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GWYDYR MINES

ARCHAEOLOGICAL ASSESSMENT (G1194A)

Prepared by

Gwynedd Archaeological Trust

for

Snowdonia National Park Authority

GWYDYR MINES
ARCHAEOLOGICAL ASSESSMENT

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GWYDYR MINES ARCHAEOLOGICAL ASSESSMENT

INITIAL REPORT

1. INTRODUCTION

Gwynedd County Council as Snowdonia National Park Authority intend to reclaim certain areas of derelict land within the Gwydyr Forest. As part of the reclamation scheme, Gwynedd Archaeological Trust have been asked to undertake an Archaeological Assessment of four former lead mine sites known as Alltwen, Coed Mawr Pool, Gwaenllifion and New Pandora Mine.

2. ASSESSMENT BRIEF

An initial report was requested from Gwynedd Archaeological Trust, assessing the likely archaeological impact of the scheme and suggesting mitigatory measures.

The basic requirement was for a desk-top study and field search to assess the impact of the proposed scheme on the archaeological and heritage features in the areas concerned. The importance and condition of known archaeological remains were to be assessed and areas of archaeological potential and new sites identified. Measures to mitigate the affects of the proposed scheme on the archaeological resource were to be suggested.

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

a) to identify and record the cultural heritage of the area affected by the proposals;

b) to evaluate the importance of what was identified (both as an integral landscape and as the individual items which make up that landscape); and

c) to recommend ways in which damage to the cultural heritage can be avoided or minimised.

The report covers the work done under the first two stages of assessment, documentary research and walking the area, and includes recommendations for later stages.

3. METHODS AND TECHNIQUES

3.1 Desk-top Study

The major aim of the assessment was to locate and identify the nature and extent of surviving features of archaeological interest. In the absence of up-to-date, accurate large scale topographical surveys of the designated areas, extant features or perceived zones of interest were indicated on to 1:5000 scale base maps assimilated from existing 1:2500 & 1:10,000 OS sheets. Although limited in scope and non-discriminating, these provided sufficient topographical information to enable the location and comparative juxtaposition of particular features to be verified and/or plotted. This was less successful in areas of dense forest cover. Additional data and indications of site phasing were obtained from plans drawn from documentary research undertaken by R.W. Vernon on behalf of the Trust.

3.2 Field Survey

The Survey was carried out during October 1994. Conditions were generally reasonable for field-work, with light and visibility good to average for the time of year.

Sites identified were marked on 1:5000 base maps as accurately as possible without surveying. A comprehensive photographic record of the site was made during the survey in both archive standard black & white print and colour transparencies.

Although offering a tentative interpretation of design and purpose, the survey data seeks to highlight the presence of features that may require further investigation. The archaeological status of all identified features is indicated on record forms devised for the purpose and recommendations made, where appropriate, for further evaluation or particular mitigatory measures.

The survey records do not necessarily refer to discrete archaeological features, but may be used to identify more complex areas of interest. All surviving features are shown as aspects of the present day landscape without particular reference to phasing.

SUMMARY OF MINE SURVEY

4. PANDORA MINE

4.1 Introduction

The Pandora Mine is located to the south east of Llyn Geirionydd near Trefriw in the Conway Valley. The mine has a recorded history from the 1840s and was last worked in the 1920s. Altogether four main lodes, and several minor ones, were worked. Many of the features around the main shaft (Pynes Shaft) date from this century, whilst other features, adjacent to the road to Llyn Geirionydd, date from between 1878 and 1880. Peripheral remains include tramways, reservoirs and leats. During its history the mine has been referred to as Foel Ddu, Willoughby, Pandora, Welsh-Foxdale and the Eagle. However, the name Pandora is in general usage for this mine site.

4.2 The Mine Workings

Pandora started life as a lead mine, but around the end of the 19th century became a zinc producer. The workings are located on four lodes: Goddard's, New, Champion and Francis. During the driving of the 33fm level on the Goddard's Lode, four minor cross lodes were intersected. Initial workings were confined to the backs of the main lodes, but an adit level, the Pontifex Level, was driven to intersect the 33 fathom level, and completed in 1907. The main shafts are known as Pynes or Main, Ladderway or Footway, Spion Kop and Goddards.

Goddards Lode. This lode trends north-south and has been worked southwards to its intersection with the Francis Lode. Pynes shaft is located at the northern end of the workings. The shaft is vertical and about 100 metres deep. Levels at a depth of 13, 23, 33, 45 and 55 fathoms have been driven southward from it. The shaft was used for bringing ore to the surface and was the main pumping shaft prior to the construction of the Pontifex Adit which drains into Llyn Geirionydd. There are at least seven surface shafts on the Goddards Lode, the most southerly one is believed to be called Goddards. This shaft was sunk in an area adjacent to the Champion Lode, where Goddards Lode was starting to split up. Underground, the workings are connected to the surface via a winze on the Francis Lode. Several minor lodes have been explored from the 33 fathom level.

The Goddards Lode is also cut by four cross lodes, which do not appear to have been identified on the surface. However, the third, referred to as the John Harker Lode, would

outcrop in an area of extensive spoil, where several shafts are located. Cross lodes 1,2 and 3 are on a similar trend to the Champion Lode. The fourth cross lode, from its trend and position, is undoubtedly the Francis Lode.

Champion Lode. This lode runs north-east/south-west and has been accessed by several short levels driven in a south-east direction. It has been stopped up to the surface over much of its length.

Francis Lode. This lode trends roughly east/west and intersects the Goddards and Champion Lodes. It is of minor importance and workings are confined to levels close to the surface.

New Lode. This lode runs roughly north-east/south-west and intersects with Goddards Lode near Pynes Shaft. This lode was discovered when northern drivages on the Goddards Lode intersected it. An inclined shaft, used primarily for pumping, was put down on the lode. Similar to the Goddards Lode workings, 13, 23, 33, 45 and 55 fathom levels were driven and in the main were connected to the Goddards workings by short cross cuts. The 33 fathom Level is the most extensive running towards Tyn-y-groes cottage. Near the cottage, a rise was put up with the intention of connecting through to the surface, but this was never completed. The open Spion Kop Shaft is located on this lode.

The Pontifex Adit is about 410 metres long and intersects the New Lode.

4.3 Historical Summary

Although there are no known records for the early days of Pandora, the mention of John Harker would suggest that he may have been working the mine about 1800. In 1843 Pandora was regarded as an old mine. In that year Robert Evans commenced clearing out old workings at Foel Ddu, the former name of Pandora. Between 1843 and 1845 up to two men were sinking on good spots of lead, probably on the Champion Lode.

Several other operators, including Thomas Roberts, Edwards Roberts, Hugh Roberts, Messrs Hughes and Williams worked the mine successively from 1848 to 1862, doing little more than raising a few tons of lead and washing blende from the old hillocks.

Thomas Goddard, an operator of several adjacent mines, took over the lease in 1868. In his best year 1870 he raised 119 tons of ore, with up to 18 men in his employment. Goddards success attracted investment in the mine, for in May 1871, the Willoughby Mining Company Ltd. was registered, and took over the lease. They had very soon built a mine office, waterwheel pits and had commenced sinking an engine shaft on the Goddards Lode. By the 23rd November, the Engine Shaft (soon to be named Pynes after the Company Director), was down 10 fathoms. Two waterwheels had been erected, one to pump and work dressing machinery at the mill site, adjacent to the Geirionydd Road. The other was erected close to Pynes Shaft and was used to wind ore. One year later, New Lode had been discovered. Initially all seemed to go well with outputs of both lead and zinc ores annually in excess of 100 tons. The manpower fluctuated between 30 to 57 men. The 13 and 23 fathom levels were being driven with vigour. However the problem that plagued many mines in the Gwydyr Forest was soon to rear its head: insufficient water to work the machinery in the summer, leats frozen in the winter, and high winds damaging machinery. Captain Henry Nottingham, the Mine Captain, and the Directors tried to maintain their optimism in the mine, but soon had to face reality. Although the ore was there, they could not produce it fast enough to meet operating costs and so the company was soon in debt. In August 1874, after an unsuccessful appeal to shareholders for more money, a resolution was passed to wind up the Company. However, the Company weathered this emergency and actually made £300 profit in 1875 and Pynes Shaft was sunk below the 23 fathom level and the dressing floors extended.

A new Company, Pandora Lead Mines Ltd was formed in November 1876. When it did finally take over the lease in February 1878 it was under the same management, but the opportunity was taken to re-structure the Company financially. Shortly afterwards, despite

once again getting off to a healthy start, there was inadequate water to turn the pumping wheel and the mine became flooded. One of the Directors conducted informal talks with the Mineral Corporation of Great Britain who operated the adjacent Hafna Mine, with a view of extending the Hafna workings westward to de-water Pandora.

However, the rest of the management snubbed this proposal and the shareholders passed a vote of confidence in the managers of Pandora for the company to operate as normal once the mine was again in operation. This action, however, did bring about some change, for the company purchased a small semi-portable steam engine from Robeys of Lincolnshire. The engine could be attached to the pumping bob, should the water supply be inadequate to turn the pumping wheel.

By 1881, the Engine Shaft was being sunk below the 45 fathom level, and a tramway was being arranged to get ore from the south level, presumably on the Champion Lode. The dressing floor was further extended with the addition of jigs and a buddle, and a raff wheel was put on the Crusher. However, a new problem was developing. The small drawing wheel used for hauling the ore to surface was reaching the limits of its power, as it was having to wind ore up from a deeper point as shaft sinking progressed. It was a 14ft diameter wheel, and it was suggested that it should be replaced with a 24ft waterwheel.

Output at this time was often exceeding 200 tons per annum of both lead and zinc ore. A reasonable output for an operation of this size but minuscule compared to larger undertakings in the Principality.

Falling lead prices took their toll and by October 1882, the Company had liabilities of £2324 -19s-0d. After a failed attempt to raise money, the Company went into receivership.

Alfred Endean, a notorious share dealer, who had already successfully made profits from ownership and share dealing on the Llanrwst Mine, acquired the lease of Pandora in February 1884, and just as quickly in April floated the Standard Lead Company Ltd. He brought with him his entourage from Llanrwst Mine and Captain Borlase soon started sinking below the 45 fathom level. To improve pumping the Company purchased the 60ft diameter waterwheel from the Clementina Company but this was never erected. They also constructed new reservoirs and replaced the winding waterwheel which seems to have also been used for pumping. The dressing floors were also modernised and an engine was erected alongside the new winding and pumping wheel. By August 1886, with the shaft down to the 55 fathom level, every thing was in place for an announcement in the Mining Press proclaiming great discoveries of lead had been made at Pandora. However few rose to the bait, and the Company Meeting in 1887 was held behind closed doors. On 18th February 1888 an auction was held to sell the mine lease, plant and machinery. It is unclear what happened at this point and for several years the mine was unlet, even though some ore was weighed and the pumping machinery kept in working order.

The Welsh-Foxdale Company was to be equally unsuccessful, employing at the most 8 men. It only held the mine from 1894. A year after the Company had been floated, a plan was produced showing the mine sett to 1899. Apparently little was done other than erecting a stone breaker and dressing blende. Intriguingly, the plan shows a dressing shed adjacent to the old dressing floor of the Willoughby Company, possibly indicating some reworking of the dumps.

However, fortunes were about to change for Pandora, as the English Crown Spelter Company Ltd, major zinc producers based in Swansea, were having tax problems with their Italian operations. They operated a major zinc mine near Milan. A change of Company policy together with soaring zinc prices meant that they could profitably operate a zinc mine closer to home. Pandora Mine was their choice. They formed a subsidiary Company, the Welsh Spelter Company Limited in 1899, and in December that year commenced operations at Pandora, having leased nearly 1000 acres of land.

A priority was mines drainage, so they commenced a drainage adit from the south-east side of Llyn Geirionydd to connect with the 33 fathom Level. It was named the Pontifex Level, after the Company Chairman.

By September 1901 the Welsh Crown Spelter Company had built the following:

(i) A house for the Mine Captain with commodious managers office above and two comfortable spare bedrooms.
(ii) A general office with store below.
(iii) A miners dry house.
(iv) A carpenters shed.
(v) A large barrack house for the miners.
(vi) A smithy.

Most of the buildings were in a state of ruin, but they were repaired without quarrying a single stone. They used stone from the wheel pits, and also scrap timber and iron on site.

The Company installed an electric generating station with a 50 H.P. dynamo worked by a water turbine, built next to the Pontifex Level. It was used to light all buildings and the Pontifex Level. In addition, electric rock drills were purchased to be used in the driving of the Level.

A timber headframe was erected on the drawing shaft, and an electric winding engine was installed.

They also built a tramway, which ran south-west from the mine, and down the hill to Geirionydd. It then ran along the east side of the lake. Beyond the lake, an aerial ropeway was used to take the ore to the Klondike Mill which had been built in the Crafnant Valley. It was powered by turbines using water from Llyn Geirionydd.

By 1904, the company was employing up to 120 people, and the mine produced its best tonnage of 731 tons of blende. This was against a background of falling spelter prices and milling problems. A year later shareholders were beginning to ask questions about the Company's performance, and so in an attempt to pay a dividend, the English Crown Spelter Company wrote off the Welsh debts. In addition it was reported that a Manchester company was showing an interest in Pandora.

This Company, the North-West Spelter Syndicate, took up the lease for a short time in 1906 and did some underground development work. Shortly afterwards, the ball was back in the court of the Welsh Crown Spelter Company, and on the 18th and 19th July 1907 the mine and the Klondike Mill were sold.

James Griffith took up the lease and persevered with the drivage of the Pontifex Level. On 20 June 1908 his drivage team holed through to the Pandora workings. Work was halted and the mine together with the Klondike Mill sold to the New Pandora Lead Mining Company. This Company was registered on the 3rd December 1908. Operations appear to have been confined to mining ore, though with little accompanying development. In March 1912 mining operations ceased, and on the 7th August of the same year, the Company wound up.

During the Summer of 1912, Hafna Mines Ltd extended their operations to include Pandora. Their main interest was directed towards the Pandora Electricity Generating Station next to the Pontifex Level. They very soon had erected an electricity transmission line from the Station to Hafna. They may have done a little prospecting in the mine, but overall nothing of significance was carried out at Pandora during the war years.

After the War, most of the surface development was confined to the area around Pynes Shaft. The tramway link to Klondike had been dismantled. Presumably the iron rails, as scrap, were required for the war effort.

In 1918, there was renewed interest probably due to Government Grants that were available to promote British industry. A.J. Salisbury-Jones took on the Pandora lease in 1918 and quickly started prospecting. In 1919, 24 men were prospecting, driving levels, laying tramways, constructing and erecting plant, machinery and pit-head frame for the Western Development Company Ltd. But despite the outlay, work was confined to prospecting and sampling stopes at the southern end of the New Lode which was extended for about 120ft on the Adit level. A rise was also put up to the 23 fathom level.

The last serious and prolonged attempt to work Pandora commenced in 1920, when the Eagle Lead Co. Ltd. bought the mine off the Western Development Co. for £47,500. By 1926 a new mill was under construction, but was not completed until 1928. In 1927 a compressor was erected and four drills were in use underground. Everything was again powered by electricity.

The mill was separating ore using the oil flotation method. The Pandora ores, however, proved to be too complex for it. Difficulty was being experienced in getting the correct balance of reagents in the process and the efficient separation of ore, from the shale, was not being achieved. On the 5th December 1930, a special resolution was passed to wind up the Eagle Lead Company. During this period, water was introduced into an underground turbine via pipes in the Spion Kop Shaft.

In the 1930s, Messrs Ditmus, Ware and Froggatt leased the Mine, but no work of any significance appears to have been conducted. Froggatt, the manager for the Eagle Company, is understood to have lived on site for a number of years after the mine closed. The only one of the trio to maintain optimism in the mine was Ware who rented Pandora on a yearly basis up to 1948.

