish: Trefdraeth, Llangadwaladr

SH 403 685

Berth Hwfa Colliery represents the westernmost limit of the coal-field, and its focus was on the sea-shore (**Map 8**) near to the village of Malltraeth, which grew up around the construction yard for the building of the embankment, and which is still known as 'yr Iard' for that reason. Berth Hwfa farm belonged in the eighteenth and nineteenth century to the Owen family of Orierton, in Pembrokeshire, though the foreshore to which it slopes was crown land. As early as 1772 Owen writes to Poole, the Llangefni solicitor, that the applicants for the 'Malltraeth' colliery were not to have it on the terms offered – a sixth of the produce – but according to the primitive custom of the Pembrokeshire collieries, still in force at the time, of paying a farm of the third or quarter.¹⁴⁰ Six years later he instructed that a collier by the name of William Williams and partners be required to dig 'in the Marsh Rocks &c which were the Places they mentioned' rather than sink shafts in the farmland, and that they pay him a third. This is unlikely to have been Pen y Bont colliery, which was not yet drained, and probably refers to trials on the lower reaches of Berth Hwfa, near the sea-shore. In 1808 the prospect of coal underneath Berth Hwfa was held out to potential tenants.¹⁴¹

In 1863 William Davies, probably the same Davies as sank the Pen y Bont shaft, is said to have run a shaft 300 yards beyond the cob and under the sea. His lease is enrolled in the Land Revenues archive for 2 July 1863.¹⁴² It may be here that a Mr Roberts of Rhyl opened a pit in 1874,¹⁴³ and Tyswyn refers to an attempt made to work a mine in the period 1881-4.¹⁴⁴

Other sites

Parishes: various

A number of sites have been trialled for coal. Vaynol papers in 1829 refer to coal trials at 'Nant porth and in Anglesey'¹⁴⁵ – presumably Nant y Porth near Bangor, though the site of the Anglesey works is unknown. References to 'Pwll y glo' in Llanidan parish in the eighteenth century suggests that there may have been unidentified small workings elsewhere in the coal field.¹⁴⁶

¹³⁸ CRO X/Poole (Bodeon agency papers), UWB M/C Misc. 4/112. Sir Hugh Owen introduced the steam engine to the Pembrokeshire coalfield in 1800 – see George Edwards, 'The Coal Industry in Pembrokeshire' *Field Studies* 1 no. 5 (1963) p. 12.

¹³⁹ I owe this suggestion to Mr Tomos Roberts.

¹⁴⁰ CRO X/Poole 1013. The Owens owned Landshipping, Cresswell, Jeffreyston Mountain and Hook collieries in Pembrokeshire – see Brian Howells, *Pembrokeshire County History III Early Modern Pembrokeshire 1536-1815* (Pembrokeshire Historical Society, Haverfordwest, 1987), pp. 319-20.

¹⁴¹ *North Wales Gazette*, 5 May 1808, p. 1, col. d.

¹⁴² PRO LRRO16/21.

¹⁴³ E.A. Williams, *The Day Before Yesterday* (Beaumaris, 1988 – translation of *Hanes Môn*, [Llangefni, 1927]) p. 137. A lease from the crown was granted to Roberts on 5 March 1875, suggesting that he had had a take-note over the previous year. The document observes that he was the third tenant, though no name for the intervening period has so far come to light – PRO LRRO16/55. A further lease was granted on 26 February 1876 (PRO LRRO 16/57), and a lease of further coal mines in the parishes, Trefdraeth and Llangadwaladr, was granted the same day to Thomas Williams and John Ellis – PRO LRRO 16/57.

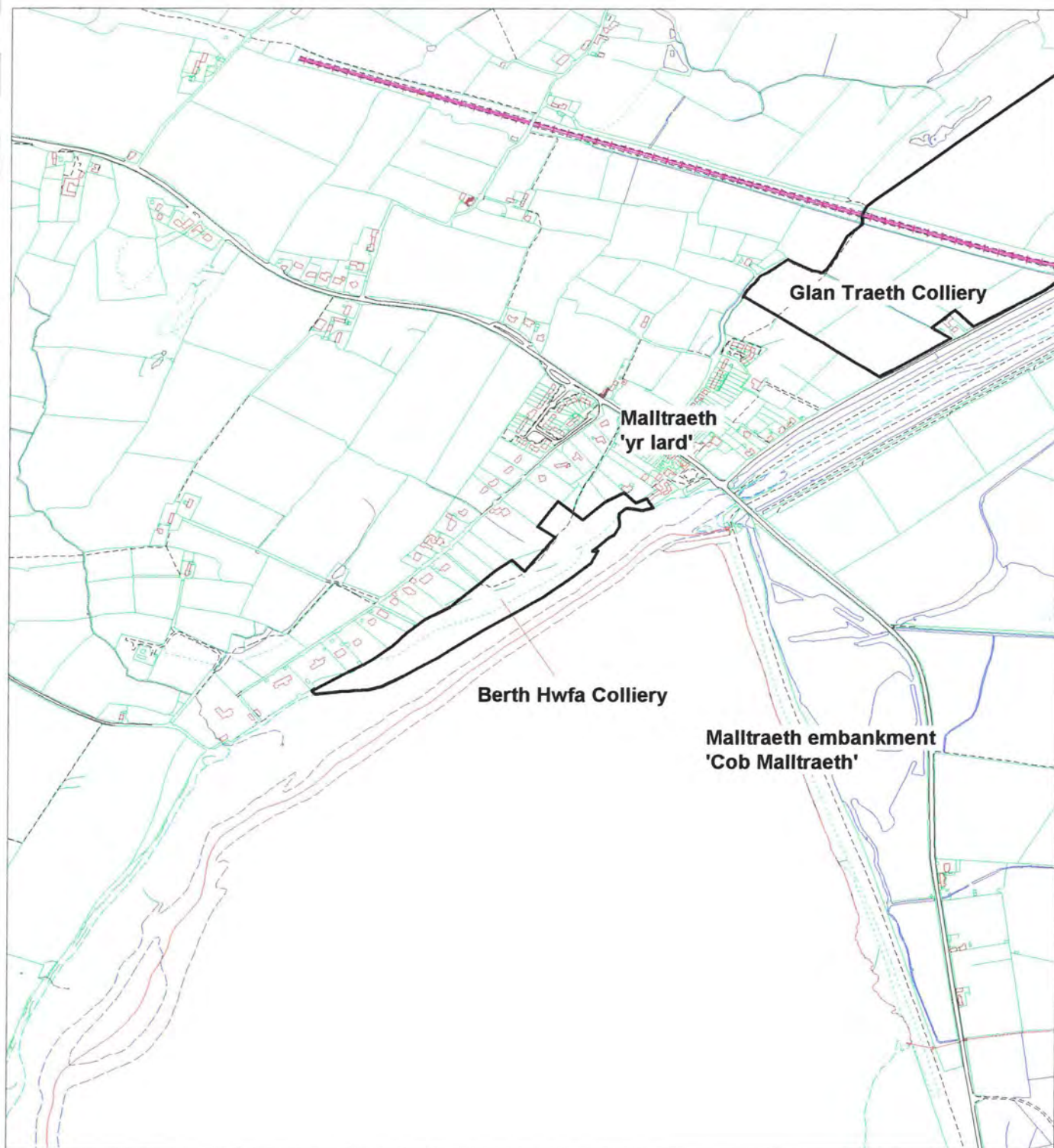
¹⁴⁴ Parch O. Hughes (Tyswyn), *Hanes Plwyf Trefdraeth* (Bangor, n.d. - ?1903), t. 85.

