AMLWCH WASTE WATER TREATMENT SCHEME

ARCHAEOLOGICAL ASSESSMENT

Report No. 481

Prepared for

Symonds Group Ltd

April, 2003

Ymddiriedolaeth Archaeolegol Gwynedd
Gwynedd Archaeological Trust

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AMLWCH WTW IMPROVEMENT (G1755)

ARCHAEOLOGICAL ASSESSMENT

SUMMARY
An archaeological assessment was carried out in advance of a proposed pipeline between Llaneilian and Amlwch Port between an existing pumping station and a proposed treatment works at Amlwch Port. This involved consultation of existing records and documents and a field search. Nine archaeological features were identified: 1 was categorised as national importance, 1 of regional importance, 2 of local importance, 1 of minor importance and 2 of unknown importance. The pipeline will have a slight impact on 3 of these features, one is an incline, of regional importance, and another a track of minor importance. It is not possible to assess the impact on the third site, as the condition of the archaeological remains (a demolished terrace of houses) is not known. Those sites which will be slightly affected will be recorded in advance. A watching brief will be undertaken along the entire route during the initial earth removal process, and during trench excavation if it is considered appropriate. The port at Amlwch, and all the related structures, is of national importance, and all work undertaken there needs to be carried out sensitively and with due regard for the setting of the archaeological remains.

1 INTRODUCTION

Gwynedd Archaeological Trust have been asked by Symonds Group Ltd to undertake an archaeological assessment in advance of improvements to the pipeline between Llaneilian and the pumping station at Amlwch Port, and a proposed Waste Water Treatment Works west of the port (SH 448936).

2 SPECIFICATION AND PROJECT DESIGN

A brief has been prepared for this project by Gwynedd Archaeological Planning Service (D718). A project design was produced which conformed to the requirements of the brief, and to the guidelines specified in *Standard and Guidance for Archaeological Desk-based Assessment* (Institute of Field Archaeologists, 1994, rev. 1999). The project is being monitored by Gwynedd Archaeological Planning Service.

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

a) *to identify and record the cultural heritage of the area to be affected;*
b) *to evaluate the importance of what was identified (both as a cultural 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.*

A full archaeological assessment usually comprises 6 phases:

1) *Desk-top study*
2) *Field Search*
3) *Interim Draft Report*
4) *Detailed Field Evaluation*
5) *Final Draft Report*
6) *Final Report*

This assessment has covered the work required under 1, 2 and 3. It is sometimes necessary to undertake a programme of field evaluation following the desktop assessment. This is because some sites cannot be assessed by desktop or field visit alone, and additional fieldwork is required. This typically takes the form of geophysical survey or trial excavation, although a measured survey is also an option. The present report makes recommendations for any field evaluation required.

3 METHODS AND TECHNIQUES

3.1 Desk-top Study

This involved consultation of maps, computer records, written records and reference works, which make up the Sites and Monuments Record (SMR), located at Gwynedd Archaeological Trust, Bangor. Aerial photographs, mostly taken in the 1980's, were examined at Countryside Council for Wales. Estate maps, tithe maps and OS maps were examined at the County Record Office, Llangefni, and the University of Wales Bangor archives. Information about Listed Buildings and Scheduled Ancient Monuments was obtained from Cadw: Welsh Historic Monuments. Secondary sources were consulted to provide background information, particularly on the development of the port of Amlwch. The Amlwch Industrial Heritage Trust were consulted on aspects relating to the archaeology of the port. A full list of sources consulted is given in section 7 of the report.

I am very grateful to Brian Hope, who gave assistance with the identification of buildings that formerly lay either side Quay Street, and was able to provide information on the incline and saw mill at the port.

3.2 Field Search

This was undertaken on 9 April, 2003, when the route of the pipeline was walked by an archaeologist to note the present state of known sites, and to identify any archaeological features visible as earthworks.

The conditions were fine for a field search, though some fields were heavily overgrown with gorse or bracken, making site identification impossible.

Features identified were marked on copies of the 1:10,000 OS map, as accurately as possible without surveying. Each feature was described and assessed. Detail notes, sketch plans and photographs were made of the more important features. These records are archived in Gwynedd Archaeological Trust under project number G1775.