4.4 The Survey Area

The survey area includes two technologically distinctive sites relating to both the extraction and processing of lead and zinc ores. The area is physically divided by a public tarmac road at the southern end which effectively isolates those remains associated with the earliest processing methods used on the site. This southern zone also incorporates spoil associated with workings at the Tal-y-llyn Mine.

The designated survey area encompasses most of the physical remains belonging to all periods of working on the Pandora sett, with the exception of the Pontifex level portal and the site of the generator house located on the eastern shore of Llyn Geirionydd, and the larger reservoirs that fed the leats providing water power to the mine which lie further east.

Unlike many of the Gwydyr mine sites, Pandora is mostly clear of forest plantation and so evidence of some of the more transient features that may be expected on such a site can still be seen, despite other forms of disturbance. The present day extent of survival or preservation of particular features is to some degree due to the variance in approach to land management by different landowners.

Fittings and building materials have been stripped from all surviving structures within the survey area at one time or another. It is still possible, however, to verify the location of the structures and features on the ground that are indicated from the documentary sources.

4.5 Summary of Features

The site can be split up into three main areas centred on Pynes Shaft, the Champion Lode outcrop and the 19th Century Dressing Floors.

Many of the features associated with the later period of working, at the north end of the site, have been demolished; coarse spoil and building debris have been removed from the site at a number of locations and an attempt made to level the remains where possible. Much is now

grassed over as pasture. The ground on, and surrounding some infilled shafts may be unstable depending on the nature of the fill.

The following features however can still be identified:

(i) Manager's house - stone construction that may have housed an earlier winding engine.
(ii) Winding engine house - concrete foundations and footings for the headgear above Pynes Shaft - orebin and conveyor.
(iii) Flotation Mill - concrete foundations, converted to sheep pens.
(iv) Compressor House - concrete and stone foundations and walls.
(v) Remains of other stone buildings - stable, miners dry, assay office and smithies.

The central area, east of Ty'n-y-groes, contains evidence of some of the earliest working, on the Champion Lode which is accessed by several shallow adits and shallow shafts. Dressing floors, an aqueduct, leat and tramway are evident. A small brick powder magazine is located to the south of the workings. Outside the survey area, to the east, the remains of the original powder magazine can be found on forestry land. The central area appears more derelict than disturbed, and is more given to natural regeneration.

The 19th Century dressing floors of the Willoughby, Pandora and Standard Companies are located on the south side of the minor road. Structural remains consist of a pit for a 60ft wheel which housed the main pumping wheel and drove dressing machinery. Spoil comprises mainly fine processing-waste; associated structures have been largely demolished, but traces of wooden foundations protrude through the spoil in places. North of the 60ft wheel pit are dressing floors associated with the Welsh-Foxdale period. The remains of another, smaller wheel pit and part of the foundations of a dressing shed are just visible, although both are truncated by a later tramway embankment.

Further mine workings occur to the west of the dressing floors on the periphery of the survey area. These are associated with the Ffrith Talyllyn Mine. The remains consist of several open shafts, an adit and a tramway embankment. There is some evidence of rudimentary hand dressing.

Though many of the leats have silted up or been infilled, it is still possible to follow their routes. The water intake to the Spion Kop Shaft, which was piped down the shaft to an underground turbine is still discernible. Water from the principal leat, that roughly follows the outcrop of the Champion Lode, was carried on launders across a small valley to the Spion Kop Shaft. The launder take-off point and the foundations of several of the support pillars are still visible.

5. ALLTWEN MINE

5.1 Introduction

The Alltwen Lead Mine is located on the eastern side of Llyn Sarnau at Nant Bwlch-yr-Haiarn to the north-west of Betws-y-Coed. The site consists of some ruined buildings and the foundations of the dressing plant clustered around the adit portal. The complex illustrates a simple lead mining operation of the last century.

5.2 The Mine Workings

A level has been driven eastwards from the shore of Llyn Sarnau for a distance of about 210 metres on the east-west Old Alltwen Lode before it reached the north-south Bryn Eisteddfod or Alltwen Lode. This lode has then been followed northward for a distance of about 190 metres. The portal of the level is located in a shallow cutting on the Alltwen site and is blocked. On the Alltwen Lode a sump, 78ft deep, has been put down on the lode.

An air shaft from the surface to the level may be present about 40 metres along the level, but this is not discernible on the surface.

A series of shafts and open stopes (some partially backfilled) are present on the line of the Alltwen Lode, but it is not known if they connect directly with the Alltwen Adit workings. It is suspected that water flows naturally down the lode to the Alltwen Adit.

5.3 Historical Summary

The first known proprietor of Alltwen Mine is a Mrs Jones who employed eight men. Some lead ore was raised, but there is no evidence to suggest that the mine was being worked in any planned fashion.

The mine was idle during the 1830s but in the 1840s, a succession of small partnerships and even one man on his own, were at work, probably not doing much more than picking on the back of the lode.

During the 1850s Edward Bellis, a Mine Agent from Llanrwst, and his partner, Edward Edwards, conducted a more sustained operation, employing up to 15 men. However, by 1861 the mine sett had been acquired by Adam Eyton J.P. of Plas Llanerch-y-Mor, Flintshire, who operated mines, a lead smelter and rolling mill in that County. Eyton soon built a smithy and an office adjacent to the Adit. Despite raising 10 tons of lead ore in the first year of operation, interest soon dwindled and subsequent progress was confined to intermittent driving of the adit by two or three men. This was primarily being done to obtain access to earlier workings on the Alltwen Lode. In 1870/71 some 40 tons of ore were weighed, probably material stockpiled during the driving of the Adit.

In 1875 Howard C. Parkes purchased the lease and machinery of the mine from Eyton. Parkes quickly resold them to the Whitecliff Lead Mining Co. Ltd. which was floated in 1876. This company was principally the concern of a group of Birmingham speculators. By 1878 the workforce had risen to 28, work had been done on the reservoir, and in erecting the dressing floor and sheds. However, with a change of Director later that year, the Company concentrated on working the adjacent Gorlan Mine and no further work was conducted at Alltwen. The Whitecliff Company went into liquidation in 1883.

The Alltwen sett was leased from 1905 to the 1920s to Charles Holmes, the owner of Parc Mine, but no work was carried out at Alltwen Mine.

5.4 The Survey Area

Alltwen was a small, self contained concern, sited at the north-east end of Llyn Sarnau. Forestry plantations have engulfed the northern side of the site although it is still possible to identify a number of surviving features.

The modern forestry road has replaced an earlier track and is now carried by an embankment where the lake was once forded. It has truncated some features on the site. The nucleus of the surface remains lies on the north side of the road and is characterised by an open expanse of fine spoil.

5.5 Summary of Features

The Alltwen Adit survives as a stone revetted level culminating in a portal, now collapsed, from which water still issues. Parallel with the level on the east side is a metalled tramway or barrow run. West of the level is the site of the dressing floor where the remains of two buddle pits and traces of a rectangular structure can still be seen. A small waterwheel, location unknown, probably once operated a crusher and the buddle pits.

South of and also disturbed by the forestry road lie the remains of another rectangular

building, a much ruined store house. West of this feature, at the lakeside is a simple hand dressing floor.

A small overgrown reservoir lies on the east side of the site above the dressing floor. This would have provided water for the waterwheel and dressing operations. Further east again, now under heavy forestry, was the site of the magazine. This was not located during the field survey.

A hand dressing floor can be seen at the northern end of the survey area, adjacent to an infilled level. Similar partially infilled and overgrown workings can be seen in the forest outside the survey area to the north and east.

6. COED MAWR POOL MINE

6.1 Introduction

The Coed Mawr Pool Mine lies about one mile to the north-west of Betws-y-Coed mainly in the topographical depression occupied by Llyn Pencraig.

The mine workings are primarily located in three geographical areas. The most extensive lie on the south and east sides of the lake in the "Coed Ground", land that was once part of the Gwydyr Estate. On the north side, workings extended northward towards Ffridd in an area consequently known as "Ffridd Ground", part of the Pencraig Estate. The third area which is remote from the main area of mining lies about half a mile south of Llyn Pencraig on the banks of the River Llugwy. This is the mouth of the Pool Adit which was driven north-eastward from the north bank of the river at the turn of the century to de-water the Llyn Pencraig area. The area around the adit was to become the principal mine site this century.

6.2 The Mine Workings

The Coed Mawr Pool mine was primarily a lead mine, though infrequent weighings of zinc blende were recorded. The mine was mainly worked during the last century.

The mine worked three main lodes, two of which are described as being on an east-west trend. However, these two lodes, the Cyffty and the Challinor actually trend NW-SE and NE-SW respectively. The third lode, the Ffridd is N-S in alignment and runs from the Llyn Pencraig area to Llyn Sarnau. The Challinor lode appears to be regarded as the main lode and the earliest workings appear to be on it. Mining was predominantly carried out from shafts, the topography being unsuitable for driving surface adits except in the most shallow workings.

Several other minor lodes occur also on an E-W alignment and have been tried in places.

Apart from very rough sketches dating from this century, there are no known accurate mine plans of the Coed Mawr Pool workings. Knowledge is therefore restricted to description in sources such as the *Mining Journal* and information gleaned from observations made by various mine operators working adjacent mines during this century.

The Ordnance Survey maps on a scale of 1:2500 show a number of mine shafts, some of which can be named from their relative positions. However, because of activities connected with forestry, some shafts are no longer visible, being covered by surrounding spoil. Several shallow adits can be seen in the cliff backing the south-east side of Llyn Pencraig.

6.3 Historical Summary

It is easy to speculate that some of Sir John Wynn's early trials for lead were around Llyn Pencraig in the early 1600s, as the first mention of lead being worked dates from that period. Edward Lhwyd's records in his *Parochialia*, written in 1697, that one Robert, son of Hugh,

ninety years of age, once raised lead ore near a pool called "Coedmor" on the Gwydyr Estate, a reference that could really only apply to the Pencraig area, the farm of Coedmor lying just to the east of the lake.

Observations made in 1793, state "that there are Roman rakes running parallel and closing at a shaft sunk about 1753 within seven yards of Pencraig Lake" ... " the rakes are 112 yards long and the shafts 10 yards deep." Rakes - lodes worked on the surface - do occur on the south side of Llyn Pencraig and prior to lowering of the level of the lake would have been within 7 yards at their eastern extremity.

Records become more accurate in the 1820 to 1840 period when several groups were working the mine. Thomas Challinor probably worked the most productive mine, keeping three men working and weighing 30 tons of lead ore between 1833 and 1835. By 1843 Challinor had erected a waterwheel and pumping equipment, but lack of water restricted operations and he left in 1844.

The problem of de-watering the mine workings in this relatively low lying area was to plague the mine operators for years to come. There was insufficient water to turn the waterwheels in the summer and in the winter the water leats were frozen up. Without pumping, the mines filled with water and limited work could be carried out. It was only with the Pool Adit de-watering the mines this century that the problems caused by mine water were finally overcome.

Both Morris Jones and William Prosser tried their hands as individual mine operators with limited success. However it was the entrepreneurial instinct of the latter that led to the formation of the Coed Mawr Pool Lead Mining Company in March 1851. All the two thousand shares at £10 each were soon taken up, enabling the proprietor to increase the workforce to 60 men. By August the mine manager, Captain Jones, reported that two engine shafts were being sunk which would reach the lode at a depth of 30 yds. Also two thirty-foot diameter waterwheels were being erected. However work came to a halt when drivages going northward under the lake lead to water from the lake to leak into the workings. This problem was overcome by lowering the level of the lake with a cutting, and later a drainage tunnel, on the south-west corner of the lake and bringing more water into the area to turn the water wheels. The Company also obtained an agreement with the Ffriddllechwedd Company operating the Ffridd mine to the north, to allow their water to also be used at Coed Mawr Pool. In addition the Pencraig Mine (Cyffty) to the north-west was also using water from the same reservoirs.

The work to control the water in the workings was successful and shortly afterwards the mine was restructured and refloated on the Stock Exchange in 1857 under the same name. During the lifetime of this Company, the principal shafts and waterwheels were extended to four, including one of 50ft diameter which was used for pumping in two shafts. A new main shaft was also sunk on the junction of the Chandlers and Ffridd Lode. However by 1865 the mine had a new proprietor, Edward Wynne Thomas.

Thomas was extending his interest from the adjacent Pencraig Mine with which he had been involved over the previous 20 years. The idea had evolved, that if all three mines, which used the water in the Llyn Pencraig area were amalgamated, then economic use could be made of the water. In addition a number of mines would benefit if a deep drainage level was driven northward to Llyn Pencraig from the north bank of the River Llugwy. This was achieved with the registration of the Carnarvonshire Consolidated Lead Mines Company Ltd. in 1866. However, what should have become an efficient mining company fell foul of devious share dealings and accusations of malpractice. By June of 1868 the mine was in the hands of a caretaker, with the deep level having been driven some fifty fathoms, and only forty tons of ore weighed.

For a few years Wynne Thomas repossessed the mine but only raised a few tons of lead. In 1870 he attempted a revival by forming the Bryn Llugwy Lead Mining Company which leased

both the Coed Mawr Pool and Ffridd Mines. However the Company soon ceased operating, though was not formally dissolved until 1883.

The next company to promote this mine was the Coed Mawr Pool Lead Mining Company of 1879, which had taken up the lease a few years earlier. Between then and 1879 they had driven 140 fathoms on the 20 fathom level and 25 fathoms on the 28 fathom level, the deepest point in the workings. At the same time, the Deep Adit had been driven over 80 fathoms. However, this company was never actually floated on the Stock Exchange. Things came to a head in the winter of 1879, when the 12" axle of the 50ft pumping wheel fractured, and the mine became flooded.

The Coed Mawr Pool and Ffridd Lead Mining Company took up the lease for the two mines in 1881, the Deep Adit was to be driven with vigour and at the end of 1882 the Company had 21 men working there. By 1884 progress was sporadic and by the end of the decade the mine had been repossessed for breach of contract. It had been an agreement in the lease for the mine, that the Deep Adit was to be completed.

A new lease was soon taken up in November 1890 by William Wright of Llanrwst, and William Jones of Betws-y-Coed, a mine manager. However, they made little advance in driving the Deep Adit which had been driven 611 yards by 1899 when they gave up the lease.

For nearly 20 years various parties had dabbled with the Deep Adit. No ore was weighed in this period, which was a time when it commanded a low price on the world market.

However, the year 1899 saw the arrival of the Coed Mawr Pool Lead and Blende Mining Company, the word Blende being used in the title of the Company for the one and only time, reflecting the high price that zinc ore was attracting at the turn of the century.

The first phase of the Company's activity lasted until 1905 when all efforts were concentrated on driving the Deep Adit under the mine. Despite the employment of an air compressor powered by a water driven pelton wheel to provide air for compressed air drills, the water supply was inadequate. In 1905 work was suspended whilst a steam engine was installed to work the compressor. On the 20th December 1907, the Adit was holed through to the Coed Mawr Pool workings, and work was started immediately in erecting an ore chute and laying rails in the adit. However, for no apparent reason the Company embarked on a course of voluntary liquidation on the 12th May 1908. But once again the lease was soon retaken.

The Pool Mining Company was registered on the 3rd November 1908. The Company soon set out to work the mine, putting 20 or so men to drive the 20 fathom level in an easterly direction. By September 1911 the mine was once again standing. About 100 tons of lead had been raised and was dressed in the mill on the south bank of the Llugwy opposite the Deep Adit.

Great Challinor Mines Ltd was the penultimate Company to work Coed Mawr Pool or Pool Mine as it had become known. Lloyd, the Mine Captain, wrote glowingly of the mines prospects, possibly influenced by his experiences as a tributer at Coed Mawr Pool in 1906. Although they had acquired the lease in 1914, they did not float the Company until 1918. Despite their ambitions, the Great Challinor Company failed and a liquidator was appointed in 1920.

One last flurry of activity was to happen with the arrival of North Wales Mines in 1926. Under the management of Sidney Kitchen they soon employed more than 20 men, and during the first few months small amounts of lead were weighed. This did not persist and by March 1927, the mine had ceased production for the last time.