¹⁴⁵ CRO Vaynol 4921 - fol. 12v-19r. See also CRO Vaynol 4921 p. 54, incidental references to payments to Elias Parry for 'Boring rods at Coal works', 1830.

¹⁴⁶ UWB Lligwy Add.1322-7

MAP 8: PRN: 22,0011

BERTH HWFA COLLIERY



Scale: 1/10,000

4.7 Social history

Comparatively little documentary evidence has yet emerged for the social history of the Anglesey collieries, though doubtless detailed work in the census returns would fill many of the gaps in our knowledge, and give some idea of how mobile or otherwise was the labour force. Anglesey men were called in to break a strike at the Bromfield pit near Mold in 1831,¹⁴⁷ and miners were leaving Anglesey for Flintshire in 1860.¹⁴⁸

Total numbers for the workforce are hard to come by, though a resolution passed by a county meeting for the abrogation of the coastal duty on coal mentions 150 men. The census report of 1851 gives forty-three coal miners, sixteen coal labourers and one other worker in coal in Trefdraeth and Llangristiolus; Llanidan had ten miners and a coal agent, as well as a coal agent's widow. Llanfihangel Esceifiog had sixty-four miners, of whom three had come from Rhiwabon, one from Liverpool, one from Dyserth and one from St Asaph. An engineer had come from Baltimore, perhaps from a Welsh family, having possibly learnt his trade either on steam vessels or on the Baltimore and Ohio Railroad.¹⁴⁹

The village of Pentre Berw, as its name suggests, was constructed on land which in the late eighteenth century formed part of the Berw estate. Its site is identified both as the house Ty'n y Pwll and as 'Pentre'r Berw' on an estate map of the late eighteenth century.¹⁵⁰ A cluster of buildings is apparent here (SH 4700 7247 C) on the Bailey map of 1812, and is identified as 'Pentre Berw', though the village had not yet attained its full size. The houses at Glanrafon (SH 4695 7255) were erected on Plas Newydd land by 1858.

¹⁴⁷ Dodd, *op. cit.*, p. 224.

¹⁴⁸ Bassett and James, *op. cit.*, p. 155.

¹⁴⁹ Bassett and James, *op. cit.*, p. 148, pp. 161-2.

¹⁵⁰ NLW Carreglwyd and Berw 7043.

5 SUMMARY OF ARCHAEOLOGICAL FINDINGS

(The terminology used here is that set out in David Cranstone, 'Early Surface Features of Metal Mining: Towards a Typology', Mining Before Powder [Matlock Bath, 1994], pp. 144-7. Numbers in brackets refer to the gazetteer of features printed as Appendix 1)

5.1 Extraction

5.1.1 Surface working

Shallow surface workings are apparent in a number of locations within the Anglesey colfield.

A linear upcast at Tyddyn Mawr in an amongst what appear to be early shaft-upcasts is almost certainly an early phase of surface working (22,002: 2 – see also **Plate 1**), a possibility strengthened by the fact that a late eighteenth century map of the Carreglwyd estate gives the field- name 'Y Trenses Quilli. Entrenchment' here.¹⁵¹ Other than that it was in existence by then, it is not possible to date this feature more accurately – surface trenching for coal is a feature of the industry from Roman times to the Great Depression. However, in that the site is near the Cefni river, yet is not on the drained portion, it is highly likely that this was the area which was the subject of the law suit over the drowning of the mines by a diversion of the river in 1610, and that this feature is therefore pre-Modern. It is also at the place where, on the evidence of early nineteenth-century maps and cross-sections, the place where the shaly five-yard coal outcropped – in other words, the easiest place to start winning coal, but in a location where the removal of overburden would soon make it uneconomic.

Surface working for coal is also apparent at Glan Traeth Colliery, where a pattern of irregular depressions in the ground in which fragments of coal are evident coincide with an area described as 'coal works' on Lewis Morris's map of the 1720s. This seems to be the place where the Glan Traeth seam outcropped (22,009: 35).

5.1.2 Underground working

Much the greater part of the works associated with the Anglesey coal-field was accessed by vertical or near-vertical shafts, commonly called 'pits' or in Welsh *pyllau*. In every case there were observed to have collapsed or to have been capped, in most cases by the expedient of placing timber baulks across them, with the single exception of the shaft which makes up Pritchard's colliery (22,004: 1), which is flooded practically to the collar.

Access to the underground workings is therefore impossible at present, and conclusions as to the form they took and to the methods they used can only be made on the basis of surface features, particularly shafts and upcasts, which are themselves more fully described in 5.1.3 below.

However, it seems probably that where, as at Tyddyn Mawr, shafts were shallow enough to be worked by a windlass, there is little possibility of lateral extension from the base of the shaft, and it is also possible that a considerable amount of back-filling has taken place. Where, as also at Tyddyn Mawr, the size of upcasts suggests winding by horse-whim (22,002: 5, **Plate 2**), it is not clear whether there were drifts connecting the foot of the shafts or isolated lateral extensions along the vein.

Surviving plans of the underground workings in the Anglesey coalfield, where they are specific, uniformly show pillar and stall workings, whereby pillars of useable coal are left to support the roof (**Underground plan 2 and 3**).¹⁵² Two leases, however, specify the 'long way' of mining, as at the Kinmel part of Glan Traeth Colliery in 1827 and at the Berw (Morfa Mawr) Colliery in 1840.¹⁵³ It is possible that the collapse of longwall workings is responsible for the marshy areas immediately adjacent to the Berw Colliery, and at Tai Hirion and Morfa Mawr. The longwall method is generally

¹⁵¹ NLW Carreg Lwyd and Berw 7043.

¹⁵² Seen to best effect in UWB Plas Newydd III 5131 but see also UWB M/C Misc 4/112-3.

¹⁵³ Bassett and James, *op. cit.*, p. 154, p. 159.

PLATE 1:

TYDDYN MAWR COLLIERY (NORTH EAST)



A view from the northern limit of the site, looking south, showing the possible early seventeenth century features in the lower part of the photograph and the linear feature running parallel to the railway line. NMR 995015-5

PLATE 2:

