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Royal Commission on the Ancient and Historical Monuments of Wales

YNYSLAS NATURE RESERVE: ABERDYFI ESTUARY

Non Intrusive Survey

County: Ceredigion
Community: Borth and Llangynfelyn
Site Name: Ynyslas Nature Reserve
NGR: SN61209350 (centre of extensive site/area)
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Surveyed by: Deanna Groom and Medwyn Parry, RCAHMW
Robin Ellis, Aberystwyth Civic Society
Report Author: Deanna Groom and Medwyn Parry
Illustrations: Deanna Groom, Medwyn Parry, Robin Ellis and Nick Cook

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CBHC/RCAHMW
Plas Crug
Aberystwyth
Ceredigion SY23 1NJ
Tel: 01970 621200
World Wide Web: <http://www.rcahmw.gov.uk>



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YNYSLAS NATURE RESERVE: ABERDYFI ESTUARY

Non Intrusive Survey

Summary

This report contains the results of desk-based research and field observations undertaken between June 2008 and October 2010 of monuments contained within and in close proximity to the Ynyslas National Nature Reserve.

The reserve was established in 1969 by the Natural Environment Council and comprises much of the southern side of estuary of the River Dyfi. The reserve includes parts of the Sites of Special Scientific Interest (SSSI) defined for the Dyfi Estuary and Cors Fochno and a wide range of coastal habitats – from sand dune systems to mudflats, salt marsh, the peat bog of Cors Fochno (Borth Bog), reclaimed grazing land and the Borth/Ynyslas golf course. Visited by many thousands of people each year, the reserve also contains extensive military remains associated with the early development of surface to air guided missiles, and a large number of industrial sites including quarries, brickworks, timber mills, railway sidings, wharves and hulked vessels.

The changes in the landscape can be traced through mapping sources to pre-enclosure and the instigation of large scale drainage. The settlement patterns include proposals to develop a substantial seaside resort. Some of the dwellings can be shown to be linked to particular phases.

This survey and research project has added 109 new records to the National Monuments Record of Wales and provided enhancements for 27 others.

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Non Intrusive Survey

1 INTRODUCTION

The extent of previously unrecorded maritime and military remains at Ynyslas was brought to the attention of the RCAHMW by David Ellis Jenkins, a member of Aberystwyth Civic Society, who reported a windlass which had been uncovered by shifting sand in June 2008. This document contains the results of desk-based research and field observations undertaken between 2008 and 2010.

2 STUDY AREA

Introduction

The study area comprises the south side of estuary of the River Dyfi which is a National Nature Reserve managed by the Natural Resources Wales. It includes parts of the Sites of Special Scientific Interest (SSSI) defined for the Dyfi Estuary and Cors Fochno (see figure 1).

The study area includes a wide range of coastal habitats – from sand dune systems to mudflats, salt marsh, the peat bog of Cors Fochno (Borth Bog), reclaimed grazing land and the Borth/Ynyslas golf course. The estuarine margin to the north and north east is dominated by alluvial clayey silts. The coastal fringe to the west is a mixture of windblown sands and pebbles.

The Area is crossed by the Aberystwyth branch railway line and the coastal road (B4353) leading north from Borth and turning eastward to join to the A487 Aberystwyth-Macynleth road at Tre'r-ddol.

Settlement at Ynylas primarily consists of private houses and farmsteads (e.g. Dolenydd, Ty Mawr, Ty Cannol, Ty Gwyn and Moel Ynys), and includes the Reserve's visitor centre and the Sea Rivers holiday/caravan park.

Geology and Geomorphology

Tertiary

During the earliest periods of human history in Wales (the Paleolithic period), the landscape of the Study Area was subjected to three major glaciations - the Anglian (478,000-423,000 BP), the Wolstonian (380,000 – 130,000 BP) and the Devensian (110,000-10,000 BP). Although the full geographical extents of these glaciations are not precisely known, the Anglian and Wolstonian

icesheets extended far to the south of the Study Area. Alternating cold (glacial) and warm (interglacial) climatic stages have resulted in substantial reworking of the landscape. The most recent period, the Devensian glaciation circa 130,000 years ago to 10,000 years BP incorporated very cold glacial stadial alternated with less cold, ice-margin periglacial interstadials. During the glacial stadials, ice masses flowed from the Cadair Idris and Aran Mawddwy peaks in the north and the Plynlimon range in the south bringing local Silurian and Ordovician material. A second Irish Sea ice sheet flowed south-southeast across Cardigan Bay. The Irish Sea ice sheet has transferred material of Irish origin to the coastal zone of northern Cardigan Bay, particularly noticeable in the storm beaches.

As the ice melted at the end of the Devensian period, about 14,500 years ago, the land has rebounded by eustatic lift. However, sea levels have risen more quickly leading to the gradual inundation of the coastal plain which, at one time, extended up to 60km westward. By approximately 6,700 years ago, sea-levels had risen to bring the coastline to within 1km west of where it is situated today (i.e. sea level 3m below present). The marine erosion of the Borth cliffs began to add to the glacial material left by retreating ice sheets, leading to the creation of an offshore barrier/bar by longshore drift (offshore currents flow from south to north).

A freshwater lagoon developed behind the bar. As this dried out, the reeds and bulrushes gave way to a fenland landscape. Palaeobotanical remains suggest that a forest of alder, pine, birch, oak and hazel flourished between 5,000 and 4,500 BP (Figure 2). The root systems, which are sometimes exposed by the shifting sands of the beach, are generally spread horizontally which is the behaviour of trees growing in fenland.

By 4700 years ago, the woodland had begun to retreat from the fenland areas due to waterlogging caused by increased rainfall and sea level rise. These conditions encouraged the proliferation of Sphagnum mosses. Whilst, samples taken from the oak stumps and branches at the southern end of the beach near Borth suggest that these oaks were still growing around 3100 BP, over time the mosses built up into thick deposits of peat burying the dead trees stumps.

In the east of the Cors Fochno, the bog has continued to thrive developing into a dome-shaped raised mire (Evans 1950: 98). In the west, sea level rise and wave action have slowly pushed the offshore bar/shingle ridge inland, causing it to also migrate over the top of the former forest. The pebble bar is up to 60m wide at its southern end running parallel to Borth High Street and tapers in the north. The pebble bar consists of shingle, mostly of mixed glacial origin (Heyworth 1987). More recently, a sand dune system has formed to obscure the shingle ridge at its northern end.

The mouth of the River Leri was formerly situated half way between Borth and Ynyslas and flowed directly into Cardigan Bay. The river Leri was canalized to flow directly into the Dyfi to the north in 1824. The mouth of the Dyfi itself comprises channels and sandbanks which have markedly changed since first charted in 1740.

SURVEY METHODOLOGY

Aims and Objectives

The overall arching aim of the survey was to facilitate a great understanding of historic environment assets within the reserve, for both members of the general public and the heritage agencies involved in active conservation.

The specific objectives for the survey were to:

- to undertake a rapid reconnaissance of archaeological remains to be supported by photography;
- to enhance and/or create new records within the National Monuments Record of Wales database with information gathered during the survey;
- to identify a network of sites close to and abounding areas accessible to the general public, which could be linked into a self-guided walk;
- to develop a coastal survey methodology which could be adopted at low cost by local community groups wishing to explore further coastal archaeology on their doorstep (e.g. recording forms, hand-held GPS units and simple survey techniques).

Methodology

The preparation work undertaken in advance of the survey consisted of a review of the historic maps and Admiralty charts held by the RCAHMW and National Library of Wales. A review of the RCAHMW's aerial photographic collections was also undertaken to identify previously unmapped features. A gazetteer of existing sites was compiled from the National Monuments Record of Wales (NMRW) and from the Historic Environment Record (HER) curated by Dyfed Archaeological Trust. Contact was made with the Countryside Council for Wales (CCW) Warden, Mike Bailey, at Ynyslas to notify CCW with regard to undertaking the survey and to seek further information with regard to any archaeological material/sites that CCW were aware of within the Ynyslas Nature Reserve.

A recording proforma was devised for field testing based upon the proformas included in the RCHME publication *Nautical Archaeology on the Foreshore* (Milne et al 1999). The three forms provided for the recording of hulked vessel (Form MR1), individual ships timbers (form MR2) and other intertidal features (form MR3). The forms provided a ready prompt sheet for recording key information as well as including a facility to compile a scale sketch plan. A photographic log was also prepared to keep track of the subjects of the digital photograph taken. A compass was used to provide the orientation of the views taken and the orientation of the hulk keels. Simple ground plans of buildings and other features were sketched using measurements made with 30m tape. A hand held DGPS unit (Garmin Etrex Venture) was used for primary position fixing. The way points recorded were downloaded and replotted in ArcGIS to facilitate a comparison with what was visible

of the sites within the RCAHMW's aerial photographic layer (source RCAHMW GIS, National Assembly of Wales 2006). The positions were reviewed and improved as necessary. Digital photographs were taken with a Cannon EOS 450D.

The RCAHMW's recording strategies are informed by EH Understanding Historic Buildings: A Guide to Good Recording Practice 2006 and the *IFA Standard and Guidance for Nautical Archaeological recording and reconstructions 2008*. These standards have been correlated to the levels of survey activity used by the RCAHMW. The archive research and fieldwork undertaken conforms to the RCAHMW Level 1a: desk-based research and 1b: field observation.

3 HISTORICAL BACKGROUND

Prehistory

A single flint implement found at Dol-y-Bont near Borth is the only evidence of human habitation of the landscape during the warmer interstadials of the early glacial periods.

As the climate ameliorated at the end of the Devensian and the tundra gave way to dwarf birch, willow, juniper and grasses, Mesolithic (10500-6500 BP) hunter-gatherers are believed to have moved northwards to take advantage of the abundance of food resources encompassed within a vast lowland plain which connected Wales to Ireland. It is likely that winters were spent on the coast foraging for fish and shellfish, and the spring and summers inland collecting roots, nuts, fruits and berries. Evidence that these hunter-gatherers came to Ynyslas is found in an antler shaft, with a hole drilled through it, which was probably used as part of an axe or adze (NPRN 5006500).

The submerged forest and peat deposits, for which Borth/Ynyslas beach is well-known, extend for some 4.1 km and have provided evidence for exploitation of the landscape by Neolithic communities (6500 – 2700 BP). As sea level continued to rise flooding the Irish Sea plain, communities would have been pushed to the margins. Finds made amongst the beach peat deposits include a hearth from which fire cracked stones and charcoal were recovered. The scientific dating of associated peat deposits confirms human occupation at around 4,000 BP (NPRN 506498/PRN 3093) (Heyworth 1987).

These Neolithic peoples may have been responsible for clearing the remaining oak woodland as they developed early farming practices. The clearance of the oak woodland would have encouraged the development of the sphagnum bog.

It is likely that the raised islands of Ynys Fergi, Ynys Gwaethfoed, Ynys Las, Ynys Fochno, and Ynys Cynfelin provided foci for human activity through the Bronze and Iron Age, although no sites or finds from these periods are currently known. The cairns and other finds sites within the valleys and hills to the east of the study area confirm that Ceredigion was well-occupied in Bronze Age (Morgan 2005: 39). Similar inference can be drawn with regard to Iron Age occupation from the substantial Iron-age hillfort at Pen Dinas near Aberystwyth. The social interactions of the Iron Age people living

around the Dyfi estuary evolved into tribal affiliations led by chieftains, whose followers included warriors and specialist craftsmen. This social ordering would have been supported by a mixed agrarian economy based on barter. Simple watercraft, such as log or skin boats, would have provided river and coastal transport for trade and communication.

Roman (AD73 – 410)

Roman influence around the Dyfi estuary was first felt under the governance of Frontinus, AD 74-77. As elsewhere in Wales, a period of intense Romanisation followed over the next 50 years with forts and roads forming the most visible remaining evidence.

In September 1976, drought brought to light the remains of a Roman fort at Eglodd Farm near Llangynfelin church (NPRN 33882). The turf ramparts measured 3m across and had a small ditch. A further ditch encircling ditch, measuring some 2m wide by 0.9 m depth, had also been excavated. Both ditches had the typical Roman military V-shaped profile, and both had been deliberately back-filled. Small sherds of Samian and coarse pottery were recovered from the ploughsoil.

There are slight indications of features outside the enclosure to the east, hinting at a more extensive settlement. The fort possessed extensive and strategic views of the estuary, which would have been navigable for ships from the Roman British fleet (*Classis Britannica*) at least as far as Derwenlas. Llyn Bwtri may have provided a mooring place. That the fleet existed and was used extensively around the Britain has been attested in monumental inscriptions to the Prefects in control (Collingwood 1965: 66, 823) and the finding of a Roman period anchor off the Llyn peninsula (Morgan 2005: 54).

Recent excavations on the fringe of Borth Bog (NPRN 400848) explored an area of lead processing debris, including at least one furnace base. This is tentatively identified as Roman. In addition, close to the Eglodd fort at Llangynfelin, Taliesin and Llan Cwn Felin is a large complex of lead and copper mine shafts and the tips, some parts of which may date back to the Roman period (NPRN 33883). It is believed that both the fort and the mines were abandoned in around AD 130.

It is likely that the landscape around estuary would have been further deforested during this period.

Early Medieval (AD 410 – 1086)

With the waning of Roman influence and eventual withdrawal by AD 410, there was a resurgence of Welsh tribal kingdoms. Reference to one of these early tribal lords is found in the placename Traeth Maelgwyn denoting a sweep of sand on the south side of the estuary to the east of the mouth of the Leri. Maelgwyn was a king of Gwynydd who died in AD 549. The placename commemorates a competition for lordship, whereby Maelgwyn won the contest by seating himself on a floating throne of waxed bird's wings while his rivals were driven ashore by the inflowing tide. The contemporary king of Ceredigion was Gwyddno who ruled Cantre'r Gwaelod (The Lowland Hundred) which was defended by great embankments or sarnau. After the storm which saw the banks

breeched and the land flooded, Gwyddno concentrated on his fishtraps in the Dyfi (possibly NPRN 402561)(Figure 3). Also caught in the traps was the infant poet Taliesin, who gained revenge for his lord by defeating the poets employed by Maelgwm in the first *ymryson* (Welsh poetic competition). The reference to the presence of a fishtrap may suggest an origin for the fishing community which is recorded at Borth in later medieval periods. Various aerial photographs in the collections of RCAHMW show a feature may have its origins as a fishtrap (see figure 3), but in a 19th century etching in the collections of the National Library of Wales and schooner is seen beached at this location being unloaded by cart. Hence the remains of the fishtraps stone walls may have been consolidated over time into a hard or landing point (NPRN 506771).

There are differing versions of the tale of the Battle of Cors Fochno. It took place sometime before the Norman invasion of 1066. Moreover, it would appear likely that beaches were the setting for the fight between the forces of Caradoc ap Rhydderch, assisted by the Saxon king Harold Godwinson and his brother Tostig, against King Griffith ap Llewellyn ap Seisyllt of North Wales. The armies met at the junction between north and south Wales, the Dyfi estuary, and were joined by Harold's sea forces (Arch. Camb 1851: 210-5).

Medieval (AD 1086 -1536)

Archaeological evidence for medieval occupation comes from the fringes of Cors Fochno to the east and southeast. In 2004, a medieval wooden track way (NPRN 406311) was discovered south of Llangynfelyn church and leading away from the shore towards Llangynfelin 'island'. The track way had a gravel surface on a timber substructure made of adze-marked oak. Dendrochronological dates from the timbers point to felling dates between 1085 and 1121 AD. Lead processing debris had been used as a foundation for the track way. At least one furnace base was found as well as a small mortar stone. In a hollow a little way to the southeast, a wooden box was recovered amid further burnt debris. Other embankments or causeways were located to the southwest in July 2005 running for approximately 240m and 270m.

The earliest reference to a ship on the Dyfi dates from AD 1109 when the medieval chronicler, Brut y Tywysogion, noted that 'Cadwgan and Owen fled into a ship that was lying in the River Dove which had come from Ireland a little while before with exchange in her'. Evidence of the shipbourne trade to Ireland is of interest in terms of the spread of Christianity into Wales. Early Christian churches dedicated to the saints of Irish origin are found in south Ceredigion.

In 1373, the settlements of Borth and Aberleri are named in a church terrier along with the turbaries, or peat digging rights on Cors Fochno which were retained by the church until the 1960s.

Specific references to Aberdyfi-Ynyslas ferry can be traced back to 1458, when Jein ap Iorwerth, of Ynys-y-Maengwyn, held the rights to the crossing under Henry VI (Morgan 1863: 5) (NPRN 112292). The medieval chronicler Gerald of Wales (Giraldus Cambrensis) includes a reference to crossing the Dyfi by boat in AD 1188, whilst accompanying the Archbishop of Canterbury (Baldwin of Exeter) on

recruitment campaign for the Third Crusade. This suggests that the ferry was well-established by the 12th century.

Post medieval (1536 – 1900)

3.1.1 Maritime Trade

A survey of ports, creeks and landings places instigated by Queen Elizabeth I in 1569 noted that the Dyfi was a 'wonderful greate resorte of ffyshers'. The boats would have been drawn up the beach into the lee of the headland at Borth or into the shelter of the mouth of Leri. A document dating to 1566 and called 'The Havens and Creeks of the County of Cardigan', named the owner of the land at Borth in Generglin as John Ougan. Thomas Jenkin and John Vaughan were appointed deputies to oversee the havens of Dyfi and Borth. Their duties included ensuring compliance with regulations for the fishing season as well the suppression of piracy.