6.4 The Survey Area

The mining remains associated with Coed Mawr Pool Mine extend over a wide area of the

Gwydyr Forest. The extent of these are shown on Fig. 1. They are mainly related to the reservoirs and leats which supplied water to operate the pumping wheels. Principal reservoirs include Llyn Bodgynedd and Llyn Ty'n-y-mynydd, water being carried from each by the Bod Leat and Low Leat respectively. Once in the Llyn Pencraig area, the water was directed to the various waterwheels via additional leats and launders. Many of these particular features can still be traced although most lie outside the survey area.

The Pool Adit has a few remains associated with it. Immediately adjacent to the adit is a small storehouse, and a number of metal turbine pipes are also scattered around the area. The mill buildings were situated on the south side of the river and concrete and stone foundations can still be seen as well as supports for a bridge that carried services back and forth across the river.

Much of the site within the survey area has been affected by forestry, to a greater or lesser extent. Surviving structural remains across the site are fragmentary and much of the informative topography of the site is now lost through bulldozing, carried out to infill and level parts of the site for tree planting. This has obliterated a number of features indicated from documentary sources and confused the subsequent identification of surviving features through problems of relative juxtaposition. This is especially true of sub-surface features such as shafts. Nevertheless, a number of interesting features do survive at particular locations.

6.5 Summary of Features

On the west side of the site the course of the Llyn Pencraig drainage level, constructed in the 1850s to reduce the level of the lake, is still clearly visible for much of its length. This feature survives as a stone lined embankment and cutting at the lake end, becoming a linear feature further south, comprising open cuts intersected by a number of shafts - the remains of workings for the tunnel that superseded the cutting. The drainage level is cut at its north end by the forestry road. Spoil tips lie along the western edge of the feature. At its south end, outside the survey area, is a waterwheel, No. 2 wheel, which also dates from the 1850s.

On the north side of Llyn Pencraig traces of several structures can still be seen, and despite fairly extensive levelling across parts of the site, the function of some of these may still be discerned. Most surviving features, however, lie outside the survey boundary. Fifteen years ago it was still possible to see the remains of two waterwheel pits here; it is presumed that these were for pumping and dressing purposes. Physical evidence of ore dressing here is slight and most of the evident spoil is coarse and sterile.

Opposite, on the south side of the lake, there is an area of levelled spoil and dressing discard. A number of infilled shafts and rectilinear pits, that may have once housed linkage or machinery, are located along the west side of this area and coarse spoil in proximity to these features is revetted, forming what may be tramways or barrow runs. Dressing floors occupy the north-east side of the area where low mounds of fine processing waste overlie coarser spoil. Traces of stone slabs or footings may be part of a paved dressing floor, others appear curvilinear, and may be the vestigial remains of buddles or horse whim circles.

The east side of the lake contains perhaps the most complete and correspondingly interpretable surviving remains. Most evident is the pit for a 30ft diameter waterwheel, dating from 1851. This feature is unusual in that water flowed from the wheel pit via a rock-cut tunnel on the lower, south side to rejoin a leat. Water to the wheel was conveyed via a rock-cut leat and an aqueduct (a launder) on the north side. The stone pillars that once carried the launder to the wheel are still visible. Other features include machine housing, a circular magazine, orebins, and capstan pits, so far unique to this site within the Gwydyr Forest. Close by the remains of other structures, including the mine office, lie outside the survey area to the south-east.

The area is otherwise characterised by coarse spoil derived from adjacent workings, few of which are now apparent - the area has been substantially damaged by bulldozers in the recent past and the present configuration of the spoil tips is misleading, although fragments of

revetment survive in places, indicating the presence of tramways or barrow runs and other small structures that may have been sorting sheds. South east of the wheelpit are dressing floors typified by several low mounds of fine spoil which obscure traces of other less substantial structures.

7. THE GWAENLLIFION MINES (Including the D' ERESBY CONSOLS ADIT)

7.1 Introduction

The Gwaenllifion Lead Mines are located in an upland area to the east of Nant Bwlch-yr-Haiarn to the north west of Betws-y-Coed. The sites are centred on a group of lodes which were worked by shallow shafts and stopes; the ore was dressed by simple hand methods. Many examples exist within the complex that illustrate early mining and ore dressing practices.

The D'Eresby Consols Adit, located at the northern end of Llyn-y-Parc, was driven in a westerly direction to de-water the mine workings and prove the extension of the lodes below the Gwaenllifion workings.

7.2 The Mine Workings

No accurate mine plans are known to exist of the Gwaenllifion workings. The only information available is a description of a survey and a rough plan made of the D'Eresby Consols Adit in the 1950s by Llanrwst Lead Mines Ltd., the company that worked the adjacent Parc Mine.

Workings exist on five main lodes, which are from east to west: Suttons, Red, Owens, New and Cobblers. Suttons Lode runs roughly east-west and may be a continuation of the east-west lode worked at Alltwen Mine. Surface workings consist of occasional shafts on the back of the lode. The D'Eresby Consols Adit was driven about 100 metres on this lode.

Red Lode runs approximately north-south and workings on it do not appear to be extensive. The name would suggest that this lode was pyritic in nature. A branch off the D'Eresby Consols Adit follows this lode for a short distance in a northerly direction and Newtons Shaft has been sunk down from the surface on the back of the lode. An adit has also been driven south on this lode at Parc Gate.

Owens Lode runs approximately north-south and has been worked extensively at surface. Most of the workings consist of shallow open stopes and hold water. Several shafts, including Owens, have been sunk on the lode immediately to the south of the open stoping. The D'Eresby Consols Adit has been driven both north and south on the lode for a short distance.

The New Lode again runs approximately north-south and several shafts have been sunk on it, including Rawsons or Suttons, and a short branch tunnel has been driven on the Lode in a southerly direction from the D'Eresby Consols Adit.

The Cobblers Lode, on a north-south trend, was not reached by the D'Eresby Adit. Here the workings are confined to shallow open stopes and occasion shafts.

In addition to the major lodes above, several minor lodes have also been worked. A group of north-south lodes which occur between Owens lode and Red lode has been worked by the Gamfa Fawr Mine, north of the D'Eresby Consols Adit. These stopes have recently been filled in by the Forestry Commission. Further workings occur on the backs of these lodes at the southern end of the Gwaenllifion area.

A lode was intersected by the D'Eresby Consols between the Portal and the Red Lode and

was driven on in a northerly direction for a short distance.

On the northern edge of the Gwaenllifion area a series of shallow shafts have been sunk on the back of the Principal Lode (of Parc Mine) at Parc-yr-Hisglog. These workings extend intermittently eastward as far as Parc Gate.

7.3 Historical Summary

It is not known if mines in the Gwaenllifion area were exploited by Sir John Wynn, owner of the Gwydyr Estate in the early 1600s. References, to Upper Gwydyr, a century later, refer to Dr. Linden erecting an Assay Furnace.

The first positive references to mining activity at Gwaenllifion occur in timber records dated 1819 and 1820. Shipping Records for Trefriw Quay, however, do not mention the shipping of lead from either Gwaenllifion or Gamfa Fawr until 1831, when these were worked by Ellis Evans and Owen Jones respectively.

Gwaenllifion is mentioned next in the detailed weighing figures of 1841, in which Gwaenllifion No's 1 and 2 setts are listed, with a No.3 sett being added in 1842. The latter, however, was only worked sporadically and disappears completely from the records in 1850. Gamfa Fawr does not feature in the records until 1855. The No.1 sett passed through several hands between 1841 and 1853 the best year probably being 1850 when 12 tons of ore were weighed. The No.2 sett had a similar history, it was always owned by members of the Owens family who also leased the No.1 sett between 1843 and 1846.

By 1853 Gwaenllifion and adjacent mines had attracted the attentions of mine investors from further afield and on the 2nd May a cost book company was formed: Gwydyr Park Consols. A year later Arthur Dean had been appointed Consulting Engineer and eleven men were driving levels, including the Deep Level from Llyn-y-Parc, and constructing a smithy. With the appointment of Henry Rawson as Mine Captain in 1855, greater effort was put into driving the Deep Level, and 30 men were employed on this task. This effort to some extent resulted in the traditional Gwaenllifion workings being neglected, although several shafts were sunk with the intention of intersecting the Deep Adit. In 1863 an abortive attempt was made to sink a shaft, Newtons, on the Red Lode, adjacent to Gamfa Fawr. A further shaft, Rawsons, was sunk in the late 1860s and was connected up to the Deep Adit. When Rawson left the company, this shaft was re-named Suttons in honour of the Director of the Company. A "fire engine" was erected on the shaft top, but it is not known if this was for winding or pumping, and in all probability was a portable machine. With a respectable mine infra-structure completed, it was decided in 1870 to go public and float a new company to work the mine.

Gwydyr Park Consols Ltd was incorporated on the 9th July 1870 to acquire the Gwaenllifion and Gwydyr Park setts from the previous cost book company. However, clouds soon formed on the optimism, and by 1871 machinery had been removed from the site and mining was being conducted by a group of tributers, with intermittent output.

Gwaenllifion was given one last chance, however, to show results when the D'Eresby Consols Lead Mining Company Ltd was formed in 1878. On paper there appeared to be a lot to go for, and the riches of the yet untapped Cobblers Lode at depth were emphasised to the Shareholders of the Company. However, the management never employed more than a dozen men and the Deep Adit was only driven, at the most, a further 30 fathoms. No ore was actually raised by the Company and no machinery erected. The Company abandoned the mine in January 1881 without even being sure that they had intersected the Cobblers Lode. Apart from the survey in the 1950's of the Deep Level no further work has been carried out at Gwaenllifion since 1881.

The Park Gate area was being worked between 1838 and 1841. At that time only sparks of ore were found, though some shale or "black earth" was raised. From 1855 to 1862 some activity is recorded at Parc-y-Hisglog, but neither ventures yielded any significant quantities

of ore.

7.4 The Survey Area

The area encompasses workings and dressing floors associated with three distinct zones and periods of activity. These are at Gwaenllifion itself, Gamfa Fawr and Park Gate. Outside the area, to the east, the D'Eresby Deep Adit connects and drains the workings below the Gwaenllifion sett.

The entire area lies under forestry which has affected the survival and subsequent interpretation of the remains: some of the remains have been levelled and/or lie under dense material resulting from clear-felling and thinning operations. The modern forest road has physically segregated otherwise associated areas of working and processing. Fortunately, most of the major shafts and stopes indicated in the documentary sources are still capable of being identified and thus the location of further features may be juxtaposed accordingly.

The majority of the visible workings exploit generally north-south trending mineral veins which outcropped in some places, evidenced by shallow working - trenched veins - that can be traced for considerable distances at surface. *This phenomenon is also typical of some of the earliest known, ie. prehistoric, workings in the British Isles.* Subsequent or broadly contemporary working has further exploited these ore deposits, resulting in deeper working often stoped to surface. In places this appears like a series of irregularly profiled shafts sunk on the vein and facets of several such features are recorded as shafts within documentary sources, in addition to the numerous "true" shafts that exist here. Many of these features are ginged or revetted at the surface, and most are flooded.

Both Gwaenllifion and the Gamfa Fawr site show widespread evidence of hand sorting and dressing practices, usually occurring in immediate proximity to respective workings. The remains of several crude stone structures, shelters or benches, may be seen at these locations. Other discrete features remain including *bucking stones* on which the ore was *cobbed* (broken) and smooth outcrops of rock on which the ore may have been sorted. Piles of waste graded into different size may be seen on several sites. This serves to illustrate the normal method of ore beneficiation in the Gwydyr region up to the 1850s.

7.5 Summary of Features - Gwaenllifion

Workings and dressing floors are concentrated on four major north-south lodes, Cobblers, New, Owens and Red respectively, from east to west. The Cobblers lode has been exploited intermittently along its length and due to the proximity of the forestry road, ancillary areas have been more prone to disturbance. The most recent mining activity was centred on new and Owens Lodes and remains here are better preserved lying within the loop formed by the forestry road. There are a number of open shafts here where stemples and false floors can still be seen. The dressing floors are extensive, if overgrown in places, but individual barrow runs can still be identified running east-west between the workings. The remains of a smithy, now roofless, stands between the two worked veins. The workings on Owens Lode were the most extensive in the area and open stopes on that lode, although now much overgrown, remain impressive features.

Workings on the south-east part of the Gwaenllifion sett are located on the Red Lode which is also exploited further north at Gamfa Fawr. This area has the appearance of being more self-contained and is better preserved than other parts of the site. Here shallow shafts and inclined levels on the vein are immediately adjacent to the remains of dressing sheds, discrete dressing floors bounded by low mounds of sorted and graded discard.

7.6 Summary of Features - Gamfa Fawr and Parc Gate Mines

Despite extensive damage to this site in 1990, when most of the surface features were infilled and levelled, two distinct locations survive within which may be found the best preserved

hand-dressing shelters in the area. One of these is located just east of the forestry road at the south end of Gamfa Fawr. The other is at the north end of the Gamfa Fawr site, below the break of slope above Parc. It is located among spoil that may be derived from workings on a trenched vein, outcropping in the north facing slope, or perhaps two adjacent shafts that may be part of working at Parc Gate.

7.7 Summary of Features - Parc Mine

The northern extremity of the survey area includes two levels and one shaft (Parc Air Shaft) that are associated with the later development of Parc Mine. All are now gated.

8. SUMMARY LIST OF FEATURES

8.1 Adits, Levels and Shafts

Adits are horizontal or inclined tunnels leading from the surface to the mine workings underground. Adits provide access, drainage, ventilation and tramming levels along which ore was removed. The possibility of tramway rails surviving within flooded adit entrances or under layers of debris must be considered when planning remedial works. The condition of adits varies from near perfect survival to various states of collapse and infilling. Many are potentially dangerous.

8.1.1 List of Sites

13 LEVEL	PANDORA
15 LEVEL/SPOIL TIP	PANDORA
41 SHAFTHEAD & LEADER TANK	PANDORA
42 LEVEL	PANDORA
43 SHAFT (SITE OF)	PANDORA
44 LEVEL	PANDORA
45 SHAFT	PANDORA
47 SHAFTHEAD (NO. 6 SHAFT)	PANDORA
51 SHAFT/MINEWORKING	PANDORA
53 SHAFT	PANDORA
56 SHAFTHEAD	PANDORA
58 SHAFT	PANDORA
59 SHAFT	PANDORA
60 SHAFT (SITE OF)	PANDORA
61 SHAFT (SITE OF)	PANDORA
81 LEVEL - ALLTWEN LEVEL	ALLTWEN
93 SHAFT (SITE OF)	COED MAWR POOL
112 SHAFTHEAD	COED MAWR POOL
113 SHAFTHEAD	COED MAWR POOL
115 LEVEL/MINEWORKING	COED MAWR POOL
117 SHAFTHEAD	COED MAWR POOL
118 SHAFTHEAD	COED MAWR POOL
123 MINEWORKING	COED MAWR POOL
124 MINEWORKING	COED MAWR POOL
130 SHAFT	GWAENLLIFION
131 SHAFT	GWAENLLIFION
132 SHAFT	GWAENLLIFION
133 SHAFT	GWAENLLIFION
134 SHAFT	GWAENLLIFION
135 SHAFT	GWAENLLIFION
136 SHAFT	GWAENLLIFION
137 STOPE	GWAENLLIFION
138 STOPE	GWAENLLIFION

139 SHAFT	GWAENLLIFION
140 SHAFT	GWAENLLIFION
141 SHAFT	GWAENLLIFION
145 SHAFT	GWAENLLIFION
146 SHAFT	GWAENLLIFION
147 SHAFTHEAD - RAWSONS/SUTTONS SHAFT	GWAENLLIFION
148 SHAFTHEAD	GWAENLLIFION
149 SHAFT/TRENCHED VEIN	GWAENLLIFION
150 SHAFT	GWAENLLIFION
151 SHAFT	GWAENLLIFION
155 SHAFT (OWENS SHAFT)	GWAENLLIFION
156 SHAFT	GWAENLLIFION
157 LEVEL/BARROW RUN?	GWAENLLIFION
158 STOPE/TRENCHED VEIN	GWAENLLIFION
160 SHAFT	GWAENLLIFION
161 OPEN STOPE	GWAENLLIFION
162 SHAFT	GWAENLLIFION
163 SHAFT	GWAENLLIFION
164 OPEN STOPE	GWAENLLIFION
165 SHAFT	GWAENLLIFION
166 STOPE	GWAENLLIFION
168 SHAFT	GWAENLLIFION
170 STOPE	GWAENLLIFION
174 STOPE/TRENCHED VEIN & DRESSING FLOOR	GWAENLLIFION
175 LEVEL/ADIT PORTAL	GWAENLLIFION
176 LEVEL/ADIT & SPOIL TIPS	GWAENLLIFION
177 LEVEL	GWAENLLIFION
178 SHAFT	GWAENLLIFION
180 SHAFT	GWAENLLIFION
181 SHAFT	GWAENLLIFION
183 SHAFT	GWAENLLIFION
184 SHAFT (SITE OF)	GWAENLLIFION
185 SHAFT	GWAENLLIFION
186 SHAFT/INCLINED LEVEL	GWAENLLIFION
187 SHAFT/INCLINED LEVEL	GWAENLLIFION
188 SHAFT	GWAENLLIFION
190 SHAFT	GWAENLLIFION
191 SHAFT	GWAENLLIFION
192 SHAFTHEAD	GWAENLLIFION
194 LEVEL - ADIT PORTAL	ABERLLYN

9. SITES OF PARTICULAR INTEREST OR IMPORTANCE

9.1 Good Examples

The following is a list of sites which have survived in sufficient condition to be regarded as either good examples of their type or period, or indeed unique features.