3.3 Report

All available information was collated, and the features were then assessed and allocated to the categories listed below. These are intended to give an idea of the importance of the feature and the level of response likely to be required; descriptions of the features and specific recommendations for further assessment or mitigatory measures, as appropriate, are given in the relevant sections of this report.

The criteria used for allocating features to categories of importance are based on those used by the Secretary of State when considering ancient monuments for scheduling; these are set out in the Welsh Office Circular 60/96.

3.3.1 Categories of importance

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

Category A - Sites of National Importance.

This category includes Scheduled Ancient Monuments and Listed Buildings of grade II* and above, as well as those sites that would meet the requirements for scheduling (ancient monuments) or listing (buildings) or both.

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

Category B - Sites of Regional Importance

This category includes grade II Listed Buildings and sites which would not fulfil the criteria for scheduling, but which are nevertheless of particular importance within the region. Preservation *in situ* is the preferred option for Category B sites, but if damage or destruction cannot be avoided, appropriate detailed recording might be an acceptable alternative.

Category C - Sites of District or Local Importance

These sites are not of sufficient importance to justify a recommendation for preservation if threatened, but nevertheless merit adequate recording in advance of damage or destruction.

Category D - Minor and Damaged Sites

These are sites, which are of minor importance, or are so badly damaged that too little remains to justify their inclusion in a higher category. For these sites rapid recording either in advance or during destruction, should be sufficient.

Category E - Sites needing further investigation

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

3.3.2 Definition of Impact

The direct impact of the proposed development on each site was estimated. The impact is defined as *none, slight, unlikely, likely, significant, considerable or unknown* as follows:

None:
There is no construction impact on this particular site.

Slight:
This has generally been used where the impact is marginal and would not by the nature of the site cause irreversible damage to the remainder of the feature, *e.g.* part of a trackway or field bank.

Unlikely:
This category indicates sites that fall on the margins of the study area, but are unlikely to be directly affected.

Likely:
Sites towards the edges of the study area, which may not be directly built on, but which are likely to be damaged in some way by the construction activity.

Significant:
The partial removal of a site affecting its overall integrity. Sites falling into this category may be linear features such as roads or field boundaries where the removal of part of the feature could make overall interpretation problematic.

Considerable:
The total removal of a feature or its partial removal which would effectively destroy the remainder of the site.

Unknown:
This is used when the location of the site is unknown, but thought to be in the vicinity of the proposed development.

3.3.3 Definition of field evaluation techniques

Field evaluation is necessary to allow the reclassification of the category E sites, and to allow the evaluation of areas of land where there are no visible features, but for which there is potential for sites to exist. Two principal techniques can be used for carrying out the evaluation: geophysical survey and trial trenching.

Geophysical survey
This technique involves the use of a magnetometer, which detects variation in the earth's magnetic field caused by the presence of iron in the soil. This is usually in the form of weakly magnetised iron oxides, which tend to be concentrated in the topsoil. Features cut into the subsoil and back-filled or silted with topsoil contain greater amounts of iron and can therefore be detected with the gradiometer. Strong readings can be produced by the presence of iron objects, and also hearths or kilns.

Other forms of geophysical survey are available, of which resistivity survey is the other most commonly used. However, for rapid coverage of large areas, the magnetometer is usually considered the most cost-effective method. It is also possible to scan a large area very rapidly by walking with the magnetometer, and marking the location of any high or low readings, but not actually logging the readings for processing.

Trial trenching
Buried archaeological deposits cannot always be detected from the surface, even with geophysics, and trial trenching allows a representative sample of the development area to be investigated. Trenches of an appropriate size can also be excavated to evaluate category E sites. These trenches typically measure between 20m and 30m long by 2m wide. The turf and topsoil is removed by mechanical excavator, and the resulting surface cleaned by hand and examined for features. Anything noted is further examined, so that the nature of any remains can be understood, and mitigation measures can be recommended.

3.3.4 Definition of Mitigatory Recommendations

None:

No impact so no requirement for mitigatory measures.

Detailed recording:

Requiring a photographic record, surveying and the production of a measure drawing prior to commencement of works.

Archaeological excavation may also be required depending on the particular feature and the extent and effect of the impact.