In 1567, to support the herring fishery, William Wightman, Peter Osbourn, Christopher Schuk, Richard Purcell and Edward Herbert proposed the setting up of a salt works on the Dyfi. The Duke of Norfolk and Lord of Pembroke and Leicester was to be a partner in the enterprise. Salt pans were sent from Sussex. The difficulties of transport (seven wainloads) meant that the large salt pans and smaller pickle pans were not cast but made of pieces which were to be assembled on site. A smith accompanied the cargo and the salt maker on the hoy CHRISTOPHER of London. The accounts contained within the Powys Castle Collection of Manuscripts of 1569 notes that the merchants complained about the 'wilful spoiling of about 100 barrels of salt consumed by weather' after it was measured and weighed it the open (Lewis 1954) (NPRN 506291).

It would appear that the venture was neither long-lived nor successful in making the Dyfi estuary self-sufficient by way of salt production. In July 1599, when a French vessel called the LE SEADOG DE EMDIN, under the command of merchant John le Cure, brought 15 tons of salt and 5 tons of wine from France. On 30 July 1599, the ship sailed with a return cargo of 15 tons of lead ore. Lead ore continued to be a significant export as there are further surviving customs dating to 1641 which note 25 tons, 50 tons and 100 tons of lead ore being exported (Morgan 1945: 22). The exporters were London and Oxford merchants. Corn became an important import to feed the growing local population of lead and silver mine workers. In 1653, a plea was sent to Oliver Cromwell's Privy Council by London merchant Luke Lucy. He urgently requested that corn be sent to Aberdyfi as the people had 'little but what is sent by sea'. The importance of the lead ore from the Dyfi is revealed by the Privy Council's response. A vessel called the JOHN of Middlesburgh was sent and it was to be protected in a convoy of vessels to be organised by the Commodore of the Squadron of the Downs (Morgan 1954: 20).

The scale of the population engaged in mining ventures on the Dyfi is evidenced by the 600 miners that Mr Waller, Captain of the Mines under Sir Carberry Pryse, employed in 1693. The miners loaded ore onto river boats at Glandyfi to be taken to a large storehouse at Aberdyfi. Some 15,000 tons of lead ore or 10,000 tons of lead to the value of £90,000 was being exported annually. Between 1742

and 1745, Aberdyfi was the fourth busiest Welsh port in terms of receipts and bounties paid on corn. By 1750, the need for a custom controller or port watcher had been established. Lewis Morris, the hydrographer was also a customs collector at Aberdyfi from 1751-52. He commented on a recent downturn in the lead and silver trade saying 'there are several lead mines up this river but few of them are working'.

With the concentration of lead mining near Tre Taliesin (NPRN 33883), the Pil Tre'rddol/Afon Cletwr may have provided access for small vessels/barges during the periods of boom (NPRN 506499). A line with the annotation 'Line of Navigable Canal marked out July 1788' is drawn on T Lewis' map of the Cors Fochno dating to 1790 leading to the limekilns at Newydd. The recognition that the spreading of burnt lime could help to improve the productivity of uplands soils provided the impetus for the development of this and other limekilns around the estuary. Whether the Pil Tre'rddol was to have been developed further with wharf facilities is currently unknown, by this time Derwenlas had established itself as an inland port.

Samuel Lewis, in his Topographical Dictionary of Wales published in 1833, noted that 'the river Dovey is navigable to Derwenlas, within 2 miles of the town (Machynlleth) and affords a facility of conveying the produce of quarries and mines to their destination and of supplying the neighbourhood with various commodities. The average annual exports from this place are 500 tons of bark, 40,000ft of oak timber, 150,000ft of oak poles for collieries; 100 tons of lead ore, and 1500 tons of slate. The average annual imports are 5000 tons of rye and wheat; 1000 tons of coal 500 tons of culm; 2000 tons of limestone and groceries and other ship goods to the amount of £14,000 in value'.

The trade in oak bark for tanning process, particularly in Ireland, and the need for ships to keep pace with growing trade led to increased deforestation (Morgan 1954: 40). During the period 1748 to 1816, 53 sloops and one brig were built at Aberdyfi or in yards further up river (e.g. Derwenlas, Garreg, Llugwy). Of the yards at Aberdyfi, the first and best facilities were situated at Penhelig. There were yards on east and west flanks of Bryn Llestai, another below mouth of 'Tunnel Bach', and, after the coming of the railway, a concentration of activity closer to the mouth of the estuary in the Park area.

A shipyard had been established at Pont Leri in 1842. The vessels built here included the sloops *Mary Rees* 1842, *Mary and Ellen* 1843, the schooners *Gleanor* and *Resolute* in 1849, *Claudia* 1850, *Priscilla* 1855; the brigantine *Island Maid* 1851; and smack *Catherine* in 1864 (Davies 2004: 35) (NPRN 506294). The western side of the Leri is the most likely place for the shipyard as a small section extant wharf is shown at this location on Sales Particulars dating to 1862(NPRN 506515)(Nat Lib of Wales MAP7613).

Of the recorded shipbuilders at Aberdyfi, Thomas Richards, Roger Lewis, John Jones and Griffith Owen, John Jones built the largest number of vessels. The greatest period of productivity being 1857–1864, during which time 16 vessels were completed. John Jones is known to have worked at

both Penhelig and at Ynyslas. John Jones had first worked for Rowland Evans at the profitable shipyard at Cei Ward, Derwenlas (Jenkins 2000: 63-86).

In 1859, a further impetus for maritime trade was provided when the slate quarries of the Corris area were linked directly to Derwenlas by a narrow gauge horse-drawn tram road. By 1860, Morgan notes that the number of vessels passing along the main channel at the north of the Study Area could be as many as 80 on any tide heading for Aberdyfi and further upstream to Derwenlas. The mass expansion in the slate trade gave rise to the so-called 'Derwenlas Fleet'. Three schooners, believed to have formed part of this fleet, were hulked at Ynyslas in 1868 after the coming of the railway had closed the port of Derwenlas and the replacement pier associated with the Aberleri ferry branch at the mouth of the estuary had also been abandoned (figure 4) (NPRNs 506769, 407989, and 408431).

The Aberdyfi Bar has played a significant role in the vast majority of other recorded shipping losses in the estuary, the MORINGEN being one example. This vessel was a 217ton, wooden brig built in 1862 and owned and captained by L Bergstrom of Drammen. It was carrying a cargo of timber, mostly in the form of deals and battens, some of which was stowed as deck cargo. The brig had arrived off Aberdyfi on the 15 June 1877 and had to wait for the tide to be high enough to cross the Dyfi bar. By the next day, when the crossing was attempted, a north-westerly force 8 gale had blown up whipping up heavy seas. The brig was pushed to the south side of the Dyfi channel and began to bump along the shallows. The Aberdyfi lifeboat was called out and rescued the six man crew, but the brig itself became a total wreck. The remains of a windlass, which may be from this wreck, are periodically uncovered (NPRN 272432) (figure 5).

3.1.2 Agricultural Developments

Agricultural developments were also taken place with Cors Fochno during the post medieval period. The farmsteads shown on T Lewis map of the Cors Fochno dating to 1790 include the Dwelling House at Ynyslas (NPRN 506337) (figure 6) and its farm buildings (NPRN 506295), Moel Ynys (NPRN 506723)(figure 7), Ty Mawr (NPRN 506738), Ty Canol (NPRN 506740), Ty Gwyn (NPRN 506744) and AberLerri Farm (NPRN 5008). Building materials were provided by the several small-scale quarries on the Cors Fochno islands associated with these farmsteads (e.g. 408429 and 506511).

Some reclamation of the western Cors Fochno had already taken place (NPRN 506991) by 1790. The course of the Leri has been altered away from its course running along behind the shingle bank. The long drain of the Pyl Newydd, with branching drains to its western side, had already been cut (the course of the Pyl Newydd was later developed to form the canalised Leri).

The General Enclosure Act of 1801 provided the stimulus for local landowners, principally Sir Pryse Pryse of Gogerddan, Lord of the Manor of Genau'r Glyn, and his close neighbour Mathew Davies of Cwmcynfelin, to promote the enclosure and drainage of the bog. An enclosure act was given royal assent on 22 June 1813. The enclosure Commissioners' surveyor, Charles Hassall, suggested that the reclamation scheme should divert various streams and that the river Dyfi should be embanked. He

recommended Anthony Bower of Lincoln as the engineer. In 1815, Bower proposed that the river Leri be deepened, straightened and embanked from an opening into the sea into the Dyfi (Pont Leri) (NPRN 506293). A sluice was to be constructed at the river mouth, from which the main drain would run through the centre of the bog. This would be accompanied by a catchwater drain which followed the course of the Leri to the foot of the hill and then along the south eastern boundary of the bog to join the river Cletwr.

Another plan was submitted by Griffith Parry of Penmorfa. This proposed the widening and deepening of the ancient ditches around the bog, embankment of the Dyfi and the diversion of the river Leri into a straight line to the Dyfi (Pont Leri). Disagreements amongst the Commissioners and land owners continued.

Waste land was sold to pay for improvement works and it appears that embankment of the Dyfi had been completed by end of 1818, as the contractor's solicitors began pressing the Commissioners for payment of the outstanding balance of £2500 in January 1819 (NPRN 506292).

Robert Williams of Bangor and David Joel Jenkins of Lampeter were appointed enclosure Commissioners in 1819, but disputes over the plans and payments continued until June 1822 when Richard Griffiths of Bishop's Castle was appointed Commissioner. A new act was needed to allow plans to proceed further (passed in 1824). Assisted by the surveyor Charles Mickleburgh of Montgomery, Griffiths forwarded extensive drainage works on the western side of the bog, including the alteration of the course of the Leri (NPRN 506293). Richard Griffiths also drafted an initial apportionment of the improved land in 1825. However, financial disputes, repairs to embankments and sluices, and proposals to prevent access to the grazing of the foreshore at Ynyslas all conspired to delay the final execution of the land award until 1847 (Colyer 1977: 186-9).

In 1861, the coming of the railway prompted the consideration of an extensive plan to reclaim the whole of the foreshore of Traeth Maelgwyn, but the plans were not taken forward (Nat Lib of Wales: Gogerddan 532)

For local fisherman, the canalisation of the Leri made access to the cockle beds of the Traeth Maelgwyn more difficult. The fishing boats that had used the shelter of the mouth of the Leri had no option but to move to the open beach at Borth or to the harbour of Aberystwyth.

3.1.3 The coming of the Railway

Some efforts were already in motion to develop the potential of Ynyslas and Borth as a holiday/health resorts in the early part of the 19th century. Although Askew Roberts in his 'The Gossiping Guide to Wales' published in 1806, noted that Borth was 'making gasping attempts to become a watering place... better stay at it was, a genuine fishing village, of that ancient and fish-like smell' (Rees 1986: 48) . This negative view of the locality was ignored by Thomas Savin, a building contractor and speculator, involved with the building of the Aberystwyth and Wash Coast Railway. He saw the coming of the railway as a great opportunity to develop both trade and tourism.

The Aberystwyth and Welsh Coast Railway was instigated by three Montgomeryshire railway companies - the Llandiloes and Newtown incorporated in 1853, the Oswestry and Newtown incorporated in 1855, Newtown and Machynlleth incorporated in July 1857. All three companies shared a building contractor – Davis and Savin – until the partnership was dissolved (David Davis became disenchanted with Thomas Savin’s grand side schemes for secondary developments).

The Aberystwyth and Welsh Coast Railway Act reached statute book on 22 July 1861 and had 78 clauses including the intention to raise £400,000 to make 5 sections of railway. The sections of most relevance to the Study Area being number 1 from Aberystwyth to Penmochno Embankment (a little to the east of Ynyslas), and number 5 from Penmochno to join the Newtown and Machynlleth railway at Machynlleth.

On 24 September 1861, the formal appointments of solicitors and secretary were made, with Benjamin and Robert Percy being the engineers. Savin offered a lump sum contract ‘to complete the railway, discharge all liabilities incident thereto and to deliver the Railway to the company approved by the Board of Trade including Stations, Telegraphs, and other usual appliances’. The line was opened as far as Borth on 1 July 1863. The line to Aberystwyth was declared ready for inspection on 11 June 1864 and was opened for goods traffic on 23 June 1864. Amongst the developments undertaken to facilitate the building was a wharf on the east side of the mouth of the Leri (NPRN 506501). Construction materials and two Manning Wardell 0-6-0 saddle tank engines were brought in by barges towed by the company’s paddle tug, the JAMES CONLEY. The procurement of two engines meant that both ends of the line (Aberystwyth to Ynyslas and Ynyslas to Machynlleth) could be worked upon at the same time (the engines delivered materials from the wharf to both points of construction). The wharf was linked to the main line by a siding. The East Wharf siding or Penrhyn siding loop ran from Ynyslas station for 400ft along the edge of the Leri (NPRN 506502). The piled face of the wharf was driven in October 1863 (figure 8).

By 16 February 1871, the railway’s traffic manager reported that the Penrhyn siding and wharf had ceased to be needed for railway construction. He also noted that the Aberdyfi timber merchants, Jones and Griffiths, would rent the wharf for £10 per annum. Jones and Griffith established a sawmill (NPRN 506503). The railway company retained the right to import and export from the wharf. A branch of the Penrhyn siding ran close to three wharfside buildings and may represent the company’s retained warehousing interests. The Penrhyn siding was closed and dismantled after April 1896 when Jones and Griffiths transferred their sawmill operations to the western bank.

These industrial developments were part of Thomas Savin’s grand plan to develop a port to rival Aberdyfi on the south side of the estuary. Amongst the collections of the National Library of Wales there is a draft of a sale agreement dated 21 April 1866 for land to east of the canalised Leri, between Thomas Savin and Miss Morris of Aberystwyth (14 lots at £420 2s 18d), Anne Wakin of Meolcermey 2 lots a at £15), Athelstan Corbet of Ynysmaengwyn (3 lots at £15) and Rev Lewis Evans of Llanfihangel (1 lot at £5) (Nat Lib of Wales: Gee & Mathews 50 131/5/6). These were the parcels

of land he required to forward his plans, despite the fact that in February 1866, Thomas Savin had overreached his finances and payments on his accounts had been suspended.

On 15 November 1866, many of Savin's landholdings at Ynyslas were sold. These included the West Wharf timber yard encompassing the Dwelling House at Ynyslas (NPRN 506522); a terrace of 17 newly erected cottages (NPRN 506737), a cottage, farmhouse and brickworks at Ynys Tachwedd (NPRNs 506743 and 506517-8) and Dolynedd (NPRN 506992). By this time, the Gogerddan Inn had also been built to service the growing community (NPRN 506739) on land owned by Sir Pryse Pryse.

Early plans for the railway included the building of a railway bridge to link the north and south sides of the estuary. However, until the line on the north side of the estuary was completed, the railway company took over the ferry service. A component part of the service was the building of the Aberdovey Ferry Branch, also known as the Penrhyn Branch (NPRN 404428). The line branched from the mainline around the hill on which Ty Mawr stands, past the West Wharf, to curve northwest across the sand to the landing stage at Cerrig-y-Penrhyn (NPRN 408413) (figure 9).

At the time the branch was built, the Aberdyfi-Ynyslas ferry was worked by a ferry captain who held a lease. The original owners of rights to ferry were the Ynys-y-Maengwyn estate, which had long been in the hands of the Corbett family. There were three levels of service: Y Fferri Fach - the little ferry which took only foot passengers; Y Fferri Ganol - the medium ferry which would take horsemen, passengers and luggage and small animals (passengers were met at the Cerrig-y-Penrhyn by a cart); and the Y Fferri Fawr – the large ferry which could take herds of animals, heavy carts, and carriages and horses. All the ferry boats were powered by sail and would work up towards the mouth of the Leri on the higher tides. By the 1860s, road improvements meant that ferry traffic had fallen off to only foot passengers and local farmers. Undeterred, the railway company bought the lease to the ferry for the railway company.

The construction of the landing stage at Cerrig-y-Penrhyn met with difficulties concerned with keeping the slate structure in place during westerly gales. The placement of 40 tons of steel rail on top eventually provided the structure with stability. A special railway carriage was employed on the line to take passengers to the landing stage. The principle vessel used on the route was the steam yacht-like ELIZABETH which had cabins for the first and second class passengers. The vessel had been built by James Watt & Co, Birmingham. The ELIZABETH started service on 24 October 1863 and was operate every hour charging 6d per head. The vessel had a crew of 5 besides the captain, Edward Bell, the former ferry master.

The Admiralty Sailing Directions for the West Coast of Wales published in 1870 stated that the railway station for Aberdyfi was on the south side of the estuary 'from whence a line of railway is laid down for the convenience of shipping slates. A ferry also crosses the river at the same point'. This appears to confirm that the railway company were making attempts to facilitate cargos for the vessels formerly engaged in the slate trade from former port of Derwenlas. But by the time these Directions were published, the fate of the branch line had already been decided. By August 1867,

the line on the northern side of the estuary had been opened and passengers could bypass the ferry to continue northwards by changing further up the line.

Moreover, the ELIZABETH had proved too large and difficult to operate on the route and was frequently aground. On 18 August 1868 the directors were informed the steamer was resting on a timber gridiron which the owner wanted back, and that on each spring tide, water washed into her cabins. On 27 May 1869, George Owen the Cambrian railway engineer reported that the old landing stage would be sold for materials as the planking was being carried away and the company would be liable for any damages if it were hit by a vessel. In September 1869, the ELIZABETH was sold to Londonderry (Green 1993: 126). The 3rd class railway carriage used by passengers to reach the landing stage was eventually sold for use on the Mawddwy line. All that remains today of the landing stage is the wooden mooring bollard, a foundation layer for the pier comprising rough slates wedged upright, and a wide area of wave-scattered slate rubble (NPRN 408413).