9.1.1 Site List

1 WHEEL PIT	PANDORA
19 TRAMWAY	PANDORA
20 LEAT	PANDORA
21 POWDER MAGAZINE	PANDORA
22 STANTIONS	PANDORA
27 WINDING HOUSE & HEADFRAME	PANDORA
41 SHAFTHEAD & LEADER TANK (SPION KOP)	PANDORA

46 SPOIL TIPS	PANDORA
48 AQUADUCT (COURSE OF)	PANDORA
56 SHAFTHEAD	PANDORA
77 TRAMWAY INCLINE/BARROW RUN	ALLTWEN
90 POWDER MAGAZINE	COED MAWR POOL
91 WHEEL PIT	COED MAWR POOL
92 DRYSTONE PILLARS (FOR LAUNDER 104)	COED MAWR POOL
94 CAPSTAN PIT	COED MAWR POOL
95 REVETTED STONE BAY - OREBIN	COED MAWR POOL
123 MINE WORKING	COED MAWR POOL
139 SHAFT	GWAENLLIFION
140 SHAFT	GWAENLLIFION
141 SHAFT	GWAENLLIFION
147 SHAFTHEAD - RAWSONS/SUTTONS SHAFT	GWAENLLIFION
148 SHAFTHEAD	GWAENLLIFION
153 BUILDING - SMITHY	GWAENLLIFION
156 SHAFT	GWAENLLIFION
158 STOPE/TRENCHED VEIN	GWAENLLIFION
159 DRESSING FLOOR	GWAENLLIFION
171 DRESSING FLOOR & SHED	GWAENLLIFION
182 DRESSING FLOOR, SHEDS & WASTE	GWAENLLIFION
194 LEVEL - ADIT PORTAL	ABERLLYN

10. MATERIALS

The type of materials used in construction affects the long-term survival of the structure(s). Features with a mixture of material types are potentiallly most at risk with a variety of conservation approaches being required. The presence of timbers is some indication of good site survival. Timbers can also allow a greater understanding of the structures associated with mining and aid more accurate representation of the processes involved at a site. The cost of removing timbers for conservation before replacing them is prohibitive in the context of a reclamation scheme. A policy of on-site treatment for individual features needs to be established, however in many cases the best option may be to replace timbers.

10.1 Sites with Wood/Timber as a component

1 WHEEL PIT	PANDORA
3 CRUSHER HOUSE	PANDORA
4 DF FITTINGS/JIG BASES	PANDORA
6 BUDDLE PIT (SITE OF)	PANDORA
7 TRAMWAY	PANDORA
10 BUILDING FOUNDATION	PANDORA
13 LEVEL	PANDORA
21 POWDER MAGAZINE	PANDORA
24 BUILDING - MANAGERS/ENGINE HOUSE	PANDORA
28 MOUNTS FOR TRAMWAY AND CONVEYOR	PANDORA
29 BUILDING - COMPRESSOR HOUSE	PANDORA
32 BRIDGE REVETMENT	PANDORA
34 WOODEN POSTS	PANDORA
53 SHAFT	PANDORA
91 WHEEL PIT	COED MAWR POOL
107 BUILDING - CORRUGATED IRON SHED	COED MAWR POOL
109 WHEEL PIT	COED MAWR POOL
153 BUILDING - SMITHY	GWAENLLIFION

11. SUMMARY LISTS OF SITE CONDITION - ALL SITES

The condition of a feature describes a number of related physical states, of which one or more can apply to an individual feature. The condition of a site reflects processes that have affected the site in the past (e.g collapse, demolished) and the likely survival of features in the future, (buried, infilled, disturbed). The condition of a feature can also help to identify priorities for further recording. The term has been sub-divided into a number of fields, including: no collapse; some collapse; much collapse; buried; partly buried; infilled; partly infilled; disturbed; partly demolished; demolished; and flooded.

11.1 No Collapse

This indicates a well-preserved site. Sites in this category are generally stable and reasonably solid. There may be some limited conservation measures required, such as re-pointing. Other works could include the removal of vegetation, such as trees or undergrowth. Drystone features are to be re-built, without using mortar.

11.1.1 Site List

27 WINDING HOUSE & HEADFRAME	PANDORA
177 LEVEL	GWAENLLIFION

11.2 Some Collapse

This indicates a site that has suffered some collapse although not enough to render the structure in immediate danger of total collapse. Often this consists of disturbance to one or two courses of stonework at the top of walls. It may be necessary to replace and consolidate some stonework to prevent further collapse.

11.2.1 Site List

1 WHEEL PIT	PANDORA
7 TRAMWAY	PANDORA
9 WHEEL PIT	PANDORA
20 LEAT	PANDORA
21 POWDER MAGAZINE	PANDORA
22 STANTIONS	PANDORA
23 FIELD BANK/WALL	PANDORA
28 MOUNTS FOR TRAMWAY AND CONVEYOR	PANDORA
32 BRIDGE REVETMENT	PANDORA
48 AQUADUCT (COURSE OF)	PANDORA
56 SHAFTHEAD	PANDORA
59 SHAFT	PANDORA
71 BUDDLE PIT	ALLTWEN
72 BUDDLE PIT	ALLTWEN
73 DRYSTONE REVETMENT WALL	ALLTWEN
74 SLUICE FOR BUDDLES 71 & 72	ALLTWEN
81 LEVEL - ALLTWEN LEVEL (SITE OF PORTAL)	ALLTWEN
90 POWDER MAGAZINE	COED MAWR POOL
91 WHEEL PIT	COED MAWR POOL
92 DRYSTONE PILLARS (FOR LAUNDER 104)	COED MAWR POOL
94 CAPSTAN PIT	COED MAWR POOL
101 PIT AND LINEAR CUT - SINGLE ARM BOB PIT	COED MAWR POOL
102 DRY STONE REVETMENT	COED MAWR POOL
104 LEAT	COED MAWR POOL
107 BUILDING - CORRUGATED IRON SHED	COED MAWR POOL
110 DRY STONE EMBANKMENT	COED MAWR POOL
114 BUILDING	COED MAWR POOL

115 LEVEL/MINEWORKING	COED MAWR POOL
117 SHAFTHEAD	COED MAWR POOL
123 MINEWORKING	COED MAWR POOL
135 SHAFT	GWAENLLIFION
136 SHAFT	GWAENLLIFION
137 STOPE	GWAENLLIFION
146 SHAFT	GWAENLLIFION
147 SHAFTHEAD - RAWSONS/SUTTONS SHAFT	GWAENLLIFION
148 SHAFTHEAD	GWAENLLIFION
150 SHAFT	GWAENLLIFION
153 BUILDING - SMITHY	GWAENLLIFION
156 SHAFT	GWAENLLIFION
159 DRESSING FLOOR	GWAENLLIFION
164 OPEN STOPE	GWAENLLIFION
167 DRESSING SHED/BENCH	GWAENLLIFION
171 DRESSING FLOOR & SHED	GWAENLLIFION
173 STONE LINED PIT/SHAFTHEAD	GWAENLLIFION
179 DRYSTONE STRUCTURE - DRESSING SHED	GWAENLLIFION
194 LEVEL - ADIT PORTAL	ABERLLYN
195 DRYSTONE STRUCTURE - STORE	ABERLLYN

11.3 Much Collapse

This indicates features that have almost entirely collapsed (see also demolished) or that have been substantially buried by collapse. The category also includes features that have small lesser amounts of significant collapse, that could lead directly to further collapse. Response to a much collapse feature could include clearing and replacing stonework to prevent further collapse, complete re-building in rare cases. The stability of the site is important when considering further action, as a site may have collapsed completely, and as a result be in a stable condition.

11.3.1 Site List

16 TRAMWAY	PANDORA
22 STANTIONS	PANDORA
24 BUILDING - MANAGERS/ENGINE HOUSE	PANDORA
29 BUILDING - COMPRESSOR HOUSE	PANDORA
30 BUILDING (SITE OF) - WASH HOUSE/DRY	PANDORA
31 BUILDING FOUNDATIONS - SMITHY/DRY	PANDORA
33 BUILDING REMAINS - STABLES	PANDORA
75 BUILDING REMS - DRESSING SHED/CRUSHER	ALLTWEN
79 BUILDING - STORE/OFFICE	ALLTWEN
95 REVETTED STONE BAY - OREBIN	COED MAWR POOL
96 REVETTED STONE BAY - OREBIN	COED MAWR POOL
97 BUILDING - MINE OFFICE	COED MAWR POOL
98 RECT STRUCTURE - GEAR/CRUSHER HOUSE	COED MAWR POOL
99 RECT STRUCTURE	COED MAWR POOL
100 STONE LINED DEPRESSION - CAPSTAN PIT	COED MAWR POOL
109 WHEEL PIT	COED MAWR POOL
111 DRYSTONE STRUCTURE - DRESSING SHED ?	COED MAWR POOL
116 ARC OF DRYSTONE WALLING	COED MAWR POOL
118 SHAFTHEAD	COED MAWR POOL
142 DRYSTONE STRUCTURE - DRESSING SHED	GWAENLLIFION
143 DRYSTONE STRUCTURE - DRESSING SHED	GWAENLLIFION
149 SHAFT/TRENCHED VEIN	GWAENLLIFION
155 SHAFT (OWENS SHAFT)	GWAENLLIFION
157 LEVEL/BARROW RUN?	GWAENLLIFION
193 BUILDING	ABERLLYN

11.4 Buried

This indicates features that are mostly or entirely buried, usually by collapse or spoil, often with little showing above ground. Buried features are likely to be well-preserved in comparison with exposed features, especially comparatively delicate features such as wooden launders. Artefacts such as miners boots, leather items and tin cans have occasionally been found on other mine sites in the Gwydyr Forest, for example the Hafna smelter house.

The normal response for buried features is to leave them buried unless there is an argued case for excavation, for example to reveal important features which would aid interpretation or provide a more comprehensive display for presentation to the public.

11.4.1 Site List

6 BUDDLE PIT (SITE OF)	PANDORA
17 SMITHY-STORE (SITE OF)	PANDORA
26 SMITHY (SITE OF)	PANDORA
81 LEVEL - ALLTWEN LEVEL (SITE OF PORTAL)	ALLTWEN

11.5 Partly Buried

Partly buried sites include those where features are partially exposed, and typically include building floors, dressing floors, yards and tramways. In many cases there may be a stronger argument for clearance and recording than for wholly buried sites because features are likely to be under threat from differential weathering or destruction. Among these sites are those buried under relatively thin deposits of processing waste, which could be easily cleared to reveal features.

11.5.1 Site List

3 CRUSHER HOUSE	PANDORA
4 DF FITTINGS/JIG BASES	PANDORA
8 TRACKWAY	PANDORA
9 WHEEL PIT	PANDORA
10 BUILDING FOUNDATION	PANDORA
18 TRACKWAY	PANDORA
29 BUILDING - COMPRESSOR HOUSE	PANDORA
31 BUILDING FOUNDATIONS - SMITHY/DRY	PANDORA
34 WOODEN POSTS	PANDORA
35 CONCRETE FLOORS & FLOTATION TANKS	PANDORA
37 TRAMWAY/TRACKWAY	PANDORA
49 TRAMWAY	PANDORA
50 LINEAR DEFILE (OLD STREAM COURSE)	PANDORA
75 BUILDING REMS - DRESSING SHED/CRUSHER	ALLTWEN
77 TRAMWAY INCLINE/BARROW RUN	ALLTWEN
79 BUILDING - STORE/OFFICE	ALLTWEN
80 DRYSTONE REVETMENT WALL	ALLTWEN
83 REVETMENT	ALLTWEN
92 DRYSTONE PILLARS (FOR LAUNDER 104)	COED MAWR POOL
93 SHAFT (SITE OF)	COED MAWR POOL
96 REVETTED STONE BAY - OREBIN	COED MAWR POOL
103 SPOIL TIPS & DRESSING FLOOR	COED MAWR POOL
116 ARC OF DRYSTONE WALLING	COED MAWR POOL
119 STONE FOOTINGS	COED MAWR POOL
142 DRYSTONE STRUCTURE - DRESSING SHED	GWAENLLIFION
143 DRYSTONE STRUCTURE - DRESSING SHED	GWAENLLIFION
144 DRESSING FLOOR	GWAENLLIFION

152 DRESSING FLOOR	GWAENLLIFION
159 DRESSING FLOOR	GWAENLLIFION
171 DRESSING FLOOR & SHED	GWAENLLIFION
172 DRESSING/SORTING FLOOR & DISCARD	GWAENLLIFION
174 STOPE/TRENCHED VEIN & DRESSING FLOOR	GWAENLLIFION
189 DRESSING FLOOR/SHEDS & WASTE	GWAENLLIFION

11.6 Infilled

Infilled sites differ from buried sites in that they are generally negative features such as shafts, adits or wheel pits that have been deliberately backfilled or collapsed. The uncertain stability and depth of these features presents grave difficulties in their detailed recording and severe health and safety problems. It is likely that less information is recoverable compared to buried sites.

11.6.1 Site List

9 WHEEL PIT	PANDORA
33 BUILDING REMAINS - STABLES	PANDORA
43 SHAFT (SITE OF)	PANDORA
47 SHAFTHEAD (NO. 6 SHAFT)	PANDORA
51 SHAFT/MINEWORKING	PANDORA
58 SHAFT	PANDORA
59 SHAFT	PANDORA
60 SHAFT (SITE OF)	PANDORA
61 SHAFT (SITE OF)	PANDORA
81 LEVEL - ALLTWEN LEVEL (SITE OF PORTAL)	ALLTWEN
93 SHAFT (SITE OF)	COED MAWR POOL
112 SHAFTHEAD	COED MAWR POOL
113 SHAFTHEAD	COED MAWR POOL
117 SHAFTHEAD	COED MAWR POOL
118 SHAFTHEAD	COED MAWR POOL
124 MINEWORKING	COED MAWR POOL
133 SHAFT	GWAENLLIFION
134 SHAFT	GWAENLLIFION
149 SHAFT/TRENCHED VEIN	GWAENLLIFION
155 SHAFT (OWENS SHAFT)	GWAENLLIFION
180 SHAFT	GWAENLLIFION
181 SHAFT	GWAENLLIFION
183 SHAFT	GWAENLLIFION
184 SHAFT (SITE OF)	GWAENLLIFION

11.7 Partly Infilled

Partly infilled sites such as wheel pits present better opportunities for clearance work, especially if the sites are to be presented to the public.