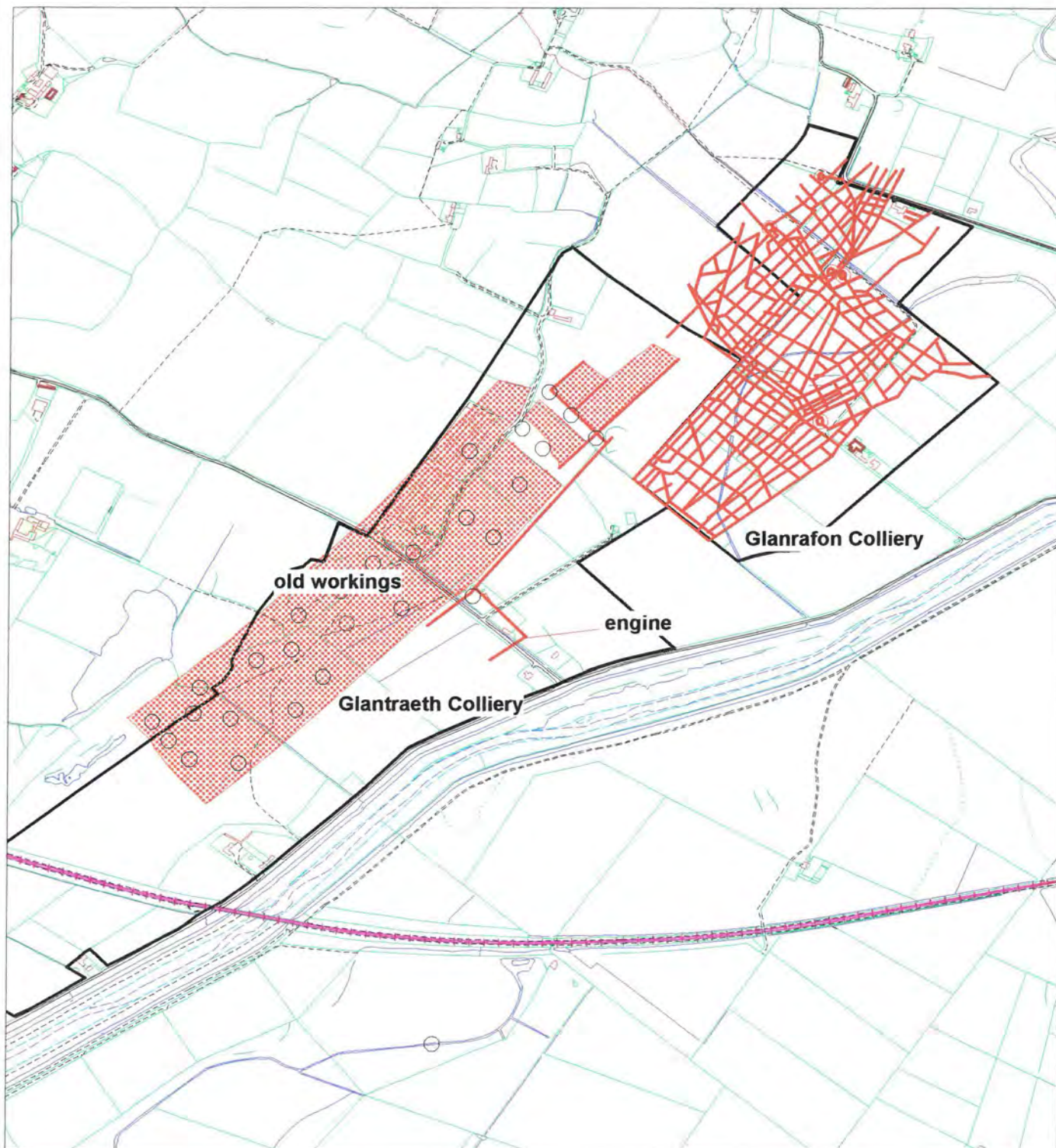
TYDDYN MAWR COLLIERY (SOUTH WEST)



A view of the southern part of the site, looking east, showing the larger upcasts which suggest winding by horse-whim, and smaller, less well-defined features. NMR 995015-46

UNDERGROUND PLAN 3: PRN: 22,007 AND 22,008

GLANRAFON AND GLANTRAETH COLLIERIES



**Scale: 1/10,000; based on UWB Bangor mss M/C Misc 4/112-3
(plan of Glan Traeth Colliery, 1838) and Coal Authority Mining Records
866, Parcel F1 (plans of 'Pont Marquis' Colliery)**

believed to have been introduced in Staffordshire in the late seventeenth century, but has been archaeologically dated to as early as 1620 at Coleorton in Leicestershire.¹⁵⁴ In any event, the influence of the English Midlands is apparent, though curiously not on any of the sites owned by the Marquess of Anglesey, the Staffordshire colliery owner.

There is very little evidence for underground transport systems. A fragment of wrought-iron strap-rail from an underground railway at Glanrafon survives in a context associated with 22,008: 1; such systems are difficult to date, in that they are recorded in a North Walian context between 1805 and 1874.¹⁵⁵ Rails were offered for sale at Penrhyn Mawr in 1838,¹⁵⁶ and 'pit waggons' are recorded there a little later.¹⁵⁷

5.1.3 Extraction – spoil heaps

Documentation confirms that shaft-winding in the collieries which make up the Anglesey coalfield was carried out variously by windlass, by horse-whim, and by steam engine. However, beyond the upcasts themselves, with their internal evidence for the depth of the shafts they represent, there is little archaeological evidence for the method of winding. The likelihood is that the smaller upcasts represent the site of shafts wound by hand windlass (in Welsh *tyntri*), the larger ones the sites of shafts wound by horse whim or steam engine.¹⁵⁸

The earliest shaft-heads are probably represented by the upcasts on the lower reaches of Tyddyn Mawr farm, at the break of the slope (22,002: 1, 3 and 4). Not only their proximity to the linear upcast referred to in 5.1.1 above but also their location near the Cefni suggest very strongly that these might be workings of the sixteenth and early seventeenth century. The dispute between Holland and Chedle in 1610 confirms that pits were being worked on Carreglwyd property at a low-lying location near to the flood-plain.

In view of the small amount of spoil around the head of these shafts, it is likely that they were backfilled once their usefulness was over, and their proximity to each other suggests very little lateral expansion at the foot of the shaft. It is likely that these were worked by hand-windlass. Archaeological investigation at the Coleorton collieries in Leicestershire, dated 1450 to the late sixteenth century, elsewhere has identified the remains of hand-winding from the same period and technical milieu as this early phase of the Anglesey coalfield.¹⁵⁹ Here windlass shafts reached to a maximum depth of 100'. It is likely that the Tyddyn Mawr shafts, which worked the three quarter coal, were shallower, and as such well within the range of hand-winding. However, insubstantial timber devices such as windlasses rarely leave any surface evidence, and none was observed in the course of the present project.

A sequence of upcasts slightly higher up the slope on Tyddyn Mawr (22,002: 5, 8, 11-13 and 16) is typologically different. These contain a significant amount of waste – mainly clay and shale, on which there is sometimes a substantial growth of thistles and honeysuckles – suggesting the use of a horse-whim to raise material. The distance between them is in some cases as little as 70-80m, again suggesting little lateral extension. Similar upcasts were observed at a considerable number of other locations within the coalfield, perhaps to best effect at Glan Traeth colliery (22,009: 1, 2, 36), where the pattern of a distance of approximately 70-80m between upcasts, in some cases slightly less, is repeated. Shafts such as these upcasts represent are unlikely to date from before the eighteenth century, when the horse-whim was introduced to north-west Wales.¹⁶⁰

¹⁵⁴ Robert F. Hartley, 'The Tudor Miners of Coleorton, Leicestershire', *Bulletin of the Peak District Mining Society* 12 3 (Summer 1994) p 94.

¹⁵⁵ M.J.T. Lewis, *Fishbelly and Flat-bottom* (title in preparation).

¹⁵⁶ *Caernarvon and Denbigh Herald*, 10 February 1838, p. 2 col. f.

¹⁵⁷ UWB Plas Newydd I 3312.

