

---

# Welsh Sailing Academy: **Pwllheli, Gwynedd**

---



## Archaeological Assessment

GAT Project No. 2104

Report No. 953

May, 2011

---

# Welsh Sailing Academy, Pwllheli

## Archaeological Assessment

---

Report No. 953

Prepared for  
Gwynedd Consultancy

May 2011

By  
Robert Evans

# **G2181 WELSH NATIONAL SAILING ACADEMY, PWLLHELI, GWYNEDD**

## **ARCHAEOLOGICAL ASSESSMENT**

**Project No. G2181**

**Gwynedd Archaeological Trust Report No. 953**

CONTENTS	Page
Summary	3
1. Introduction	3
2. Project brief and specification	4
3. Methods and Techniques	4
4. Archaeological Results	5
5. Summary of Archaeological Potential	11
6. Summary of Recommendations	11
7. Conclusions	11
8. Archive	12
9. References	12

APPENDIX 1 Sites on the Gwynedd HER within 500m of the study area

APPENDIX 2 Categories of Importance

## **Figures**

**Fig. 1** Site Location. Sites on the Gwynedd HER are shown with green dots and sites identified in the text are numbered.

**Fig. 2** Map of Part of Abereirch and Denio Marshes, the property of Mr L. Humphreys and a sketch of Pwllheli Harbour by R. Ellis (Gwynedd Archives XD 59 (Maps)/6). Not dated but about 1815-20. Study area outlined in red. Not to scale.

**Fig. 3** Abererch Tithe Map of 1840, with the study area outlined in red. Not to scale (Gwynedd Archives)

**Fig. 4** Ordnance Survey 1st edition 25 inch map of 1889 sheets XL.8 and XL.12 with study area outlined in red. Scale 1:5000

## **Plates**

**Plate 1** Proposed development area from the south

**Plate 2** Development area from the north, showing 1909 embankment

**Plate 3** Proposed development area from the east, looking towards Pwllheli

**Plate 4** Detail of hard surface within development area. Scale 1m

# WELSH NATIONAL SAILING ACADEMY, PWLLHELI, GWYNEDD (G2181)

## ARCHAEOLOGICAL ASSESSMENT

### SUMMARY

*An archaeological assessment has been carried out on land adjacent to the Pwllheli Sailing Club, Pwllheli. The assessment identified that the land on the proposed development of the Welsh National Sailing Academy was on a spit of land that was partially reclaimed and embanked in 1815 to form the eastern side of the new harbour which had become enclosed. The land was partially improved and farmed during the 19<sup>th</sup> century, when much of the land became part of Glan y Don farm, the property of Lord Newborough. In 1909 further embanking and improvements were carried out, when the Cambrian Coast Railway was extended to the centre of the town, to the north of the study area. The northern part of the study area now forms part of the Glan y Don Industrial Estate. Since the 1980s the remainder of the land has formed part of the Pwllheli Sailing Club and Marina, and has undergone much alteration in the form of landscaping, the construction of new access roads, car parks and new buildings. This is thought to have involved some truncation of the land.*

*No new archaeological sites were identified, and the potential for the survival of archaeological evidence was considered to be low. However an intermittent watching brief during ground works has recommended during ground works to investigate for the presence of post-medieval remains.*

### 1 INTRODUCTION

Gwynedd Archaeological Trust has been asked by *Gwynedd Consultancy* to carry out an archaeological assessment in advance of the proposed Welsh National Sailing Academy, Pwllheli, Gwynedd (centred on NGR **SH38223497**).

The proposed Sailing Academy development (as detailed in *Welsh National Sailing Academy and Events Centre Stage 1 Preparation of Concept Proposals*, August 2008) will include:

- A150 berth pontoon
- Quay facilities – new quay wall etc
- River Training works
- Capital dredge works
- Sailing and Events Academy
- Traffic and parking facilities
- Storage and ancillary uses
- Statutory services
- Boat launching slipway
- Day trip pontoon

The proposed Sailing Academy development will be located to the immediate north of the existing Pwllheli Sailing Club buildings (*Welsh National Sailing Academy and Events Centre Stage 1 Preparation of Concept Proposals*, August 2008: 137).

Gwynedd Archaeological Planning Services (GAPS) has requested an **archaeological assessment** of the proposed area in accordance with national planning guidance (*Planning Policy Guidance Wales 2002*) and Welsh Office Circular 60/96 (*Planning and the Historic Environment: Archaeology*). GAPS has requested that the assessment include archaeological desk-based research and a site visit, resulting in a report outlining the known archaeological resource, historical development of the site, potential for presently unknown archaeological remains, the significance of the identified resource and recommendations for mitigating any threat.

### **1.1 Acknowledgements**

The staffs at Gwynedd Archives, Caernarfon and the National Library of Wales are thanked for their help with providing archive material. Jenny Emmett and Ashley Batten of Gwynedd Archaeological Planning Service are thanked for their help and guidance.

## **2 DESIGN BRIEF AND SPECIFICATION**

A detailed brief has not been prepared for this scheme, however an archaeological assessment was required by the Gwynedd Archaeological Planning Service. GAPS have stated that the proposed scheme is unlikely to have an impact on the historic landscape and do not consider an ASIDOHL2 to be necessary. GAPS have also stated that the results of any ground investigations (particularly borehole and test pit logs) could be “very useful in determining buried archaeological potential...indicating areas of made ground, the locations of former bars or islands, presence of peat and other buried soils. It would be helpful for the results of any such investigation in the area (existing or proposed), including any geophysical survey, to be provided to the archaeologist undertaking the assessment to complement historical sources”.

This report conforms to that brief, and to the guidelines specified in *Standard and Guidance for Archaeological Desk-based Assessment* (Institute of Field Archaeologists, 1994, rev. 2001).

A desk-based assessment is defined as ‘a programme of assessment of the known or potential archaeological resource within a specified area or site on land, inter-tidal zone or underwater. It consists of a collation of existing written, graphic, photographic and electronic information in order to identify the likely character, extent, quality and worth of the known or potential archaeological resource in a local, regional, national or international context as appropriate’. (*Standard and Guidance for Archaeological Desk-based Assessment*, IFA 2001, 2).

The aims of the assessment as given in the specification are:

- to identify and record the cultural heritage within the defined study area;
- to evaluate the importance of what has been identified;
- to recommend ways in which impact upon the cultural heritage can be avoided or minimised.

To comply fully with the aims expressed above it can be necessary to undertake a programme of Field Evaluation following the Desktop study and Field Visit. This is because some sites cannot be assessed by desktop or field visit alone, and additional fieldwork is therefore required. This typically takes the form of geophysical survey or trial excavation, although measured survey is also a possible option. A full programme of assessment and evaluation may therefore consist of:

- Desktop study
- Field walkover
- Initial report
- Field evaluation
- Draft report
- Final report

This phase of the project concerns the first three phases, and recommendations are made concerning further archaeological evaluation or mitigation.