After the Aberdyfi Ferry branch was abandoned, the track was uplifted and remodelled to serve the development of the West Wharf. It was first proposed that the East Bank sawmill be moved to the alternate bank in May 1895 to allow for the up-platform at Ynyslas to be extended. The remodelling was completed by summer of 1896, and the owners transferred sawmill operations soon after (NPRN 506522).

Another development that might have increased the industrialisation of mouth of the Leri was the Plynlimon and Hafan Tramway. A map contained within the collections of the National Library of Wales shows the proposed route of the tramway linking quarrying activities of the Leri valley to port facilities at Aberleri (Nat Lib of Wales: Map 9099).

The scheme's principal advocate, Thomas Molyneux, entered into extensive negotiations with Sir Pryse Pryse and the Gogerddan estate for permission. When the proposal was put forward in 1893, it was uncertain whether the tramway would use left or right bank of the Leri. Some initial embankment/route preparation was carried out (NPRN 506536), but the development came to a halt on 29 April 1893, when the Gogerddan Estate refused permission until the whole of the route had been confirmed.

On 13 July 1893, Molyneux requested that the railway board consider allowing the tramway to pass under the Afon Leri railway bridge (NPRN 400986). In response, the board stipulated that the barges receiving the slate from the tramway wagons should not be brought up the river beyond the road bridge (i.e. the promoters of the Plynlimon and Hafan Tramway would be charged for using the railway company's wharf). Permission to build a tramway across the foreshore at Ynyslas was sought from the Board of Trade Harbour Department in 1899 (The National Archives, MT10/754), but there appears to be no physical evidence that the tramway was completed all the way to Dyfi Estuary. The railway company had a greater vested interest in maintaining transshipment onto trains at Llanfihangel. However, amongst the maritime remains there are four slate ballast mounds,

which may relate to the barges referred to in connection with this development or in the construction of the main railway line and the Aberleri Ferry Branch (NPRNS 408014-7).

3.1.4 The development of a Seaside Resort

Thomas Savin's grand plans for the Welsh coast railway included property speculations using hotel building as catalysts for a seaside town development. Savin built hotels at Aberystwyth, Aberdyfi, and at Borth. Savin's Borth development was the Cambrian Hotel and the houses of Cambrian Terrace dating to 1864. The need for fresh vegetables to cater for tourists and the growing population and the market garden of Ynyslas Gardens was established to supply Savin's new hotel (NPRN 261394)(figure 10). A description of Ynyslas Gardens contained in sales particulars dating to 1897 notes 2 acres with extensive vineries, cucumber, tomato and peach houses (Nat Lib of Wales, Merioneth Sales Catalogue 180).

Savin's Bailiff for the Ynyslas and Ty Canol estates, Mr Gilfillen, lived at Moel Ynys. At the November 1866 sale, the majority of the Savin's land holdings at Ynyslas were bought by Henry Sugar Esq, of Lyall near Handforth in a Cheshire. The estate was again placed for sale on 23 August 1879 by Henry Sugar's executors, Samuel Dewhurst of Salford, merchant, and Samuel Dewhurst Whitemore Henry Perks of Llyall, a iron and tin plate merchant (Nat Lib of Wales, Cardiganshire Sales Catalogue 50). The estate was again placed up for sale by the executors of Henry Sugar and Samuel Dewhurst on 14 September 1881 (Nat Lib of Wales Longeuville Sales Catalogue 145) and again on 12 June 1890 (Nat Lib of Wales; Map 13048). Towards the end of this period of ownership, the timber framed Bungalow adjacent to Moel Ynys (NPRN 506721) (figure 11) had been built, as had the 'prettily designed' concrete bungalows of Min Y Don (NPRN 506742) (figure 12) and Glangors (NPRN 506962) (figure 13). All appear on 1st edition OS mapping dating to 1886.

Brynellen had been built by 1889 by a Dr or Mr Hutchinson (NPRN 506347) (now no longer extant). Picture postcard views dating from the 1930s show a mock black-and-white timbered exterior with a large wing or pavilion extension to the north (source: www.francisfrith.org.uk). The plan form, with a large gabled extension to the northern end, is similar to that of the Bungalow.

In the late 1880s, the plans for a large seaside resort were once again rejuvenated. In October 1889, the architects Tate and Popplewell of 87 Mosley Street, Manchester, were commissioned to produce a plan extending to some 261 acres for Ynyslas Ltd. The plan includes a wide promenade, separate ladies and gentleman's open swimming pools, a recreation park and ornamental water, hotel, shops, market hall, a church and a chapel. The plan includes detached, semi-detached and terraces of houses (figure 14). The June 1890 sale saw the estate pass into the hands of the Ynyslas Bay Company Ltd. This Company had been incorporated on 30 January 1890, with the shareholders including William Gregson, colliery proprietor of Southport (50 shares); Joseph Cunliffe, calico printed of Chorley (50 shares); Richard Barlow, colliery proprietor of Radcliff (50 shares); Thomas Gregson of Bolton (50 shares); Edward Lloyd Clarke, salt manufacturer of Cuddington (50 shares); John Taylor, cashier of Bolton (1 share) and John Renton, accountant of Manchester (50 shares). This company gave building and land development as its primary reason for coming into being. Four

semi-detached, 3-storeyed Villas (one called Gregson House) has been built by 1891 when a plaque commemorating the first phase of the scheme was unveiled (NPRNS 506718-21) (figure 17 and 18).

Finance to take the scheme further appears not to have been forthcoming and the Ynyslas Bay Company was wound up in March 1894 at the behest of the Cambrian Railways who were a creditor. The land holdings appear to have been transferred to the Ynyslas Estate Company Ltd with three Gregson brothers as the sole proprietors – Thomas Hodson Gregson, Walter Gregson and William Robert Gregson.

The golf course was one of the attractions for the resort. The earliest reference to golf being played at Borth is 1876, when the Uppingham School arrived to stay at Borth to escape a typhoid epidemic in Rutland. Golf is mentioned as having been played during the year that the school was in residence (Skrine 2006). The earliest known records for golf being played at Borth date to 1882 (Rees 1986: 50). An 18-hole golf course had been laid out by 1885. The course was further improved by the formation of a formal golf club on 3 August 1893 (Rees 1986: 13-14).

Modern (1900 onwards)

3.1.5 The Development of the Seaside Resort Continues

Between 1901 and 1910, another black and white timber-framed bungalow had been built facing Moel Ynys called Brynhyfred (NPRN 506741). A second area of market gardening activity/glasshouses had been developed by 1910 (NRPN 506296).

In 1910, the Ynyslas Estate Company went into liquidation. The sale included all the farmsteads and houses built at the time and 13 building plots to the east of the main road. Picture postcards from the inter-war years reveal the gradual development of these plots.

Local residents suggest that a hotel was built within the sand dunes in the interwar years, but had been demolished by the mid 1940s and the time of military occupation (NPRN 506339).

3.1.6 Industrial Decline

Industrial activity at the mouth of the Aberleri continued with, in November 1912, the sawmill owners requested land from the railway company to build a long drying shed. The long shed was duly constructed with a smaller shed 350ft to the north. The siding was extended to serve both buildings. Local residents suggest that the timber yard had ceased to trade before World War II.

3.1.7 Military Presence

Military activity at Ynyslas during World War II has two phases. The first relates to the nationwide programme for construction of anti-invasion defences begun early in the war. The defences were probably installed in the late summer/early autumn of 1940, as no defences are visible on the low-level oblique RAF Medmenham aerial photographs taken on 1 July 1940 (Parry 2010).

At the low-water mark, the Royal Engineers would have constructed massive lines of barbed wire and anti-tank rails, designed to hinder enemy tanks as they disembarked from landing craft. The wire was held in place by 9ft high steel scaffolding tubes. Little physical evidence of these obstacles remains today. However, occasionally stumps of military pattern rail can be seen on the beach. One such rail was visible in February 2008 (NPRN 506530).

There is only one surviving extant pillbox (figure 16). The pillbox overlooks the River Dyfi and is a hexagonal plan, brick-built 'Type 24' (NPRN 506521). Although now used for an animal shelter, the pillbox retains the wooden brackets for shelves at each firing loop which were used to hold ammunitions or binoculars. Examination of RAF low-level oblique aerial photographic sortie P58/RAF/3085, taken 1st August 1959, has revealed the location of two others. The first, in the sand dunes at SN60499387 (NPRN 408400), and the second is shown is at SN60779095 (NPRN 506531). No remains are visible today, except for a few pieces of weathered bricks and concrete. It is likely that the first was destroyed by the army disposing of excess explosives. The roof was blown clean off – in one piece – and came to rest a few feet to the west. The aerial photograph clearly shows the internal layout of the pillbox, the internal anti-ricochet wall being a distinctive feature. The second may have suffered a similar fate and has since become engulfed by the sand dunes. The pillboxes would have been manned by soldiers of the No 15 and No 16 Platoon of the 1st Cardiganshire Battalion Home Guard. No 15 Platoon were responsible for Taliesin and Glandyfi, while No 16 covered Borth, Llandre and Dolybont.

Parts of the sea wall at Borth were also given defensive installations. Temporary machine-gun posts fabricated from sandbags were placed at intervals between Upper Borth and to the west of Glanygors (SN60629213). Support positions to check road traffic were located near Rock House (SN64399224) on the B4353 road heading towards the A487. Of these installations, there are no surviving remains. Near the gate to the nature reserve is a trapezoid anti-tank-pimple (NPRN 270399). Unlike the larger permanently fixed, partially sunken type, this is a smaller, free-standing concrete block with a steel bolt protruding from the upper surface.

Towards the end of the war (with certainty from February 1945 onwards), Ynyslas was selected to become a test facility for conventional shells and prototype guided missiles and rocket propellants developed through secret research being undertaken under the leadership of Sir Alwyn D Crow, CBE, ScD, Director of Guided Projectiles, Ministry of Supply. Sir Alwyn Crow had been the director of Projectile Development Establishment at Forth Halstead between 1940-1945.

Sir Alwyn reported to a top level committee (the Guided Projectile Progressing Committee) comprising representatives from the Admiralty, War Office and Air Ministry as well as a US Naval attaché and representatives from the Canadian Military. He was responsible for overseeing technical panels working 3 areas - stabilization and control; aerodynamics and propulsive ducts; and the development of liquid fuels - to deliver various forms of anti-aircraft, ship-to-ship and artillery weapons. The first milestone date for delivering prototype missiles for naval use was to be August 1947.

The guided projectiles research programme brought together some 40 civilian and service personnel from the Radar Research Defence Establishment (RRDE), Signals Research and Development Establishment (SRDE), Sir Frank Whittle's Power Jets (Research and Development) Ltd and private companies such Asiatic Petroleum Company (formed by Shell and Royal Dutch Oil Companies) and Laporte Chemicals Ltd (for the production of hydrogen peroxide).

At this time, rockets were being devised for three distinct combat roles;

- 1) Barrage rockets fired rapidly and in quantity to saturate a large area of the battlefield
- 2) Direct fire rockets aimed singly or in small numbers at specific targets
- 3) Rocket propulsion systems for aircraft (e.g. a rocket that might help boost the launch of an aircraft from aircraft carrier deck) and guided missiles

Rocket launchers consisted of little more than a set of launching tubs, mounted in parallel on a metal frame that could be rotated or tilted for aiming. Most of rockets were unguided, solid-propellant with diameters under 6 inches and warheads in tens of pounds. Being relatively light and producing no recoil, they could be mounted on vehicles. Electric ignitions systems allowed rockets from a single launcher to be 'ripple fired' - launched at precise split second intervals to maximize the psychological impact of a steady cascade of explosions. Rockets could also be launched from aircraft. The British used 3inch diameter tubes with rockets having four fins and carrying a 65 pound, 5inch diameter warhead (e.g. Admonitor rockets). At the Battle of Mortain 2 months after D-D landing 7 August 1944, British Hawker Typhoons devastated German armour with rocket fire - 83 tanks were destroyed, 29 were probably destroyed and 24 were damaged.

Local residents have provided information with regard to the use of HMS CAMROUX III, a coaster that was requisitioned in 1939. It was anchored at Aberdyfi to provide 30 billets for army officers during the construction of the range. The ship carried out a detailed survey of the foreshore at Ynyslas, which was later squared off into grids. Each grid was allocated a target reference code for the rockets and the grid was used to test accuracy. The ship itself was used a rocket-testing bed with a thousand rockets each with its own projector placed onboard and then banks of 25 rockets at a time were fired onto the mudflats and their landing sites recorded.

An oral testimony in the collections of the Imperial War Museum from a member of the Women's Auxiliary Territorial Army, Margaret Herterich, provides additional confirmation of these events:

'The sea and estuary were used for testing different types of firing shells. The girls, smartly dressed in black refer jackets and berets, were placed at different observation posts around the area where we read off bearings and information from our equipment. We travelled around on the back of lorries or went across the Dovey on our duck.

We need to understand about photography, light meters, theodolites, thermometers, and filling and reading off weather balloons. Before I could be called an E.G.A., I had to load a camera with a plate, take a photograph of a group of objects and develop the plate.

I remember trudging up to different levels on Plynlmmon 2486ft and walked up the sandy estuary, when the tide was out, plotting the scatter of shells on to a grid paper. We were invited to tea on a Naval Ship anchored in the estuary that day. We felt very grand - somewhat different to ablution, or cookhouse fatigues!

HMS CAMROUX is also reported to have assisted with much of the experimental development of radio and radar (Testimonies: William Davies of Towyn and Les Dennett of Borth). In his oral testimony, the ship's second engineer William Davies recalled:

'One of our operations about this time involved anchoring a buoy out in the bay with a very high balloon above it. Halfway between the balloon and the buoy was suspended a dummy aeroplane made of chicken wire and three ply. It looked very realistic. This was to test proximity-fused shells fired from Ynyslas. The shells did not have to hit the plane but exploded at their nearest point to it. This was achieved by using the Doppler Effect principle. Each Shell had a small radio transmitter and receiver in the nose which was switched on as the shell left the gun and had a self-destruct mechanism in case it didn't go off. I dismantled one once to see how it worked....'

The report written by Sir Alwyn Crow 'Guided Projectiles Organisation within Ministry of Supply' (National Archives Kew, AVIA 48/1) in November 1945 provides the documentary confirmation of the use of Ynyslas for guided missiles trials. It was to be manned by 9 officers and 202 ordinary ratings (excluding cooks and ratings) under a Superintendent of Experiments (S of X). Only one document appears to have survived detailing the nature of the trials undertaken during the 15-month period of establishment's existence – this being the minutes of a visit by the chairman of the Guided Projectile Working Committee, Major L W Jubb, on 2 January 1946. A tour of the existing facilities was undertaken with the S of X, Lt Col T L G Tod, Royal Artillery. Minuted discussions centred on how photographic observations might be improved with Akeley and Ascania cameras. Attending the discussions were four Assistant Supervisors of Experiments, Major Till, Captain Pubach, Captain Lodge, and the female officer, Junior Commander Biddle. She was responsible for overseeing staff operation of the Ascania cameras. The minutes refer to a proposed propulsive duct trial (for 11 January 1946) and test of the Ascania cameras to precede this using Admonitor rockets from Aberporth (AVIA 48/16, National Archives, Kew).

The nature of the installations can be gleaned from oral testimonies, correspondence and documents relating to other establishments engaged in the research, such as Westcott, Buckinghamshire, and the Projectile Development Establishment at Aberporth. For example, a letter from Fort Halstead dated 8 February 1845, which provides the specification for the camera observation posts to be built at Ynyslas (i.e. 20 ft in length to allow for 20 viewers, splinter-proof construction, 30 yards to the rear and 20 yards to the side of the projector).

The listing of range facilities below has been gleaned from correspondence relating to the Guided Projectile Flight Trials Establishment's requirements on its transfer to Aberporth on 17 May 1946.

That is, the facilities that had or were to be developed at Ynyslas were drawn upon to demonstrate the present and anticipated needs of the establishment over the next 3-6 years (AVIA 48/15-16, National Archives, Kew).

Facilities at Ynyslas are likely to have included:

- batteries with access tracks and smooth running cranes to recover projectile carriages along test tracks;
- temporary platforms for rocket projectors;
- camera observation posts (20 ft in length, splinter-proof, 30 yards to the rear and 20 yards to the side of the projector);
- sites for radar tracking equipment, telemetry ground stations and radar control equipment;
- nearby-by heating and cooling chambers, assembly and fuelling sheds;
- full meteorological equipment including wind tower and a base for upper wind observations.
- workshop (8,400 sq ft) divided into machine shop (1600sq ft) , electrical shop (1000 sq ft), blacksmith and welding shops (1000 sq ft), stores (600 sq ft), office (200 sq ft) and assembly shop 4,000 sq ft); the workshop to be equipped with a 15ton Ransome crane;
- five laboratories (5 huts 40ft x 20ft) of standard construction with electric light and power and supplied with benches and fittings - three huts as laboratories and stores for RRDE to work on receivers; 1 hut for SRDE for telemetry; and one for AGE for servo work;
- a large hut 40ft x 20ft fitted out as a dark room for the development of radar tracking records, telemetry recording plates and kine-theodolite films;
- one large main plotting and computing room with three smaller rooms for individual analysis of photographic, radar tracking and telemetry;
- a compound of 16 standard huts to store explosives;
- four huts for the storage of petrol, paraffin and oxidants such as hydrogen peroxide;
- general store for components such as dummy projectiles, boost cones, fins, etc;
- a dust-free, temperature controlled store for electrical components for RRDE;
- accommodation and messing for officers and ordinary ratings;
- a civilian hotel to provide accommodation for civilian and permanent scientific staff near Ynyslas;
- transport for the delivery of GP stores and special vehicles for the transport of liquid fuels with provision for undertaking repairs to said transport;
- telephone system linking the batteries to the camp;
- electrical power, water and fire-fighting equipment.