Basic recording:

Requiring a photographic record and full description prior to commencement of works.

Watching brief:

Requiring observation of particular identified features or areas during works in their vicinity. This may be supplemented by detailed or basic recording of exposed layers or structures.

Avoidance:

Features, which may be affected directly by the scheme, or during the construction, should be avoided. Occasionally a minor change to the proposed plan is recommended, but more usually it refers to the need for care to be taken during construction to avoid accidental damage to a feature. This is often best achieved by clearly marking features prior to the start of work.

Reinstatement:

The feature should be re-instated with archaeological advice and supervision.

4 ARCHAEOLOGICAL FINDINGS AND RECOMMENDATIONS

4.1 Topographic Description

The route of the Llaneilian pipeline runs through rocky coastal terrain, with poorly drained soils and wetlands contrasting with rock outcrops and thin soils supporting gorse and heathers. Bracken grows on the slightly better soils.

Geologically Anglesey is composed largely of Pre-Cambrian rocks, most notably the Mona Complex. These bedded rocks have undergone intense pressures leaving them deformed and folded, and volcanic events have resulted in their interbedding with lavas, ashes and tuffs. North-east Anglesey is made up of rocks of the New Harbour Group of the Mona Complex, in part overlain by glacial clays, though rock outcrops are much in evidence (Davies 1972).

The dominant rock outcrops and relatively poor soils would not have encouraged settlement in former times, though the marginal nature of the land would mean relatively good preservation of any sites that exist.

The pipelines at Porth Amlwch lie start on a rock terrace, partly created by drilling and blasting, and pass up the rock face via a former incline. The route to the proposed STW then runs along the track that passes Mona Mill. Much of this route leads past or through areas of former industrialisation.

4.2 Archaeological and Historical Background

(see figure 1)

The study area is in two parts: the Llaneilian to Amlwch port pipeline, and the section in Amlwch port adjacent to the existing pumping station.

4.2.1 Llaneilian to Amlwch Port

The Llaneilian to Amlwch Port pipeline crosses rocky marginal lands. There are no sites recorded on the regional Sites and Monuments Record in the immediate vicinity. A Neolithic stone axe (c. 3500 BC – 2500 BC) was found some 700m SE of the pipeline (PRN 3568), but there is little other evidence for occupation within the area until medieval times.

The church at Llaneilian (PRN 6972, approximately 500m east of the pipeline) is a Grade I listed building, and retains exceptionally fine medieval architecture, including a 12th century west tower and nave and chancel of the late 15th century. There is an additional chapel dedicated to St Eilian off the south-east corner of the chancel, now linked by a passage though formerly free-standing. The present chapel was built in the 15th century, but is likely to have had earlier origins. Similar chapels exist at other important churches in Anglesey and north-west Wales, and can be evidence that the site was formerly that of the dominant church (usually referred to as a 'mother' church or a 'clas' church) within a region, typically a cantref or commote. In this instance it is thought that Llaneilian was the mother church for the Cantref of Cemais prior to the 12th century. Its date of origin is likely to be sometime in the 6th century, though there is no direct evidence for this at present. After the 12th century the development of the parochial system meant that Llaneilian lost some of its former status as a mother church of the region, and became a parish church. In later medieval times it remained popular with pilgrims, and has a well (PRN 3567) dedicated to St Eilian which lies to the north on the coast. A late medieval map of the north coast of Anglesey shows a 'Bishop's House' and a pictorial representation of a fairly large late medieval house standing close to the church (PRO MPF/1/11, reproduced in Hope 1994, 16). It was probably on the site of the present farm of Plas Eilian adjacent to the church.

The pipeline crosses the Afon Bryngwyn at Rhyd y Talog. The river may originally have been called Afon Cawell, as it discharges into a small inlet called Aber Cawell (Jones 1989, 24). The present road is carried over the river on a small stone culvert of late 19th century date, and the location of the earlier ford is not immediately evident.