¹⁵⁸ The mounds at Crug Las identified and discussed by Richard White in 'A Re-Excavation of Crug Las, Malttraeth', *TAA* 1968, pp. 4-12 are unlikely to be connected with the coal industry. Crug Las is identified by Lewis Morris in UWB Bodorgan ms 1579; had it been a shaft upcast it would have been of recent origin, and recognisable as such to him.

¹⁵⁹ Robert F. Hartley, 'The Tudor Miners of Coleorton, Leicestershire', *Bulletin of the Peak District Mining Society* 12 3 (Summer 1994) pp. 91-101. The Coleorton pits in this period are believed to have supplied a regional domestic market.

¹⁶⁰ UWB Plas Newydd IV 8484 of 1742 appears to be the earliest reference to their use in the area.

5.2 Winding

The possible implication of surviving shaft-upcasts for identifying winding machinery is discussed above.

Documentation confirms that shaft-winding in the collieries which make up the Anglesey coalfield was carried out variously by windlass, by horse-whim, and by steam engine. However, beyond the upcasts themselves, with their internal evidence for the depth of the shafts they represent, there is little archaeological evidence for the method of winding. The likelihood is that the smaller upcasts represent the site of shafts wound by hand windlass (in Welsh *tyntri*), the larger ones the sites of shafts wound by horse whim or steam engine.¹⁶¹

There is very little archaeological evidence for the use of steam winding within the Anglesey coal field, though documentation and local tradition confirm that steam engines were widely used. At one upcast, a holding-down bolt was observed (22,009: 10). Engine-houses, however, are conspicuous by their absence. Only at Berw Colliery is there any masonry trace of such a structure (5,792: 5),¹⁶² though an engine-house is recorded at Penrhyn Mawr. At Tai Hirion a densely-overgrown area on the site of a building identified by the 25" ordnance survey (22,005: 3) may represent the site of an engine-house. It is possible that in some cases shafts were wound by a portable engine, which would leave little trace.¹⁶³

Documentation confirms that Penrhyn Mawr made the most consistent use of fixed steam winding plant, from the period 1815-1817 onwards, when the first winding engine was introduced – roughly coeval with the pump- and winding engines installed at Hafodlas Quarry (Cloddfa'r Coed) in Nantlle by Fawcett's of Birkenhead,¹⁶⁴ and later than the Boulton and Watt winder at Mynydd Parys in 1790.¹⁶⁵

In 1838 the mine had 'A Winding Engine of Double Power, constructed on the like principle (*as the pump-engine – see below*) with a twelve-inch Cylinder, and two Boilers in good working order; also another Winding Engine, with a sixteen inch Cylinder, Boiler, &c'.¹⁶⁶ The implication that the second engine mentioned here was not in good working order is borne out by the inventories of 1847, which do not refer to it, and which also confirm that the two boilers on the 12" engine were 'circular' (haystack type).¹⁶⁷ The 'Double Power' probably means no more than that the engine was a double-acting Boulton and Watt type, not an atmospheric engine.

The location of these two engines is in doubt. The principal haulage shaft may have been the no. 2 shaft (22,003: 3), the site of which has been obliterated, but which was formerly marked by a substantial upcast at SH 4679 7282. However, the 1847 map shows two engine houses lining up on a shaft (22,003: 13) near the northern perimeter of the site, on a site which has also now been obliterated by an access road (22,003: 14 and 15).

Other items of winding machinery are known only from documentary sources. 'Pit Frames' (presumably shaft headgear) and 'pit baskets' are recorded at Penrhyn Mawr in 1838.¹⁶⁸

5.3 Pumping

Owing to their low-lying site, none of the Anglesey pits can have been self-draining, and some form of

¹⁶¹ The mounds at Crug Las identified and discussed by Richard White in 'A Re-Excavation of Crug Las, Malltraeth', *TAAS* 1968, pp. 4-12 are unlikely to be connected with the coal industry. Crug Las is identified by Lewis Morris in UWB Bodorgan ms 1579; if it were a shaft upcast it would be of recent origin, and recognisable as such to him.

¹⁶² John Williams states that the engine at Berw Colliery which required the substantial chimney wound as well as pumped. See *History of Berw*, p. 63.

¹⁶³ Though a portable colliery winding engine is recorded as early as 1788 (T.S. Ashton, J. Sykes, *The Coal Industry of the Eighteenth Century* (Manchester, 1964), p. 59, it is in the mid-nineteenth century that they became commonplace – see Trevithick Society, *Illustrated Catalogue of Pumping & Winding Engines ... manufactured by Williams' Perran Foundry* (Camborne, 1976) – reprint of undated mid-nineteenth century catalogue.

¹⁶⁴ D. Gwyn, 'An Early High Pressure Steam-Engine', *Industrial Gwynedd* vol. 5.

¹⁶⁵ Gwynedd Archaeological Trust, *Mynydd Parys Copper Mine*, 7.3.2, Pers. comm.; Messrs John Bennett and Chris Williams, Birmingham Public Library, Boulton and Watt collection 6/6/85.

¹⁶⁶ *Carnarvon and Denbigh Herald* 10 February 1838 p. 2 col. f.

¹⁶⁷ UWB Plas Newydd I 3311.

¹⁶⁸ *Caernarvon and Denbigh Herald*, 10 February 1838, p. 2 col. f.

mechanical pumping system was required.

British collieries have made use since Medieval times of windlasses to wind water buckets. From the late seventeenth century, horse-whims were also used to perform this task. Their sites can sometimes be clear from surface features (though no evidence was observed on any of the Anglesey sites during the course of the present survey), and by the nature of things they leave little underground evidence even where it is possible to gain access to workings.

Other systems require a mechanical prime-mover, generally located at or near the surface of the shaft, and a pump mechanism in the shaft itself. The prime movers take various forms. 'Coal mills' (water-powered pumping systems) are recorded in the British coal industry from perhaps the fifteenth century, and heat engines appear in the early eighteenth century. Horse-whims coupled directly to lift or force pumps, and water-pressure engines have also been used, and electric motors were introduced in the late nineteenth century.

In Anglesey the low-lying nature of the site and the sluggishness of the streams probably precluded the use of coal-mills, even if the capital had been available, but the other methods are attested by documentary evidence and in some cases by archaeological evidence. Documentation confirms the use of horse-whims, and both archival and field-work evidence confirm the use of steam power to pump.

An eighteenth century inventory lists buckets amongst the assets of Penrhyn Mawr, and these were almost certainly hauled on the windlasses and whimsies as a method of drainage. No archaeological evidence survives, however, either here or at any of the other Anglesey collieries.