The range of observation methods to be implemented at Aberporth included 'times by stop-watch and P.E. timer, launching velocities, position observations by window, mirrors, directors, etc; photography, including kine-theodolities; radar tracking including the Doppler method under development by RRDE'. It is logical to assume some if not all these methods were also employed at Ynyslas. A letter from the Major Jubb (dated 11 June 1946) suggests that the observers/recorders

were from the Auxiliary Territorial Services (Women's ATS) and that their commander, Lt Col Todd, lamented the loss of their skills when they were replaced by Royal Artillery surveyors after the ATS staff were demobilized (AVIA 48/16, National Archives, Kew)..

The footprint of the main complex can clearly be seen on RCAHMW aerial photograph 99-cs-0921 (figure 18). The road or track installed as part of the Ynyslas Estate development plans (NPRN 408007) was upgraded and concreted to serve as the main access road from the main road. This road ran to the main laboratory, photographic processing and computational blocks to the north. The description of the need for an explosives compound perhaps provides an alternative interpretation of the formal layout of the 12 huts to the south of the access road (NPRN 402558; SN608930) (figure 19), although these may have been accommodation. Two of the camp buildings, a laboratory building (NRPN 408010) and a standard hut (NPRN 408011), survive in poor condition in use as animal shelters within the field.

A former area of glasshouses was converted into a large hangar possible for missile assembly (NPRN 506296). The area under cover would correspond with the description above for a workshop equipped with a 15ton Ransome crane. Within this compound, there is a vehicle inspection ramp.

Historic aerial photographs show two other 'large' buildings near the crossroads of the access track, one with vehicles outside and interpreted as range vehicle garage (NPRN 506350) and the other associated with the plumber's and carpenter's workshops (NPRN 408396 and 406398) which possibly served as the main administrative building or general stores (NPRN 506535). There are complexes of huts to the north of Moel Ynys (NPRN 506345) and at the northern edge of the ribbon developments (NPRN 506344) which may have served as stores or as accommodation. Local residents suggest that the NAAFI was in the vicinity of the more northerly block of huts.

For emergency fire fighting, three water towers were installed near Brynellen, the hangar/assembly shed and in the back garden of one of the private houses to the south of the settlement overlooking the compound with 12 huts (NPRNs 506515 and 506753-4).

Two large projectile testbeds were laid with their associated observation posts and camera buildings. The main firing ramp (NPRN 408394) was used for firing rocket motors up the estuary. The testbed comprised a large blast wall at the firing end, with concrete supporting plinths for the overhead firing guide track. The accelerating projectile would trigger a high-speed camera, located in a dedicated single storey block plan structure (NPRN 408401). One of the Dyfi estuary observation posts is sited close to a steep access track/slipway over the embankment onto the foreshore for recovery of the projectile.

The surviving pillbox (NPRN 506521) was adapted into a ranging point, with a plinth for what may have been a Kine Theodolite nearby (NRPN 506534). It is difficult to ascertain if this was for tracking test firings from the main test bed, or for 2" anti-aircraft, or even anti-shipping rockets.

A short distance to the east of the pillbox is a pair of buildings – very similar to the two units on the western shore (NPRN 506505 and 506504). The first is a brick-built observation/command post (NPRN 506534). The observation/command post overlooks a large concrete pad, with three raised oval concrete plinths, each with steel bolts. These may have been used as an early form of a simple radio beam-guidance system for the rockets or as a target RADAR acquisition and tracking system. The second is a BCF hut (NPRN 506533) which is in very poor condition.

A secondary test bed ran from an area that is within the Searivers caravan park (NPRN 408394) to a target stop-butt (NPRN 408008) set into a sand dune. The eastern end of the track is associated with an openwork radar tower (NPRN 506356) and ancillary buildings, two of which survive (NPRNs 411932-3). The face of the dune has been formed into an Amphitheatre, to absorb shock waves from the impact of the projectiles (figure 19).

A small firing range for mobile rocket systems (probably the 2" system) was probably set up on the shoreline, comprising a two-bay observation post at (NPRN 408009) and a 12 bay British Concrete Federation (BCF) hut (NPRN 408404). The flight track of the projectile was recorded from a depression rangefinder post on top of the rocky outcrop to the west of Moel Ynys farm (NPRN 498405). Wartime aerial photographs within the RCAHMMW collections have caught the moment of a seaplane on the beach. It is possible that this plane was being used for target towing, observation or recovery of missiles from the offshore range.

A simplified form of a small experimental Ground Controlled Intercept (GCI) Radar Station was established at Aberleri Farm (NPRN 506993). The only surviving evidence is the foundation and plinth for the antenna now hidden within a raised flower bed. Another outstation was established on a promontory above Dyfi Railway Bridge at Glandyfi Junction (NPRN 420353).

The oral testimony contained of Margaret Herterich provides an insight on how the tests were being conducted:

‘Our main work, which came later, was the start of experimentation on rockets, the beginning I believe of the Blue Streak, the British rocket.

Four of us were trained as Kinetographers on modified kinecameras as used in the film news industry.

The first instruction was in one of the loading bays where a system of knots and rope-pullage had been devised. We pulled the ropes in a fashion to follow the knots, although we didn't know why we were doing it at the time. Eventually we worked these two kinecameas mounted on posts. Each was worked by two girls for bearing and elevation. After loading and switching on, we followed the flight path and booster-drop of rockets fired from a ramp on the range.

The films were taken back to the dark-room where we four girls wound them on large circular reels and developed them. We were responsible for the results of the experiments costing

thousands of pounds. Our officers must have been great instructors. The film was then evaluated, frame by frame, through a grid machine and then plotted onto the longest piece of graph paper you've ever seen. The trajectory was then studied by the Officers'.

Despite all these installations at Ynyslas, the minutes of the Guided Projectile Processing Committee dated 7 March 1946 note continuing problems in gaining adequate observational data and that lack of adequate static testing facilities. By this time, Westcott had already been identified as the longer term base for the Guided Projectile Establishment with an outstation at Aberporth. With theoretical consideration already being given to a weapon that could carry a 7000lb warhead some 2000 miles, it is clear that the 25-30mile offshore range on offer at Ynyslas and Aberporth was going to be restrictive. The Committee was attracted by the range possibilities in Canada and Australia (e.g. up to 1200 miles in Australia with more favorable weather conditions than anywhere else within British Dominions).

The above problems of gaining observational data and the transferal of testing to Australia is again confirmed in Margaret Herterich's oral testimony:

'We knew that we were working on something special when we girls received letters from the Ministry of Supply, asking if we would like to go to Woomera, Australia, to carry on the work of the Blue Streak Rocket.

Our officers were excited about this work as they had just received some new Canadian radar equipment. Knowing that I had been an Operator Firing Control on radar in the Ack-Ack, they invited me into the new set to be, as they said - 'The first woman in Britain to see a rocket on radar'. We didn't see a thing!

It is also interesting to note that the 7 March 1946 minutes refer to the close collaboration between the US and British scientists that was already occurring. The US had built a test plant largely to British design and two British scientists were already in the US assisting Section T, Office of Scientific Research and Development, with their experiments. Indeed, in November 1946, Sir Alwyn Crow was appointed to lead the Scientific and Technical Services, British Supply Office, Washington, to maintain liaison with the US authorities. The continued development of medium and longer range intercontinental missiles was the origin of the space exploration programmes of the US and USSR in the 1950s, with rockets such as Redstone, Atlas and Titan eventually allowing the US to launch astronauts into space.

Between November 1945 and November 1947, the harbour at Aberdyfi was used by the Royal Army Service Corps Amphibious Training Unit based at Towyn. An old hulk was moored in midstream to act as a focal point, for the crossings. The RCAHMW collections include an aerial photographic image of a line of buffalo tanks entering the Leri to cross to Aberdyfi (NPRN 506537) or the slipway at Fron-Goch, where another 12-bay BCF hut can be found (NRPN 411280). The military also appear to have taken over the West Wharf at Aberleri. Two BCF huts remain here at the northern end (NPRN 408425-6).

4 RESULTS OF SURVEY

This survey and research project has added 109 new records to the National Monuments Record of Wales and provided enhancements for 27 others.

It has provided the opportunity to explore the phases of development in settlement patterns, from pre-enclosure, through unrealized plans for a seaside resort to the imposition of a significant, if temporary, military infrastructure.

The story of the Victorian entrepreneurs, who had such grand visions for Ynyslas, has potential for development to assist with teaching of certain Key Stages of the National Curriculum (The Victorians). As a case study, the study area could be used to explore environmental themes such town planning and responses to coastal change.

This project had shed some light on some of the phasing of the drainage of the Cors Fochno and the development of fields systems, but more research might be undertaken.

The amount of industrial activity has been particularly surprising, but it has served to reveal the trading links to other settlements around the estuary and at the edge of the Cors Fochno. An historic environment estuary-wide study would be a useful complement to the present Aberdyfi Biosphere Initiative.

The military remains at Ynyslas are extensive. The condition of the military monuments varies, however the camera observation post and pillbox on the bank of the Aberdyfi are particularly well-preserved. Cadw may wish to liaise with the Natural Resources Wales and the landowner with regard to scheduling and the development of sympathetic management/maintenance regimes.

The three schooner hulks, grouped so closely together, and representing a significant change in the maritime trading patterns in the estuary would suggest that they are also strong candidates for designation as scheduled ancient monuments.

The recording proformas developed for hulk recording (M1 and M2) provided a useful checklist of items to note and key measurements to record. The inclusion of a graph paper on the back increased their usefulness by allowing a measured sketch of the site to be recorded. Should the forms be taken forward for community group use in the Arfordir Project, scoping notes for each box of date will be required to ensure the consistency in the data recorded.

The accuracy of positions recorded with the hand-held GPS was +/- 6m. Whilst the hand-held unit was extremely useful for providing a reference point in the open landscape, the positional accuracy would have to be taken into consideration in the survey methodologies recommended for Arfordir Groups. The accuracy may vary from day to day. A mapped feature (e.g. a corner of the Ynyslas Visitor Centre) used as a control point for all repeated surveys may assist the collation of ongoing surveys.

CONTENTS OF PROJECT ARCHIVE DEPOSITED IN THE NATIONAL MONUMENTS RECORD OF WALES

Archive Collection Name:

Maritime Project: Ynyslas Non-Intrusive Survey

Digital resources:

Over 330 digital fieldwork images

Report in MS Word format and .pdf

Gazetteer in MS Excel

ArcGIS shapefiles representing a) all sites within study and b) those with military connections

MS PowerPoint Presentations

Paper Resources in ring binders:

3 hulk record forms re sites NPRN (form reference RCAHMW MR2)

Photocopies of historic maps, plans and sales particulars from National Library of Wales and National Archives at Kew.

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Gogerddan 045 131/4/16: Proposed improved drainage outfall along embankment nr Ynyslas, 1882

Gogerddan 108 131/4/24: Map of Cors Fochno and the several islands situate thereinwith part of the navigable River Dovey in the county of Cardigan by T. Lewis, 1790

Gogerddan 379: General plan [of Hafan Mine] [cartographic material] / The Hafan Mining Co. Ltd.

Gogerddan 465: Ynyslas Ltd Plan of Development, Tate & Popplewell Architects and Surveyors, 1889

Gogerddan 528 131/4: Aberystwyth and Welsh Coast Railway: plan showing the land Required of Pryse Loveden Esq. Parish of Lanfihangel-Geneu'r Glyn, 1863

Gogerddan 531: Maps of the Aberystwyth and Welsh Coast Railway – Sheet 3, Railway No 1 Aberystwyth to Caepenmochno. Sheet No B Railway no 6 Branch to Machynlleth. 1863. Two maps of railway deviations from Borth to Ynyslas (showing projected crossing to Aberdyfi), and Ynys Edwin section (parish of Llanfihangel Geneu'r Glyn).

Gogerddan 532: River Dyfi Land Reclamation Scheme, 1861

Gogerddan 533 131/4: The Hafan Railway, Plan showing line of railway on the Gogerddan Estate from near Ty'n-y-parc, Llanfihangel - Geneu'r Glyn to Tanyfoel, near Capel Bethesda, Tynant, circa 1895

Gogerddan 534: The Hafan Railway, colour plan of proposed railway from 'Llandre station' to Hafan Mine, via Maesnewydd, Talybont and Lerry Valley. Shows affected owners, i.e. L Pryse, Messrs Rees, Morgan, Jones and Roberts. Names and locations of mines are noted, along with extant tramway.

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MAP 7613: Ynys-Las Farm situated on or near the banks of the River Dovey, being in the parishes of Llancynfelin and Llanfihangel Geneu’rglyn, 1862 (maps showing lots for sale)

MAP 9099 134/43: Ordnance Map showing Plynlimon and Hafan Tramway and the Deposits that it will tap and its connection with the Aberystwyth Harbour and the river Dovey

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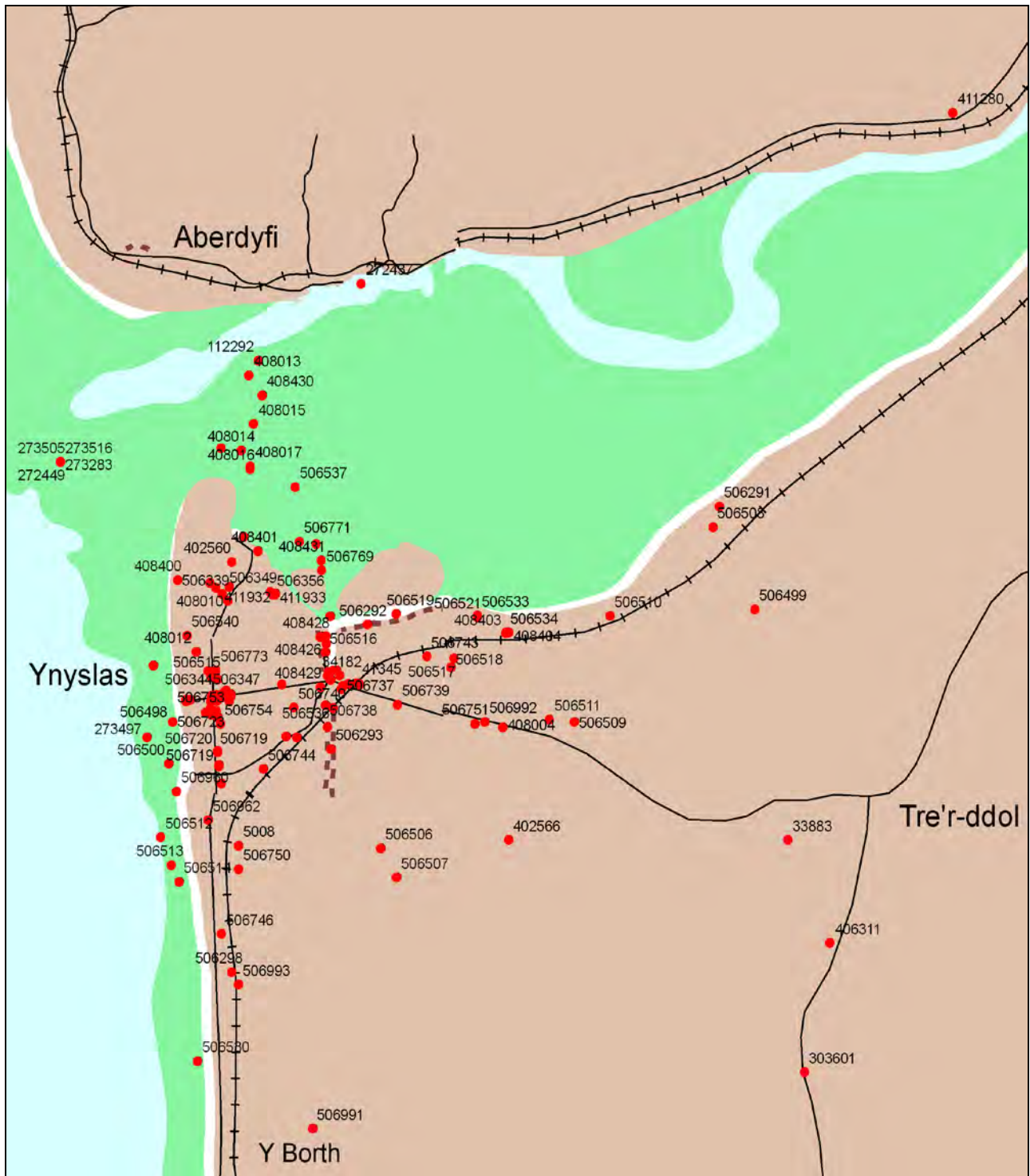
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National Assembly of Wales, aerial photographic surveys compiled 2008 (RCAHMW GIS)

Figure 1: Survey Area



Background mapping courtesy SeaZone Solutions Ltd
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Figure 2: Borth Submerged Forest (NPRN 506500)