4.2.2 Amlwch Port
(Note: the following summary was originally prepared by the Trust for inclusion in *Report on a feasibility study for land reclamation at Amlwch port* compiled for Anglesey Borough Council by Richards Moorehead and Laing, 1995, that below is an edited version of the original submission)

The port and town of Amlwch developed and declined with the fortunes of the copper mines at Mynydd Parys, a mile away, at one time the largest copper mines in the world. These were worked in the Bronze Age and, probably, in the roman period (Rowlands 1981, 20), but thereafter lay unused until the 16th century, when Sir John Wynn of Gwydir, Lord Burghley, in his capacity as President of the Mineral and Battery Workes and others made an assay of the ore (Hope 1994, 75). Possibly a small quay was constructed to ship what little was produced in this period; a map discovered in the State Papers Supplementary of the coastline of north-east Anglesey, undated but annotated in Tudor secretary hand, shows the '*Haven at Amlewyhe'* (Hope 1994, 16). It has been suggested that a length of quayside at Amlwch my belong to this period (Hope 1994, 18). Systematic exploitation of the ores began in the 1760s, and increased through the last quarter of the 18th century. However by 1800 operations were in decline though mining continued into the 1880s.

The scale of operations at Mynydd Parys not only called into being a community to house the workers but also required comprehensive port facilities. Amlwch creek was well suited to the purpose, because of its close proximity to the mines and in 1793 an Act was passed to permit the "enlargement, deepening, cleansing, improvement and regulation of the harbour" (Hope 1994, 98). Before this date it is likely that vessels were loaded and unloaded at the extreme southern end of the creek, at the point where the Afon Goch discharges. Operations concentrated on developing the eastern side of the creek, and it was here that storage bins, three for copper ore, one each for slag, iron and coal were constructed ((Hope 1994, 99). In 1816 an outer pier was built, and furnished with a small lighthouse in 1817. This was replaced by the present lighthouse in 1853 (Hague, 1994). Conical ore-burning kilns were set up "near to the coast" (Hope 1994; Davies 1810) but their precise whereabouts is unknown.

The Francis map of 1828 (UWB Llwydiarth Esgob, FS639), the primary source for the development of the port in the early 19th century, shows that a small settlement existed around the port, with a number of industries, including a substantial brewery, in the immediate vicinity. Unfortunately, little of the west side, where the land belonged to the see of Bangor, is shown on the map, but it does clearly indicate a "Shipwright's yard", whose site survives.

An extensive copper smelting plant was established to the west of the port, on a site which has now disappeared under a housing estate. Two smelting houses were in operation by 1797 (Hope 1994, 47) and by the early 19th century were connected to the port by an incline, whose trace may be seen on the western slopes of the creek. It is possible that in some places rails and sleepers may survive under the road surface on the quayside (*pers comm* Bryan Hope). Paynter's saw mill lay at the top of the incline, on the opposite side of a small stream which issues from under the road at the base of a high terraced wall. The wheel pit for the mill is still clearly visible. To the east of the mill lie the remains of the Newhaven public house.

Above the harbour lies Mona Mill, a windmill erected in 1816, also by the Paynter family. Archive photographs show the mill with a cluster of buildings around the base, though only the tower, an empty shell, now survives.

4.3 The Existing Archaeological Record
(See figure 2)

4.3.1 Llaneilian to Porth Amlwch pipeline

Nine features were identified within the survey area, of which three will be directly affected by the pipeline. These are listed below along with recommendations for further assessment and mitigatory measures.

1. Well SH45929292
Category: C Impact: None
A small stone built well, next to the field wall, and with a capstone which carries a footpath over the chamber, lies on ground sloping to the south. It probably served the farm of Cae Pant to the south.

Recommendations for further assessment: *None*
Recommendations for mitigatory measures: Avoid. The pipeline route appears to lie south of the well chamber.

2. Rhyd y Talog SH45529295
Category: C Impact: Unknown
Also called Rhyd Halog, this is the site of a ford across Afon Bryngwyn, of at least 18th century date, and presumably much older, as it lies on the line of the main east-west route across the north of Anglesey. A bridge was built over the stream in the early 19th century, which was rebuilt c. 1891 (Jones 1992, 81). The exact site of the ford is not known, but must have lain under or close to the site of the bridge.
Recommendations for further assessment: *None*
Recommendations for mitigatory measures: *Watching brief to try to locate ford, and examine bridge structure.*