Though in 1804 Penrhyn Mawr was still dependent on a horse-whim for drainage, there were signs of change in the plans of the workings made available to the Earl of Uxbridge that year.¹⁶⁹ A proposed 'engine shaft' implies that pumps were in prospect, and, in view of the lack of useable water in the area, perhaps a steam engine to operate them.¹⁷⁰ It is likely that the main engine shaft at Penrhyn Mawr is the site near the Telford Road (22,003: 1); however, a pump shaft is visible near the north-eastern boundary to the site, filled with sheep corpses almost to the shaft-head, but preserving its ginging and a lift pump (22,003: 11). It is likely that this was operated from a remote prime-mover by means of flat-rods – probably a steam-engine, and possibly the one installed in 1815 or 1817 at the main pump shaft. This machine post-dates the Boulton and Watt pump engine installed at Penrhyn Du lead mine (also on the Plas Newydd estate) in 1779.¹⁷¹ As described in 1847 it was a 32" double-acting beam engine, fed by one tubular boiler (clearly a later addition) and two 'Circular Boiler's (*sic*) with flat Bottoms' – in other words, haystack boilers.¹⁷²

In 1810 Gwallter Mechain wrote obscurely of mechanical pumps draining the Malltraeth pits.¹⁷³ Their precise location is obscure – it could be any one of the mines on the marsh – nor is it clear what sort of prime-mover operated them. There is insufficient water on the marsh to operate a water-wheel, and the likelihood is that the mines were at that stage already too deep for a horse-engine to operate pumps. This suggests that a steam engine was employed, and in this connection the tale of a steam engine and its massive boiler being moved to Penlon from elsewhere on the marsh is suggestive. Whilst no date is given for this move, it is possible that it was before 1838, when Hopkins marks an engine at Penlon (22,009: 6), in what had then become the focus of working. The older workings at col parc were conversely marked as having been abandoned, and it is a strong possibility that the steam pump engine was originally erected here. This cannot have been before the draining of the marsh, largely complete by the late eighteenth century, and a steam engine in place by 1810 is unlikely to have been life-expired by 1838. However, neither Hopkins's map of 1838 nor the 2" ordnance survey of 1819-21 give any clues as to its initial location.

¹⁶⁹ UWB Mona Mine 1402.

¹⁷⁰ At this stage the word 'engine' in this context refers to the pump itself, not to the machine which operated it.

¹⁷¹ Gwynedd Archaeological Trust, *Gwynedd Metalliferous Mines* 5.2.3.ii., Birmingham City Archives, Boulton and Watt collection, Box 27/A (agreements), 4/18/36, 4/18/35.

¹⁷² UWB Mona Mine 3310.

¹⁷³ Walter Davies ('Gwallter Mechain'), *General View of the Agriculture and Domestic Economy of North Wales* (London, 1810) p. 363. 'Hitherto, coal has not been worked with any profit in the Isle of Anglesey.'

Glanrafon, Pen y Bont and Berth Hwfa may well have used steam engines for pumping, but their comparatively small scale may have permitted the use of semi-portables such as were advertised by the Perran foundry, and which leave little or no trace.

Much less is known of the pump mechanisms these machines operated. Force and lift pumps, both of ancient origin, have been used in British coal mining since the sixteenth century and are known from documentary sources to have been used in Anglesey. Pulsometer pumps and centrifugal pumps, which only won ground in the later nineteenth century, are unlikely to have been used.

The force pump and associated linkages at Penrhyn Mawr (22,003: 11) is the only visible archaeological survival. Gwallter Mechain's refers in 1810 to 'quarter and half engines' draining the Malltraeth pits.¹⁷⁴ It is possible that these were toroidal pumps, which the pump chamber is formed from a quarter-segment pipe, up and down which a piston mounted on the end of a semi-circular rod which reciprocates around its centre point. No evidence survives elsewhere in the coal industry in Britain for such devices, and there is no obvious reason why such machines should have been installed rather than more conventional pumps.¹⁷⁵

It is possible, indeed likely, that other pump mechanisms survive underground, though the depth at which the pits would have been sunk make it unlikely that they will be exposed.

5.4 Coal preparation

The screening of coal, in order to remove small unsaleable particles, was increasingly mechanised in the British coal industry from the late eighteenth century onwards, and coal washing was introduced from the 1880s. However, there is neither documentary nor archaeological evidence for the preparation of coal on site in any of the Anglesey collieries. It is clear from documentary sources that for land sale, mules and horses and carts were driven right up to the shaft-head, and the plans for the proposed railway to Traeth Coch shows the line leading straight to the main haulage shaft of Penrhyn Mawr after the manner of a Newcastle waggonway, without any intermediate preparation.¹⁷⁶

5.5 Secondary products

The major secondary product derived from coal at collieries was coke, the result of heating coal in the absence of air to drive off volatile material to produce lumps of elemental carbon. There is no documentary evidence for the preparation of coke secondary materials at any of the sites. An advertisement of 1814 states that the coal from one of Holland Griffith's pits was good for coking,¹⁷⁷ but there is no documentary or archaeological evidence to suggest that this was carried out on site.

5.6 Administrative

Various maps indicate the existence of administrative buildings. A map of 1790-1800 identifies a field at Tyddyn Mawr as 'Cae Stabal', and a stable is marked here in 1812 (22,002: 6). A 'tool house' is marked at Tyddyn Mawr in 1812, on the site of the present dwelling Parc Penrhyn (22,002: 27);¹⁷⁸ it is likely that this would have been a smithy. A smithy, carpenter's shop, warehouse and office are marked at Penrhyn Mawr in 1804, though the location cannot now be identified.¹⁷⁹ Penrhyn Mawr

¹⁷⁴ Walter Davies ('Gwallter Mechain'), *General View of the Agriculture and Domestic Economy of North Wales* (London, 1810) p. 363. 'Upon the Malltraeth, quarter and half engines are employed to drain the pits.'

¹⁷⁵ Toroidal pumps are attested by both DaVinci and Ramelli in the sixteenth century, but it is remarkable to find them still in use at the beginning of the nineteenth, and it is difficult to suggest why they might have been adopted. The usual lines of enquiry fail – 1810 is too early for the influence of Telford, Rennie or Provis to be felt locally (and Walter Davies's field-work was probably carried out a few years earlier) and there is no evidence that any of them favoured such devices. James Golbourne, engineer of the Bedford levels, who had worked on the drainage of the Dee and the Clyde before he designed the Malltraeth Cob (pers. comm., Mike Chrimes, Institute of Civil Engineers) is another possibility, but again nothing exists to connect him with so archaic a device.

¹⁷⁶ See Ian Ayris, John Nolan, Andrew Durkin et alii., 'The Archaeological excavation of wooden waggonway remains at Lambton D Pit, Sunderland' *Industrial Archaeology Review* 20 (1998) pp. 5-22.

¹⁷⁷ *North Wales Gazette* 28 April 1814, p. 1 col. a.

¹⁷⁸ NLW Carreg Lwyd and Berw 7043, UWB Bangor Ms 118A.

¹⁷⁹ UWB Mona Mine 1402.

farmhouse (22,003: 16) has gone through a number of phases of rebuilding, and has been heavily modernised, but preserved until recently what may have been a window where the men were paid.¹⁸⁰

A weighbridge house is shown on the south west side of the Telford road on a map of 1847,¹⁸¹ the 'Ty Machine' shown on later documents,¹⁸² and it is possible that the extension to the present house 'Llys Difir' preserves some of the fabric (22,003: 18). The remains of a magazine survive at Col parc at Glan Traeth Colliery (22,009: 11), and of an office at Glanrafon (22,008: 7).

5.7 Domestic

Many dwellings in the area of the coal field appear to have been constructed to house miners. The majority have been heavily modernised.