11.7.1 Site List

1 WHEEL PIT	PANDORA
12 LEAT/STREAM	PANDORA
15 LEVEL/SPOIL TIP	PANDORA
20 LEAT	PANDORA
24 BUILDING - MANAGERS/ENGINE HOUSE	PANDORA
27 WINDING HOUSE & HEADFRAME	PANDORA
28 MOUNTS FOR TRAMWAY AND CONVEYOR	PANDORA
38 RESERVOIR	PANDORA
39 LEAT	PANDORA

40 CISTERN	PANDORA
41 SHAFTHEAD & LEADER TANK (SPION KOP)	PANDORA
42 LEVEL	PANDORA
44 LEVEL	PANDORA
45 SHAFT	PANDORA
53 SHAFT	PANDORA
54 RESERVOIR	PANDORA
55 LEAT	PANDORA
56 SHAFTHEAD	PANDORA
71 BUDDLE PIT	ALLTWEN
72 BUDDLE PIT	ALLTWEN
74 SLUICE FOR BUDDLES 71 & 72	ALLTWEN
78 RESERVOIR	ALLTWEN
79 BUILDING - STORE/OFFICE	ALLTWEN
91 WHEEL PIT	COED MAWR POOL
94 CAPSTAN PIT	COED MAWR POOL
95 REVETTED STONE BAY - OREBIN	COED MAWR POOL
97 BUILDING - MINE OFFICE	COED MAWR POOL
98 RECT STRUCTURE - GEAR/CRUSHER HOUSE	COED MAWR POOL
99 RECT STRUCTURE	COED MAWR POOL
100 STONE LINED DEPRESSION - CAPSTAN PIT	COED MAWR POOL
101 PIT AND LINEAR CUT - SINGLE ARM BOB PIT	COED MAWR POOL
104 LEAT	COED MAWR POOL
109 WHEEL PIT	COED MAWR POOL
114 BUILDING	COED MAWR POOL
115 LEVEL/MINEWORKING	COED MAWR POOL
121 LINEAR CUT - DRAINAGE LEVEL/TUNNEL	COED MAWR POOL
123 MINEWORKING	COED MAWR POOL
130 SHAFT	GWAENLLIFION
131 SHAFT	GWAENLLIFION
132 SHAFT	GWAENLLIFION
135 SHAFT	GWAENLLIFION
136 SHAFT	GWAENLLIFION
138 STOPE	GWAENLLIFION
139 SHAFT	GWAENLLIFION
140 SHAFT	GWAENLLIFION
141 SHAFT	GWAENLLIFION
145 SHAFT	GWAENLLIFION
146 SHAFT	GWAENLLIFION
147 SHAFTHEAD - RAWSONS/SUTTONS SHAFT	GWAENLLIFION
148 SHAFTHEAD	GWAENLLIFION
150 SHAFT	GWAENLLIFION
151 SHAFT	GWAENLLIFION
153 BUILDING - SMITHY	GWAENLLIFION
156 SHAFT	GWAENLLIFION
157 LEVEL/BARROW RUN?	GWAENLLIFION
158 STOPE/TRENCHED VEIN	GWAENLLIFION
160 SHAFT	GWAENLLIFION
161 OPEN STOPE	GWAENLLIFION
164 OPEN STOPE	GWAENLLIFION
165 SHAFT	GWAENLLIFION
166 STOPE	GWAENLLIFION
170 STOPE	GWAENLLIFION
173 STONE LINED PIT/SHAFTHEAD	GWAENLLIFION
174 STOPE/TRENCHED VEIN & DRESSING FLOOR	GWAENLLIFION
180 SHAFT	GWAENLLIFION
181 SHAFT	GWAENLLIFION
186 SHAFT/INCLINED LEVEL	GWAENLLIFION

187 SHAFT/INCLINED LEVEL	GWAENLLIFION
192 SHAFTHEAD	GWAENLLIFION
193 BUILDING	ABERLLYN
194 LEVEL - ADIT PORTAL	ABERLLYN
195 DRYSTONE STRUCTURE - STORE	ABERLLYN

11.8 Disturbed

This largely relates to sites under direct threat from tree growth, and/or activities related to forestry.

11.8.1 Site List

3 CRUSHER HOUSE	PANDORA
4 DF FITTINGS/JIG BASES	PANDORA
6 BUDDLE PIT (SITE OF)	PANDORA
7 TRAMWAY	PANDORA
8 TRACKWAY	PANDORA
10 BUILDING FOUNDATION	PANDORA
11 SPOIL-TIPS/TAILINGS	PANDORA
12 LEAT/STREAM	PANDORA
17 SMITHY-STORE (SITE OF)	PANDORA
20 LEAT	PANDORA
21 POWDER MAGAZINE	PANDORA
22 STANTIONS	PANDORA
23 FIELD BANK/WALL	PANDORA
36 SPOIL HEAP	PANDORA
39 LEAT	PANDORA
41 SHAFTHEAD & LEADER TANK (SPION KOP)	PANDORA
46 SPOIL TIPS	PANDORA
47 SHAFTHEAD (NO. 6 SHAFT)	PANDORA
49 TRAMWAY	PANDORA
50 LINEAR DEFILE (OLD STREAM COURSE)	PANDORA
55 LEAT	PANDORA
56 SHAFTHEAD	PANDORA
57 RAISED LINEAR FEATURE	PANDORA
73 DRYSTONE REVETMENT WALL	ALLTWEN
74 SLUICE FOR BUDDLES 71 & 72	ALLTWEN
75 BUILDING REMS - DRESSING SHED/CRUSHER	ALLTWEN
76 SPOIL TIP	ALLTWEN
77 TRAMWAY INCLINE/BARROW RUN	ALLTWEN
80 DRYSTONE REVETMENT WALL	ALLTWEN
81 LEVEL - ALLTWEN LEVEL (SITE OF PORTAL)	ALLTWEN
82 DRESSING FLOOR/SPOIL TIPS	ALLTWEN
83 REVETMENT	ALLTWEN
84 SPOIL TIP	ALLTWEN
85 SPOIL TIP	ALLTWEN
90 POWDER MAGAZINE	COED MAWR POOL
91 WHEEL PIT	COED MAWR POOL
92 DRYSTONE PILLARS (FOR LAUNDER 104)	COED MAWR POOL
93 SHAFT (SITE OF)	COED MAWR POOL
96 REVETTED STONE BAY - OREBIN	COED MAWR POOL
100 STONE LINED DEPRESSION - CAPSTAN PIT	COED MAWR POOL
103 SPOIL TIPS & DRESSING FLOOR	COED MAWR POOL
104 LEAT	COED MAWR POOL
105 SPOIL TIPS & WORKINGS	COED MAWR POOL
106 LINEAR FEATURE - TRAMWAY/FLATRODS ?	COED MAWR POOL
108 STRUCTURES, WORKINGS & DRESSING FLOORS	COED MAWR POOL

110 DRY STONE EMBANKMENT	COED MAWR POOL
117 SHAFTHEAD	COED MAWR POOL
118 SHAFTHEAD	COED MAWR POOL
119 STONE FOOTINGS	COED MAWR POOL
120 SPOIL TIPS	COED MAWR POOL
121 LINEAR CUT - DRAINAGE LEVEL/TUNNEL	COED MAWR POOL
137 STOPE	GWAENLLIFION
142 DRYSTONE STRUCTURE - DRESSING SHED	GWAENLLIFION
143 DRYSTONE STRUCTURE - DRESSING SHED	GWAENLLIFION
144 DRESSING FLOOR	GWAENLLIFION
145 SHAFT	GWAENLLIFION
148 SHAFTHEAD	GWAENLLIFION
151 SHAFT	GWAENLLIFION
152 DRESSING FLOOR	GWAENLLIFION
153 BUILDING - SMITHY	GWAENLLIFION
154 DRESSING FLOOR	GWAENLLIFION
157 LEVEL/BARROW RUN ?	GWAENLLIFION
158 STOPE/TRENCHED VEIN	GWAENLLIFION
159 DRESSING FLOOR	GWAENLLIFION
160 SHAFT	GWAENLLIFION
161 OPEN STOPE	GWAENLLIFION
162 SHAFT	GWAENLLIFION
163 SHAFT	GWAENLLIFION
164 OPEN STOPE	GWAENLLIFION
165 SHAFT	GWAENLLIFION
166 STOPE	GWAENLLIFION
167 DRESSING SHED/BENCH	GWAENLLIFION
168 SHAFT	GWAENLLIFION
169 SITE OF BUILDING	GWAENLLIFION
170 STOPE	GWAENLLIFION
171 DRESSING FLOOR & SHED	GWAENLLIFION
172 DRESSING/SORTING FLOOR & DISCARD	GWAENLLIFION
173 STONE LINED PIT/SHAFTHEAD	GWAENLLIFION
174 STOPE/TRENCHED VEIN & DRESSING FLOOR	GWAENLLIFION
176 LEVEL/ADIT & SPOIL TIPS	GWAENLLIFION
178 SHAFT	GWAENLLIFION
179 DRYSTONE STRUCTURE - DRESSING SHED	GWAENLLIFION
180 SHAFT	GWAENLLIFION
181 SHAFT	GWAENLLIFION
182 DRESSING FLOOR, SHEDS & WASTE	GWAENLLIFION
183 SHAFT	GWAENLLIFION
187 SHAFT/INCLINED LEVEL	GWAENLLIFION
189 DRESSING FLOOR/SHEDS & WASTE	GWAENLLIFION
190 SHAFT	GWAENLLIFION
191 SHAFT	GWAENLLIFION
192 SHAFTHEAD	GWAENLLIFION
193 BUILDING	ABERLLYN
194 LEVEL - ADIT PORTAL	ABERLLYN
195 DRYSTONE STRUCTURE - STORE	ABERLLYN
196 SPOIL TIP	ABERLLYN

11.9 Demolished and Partly Demolished

Some sites have been demolished in recent years, such as the manager's house/engine house at Pandora (24) and the store/office at Alltwen (79). Others were probably partly, or wholly demolished during the working life of the mines or immediately following closure, either deliberately or incidentally during the removal of machinery etc. The method of demolition will affect the survival and condition of features under the demolition layer. Many of the sites

can be considered along the same lines as partly buried and buried sites.

11.9.1 Demolished - Site List

3 CRUSHER HOUSE	PANDORA
10 BUILDING FOUNDATION	PANDORA
24 BUILDING - MANAGERS/ENGINE HOUSE	PANDORA
26 SMITHY (SITE OF)	PANDORA
30 BUILDING (SITE OF) - WASH HOUSE/DRY	PANDORA
31 BUILDING FOUNDATIONS - SMITHY/DRY	PANDORA
33 BUILDING REMAINS - STABLES	PANDORA
93 SHAFT (SITE OF)	COED MAWR POOL
113 SHAFTHEAD	COED MAWR POOL
118 SHAFTHEAD	COED MAWR POOL
169 SITE OF BUILDING	GWAENLLIFION
173 STONE LINED PIT/SHAFTHEAD	GWAENLLIFION
183 SHAFT	GWAENLLIFION
189 DRESSING FLOOR/SHEDS & WASTE	GWAENLLIFION

11.9.2 Partly Demolished

1 WHEEL PIT	PANDORA
7 TRAMWAY	PANDORA
9 WHEEL PIT	PANDORA
14 TRAMWAY/SPOIL-TIP	PANDORA
16 TRAMWAY	PANDORA
22 STANTIONS	PANDORA
27 WINDING HOUSE & HEADFRAME	PANDORA
28 MOUNTS FOR TRAMWAY AND CONVEYOR	PANDORA
29 BUILDING - COMPRESSOR HOUSE	PANDORA
32 BRIDGE REVETMENT	PANDORA
34 WOODEN POSTS	PANDORA
35 CONCRETE FLOORS & FLOTATION TANKS	PANDORA
37 TRAMWAY/TRACKWAY	PANDORA
40 CISTERN	PANDORA
41 SHAFTHEAD & LEADER TANK (SPION KOP)	PANDORA
48 AQUADUCT (COURSE OF)	PANDORA
59 SHAFT	PANDORA
71 BUDDLE PIT	ALLTWEN
72 BUDDLE PIT	ALLTWEN
79 BUILDING - STORE/OFFICE	ALLTWEN
83 REVETMENT	ALLTWEN
91 WHEEL PIT	COED MAWR POOL
92 DRYSTONE PILLARS (FOR LAUNDER 104)	COED MAWR POOL
95 REVETTED STONE BAY - OREBIN	COED MAWR POOL
97 BUILDING - MINE OFFICE	COED MAWR POOL
98 RECT STRUCTURE - GEAR/CRUSHER HOUSE	COED MAWR POOL
99 RECT STRUCTURE	COED MAWR POOL
106 LINEAR FEATURE - TRAMWAY/FLATRODS ?	COED MAWR POOL
109 WHEEL PIT	COED MAWR POOL
111 DRYSTONE STRUCTURE - DRESSING SHED ?	COED MAWR POOL
112 SHAFTHEAD	COED MAWR POOL
114 BUILDING	COED MAWR POOL
116 ARC OF DRYSTONE WALLING	COED MAWR POOL
153 BUILDING - SMITHY	GWAENLLIFION
159 DRESSING FLOOR	GWAENLLIFION
176 LEVEL/ADIT & SPOIL TIPS	GWAENLLIFION
178 SHAFT	GWAENLLIFION

182 DRESSING FLOOR, SHEDS & WASTE	GWAENLLIFION
193 BUILDING	ABERLLYN
195 DRYSTONE STRUCTURE - STORE	ABERLLYN

11.10 Flooded

This section includes features which are now flooded, all are mine workings, such as levels, adits, open stopes and shafts.

11.10.1 Site List

13 LEVEL	PANDORA
42 LEVEL	PANDORA
44 LEVEL	PANDORA
53 SHAFT	PANDORA
130 SHAFT	GWAENLLIFON
131 SHAFT	GWAENLLIFION
132 SHAFT	GWAENLLIFION
133 SHAFT	GWAENLLIFION
135 SHAFT	GWAENLLIFION
136 SHAFT	GWAENLLIFION
137 STOPE	GWAENLLIFION
138 STOPE	GWAENLLIFION
139 SHAFT	GWAENLLIFION
140 SHAFT	GWAENLLIFION
141 SHAFT	GWAENLLIFION
145 SHAFT	GWAENLLIFION
161 OPEN STOPE	GWAENLLIFION
162 SHAFT	GWAENLLIFION
163 SHAFT	GWAENLLIFION
164 OPEN STOPE	GWAENLLIFION
165 SHAFT	GWAENLLIFION
166 STOPE	GWAENLLIFION
168 SHAFT	GWAENLLIFION
185 SHAFT	GWAENLLIFION
186 SHAFT/INCLINED LEVEL	GWAENLLIFION
187 SHAFT/INCLINED LEVEL	GWAENLLIFION
188 SHAFT	GWAENLLIFION
190 SHAFT	GWAENLLIFION
191 SHAFT	GWAENLLIFION
192 SHAFTHEAD	GWAENLLIFION
194 LEVEL - ADIT PORTAL	ABERLLYN

12. PRIORITIES FOR RECORDING AND CONSERVATION

1. UNSTABLE SITES (5 records)
2. VERY FRAGILE SITES (59 records)

12.1 Unstable Features

The stability of a site as defined here is a judgment based on a visual inspection of the site as to whether it appears likely to collapse or alter its physical form in the next decade or so. These sites are high priorities for recording and remedial works, including consolidation and reconstruction. Some of the sites are dangerous and pose particular problems for investigation and recording.

