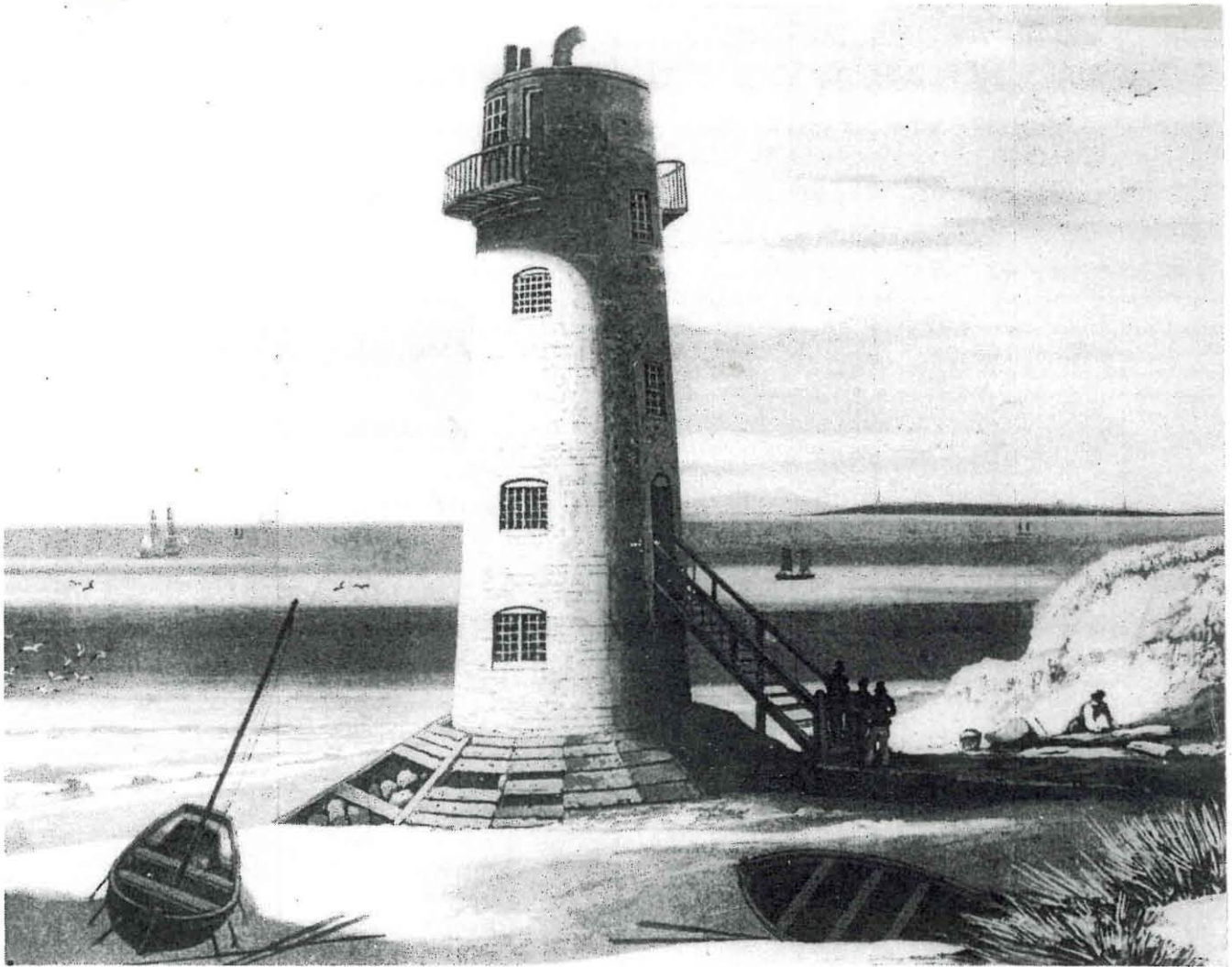


THE CLWYD-POWYS ARCHAEOLOGICAL TRUST

Coastal Survey: Rhos-on-Sea to Saltney



POINT OF AYR LIGHTHOUSE
Aquatint by William Daniell, 1815

CPAT Report No 194

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Coastal Survey: Rhos-on-Sea to Saltney

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Report for Cadw/Welsh Historic Monuments

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CONTENTS

- 1 Summary**
- 2 Research Design**
- 3 The Survey Area**
 - General
 - Rhos on Sea to River Clwyd
 - River Clwyd Rhuddlan to Foryd
 - River Clwyd to Point of Ayr
 - Dee Estuary Point of Ayr to Connah's Quay
 - Dee Estuary Connah's Quay to Saltney
 - Scheduled Sites and Listed Buildings
 - SSSIs and Nature Reserves
 - Management Plans
- 4 Desk-based Study**
- 5 Liaison with other organisations**
- 6 Acknowledgements**
- 7 Field Survey**
 - Methods
 - Coast Edge Types
 - Land Edge Types
 - Foreshore Types
 - Erosion Class
 - Archaeological Survey
- 8 Assessment of Coast Type, Erosion and Change**
 - Assessment of Erosion
 - Long Term Cycles and Changing Sea-levels
- 9 Assessment of Archaeology**
 - General Summary
 - Prehistory
 - Roman
 - Medieval
 - Post Medieval and Modern
 - Other Coastal Influences affecting Archaeology
- 10 Recommendations**
 - General Recommendations
 - Site Specific recommendations
- 11 References**
- 12 Field survey results**

Appendix 1: Gazetteer of Coast Units

Appendix 2: Gazetteer of sites by Category

Appendix 3: Gazetteer of sites by Threat

Appendix 4: Gazetteer of sites by Recommendation

Appendix 5: Archive reference material

1 SUMMARY

- 1.1 This study of coastal erosion has been promoted and funded by Cadw: Welsh Historic Monuments as a pan-Wales initiative, and has been conducted by the four Welsh Archaeological Trusts. The main objectives are to assess the nature of coastal erosion and relate this and other coast related threats to the likely impact on the archaeological resource.
- 1.2 Within the present study area the majority of the coastline is shown to be stable, largely due to extensive man-made protection, or suffering only slight erosion. One short section of coast at Point of Ayr appears to be under serious threat from erosion. However, a significant proportion of the coastal plain is very low lying (Fig. 1), consisting of soft glacial and post-glacial sediments, much of which is reclaimed salt marsh, some of which lies below the HWM. Consequently, rising sea levels could have a serious impact on significant areas. Although erosion is not identified as a major threat, the development of both light industry and tourism has already had a significant impact on the archaeology of the area, most notably on the post-medieval and industrial sites along the Dee Estuary.
- 1.3 A search of the Sites and Monuments Record (SMR) and the National Monuments Record (NMR) revealed 49 sites within the immediate coastal fringe, most of which are post-medieval or industrial. The desk based and field surveys revealed 129 new sites, all belonging to a similar period, of which 26 sites consisted of documentary references only. The generally low number of archaeological sites belonging to earlier periods may in part be attributed to the relatively recent emergence of the present coastline, as a result of coastal protection and reclamation. The only sites identified as at possible risk from coastal erosion are a series of sites within the intertidal zone, although as noted above, other pressures present a serious threat to the surviving archaeology.