Figure 3: feature which may have its origins as a fishtrap, but is shown as being used as a quay for the unloading of coastal craft on imagery in the collections of National Library of Wales (NPRN 506771)



Figure 4: Schooner remains at Ynnylas (NPRNs 407989)



Figure 5: Schooner remains at Ynnylas (NPRNs 408431)



Figure 6: Schooner remains eroding from the bank of the Leri (NPRN 506769)



Figure 7: windlass possibly from the Brig MORINGEN (images courtesy Robin Ellis, Aberystwyth Civic Society and Nick Cooke, Wessex Archaeology)(NPRN 272432)



Figure 8: Dwelling House at Ynyslas (NPRN 506337)



Figure 9: Moel Ynys (NPRN 506723)



Figure 10: West Wharf, Aberleri (NPRN 34182)



Figure 11: Aberleri Ferry Branch (NPRN 408013)

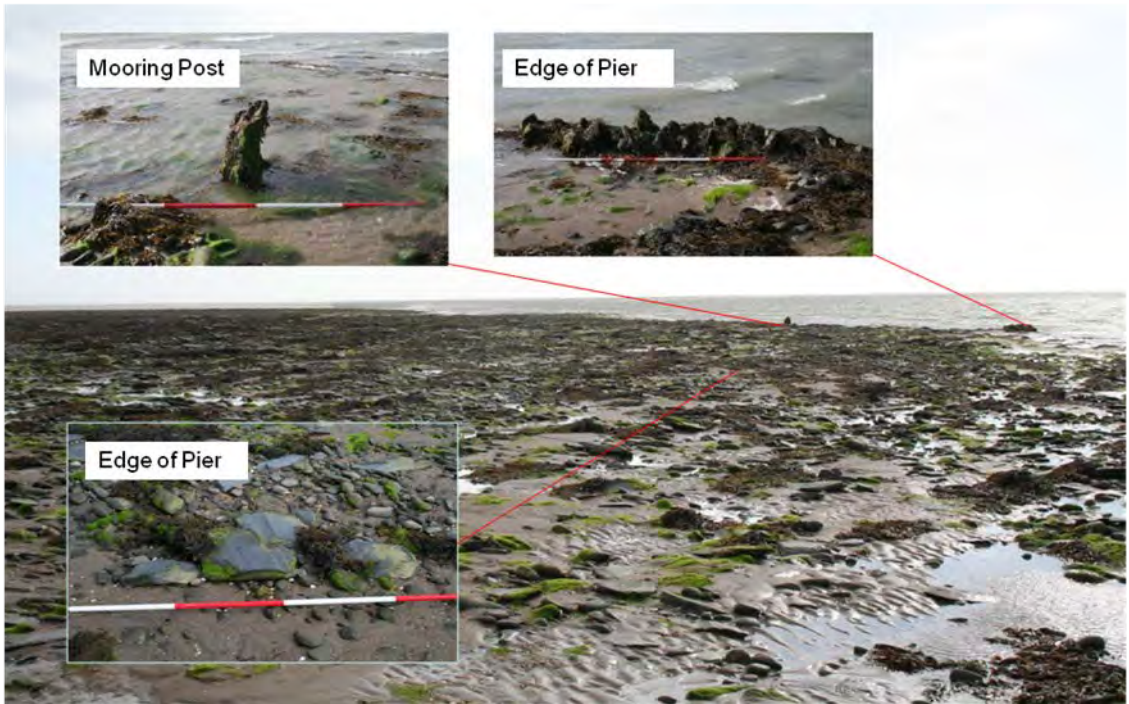


Figure 12: Ynyslas Gardens (NPRN 265034)



Figure 13: The Bungalow (NRPN 506721)



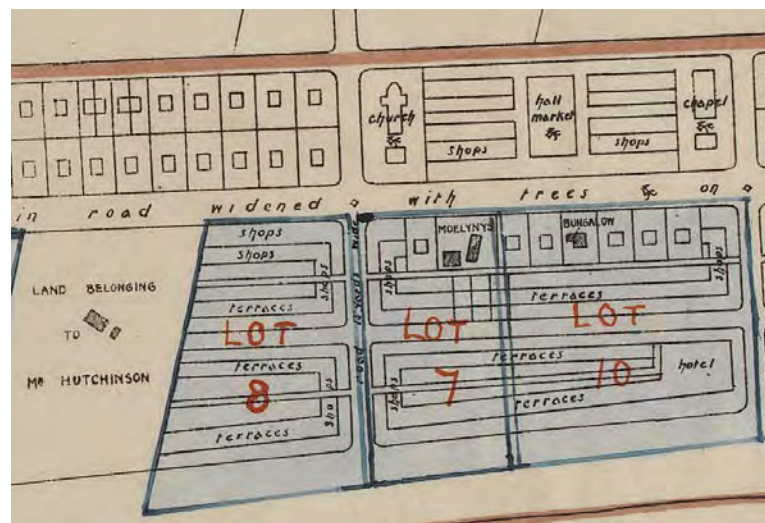
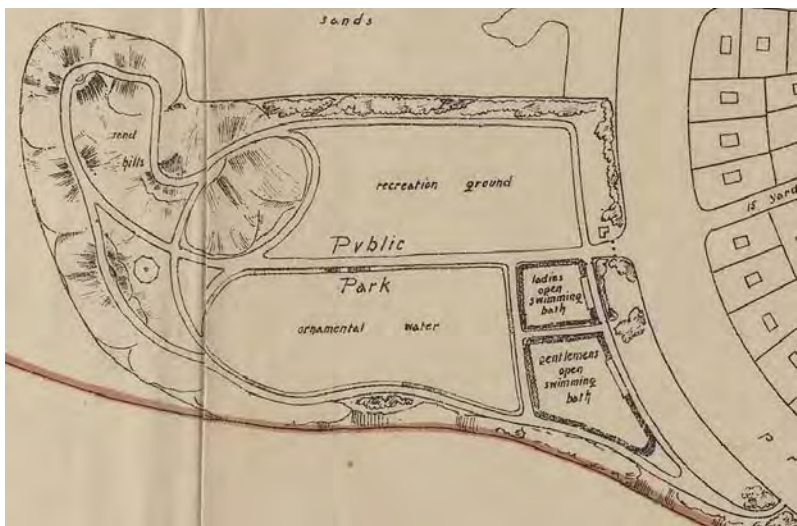
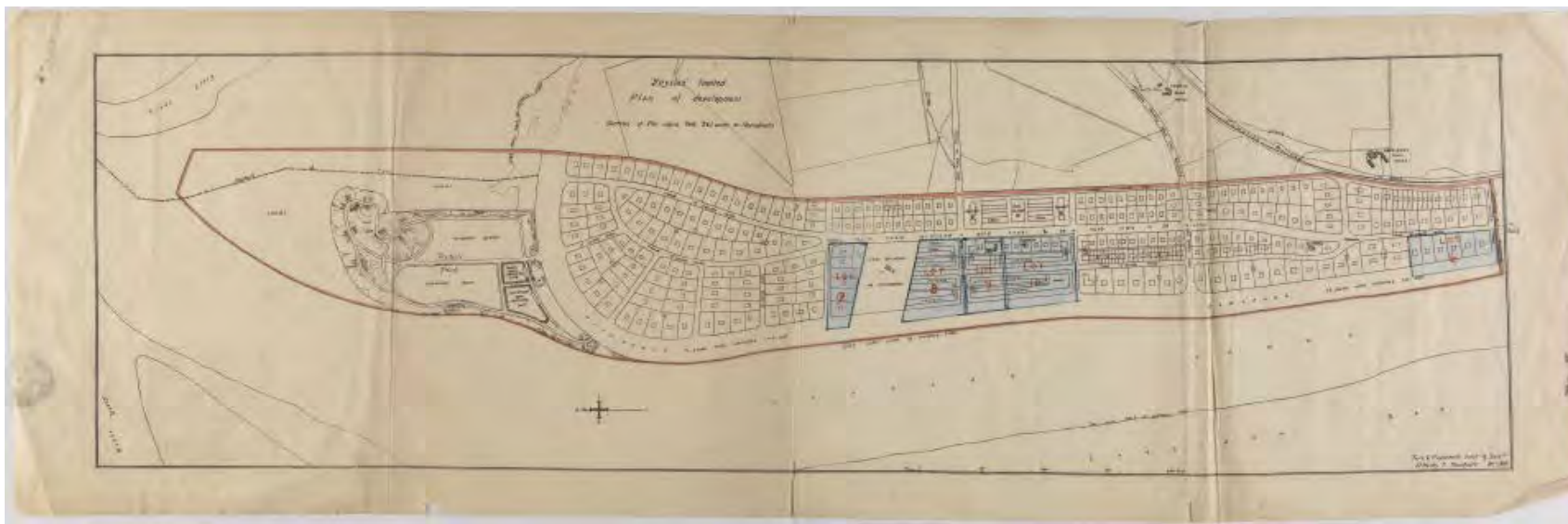
Figure 14: Min Y Don with second storey added (NPRN 506742)



Figure 15: Glangors (NPRN 506962)



Figure 16: Ynyslas Ltd Plan of Development, Tate & Popplewell Architects and Surveyors, 1889 (Gogerddan 465, National Library of Wales)



Detail for the area for the dunes and for the vicinity of Moel Ynys (NPRN 506723)

Figure 17: Gregson House (Villa 4) (NPRN 506720)



Figure 18: Ynyslas Health Resort commemorative Plaque on the front elevation of Gregson House (Villa 4) dated April 25 1891 (NPRN 506720)

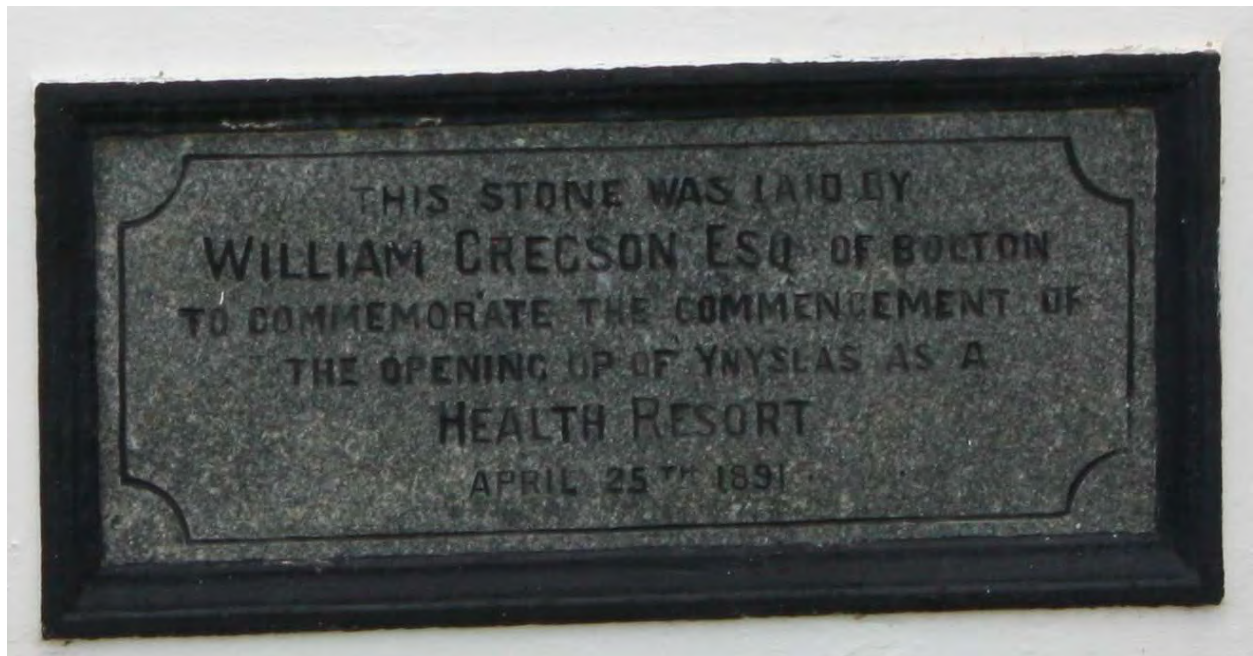


Figure 19: Type 24 pillbox (NPRN 506521)



Figure 20: A camera/observation post built to a specification forwarded by the Experimental Establishment at Walton-on-the-Naze with concrete bases for Kine Theodolite or experimental radar (NPRN 408403-4, 506534)



Figure 21: The footprint of the military camp can be clearly seen on RCAHMW aerial photograph 99-cs-0921 (NPRN 408393)



Figure 22: One of the remaining military camp buildings (NPRN 404399)



Figure 23: Carpenters and Plumbers workshops to the south of the military access road (NPRNs 408398 and 408396)



Figure 25: the stop-butt amphitheatre looking eastwards along the firing track and the concrete bases (the line of the track is preserved by an access road within the Searivers caravan park) (NPRN 408008)



Figure 26: one of the range's six surviving 12-bay British Concrete Federation (BCF) huts (NPRN 408402)



Figure 25: the depression rangefinder post on top of the rocky outcrop to the west of Moel Ynys farm (NPRN 498405)



APPENDIX 1: GAZETTEER

NPRN	NGRE	NGRN	Site Name	Type	Period	Description	Designation	DAT Ref:
5008	260950	291960	Aberleri Farm	Farmstead	Post medieval	The house walls are of split and roughly coursed rubble set in a lime mortar. The roof is of slate with brick chimneys. The openings have shallow segmental arched heads of brick. The windows are large-paned Victorian sashes. The outbuildings are ruinous and mainly built of split beach pebbles in a lime mortar. The farmstead is shown on T Lewis map of the Cors Fochno dating to 1790, when two buildings are shown inside a sub-rectangular enclosure.		
33883	265120	292000	Llancynfelin, later Taliesin Lead Mine	Lead mine; Copper mine	Post medieval; Roman	A large complex of mine shafts and worked lodes which are believed to have been worked in the Roman period. The mine was re-opened in the 1740s and again in 1846, when a steam engine was erected for pumping and operating ore stamps. The venture was unsuccessful and the operating plant was sold. In 1850s, the mine re-opened as Taliesin mine and a new steam pumping engine erected. Apart from the chimney and a narrow cutting along which flat rods ran, there are scanty remains.		19500
34182	261636	293182	West Wharf, Aber Leri Harbour	Harbour	Post medieval	Remains of timber-fronted quay on the west side of the entrance of the river Leri constructed by the railway company. The northern end of the quay frontage is degraded and the quay material has washed out from behind the piling. The section in front of the boatyard has been repaired and remodeled to accommodate a modern boat lift. Sales particulars dating to 1862 reveal that short section of wharf already existed close the road before the coming of the Welsh Coast Railway.		
41345	261850	293130	Ynyslas Station	Railway Station	Post medieval	The station and platform have been demolished. Work on the building of the station began in 1862, but it was not until January 1872 that a permanent station was authorised. By August 1873, the building had suffered from subsidence and the upper storey had to be removed. In 1896, the platforms were lengthened and, in 1926, the up platform. was renewed. Despite goods and parcels services being withdrawn. in 1938, repairs to both platforms were authorised in 1944.		
112292	261100	295450	Dovey Estuary Ferry Crossing	Ferry	Medieval	The usual landing place on the south site of the estuary was at Cerrigypenhryn. From here poles guided passengers across the sands towards the road to Borth. By the 19th century, a refuge (an platform reached by steps) had been constructed for passengers caught out by the tides (see NPRN 404430). At times of high-water the ferry ran up the Leri to Ynyslas Bridge. The ferry boats would also sometimes carry passengers up the pill or river Cletwr to Tre'rddol. A small boat, summertime service for passengers continues.		12446

Note: fuller entries completed with relevant bibliography can be found via www.coflien.gov.uk

NPRN	NGRE	NGRN	Site Name	Type	Period	Description	Designation	DAT Ref:
265034	261394	292739	Ynyslas Gardens	Market Garden	Post medieval	The high, exterior wall bordering the road is still extant, as are some of the greenhouses in the interior. In sales particular dating to 1897, the property was described as a 'substantial brick built cottage residence, with extensive vineries, cucumber, tomato and peach houses... contained in all an area of 2 acres or 17 perches.' The dwelling cottage has since been extended. The property is now a private house.		
270399	260870	293720	Ynyslas Anti-Invasion Defences, Ynyslas nature Reserve	Anti-tank Pimple	Modern	An anti-tank pimple and one anti-tank cylinder recorded by volunteers undertaking the Defence of Britain project. Located by the entrance to a layby, they are not in original situ, and the anti-tank cylinder has since been removed. The anti-tank pimple is a freestanding concrete block with a protruding steel bolt on the upper surface. This pimple would have been linked to at least one other with a length of chain to serve as an improvised temporary road block.		
272432	260816	294820	Moringen	Wreck	Post medieval	In 1970, ship timbers were reported at this location and in the late winter/early spring of 2008 shifting sands uncovered a windlass. The MORINGEN was a 217ton, wooden brig built in 1862 and registered at Drammen, Norway. It was carrying a cargo of timber, mostly in the form of deals and battens, when it got not trouble crossing the Aberdyfi Bar and ran into the shallows on the south side of the channel.		
272433	259600	294720	Albion	Wreck	Post medieval	Record assigned to the maritime named location ABERDYFI BAR. The ALBION was a wooden sailing vessel which was wrecked near Aberdyfi on 23 May 1837.		
272435	259600	294720	Eleanor and Betty	Wreck	Post medieval	This shipping casualty which has been assigned to the maritime named location ABERDYFI BAR. The ELEANOR AND BETTY was a 43nt wooden sloop carrying limestone from Caernarfon to Aberdyfi. On 13 November 1953, the sloop was attempting to cross the bar without a pilot in a southeasterly force 6. The sloop took the ground, got off and then sank.		
272437	261880	296002	Stornoway	Wreck	Post Medieval	The STORNOWAY was a full-rigged ship belonging to Boston, United States of America. At time of loss 20 September 1854, the vessel was carrying deals from St John's, Newfoundland, to Dublin. It was caught in a west-northwesterly force 7 gale and thick fog, and drove ashore near the Paru Bwch Causeway after entering the Dyfi estuary seeking shelter.		
272438	259600	294720	Merrion Lass	Wreck	Post medieval	This shipping casualty has been assigned to the maritime named location ABERDYFI BAR. The MERRION LASS was a wooden sailing smack registered at Aberystwyth. It was lost on the Aberdyfi Bar on 22 June 1862.		
272449	259600	294720	Enterprise	Wreck	Post medieval	This shipping casualty has been assigned to the maritime named location ABERDYFI BAR. The ENTERPRISE was a wooden brig which was lost near Aberdyfi on 17 April 1839.		