12.1.1 Site List

96 REVETTED STONE BAY - OREBIN	COED MAWR POOL
103 SPOIL TIPS & DRESSING FLOOR	COED MAWR POOL
109 WHEEL PIT	COED MAWR POOL
154 DRESSING FLOOR	GWAENLLIFION
194 LEVEL - ADIT PORTAL	ABERLLYN

12.2 Very Fragile Features

Fragility in the sense used here relates to the susceptibility of the sites to disturbance and the potential for irretrievably losing information. Therefore it is not just the physical delicacy of the sites that is being assessed, but also their archaeological value. Most archaeological sites are fragile by nature and it is only the "very fragile" features that are listed here.

These sites are also high priorities for recording although remedial works are not always necessary or possible.

12.2.1 Site List

3 CRUSHER HOUSE	PANDORA
4 DF FITTINGS/JIG BASES	PANDORA
6 BUDDLE PIT (SITE OF)	PANDORA
11 SPOIL-TIPS/TAILINGS	PANDORA
12 LEAT/STREAM	PANDORA
16 TRAMWAY	PANDORA
19 TRAMWAY	PANDORA
20 LEAT	PANDORA
22 STANTIONS	PANDORA
34 WOODEN POSTS	PANDORA
47 SHAFTHEAD (NO. 6 SHAFT)	PANDORA
53 SHAFT	PANDORA
71 BUDDLE PIT	ALLTWEN
72 BUDDLE PIT	ALLTWEN
74 SLUICE FOR BUDDLES 71 & 72	ALLTWEN
75 BUILDING REMS - DRESSING SHED/CRUSHER	ALLTWEN
76 SPOIL TIP	ALLTWEN
79 BUILDING - STORE/OFFICE	ALLTWEN
83 REVETMENT	ALLTWEN
84 SPOIL TIP	ALLTWEN
85 SPOIL TIP	ALLTWEN
90 POWDER MAGAZINE	COED MAWR POOL
94 CAPSTAN PIT	COED MAWR POOL
95 REVETTED STONE BAY - OREBIN	COED MAWR POOL
96 REVETTED STONE BAY - OREBIN	COED MAWR POOL
100 STONE LINED DEPRESSION - CAPSTAN PIT	COED MAWR POOL
102 DRY STONE REVETMENT	COED MAWR POOL
103 SPOIL TIPS & DRESSING FLOOR	COED MAWR POOL
104 LEAT	COED MAWR POOL
105 SPOIL TIPS & WORKINGS	COED MAWR POOL
107 BUILDING - CORRUGATED IRON SHED	COED MAWR POOL
108 STRUCTURES, WORKINGS & DRESSING FLOORS	COED MAWR POOL
109 WHEEL PIT	COED MAWR POOL
111 DRYSTONE STRUCTURE - DRESSING SHED ?	COED MAWR POOL
114 BUILDING	COED MAWR POOL

116 ARC OF DRYSTONE WALLING	COED MAWR POOL
119 STONE FOOTINGS	COED MAWR POOL
121 LINEAR CUT - DRAINAGE LEVEL/TUNNEL	COED MAWR POOL
142 DRYSTONE STRUCTURE - DRESSING SHED	GWAENLLIFION
143 DRYSTONE STRUCTURE - DRESSING SHED	GWAENLLIFION
144 DRESSING FLOOR	GWAENLLIFION
147 SHAFTHEAD - RAWSONS/SUTTONS SHAFT	GWAENLLIFION
148 SHAFTHEAD	GWAENLLIFION
150 SHAFT	GWAENLLIFION
152 DRESSING FLOOR	GWAENLLIFION
153 BUILDING - SMITHY	GWAENLLIFION
154 DRESSING FLOOR	GWAENLLIFION
159 DRESSING FLOOR	GWAENLLIFION
164 OPEN STOPE	GWAENLLIFION
167 DRESSING SHED/BENCH	GWAENLLIFION
170 STOPE	GWAENLLIFION
171 DRESSING FLOOR & SHED	GWAENLLIFION
172 DRESSING/SORTING FLOOR & DISCARD	GWAENLLIFION
173 STONE LINED PIT/SHAFT HEAD	GWAENLLIFION
179 DRYSTONE STRUCTURE - DRESSING SHED	GWAENLLIFION
182 DRESSING FLOOR, SHEDS & WASTE	GWAENLLIFION
189 DRESSING FLOOR/SHEDS & WASTE	GWAENLLIFION
193 BUILDING	ABERLLYN
194 LEVEL - ADIT PORTAL	ABERLLYN

13. POTENTIAL CLEARANCE AND EXCAVATION

13.1 Sites with potential for clearance of vegetation

Features are often hidden by undergrowth such as bracken, brambles and heather, making them difficult to identify initially and impossible to survey or photograph. In many cases the problem is lessened during the winter months. Ivy can completely cover walls, often hiding significant phasing or operating details. There are also practical difficulties with elevation drawing and photography.

Tree-growth is a major cause of destruction of archaeological features. A number of features have been identified, that are being directly affected by trees. This occurs in a number of ways including disturbance to features through expanding root growth, the collapsing of walls by falling branches and trunks, and destruction of sub-surface archaeology by up-ended tree roots.

All sites with low undergrowth, or dense sapling growth have the potential to produce more information simply by being cleared, which would also allow easier presentation. The exact areas and nature of species to be cleared would need to be identified both on plan and on the ground with relevant parties. Features being actively eroded by root growth need to be recorded in advance of clearance as removal of roots will inevitably cause further disturbance.

It is recommended that spoil tips are left vegetated where possible to aid stabilisation.

13.1.1 Site List

6 BUDDLE PIT (SITE OF)	PANDORA
19 TRAMWAY	PANDORA
20 LEAT	PANDORA
53 SHAFT	PANDORA
75 BUILDING REMS - DRESSING SHED/CRUSHER	ALLTWEN
77 TRAMWAY INCLINE/BARROW RUN	ALLTWEN

79 BUILDING - STORE/OFFICE	ALLTWEN
81 LEVEL - ALLTWEN LEVEL (SITE OF PORTAL)	ALLTWEN
82 DRESSING FLOOR/SPOIL TIPS	ALLTWEN
90 POWDER MAGAZINE	COED MAWR POOL
92 DRYSTONE PILLARS (FOR LAUNDER 104)	COED MAWR POOL
93 SHAFT (SITE OF)	COED MAWR POOL
94 CAPSTAN PIT	COED MAWR POOL
95 REVETTED STONE BAY - OREBIN	COED MAWR POOL
98 RECT STRUCTURE - GEAR/CRUSHER HOUSE	COED MAWR POOL
99 RECT STRUCTURE	COED MAWR POOL
100 STONE LINED DEPRESSION - CAPSTAN PIT	COED MAWR POOL
101 PIT AND LINEAR CUT - SINGLE ARM BOB PIT	COED MAWR POOL
102 DRY STONE REVETMENT	COED MAWR POOL
103 SPOIL TIPS & DRESSING FLOOR	COED MAWR POOL
104 LEAT	COED MAWR POOL
106 LINEAR FEATURE - TRAMWAY/FLATRODS ?	COED MAWR POOL
111 DRYSTONE STRUCTURE - DRESSING SHED ?	COED MAWR POOL
112 SHAFTHEAD	COED MAWR POOL
113 SHAFTHEAD	COED MAWR POOL
114 BUILDING	COED MAWR POOL
115 LEVEL/MINEWORKING	COED MAWR POOL
116 ARC OF DRYSTONE WALLING	COED MAWR POOL
117 SHAFTHEAD	COED MAWR POOL
121 LINEAR CUT - DRAINAGE LEVEL / TUNNEL	COED MAWR POOL
130 SHAFT	GWAENLLIFON
132 SHAFT	GWAENLLIFION
133 SHAFT	GWAENLLIFION
134 SHAFT	GWAENLLIFION
137 STOPE	GWAENLLIFION
138 STOPE	GWAENLLIFION
139 SHAFT	GWAENLLIFION
140 SHAFT	GWAENLLIFION
141 SHAFT	GWAENLLIFION
144 DRESSING FLOOR	GWAENLLIFION
145 SHAFT	GWAENLLIFION
146 SHAFT	GWAENLLIFION
149 SHAFT/TRENCHED VEIN	GWAENLLIFION
151 SHAFT	GWAENLLIFION
152 DRESSING FLOOR	GWAENLLIFION
153 BUILDING - SMITHY	GWAENLLIFION
156 SHAFT	GWAENLLIFION
158 STOPE/TRENCHED VEIN	GWAENLLIFION
159 DRESSING FLOOR	GWAENLLIFION
160 SHAFT	GWAENLLIFION
161 OPEN STOPE	GWAENLLIFION
162 SHAFT	GWAENLLIFION
163 SHAFT	GWAENLLIFION
164 OPEN STOPE	GWAENLLIFION
165 SHAFT	GWAENLLIFION
166 STOPE	GWAENLLIFION
167 DRESSING SHED/BENCH	GWAENLLIFION
168 SHAFT	GWAENLLIFION
170 STOPE	GWAENLLIFION
171 DRESSING FLOOR & SHED	GWAENLLIFION
173 STONE LINED PIT/SHAFT HEAD	GWAENLLIFION
174 STOPE/TRENCHED VEIN & DRESSING FLOOR	GWAENLLIFION
175 LEVEL/ADIT PORTAL	GWAENLLIFION
176 LEVEL/ADIT & SPOIL TIPS	GWAENLLIFION

179 DRYSTONE STRUCTURE - DRESSING SHED	GWAENLLIFION
180 SHAFT	GWAENLLIFION
181 SHAFT	GWAENLLIFION
182 DRESSING FLOOR, SHEDS & WASTE	GWAENLLIFION
183 SHAFT	GWAENLLIFION
184 SHAFT (SITE OF)	GWAENLLIFION
189 DRESSING FLOOR/SHEDS & WASTE	GWAENLLIFION
190 SHAFT	GWAENLLIFION
191 SHAFT	GWAENLLIFION
192 SHAFTHEAD	GWAENLLIFION
193 BUILDING	ABERLLYN
194 LEVEL - ADIT PORTAL	ABERLLYN
195 DRYSTONE STRUCTURE - STORE	ABERLLYN
196 SPOIL TIP	ABERLLYN

13.2 Sites with Potential for Clearance of Collapse/Rubble

The following is a list of sites that have been identified as being possible candidates for partial excavation. Excavation in this sense means clearing rubble and spoil to reveal the latest phases of use. The sites would then be recorded and conserved for display. In some cases features would be re-buried.

13.2.1 Site List

1 WHEEL PIT	PANDORA
6 BUDDLE PIT (SITE OF)	PANDORA
9 WHEEL PIT	PANDORA
14 TRAMWAY/SPOIL-TIP	PANDORA
15 LEVEL/SPOIL TIP	PANDORA
17 SMITHY-STORE (SITE OF)	PANDORA
24 BUILDING - MANAGERS/ENGINE HOUSE	PANDORA
31 BUILDING FOUNDATIONS - SMITHY/DRY	PANDORA
32 BRIDGE REVETMENT	PANDORA
33 BUILDING REMAINS - STABLES	PANDORA
35 CONCRETE FLOORS & FLOTATION TANKS	PANDORA
40 CISTERN	PANDORA
41 SHAFTHEAD & LEADER TANK (SPION KOP)	PANDORA
43 SHAFT (SITE OF)	PANDORA
44 LEVEL	PANDORA
56 SHAFTHEAD	PANDORA
59 SHAFT	PANDORA
75 BUILDING REMS - DRESSING SHED/CRUSHER	ALLTWEN
79 BUILDING - STORE/OFFICE	ALLTWEN
81 LEVEL - ALLTWEN LEVEL (SITE OF PORTAL)	ALLTWEN
90 POWDER MAGAZINE	COED MAWR POOL
91 WHEEL PIT	COED MAWR POOL
93 SHAFT (SITE OF)	COED MAWR POOL
94 CAPSTAN PIT	COED MAWR POOL
95 REVETTED STONE BAY - OREBIN	COED MAWR POOL
97 BUILDING - MINE OFFICE	COED MAWR POOL
98 RECT STRUCTURE - GEAR/CRUSHER HOUSE	COED MAWR POOL
99 RECT STRUCTURE	COED MAWR POOL
100 STONE LINED DEPRESSION - CAPSTAN PIT	COED MAWR POOL
101 PIT AND LINEAR CUT - SINGLE ARM BOB PIT	COED MAWR POOL
109 WHEEL PIT	COED MAWR POOL
112 SHAFTHEAD	COED MAWR POOL

113 SHAFTHEAD	COED MAWR POOL
114 BUILDING	COED MAWR POOL
115 LEVEL/MINEWORKING	COED MAWR POOL
116 ARC OF DRYSTONE WALLING	COED MAWR POOL
117 SHAFTHEAD	COED MAWR POOL
118 SHAFTHEAD	COED MAWR POOL
121 LINEAR CUT - DRAINAGE LEVEL/TUNNEL	COED MAWR POOL
147 SHAFTHEAD - RAWSONS/SUTTONS SHAFT	GWAENLLIFION
148 SHAFTHEAD	GWAENLLIFION
149 SHAFT/TRENCHED VEIN	GWAENLLIFION
151 SHAFT	GWAENLLIFION
152 DRESSING FLOOR	GWAENLLIFION
153 BUILDING - SMITHY	GWAENLLIFION
155 SHAFT (OWENS SHAFT)	GWAENLLIFION
173 STONE LINED PIT/SHAFT HEAD	GWAENLLIFION
183 SHAFT	GWAENLLIFION
186 SHAFT/INCLINED LEVEL	GWAENLLIFION

13.3 Sites with Potential for Clearance of Mixed Material

13.3.1 Site List

3 CRUSHER HOUSE	PANDORA
4 DF FITTINGS/JIG BASES	PANDORA
8 TRACKWAY	PANDORA
10 BUILDING FOUNDATION	PANDORA
11 SPOIL-TIPS/TAILINGS	PANDORA
12 LEAT/STREAM	PANDORA
29 BUILDING - COMPRESSOR HOUSE	PANDORA
30 BUILDING (SITE OF) - WASH HOUSE/DRY	PANDORA
31 BUILDING FOUNDATIONS - SMITHY/DRY	PANDORA
36 SPOIL HEAP	PANDORA
43 SHAFT (SITE OF)	PANDORA
51 SHAFT/MINEWORKING	PANDORA
56 SHAFTHEAD	PANDORA
71 BUDDLE PIT	ALLTWEN
72 BUDDLE PIT	ALLTWEN
81 LEVEL - ALLTWEN LEVEL (SITE OF PORTAL)	ALLTWEN
96 REVETTED STONE BAY - OREBIN	COED MAWR POOL
119 STONE FOOTINGS	COED MAWR POOL
147 SHAFTHEAD - RAWSONS/SUTTONS SHAFT	GWAENLLIFION

13.4 Sites with Potential for Clearance of Coarse Spoil

13.4.1 Site List

9 WHEEL PIT	PANDORA
35 CONCRETE FLOORS & FLOTATION TANKS	PANDORA
36 SPOIL HEAP	PANDORA
51 SHAFT/MINEWORKING	PANDORA
93 SHAFT (SITE OF)	COED MAWR POOL
100 STONE LINED DEPRESSION - CAPSTAN PIT	COED MAWR POOL
155 SHAFT (OWENS SHAFT)	GWAENLLIFION

13.5 Sites with Potential for Clearance of Fine Spoil

Features with a covering of fine spoil can present health and safety problems and excavation can only proceed with adequate information on levels of toxicity and relevant safety precautions.

13.5.1 Site List

1 WHEEL PIT	PANDORA
3 CRUSHER HOUSE	PANDORA
6 BUDDLE PIT (SITE OF)	PANDORA
10 BUILDING FOUNDATION	PANDORA
11 SPOIL-TIPS/TAILINGS	PANDORA
74 SLUICE FOR BUDDLES 71 & 72	ALLTWEN
103 SPOIL TIPS & DRESSING FLOOR	COED MAWR POOL
104 LEAT	COED MAWR POOL
152 DRESSING FLOOR	GWAENLLIFION

14. RECOMMENDATIONS

14.1 Sites Recommended for Presentation

These are sites which are considered possible candidates for public display and interpretation. This is judged on a number of criteria including accessibility, whether the features are good examples, of local interest or of group value, that is, allow a better understanding of the processes occurring at a site, and hence allow for a more comprehensive display.