4.3.2 Porth Amlwch

3. Buildings on east side of Quay Street SH44939324
Category: E Impact: None
A row of buildings formerly lay on the east side of quay street. One was a public house (Waterman's Arms) and the remainder were houses. (see Map 2).
Recommendations for further assessment: *None*
Recommendations for mitigatory measures: *Avoid: the pipeline does not impact upon this area.*

4. Mooring ring fastened to rock above Quay Street SH44939323
Category: C Impact: None
An iron mooring ring located above the terrace now occupied by the pumping station. This must have been for mooring boats at the top end of the harbour.
Recommendations for further assessment: *None*
Recommendations for mitigatory measures: *Avoid. This will not be disturbed by the pipeline.*

5. Buildings on west side of Quay Street SH44939324
Category: D Impact: Unknown
A row of buildings formerly lay on the terrace now occupied by the pumping station. These are clearly marked on the Francis map of 1828, though unfortunately there is no indication of function. Though most likely to have been houses, some may have been warehouses or workshops.
Recommendations for further assessment: *None*
Recommendations for mitigatory measures: *Watching brief.*

6. Incline SH44919325
Category: B Impact: Slight
An incline of early 19th century date built to run between the head of the port and the smelters above, and created from a natural rock shelf. It is now grassed over, but traces of former rail fastenings may remain in the rock. A pipe apparently already runs along the south side of the of the incline against the rock face (*pers comm* ??).
Recommendations for further assessment: *None*
Recommendations for mitigatory measures: *Watching Brief. Avoid any new disturbance of the incline; if it is not possible to use the existing trench, then it would be preferable to bury the pipe in the terrace immediately below the incline. Any new disturbance should be preceded by archaeological investigation and recording.*

7. Saw mill SH45929292
Category: C Impact: None
The remains of a rectangular stone structure, formerly a saw mill built in the early 19th century, with a wheel pit alongside. It lies above a small stream, into which the tailrace discharged.
Recommendations for further assessment: *None*
Recommendations for mitigatory measures: *Avoid.*

8. Track from port to Mona Mill
Category: D Impact: Considerable
The track which led to Mona Mill. It runs past a number of sites of other former buildings, and it is probable that much of the track pre-dates the construction of the mill built 1816.
Recommendations for further assessment: *None*
Recommendations for mitigatory measures: *None*.

9. Mona Mill (also called Melin y Borth) SH44859346
Category: A Impact: None Listed Building Grade II.
A windmill built in 1816 by the Paynter family. It was the tallest mill on Anglesey, standing over 60ft high, and was built largely of brick, with the ground floor only of stone. It stopped working in the early years of the 20th century, and is now an empty shell, with only some timbers remaining of the cap frame. Archival and map evidence (see map 2) show that a number of buildings once clustered around the mill, though these have now all been demolished.
Recommendations for further assessment: *None*
Recommendations for mitigatory measures: Avoid the tower. Watching Brief for ancillary structures.

4.4 General recommendations

The Llaneilian to Amlwch Port pipeline passes through open fields which may contain archaeological sites not recognizable by assessment techniques alone, and which would only become apparent during field evaluation (geophysical survey and trial excavation) or during a watching brief. In this instance the potential for discovering further archaeological sites is relatively low, and therefore field evaluation is not recommended. It is, however, recommended that the route be examined by a watching brief during the top soil strip and, if required, during trench excavation. This would ensure all sites not identified by the assessment process but affected by construction will be identified and recorded.

Many aspects of the archaeology of Amlwch Port are being preserved and interpreted by the Amlwch Industrial Heritage Trust. The site has the potential for attracting many visitors, and by so doing preserving an important 18th century harbour and ancillary buildings associated with shipbuilding and copper smelting. Though individually these features are of regional importance, collectively they should be considered of national importance. Consequently any works which take place on the site should take into account both the effect upon the setting of the archaeology, and the future intention of the AIHT to further develop the site. Any new structures should therefore be designed sensitively.