2 RESEARCH DESIGN

- 2.1 The format of the study draws heavily on the example set by the Gwynedd Archaeological Trust (Smith 1995) which largely set the standard for the survey of coastal erosion. Where a different approach has been adopted, it has been dictated by the nature of the coast and coastal strip within the study area which has presented certain situations not prevalent within the Gwynedd study area.
- 2.2 The parameters of the study were defined as the coast edge itself, the intertidal zone, tidal estuaries and rivers, and a strip of the land edge defined as follows. Generally, the Gwynedd approach was adopted whereby the land strip extended for 150m from the coast edge. However, the topography occasionally dictated a slightly wider area where the land zone was thought to be at risk of inundation. In such cases, the boundary was taken to be the first physical barrier, for example, a railway or former coastal defensive bank. Although the study was intended to encompass the whole intertidal zone, for reasons of safety this was limited to the first 300m of the foreshore along the Dee Estuary, where the intertidal zone can extend to almost 1 km. This did, however, allow a view over the mudflats to the low water mark. The study area encompassed two major tidal rivers, the Dee and the Clwyd. Although neither can be described as coastal zones at the present time, they have been included (as far as the lowest historic bridging point, or the English/Welsh border of the Dee) largely for their historic significance for ports, shipping and associated industries.
- 2.3 The first year of the project (1995/96) consisted of two-stage study of a 14.7 km length of coastline between Prestatyn and Mostyn (Jones 1996) together with a scoping study to assess the nature and quality of the documentary, cartographic and photographic sources relating to the remaining 72.6 km of the coastline in preparation for a continuation of the study during 1996/97.
- 2.4 Prior to the commencement of this project the archaeological resource had never been specifically related to the effects of erosion, and the main aim was therefore to assess the relationship between the three key elements of site type, coast type and erosion. The study is also concerned with the future management of the archaeological resource, identifying areas where sites may be at risk either from erosion or development, particularly where the perceived threat arises from an increase in the use of coastal areas for amenities and tourism, or from the likely effects of rising sea-levels.
- 2.5 The field study involved the identification and rapid recording of archaeological remains of all periods within the defined coastal strip, recording the nature of the coast edge, land edge and foreshore and assessing the extent and nature of any erosion. As such, this is a study which may be

of use to a variety of disciplines and should not necessarily be seen as archaeologically specific. It is intended that copies of this report will be circulated to those bodies considered to have a direct interest in the study area.

- 2.6 It is anticipated that once the survey has been completed, encompassing the entire coastline of Wales, a further report will be produced to synthesize the results from the project as a whole.

3 THE SURVEY AREA

General

- 3.1 The coast generally faces north-north-west with prevailing winds from the north-west, west and south-west causing waves to strike the coast obliquely. This wave action causes a general movement of beach material from west to east, known as longshore drift, which is most noticeable with the diversion of the Prestatyn Gutter and the sand spit at Point of Ayr (Neaverson 1947).
- 3.2 The present coastline and coastal plain are of relatively recent origin. There is considerable historical and archaeological evidence for extensive changes to the coast of Clwyd, notably the advance of the land edge. This is perhaps most evident at Prestatyn where excavations have recently revealed extensive Mesolithic shell middens at Nant Hall Road, which is now 1 km inland. During the historic period there is further evidence from the gradual silting and decline of the Prestatyn Gutter, which had been navigable with an active port in the town, at least until the 18th century.
- 3.3 The drift geology is mainly composed of glacial (boulder clay) and post-glacial deposits. Solid rock is, however, exposed near Mostyn. (Neaverson 1947).
- 3.4 The present study can be divided into five main areas (Fig. 1):

Rhos-on-Sea to River Clwyd

- 3.5 The wide sandy foreshore is generally backed by a man-made coastal edge, either in the form of coastal defences at Rhos-on-Sea and Colwyn Bay, or the railway, which itself forms a coastal defence along much of the seafront. The only area which retains the natural coastal edge is the shingle bank along the beach at Llanddulas, which forms an SSSI. The sea defences are of particular significance in the area around Towyn where the threat of inundation was dramatically illustrated by the severe flooding in 1990. Much of the area is occupied by developments relating to tourism and leisure activities, the expansion of which pose the single most important threat to the archaeological resource.

River Clwyd: Rhuddlan Bridge to Foryd

- 3.6 The majority of this tidal stretch of the river from the lowest historic bridging point to the sea is enclosed by banks constructed during the reclamation of the surrounding salt marshes.

River Clwyd to Point of Ayr

- 3.7 With the exception of Prestatyn and Rhyl, which have substantial sea defences, the coastline is characterised by a wide sandy foreshore backed by stable sand dunes protecting a wide coastal plain, much of which has been reclaimed from marshland over the past 250 years. Erosion is only evident along short sections of the coast at Point of Ayr, where the dunes are in retreat and are suffering serious erosion at high tides. However, the low lying nature of the coastal plain, particularly those areas of reclaimed marsh, suggests that rising sea levels could have serious consequences for much of the area.

Dee Estuary: Point of Ayr to Connah's Quay

- 3.8 The estuarine coast generally faces north-east and is largely protected by a variety of man-made defences, both against erosion and inundation. Consequently, erosion is not a significant problem, with the exception of the immediate area of Mostyn Quay and Docks. The area is characterised by a wide expanse of mudflats within the intertidal zone, all of which falls within the Dee Estuary SSSI. Much of the coastal strip has been developed for industry together with coastal road and rail links.

Dee Estuary: Connah's Quay to Saltney

- 3.9 This tidal section of the river was fixed in its present form by the construction of the New Cut between 1735 and 1736 (Ward 1996, 4). This was followed by a series of schemes to reclaim areas of salt marsh, including the formation of the River Dee Company in 1744 (Lloyd 1968, 38). Historical maps of the Dee Estuary illustrate this process of gradual encroachment on areas of former salt marsh. As a consequence of this process, the area is well protected from erosion and inundation by substantial embankments. However, the areas behind these embankments is very low-lying and might be considered to be at some risk from rising sea levels in the future. Although this section is no longer strictly coastal, it has been included within the study area for the significance of the series of ports along the Dee and the continued risk from inundation outlined above.

Scheduled Ancient Monuments and Listed Buildings

- 3.10 The only Scheduled site within the study area is Flint Castle (PRN 100325, SAM FI 3), which is also listed Grade I. St. Mary's Church, Rhuddlan (PRN 102048) and Rhuddlan Bridge (PRN 102034) are both listed Grade II*, while St. Trillo's Chapel (PRN 100500), Rhos on Sea and Colwyn Bay Piers are listed Grade II.

SSSIs and Nature Reserves

- 3.11 Much of the coastal area is encompassed by three Sites of Special Scientific Interest (SSSI) (Fig. 2). The Llanddulas Beach SSSI extends for c. 1.5 km, encompassing the dunes between the HWM and the railway. The Gronant Dunes and Talacre Warren SSSI covers c. 5.5 km of coast between Prestatyn and Point of Ayr. The dunes within this area represent the only significant remnant of the once extensive dune system of the North Welsh coast. Adjoining this area, the Dee Estuary SSSI runs the length of the estuary between the HWM on the two shores, an area also designated as a National Nature Reserve.
- 3.12 At Talacre, the area north of Point of Ayr Colliery is managed as a nature reserve by the RSPB. A number of local Wildlife Sites exist along the coastal fringe at Point of Ayr, Flint, Oakenholt, Kelsterton and Connah's Quay (Fig. 2)

Management Plans

- 3.13 General coastal protection is managed by the Environment Agency and the new unitary authorities as well as by Regional Railways and several private companies. Catchment Management Plans have been produced by the Environment Agency for the River Dee and River Clwyd and a Shoreline Management Plan is being produced for Liverpool Bay, which encompasses the study area, and representations are being made to include archaeology as one of the main considerations.
- 3.14 The Dee Estuary Strategy (Jemmett 1996a) has produced a management plan which presents recommendations for the management and future development of both sides of the Dee Estuary. The results from the initial survey area between Point of Ayr and Mostyn were submitted along with information from the SMR for the remaining area to provide a basis for the chapter on the Historic Environment. This has been followed by an Agenda for Action (Jemmett 1996b), which identifies a list of major objectives to focus attention and target resources on the most urgent issues, one of which is the Historic Environment. At Point of Ayr, BHP Petroleum own a short section of the coast which is threatened by erosion. A Management Plan has been developed for the area, including an archaeological assessment by AC Archaeology.