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NPRN	NGRE	NGRN	Site Name	Type	Period	Description	Designation	DAT Ref:
272541	261646	293611	Hope	Wreck	Post medieval	Archaeological remains associated with the loss of this vessel are not confirmed as present at this location. The HOPE was a wooden sloop belonging to Mrs E Jones, Borth. The sloop was moored at the mouth of the Aber Leri on 13 September 1904, when it was blown ashore and wrecked during a north-westerly force 7 gale.		
273283	259600	294720	Mary	Wreck	Post medieval	This shipping casualty has been assigned to the maritime named location ABERDYFI BAR pending additional information which may allow a more precise loss location to be determined. The MARY was a wooden sailing vessel on passage from London to Aberdyfi. The vessel was lost near Aberdyfi on 8 January 1817		
273497	260255	292738	Venus	Wreck	Post medieval	Archaeological remains associated with the loss of this vessel are not confirmed as present at this location, but may be in the vicinity. The VENUS was a wooden sloop which drove ashore to the south of Aberdyfi bar on 16 December 1811.		
273505	259600	294720	Phoebe	Wreck	Post medieval	This shipping casualty has been assigned to the maritime named location ABERDYFI BAR pending additional information which may allow a more precise loss location to be determined. The PHOEBE was a 124ton wooden schooner built at Newport in 1839. The schooner went ashore near Aberdyfi on 14 January 1843 and was lost with all hands.		
273516	259600	294720	St Peter	Wreck	Post medieval	This shipping casualty has been assigned to the maritime named location ABERDYFI BAR pending additional information which may allow a more precise loss location to be determined. The SAINT PETER was travelling from Youghal to Liverpool when it was lost near Aberdyfi on 10 November 1841.		
303601	265246	290330	Egglodd Farm	Fort	Roman	In September 1976, drought brought to light the remains of a Roman fort. The complete outline of its defences were observed as a parch-mark; the enclosure measured 167 ft from north-west to south-east by 154 ft transversely (c.51 x 47 m). A section across the defences revealed a turf rampart, 10 ft wide (c.3 m), its front overlapping a shallow, turf-filled ditch, beyond which was another, wider ditch 6½ ft wide and 3 ft deep (c.2 x 0.9 m); both ditches had a typical Roman military V-shaped profile and both were deliberately back-filled.		
400986	261670	292950	Afon Leri Railway Bridge	Railway Bridge	Post medieval	The bridge was built in 1863 and has 7 spans of wooden piers.		5432
400986	261650	293150	Pont Aber Leri	Road Bridge	Post medieval	Concrete bridge, dated 1936, built as part of the Tre'r-ddol by-pass road by Cardiganshire County Council.		
402558	260858	293077	MOS EE AA Ynyslas Research Building	Store - Military	Modern	The final phase of Ynyslas research establishment (1946 onwards) appeared to centre on 5 buildings to the north of the service road - NPRNs 408396, 408398-9, and possibly the house (now a private residence) at SN60819304. The largest building, measuring 30 x 10m and orientated north/south, has been removed but its outline and that of the enclosure that surrounded it are still visible on modern aerial photography.		
402560	260900	294000	Ynyslas National Nature Reserve	Park	Modern	The Ynyslas Nature Reserve was created in 1969 by the Natural Environment Council. The reserves extends from the mudflats of the Dyfi to the sand dune systems and the raised mire of the Cors Fochno. The site is now managed by the Countryside Council for Wales.		

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NPRN	NGRE	NGRN	Site Name	Type	Period	Description	Designation	DAT Ref:
402566	263000	292000	Gors Fochno	Peat Cutting	Post medieval	Aerial photographs reveals a pattern of small rectangular fields (peat cuttings?) overlain by more modern complex of drainage channels and larger fields on a different orientation. The surface scarring associated with industrial scale peat cutting is more obvious to the south centred around SN62109030		
406311	265440	291260	Tan Yr Allt, Tre Taliesin	Trackway; Causeway	Medieval	The earthworks of raised linear features, conceivably embankments or causeways, were highlighted by slight parching during RCAHMW aerial reconnaissance on 18 July 2005.		
407989	261540	294130	Unknown	Wreck	Post medieval	The remains consist of the port side of a wooden sailing vessel. The keel is visible along with the degraded ends of the starboard side lower floors or riders (43 in number) to the west. Seven heavily degraded ends of deck beams form the eastern edge of the hull's outline. The ends of runs of clinker laid planking break the surface to the south, whilst to the north a heavily concreted timber suggests a stern post and rudder pintels. The vessel measures some 17m (55-56ft) with a depth below the main deck of 3.1m (10ft). This wrecked is believed to be a schooner operating within the slate trade from Derwenlas.		35337
407993	260880	293820	MOS EE AA Ynyslas Firing Range Launch Track	Firing Range	Modern	A testbed for rocket missiles extends westwards from close to the caravan park. The track of the testbed is defined by the concrete plinths. The test track faces a back-stop (NPRN 293860) and an amphitheatre excavated into the eastern face of a dune to absorb shock waves from projectile impacts (see NPRN 408008) after passing through a target that was suspended on an overhead gantry 10m east of the back-stop.		
408004	262957	292810	MOS EE AA Ynyslas Ancillary Store	Store - Military	Modern	A British Concrete Federation (BCF) hut measuring in ground plan 5 x 8m and comprising 12 bays of prefabricated concrete posts and walling slabs is currently in use as a garage.		
408006	261313	292745	MOS EE AA Ynyslas Ancillary Store	Store - Military	Modern	The base of a British Concrete Federation (BCF) hut remains in a field to the north of Ynyslas Gardens. The concrete uprights and panels were removed in 2002.		
408007	261280	293120	Ynyslas Nature Reserve Service Road	Road	Modern	A road is shown on maps accompanying the sales particulars for the Ynyslas Estate dating to 1910 (Cardiganshire Sales Particulars 51 and 51A, National Library of Wales) and is likely to have been installed as part of seaside resort development plans. The road was upgraded and concreted by the military to service the research establishment (see NPRN 408983)		
408008	260734	293850	MOS EE AA Ynyslas Firing Range	Butts	Modern	A semi-circular amphitheatre (measuring 26m across and 17m deep) has been excavated into the sand dunes to act as a stop-butt for missiles fired from the large testbed track to the east (see NPRN 407993). The stump of a metal post (target?) is located halfway up the slope at the back of the amphitheatre.		
408010	260777	293814	MOS EE AA Ynyslas Firing Range Camera Position	Observation Post	Modern	A small building is shown on wartime aerial photographs to the south of the rocket firing test track (see NPRN 407993) (RAF aerial photograph 541.116-3692).		
408011	260889	293051	MOS EE AA Ynyslas Ancillary Building	Store - Military	Modern	A British Concrete Federation (BCF) hut measuring in ground plan 5 x 8m and comprising 12 bays of prefabricated concrete posts and walling slabs. Currently in use as a sheep shelter and in poor condition.		

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NPRN	NGRE	NGRN	Site Name	Type	Period	Description	Designation	DAT Ref:
408012	260629	293353	MOS EE AA Ynyslas Firing Range	Firing Range	Modern	A small firing range, possibly for mobile rocket systems (probably for the 2 inch system), and to observe firing from MV Camroux III, moored 1 mile offshore, was set up on the shoreline and is associated with a two- bay observation post (see NPRN 408405) and 12 bay BCF hut (see NPRN 408404).		
408013	261030	295342	Aberdyfi Ferry Branch Wharf	Wharf	Post medieval	At the low tide mark, an alignment of upright slates running approximately east-west marks the edge of the landing stage (SN61030 95342). The eroded end of wooden mooring post can also be seen at the western end (SN61020 95328). The rough slates that once formed the roll-on roll-off platform are scattered over a wide area to the east approximately defined by the following coordinates - SN61131 95360, SN61156 95595, SN61019 95305, SN61022 95283, and SN61044 95273.		
408014	260970	294803	Ynyslas Nature Reserve Ballast Mound	Ballast mound	Post medieval	The mound measures some 12m (approximately 40ft) long and 4-5m wide, with a spread of scattered slates to the east extending down the slope of the channel bank. The ridge of the mound is formed by rough slates stacked upright or on edge. At time of survey in October 2008, there was no obvious evidence for timber hull structure.		
408015	261066	294994	Ynyslas Nature Reserve Ballast Mound	Ballast mound	Post medieval	Only visible at lowest tides, a concentration of stacked slate waste is located down slope towards the bottom of the channel. The concentration has an approximate length of 12m. The slope of the channel side is also covered in slate debris. The site is slightly to the south and east of the mound NPRN 408014 suggesting that these two mounds may represent two barges which were tied bow to stern at the edge of the channel, but this barge sank in deeper water.		
408016	261040	294670	Ynyslas Nature Reserve Ballast Mound	Ballast mound	Post medieval	A mound of slate at the edge of the river Leri channel, which appears to have a central ridge of edge-stacked waste. The orientation of this ridge in association with the mound nearby (see NPRN 408017) suggests that these mounds may represent two barges that were sunk tied bow to stern. No evidence of wooden ship structure underlying the ballast mounds was seen (see also NPRNs 404014, 404015 and 404017).		
408017	261040	294690	Ynyslas Nature Reserve Ballast Mound	Ballast mound	Post medieval	A mound of slate at the edge of the river Leri channel, which appears to have a central ridge of edge-stacked waste. The orientation of this ridge in association with the mound nearby (see NPRN 408016) suggests that these mounds may represent two barges that were sunk tied bow to stern. No evidence of wooden ship structure underlying the ballast mounds was seen (see also NPRN 404014, 404015 and 404016).		
408393	260880	293000	Ministry of Supply Experimental Establishment Anti-Aircraft (MOS EE AA) Ynyslas	Military Camp	Modern	Ynyslas was selected by the Air Ministry as a missile-testing site for liquid fuel rocket systems from 1944 onwards. A road/farm track dating from the period of the Ynyslas Development Company was upgraded and concreted over (see NPRN 408007). The road served as the access to the military research camp comprising workshops, assembly shops, accommodation huts and ancillary buildings.		

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NPRN	NGRE	NGRN	Site Name	Type	Period	Description	Designation	DAT Ref:
408394	260990	294180	MOS EE AA Ynyslas Firing Range Launch Track	Firing Range	Modern	The main firing ramp was used for firing LOPGAP rocket motors/test rigs onto the sandbanks of the estuary. The test rigs would be collected by recovery teams and taken back to the workshops. The firing ramps consisted of concrete plinths supporting overhead steel gantries for the firing track. The accelerating projectile would trigger a high-speed camera located in a dedicated single story observation post (see NPRN 408401).		
408396	260794	293023	MOS EE AA Ynyslas, Workshop	Military Store	Modern	A brick-built, flat roofed building with large opening doors to its northern side and a windows and a door on its eastern side. Local residents suggest that this building and the one to the east were used as a workshops for the carpenter and plumber employed to assist with the construction and maintenance (see NPRN 506398).		
408398	260818	293026	MOS EE AA Ynyslas, Carpenters Workshop	Military Store	Modern	Brick-built, flat roofed building with large sliding doors to its western side and two windows on its northern side. Local residents suggest that this building and the smaller garage/workshop to the west were used as a workshops for the carpenter and plumber employed to assist with the construction and maintenance of buildings associated with MOS EE AA Ynyslas military establishment (see NPRN 506396)		
408399	260839	293063	MOS EE AA Ynyslas Ancillary Building	Store - Military	Modern	An office building or research unit which was still in use in the final phase of MOS EE AA Ynyslas, when the establishment appears to have shrunk to five buildings to the north of the service road. Local residents suggest that this may have been the laundry or the film processing unit. Now in use as a cattle/shed shelter.		
408400	260490	293870	Ynyslas Anti-Invasion Defences, Ynyslas Nature Reserve	Pillbox	Modern	A hexagonal 'Type 24' constructed during 1940-1 and now in poor condition. The basic plan form can still be determined.		
408401	261098	294079	MOS EE AA Ynyslas Firing Range Camera Position	Observation Post	Modern	Camera observation post associated with the main rocket firing testbed (NPRN 408394) which fired projectiles over sandbanks of the Dyfi. The building is brick built with a re-enforced concrete roof and an observation slit defined by concrete moldings in its northern wall. The eastern wall is pockmarked with bullet holes. The view from the observation slit has since been obscured by sand dune encroachment.		
408402	260550	293000	MOS EE AA Ynyslas Firing Range Camera Position	Observation Post	Modern	This brick-built building overlooks the beach and measures 7.5m by 4m. It consists of two compartments, the northern open at the rear, the southern an enclosed room and concrete plinth to the north (NPRN 506757). Both bays of the brick-built building contains observation slits facing out over the sea. Fifteen metres to the east is an associated prefabricated concrete building (see NPRN 506504).		31465
408403	262985	293495	MOS EE AA Ynyslas Ancillary Store	Observation Post	Modern	A double-bay, brick-built observation post with a viewing slit on its western side in close association with a BCF hut. Access to the foreshore is provided by an earthwork and concrete ramp at SN62859358. On the northern side are the concrete bases for possibly a Kine station or a simplified RADAR acquisition and tracking system (NPRN 506533)		

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NPRN	NGRE	NGRN	Site Name	Type	Period	Description	Designation	DAT Ref:
408404	263002	293492	MOS EE AA Ynyslas Ancillary Store	Store - Military	Modern	A British Concrete Federation (BCF) hut measuring in ground plan 5 x 8m and comprising 12 bays of prefabricated concrete posts and walling slabs. The hut is in fairly poor condition with the roof having partially collapsed. The hut is closely associated with a brick-built observation post. Access to the foreshore is provided by an earthwork and concrete ramp at SN62859358.		
408405	260701	292917	MOS EE AA Ynyslas Range Finder	Observation Post	Modern	The flight track of the projectiles from the shoreline rocket range (see NRPN 408412) was recorded by a depression rangefinder. The site is situated in an elevated position on a rocky knoll overlooking the sea and golf course, and consists of a concrete and brick plinth measuring 1.5m X 4m. There is a concrete column on the roof of the building offset from centre for a Kine Theodolite.		31450
408425	261617	293411	MOS EE AA Ynyslas, Store at Ynyslas Boatyard	Store - Military	Modern	A British Concrete Federation (BCF) hut measuring in ground plan 5 x 8m and comprising 12 bays of prefabricated concrete posts and walling slabs.		
408426	261614	293467	MOS EE AA Ynyslas, Store at Ynyslas Boatyard	Store - Military	Modern	A British Concrete Federation (BCF) hut measuring in ground plan 5 x 8m and comprising 12 bays of prefabricated concrete posts and walling slabs.		
408428	261573	293461	Aberdyfi Ferry Branch	Railway Line	Post medieval	The Aberdyfi Ferry Branch also known as the Penrhyn Branch ran from the mainline around the hill on which Tyn Mawr stands to run along the west side of the Leri. It then curved northwest to reach the north westernmost tip of the Cerrig-y-Penrhyn, 65 yards from Aberdyfi pier on the northern bank of the river. The total length was 1 mile 53 chains (2.8km). The only remaining trace of the Aberdyfi Ferry Branch are two stretches of embankment.		
408429	261570	293100	Pont Aber Leri Quarry	Quarry	Post medieval	The quarry is marked on OS 1st and 2nd edition mapping. The cutting extends for some 45m along the western side of the farm track.		
408430	261128	295199	Cerrigypenrhyn Refuge	Refuge	Post medieval	The site of the refuge beacon recorded on historic maps from the mid 19th century. The most recent form of the refuge was a tower of steel or iron girders. It was built in 1933 and removed in the 1970s. Modern aerial photograph still show the rectangular concrete base of the tower measuring some 5m x 5m.		
408431	261579	294012	Unknown	Wreck	Post medieval	The visible remains comprise 7 degraded timbers protruding 150-300mm above the surface within an area of developing saltmarsh. The arrangement of the timbers suggests that these consist of a stem or sternpost, with one frame on the eastern edge of the hulk's outline and four frames on the western edge. The keel is orientated 160/340 degrees with the stern/stem post towards the north. The wreck is believed to be a schooner operating within the slate trade from Derwenlas.		35338
411280	266370	297230	MOS EE AA Ynyslas Store at Fron-Goch	Store - Military	Modern	A wartime British Ferro Concrete (BCF) hut remaining in use as a store.		
411858	260890	293029	MOS EE AA Ynyslas Rocket Test Track Hut	Military Building	Modern	The outline of a demolished building orientated north-south and associated brick rubble and an open drain hole cover to the east of the junction of the military access track and the track entering the main complex for accommodation huts. Likely to have been similar in construction to NPRN 408011.		