4.5 Summary of importance and impact

Feature no	Category	Impact	Mitigation measures
1	C	None	Avoid
2	C	None	Avoid
3	E	None	Avoid
4	C	None	Avoid
5	E	Unknown	Watching Brief
6	B	Slight	Avoid/Watching Brief
7	B	None	Avoid
8	D	Considerable	None
9	A	None	Avoid
Entire route	E	Considerable	Watching Brief
Amlwch Port	A	Slight	Minimise impact on setting and employ sensitive design

5. SOURCES

OS Maps
25" County Series Anglesey III.6 and III.7 surveyed 1900 and 1924
6" County Series Anglesey Sheets III NW and III NE surveyed 1887 revised 1923

Aerial Photographs
Countryside Council for Wales

Manuscript Sources
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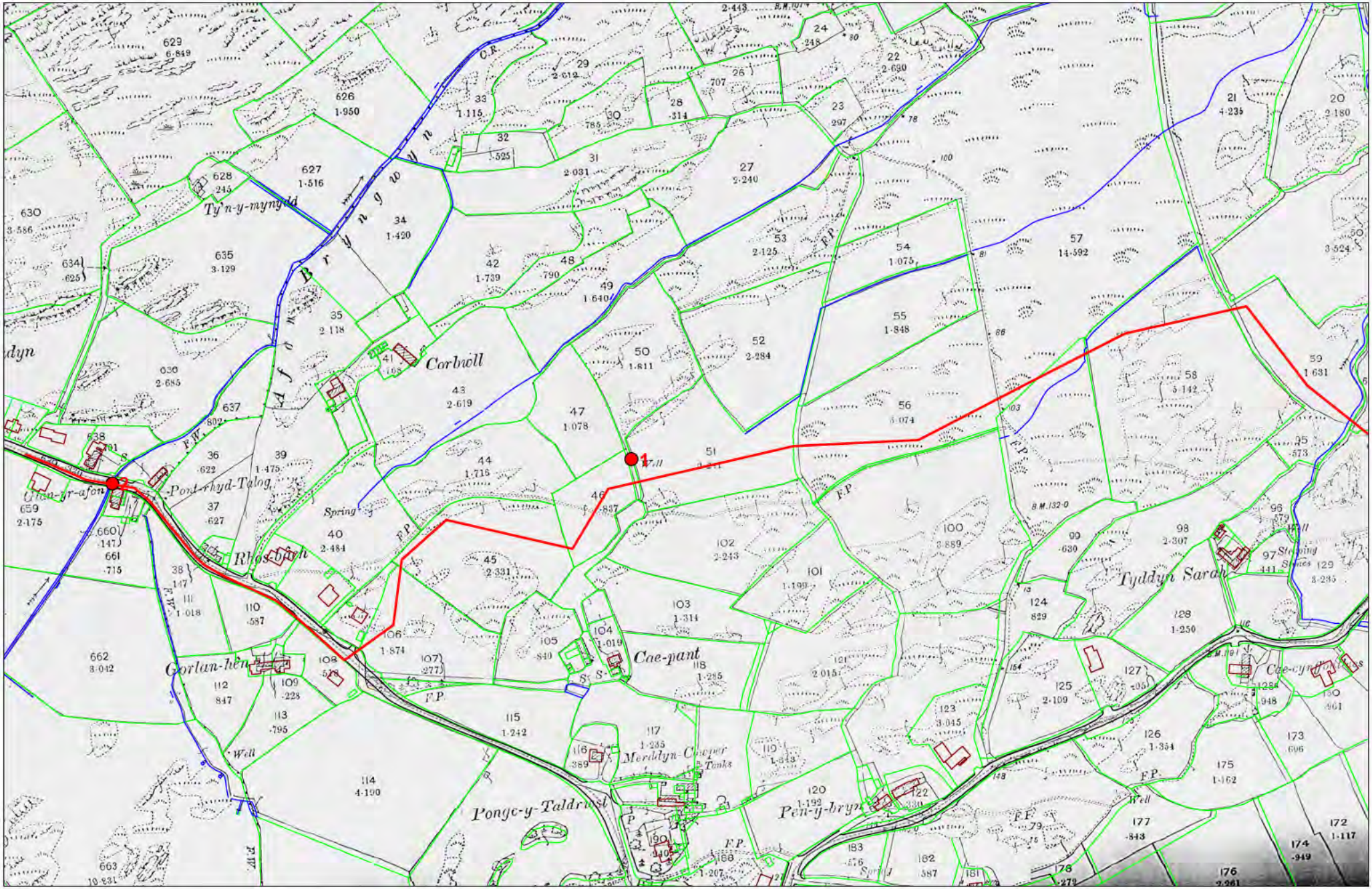
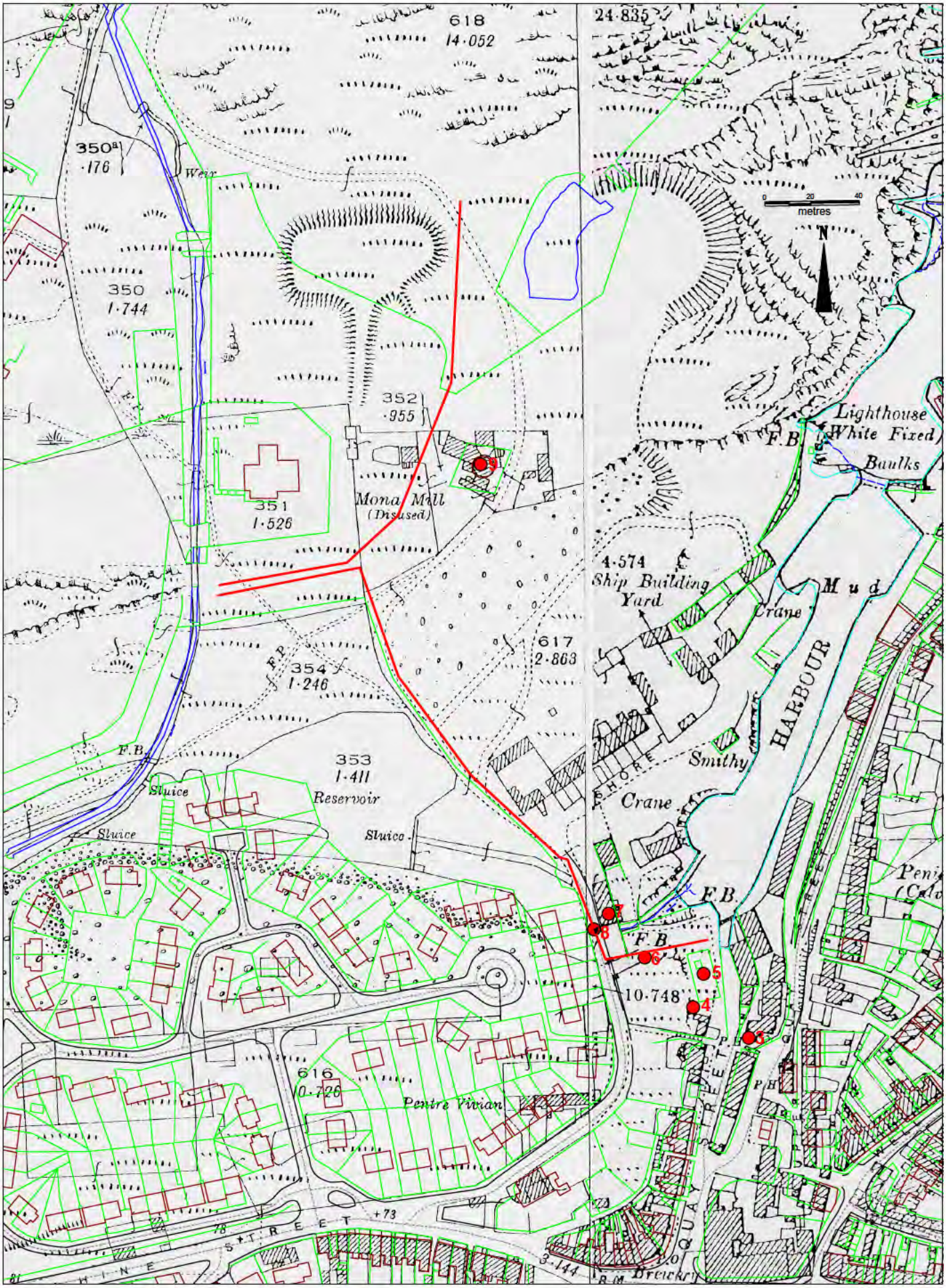