4 DESK-BASED STUDY

- 4.1 The first stage of the survey project consisted of a more detailed desk-based study of all readily available documentary, cartographic and photographic sources than had been undertaken for the scoping survey. The study involved an examination of the County SMR and the resources of the National Monuments Record (NMR), Aberystwyth, the National Library of Wales, Aberystwyth, County Record Offices, Hawarden and Ruthin, and Mold Local Studies Library. The aerial photographic collections at CPAT and the NMR were also examined and CPAT also conducted its own programme of oblique aerial photography for the study area.
- 4.2 In general, the information held at Hawarden proved to be the most valuable, with a fairly extensive collection of historic maps providing considerable data relating to existing and former archaeological sites, as well as information on coastal change.

5 LIAISON WITH OTHER ORGANISATIONS

- 5.1 The following have all been contacted during the course of the study, although the response has been extremely variable:

BHP Petroleum
Clwyd County Council
Countryside Council for Wales
Dee Estuary Forum
Denbighshire County Council
English Nature
Flintshire County Council
Liverpool Bay Coastal Cell
National Rivers Authority/Environment Agency
North Wales Coastal Forum
North Wales Wildlife Trust
RSPB

- 5.2 In general it seems that the most successful liaison and the best opportunities for future cooperation have been provided by consultation with the Dee Estuary Forum and the Liverpool Bay Coastal Cell. The former was established in 1992 in response to Government proposals for the improved management of the coast. CPAT is now an active member of the Forum and it is hoped that a Dee Estuary Heritage Group will be established to promote the future management of the archaeological resource. The Coastal Cells, of which there are seven for Wales, were established by a Government directive with the intention of producing Shoreline Management Plans. Both groups have representatives from the major authorities, specialist groups and industry and as such present the ideal platform for exchanges of information and the development of an overall strategy for managing the archaeological resource.

6 ACKNOWLEDGEMENTS

- 6.1 Thanks are due to the staff at the following for their assistance during the desk based survey: County Record Office, Hawarden; County Record Office, Ruthin; Clwyd Local Studies Library, Mold; National Monuments Record, Aberystwyth; National Library of Wales, Aberystwyth. I would also like to thank the following for their kind cooperation and assistance: Morwenna Bolas, CCW; Sally Stevenson, BHP Petroleum; Alan Jemmett, Dee Estuary Forum; André Berry, Wrexham Maelor County Borough Council; Alex Emery, North Wales Wildlife Trust; Mostyn Docks; Fiona Gale, Denbighshire Archaeology Service; Wayne Cocroft, RCAHM(E).

7 FIELD SURVEY

Methods

- 7.1 The field survey was undertaken by one person systematically walking the areas of foreshore, coast edge and land edge. Archaeological features, coast types and erosion details were recorded directly onto a series of 1:10,000 maplets, with written descriptions being recorded onto standard CPAT site visit forms and coastal survey forms, with photography where appropriate in 35mm black and white negative and colour slide formats. The information from the record forms was subsequently entered into a database and integrated into the SMR. The whole coastline was surveyed with the exception of the following where access was not permitted: Point of Ayr Colliery; the industrial units occupying part of Mostyn Docks; Shotton Steelworks; Connah's Quay Power Station.
- 7.2 The coast was divided into segments identified as having individual characteristics and each length was recorded on a separate record form. The coast within the study area was eventually divided into 83 segments, each receiving a consecutive record number running from west to east. To allow a consecutive numbering sequence, the 10 segments which comprised the initial study area were renumbered according to their position within the overall coastal survey. The coast edge, land edge and foreshore types were recorded according to the various categories described below, each of which was assigned a code for entry into the database. During the initial study a coding system was

adopted which differed from that used in other areas of Wales. However, following consultation it was decided that the Gwynedd (GAT) coding system would become the standard, and this has been used throughout, including a re-classification of the initial area.

Coast Edge Type

- 1 Man-made wall
- 2 Man-made bank
- 3 Man-made mixed rubble dump
- 4 Man-made boulder dump
- 5 Man-made other
- 6 Mainly rock
- 7 Rock with drift cover
- 8 Rock to tide line with drift cover
- 9 Drift, boulder clay
- 10 Drift, sand/blown sand
- 11 Alluvial/marine mud
- 12 Other
- 13 Shingle Bank

- 7.3 Not all man-made coast edges were designed specifically for coast protection, particularly in the case of dumps of industrial waste which form the coast edge along parts of the Dee Estuary.
- 7.4 The majority of the coast edge identified (77.2 km) consisted of some form of man-made structure, either Sea Defence Walls or Boulder Dumps (32.85 km), Coast Protection Banks (38.15 km), or other dumps, such as spoil tips (6.2 km). The only natural coastal edge consisted of the shingle banks at Llanddulas (1.25 km) and Foryd (0.35 km), the cliffs at Penmaen Head (0.40 km) and the sand dunes along the coast from Prestatyn to Point of Ayr (5.25 km), although even here the dunes themselves had often been artificially stabilised.

Land Edge Type

- 1 Man-made structures
- 1a Military
- 2 Arable
- 3 Improved pasture
- 4 Scrub/heath/rough pasture
- 5 Coppice/woodland
- 6 Other

- 7.5 Only 10.30 km of the coastline land edge could be said to be mostly natural along the land edge, consisting of the dunes at Talacre Warren (7.45 km) and a shingle bank at Kinmel Bay and Llanddulas (2.85 km). In general, man-made structures and dumps either relating to industry, transport or leisure activities accounted for the majority of the land edge, including significant encroachment into the dunes.

Foreshore Type

- 1 Rock
- 2 Boulder
- 3 Shingle
- 4 Sand
- 5 Mud
- 6 Marsh
- 7 Mixed
- 8 Other

- 7.6 In general, the area could be divided into three types of foreshore: pebble/boulder with sand at low water, generally between Rhos on Sea and Abergele; a wide, mostly sandy beach along the coast between Abergele and Point of Ayr, and a combination of sand and mud along the Dee Estuary and River Clwyd. Locally, there were slight variations, but the underlying conclusion was that the width and composition of the foreshore gave no indication of significant erosion.

Erosion Class

1	Stable	No erosion, aggrading or man-made protection
2	Slight	Some soil exposure but well vegetated
3	Medium	Widespread soil exposure, intermittent slumping
4	Major	General soil exposure, frequent slumping, little vegetation
5	Severe	Widespread slumping, no vegetation

- 7.7 The identification of this category depended solely on a visual assessment of the present day coast edge. It was evident from documentary and cartographic sources that the coastline in this area has been the subject of considerable change, but this has largely been due to the influence of man, and generally falls outside the scope of this study.
- 7.8 As might be expected with such extensive sea defences and coastal protection works, the majority of the coast (67.2 km, 77%) was judged to be stable, with a further 7.75 km (9%) showing only slight erosion. Only two lengths of coast displayed signs of moderate erosion (11.65 km, 13%), one near Point of Ayr Lighthouse and the other at Mostyn Docks, while only 0.7 km (1%) was identified as under serious threat.