In 1812 it was stipulated that the prospective lessees of Penrhyn Mawr were to build 'a certain number' of cottages for workmen,¹⁸³ and a letter of 1852 confirms that three dwellings had been constructed.¹⁸⁴ 'Pentre Berw' is marked as such in 1811,¹⁸⁵ and many of the present dwellings at Pentre Berw are modernised miners' cottages, though none now preserves a nineteenth century exterior. One of the larger houses in the village was formerly the Collier's Arms public house.

The row of single-storey dwellings at Malltraeth known as 'Viaduct Terrace' (colloquially 'Tai Pontydd' - 22,009: 38) are identified as 'Colliers' Row in 1838,¹⁸⁶ and probably constitute a purpose-built industrial terrace. Parc Mawr, a substantial nineteenth-century dwelling in continued occupation (22,009: 37), is believed to have housed the Glan Traeth Colliery engineer.¹⁸⁷

5.8 Surface transport

Although there is archaeological evidence for the use of rails underground at Glanrafon, there is no evidence for any surface railways, and internal surface movement appears to have been carried out entirely by cart or barrow. The causeways within Tai Hirion and Morfa Mawr Colliery (22,005: 1 and 5,791: 10) were presumably cart-roads for transport within the mine precinct, and an engineered road to give access to the Morfa passes through Glanrafon colliery (22,008: 3). In that most of the collieries' output was local sales, these would have been built with farmer's carts in mind carrying around two tons on one axle.¹⁸⁸

For transport away from the pits, a number of documents refer to right of road. In 1596 Sir Henry Bagnall granted Owen Holland the use of a (presumably pre-existing) road to the Queen's highway¹⁸⁹ - presumably a short connecting link to the Llangaffo-Ceint road, or the road south from Pentre Berw to Llanddaniel Fab, as there was no road across the marsh at that stage.

Occasionally documents referring to the workings on the north-west side of Malltraeth marsh refer to permission to build a road. The lease of Fferam Fawr to Thomas Bulgen of Bangor in 1824 gave him permission to build a road 24' wide at his own expense to the road through Fferam, then a right of way to the public road.¹⁹⁰

The fact that the Telford Road ran right through Penrhyn Mawr eased the transport situation after the

¹⁸⁰ Pers. Comm. John Pritchard, Pentre Berw.

¹⁸¹ UWB Plas Newydd III 5122.

¹⁸² UWB Plas Newydd VI 588 (map of Llanfihangel Esceifiog).

¹⁸³ UWB Plas Newydd V 1207.

¹⁸⁴ UWB Plas newydd III 5125.

¹⁸⁵ UWB Bangor Ms 118a.

¹⁸⁶ UWB M/C Misc 4/112.

¹⁸⁷ Pers. comm., Tomos Roberts.

¹⁸⁸ *British Parliamentary Papers* 1841 XII, *Eighteenth Report of Commissioners (on Holyhead road) under 4 Geo IV*. Local memory speaks of farmers coming 'from as far away as Gwalchmai', suggesting the limits of sales - pers. comm., Mr Richard Hughes Glanrafon.

¹⁸⁹ UWB Plas Newydd 1431.

¹⁹⁰ UWB Porth yr Aur 305826.

1820s onwards.¹⁹¹ A map of the 1840s shows a weighbridge house here, on which the house 'Ty Machine', now 'Llys Difir', has been constructed (22,003: 18). At Traeth Coch (Red Wharf Bay) there was by 1811 a coal yard for the small export trade, which would have formed the lower terminus of the colliery railway had it come into being.¹⁹² It is possible that some elements of this survive in the present structures there. The failure to build a railway or a canal to the sea is itself an indication of the small scale of workings geared largely to the 'land coal' market. In 1810 Walter Davies recommended that the river from Malttraeth might be navigable for coal barges.¹⁹³ By the same token, the fact that the Anglesey Central Railway, when it opened in 1866, did not feel it necessary to construct sidings to the works illustrates the near-moribund condition to which they had then fallen.

¹⁹¹ *British Parliamentary Papers* 1841 XII, *Eighteenth Report of Commissioners (on Holyhead road) under 4 Geo IV* records a great increase of traffic from Malttraeth collieries; carts were overloaded with two tons of coal on one pair of wheels. *British Parliamentary Papers* 1844 XXXI, *Twenty first report of Commissioners (on Holyhead road) under 4 Geo IV* records more sinkage of road near Berw colliery.

¹⁹² LIRO WCD 30.

¹⁹³ Walter Davies, *op. cit.*, p. 254.

6. CONCLUSIONS

The Anglesey coal-field constitutes one of the smallest and least commercially successful of the recognised British coal fields. Its failure to develop was a consequence not primarily of the quality of the coal so much as transport and pumping difficulties, and proprietorship patterns, not least the reluctance of landowners and tenants to co-operate.

Overall, its archaeology has been significantly affected by the construction of two twentieth-century transport links, one of them the Benllech branch line, opened in 1904, which follows the basset of the coal-field in a way that has obliterated some workings, and the other the A5 road, which has been built over the main focus of Penrhyn Mawr colliery.

However, a number of sites have remained comparatively undisturbed, and preserve what are in effect fossilised examples of coal-working techniques of particular dates. One of these is Berw colliery, sunk in the early nineteenth century in land that had previously been marsh, and which had a comparatively short working life. As such, it illustrates typical features of a small early nineteenth century Welsh coal-mine.

The other is the Tyddyn Mawr area. It is clear from documentary evidence that this was being worked in the early seventeenth century, and as such constitutes an exceptionally rare example of a pre-Modern colliery in which certain features can be dated. However, while it is likely that other features in the immediate area illustrate the evolution of mining techniques from the shallow shafts and windlass-winding of the Medieval period to the more complex mechanisms introduced in perhaps the eighteenth century, many questions remain unanswered.

7. MANAGEMENT

7.1 Pressure

The fourteen sites identified by the present assessment, and the individual features within them, are subject to different pressures. Berw, Morfa Mawr and Tai Hirion collieries, as under the management of the RSPB, are subject to regular monitoring of surface features, and have been the subject of study by the University of Wales, Bangor and the Geological Survey. Close co-operation with these organisations should therefore be maintained.

Penrhyn Mawr has been largely destroyed by the construction of the new road. However, surviving shaft-upcasts should be preserved, and the site of the pump-shaft, with its surviving mechanism, marked on the ground.

Other sites are subject to agricultural pressures. It has been noted that many of the late eighteenth-early nineteenth century upcasts at Glan Traeth have been ploughed out or removed for fill in recent years. The most effective way to ensure their preservation is likely to be the publication of an article in the *TAAS*, backed up if possible by lectures to local groups, alerting residents to the significance of these features.

7.2 Mitigation

7.2.1 Contour survey

In the case of Tyddyn Mawr, where there is every possibility that a complex site contains rare archaeological evidence of pre-Modern coal-working, a ground contour survey should be undertaken in conjunction with detailed examination of geological evidence in order to establish the significance of undiagnostic features and to confirm that these features are indeed of national importance.

7.2.2 Monitoring

All the sites identified in the present assessment should be monitored in advance of, and during, any work likely to uncover underground features.

7.2.3 Outstanding archaeological importance

The surviving buildings at Berw colliery have been identified by the present assessment as of national importance.

Subject to the results of a contour survey as discussed in 7.2.1 above, surviving features at Tyddyn Mawr are likely to prove to be of outstanding archaeological importance.