## **3 METHODS AND TECHNIQUES**

### **3.1 Desk top study**

The desktop study comprised the consultation of maps, documents, computer records, written records and reference works, which form part of the Historic Environment Record (HER), located at Gwynedd Archaeological Trust (GAT), Bangor. The archives held by the Caernarfon Record Office and Bangor University were also consulted. Information about listed buildings was consulted by means of the CARN

(Core Archaeological Index), which is the online index of the Royal Commission on Ancient and Historic Monuments, Wales. Relevant aerial photographs from the collection at RCAHM, Wales were examined.

Sites, buildings and find spots listed in the GAT HER were identified (Fig. 1), with GAT HER referring to the unique Primary Record Number given to each individual site.

### 3.2 Field Search

The field search was undertaken during May 2011, when the area of the proposed development was examined. Notes were taken, sketches and measurements were taken of sites of potential archaeological interest and a photographic record was made. Ground conditions were good for a site visit.

### 3.3 Report

The available information was synthesised to give a summary of the archaeological and historic background and of the assessment and recommendations, as set out below. The separate features, their evaluation and recommendations are listed separately, and a summary of the overall assessment of the area is given at the end. The report draws significantly on a previous assessment carried out on Pwllheli Harbour (Davidson 2004), although this concentrated on the northern and western sides of the harbour.

The criteria used for assessing the value of features was based upon those used by the Secretary of State for Wales when considering sites for protection as scheduled ancient monuments, as set out in the Welsh Office circular 60/96. The definitions of categories used for impact, field evaluation and mitigation are set out in Appendix 2.

This report conforms to the guidelines specified in *Standard and Guidance for Archaeological Desk-based Assessment* (Institute of Field Archaeologists, 1994, rev. 2001 & 2008).

## 4 ARCHAEOLOGICAL RESULTS

### 4.1 Topographic description

Pwllheli lies mid-way along the southern coast of the Llŷn peninsula, and approximately opposite its neighbouring market town of Nefyn, which lies on the north coast. The peninsula is partially an extension of the Snowdonia massif, and consists of a lowland plateau of Ordovician rocks with an undulating surface varying between 50m and 100m OD, though on the north side the Precambrian rocks of Anglesey are dominant. There are occasional lower areas formed by shallow valley basins and coastal margins. Rising out of the plateau are steep-sided hills formed of igneous rocks, and, particularly on the south coast, prominent headlands formed of hard microgranites which alternate with long sweeping beaches of softer Ordovician rocks or boulder clay. These headlands provided greater shelter for shipping than did the north coast, though this advantage is partly off-set by the dangers of the wide bay of Porth Neigwl (Cattermole and Tomano 1981; Challinor and Bates 1973, 24-33).

#### 4.1.1 The development of the coastline

The development of the coastline at Pwllheli is a complex one. Saxton and Speed in 1578 and 1610 both show three rivers, Afon Erch from the east and Afon Rhyd-hir and Afon Penrhos from the west, running into the sea in a single large estuary at Pwllheli. Hughes (1991, 7-11) argues that prior to the 16<sup>th</sup> century these rivers each had their own estuary, the Afon Penrhos at Tan y Bwlch (SH 355337), the Afon Rhyd-hir at Bwlch y Tywod (SH 377342) and the Afon Erch close to the village of Abererch (SH 394398). If this was the case, the date of the creation of the single estuary is not known with any certainty. The south coast of the Llŷn peninsula has long curving bays that sweep from one rocky headland to the next. Either side Pwllheli they exist from Carreg y Defaid in the west to the rock of Carreg yr Imbill, and east again to the headland of Penychain. The three rivers merge into one estuary, and enter the sea on the east side of Carreg yr Imbill. Prior to the construction of the embankments this created a huge tidal estuary, and Lewis Morris's chart of 1736/7 shows significant salt water estuaries of the Afon Erch and Afon Penrhos lying to the east and west, separated from the sea by sand spits which, on their south side, formed long sandy beaches. Pwllheli was established on the north side of this estuary, alongside an inlet into which flowed a small stream called Afon Golchi. This inlet was, in medieval

times, the inner harbour. Hughes suggests this was the original salt water pool to which the name Pwllheli was given. This may be correct, and yet the name may just as aptly have been given to the much larger tidal pool that formed the primary estuary of the three rivers.

The medieval borough was established on a relatively narrow terrace some 350m wide, above which rose the steep slopes of Y Garn and Yr Allt. The original layout of the town was confined by the space available between the sea, the large combined estuaries of the river's Erch and Penrhos, and the steep slopes to the north. The subsequent growth of Pwllheli is the result of successive phases of land reclamation, which allowed expansion of the settlement to the south and west. Much of Pwllheli is now built on areas which were formerly tidal estuary, and this is largely the consequence of the Enclosure Act of 1811, which effectively prevented sea access into the east and west arms of the estuary, and left a rectangular pool that became the inner harbour. This resulted in the development of Y Maes and Glan y Don, and eventually Morfa Mawr and Morfa Garreg. Further harbour works in the early 20<sup>th</sup> century reclaimed land on the north side of the harbour, along which the railway was extended.

## **4.2 Archaeological and historical background**

### **4.2.1 Introduction**

The importance of Pwllheli as a medieval port, town and shipbuilding centre and port owed much to its natural harbour and facilities. The settlement developed at the confluence of three rivers, the Afon Rhyd hir, Afon Penrhos and Afon Erch, where a tidal pool, sheltered by two opposing spits or bars of sand, formed a safe harbourage. The development of the coast edge is not fully understood, the rivers have been re-aligned over the years, and sand accumulation, much of it almost certainly in medieval times, will have altered the coastal landscape. In pre-medieval times the rivers would have had separate estuaries along the coast. The map of the harbour by Lewis Morris in 1748 shows the landscape much as it would have been from late medieval times to 1800, with sand hills to the south and east, and a confluence of rivers at Pwllheli. The rock of Carreg yr Imbill, at the seaward end of the southern bar, was, before most of it was quarried away, a fixed landmark to the channel that lead into the harbour.

### **4.2.2. Prehistoric and Roman sites**

Though no prehistoric or Roman settlements are known from Pwllheli, there is evidence from stray finds that they did exist, but have been destroyed by subsequent development. For example, finds from Carreg yr Imbill include a Bronze Age adze and Iron Age spindle whorl (PRN 2212 and 2213; see Green 1981 for details of the adze). Three quern stones and a mortar of late prehistoric or Roman date were found in the vicinity of Pwllheli, though the exact findspot is not known (PRN 2259; RCAHMW 1964, xl).

### **4.2.3 Medieval**

The origins of Pwllheli are obscure. What is certain is that under the later Welsh princes in the 12<sup>th</sup> century it was to become the administrative centre of the commote of Afloegion, and like Nefyn on the north side of the Llŷn it was to develop into a town and port, eventually to be granted borough status. Whilst it was the benefits of a secure harbour that encouraged the growth of the town, the location of the original medieval centre of the commote, the *llys* or court where the princes would have stayed during their peripatetic journeys, remains uncertain. There is evidence, however, to suggest that the original commotal centre may have lain closer to the parish church of Deneio, north-east of which is the farm of Henlllys, perhaps denoting the site of the earlier *llys*.