Archaeological survey

- 7.9 The archaeological element of the survey was conducted concurrently with the survey of coastal erosion. This involved visiting known sites identified from either the County SMR, the NMR, or during the desk-based study, and recording those and any new sites identified during the field visits. Only 46 sites were previously recorded on the SMR within the study area and a further 128 were identified during the survey, the majority of which were either post-medieval or modern.
- 7.10 Each site was located on the 1:10,000 project maplets and recorded on standard CPAT site visit forms. A summary is provided in the form of a gazetteer in Appendix 2.

8 ASSESSMENT OF COASTAL TYPE, EROSION AND CHANGE

- 8.1 The statistics for the different categories of coast edge type are presented in Table. 1, below.

Table 1. Coast edge types

Code	Type	Length (km)	%
1	Man-made wall	23.25	26.6
2	Man-made bank	38.15	43.7
3	Man-made mixed rubble dump	1.30	1.5
4	Man-made boulder dump	9.10	10.4
5	Man-made other	5.40	6.2
6	Mainly rock	0.25	0.3
7	Rock with drift cover	0.00	0.0
8	Rock to tide line with drift cover	0.00	0.0
9	Drift, boulder clay	0.70	0.8
10	Drift, sand/blown sand	5.80	6.7
11	Alluvial/marine mud	1.40	1.6
12	Other	0.00	0.0
13	Shingle bank	1.95	2.2

- 8.2 The present study has been largely concentrated on the stability of the coast edge and the likely impact of sea erosion on this and the immediate land edge. However, for the majority of the area (77.20 km, 88.4%) the coast edge has been formed by some form of man-made structure, either specifically for coastal protection, or else related to the use of the land edge for industry, tourism or infrastructure. The result is that the overwhelming majority of the coastal length remains stable, a fact which is highlighted by the statistics in Table. 2. This does not take account of the erosion potential of the intertidal zone, where the majority archaeological sites threatened by erosion are located (see 10.5 below).

Table 2. Erosion classes

Type	Length (km)	%
Stable	67.20	77
Slight	11.65	13
Medium	7.75	9
Major	0.70	1

Assessment of Erosion

- 8.3 As with the study by the Gwynedd Archaeological Trust, the recording of erosion has been descriptive and qualitative rather than quantitative, due to the lack of available information. For much of this area the historical evidence suggests that the coast edge has been advancing rather than retreating, due both to nature and land reclamation. During the Late Mesolithic period, at least for a time, it would appear that the coast edge was close to Nant Hall Road, Prestatyn, where extensive shell middens have been recorded, at a position which is now c.1 km from the coast. The draining of marshes and construction of sea defences along much of the coast length, and the protection afforded by the dunes at Gronant and Talacre Warren have resulted in a relatively stable coastline, as indicated by a comparison between the 1st edition OS survey of 1872 and the present day. However, although the extensive protection measures have largely controlled the erosion of the coast edge and backshore, they may have increased the erosion on the lower foreshore by restricting the supply of eroded sediment (Barne *et al.* 1996, 34).
- 8.4 The Dee Estuary has been subjected to considerable changes during the last 300 years, with significant alterations to the navigable course of the Dee, the disappearance of salt marshes along the coast and the canalization of the Dee upstream of Connah's Quay. These changes are documented by a series of maps of the estuary, including the 1684 survey by Grenville Collins, John Mackay's survey of 1732 and further surveys in 1840 and 1849. At present around 40% of the Estuary has so far been reclaimed (Jemmett 1996, 15).
- 8.5 These surveys, together with a comparative map (D/LA/97) detailing changes in the area around Talacre Harbour in Hawarden Record Office, also illustrate the changes at Point of Ayr, which is currently the only area where coastal erosion may be considered a significant problem. It is clear that the high dunes of Talacre Warren were formerly more extensive, and have retreated significantly during the last 200 years. A significant marker is Point of Ayr Lighthouse, which was constructed in 1776. A print dated 1815 shows the lighthouse amongst high dunes, whereas today it stands on the foreshore at least 70m in front of the dunes.
- Long term erosion cycles and changing sea-levels**
- 8.6 From the end of the last glaciation (c. 10000BP) to the early Neolithic (c. 5700BP) sea-levels rose steadily in Britain (Tooley 1974), although the local effects were often complicated, not least as a result of isostatic recovery. Thus, low-lying coastal margins have been submerged, as evidenced by the peat beds and prehistoric finds on the beach at Rhyl and a submerged forest recorded by Thomas Pennant near Abergele (Manley 1989, 181). Since the Neolithic period sea-levels are thought to have fluctuated within 5m of present day levels (Tooley 1974).
- 8.7 The affect of successive marine transgressions on the area around the mouth of the River Clwyd has been examined by Manley (Manley 1981), based largely on the results of borehole data and evidence from the work of Tooley who had identified ten transgressions between c. 7320 b.c. and a.d. 1133 in south-west Lancashire (Tooley 1978). During the Mesolithic period major transgressions may have made Rhuddlan and Abergele coastal locations, with the low-lying area between Rhyl and Prestatyn transgressed. Areas of elevated boulder clay might have remained above sea level and been occupied as the most seaward habitable land. This may account for the distribution of shell beds and Mesolithic finds reported around Rhyl. The more major transgressions may have covered the elevated boulder clay, although during periods of regression it is possible that low lying areas may have been settled before being inundated by later transgressions. It is clear that during this period vast tracts of coastal plain were inundated, although the highest absolute sea levels probably occurred during the Roman/post-Roman period.
- 8.8 Long term sea-level change is a function of both global changes in sea-level, estimated to be rising by 1.5-2mm a year, and local change in land levels due to isostatic recovery. Absolute sea-levels in this area are estimated to be rising by up to 2mm a year (Barne *et al.* 1996, 37).

- 8.9 The generally low-lying nature of the Clwyd coastal strip could mean that significant areas may be prone to inundation. The likely effects on the archaeological resource are difficult to predict, but few of the sites identified lie above the 5m contour, and an area extending inland at least as far as the A548 could be at risk from future rises in absolute sea level.
- 8.10 During normal conditions, wave erosion is not seen to be a significant problem within the study area. However, even during normal high tides there is an erosion threat at Point of Ayr, which becomes serious during exceptional tides and storms. The effects of this combination of factors was amply illustrated in 1990 when the sea defences were breached at Towyn and Ffynnongroyw and overtopped at Prestatyn, leading to extensive flooding. This type of event is most likely when high tides coincide with a storm surge (Barne *et al.* 1996, 37), but has serious implications when considered in the context of rising sea-levels.
- 8.11 At present the flood defences are largely the responsibility of the Environment Agency, who maintain embankments within the area. However, significant coastal protection works are also maintained privately by BHP Petroleum, RJB Mining, Regional Railways, Mostyn Docks Ltd, British Steel, Warwick International and Powergen (Jemmett 1996, 16).

9 ASSESSMENT OF ARCHAEOLOGY

General summary

- 9.1 Table 3 gives a detailed breakdown of the sites by period:

Table 3. Sites by period

	Known sites	New sites	TOTAL
Prehistoric	10	-	10
Roman	8	-	8
Medieval	7	1	8
Post medieval	10	59	69
Modern	11	69	80
Undated	2	-	2
Non antiquity	1	-	1
	49	129	178

- 9.2 A total of 129 new sites have been added to the SMR, largely resulting from the desk-based study. Several of these sites have no surviving trace, but are still recorded because of their significance or likely impact for Development Control. All but one of the new sites are of post-medieval or modern date, of which 48 relate to industrial or port functions.
- 9.3 Each site has been evaluated to give an indication of its potential significance according to the following classification:
- A** Sites of national importance which meet the criteria for scheduling or listing and require appropriate recording and management.
 - B** Sites of regional importance which do not meet the criteria for scheduling or listing, but which are nevertheless of particular importance and merit further recording and management.
 - C** Sites of local importance which may merit further investigation and recording if threatened.
 - D** Minor and damaged sites for which rapid recording is considered sufficient, or sites for which the information provided by the desk-top assessment and field survey is considered sufficient.
 - E** Sites whose importance could not be fully determined.
- 9.4 It should be noted that the inclusion of a site within one of the lesser categories is not an indication of lack of importance, and consideration should be given to such sites regarding their future preservation and management.
- 9.5 Table 4 gives a breakdown of sites within each category, indicating the respective threats.