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NPRN	NGRE	NGRN	Site Name	Type	Period	Description	Designation	DAT Ref:
411932	261227	293775	MOS EE AA Ynyslas Rocket Test Track Hut	Building	Modern	A small single- bay, brick-built building with a concrete roof stands adjacent to the base of a former 12-bay BCF hut. The building has a wide door in its door southern face flanked by two narrow window apertures with red-tile sills. It measures approximately 4.7m x 3.6m.		
411933	261226	293767	MOS EE AA Ynyslas Observation Post	Building	Modern	A partially collapsed timber shed stands on top of concrete foundations likely to have once formed the base of a 12-bay BCF hut. The structure is adjacent to a small brick-built structure with a concrete roof (see NPRN 411932).		
416298	26112	29395	MOS EE AA Ynyslas Military Camp Building	Military Building	Modern	A small rectangular building is shown on an aerial photograph dating to May 1946. The building measures approximately 6m x 4m.		
419624	26112	29396	MOS EE AA Ynyslas Projectile Tracking System;Observation Post	Observation Post	Modern	Concrete raft foundation for a BCF hut with, on its north side, three concrete plinths for observation instruments.		
419625	26108	29398	MOS EE AA Ynyslas Military Camp Building	Military Building	Modern	Concrete raft foundation for a BCF hut, associated with the camera observation posts to the east and north.		
419891	26050	29296	MOS EE AA Ynyslas Concrete Slipway	Slipway	Modern	Exposed by the storms of December 2013 and January 2014, the reinforced concrete raft forming a slipway or firm access to the beach.		
420353	26868	29788	MOS EE AA Ynyslas Radar Station	Radar Station	Modern	Standing on an 'island' or raised ground above the estuary, this complex of BCF hut with three much smaller concrete bases has an uninterrupted view down estuary to the mouth of the Dyfi and the core of the military range at Ynyslas. The western end of the BCF building with the double doors has suffered wind damage - the roof and truss over the first bay is missing (lifted by a gale?). It continues in use as a store for farm machinery.		
506291	264600	294400	Traeth Maelgwyn Salt Works	Salt Works	Post medieval	Two rectangular ponds cut into the salt marsh, one measuring 23m x 9m and the other 4m x 6m, may represent brine holding ponds for the salt works. A salting/salt works is marked on the second edition OS map of 1901, which is possibly a relict of the salt works established by William Wightman, Peter Osbourne, Christopher Schuk, Richard Purcell, Edward Herbert, the Duke of Norfolk and the Lords of Pembrokeshire and Leicester in 1567.		30763
506292	261928	293551	Traeth Maelgwyn Sea Defences	Sea Defences	Post Medieval	Earth bank between and along the Afon Leri and Afon Clettwr and which continue as far as the Ynys Hir Nature Reserve. Spurs of the sea defences turn inland along the line of streams and rivers flowing towards the estuary, and the embankment links to the banks along the canalised river Leri. Much of embankment prompted by the General Enclosure Act of 1801 had been completed by end of 1818.		

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NPRN	NGRE	NGRN	Site Name	Type	Period	Description	Designation	DAT Ref:
506293	261653	292655	Afon Leri Canalisation and Embankment	Canal; Sea defences	Post medieval	The canalized Leri runs for some 3.35km from Ynys Fergi in the south to Pont Leri in the north. Viewed from the air, the canal is approximately 35m wide along its length. The eastern bank is approximately 12m wide. The embankments joins the system of Dyfi embankments to the north, and continues along the old course of the Leri to the west of Tai Canol (SN61942882). The course of the canalized Leri had been established as the 'Pill Newydd' as early as 1790 when it was mapped by T Lewis. The canalisation was completed by a commissioner, Ralph Griffiths, working with surveyor Charles Mickleburgh in around 1825.		35313
506294	261627	293181	Pont Aber Leri Shipyard	Shipyard	Post medieval	In 1842, a shipyard was developed near bridge, probably on the western side where a wharf is shown some 20 years later. The vessels built included the sloops MARY AND ELLEN in 1843, MARY REES in 1842, CLAUDIA in 1850, PRISCILLA in 1855; the brigantine ISLAND MAID in 1851; the schooners GLEANOR and RESOLUTE in 1849; and smack CATHERINE in 1864. John Jones, the most prolific shipbuilder on the Dyfi, in the 19th century is known to have also worked at Ynyslas. The current use of the area is shipbuilding and repair.		
506295	261732	293087	Ynyslas Farm Buildings	Farmstead	Post medieval	The farm buildings are not shown on T Lewis' 1790 map of the Cors Fochno, but are shown on Sales Particulars dating from 1862. At that time, the buildings were described as 'stable barn, cow-house and other outbuildings, belonging to the farm of Ynyslas,...'. The older 19th century farm buildings have been altered with modern breeze block additions.		
506298	260900	291050	Ynyslas Golf Course	Peat Cutting; Drainage system	Post medieval	Irregularly spaced lines of grass growth were seen the vicinity of the one of the former watercourses of the river Leri in 1995. The lines ran east-west and possible represent evidence of former peat cutting or the implementation of a drainage system. The whole area has a fairly irregular surface.		31472
506337	261718	293185	Dwelling House of Ynyslas	Farmstead	Post medieval	The house is shown on T Lewis' map of Cors Fochno dating to 1790, is referred to in Sales Particulars dating to 1862. At that time, the complex is described as have a cart house, which appears to be adjoining according to the accompanying map. The house became associated with the East Wharf saw mill was developed by Jones and Griffiths. It appears that the cart house was developed into a dwelling, as in Sales Particulars dating to 1910 the house and cart house are described as 'two cottages and premises known as Ynyslas cottages'.		
506339	260828	293768	Ynyslas Nature Reserve	Hotel	Post medieval	The ground plan of a building and possible a garden terrace is discernible in modern aerial photographs as a series of connected squares and rectangles in the vicinity of a curved drive/access track. Local residents tell of a hotel that was built here but demolished before World War II.		
506344	260791	293156	MOS EE AA Ynyslas	Military Building	Modern	An additional collection of military huts are shown on aerial photographs dating to 1948. Five huts bases line the northern edge of the compound aligned north/south. A further rectangular building marks the eastern boundary and square building with a sloping roof marks the eastern corner. The plot has been cleared and remodeled to accommodate two houses and gardens. Local residents suggest that these may have been the NAFI complex and laundry. Wartime concrete fencing posts along the roadside remain.		

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NPRN	NGRE	NGRN	Site Name	Type	Period	Description	Designation	DAT Ref:
506345	260741	292995	MOS EE AA Ynyslas	Military Building	Modern	Nine military buildings are shown laid out in a grid to the north of Moel Ynys. The plot has been cleared and now forms part of the golf course.		
506346	260795	292881	MOS EE AA Ynyslas	Military Building	Modern	Up to five more military buildings are shown laid out to the east of the main road on aerial photographs dating to 1948. The plot has been cleared and now accommodates two houses and gardens.		
506347	260721	293216	Brynnellen	Military Building	Modern	Photographs from the early 19th century reveal a mock black-and-white timbered facade with dormer windows to the first storey. A cross wing or pavilion can be seen at the northern end with a large bay window. The basic plan form is similar to that of the still extant 'The Bungalow' (NPRN 292200). Aerial photographs dating to 1946 reveal that a rectangular building has been added to west of the main house and connected by covered walkway. The plot has since been cleared and is part of the fairway.		
506348	260303	293254	Unknown	Wreck	Post medieval	A dark outline, possibly a partially exposed wreck is shown on aerial photographs dating to July 1948. The outline is some 30- 35m in length (100-112ft).		
506349	261190	293786	MOS EE AA Ynyslas	Military Building	Modern	The building associated with eastern end of the firing test bed (see NPRN 407993) has now disappeared to be replaced by caravan stands. The line of the test firing track/access road can still be traced in the layout of the roads of the caravan park.		
506350	260746	293038	MOS EE AA Ynyslas	Military Building	Modern	Aerial photographs dating to 1946 show a large garage and four other buildings to the north of the track crossing the golf course. Stacked on the grass to the north west are what appear to be concrete rails or timber. These buildings had been removed by 1948. The area is now part of the golf course fairway.		
506356	261209	293765	MOS EE AA Ynyslas Radar Station	Radar Station	Modern	Aerial photographs dating to May 1946 reveal a tall openwork tower possibly a radar or radio station, with a smaller building to the southeast (see NPRNs 411932-3).		
506498	260450	292850	Borth Sands	Hearth	Neolithic	Samples taken from the hearth were sieved for food debris, but none were located. Charcoal and fire-cracked stones were recovered. The scientific dating of the associated peats suggested a date of approximately 4,000 BP.		3093
506499	264869	293660	Afon Clettwr Embankments	Drainage Channel	Post medieval	The embankments may comprise some of the earlier reclamation work undertaken after an Enclosure Act was given Royal assent in June 1813. Documentation suggests that the major work on the Dyfi embankments had been completed by the end of 1818. The eastern embankment continues northwards and is cut by the railway line.		
506500	260420	292550	Borth Sands	Submerged Forest	Mesolithic	Only small sections are uncovered at any one time. Palaeoenvironmental evidence suggests that the forest flourished between 5,000 and 4,500 BP. From 4,800 - 4,000 the area became waterlogged with peat growth, although oaks were growing until 3100 BP at the southern end. A hearth (NPRN 506498) was dated by association with the peat to 4,000 BP. Other finds include a Mesolithic composite tool of antler, two flints, the skeleton of an aurochs, and a piece of antler.		30898

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NPRN	NGRE	NGRN	Site Name	Type	Period	Description	Designation	DAT Ref:
506501	261665	293220	East Wharf, Aber Leri	Wharf	Post medieval	The river frontage is collapsed in places. The piled front of the wharf was first driven in October 1863 by the railway company to allow barges towed by the company tug to bring in materials for the construction of the line.		
506502	261783	293123	East Wharf (Penrhyn) Siding	Railway Line	Post medieval	The OS 1st edition map dating to 1886 shows the main siding with a small branch line running along behind three wharf fronted buildings. The line branches at SN61679318 and one arm continues to the end of the quay frontage at SN61679324. The maximum length of the siding (from Ynyslas Station to the end of longer branch of the siding) was 270m.		
506503	261695	293219	East Wharf Timber Mill, Bwthyn Ynyslas	Saw Mill	Post medieval	OS 1st edition map dating to 1886 shows the layout of the fully developed sawmill. The site is bisected by Penrhyn railway siding servicing the East Wharf. Three small wharfside buildings, each is rectangular in plan form with waterside porches/entrances are situated to the west of the siding. The main complex of 8 industrial buildings is the east of the siding and includes the adjoining dwellings (with various attached outbuildings and porches) which survive today as a private house. A trackway running southwest to northeast services five of the industrial buildings, which are primarily rectangular in plan form with various porch extensions on the long and short sides. A sixth building, square in plan, abuts to the beginning of the Leri embankments at the northern end of the site.. After April 1896, Mr Hughes Jones transferred his business to the new works on the opposite bank and the site was cleared.		
506504	260584	293007	MOS EE AA Ynyslas, Ynyslas Golf Course	Store - Military	Modern	A British Concrete Federation (BCF) hut. The southern end contains a large double door and the northern end has been extended with a single-storey brick-built room. The brick-built extension (2.56m x 2.2m) contains single windows on its western and eastern faces and bricked-up and rendered over door on its northern face. The hut stands some 15m landward of an Observation Post (see NPRN 506505).		30798
506506	262030	291940	Cors Fochno	Cropmark	Unknown	A cropmark of unknown of significance was noted by DAT staff in September 2001		6097
506507	262150	291730	Cors Fochno	Cropmark	Unknown	A cropmark of unknown of significance was noted by DAT staff in September 2001		6098
506508	264550	294250	Mouth of Afon Clettwr	Sea Defences	Post medieval	Earth bank running along east bank of the canalised Afon Clettwr which forms part of the sea defences which extend northwards from Borth, along the course of the Afon Leri to its mouth on the Dyfi estuary. The defences then turn eastwards and follow the southern side of the estuary inland as far as the Ynys Hir Nature Reserve. Spurs of the bank turn inland along the line of streams and rivers flowing towards the estuary. The bank is also cut by the railway line.		35318
506509	263500	292850	Penpontbren Mochno	Bridge (placename evidence)	Post medieval	The name of the nearby dwellings suggests a bridge, although 'Penpontbren' is not recorded on Lewis's map of 1790, but is shown on the enclosure maps of c1824.		19855
506510	263771	293612	Railway Cottage	Cottage	Post medieval	The OS 1st edition mapping shows the cottage (ground plan 12m x 6m) with a central porch on each of its longer sides. A long, narrow outbuilding (13m x 3m) is show to the east.		35315

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NPRN	NGRE	NGRN	Site Name	Type	Period	Description	Designation	DAT Ref:
506511	263311	292866	Penpontbren Mochno	Quarry	Post medieval	The annotation 'Old Quarry' is shown on OS 1st edition mapping dating to 1886. The quarry site is now occupied by farmbuildings.		19854
506512	260360	292020	Unknown, Borth Sands	Wreck	Post medieval	The submerged outline of a possible wreck was noted on aerial photographs in 1995 by DAT staff (possibly an exposure of peats and the submerged forest)		31466
506513	260440	291820	Unknown, Borth Sands	Wreck	Post medieval	The submerged outline of a possible wreck was noted on aerial photographs in 1995 by DAT staff (possibly exposure of peats and the submerged forest).		31467
506514	260500	291700	Unknown, Borth Sands	Wreck	Post medieval	The submerged outline of a possible wreck was noted on aerial photographs in 1995 by DAT staff (possibly an exposure of peats and the submerged forest)		31468
506515	260740	293178	MOS EE Ynyslas Emergency Water Supply Tank	Water Tower	Modern	A circular cropmark or area of concrete measuring some 7.9m in diameter is visible on modern aerial photography, to the east of the demolished Brynhellen house. The features is shown on aerial photographs dating to May 1946 as thin white circle enclosing a dark area.		
506516	261610	293349	West Wharf (Penrhyn Branch) Siding	Railway Line	Post medieval	The siding has been removed and its route has largely disappeared under boatyard development and landfill. In 1895, Jones and Griffiths proposed to move their sawmill business from East Wharf to the West Wharf. This proposal provided the railway company with an opportunity to extend the up-platform at Ynyslas station by the removal of the East Wharf siding. The siding had been extended by 1901 and remodelled to branch from the old route of the (No Suggestions) Ferry Branch slightly eastward to service an additional drying shed at SH61609359.		
506517	262586	293308	Ynys Tachwedd	Brickworks	Post medieval	The original farmhouse is still extant and the waterfilled depression (claypit) to the south can still be seen in aerial photographs (see NPRN 506518). The brickworks and the house date to 1863 - 1866.		
506518	262564	293243	Ynys Tachwedd	Claypit	Post medieval	A scoop/claypit is shown to the south of Ynyslas Farm on OS 1st edition mapping surveyed in 1886. The claypit cuts the boundary between two fields. A second hollow or depression is noted 115m away to the northwest (SN62479330).		
506519	262148	293625	Ynys Tachwedd	Breakwaters	Post medieval	A concentration of six breakwaters angled at 30-40 degrees to the Dyfi embankment are shown on OS 1st edition mapping surveyed in 1886.		
506521	262765	293602	Ynyslas Anti-Invasion Defences, Ynys-Las farm	Pillbox	Modern	Hexagonal (type 24) pillbox constructed on the sea wall. It has a typical letterbox firing loop on each wall, topped with substantial concrete lintels. . The internal walls still have the wooden brackets for the shelves at each firing loop used for binoculars, ammunition, etc. The floor is in poor condition. Livestock have been using the structure for shelter.		35334

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NPRN	NGRE	NGRN	Site Name	Type	Period	Description	Designation	DAT Ref:
506522	261632	293210	West Wharf Sawmill	Saw Mill	Post medieval	The site of the sawmill is now occupied by the boatyard development. OS 2nd edition mapping dating from 1900 shows the long drying shed alongside the railway line and three other buildings. In November 1912, the saw mill owner requested permission from the railway company to further extend the drying shed. The saw mill is believed to have ceased trading in the interwar years.		35897
506530	260640	290410	Anti-Invasion Defences, Borth Sands	Anti-landing defences	Modern	The cut-off stumps of anti-tank rails embedded in massive concrete block was seen sunken into foreshore in February 2008 after storms had lowered the beach level. Royal engineers were responsible for the installation of massive lines of barbed wire and anti-tank rails. These were designed to hamper enemy tanks disembarking from enemy landing craft. The wire was held in place by 9ft high steel scaffolding tubes.		
506531	260789	293002	MOS EE AA Ynyslas	Military Building	Modern	Aerial photographs dating to 1946 show a long, thin rectangular building orientated north/south. The building had been removed by 1948 and the plot is now occupied by two houses.		
506533	262763	293615	MOS EE AA Ynyslas, Rangefinder, Dyfi Embankment	Observation Post	Mo	To the seaward of the pillbox is a concrete plinth and monolith which may have been the base for the Kine Theodolite used for tracking the projectiles fired from the main rocket test track (see NPRN 408394).		
506534	262980	293490	MOS EE AA Ynyslas Radar Station	Radar Plinth	Modern	The observation post overlooks a concrete plinth with surmounted three raised oval concrete monoliths, each with steel bolts. These may have been used as an early form of radio beam-guidance system for rockets or as target RADAR acquisition and tracking system.		
506536	261626	292813	Plynlimon and Hafan Tramway	Tramway	Post medieval	A map contained within the collections of the National Library of Wales shows the proposed route of the tramway from its start at Hyddgen linking quarrying activities at various sites with the main railway line at Llanfighangel and then on to port facilities at Aberleri along the western bank of the canalised Leri. Some initial bankment/route preparation was carried out and the some clearing/dredging of Leri itself was undertaken. However, the development came to a halt on 29 April 1893, when the Gogerddan Estate refused permission until the whole of the route had been confirmed.		
506537	261380	294540	River Leri	Training Ground	Modern	Between November 1945 to November 1947, the small harbour at Aberdyfi harbour and the mudflats and sandbanks on the south side of the estuary were used by Royal Army Service Corps Amphibious Training Unit at Towyn. A hulk was moored in midstream to act as a focal point for crossing the Dyfi. An aerial photograph within the RCAHMMW collections shows a line of eight 'buffalo' (amphibious tanks) entering the Aber Leri channel from the south (Ynyslas beach) and heading northwards (aerial photograph ref 106G.UK.1450-3150).		