The first real information we have about Pwllheli is from post-conquest surveys and taxation documents. The extent of 1284, incorporated in later Minister's Accounts, confirms the existence of a court which was maintained by the tenants, and a home farm, estimated at about 180 acres, of which at the time of the extent two thirds was let to the community of Pwllheli and one third to Rhirid ap Cadwgan, chief bailiff. There was a mill, (the mill of Deneio) to which the tenants were obliged to take their grain to be ground. The extent records that 20 shillings was paid by the tenants at 1 shilling per household. This figure of approximately 20 households contrasts with the 120 householders recorded at Nefyn, and it is clear that at this stage Pwllheli was a relatively small settlement. The small size, and in particular the evidence for a shift to the coast, has led Professor Jones Pierce to suggest that Pwllheli was a purposeful creation, perhaps by Llywelyn ap Iorwerth, to establish a combined commotal centre and trading port, so complimenting the successful boroughs of Llanfaes and Nefyn (Pierce 1972, 142-4). This idea is re-enforced by the references to 'burgages' within the extent, a term that had a distinct tenurial meaning, and the use of the standard rent of 12d per burgage (*idem*, 143).



Repairs were made to the chamber, solar and hawk house in 1306-7, when the solar was thatched, and large new beams were placed in the hall (Pierce 1930, 151). The location of these buildings is in some doubt, but if the shift in settlement location had occurred by this date, they would have lain on the area later known as *Gadlys* (see below).

Though Pwllheli was not formally granted borough status until 1355, the surviving documents would suggest it was operating under a similar tenure to other boroughs of Welsh origin such as Llanfaes, Nefyn and Tywyn. The crown farmed out the customary rents and profits of the borough, and this, combined with the presence of a court and bailiff distinct from those of the commote, would have placed the borough on a similar footing to the English boroughs, despite the lack of formal recognition.

Crown grants of Pwllheli are first recorded in 1317, when it was committed to Edmund de Dyneieton. In 1349 it was granted to Sir Nigel Loryng, one of the original Knights of the Garter, and a member of the personal body guard of the Prince of Wales. Six years later in 1355, partly at the instigation of Sir Nigel, Pwllheli was created a 'free borough'. Two annual fairs were to be held, and a weekly market on Sunday. The privileges granted to the burgesses were based on those of Newborough, and in turn Rhuddlan and Hereford. The heirs of Nigel Loryng held Pwllheli until 1397, when it reverted to the Crown, and was subsequently let to Thomas Percy.

The revolt of Owain Glyndwr had a profound impact upon the economy of Wales, and in particular those features of the economy which were seen to be alien to the native institutions of the country. Pwllheli suffered as much, if not more, than other Welsh boroughs, and paid no rents between 1401 and 1412. In 1409 the sheriff says in his return 'Nothing this year because the manor is in ruins and the lands laid waste as a result of the rebellion of the Welsh' (Pierce 1972, 156). The town was slow to recover, and in the mid-15<sup>th</sup> century it was only yielding £4, in contrast to the pre-revolt fee-farm rent of £14, set in 1359. Many of the burgrave plots came to be held by the new estate-building families that lived outside the borough, such as that of Hugh ap John Madryn of Llanerch Fawr, and the Bodfel family, but though they lived outside the borough they still claimed the full rights of the resident burgesses. The resident and non-resident burgesses were, however, given a rude awakening when the manor of Pwllheli was granted to George Sheppard in 1586. The town was emerging from its former economic recess, and the dues now collected from trade in the town would provide a useful income. In addition to these Sheppard also attempted to take full control of the borough lands, and charge full rent on all property. Lengthy court cases ensued, and though Sheppard failed to obtain all he wanted, these actions resulted in greater concentration on legality of tenure and an increase in the sale and purchase of lands. Many inherited lands consisted of scattered strips within the fields outside the town, however the trend was now towards the acquisition of larger, more coherent, blocks of land by new owners who were busy building up large estates throughout Caernarfonshire. By the 18<sup>th</sup> century most of the scattered quilleys had been incorporated into farms that are identifiable on the Tithe award map of 1840.

#### **4.2.4 Post-Medieval and Modern**

The growth of the town was relatively slow between the 16<sup>th</sup> and 18<sup>th</sup> centuries. It is unlikely that many of the earlier medieval buildings would have been suitable for use, and there must have been substantial rebuilding of all houses and buildings after the Glyndwr revolt and during the slow recovery. There are references to several new substantial houses being built within the town in the 16<sup>th</sup> and 17<sup>th</sup> centuries. Plas Tanrallt was built by William ap Robert c. 1600, and Plas Tai Tan yr Allt by his son-in-law Harri Humphreys (Pierce 1972, 190). The Madryn's of Llanerch had a town house not far from Gadlys on the Abererch road, and close-by was a horse mill and a tannery (Pierce 1972, 184). The population expanded in the 16<sup>th</sup> century to some 72 households (PRO, E.178/380, quoted in Pierce 1972, 183), and the housing formerly clustered around the harbour would now have expanded along what was to become the High Street.

Maritime trade was important, and played a significant role in the growth of the town. A mid-16<sup>th</sup> century description describes the harbour as 'A proper haven for a shippe of 100, bare of corne but enoughe of cattell' (description by Dr Thomas Phaer c. 1551, transcribed in Robinson 1972, 500). In a survey of 1566 the town had no vessels of its own, and consisted of 36 households (Lewis 1927, 308). Leland describes it as a 'poore market' though a contemporary poet mentions the paved area where a large market was situated (Ieuan Tew in the late 16<sup>th</sup> century, quoted by Pierce 1972, 185).

The earliest harbour is thought to have lain within a tidal pool north of the High Street that extended to Llawr y Gors, where the present Asda supermarket is now sited. This became silted up in late medieval times, and the

principal quay was moved to Ty Eiddew at the lower end of the High Street. In 1566 Pwllheli harbour was described as 'a haven having the same name upon it wherein are 36 householdes or cottages (Lewis 1927 Appendix 1). Trade was conducted in agricultural produce, malted barley and coal, and by 1603 Pwllheli had contacts with ports all round the Irish Sea, and two vessels of its own (Lloyd 1991). Fishing also played an important role, and Lewis Morris records 'Beds of Oysters, and plenty of other Fish, and some years they have a good Herring fishery here; but the chief commodities of the place are butter and cheese' (Budenberg 1987, 14). Piracy and smuggling were lucrative trades, encouraged by local landowners, and Pwllheli was often deeply involved with both. The limits of the port were laid down in 1723 as from a 'cornall of a wall of Gadlis ground lying south-west to ye southern corner of garden wall of Tu Iddew' (quoted in Hughes 1991, 12). Lewis Morris does not show this clearly, but certainly the limits of the town seemed to form the south and east sides of a square, with the corner being located approximately at Penymount and Ty Eiddew. Woods map of 1834 clearly marks the top of the High Street (which he calls Strand Street) 'The Port'. He also shows 'The Quay' and 'Custom House Square' at the south end of Penlan Street, though the quay was no longer available to ships following the construction of the embankment in 1811. It seems probable, therefore, that in the late 18<sup>th</sup> century a new quay was constructed at the lower end of Penlan street, and the Custom House was moved there. This quay was more exposed than the other, and in 1808 the Corporation leased the shoreline at Ty Eiddew to three English merchants who built a quay from the north corner of the harbour by the Black Lion to Ty Eiddew and beyond, possibly as far as where New Street was to be built in the 1860's. The Afon Olchi was culverted, and the Llawr y Gors area was fully reclaimed from tidal waters.