Table 4: Archaeological sites by category and threat

	Slight erosion	Moderate erosion	Major erosion	Development	None	Unknown	Find only	Destroyed	TOTAL
A	1	-	-	2	4	-	-	-	7
B	-	2	4	12	4	-	-	-	22
C	3	17	1	17	1	-	-	-	39
D	6	4	-	9	35	13	17	23	107
E	-	-	-	-	-	3	-	-	3
	10	23	5	40	44	16	17	23	178

9.6 Of those sites which to some extent remain extant (133), the only sites identified as being under threat from coastal erosion were those located in the intertidal zone, reflecting the overall stability of the coast edge. Of these 6 are potentially under serious threat, all lying on the beach at Point of Ayr, including the lighthouse (PRN 26551), a slipway (PRN 26552), three pillboxes (PRNs 26574-6) and anti-glider defence poles (PRN 26573). Eight visible wreck sites have been identified, 7 of which are under a moderate threat from erosion: three within Foryd Harbour (PRNs 34274-6); three within Mostyn Docks (PRNs 26577, 34284-5); one at Shotton Steelworks (PRN 34266). Overall, 38 sites are considered to be under threat from sea erosion to some degree. The gazetteer in Appendix 2 lists all new and known sites, together with the perceived threat and suggested responses.

9.7 The threat from coastal erosion is perhaps not the main problem facing those archaeological sites within the study area. The development of the coast for tourism, leisure and industry poses a significant threat directly affecting 36 sites at present, and it has already resulted in the loss of several major industrial sites without any archaeological response. This is of particular relevance to the Dee Estuary where the majority of the archaeology is related to either port, industrial, military or coastal defence features. In general, these sites are not thought to be at risk from erosion, but are threatened more by industrial expansion and development of the local infrastructure. Recent proposals to expand Mostyn Docks are likely to affect the surviving archaeology, and this area and other sites identified during this study warrant close monitoring in relation to development control to avoid further losses.

9.8 The archaeological resource within the study area can be summarised according to the following categories:

Finds

9.9 The field survey revealed no new beach finds, although the SMR had already recorded 7 finds within the intertidal zone. Several of these may be regarded as chance finds of little general significance, but of possible greater importance are those around Rhyl where beach finds of Prehistoric and Roman date may indicate a considerable change in coastline (although the SMR only records four find spots). Over 70 prehistoric objects have reputedly been recovered from peat beds and estuarine/marine clays on the Rhyl foreshore (Manley 1989, 185), including an antler mattock (PRN 33099) now dated to 6560 BP \pm 80 (Bonsall and Smith 1990). However, there is no physical evidence of occupation associated with the finds to confirm this assumption. Other than beach finds a further 8 finds have been recorded within the study area, largely discovered during building developments.

Prehistoric

9.10 The only evidence for Prehistoric activity comes from the beach finds described above, with no new sites or finds identified during the survey.

Roman

9.11 Evidence for Roman occupation along the coastal zone is largely confined to the area immediately east of Flint, with the exception of a number of coins found at Rhyl. The Pentre Farm site at Flint (PRN 100133) is presumed to be associated with the lead trade and consists of a 2nd-century timber villa, later rebuilt in stone by the mid 3rd century (O'Leary 1989).

Medieval

9.12 Only eight medieval sites have been identified within the study area. Flint Castle (PRN 100325), was constructed in 1272 by Edward I, and is protected as a Scheduled Ancient Monument. St.

Trillo's Chapel (PRN 100500) at Rhos on Sea is a small single cell structure constructed of boulders, which remains undated with suggestions ranging from the 6th to 16th centuries. Rhos on Sea has two substantial stone and timber fishing weirs (PRNs 100501 and 34278), both of which may be associated with a monastic site (PRN 100503) recorded in the area, the location of which is now lost. Fishing weirs, or *goradau*, appear to be a common feature of the north Gwynedd coast, but these form the eastern limit of their distribution (Jones 1983). At Rhuddlan, the Bridge (PRN 102034) forms the upstream limit of the survey, while St. Mary's Church (PRN 102048) lies overlooking the river on the north bank. The only medieval find recorded is that of a groat on the beach at Talacre (PRN 103002).

Post-Medieval and Modern (from 1536 to present)

- 9.13 The vast majority of both known and new sites (138 sites, representing 83.6%) were of post-medieval date. These included industrial sites, port features and coastal protection features which are described separately below.

Industrial sites

- 9.13.1 The most significant industrial sites are related to the extractive industries of the coastal hinterland, namely lead and coal. The lead works at Llannerch-y-mor, Bagillt and Flint all had associated quay facilities. The collieries at Point of Ayr (PRN 26558), Mostyn (PRN 106098), Hanmer (PRN 34211) and Bettisfield (PRN 103981), together with other nearby shafts were similarly linked to quays and also to the Darwen and Mostyn Ironworks (PRN 26567). Alkali works developed at Prestatyn (PRN 26571) and Pentre Farm, Flint (PRN 103985), while two foundries (PRNs 103601, 103603) were located along the west bank of the Clwyd near Rhuddlan, along with a tannery (PRN 103605).

Ports

- 9.13.2 Historically, the study area contained a significant number of important ports and quays, mostly located along the Dee Estuary. Along the Irish Sea coast, the main port was Foryd (PRN 34277) at the mouth of the Clwyd, although vessels may well have simply been beached at any point along the coast. Foryd is still used by small fishing and pleasure craft. It has been assumed that there was a port on the Prestatyn Gutter during the Roman period (Jones 1980, 99-101), and certainly the inlet was used as such during the later post-medieval period and into the 19th century. A Roman port has also been postulated at Pentre Farm, Flint, in association with lead production (O'Leary 1989). A medieval harbour has been suggested at Flint to supply the castle during its construction, and subsequently provision both the castle and town, although no archaeological evidence for such has yet been uncovered. There are also documentary references to a quay at Rhuddlan during the early 19th century, although no trace remains visible.
- 9.13.3 A number of important ports and quays developed along the Dee Estuary, particularly during the 18th and 19th centuries, often directly associated with local industry. Today only Mostyn Docks, which was constructed as part of the Darwen and Mostyn Ironworks, remains in use as a major port, although both Point of Ayr Colliery (formerly Talacre Harbour) and Shotton Steelworks retain their own quays. The recently approved expansion of Mostyn Docks may pose a significant threat to the surviving archaeology, although as yet the likely impact remains unknown. Virtually every inlet along the Dee seems to have been utilised as a quay although most are now silted and disused. The local importance of the lead industry resulted in quays developing at Llannerch-y-mor (PRN 34212), Greenfield (PRN 34216), Bagillt (PRN 104002), Flint (PRN 34269) and Bettisfield (PRN 34270), which also served the colliery. The development of industry on reclaimed salt marshes higher up the Dee led to the construction of Connah's Quay, Queensferry, Aston Quay and Sandycroft Quay, together with numerous smaller jetties and landing stages serving specific industries. Of these, only Connah's Quay and Sandycroft survive to any extent, with only the former still in use.
- 9.13.4 Until the later 19th century the lowest bridging point across the Dee was at Chester, and ferries provided a service lower down at Higher King's Ferry and Queensferry (formerly Lower King's Ferry).
- 9.13.5 Other maritime features include the Point of Ayr Lighthouse (PRN 26551) and lifeboat slipway (PRN 26552), and lifeboat stations at Gronant (PRN 26550) and Llanddulas (PRN 34207).
- 9.13.6 A total of 9 wreck sites have been recorded within the study area, 8 of which are still visible and probably all of late 19th- and early 20th-century coastal vessels or barges.