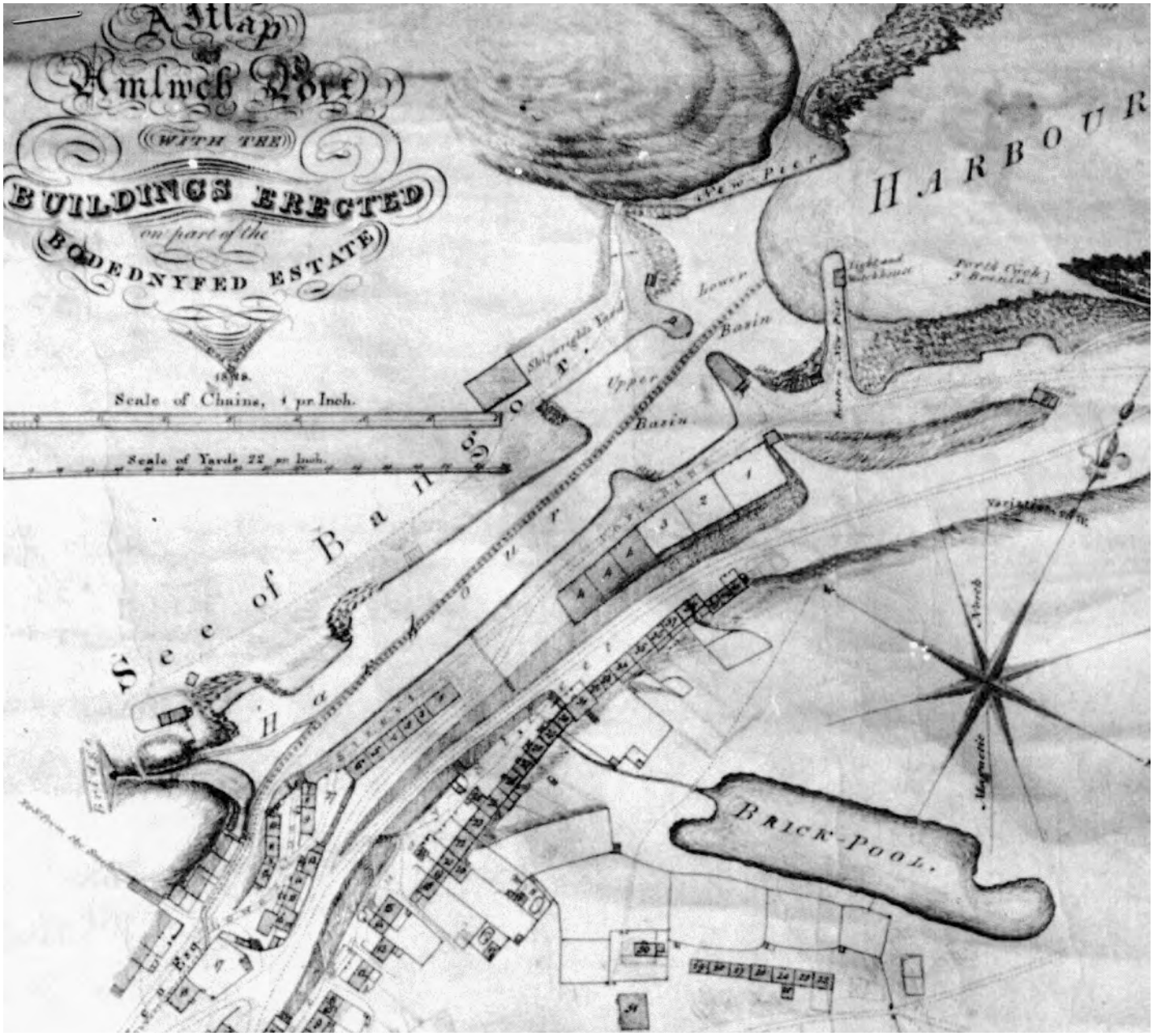
Map 1: Location of sites Llaneilian to Amlwch Port

(25" County Series OS map III.7 (1900) and OS Landline data)



Map 2: Location of sites at Amlwch Port

(25" County Series OS map III.6 (1924) and III.7 (1900) OS Landline data)



Map 3: Amlwch Port 1828 (University of Wales, Bangor, Llwydiarth Esgob, FS 639)

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