The event to have the greatest impact upon the topographical development of Pwllheli was, however, not undertaken until the second decade of the 19<sup>th</sup> century. The Enclosure Act of 1811 included several sites on the Llŷn peninsula, though Pwllheli was the largest. The commissioner for the Act was Richard Ellis, a local attorney and burgess of Pwllheli, and a local landowner. He was accused of a number of sharp practices, and the enclosure did not run smoothly (Chapman 1992, 41; the Act is discussed by Dodd 1971, 83; Hughes 1991, 14-20 and Lloyd 1991, 22-4). Nonetheless, by 1815 two new embankments to the east and west of the harbour had resulted in the reclamation of over 300 acres on the west, and a similar area on the east in Abererch parish. These changes are shown on a map of the harbour made in the years following 1815 (Fig. 2; XD 59 (Maps)/6). To the west the combined estuary of the Rhyd-Hir, Penrhos and Ddwyryd rivers, which previously had been tidal, was now protected by the town embankment over 700m long, with sluice gates at the north end. The estuary of the Afon Erch was similarly protected by an embankment that lay between the rock outcrops of Allt Fawr and Glan y Don, thereby utilizing the existing sand banks that formed the east side of the harbour. The scheme resulted in the addition of over 600 acres of reclaimed land and an improved harbour. There were other impacts also. The town embankment now made access to Morfa Mawr much easier, and opened up the way for development there, though it would be several decades before advantage was taken of this. In the shorter term, the land available for building was considerably increased to the south-west, where the Maes and adjacent development now took place. The quay at Penlan, which had become redundant following the construction of the embankment, was demolished in the 1840's to make way for the Mitre Hotel, though a new quay was built alongside the embankment.

Pwllheli is known for being a centre of Non-conformism, and chapel buildings of the different denominations form a very physical presence within the town. The Independent chapel at Penylan was one of the earliest to be established, and a chapel was built there by 1744. The first Methodist chapel was built at Penmount in 1780. Both chapels were subsequently rebuilt and enlarged, and Penmount dominated the coastline, just as its breakaway chapel at Salem dominates the north view up Gaol Street, and Penylan the lower end of the same street. The decision early in the 19<sup>th</sup> century to rebuild the parish church of Deneio within the town on land at Lleiniau led to the rapid development of the former strip fields north of the High Street (Hughes 1991, 242-284 details the religious development of the town).

The construction of the harbour at Portmadog during the early 19<sup>th</sup> century as part of William Madocks inspiring scheme provided severe competition for Pwllheli, and though the former was eventually to become the more important, the new inner harbour at Pwllheli created by the construction of the two embankments, was busy throughout the middle decades of the 19<sup>th</sup> century, both for trade and for ship building and repairing. Ship building was carried on in Pwllheli from as early as the 17<sup>th</sup> century, but it came to form a significant industry in the 19<sup>th</sup> century, and over 400 ships were built there, from small sloops of seven or eight tons to the 693 ton *Margaret Pugh*, the largest ship to be built in north Wales. The timber, scarce in Llŷn, was initially brought in from Arudwy, though greater use was later made of imported timber from North America. In 1801, Colt Hoare records 'I found a comfortable inn lately built at Pwllheli, a little town on the coast without a church, the one appropriated to it at Denyo being at some distance..... This little town seems in a flourishing condition. I saw a large Guineaman on the stocks fitted for 600 slaves' (Thompson 1983, 189). The shipbuilding industry

was particularly influenced by William Jones, who became a shipbuilder in 1835, and was a major shipowner and a timber merchant dealing in Canadian timber. William Jones lived in Brynhyfryd, one of the few large houses that lay on the outskirts of the town. He was Mayor of Pwllheli on more than one occasion, and was a leading Baptist. The brothers John Arthur and Richard Arthur Prichard ran a successful shipbuilding yard at Glanydon. The most active period of shipbuilding was between 1835 and 1862. The last ship was built at Pwllheli in 1878 (see Lloyd 1991 for further details of the rise and decline in ship building at Pwllheli).

#### 4.3 The Archaeological Survey (Fig. 1)

##### 4.3.1 Introduction

The study area, until the enclosure of 1815, consisted of a sand bar and salt marsh. Following the construction of two new embankments to the east and west of the harbour at Pwllheli an area of over 300 acres on the east side of the harbour was reclaimed. These changes are shown on a map of the harbour made in the years following the 1815 developments (Fig. 2; XD 59 (Maps)/6), which also indicates a house towards the south end, probably Glan y Don, and a barn further north. The plan shows that the study area was the property of L. Humphreys, and suggests that he encouraged the development of the area.

##### 4.3.2 The Study Area

By 1840 the farmstead of Glan-y- Don with its associated fields had been developed. This by now formed part of Lord Newborough's Bodfean estate, and is shown on the tithe map of 1840, with the fields numbered (Fig. 3). The details of these and those of surrounding fields from the tithe apportionment are shown below:

Landowner	Occupier	Plan Nos	Name and Description of Land and Premises	State of Cultivation	Quantities in Statute measure
			<i>Glan y Don</i>		
Lord Newborough	William Jones	1592	House & c		- - 33
		1593	Morfa	Pasture	1 - 31
		1594	Do	"	- 3 14
		1595	Do	"	2 1 2
		1596	Do	"	1 2 25
		1597	Do	"	- 2 26
		1598	Do	"	- 1 31
			-		
	Common	1599	Traeth	Waste	20 - 32
	John Thomas	1602	Cae uch	Arable	1 2 2
		1603	Cae isa	"	1 1 17
	Robert Jones	1604	Cae bach	Arable	- 1 39
		1605	Cae avon	"	- 2 2
		1606	Cae canol	"	1 - 2
		1607	Cae uchaf	"	1 - 1
	John Evans	1590	Cae cob	Arable	4 - 6
		1591	Cae big	"	2 3 15
		1600	Cae ucha	"	2 3 35
		1601	Cae dwnan	"	2 3 39
		1608	Cae mawr	"	4 1 26
		1609	Cae sgybor	"	3 2 24
		1610	Barn and Rick yard	"	- - 30
		1613	Y dwnan	Pasture	6 1 18
	Ellis Griffith	1611	Cae morfa	Arable	- 3 39
		1612	Do	"	2 - 14
		1614	Do	"	2 - 23
John Ellis Esq.	David Evans	1616 1617	Dwnan	Pasture	3 3 20

		1618	River	-	- 3 7
Owen Evans Esq.	On hand	1615	Dwnan	Pasture	- 3 16

In 1867 the Cambrian Railway was opened to a station constructed a short distance outside Pwllheli. Eventually in 1909 the Cambrian Railway was extended into the town along the northern side of the harbour and a new station built, along with an extended embankment on the east side of the harbour to Glan y Don. This completed a whole series of changes to the harbour that resulted in its early 20<sup>th</sup> century form.