Military Sites

- 9.13.7 The Dee Estuary from Point of Ayr to Queensferry was protected at strategic points along the south-west bank by a series of World War Two pillboxes. These fall into three groups, at Point of Ayr, Mostyn Docks and the Dee between Connah's Quay and Sandycroft. In addition, the beach at Point of Ayr seems to have been used as a training ground and has anti-glider defence poles along the beach. During the First World War a substantial gun cotton factory (PRN 34291) was established near Queensferry, continuing in use during World War Two. A second munitions factory was established nearby at Sandycroft (PRN 34299).

Coastal Protection and Reclamation

- 9.13.8 The reclamation of areas of former salt marsh and their subsequent protection from the sea has greatly affected the nature of much of the coastline. This is particularly true around Abergele and Towyn, Prestatyn and the whole of the former Dee Estuary upstream of Connah's Quay. Many of the banks associated with these works still survive, in some cases continuing their function of coastal defence.

Miscellaneous

- 9.13.9 The Dee Estuary has 19 recorded boundary markers associated with the holdings of the River Dee Company during the late 18th century, of which only 3 now survive. A further two boundary stones were identified at Connah's Quay along the Community boundary.

Other coastal developments affecting archaeology

- 9.14 Increasingly, the coastal area is being developed as a leisure and tourist resource, as well as a location for industry. In the case of the former, virtually the entire land strip between Prestatyn and Point of Ayr has been occupied by leisure parks, golf courses and caravan sites, as has much of the area around Towyn and Colwyn Bay, clearly illustrating the impact on the environment in general. A general scarcity of archaeological sites has meant, however, that the effect on this resource has been less than might be expected. Along the Dee Estuary industry has been the major development, which poses a serious threat to the archaeological resource, and in particular to industrial and port sites.
- 9.15 The safeguarding of the archaeological resource from development threats is dealt with under Development Control procedures, but generally this is the only protection afforded to coastal sites. Two management strategies have been developed which relate to this area and include archaeological components. The main document has been prepared by the Dee Estuary Forum, and includes a chapter on the Historic Environment, which has taken limited account of the archaeological resource. A smaller scale report has been prepared by BHP Petroleum to manage their holdings at Point of Ayr and as part of that an assessment of the archaeology was commissioned, specifically in relation to the military sites. At present, although the Local Plans for the former Delyn and Rhuddlan Boroughs as well as the Clwyd County Structure Plan do take account of the archaeology, this focuses on threats from development rather than from erosion. The new unitary authorities have all adopted the relevant sections of existing plans inherited from their predecessors but will ultimately produce new documents for their own areas.

10 RECOMMENDATIONS**General**

- 10.1 The survey is an important step in furthering the protection of the archaeological resource within the coastal margins. Although the nature of the study is that of a rapid survey, it has been successful in identifying new sites and recording the nature of the coastline with an assessment of the perceived threat to the archaeology from erosion and other sources. Although the majority of the study area has a relatively stable coast edge, largely due to man-made defences and high dunes, localised areas are at particular risk.
- 10.2 Continued liaison with other organisations will hopefully help to promote a wider acceptance and understanding of the archaeological resource and enable mitigation and management strategies to be developed where appropriate. Involvement with the local Coastal Cell covering Liverpool Bay may prove significant in this respect. The seven Coastal Cells in Wales are responsible for producing Shoreline Management Plans to be used by landowners, local authorities and conservation bodies.

- 10.3 The Dee Estuary Forum has been responsible for producing a management strategy for the area (Jemmett 1996a), which includes a chapter on the Historic Environment. The Trust has been involved in the drafting of this chapter, although the timing of the report was such that only the results from the initial study were able to be included. One of the recommendations of that report, which was include in the subsequent Agenda for Action (Jemmett 1996b), was for an audit of the historic environment as a basis for developing a strategy for protection, conservation and management. The present study could be seen as a first stage in this process.
- 10.4 As a result of the desk-top study in particular it is clear that there is a wealth of information relating to a wider area along the coastal strip which remains relatively untapped. In particular, the reclamation of the Dee Estuary has left what might be regarded as a fossilised coastline, further study of which is likely to lead to significant additions to the SMR. Several of the documents examined as part of the current survey also show details of features associated with former coastal activities extending beyond the study area, as for example at Mostyn, where Estate maps show salt houses, wharves and warehouses. The rapid development of Deeside has already resulted in the loss of many archaeological sites, primarily post-medieval and industrial, largely through a bias of the SMR towards earlier monuments. Although this imbalance is continually being redressed, a rapid, largely desk-based survey would do much to afford some measure of protection to those sites which remain and enable a strategy to be developed for the management of the archaeological resource within the area as a whole.

Site specific

- 10.5 A summary of the recommendations for each site is provided in Appendix 4.

Preservation

- 10.6 The only sites currently afforded any statutory protection are Flint Castle (PRN 100325), St. Trillo's Chapel (PRN 100500), Rhuddlan Church (PRN 102048), Rhuddlan Bridge (PRN 102034), Colwyn Bay Pier (PRN 25354), all of which merit continued preservation.
- 10.7 Bettisfield Colliery Engine House (PRN 103981) and associated remains are considered worthy of statutory preservation.
- 10.8 The two fishing weirs at Rhos on Sea (PRNs 100501 and 34278) are similarly worthy of preservation although since they lie in the intertidal zone, they fall outside the limits for Scheduled Monument status.
- 10.9 Other sites considered worthy of preservation include the Second World War pillboxes at Mostyn Docks (PRNs 34286 and 34287), Hawarden Bridge (PRNs 34257 and 34258) and Sandycroft (PRN 34252).

Detailed Survey and Recording

- 10.10 The Llandrillo-yn-Rhos Fishing Weir (PRN 34278) merits further recording in the form of a detailed EDM survey (the Rhos Fynach weir has been already surveyed by GAT, Flook 1995) and possible dating of some timbers.
- 10.11 The Munitions factories at Queensferry (PRN 34291) and Sandycroft (PRN 34299) should be properly assessed and recorded to determine the extent of survival and likely importance of what was one of the largest munitions manufacturing complexes in Britain.
- 10.12 The military defence sites should be recorded in greater detail than the rapid survey allowed.

Monitoring

- 10.13 Although many of the sites have been identified as under threat from development and therefore require monitoring as part of Development Control, the various features associated with quays and ports, particularly along the Dee Estuary would benefit from a detailed assessment of their condition and threat with a view to developing management plans where appropriate. These features are of considerable historic importance to the area and several are worthy of more detailed recording should any threat develop. Of particular interest are the remains of the quays at Mostyn, Sandycroft, Aston, Flint, Bettisfield, Bagillt.