14.1.1 Site List

1 WHEEL PIT	PANDORA
3 CRUSHER HOUSE	PANDORA
4 DF FITTINGS/JIG BASES	PANDORA
5 RESERVOIR	PANDORA
6 BUDDLE PIT (SITE OF)	PANDORA
7 TRAMWAY	PANDORA
9 WHEEL PIT	PANDORA
10 BUILDING FOUNDATION	PANDORA
11 SPOIL-TIPS/TAILINGS	PANDORA
17 SMITHY-STORE (SITE OF)	PANDORA
71 BUDDLE PIT	ALLTWEN
72 BUDDLE PIT	ALLTWEN
73 DRYSTONE REVETMENT WALL	ALLTWEN
74 SLUICE FOR BUDDLES 71 & 72	ALLTWEN
75 BUILDING REMS - DRESSING SHED/CRUSHER	ALLTWEN
76 SPOIL TIP	ALLTWEN
77 TRAMWAY INCLINE/BARROW RUN	ALLTWEN
79 BUILDING - STORE/OFFICE	ALLTWEN
80 DRYSTONE REVETMENT WALL	ALLTWEN
81 LEVEL - ALLTWEN LEVEL (SITE OF PORTAL)	ALLTWEN
84 SPOIL TIP	ALLTWEN
85 SPOIL TIP	ALLTWEN
90 POWDER MAGAZINE	COED MAWR POOL
91 WHEEL PIT	COED MAWR POOL
92 DRYSTONE PILLARS (FOR LAUNDER 104)	COED MAWR POOL
93 SHAFT (SITE OF)	COED MAWR POOL
94 CAPSTAN PIT	COED MAWR POOL
95 REVETTED STONE BAY - OREBIN	COED MAWR POOL
96 REVETTED STONE BAY - OREBIN	COED MAWR POOL
97 BUILDING - MINE OFFICE	COED MAWR POOL
98 RECT STRUCTURE - GEAR/CRUSHER HOUSE	COED MAWR POOL
99 RECT STRUCTURE	COED MAWR POOL
100 STONE LINED DEPRESSION - CAPSTAN PIT	COED MAWR POOL
101 PIT AND LINEAR CUT - SINGLE ARM BOB PIT	COED MAWR POOL

102 DRY STONE REVETMENT	COED MAWR POOL
103 SPOIL TIPS & DRESSING FLOOR	COED MAWR POOL
153 BUILDING - SMITHY	GWAENLLIFION
159 DRESSING FLOOR	GWAENLLIFION
182 DRESSING FLOOR, SHEDS & WASTE	GWAENLLIFION

14.2 Summary of Recommendations

All sites require a level of measured survey to be carried out at a working scale of 1:500 before any further recording can proceed. The production of an accurate plot of all surviving archaeological features in the context of their physical setting is a necessary step toward an overall strategy for each site. Any future works to be scheduled in accordance with the above requirements.

14.3 Amenity Value

Only specific parts of particular sites are deemed to be suitable for future interpretation and presentation to the general public. At this stage the main criteria for identifying such areas are:

1) location - proximity to existing roads/pathways etc.
2) survival/condition of remains
3) interest value/potential

Suitable locations are as follows:

a) Pandora - wheelpit and dressing floors at NGR SH765598
b) Alltwen - dressing floor and level at NGR SH780591
c) Gwaenllifion - hand-dressing floors at NGR SH787591
d) Coed Mawr Pool - aqueduct, wheelpit and dressing floors at NGR SH781584.

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Parc and Fucheslas (2) - Caernarfon Record Office
Plans of Abandoned Mines - Caernarfon Record Office
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Plan of the Welsh-Foxdale Mine Sett (sales catalogue plan dated 1895) - Clwyd Record Office, Ruthin.

15.2 Unpublished Sources

15.2.1 Records of the Following Companies (Public Records Office):

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Caernarvonshire Consolidated Lead Mines
Coed Mawr Pool & Ffridd Lead Mining Co.
Coed Mawr Pool Lead & Blende Mining Co.
Coed Mawr Lead Mining Co.
Cyffty Lead Mining Co.
D'Eresby Consolidated Mining Co. Ltd.
D'Eresby Mountain Mining Company

D'Eresby Mining Company
D'Eresby & Gwydir Mines Ltd.
Eagle Lead Mining Co.
Ffriddllechwedd Lead Mining Co.
Gel Tin Lode & Alluvial Co.
Great Challinor Mines
Gwydyr Amalgamated Mining Co.
Gwydyr Park Consols Mining Co.
Llanrwst Consolidated Mines
Llanrwst Lead Mining Co.
North Wales Mines Ltd.
North-West Spelter Syndicate
Pandora Lead Mines Ltd.
Parc Lead & Zinc Mining Co.
Pencraig United Lead Mining Co.
Pool Mining Co.
Standard Lead Co. Ltd.
Welsh-Foxdale Co.
Welsh Crown Spelter Co.
Western Development Co.
White Cliff Lead Mining Co.
Willoughby Mining Co.

15.2.2 Gwydyr Estate Records:
Caernarfon Record Office
Lincoln Archive Office
Ancaster Estate Papers - (Private Papers) Grimsthorpe Castle, Lincolnshire
Collation Mines & Quarry Returns - Gwydyr Estate 1838-1920
J.S Bennett & M.J.T. Lewis - deposited Clwyd & Gwynedd R.O.s

15.2.3 Other:
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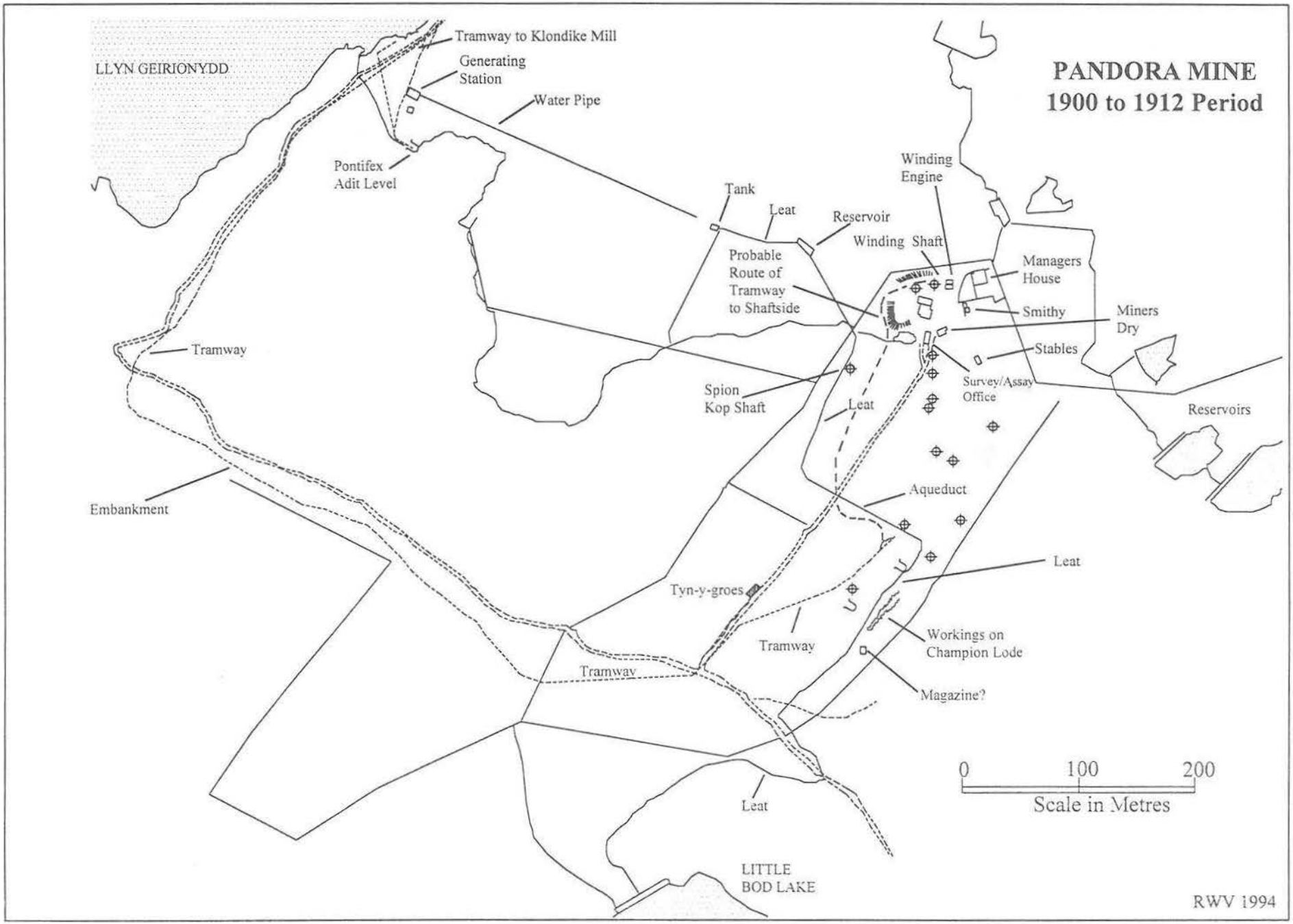
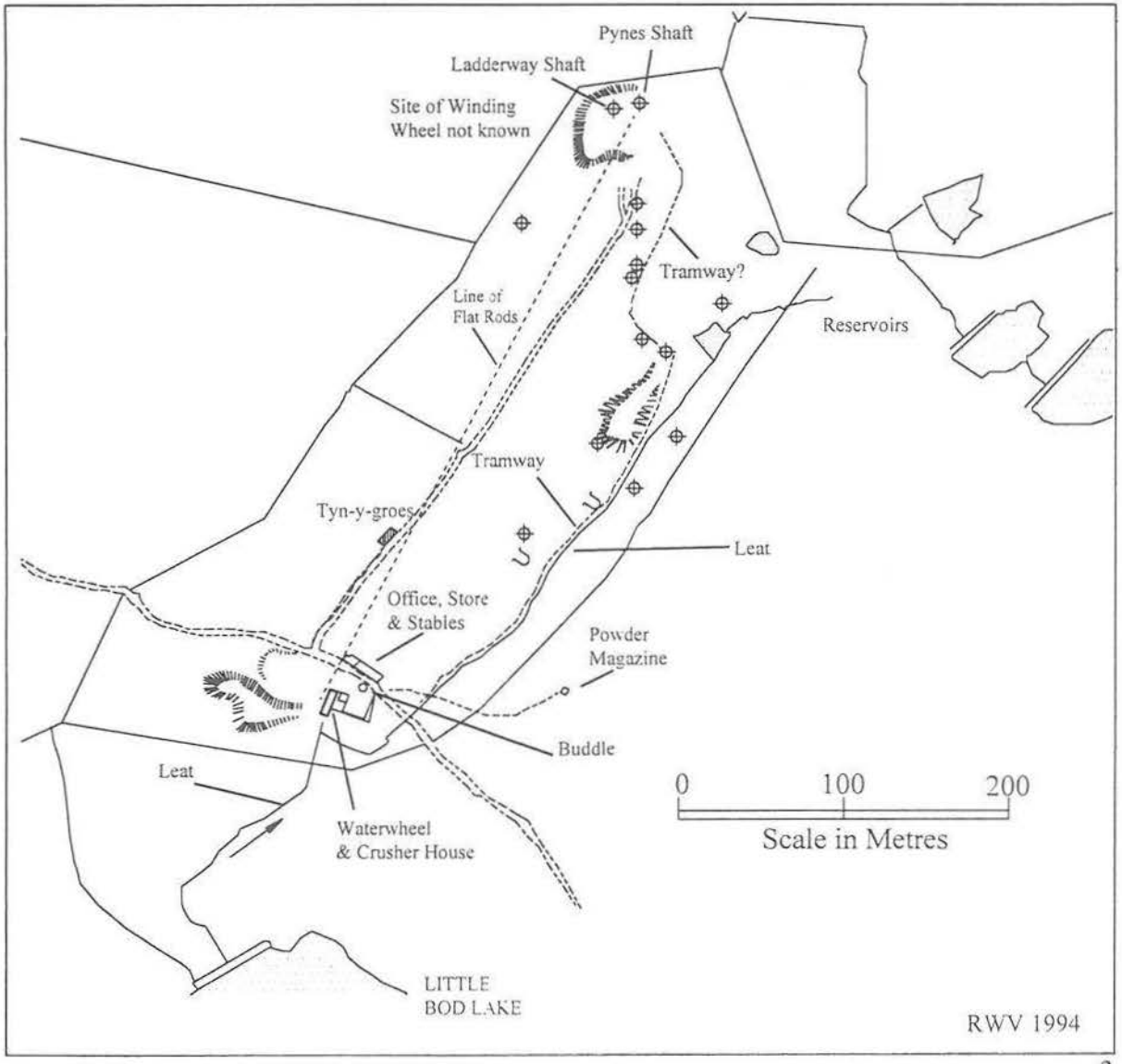
APPENDIX I

Historical Maps 1 - 4

Pages I - III

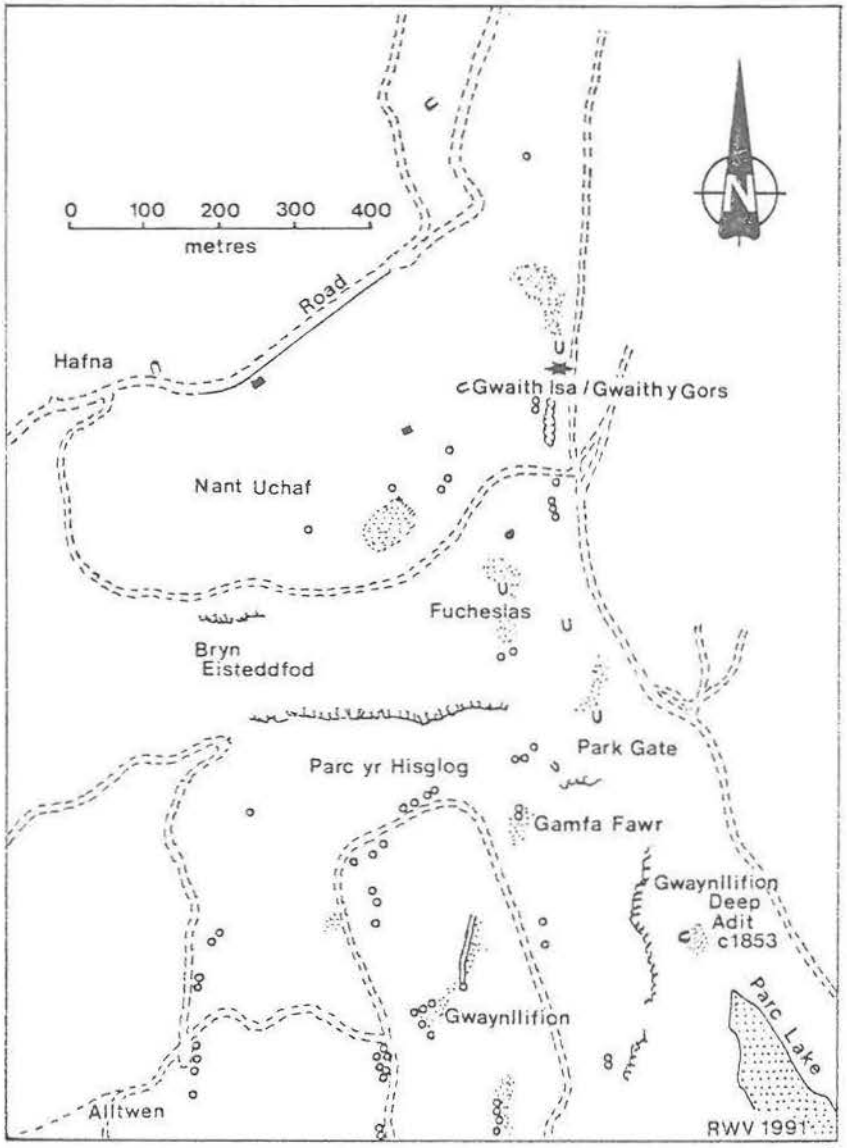


Pandora Mine 1900 - 1912.