There appears to have been little change to the field systems in the study area from the tithe map to the time of the 25 inch 1<sup>st</sup> edition Ordnance Survey map of 1889 (Fig. 4). The area is still shown as mainly undeveloped on aerial photographs dating to 1945 (RAF AP 106G UK 644 frame 3222). In modern times the area to the north of the Marina and south of the railway line became the Glan y Don Industrial Estate, which was constructed in about 1980, the southern edge of which respected the former field boundaries shown on the tithe map. In the 1980s the spit was substantially redeveloped to form Pwllheli Marina, which involved a significant amount of landscaping, and the provision of access roads and areas for car parking.

#### 4.3.3 The Archaeological Survey

The archaeological survey lists sites identified within the study area (outlined in red on fig. 1).

##### **Feature 1 Embankment (Fig. 2; Plate 2)**

SH 38173530-38193512

*Period: Early 19<sup>th</sup> century-modern*

*Category: B Impact: None*

A small embankment, which includes a crossing of the Afon Erch, with sluice gates to regulate the water flow. The original part of the embankment is located to the north-east of the study area, and was built around the year 1815 and was constructed on the north east side of the harbour (shown on Fig. 2). This, along with the creation of the other embankments had the effect of creating an enclosed harbour. In 1909, in association with the extension of the Cambrian railway into town, the embankment was extended to Glan y Don, and this has undergone improvements in more recent times (Plate 2).

***Recommendations for further assessment: None***

***Recommendations for mitigatory measures: None***

##### **Feature 2 Pwllheli Sailing Club (Fig. 1; Plate 1)**

SH 38233491

*Period: Modern*

*Category: C Impact: None*

A modern building that houses the Pwllheli Sailing Club. It is built on reclaimed land that was formerly part of Glan y Don farm. The land to the north of the building, where the development is due to take place is partially Mcadamised, and has been levelled in recent times.

***Recommendations for further assessment: None***

***Recommendations for mitigatory measures: None***

##### **Feature 3 Glan y Don Industrial Estate**

SH 38313531

*Period: Modern*

*Category: D Impact: None*

A modern industrial estate lies to the north of the study area, which was constructed in 1980. This involved the construction of access roads, units and landscaping. To the north it incorporated an area of former sidings and goods yard, part of the Cambrian Coast Railway (RAF AP 106G UK 644 3222, taken 14<sup>th</sup> August 1945).

***Recommendations for further assessment: None***

***Recommendations for mitigatory measures: None***

## 5. SUMMARY OF ARCHAEOLOGICAL POTENTIAL

### 5.1 Location Summary

The proposed sailing club development will be located to the immediate north of the existing Pwllheli Sailing Club buildings, centred on NGR SH 38223497). The study area forms part of the eastern of two embankments to the east and west of the harbour had resulted in the reclamation of over 300 acres of in Abererch parish. This area became farmland, Glan y Don farm, before becoming the home of the Pwllheli Sailing Club and Marina. To the west the combined estuary of the Rhyd-Hir, Penrhos and Ddwryd rivers, which previously had been tidal, is protected by the town embankment over 700m long, with sluice gates at the north end. The estuary of the Afon Erch was similarly protected by an embankment that lay between the rock outcrops of Allt Fawr and Glan y Don, thereby utilizing the existing sand banks that formed the east side of the harbour.

### 5.2 Environmental Remains and Soil Morphology

The depth of soil is not known, although it is likely to be shallow as the area has undergone significant development and truncation. The study area consists of land that was reclaimed after 1815, and was the location of Glan y Don Farm, so agricultural soils might be encountered. The significance for the preservation of environmental remains is unknown, but is considered likely to be low and the soils likely to consist mainly of sands below topsoil level.

### 5.3 Artefactual Potential

It is likely that 19<sup>th</sup> century finds might be encountered, and there may be evidence of material associated with the building and occupation of Glan y Don Farm, and also harbour and embankment construction. The potential for the recovery of finds of medieval or earlier date is considered to be very low.

## 6. SUMMARY OF RECOMMENDATIONS

### 6.1 Summary of Specific Recommendations

Number	Name	Importance	Impact	Recommendation for further evaluation	Mitigation recommendations
1	Embankment	B	None	None	None
2	Pwllheli Sailing Club	C	None	None	None
3	Glan y Don Industrial Estate	D	None	None	None

### 6.2 General Recommendations

The area of the proposed development to the north of the current Pwllheli Sailing Club consists of an approximately 380m<sup>2</sup> area of open land, bounded by access roads to the east and a harbour embankment to the west that has been significantly modified in recent times, including ground disturbance involving levelling and landscaping, and the building of access roads and areas of car parking (Fig. 1). To the north lies the Glan y Don Industrial estate, constructed in about 1980. The field systems and landscape associated with Glan y Don farm in the 19<sup>th</sup> century has been almost completely lost. It is thought that the potential for the recovery of archaeological information is low and that the sandy soils will have been truncated, although an **Intermittent Watching Brief** should be maintained during all phases of ground works to investigate any evidence of the 19<sup>th</sup> century harbour and farming activity in the area.

## 7. CONCLUSIONS

The assessment has identified that the land on the proposed development of the Welsh National Sailing Academy was on a spit of land that was partially reclaimed and embanked in 1815 to form the eastern side of the new harbour development. The land was partially improved and farmed during the 19<sup>th</sup> century, when much

of the land became part of Glan y Don farm, the property of Lord Newborough. Since the 1980s the land has formed part of the Pwllheli Sailing Club and Marina, and has undergone much alteration in the form of landscaping, the construction of new access roads, car parks and new buildings. This is thought to have involved some truncation of the land.

No new archaeological sites were identified, and the potential for the survival of archaeological evidence was considered to be low. However an intermittent watching brief during ground works, including any bore-hole investigations has recommended during ground works to investigate for the presence of post-medieval remains, and to gain further understanding of the make up of the sand bar.

## 8. ARCHIVE

The archive consists of historic maps, plans and aerial photographs, along with notes and digital images taken on the field visit. The archive is currently held by GAT under project code **G2182**.

One copy of the bound report will be sent to the GAPS archaeologist, and a further copy sent to the HER Archaeologist at the curatorial division of Gwynedd Archaeological Trust, Bangor, for deposition in the Regional HER. A copy of the report will be provided to the National Monument Record, Royal Commission on the Ancient and Historic Monuments of Wales, Aberystwyth.

## 9. REFERENCES AND OTHER SOURCES CONSULTED

Budenberg, G. (ed), 1987 *Lewis Morris: Plans in St George's Channel 1748*. Beaumaris.

Cattermole, P. J., and Romano, M., 1981 'Lleyn Peninsula', *Geologists Association Guide, No 39*. Reprinted 1988.