11 REFERENCES

- Barne, J.H., Robson, C.F., Kaznowska, S.S., Doody, J.P., & Davidson, N.C., (eds) 1996. *Coasts and Seas of the United Kingdom. Region 13, Northern Irish Sea: Colwyn Bay to Stranraer, including the Isle of Man*, Peterborough: Joint Nature Conservation Committee.
- Bonsall, C., & Smith, C., 1990 Bone and Antler Technology in the British Late Upper Paleolithic and Mesolithic: The Impact of Accelerator Dating, in P.M. Vermeersch & P. Van Peer (eds) 1990 *Contributions to the Mesolithic in Europe, Papers presented at the fourth international symposium The Mesolithic in Europe, Leuven 1990*. Leuven: Leuven University Press.
- Clwyd County Council, 1990 *Clwyd County Council Structure Plan*, Clwyd County Council.
- Delyn Borough Council, 1990 *Delyn Borough Local Plan*, Delyn Borough Council.
- Ebbs, C., 1993 *The Milwr Tunnel. Bagillt to Loggerheads 1897-1987*.
- Flook, R., 1995 *Rhos on Sea Coastal Protection Watching Briefs*, Gwynedd Archaeological Trust Report No. 152.
- Jemmett, A.W.L., 1996a *The Dee Estuary Strategy Final Report: January 1996. A Management Strategy to Safeguard the Future of the Dee Estuary*. Birkenhead: Dee Estuary Strategy.
- Jemmett, A.W.L., 1996b *Agenda for Action*. Birkenhead: Dee Estuary Strategy.
- Jones, C., 1983 Walls in the sea: the goradau of the Menai Straits, *International Journal of Nautical Archaeology and Underwater Exploration* 12.1, 27-40.
- Jones G.D.B., 1980 Archaeology and Coastal Change in the North-west, in F.H. Thompson (ed.) *Archaeology and Coastal Change*, Soc. of Antiq. occ. paper, new series, 1, 87-102.
- Jones, N.W., 1996 *Clwyd Coastal Survey 1995/6. Prestatyn to Mostyn*, CPAT Report No. 162.
- Levy, S.I., (undated) *Modern Explosives*. London: Sir Isaac Pitman & Sons Ltd.
- Lloyd, G., 1968 The Canalization of the River Dee in 1737, *Flintshire Historical Society Publication* 23, 35-41
- Lowery, B., (ed.) 1995 *20th Century Defences in Britain. An introductory guide*, CBA Practical Handbook in Archaeology No. 12.
- Manley, J., 1981 Rhuddlan and Coastal Evolution, *J. Landscape History*, 3, 1-15.
- Manley, J., 1989 Rhyl and Coastal Evolution, *Flint Historical Soc. J.* 32, 181-9.
- Mostyn History Preservation Society (undated) *Mostyn Ironworks 1800-1964*, *Archive* 2, 2-14.
- Neaverson, E., 1947 Coastal changes around Liverpool Bay since the Ice Age, *Proc. Liverpool Geological Soc.* 19, part IV 1946-7.
- O'Leary, T.J., 1989 *Pentre Farm, Flint 1976-81. An official building in the Roman lead mining district*. BAR British Series 207.
- Owen, W.G., 1994 *Glascoed to Rhyl Replacement Main at Rhuddlan, Clwyd*, CPAT Report S4.
- Richards, P.S., 1972 The Hawarden Bridge Shotton, Chester, Iron and Steelworks of Messrs John Summers and Co., *Flintshire Historical Soc. J.* 25, 103-123.
- Rhuddlan Borough Council, 1988 *Rhuddlan Borough Local Plan*, Rhuddlan Borough Council.
- Smith, G., 1995 *Coastal Erosion Survey. Aberdaron Bay to Great Orme*, GAT Report No. 79.
- Tooley, M.J., 1974 Sea-level changes during the last 9000 years in north-west England, *Geographical Journal* 140, 18-42.
- Tooley, M.J., 1978 *Sea-level Changes: North-west England during the Flandrian Stage*. Oxford.
- Ward, S., 1996 The Course of the River Dee at Chester, in P. Carrington (ed.) 1996 *Where Deva Spreads Her Wizard Stream: Trade and the port of Chester, Papers from a seminar held at Chester, Nov. 1995*. Chester: Chester City Council.
- Wills, H., 1985 *Pillboxes. A study of UK defences 1946*.

11.2 Ordnance Survey 1st and 2nd Editions

Denbighshire 1st Edition

1.15
2.13
3.3, 3.4
4.5, 4.6, 4.7, 4.8

Flintshire 1st Edition

1.10, 1.11, 1.12, 1.13, 1.14
2.3, 2.5, 2.6, 2.7, 2.11, 2.16
6.1, 6.2, 6.11, 6.15, 6.16
10.2, 10.5, 10.6, 10.10, 10.11, 10.12, 10.15, 10.16
14.4
15.1, 15.2, 15.5, 15.6

Denbighshire 2nd Edition

1.15
2.13, 2.14
3.3, 3.4, 3.8
4.5, 4.6, 4.7, 4.8

Flintshire 2nd Edition

1.8, 1.10, 1.11, 1.12, 1.13, 1.14
2.2, 2.3, 2.5, 2.6, 2.7, 2.11, 2.12, 2.16
6.1, 6.2, 6.6, 6.11, 6.15, 6.16
9.4
10.1, 10.2, 10.5, 10.6, 10.10, 10.11, 10.12, 10.15, 10.16
14.4
15.1, 15.2, 15.5, 15.6

KEY TO MAPS

Coast units

(4) 2/stable - Coast record No 4 / Coastal edge = Man-made bank/
Erosion = stable

Archaeology

+ Find spot

Δ Prehistoric

▽ Roman

◇ Medieval

* Post-medieval

⊗ Modern

● Industrial

□ Military

Transport

✦ Wrecks

102005 SMR existing record

34256 New record

— • — Limit of survey area

12 Field Survey Results

Record no 1	RHOS ON SEA		Map No 1
Grid References	SH832814-SH842812	Coastlength 1.10	Direction N
Erosion threat	Stable	Coast edge 4	Facing
GLCS Nos	6403, 6405, 6410, 6710, 6970		

Coastal Description

The seafront at Rhos-on-Sea Marine Drive has recently been given new sea defences along the entire length, composed of a substantial dump of large boulders in front of the existing sea wall. The foreshore is largely composed of rocks and pebbles with a narrow stretch of sand at the LWM. The landedge is entirely man-made with Marine Drive along the seafront and housing development behind.

Archaeology

St. Trillo's Chapel (PRN 100500) is a single cell listed building constructed of boulders over a spring. The chapel remains undated with suggestions ranging from 6th-16th centuries.

Record no 2	RHOS ON SEA		Map No 1
Grid References	SH843812-SH843808	Coastlength 0.35	Direction ENE
Erosion threat	Stable	Coast edge 4	Facing
GLCS Nos	6970		

Coastal Description

Rhos-on-Sea seafront between St.Trillo's Chapel and the former pier site is protected by new sea defences, continuing the boulder dump in front of the existing sea wall. The foreshore is largely composed of rocks and pebbles with a narrow stretch of sand at the LWM. The landedge is entirely man-made with Marine Drive along the seafront and housing development behind.

Archaeology

On the foreshore lies the Rhos Fynach Fishing Weir (PRN 100501). The weir survives as a raised bank of closely set and compacted rounded stones with alignments of timbers set 0.5 to 0.75m apart. The weir is an uneven A-shape extending 425m from HWM. Following examination of the timbers it is now thought that the most likely date of construction is between 1450 and 1670 AD. (Flook 1995, 3-4). The weir is under constant threat of further erosion, lying as it does between the High and Low Water Marks.

Although the pier (PRN 34200) has been demolished, the abutment remains along the seafront, consisting of a stone wall with slots for timber and small adjacent tower. There are documentary references to a wreck, the Rhosneigr (PRN 34201), lying close to the pier after running aground in July 1908. (Williams 1956, 67).