8. ACKNOWLEDGEMENTS

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9. BIBLIOGRAPHY

9.1 Secondary works

- Anderson D, *The Orrell Coalfield, Lancashire 1740-1850* (Buxton, 1975)
- Archaeoleg Cambria, *Coastal Survey 1996-97 Strumble Head (Pembrokeshire) to Ginst Point Carmarthenshire* (February 1997) (Pembrokeshire collieries).
- Ashton TS and Sykes J, *The Coal Industry of the Eighteenth Century* (Manchester, 1964).
- Bassett TM and James G, 'Coalmining in Anglesey' *TAAS* 1969-70, pp. 137-8.
- Brown K, 'Anglesey's Ghost Railway', *TAAS* 1941, pp. 39-42.
- Cranstone D and Gould S, *Monuments Protection Programme: The Coal Industry Step 1 Report* (Cranstone Consultancy for English Heritage, 1993).
- Cranstone D, 'Early Surface Features of Metal Mining: Towards a Typology', *Mining Before Powder* (Matlock Bath, 1994), pp. 144-7.
- Davies W ('Gwallter Mechain'), *General View of the Agriculture and Domestic Economy of North Wales* (London, 1810).
- Dinely T, *The account of the official progress of Henry ... Duke of Beaufort through Wales* (London, 1884).
- Dodd A H, 'The North Wales Coal Industry During the Industrial Revolution', *Archaeologia Cambrensis* LXXXIV 2 (December, 1929).
- *The Industrial Revolution in North Wales* (Wrexham, 1990).
- Duckham, Baron F: *A History of the Scottish Coal Industry vol. 1 1700-1815* (Newton Abbot, 1970).
- Edwards G, 'The Coal Industry in Pembrokeshire' *Field Studies* 1 no. 5 (1963) pp. 33-64.
- Evans J, *Topographical and Historical Description of Anglesey* (London 1810)
- *The Beauties of England and Wales* (part 1).
- Greenly E, *Geology of Anglesey* vol. 2 (Memoir of the Geological Survey, 1919).
- Griffin A R, *Mining in the East Midlands 1550-1947* (London, 1971).
- Howells B, *Pembrokeshire County History III Early Modern Pembrokeshire 1536-1815* (Pembrokeshire Historical Society, Haverfordwest, 1987).
- Hughes R: *Enwogion Môn* (Dolgellau, 1913), pp. 56-7, entry for Hugh Hughes (1792-1876).
- Jones E E, 'Coalfield in the Marsh', *Country Quest* August 1972, p. 9.
- Jones E J, 'The Enclosure Movement in Anglesey (1788-1866) *Transactions of the Anglesey Antiquarian Association* 1926 pp.31-89.
- Kay G, *General View of the Agriculture of North Wales* (Edinburgh, 1794).
- Lancaster Archaeological Unit, *Telford's Holyhead Road* (Lancaster, 1999).
- Millard E and Hatcher J, *Medieval England: Towns, Commerce and Craft 1086-1348* (London and New York, 1995).
- Owen G, *Description of Pembrokeshire* (ed. Dillwyn Miles, Gomer, 1994).
- Roberts T, 'Awdur "Cob Malltraeth"', *Gwynedd Diwydiannol* cyf. 1 (1996).
- Smith R S, 'England's first rails: a reconsideration', *Renaissance and Modern Studies* 4 (1960), pp. 119-34.
- Taylor A J, *The Staffordshire Coal Industry*, (Stafford 1981).
- Taylor T J, *The Archaeology of the Coal Trade* (repr. Newcastle upon Tyne, 1971 of *Memoirs Chiefly Illustrative of the History and Antiquities of Northumberland communicated to the Annual meetings of the Archaeological Institute of Great Britain and Ireland*).
- White R, 'A Re-Excavation of Crug Las, Malltraeth', *TAAS* 1968, pp. 4-12
- Williams E A, *Hanes Môn yn y Bedwaredd Ganrif ar Bymtheg* (Eisteddfod Gadeiriol Môn, 1927)
- *The Day Before Yesterday* (translation of above by G. Wynne Griffith) (Beaumaris, 1988).
- Wood O, *West Cumberland Coal 1600-1982/3* (Cumberland and Westmoreland Antiquarian and Archaeological Society extra series xxiv [1988]).

9.2 Newspapers

9.2.1 Chester Chronicle

24 September 1779.

9.2.2 *Cambrian Register*

I p. 285

II p. 416 (1795-6)

9.2.3 *North Wales Gazette*

12 Jan 1808	Berth Hwfa farm adjacent to Malltraeth rivrer, to be let, prospect of coals, already worked on adjacent farm.
5 May 1808	Prospect of coal at Berth Hwfa.
1 Oct. 1812	Colliery to be let – this advertisement continued to be published until June 1813.
3 Dec. 1812	Bodorgan Colliery offered on lease; coals lie within 30yards of the surface.
26 Nov. 1812	Bodorgan colliery
21 April 1814	Colliery to let at 'Llanvehenal', 1½ miles south-west of Ceint.
28 April 1814	Colliery at Llanvehenal, coal good for 'caking'.
22 Sept. 1814	Griffith of Carreglwyd has let Berw colliery, and work has begun.
9 March 1815	Engine set in motion at Penrhyn Mawr colliery, landsale of coal.
14 June 1821	Shares in Berw Colliery (?Penrhyn Mawr), machinery consists of steam engines erected in 1815 and 1817, boilers, etc.
1 October 1829	Penrhyn Colliery

9.2.4 *Carnarvon and Denbigh Herald*

10 Feb. 1838	Sale of Berw (i.e. Penrhyn Mawr) Colliery; details of machinery.
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9.3 **Official publications**

9.3.5 *Report of Inspectors of Mines*

1874	Fatality at 'Nineveh' shaft.
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9.4 **Maps**

1" ordnance survey, 1841 (David and Charles reprint)

Anglesey series 25" maps XXII 1 (1900 and 1920), XXII 2 (1900) XVIII 11, 12, 14 (1900)

9.5 **Archive sources**

There is an extensive archive for these mines, in the Caernarfon Record Office (CRO), the Llangefni Record Office (LIRO) and the University of Wales, Bangor (UWB). Other documents are preserved in the National Library of Wales, Aberystwyth. These documents were consulted in the course of the present assessment.