Challinor, J., and Bates, D. E. B., 1973 *Geology Explained in North Wales*; Newton Abbot

Chapman, J., 1992 *A Guide to Parliamentary Enclosures in Wales*. Cardiff.

Davidson, A. 2004 *Pwllheli Harbour Development*. Unpublished GAT Report No. **527**

Davidson, A. 2008 *Pwllheli- Urban Characterisation*. Unpublished GAT Report No. **730**

Dodd, A. H., 1971 *The Industrial Revolution in North Wales*. Third edition, Cardiff.

Green, S., 1981 'Two perforated adzes from Gwynedd', *BBCS*, XXIX, 342.

Hughes, D. G. Lloyd, 1991 *Pwllheli: An Old Welsh Town and its History*. Llandysul.

IFA 1994 *Standard and Guidance for Archaeological Desk-based Assessment* (rev. 2001).

Lewis, E. A., 1927 *The Welsh Port Books 1550-1603*.

Lewis, S., 1833 *A Topographical Dictionary of Wales*.

Lloyd, L., 1991 *Pwllheli: The port and mart of Llŷn*. Caernarfon.

Pierce, T. Jones, 1940 – 44 'A Caernarfonshire Manorial Borough: Studies in the medieval history of Pwllheli' reprinted in J. B. Smith (ed) *Medieval Welsh Society* Cardiff, 1972).

RCAHMW 1964 *An Inventory of Ancient and Historical Monuments in Caernarvonshire Vol. III: West*

Robinson, W. R. B., 1972 'Dr Thomas Phaer's report on the harbours and customs administration of Wales under Edward IV', *BBCS*, XXIV, 485-503

***GAT Historic Environment Record***

***Gwynedd Archives, Caernarfon***

XD 59 (Maps)/6 *Map of Part of Abereirch and Denio Marshes, the property of Mr L. Humphreys and a sketch of Pwllheli Harbour* by R. Ellis (not dated, but probably 1815-1820)

XD2A/1324 Plans of Pwllheli Harbour 1897

Tithe map of the parish of Abererch of 1840

***National Archives***

***National Library of Wales***

***RCAHM Wales Aberystwyth***

**Aerial Photographs**

RAF 106G UK 644 frame 3222 taken 14<sup>th</sup> August 1945

RAF 106G UK 644 frame 4312 taken 14<sup>th</sup> August 1945



# APPENDIX 1

Sites on the Gwynedd HER, the RCAHMW CARN database and listed buildings, within 1km of the study area

PRN	NPRN	SITENAME	NGR	SAM OR LISTED BUILDING	SITE TYPE	PERIOD
2212	55026	SPINDLE WHORL - FINDSPOT, GIMBLET ROCK, PWLLHELI	SH38703430A		FINDSPOT	Roman
2213	55027	STONE TOOL - FINDSPOT, GIMBLET ROCK, PWLLHELI	SH38803440A		FINDSPOT	Prehistoric
1199	57359	CASTLE MOUND (POSS.) - PLACE-NAME, PWLLHELI	SH37663520		MOUND	Medieval
3196	59519	PWLLHELI MEDIEVAL TOWN	SH37603520		TOWN	Medieval
1338	59834	WATCHING BRIEF, 20 HIGH STREET, PWLLHELI	SH37643521		WATCHING BRIEF	Modern
5468	61752	STONE LINED WELL, PWLLHELI	SH37753535		WELL	Unknown
7247	64183	PWLLHELI HARBOUR	SH37903460		WHARF	Modern
6569	64296	PWLLHELI MEDIEVAL TOWNSHIP	SH37503520		TOWNSHIP	Medieval
11390	16676	PENLAN FAWR P.H., PENLAN ST.	SH37493511	GII LB	BUILDING	Post-Medieval
11649	23241	OLD TOWN/MARKET HALL, PENLAN ST	SH37463515	GII LB	BUILDING	Post-Medieval
12141	26470	GAOL STREET, 16,18 & 20	SH37363504	GII LB	BUILDING	Post-Medieval
12246	26661	HIGH STREET 4, 6, 8,10, 12, 14	SH37503521	GII LB	BUILDING	Post-Medieval
12248	26666	HIGH STREET 54	SH37503521	GII LB	BUILDING	Post-Medieval
12263	26693	KINGS HEAD STREET	SH37573526	GII LB	BUILDING	Post-Medieval
18369	0	EMBANKMENT, PWLLHELI HARBOUR	SH37553476A		EMBANKMENT	Post-Medieval
18370	0	WAR MEMORIAL, PWLLHELI HARBOUR	SH37553479	GII LB	MEMORIAL	Modern



## APPENDIX 2

### Categories of importance

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

#### *Category A - Sites of National Importance.*

Scheduled Ancient Monuments, Listed Buildings of grade II\* and above, as well as those 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 or county importance.*

Grade II listed buildings and sites which would not fulfil the criteria for scheduling or listing, 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.*

Sites which are not of sufficient importance to justify a recommendation for preservation if threatened.

Category C sites nevertheless merit adequate recording in advance of damage or destruction.

#### *Category D - Minor and damaged sites.*

Sites that are of minor importance or are so badly damaged that too little remains to justify their inclusion in a higher category.

For Category D sites, rapid recording, either in advance of 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 usually be no sites remaining in this category. In this case several areas of unknown potential have been allocated to this category.

### Definition of Impact

The impact of the proposed development on each feature 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 within the band of interest but are unlikely to be directly affected. This includes sites such as standing and occupied buildings at the margins of the band of interest.

#### *Likely:*

Sites towards the edges of the study area, which may not be directly affected, but 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 tramways 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 works.

### **Definition of field evaluation techniques**

Field evaluation is necessary to fully understand and assess most class 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. Topographic survey may also be employed where sites are thought to survive as earthworks.

Geophysical survey most often involves the use of a magnetometer, which allows detection of some underground features, depending on their composition and the nature of the subsoil. Other forms of geophysical survey, including resistivity survey and ground penetrating radar might also be of use.

Trial trenching allows a representative sample of the development area to be investigated at depth. Trenches of appropriate size can also be excavated to evaluate category E sites. Trenching is typically carried out with trenches of between 20 to 30m length and 2m width. The topsoil is removed by machine and the resulting surface is cleaned by hand, recording features. Depending on the stratigraphy encountered the machine may be used to remove stratigraphy to deeper levels.

### **Definition of Mitigatory Recommendations**

Below are the measures that may be recommended to mitigate the impact of the development on the archaeology.

*None:*

No impact so no requirement for mitigatory measures.

*Detailed recording:*

This requires a full photographic record and measured survey 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.

*Strip, Map and Sample:*

The technique of Strip, Map and Sample involves the examination of machine-stripped surfaces to identify archaeological remains. The stripping is undertaken under the supervision of an archaeologist. Stripping and removal of the overburden is undertaken in such a manner as to ensure damage does not take place to surfaces that have already been stripped, nor to archaeological surfaces that have not yet been revealed.

Stripping is undertaken in as careful a manner as possible, to allow for good identification of archaeological features. A small team of archaeologists will be responsible for subsequently further cleaning defined areas where necessary. Complex sites which cannot be avoided will need to be fully excavated.