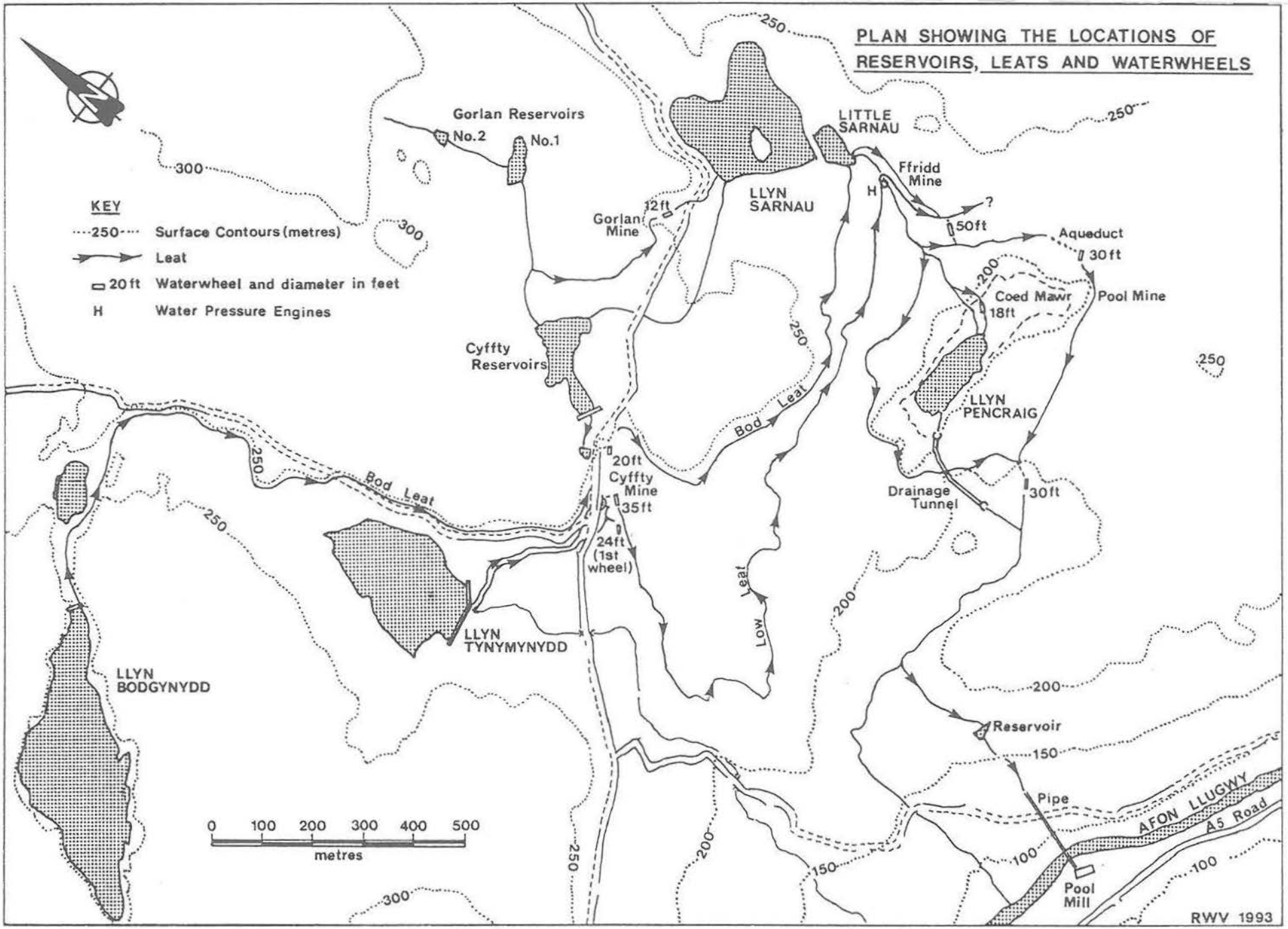
2

Pandora Mine (Willoughby Mine) 1875.



3

Alltwen and Gwaenllifion - location and adjacent mines



Coed Mawr Pool and adjacent mines:
Location of reservoirs, leats and waterwheels.

APPENDIX II

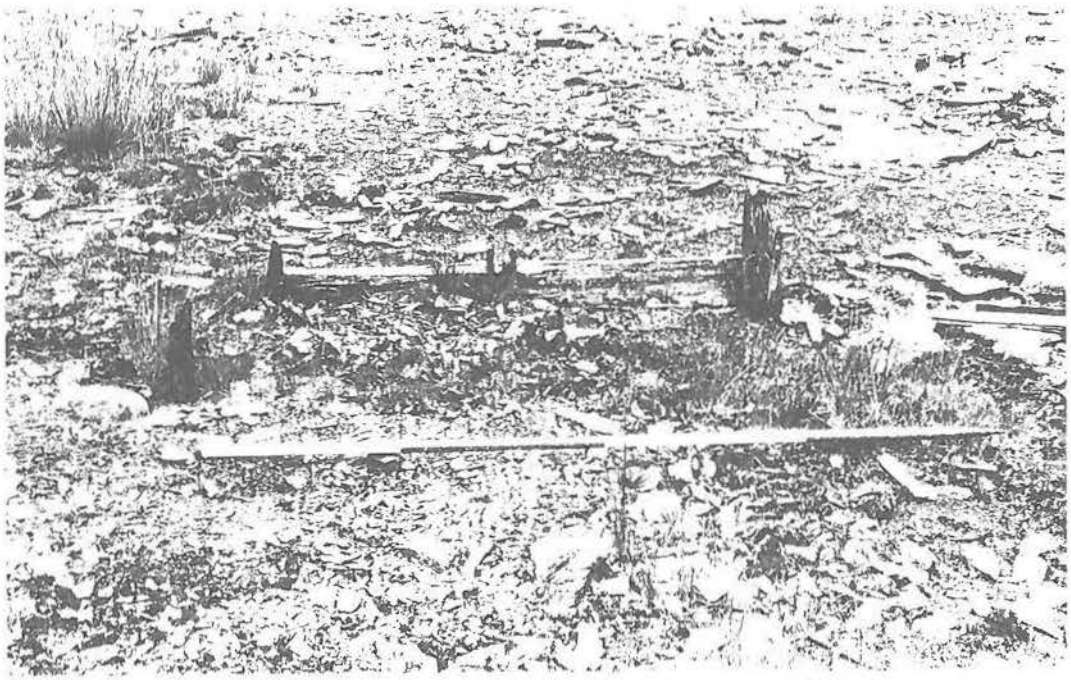
Plates 1 - 8

Pages I - IV

Pl.1

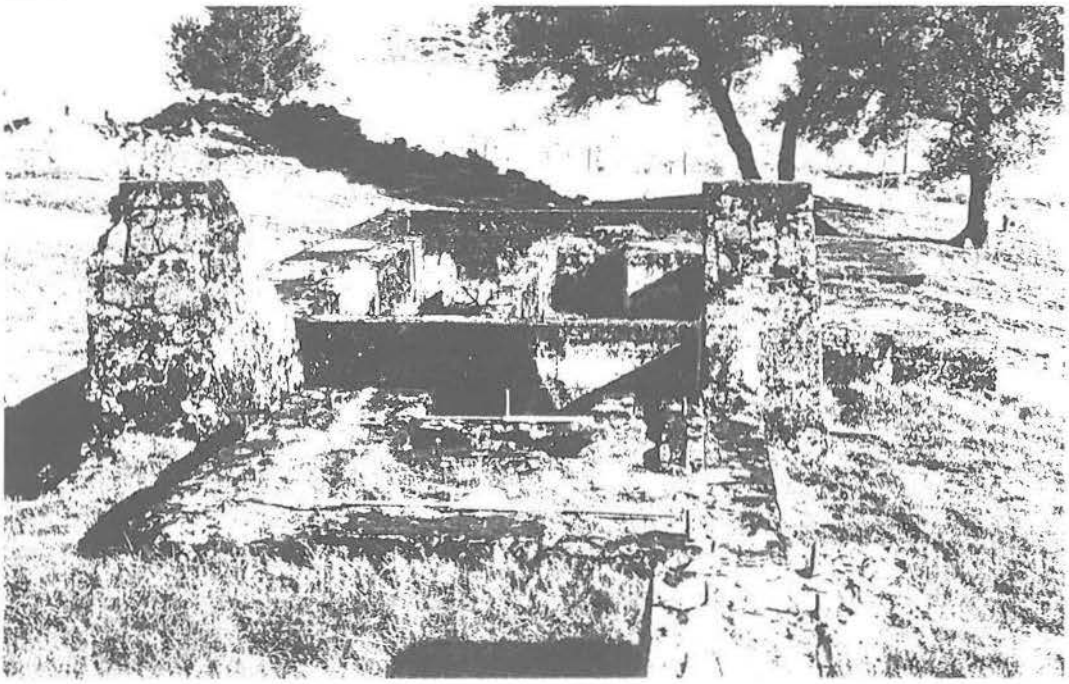
Site no. 21 - Pandora Mine : Powder Magazine - view from SE

Pl.2



Site no. 04 - Pandora Mine (Willoughby Mine) : Dressing floor showing jig bases - view from E.

Pl.3



Site no. 27 - Pandora Mine : Pyne's Shaft - Winding house and headframe supports

Pl.4

Site no.41 - Pandora Mine : Spion Kop shafthead & header tank - view from E

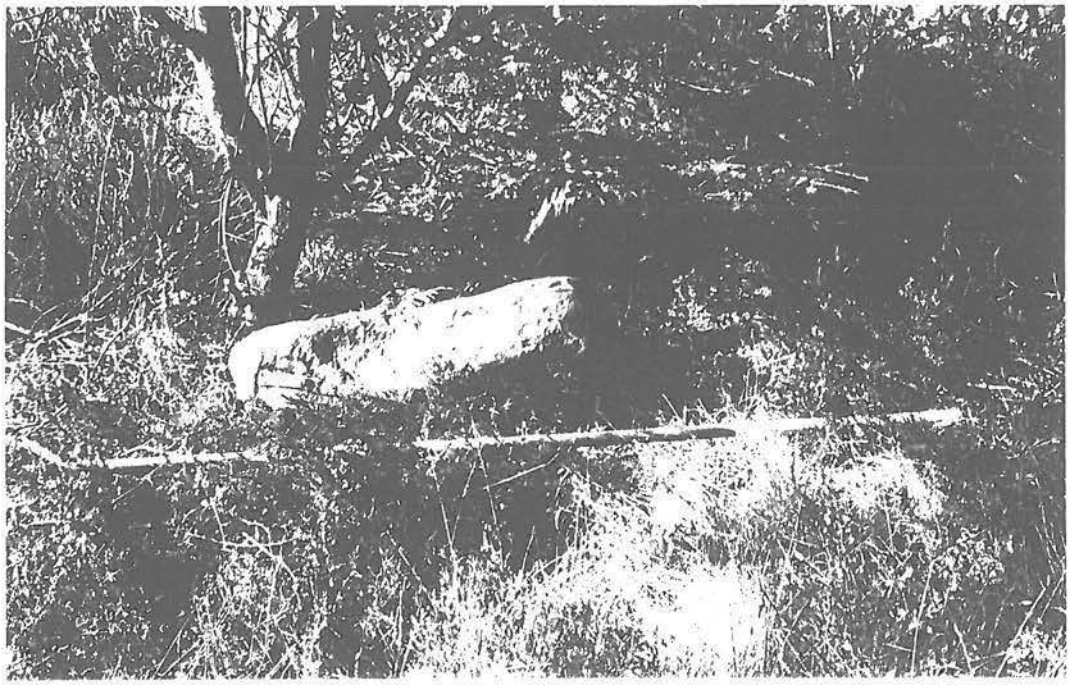
Pl.5

Site no.35 - Pandora Mine : Eagle Flotation Mill -
Concrete floors and tanks - view from N

Pl.6

Site no. 01 - Pandora Mine (Willoughby Mine) :
Waterwheel Pit - view from S

Pl.7



Site no. 82 - Alltwen Mine : Hand bucking stone

Pl.8

Site nos. 91/98 - Coedmawr Pool Mine : No.1 Wheelpit & gearhouse - view from SSE

APPENDIX III

Summary of Overall Value Assessment

I Pandora Mine

II Alltwen Mine

III Coed Mawr Pool Mine

IV The Gwaenllifion Mines

V Gamfa Fawr

VI Parc/Parc Gate

GWYDYR MINES SURVEY - PANDORA MINE

SUMMARY OF OVERALL VALUE ASSESSMENT

		Low	Medium	High
1.	Documentation		X	
2a.	Group Value, Association			X
2b.	Group Value, Clustering		X	
3a.	Survival		X	
3b.	Condition	X		
4a.	Fragility		X	
4b.	Vulnerability		X	
5a.	Diversity, Type	X		
5b.	Diversity, Features			X
6.	Potential		X	
7.	Amenity Value			X
8.	Nature Conservation Value			X

GWYDYR MINES SURVEY - ALLTWEN MINE

SUMMARY OF OVERALL VALUE ASSESSMENT

		Low	Medium	High
1.	Documentation		X	
2a.	Group Value, Association			X
2b.	Group Value, Clustering			X
3a.	Survival		X	
3b.	Condition	X		
4a.	Fragility		X	
4b.	Vulnerability			X
5a.	Diversity, Type	X		
5b.	Diversity, Features		X	
6.	Potential		X	
7.	Amenity Value			X
8.	Nature Conservation Value		X	

GWYDYR MINES SURVEY - COED MAWR POOL MINE

SUMMARY OF OVERALL VALUE ASSESSMENT

		Low	Medium	High
1.	Documentation		X	
2a.	Group Value, Association			X
2b.	Group Value, Clustering			X
3a.	Survival		X	
3b.	Condition		X	
4a.	Fragility		X	
4b.	Vulnerability			X
5a.	Diversity, Type	X		
5b.	Diversity, Features			X
6.	Potential		X	
7.	Amenity Value			X
8.	Nature Conservation Value			X

GWYDYR MINES SURVEY - GWAYN LLIFON MINE

SUMMARY OF OVERALL VALUE ASSESSMENT

		Low	Medium	High
1.	Documentation		X	
2a.	Group Value, Association			X
2b.	Group Value, Clustering			X
3a.	Survival		X	
3b.	Condition		X	
4a.	Fragility			X
4b.	Vulnerability			X
5a.	Diversity, Type	X		
5b.	Diversity, Features		X	
6.	Potential		X	
7.	Amenity Value		X	
8.	Nature Conservation Value			X

GWYDYR MINES SURVEY - GAMFA FAWR MINE

SUMMARY OF OVERALL VALUE ASSESSMENT

		Low	Medium	High
1.	Documentation		X	
2a.	Group Value, Association			X
2b.	Group Value, Clustering			X
3a.	Survival	X		
3b.	Condition	X		
4a.	Fragility			X
4b.	Vulnerability			X
5a.	Diversity, Type	X		
5b.	Diversity, Features	X		
6.	Potential	X		
7.	Amenity Value	X		
8.	Nature Conservation Value		X	

GWYDYR MINES SURVEY - PARC/PARC GATE

SUMMARY OF OVERALL VALUE ASSESSMENT

		Low	Medium	High
1.	Documentation		X	
2a.	Group Value, Association			X
2b.	Group Value, Clustering			X
3a.	Survival		X	
3b.	Condition	X		
4a.	Fragility		X	
4b.	Vulnerability	X		
5a.	Diversity, Type	X		
5b.	Diversity, Features	X		
6.	Potential	X		
7.	Amenity Value	X		
8.	Nature Conservation Value		X	