9.5.1 *CRO*

XD	70	Twentieth century trials in Anglesey
XM	342	Report by W.W. Bailey on Penrhyn Mawr Colliery, 1830
X/Poole	5190	Note re lease of Penrhyn Mawr colliery, 1830
	5192	Draft lease of Penrhyn Mawr colliery, nd
	5193	Letter re lease of Penrhyn Mawr colliery, 1830
	5194	Letter re Penrhyn Mawr colliery, 1831
	5196	Letter of Penrhyn Mawr colliery
	5197	Bill for preparing lease of Penrhyn Mawr colliery, nd
	5198	Railway from Penrhyn Mawr colliery to Traeth Coch, 1811
	5199	Bill for survey of railway to Traeth Coch, 1810

5203 Notice of intention to apply for act of railway
 5207 Estimate of building railway
 5208 Estimate of building railway
 5215 Railway from Penrhyn Mawr colliery to Traeth Coch, 1811
 5325 'Berw colliery' and railway
 5326 'Berw colliery' and railway

1013 Letter re colliery at Malltraeth, 1772
 1072 Colliers must dig in marshes and rocks, 1778
 1140-1 Trials for coal, by newly-arrived miners, nd.
 1332 Dispute re Malltraeth Marsh
 1577 Speculation as to coal on Bodeon estate, 1813.
 1737 Draft affidavit, possibility of coal, 1789
 1873 Possibility of coal on Bodeon estate, 1813
 1887-8 Possibility of coal on Bodeon estate, 1819
 1888 Possibility of coal on Bodeon estate, 1819

9.5.ii LIRO

Tithe map Trefdraeth, (1841), Llanfihangel Esceifiog (1850)

WM 328/I-2 Instructions concerning Penrhyn Mawr colliery, 1845
 641/1 Papers re proposed railway to Traeth Coch, 1811
 649/1 Plan of railway from Penrhyn Mawr colliery to Traeth Coch, 1811
 649/2 Act for railway from Penrhyn Mawr colliery to Traeth Coch, 1811
 893 Act for railway from Penrhyn Mawr colliery to Traeth Coch, 1811

WCD 26-32 Plans of railway from Ceint to Traeth Coch
 35 Plans of Anglesey Central Railway
 37 Plans of Anglesey Central Railway
 38 Plans of Anglesey Central Railway
 39 Plans of Anglesey Central Railway
 40 Plans of Anglesey Central Railway

WQA RA1/24-32 Correspondence concerning Penrhyn Mawr colliery.

9.5.iii UWB

Plas Newydd liv 2699 Dissolution of Berw Coal Co., 1829
 3183-312 Papers re Penrhyn Mawr Colliery, 1810-1847
 3261 Map of workings, 1845
 3302 Valuation, Penrhyn Mawr colliery, 1847
 3303 Report on Penrhyn Mawr colliery, 1847
 3307 Report on Penrhyn Mawr colliery, 1847
 3310 Inventory and valuation, 'lifting engine', 1847
 3311 Inventory and valuation, 'drawing engine', 1847
 3312 Inventory and valuation, machinery at Penrhyn Mawr colliery,
 1847.

Plas Newydd 3iii 4422-3 Berw Colliery, 1828
 4643-97 Berw Colliery, 1811
 5059-132 Penrhyn Mawr Colliery, 1846-9 and 'Nant Coal Co', 1859

Plas Newydd 4iii 6495-910 Penrhyn Mawr Colliery, 1843-5
 8483 Lease of colliery to John Cartwright, 1747
 8484 Articles of agreement concerning Sir Nicholas Bayley's colliery,
 1742

Plas Newydd 5vi 1202-8 Berw (?Tyddyn Mawr) Colliery, 1811-2.
 1431-2 Agreement re collieries, 1596

Plas Newydd 6v	1492	Lease of Penrhyn Mawr Colliery, 1748
	B588	Map of lands in Llanfihangel Ysceifiog, 1850s
Plas Newydd 7	1136-222	Coal duties, collieries
Plas Newydd 8	3133	Penrhyn Mawr Colliery
Mona Mine	1401-24	Penrhyn Mawr Colliery 1803-1819
	1638	Penrhyn Mawr Colliery 1830
	1827	Waen y Nant Colliery 1855
Porth yr Aur	30564-86	Lease of Pen y Crug Colliery 1814
Ty'n y Gongl	239	Counterpart lease of Penrhyn Mawr Colliery 1849
	131	Lease of Pen y Crug Colliery.
Llwydiarth Esgob	326-8	Colliery papers 1828-1833.
Lligwy	24	Colliery speculators at work in Berw marsh, 1852
	133-95	Boston estate rentals, 1798-1866
	414-30	Taihirion colliery, 1854-5
	450-60	Correspondence concerning abortive revival of colliery, 1900-01
Lligwy Add.	1322-7	References to 'Pwll y glo' in Llanidan parish, eighteenth century
Bodorgan	1023	Lease of Glan Traeth
	1028	Lease of Glan Traeth Colliery
	B1579	Map of Bodorgan estate, Lewis Morris, 1720s
Llysduelas	78-80	Lease and assignment of Kinmel moiety, Glantraeth Colliery, 1827
	137-8	Lease of Morfa Mawr Colliery 1860
Henblas	675-6	
	1165-75	Correspondence re colliery, 1830, 1845, 1901
Baron Hill	1695, 1697-1700,	'An affidavit concerning the Cefni River being dammed'
Bangor mss	M/C Misc 4/112-3	Plan of Glantraeth Colliery by R. Hopkins, 1838.
	1675 (33)	Bill to Berw Colliery, (97) shares in Berw Colliery

9.5.iv *National Library of Wales*

Carreg-lwyd 1	25	River Cefni, 1636
	957	Damage to property by river
	1316	Dispute over river
	1750	Deed of covenant re working of coal-field
	1805-6	Colliery account, 1815-6
	1773	Colliery lease, 1839, with map
	1887	Coal sold at Berw, 1855
	2109	Lease of land in 'Ysceifiog' 1596
	2113	Township of Ysceigiog with right of mine, 1596
	2133	Proposed lease of collieries 1621
	2180	Assignment of land in 'Eskyveoke' 1576.
	2191	Lease of collieries, 1565

Carreglwyd 2	47	Sale of coals, 1692
	345	'loades of coales', 1639
	597	Plas Newydd and Carreglwyd colliery interests, 1813
	604-24	Plas Newydd and Carreglwyd colliery interests, 1813
	957	'An affidavit concerning the Cefni River being dammed'.
Panton Deeds	31	Particulars of sale of lands including Berth Hwfa, 1813

9.5.v *Coal Authority Mining Records, Burton on Trent*

866	Parcel F1	Plans of Pont Marquis Colliery
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9.5.vi *Public Record Office, Kew*

BPP1841 XII	<i>Eighteenth Report of Commissioners (on Holyhead road) under 4 Geo IV – great increase of traffic from Malltraeth collieries; carts overloaded with 2 tons of coal on one pair of wheels.</i>	
BPP 1844 XXXI	<i>Twenty first report of Commissioners (on Holyhead road) under 4 Geo IV – more sinkage of road near Berw colliery.</i>	
BT41/17/92	Anglesea (sic) Coal Company Ltd. Promoters: John Owen, Taynton House, Newent, Gloucs and others. Established: 1855. Aim: to work Berw Colliery.	
BT31/13852/120930	Anglesea (sic) Coalfields L.td. Promoters: various London clerks, brokers, etc. Established 1912. Dissolved: 1915.	
BT31/807/562C	Anglesea (sic) Colliery Company Ltd. Promoters: Liquidator of Island of Anglesey Colliery Company. Established: 1863. Aim: purchase of Brew (sic) Colliery. Liquidator appointed 1865.	
BT31/239/777	Island of Anglesey Coal and Coke Co. Promoter: Anguish Honour Augustus Durant, Owen family of Taynton, Newent, Gloucs. Established: 1857. Aim: to work Berw Colliery. Liquidator appointed 1863.	
BT31/13889/12189	Menai Collieries Ltd. Promoters: Charles Edward Foster, Sydney Robert Sheppard, Harington Onslow Thompson. Established: 1912. Aim: acquisition of mining lease of Malltraeth Marsh. Liquidated 1915.	