*Watching brief:*

This is a formal programme of observation and investigation conducted during any operation carried out for non-archaeological reasons. This will be within a specified area or site on land, inter-tidal zone or underwater, where there is a possibility that archaeological deposits may be disturbed or destroyed. The programme will result in the preparation of a report and ordered archive.

*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.

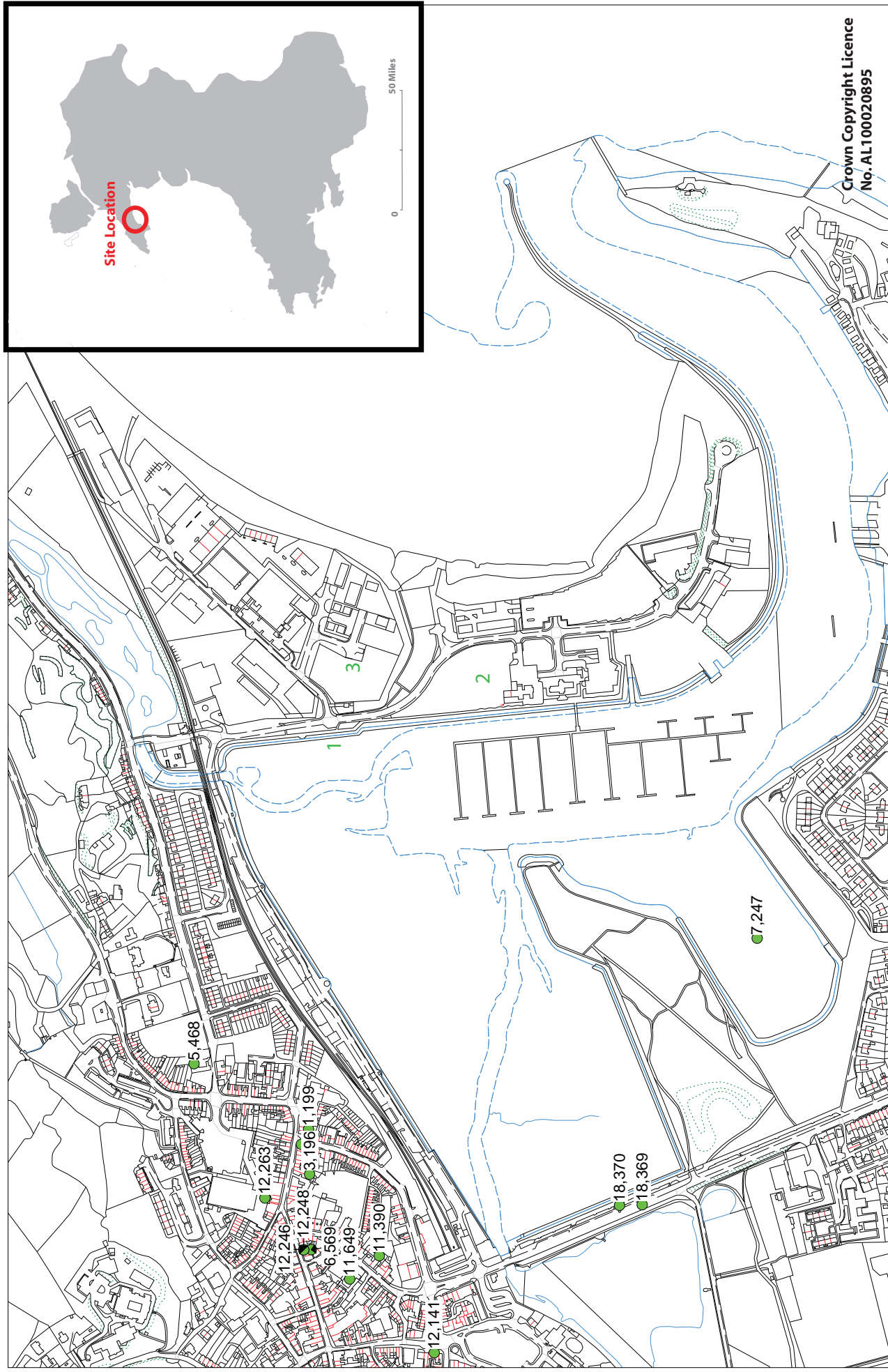


Fig. 1 Site Location. Sites on the Gwynedd HER are shown with green dots and sites identified in the text are numbered.









Fig. 3 Abererch Tithe Map of 1840, with the study area outlined in red. Not to scale (Gwynedd Archives)