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NPRN	NGRE	NGRN	Site Name	Type	Period	Description	Designation	DAT Ref:
506538	261870	293120	Ynyslas Station Cattle Pens	Pound	Post medieval	Surviving documents relating to the building of the railway include minutes which note that Western Counties Manure Company were refused permission to build a manure shed in 1869, but in 1871 cattle pens and a landing were authorised at the cost of £40. These had been completed by January 1872. The pens are shown on OS 1st edition mapping dating to 1886 to the southeast of the station.		
506540	260560	293470	Twyni Mawr	Rabbit Warren	Post medieval	The map of Cors Fochno compiled by T Lewis in 1790 shows the placename 'Warren Point' immediately behind the shingle ridge at the back of the beach. Further references to the rabbit warren are found in Sales Particulars dating to 1866, when it is described as 'one of the best rabbit warrens in the principality extending over nearly 100 acres; and an abundance of partridge, snipe and wildfowl'. At that time, the warren was associated with Ty Canol farmstead. The warren is again mentioned in association with Ty Gwyn farm in 1887. In 1910, the shooting rights over all of the Ynyslas Estate, including the warren, were let to a Mr Williams for £110 per annum.		
506718	260800	292530	Villa Number 1, Ynyslas	House	Post medieval	One of four semi-detached dwellings built as 'show homes' to illustrate the potential to develop Ynyslas as a seaside resort by the Ynyslas Estate Company Ltd (Gregson brothers) in 1890-1891. The house was sold on the liquidation of the Ynyslas Estate Company Ltd in 1910. and described as 'possessing a commanding elevation and containing a ground floor entrance hall, pleasant dining room with large bay window, measuring 16ft 6in by 14ft 6in exclusive of bay, breakfast room, kitchen, scullery and pantry. First floor drawing room, four bedrooms, bathroom (hot and cold), and WC. Second floor three bedrooms.' The property was let to a Miss Elizabeth Williams. During the period that MOS EE AA Ynyslas was operational (1945-6), local residents suggest that the house was used as a Drawing Office.		
506719	260800	292540	Villa Number 2, Ynyslas	House	Post medieval	A semi-detached 3-storey house much extended and with additional outbuildings. One of four semi-detached dwellings built as 'show homes' to illustrate the potential to develop Ynyslas as a seaside resort in 1890-1891.		
506719	260790	292630	Villa Number 3, Ynyslas	House	Post medieval	A semi-detached 3-storey house. One of four semi-detached dwellings built as 'show homes' to illustrate the potential to develop Ynyslas as a seaside resort in 1890-91.		
506720	260790	292640	Gregson House (Villa Number 4), Ynyslas	House	Post medieval	One of four semi-detached, 3 storey dwellings built as 'show homes' to illustrate the potential to develop Ynyslas as a seaside resort by the Ynyslas Estate Company Ltd (Gregson brothers) in 1890-1891. A commemorative plaque on the front elevation states 'This stone was laid by William Gregson Esq of Bolton to commemorate the opening up of Ynyslas as a health resort April 25 1891'.		

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NPRN	NGRE	NGRN	Site Name	Type	Period	Description	Designation	DAT Ref:
506721	260742	292900	The Bungalow, Ynyslas	House	Post medieval	Timber framed bungalow with as slate roof, some later additions. This bungalow is amongst the first new dwellings built in response to the coming of railway and plans to develop a health resort. (it is shown on OS 1st edition mapping dating to 1886). When sold in 1910 on the liquidation of the Ynyslas Estate Company Ltd, it was described as a picturesque black-and-white dwelling 'built of timber and with a slated roof and has a veranda in front also a conservatory, it contains dining room, kitchen, back kitchen, pantry and six bedrooms with a room in the attic. Coal house and WC outside, water is pumped from a spring situated on the premises'. OS 1st edition mapping shows two pumps in the rear garden of the property. The plan form, with cross wing to the north, is reminiscent of the grander but now demolished Brynellen (see NPRN 293216).		
506723	260737	292947	Moel Ynys	Farmstead	Post medieval	The farmstead is shown on T Lewis' 1790 map of the Cors Fochno, with two small rectangular fields to the southwest. When this part of the Ynyslas Estate was sold in August 1879, it was described as having 'a handsome portico at the front entrance... basement, wine cellar, ground floor entrance hall, spacious and well-lighted drawing room, dining room with bay window, kitchen, scullery and pantry. First floor, six bedrooms sitting room, lavatory and wc. Top floor, two bedrooms. Outside WC.' The outbuildings included 'a wash house (fitted with household copper, also water pump, and cistern with a storeroom over'. The property comprised a 'two-stall stable, and loose box with hay loft over, saddle room, coal house and coach house, all stone built and slated. There is also a timber built coach house or motor garage roofed with corrugated iron sheets. Between the house and the road there is a pretty croquet or tennis lawn and on the south side a productive walled in kitchen garden'. During the period that MOS EE AA Ynyslas was operational (1945-6), local residents suggest that the house was used as a Sergeants' mess and for accommodation.		
506737	261740	293110	Ynyslas Terrace	House	Post medieval	In 1866, the financially-troubled railway developer Thomas Savin was forced to sell some of his land holdings at Ynyslas, the sales particulars describe Lot 4 as '17 newly erected cottages and shops, yards and premises with the Ynyslas farm buildings, containing together 1 acre 1 rod 24 perches.... the cottages each consist of a parlour, kitchen, and two bedrooms, with Out offices, and a large shop with double frontage, Storeroom, etc, ... in the holding of respectable tenants. There is also a range of farm buildings at the back, consisting of barn, stable, cow buildings, sheds and yard.' This terrace is again shown, with a gap half way along, on Sales Particulars dating to 1879. However, the whole terrace had been removed by the time of OS survey in 1886.		
506738	261610	292970	Ty Mawr	Farmstead	Post medieval	A single building is shown for this farmstead on T Lewis' map of the Cors Fochno dating to 1790. The farm was part of the holdings of the Ynyslas Estate Company Ltd sold in 1910. At that time, this property is described as being 'a stone built house... containing kitchen, parlour, dairy, back kitchen and two bedrooms. Outbuildings adjoining the house are a four-stall stable, chaff room and cart house with a loft over. Close by is another building consisting of cow house for 4, calf kit, and piggery... there is another range of buildings including a stable (2 stalls) with loft over, barn and two bays, cattle sheds and small stable'.		

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NPRN	NGRE	NGRN	Site Name	Type	Period	Description	Designation	DAT Ref:
506739	262157	292974	Gogerddan Arms	Inn	Post medieval	Originally built as an inn to service the growing community at Ynyslas after the coming of the railway from 1866 onwards. Local residents suggest it was built with bricks from the near by works at Ynys Tachwedd. The land was retained in the ownership of Sir Pryse Pryse. Sales Particulars dating to 1883 note that the house was let to Mr Jenkin Jones for the unexpired term of 79 years at a ground rent of £1 10s. The house and larger field in which the house stands were again placed up for sale in 1886 and again in 1895. The long, narrow field in the corner of which the house stands is now Greenacres Nursery.		
506740	261370	292952	Ty Canol	Farmstead	Post medieval	Once part of the land holdings of the railway speculator Thomas Savin. The farm was sold when in 1866, it was described as a stone built farmhouse with land producing barley and root crops and one of the best rabbit warrens extending to 80 acres. In 1910, when the Ynyslas Estate was sold, the sales particulars note that the older farmhouse had been 'converted into a store for machinery and corn, etc'. The newer farmhouse 'having as accommodation parlour, dining room, kitchen, back kitchen, diary, and five bedrooms.' The outbuildings included a 'yearling shed, a tie-up cowhouse for 11, 2 calf kits, 1 cattle shed, three-stall stable and loose box with loft over, barn and bay, also piggery. Adjoining is a coalhouse and two other calf kits. There is also a spacious Dutch barn, built with iron pillars with a corrugated iron roof.' The sales particulars also note that the domestic water supply is a pump inside the house to which piped water was pumped by gravitation.		
506741	260782	293044	Brynhyfyd	House	Post medieval	A timber framed bungalow - one of the earlier seaside residences built at Ynyslas. On sales particulars relating to the liquidation of the Ynyslas Estate Company Ltd in 1910, the bungalow (Lot 15) was described as 'built of timber on a stone foundation and, with a shady verandah in front, it contains drawing room, dining room, kitchen, back kitchen, scullery, pantry, and five bedrooms. Coalhouse and two WCs outside. Water is obtained by means of a pump fixed over a spring on the premises'.		
506742	260822	292406	Min Y Don	House	Post medieval	The house is shown on OS 1st edition mapping dating to 1886 and hence is amongst the earliest seaside residences built at Ynyslas. In 1910, when the Ynyslas Estate Company Ltd sold its land holdings, Sales Particulars show two buildings on the plot - 'prettily designed bungalow... with lawn and premises belonging thereto, the while extending to about 1572 square yards, and in the occupation of Mrs Rowlands from year to year, at a rental of £16 per annum. The accommodation includes dining room, kitchen, pantry, small scullery and four bedrooms. A spiral iron staircase leads up to the flat roof. Outside there are a wash-house, coach-house, lumber room, coal-house and W C.'		

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NPRN	NGRE	NGRN	Site Name	Type	Period	Description	Designation	DAT Ref:
506743	262380	293320	Cottage, Ynys Tachwedd	Cottage	Post medieval	A small cottage is referred to in and shown on the plan accompany in sales particulars published to announce the sale of various landholdings belonging to the financially troubled railway builder/speculator Thomas Savin in 1866. The cottage was not recorded by the OS in 1886, and hence it would seem likely that it had suffered from subsidence and been demolished. The cottage formed part of the parcel of land including the brickworks at Ynys Tachwedd.		
506744	261139	292510	Ty Gwyn	Farmstead	Post medieval	A single building is shown on T Lewis' map of Cors Fochno dating to 1790. In 1910, when the Ynyslas Estate was again, the sales particulars noted the house comprised 'kitchen, parlour, pantry, dairy, back kitchen, and four bedrooms. The farm buildings consisted of cattle shed, cow house (tying for 10), three-stall stable and loose box with loft over, barn, cart house, with loft over. These adjoin the house and are built of stone and slated. Close by there are three piggeries and a small cattle shed, brick built and slated.' The sales particulars also contain a note of the windmill (sited in the field to the northwest) which was used for pumping water and the reservoir also sites uphill from the farm. Rights of access to repair and service the water supply system were retained as was a right of way for Ynyslas Gardens.		
506746	260821	291324	Ynyslas Golf Club	Golf Course	Post medieval	An 18 hole golf course laid out behind the shingle ridge at the back of Borth Sands. Believed to be the oldest golf course in Wales. The earliest reference to golf being played at Borth is 1876, when the Uppingham School arrived to stay at Borth's Grand Hotel to escape a typhoid epidemic in Rutland. Golf is mentioned as having been played during the year that the school was in residence. The course was laid out in 1885 and further improved on the formation of a golf club on 3 August 1893.		
506747	260550	293010	MOS EE AA Ynyslas, Radiator Radar Base	Radar Plinth	Modern	Abutting to the northern side of the Observation Post (NPRN 408402) is a concrete plinth which shows signs of having been the base for a metal tower (i.e. the sockets for the legs are visible in the surface).		
506750	260952	291791	Aberleri Farm	Sheep Fold	Post medieval	A sheep fold is marked on OS 1st edition mapping dating to 1886. Modern aerial photography reveals two small rectangular enclosures (one measuring 23m x 9m and the other 28m x 22m) abutting on a north-south axis.		
506751	262746	292837	Dolenydd	Farmstead	Post medieval	The farm is not shown on T Lewis' 1790 map of the Cors Fochno. When the property was placed up for sale in 1861, the farm extended almost to the east bank at Aberleri. The sales particulars note that the land was part of Ynyslas farm, purchased by the late Issac Ll. Williams Esq under the Geneu'rglyn Inclosure Act. The complex at Dolenydd is described as comprising a cottage, stable and cow house.		
506753	260781	292927	MOS EE Ynyslas Emergency Water Supply Tank	Water Tower	Modern	A circular structure measuring some 7.9m is shown on aerial photographs dating to May 1946 as thin white circle enclosing a dark area. The structure is within the enclosure containing a large hanger, (formerly glasshouse) (see NPRN 506296)		

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NPRN	NGRE	NGRN	Site Name	Type	Period	Description	Designation	DAT Ref:
506754	260813	292835	MOS EE Ynyslas Emergency Water Supply Tank	Water Tower	Modern	A circular structure measuring some 7.9m is shown on aerial photographs dating to May 1946 as thin white circle enclosing a dark area. The structure is within the garden of bungalow. The circle of concrete remains visible on modern aerial photographs re-used as a garden feature.		
506769	261581	293940	Unknown	Wreck	Post medieval	The third of three vessels depicted on an Admiralty chart published in 1892 based on surveys undertaken in 1890. This hulk may be one of three schooners sunk in 1868 to identify and stabilize the edge of the navigable channel at the mouth of Leri.		
506771	261413	294146	Traeth Maelgwyn	Fishtrap?Quay?	Medieval?	Wartime aerial photographs appear to show a breakwater extending northeastwards from the water line. The breakwater crosses the watercourse of the Leri and includes a staggered sluice. A telegraph pole with wire at the shoreward end of the breakwater, which appears to divide where it meets the route of the (No Suggestions) Ferry Branch. The breakwater is not shown on OS 1st or 2nd edition mapping. It may be a natural outcropping of rock enhanced at sometime to form a fishtrap, and later used as a hard for the unloading of beached vessels.		
506773	260780	293220	MOS EE AA Ynyslas Accommodation Huts	Military Building	Modern	Aerial photographs dating to 1948 show a row of 4, possibly 5, huts orientated north-south and abutting to a short access track running east-west. The huts and platforms have since been cleared, but the concrete posts of the wire fence appear to confirm a wartime origin for definition of the enclosure defining this parcel of land.		
506960	260480	292350	Ynyslas Anti-Invasion Defenses, Ynyslas Nature Reserve	Pillbox	Modern	RAF aerial photographs dating to 1959 show a pillbox in amongst the sand dunes. No remains are visible today except a few pieces of weathered bricks and concrete fragments. The concrete roof lies upside down a few metres away suggesting that the pillbox may have been blown up by the military after the end of the war.		
506962	260720	292144	Glangors	House	Post medieval	The house is shown on OS 1st edition mapping dating to 1886 and mentioned as one of the properties sold on the liquidation of the Ynyslas Estate Company Ltd in 1910. At that time, the Glangors was described as 'attractive freehold bungalow... with lawn and premises belonging, in the tenure of Mrs McIndoe as yearly tenant at the very low annual rental of £13. The bungalow is built of concrete with a flat roof, and contains dining room, kitchen, scullery, pantry and four bedrooms, with WC and coal house outside. Water is obtained from a spring on the premises, over which a pump has been erected.' The jutting pediment (concrete roof span) at 1st floor level is repeated in the styling of Min Y Don. The house remains a private residence.		

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NPRN	NGRE	NGRN	Site Name	Type	Period	Description	Designation	DAT Ref:
506991	261512	289924	Pill Newydd	Drainage Channel	Post medieval	The map of the Cors Fochno drawn by T Lewis in 1790 shows early reclamation of the western side of the bog. The Leri had already been diverted from its long course running along behind the shingle/cobble bank into a new western course defining the area Ynys Fergi. The long drain of the Pill Newydd is shown running from south-southwest to the north-northeast, with adjoining drains branching from its western side from the south-southeast to the north-northwest.		
506992	262820	292850	Dolenydd	Brickworks	Post medieval	Two long drying sheds are shown in the field just to the east of Dolynedd on a plan accompanying sales particulars dating to November 1866. An annotation gives the ownership as W T Jones Esq. Aerial photographs dating to 2006 appear to show uneven ground and isolated tree plantings as well as a complex pattern of former water channel. In the field immediately to the east, there are sub-rectangular water-filled depressions.		
506993	260950	290960	MOS EE AA Ynyslas Radar Station	Radar Station	Modern	The foundation and plinth for the antenna now hidden within a large raised flower bed.		

Note: fuller entries completed with relevant bibliography can be found via WWW.coflien.gov.uk