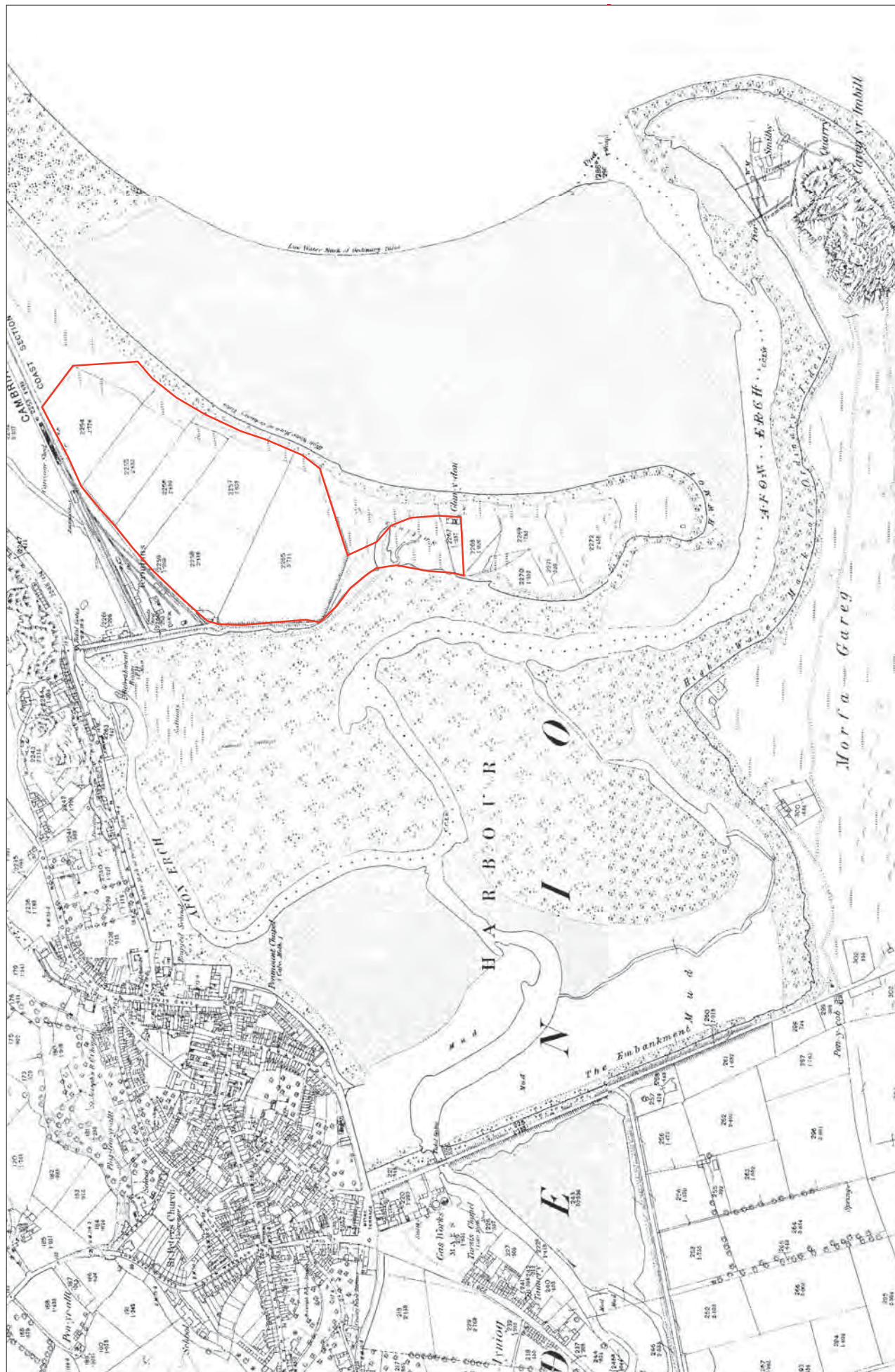


Fig. 4 Ordnance Survey 1st edition 25 inch map of 1889 sheets XL.8 and XL.12 with study area outlined in red. Scale 1:5000





**Plate 1 Proposed development area from the south**



**Plate 2 Development area from the north, showing 1909 embankment**





**Plate 3 Proposed development area from the east, looking towards Pwllheli**



**Plate 4 Detail of hard surface within development area. Scale 1m**

# APPENDIX 1

Sites on the Gwynedd HER, the RCAHMW CARN database and listed buildings, within 1km of the study area

PRN	NPRN	SITENAME	NGR	SAM OR LISTED BUILDING	SITE TYPE	PERIOD
2212	55026	SPINDLE WHORL - FINDSPOT, GIMBLET ROCK, PWLLHELI	SH38703430A		FINDSPOT	Roman
2213	55027	STONE TOOL - FINDSPOT, GIMBLET ROCK, PWLLHELI	SH38803440A		FINDSPOT	Prehistoric
1199	57359	CASTLE MOUND (POSS.) - PLACE-NAME, PWLLHELI	SH37663520		MOUND	Medieval
3196	59519	PWLLHELI MEDIEVAL TOWN	SH37603520		TOWN	Medieval
1338	59834	WATCHING BRIEF, 20 HIGH STREET, PWLLHELI	SH37643521		WATCHING BRIEF	Modern
5468	61752	STONE LINED WELL, PWLLHELI	SH37753535		WELL	Unknown
7247	64183	PWLLHELI HARBOUR	SH37903460		WHARF	Modern
6569	64296	PWLLHELI MEDIEVAL TOWNSHIP	SH37503520		TOWNSHIP	Medieval
11390	16676	PENLAN FAWR P.H., PENLAN ST.	SH37493511	GII LB	BUILDING	Post-Medieval
11649	23241	OLD TOWN/MARKET HALL, PENLAN ST	SH37463515	GII LB	BUILDING	Post-Medieval
12141	26470	GAOL STREET, 16,18 & 20	SH37363504	GII LB	BUILDING	Post-Medieval
12246	26661	HIGH STREET 4, 6, 8,10, 12, 14	SH37503521	GII LB	BUILDING	Post-Medieval
12248	26666	HIGH STREET 54	SH37503521	GII LB	BUILDING	Post-Medieval
12263	26693	KINGS HEAD STREET	SH37573526	GII LB	BUILDING	Post-Medieval
18369	0	EMBANKMENT, PWLLHELI HARBOUR	SH37553476A		EMBANKMENT	Post-Medieval
18370	0	WAR MEMORIAL, PWLLHELI HARBOUR	SH37553479	GII LB	MEMORIAL	Modern

## APPENDIX 2

### Categories of importance

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

#### *Category A - Sites of National Importance.*

Scheduled Ancient Monuments, Listed Buildings of grade II\* and above, as well as those 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 or county importance.*

Grade II listed buildings and sites which would not fulfil the criteria for scheduling or listing, 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.*

Sites which are not of sufficient importance to justify a recommendation for preservation if threatened.

Category C sites nevertheless merit adequate recording in advance of damage or destruction.

#### *Category D - Minor and damaged sites.*

Sites that are of minor importance or are so badly damaged that too little remains to justify their inclusion in a higher category.

For Category D sites, rapid recording, either in advance of 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 usually be no sites remaining in this category. In this case several areas of unknown potential have been allocated to this category.

### Definition of Impact

The impact of the proposed development on each feature 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 within the band of interest but are unlikely to be directly affected. This includes sites such as standing and occupied buildings at the margins of the band of interest.

#### *Likely:*

Sites towards the edges of the study area, which may not be directly affected, but 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 tramways 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 works.

### **Definition of field evaluation techniques**

Field evaluation is necessary to fully understand and assess most class 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. Topographic survey may also be employed where sites are thought to survive as earthworks.

Geophysical survey most often involves the use of a magnetometer, which allows detection of some underground features, depending on their composition and the nature of the subsoil. Other forms of geophysical survey, including resistivity survey and ground penetrating radar might also be of use.

Trial trenching allows a representative sample of the development area to be investigated at depth. Trenches of appropriate size can also be excavated to evaluate category E sites. Trenching is typically carried out with trenches of between 20 to 30m length and 2m width. The topsoil is removed by machine and the resulting surface is cleaned by hand, recording features. Depending on the stratigraphy encountered the machine may be used to remove stratigraphy to deeper levels.

### **Definition of Mitigatory Recommendations**

Below are the measures that may be recommended to mitigate the impact of the development on the archaeology.

*None:*

No impact so no requirement for mitigatory measures.

*Detailed recording:*

This requires a full photographic record and measured survey 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.

*Strip, Map and Sample:*

The technique of Strip, Map and Sample involves the examination of machine-stripped surfaces to identify archaeological remains. The stripping is undertaken under the supervision of an archaeologist. Stripping and removal of the overburden is undertaken in such a manner as to ensure damage does not take place to surfaces that have already been stripped, nor to archaeological surfaces that have not yet been revealed.

Stripping is undertaken in as careful a manner as possible, to allow for good identification of archaeological features. A small team of archaeologists will be responsible for subsequently further cleaning defined areas where necessary. Complex sites which cannot be avoided will need to be fully excavated.

*Watching brief:*

This is a formal programme of observation and investigation conducted during any operation carried out for non-archaeological reasons. This will be within a specified area or site on land, inter-tidal zone or underwater, where there is a possibility that archaeological deposits may be disturbed or destroyed. The programme will result in the preparation of a report and ordered archive.

*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.



YMDDIRIEDOLAETH  
ARCHAEOLEGOL  
GWYNEDD



GWYNEDD  
ARCHAEOLOGICAL  
TRUST

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