Record no 3 RHOS ON SEA HARBOUR

Map No 1

Grid References SH843808-SH843805

Coastlength 0.30

Direction E

Erosion threat Stable

Coast edge 1

Facing

GLCS Nos 6701, 6965, 6966

Coastal Description

A harbour has recently been created, formed by a large boulder dump breakwater c. 150m from HWM. This protects the area behind which is lined by the old sea wall with the Promenade behind.

Archaeology

There are documentary references to a Monastery (PRN 100503) at Llandrillo-yn-Rhos, possibly located near the Rhos Abbey Hotel. Several finds have come to light close to the hotel including a possible Neolithic chisel (PRN 100506) and Roman coins (PRN 100502).

Record no 4 RHOS ON SEA PROMENADE

Map No 1

Grid References SH843805-SH847796

Coastlength 1.10

Direction ENE

Erosion threat Stable

Coast edge 1

Facing

GLCS Nos 6701

Coastal Description

A sea wall runs the length of the Promenade with a series of groynes along the beach. The foreshore is mainly sand with some pebbles and shingle in front of the sea wall. In places the sea wall has recently been protected further by a dump of boulders.

Archaeology

A fishing weir (PRN 34278) lies on the beach, extending for c. 250m to the LWM. The weir is a rough horseshoe shape, 180m across, composed of a bank of compacted rounded stones up to 12m wide, with some timber posts visible. Although the form differs from the Rhos Fynach Weir, the details of construction are very similar. At low water a shallow lagoon forms behind the weir.

Finds include a Neolithic Axe (PRN 100505), and a Roman brooch (PRN 106447).

Record no 5 COLWYN BAY

Map No 1

Grid References SH847796-SH877787

Coastlength 3.10

Direction NNE

Erosion threat Stable

Coast edge 1

Facing

GLCS Nos 6860, 6953, 6955, 6960

Coastal Description

Colwyn Bay Promenade is fronted by a sea wall with intermitant boulder dumps in front, continuing the sea defences from Rhos-on-Sea. The foreshore is lagely sand, with some pebbles against the sea wall. The railway embankment rises behind the promenade, with the A55 expressway alongside for part of the way.

Archaeology

The Victorian pier (PRN 25354), which is Listed Grade II 12/A/66(3) is largely closed to the public due to the deteriorating condition of some timbers. A Neolithic axe (PRN 100457) was found on the beach.

Record no 6	PENMAENRHOS		Map No 1
Grid References	SH877787-SH880788	Coastlength 0.40	Direction N
Erosion threat	Stable	Coast edge 4	Facing
GLCS Nos	6950		

Coastal Description

The coast edge is formed by a dump of large boulders, deposited during the construction of the new A55 expressway, which lies immediately inland. The foreshore is pebble on the higher part of the beach and sand nearer the LWM.

Archaeology

At the eastern end of this section lie the remains of a timber jetty (PRN 34203), comprised of paired posts extending the width of the foreshore, probably associated with the former quarry (PRN 34204).

Record no 7	PENMAEN HEAD		Map No 1
Grid References	SH880788-SH883787	Coastlength 0.25	Direction NE
Erosion threat	Slight	Coast edge 6	Facing
GLCS Nos	6947		

Coastal Description

This short section of coast is formed by the limestone cliffs of the Penmaenrhos headland. The foreshore is partly a wavecut platform and partly rock eroded from the cliffs, which are still eroding.

The new A55 expressway has cut through the end of the headland forming the landedge.

Archaeology

Penmaenrhos Quarry (PRN 34204) has been almost completely destroyed during the construction of the A55.

Record no 8	LLANDDULAS		Map No 1/2
Grid References	SH883787-SH897785	Coastlength 1.55	Direction N
Erosion threat	Stable	Coast edge 5	Facing
GLCS Nos	6945		

Coastal Description

The coast edge is formed by man-made defences consisting of a dump of large interlocking concrete 'skittles'. The foreshore is largely rock and pebble, with some sand along the LWM.

Archaeology

Two timber jetties extend beyond the LWM associated with the nearby Raynes Quarry (PRN 34205) and Lllysfaen Quarry (PRN 34206).

Record no 9	LLANDDULAS		Map No 2
Grid References	SH897785-SH900786	Coastlength 0.30	Direction N
Erosion threat	Stable	Coast edge 4	Facing
GLCS Nos	6862		

Coastal Description

A boulder dump forms the coast edge, behind which lie boulder clay and drift cliffs with the railway along the top. The foreshore is rock and pebble near the HWM with sand lower down the beach.

Archaeology

No archaeological sites were noted in this section.

Record no 10	LLANDDULAS		Map No 2
Grid References	SH900786-SH902786	Coastlength 0.15	Direction N
Erosion threat	Slight	Coast edge 4	Facing
GLCS Nos	6936		

Coastal Description

The coast edge is formed by a slight boulder dump, behind which the boulder clay cliffs show some recent erosion. The foreshore is rock and pebble near the HWM with sand lower down the beach.

Archaeology

The remains of a timber jetty (PRN 34279) lie on the foreshore, composed of paired timber posts. The line of a former tramway (PRN 34280) leads to the jetty from Llysfaen Quarry. Both appear on the OS 1st ed. 1875.

Record no 11	LLANDDULAS		Map No 2
Grid References	SH902786-SH912787	Coastlength 1.00	Direction N
Erosion threat	Stable	Coast edge 4	Facing
GLCS Nos	6935		

Coastal Description

A recent dump of large boulders forms a new coastal protection, behind which is a car parking area below the railway embankment. The foreshore is rock and pebble near the HWM with sand lower down the beach.

Archaeology

The former Lifeboat House (PRN 34207) survives, although now converted to a dwelling.

Record no 12 LLANDDULAS**Grid References** SH912787-SH918783**Erosion threat** Moderate**GLCS Nos** 6920**Coastlength** 0.70**Coast edge** 13**Map No** 2**Direction** NE
Facing**Coastal Description**

The coast edge is formed by a pebble/shingle bank. The foreshore is pebble near the HWM with sand lower down the beach. Behind the shingle bank lies a rough track with a caravan site alongside.

Archaeology

No archaeological sites were identified in this section.

Record no 13 LLANDDULAS**Grid References** SH918783-SH926782**Erosion threat** Stable**GLCS Nos** 6910**Coastlength** 0.80**Coast edge** 2/4**Map No** 2**Direction** N
Facing**Coastal Description**

The coast edge is formed by a concrete block revetted bank with an additional boulder dump currently being added. A landfill site lies between this and the railway. The foreshore is mostly sand with some shingle.

Archaeology

No archaeological sites were identified in this section.

Record no 14 LLANDDULAS**Grid References** SH926782-SH929783**Erosion threat** Stable**GLCS Nos** 7220**Coastlength** 0.30**Coast edge** 4**Map No** 2**Direction** N
Facing**Coastal Description**

A new boulder dump forms the coast edge, with a rough track along the landward side, behind which an embankment rises to the railway and A55.

Archaeology

No archaeological sites were identified along this section.

Record no 15 LLANDDULAS**Grid References** SH929783-SH941786**Erosion threat** Slight**GLCS Nos** 7770**Coastlength** 1.25**Coast edge** 13**Map No** 2**Direction** NNW
Facing**Coastal Description**

The coast edge is formed by a pebble/shingle bank with a sandy foreshore. A new sea wall has been constructed in front of the caravan site which lies alongside the railway. The beach and shingle bank are protected as the Llanddulas Beach SSSI, designated for the botanical interest as the best example of a vegetated shingle bank in Clwyd.

Archaeology

No archaeological sites were identified along this section.

Record no 16 ABERGELE**Grid References** SH941786-SH956792**Erosion threat** Stable**GLCS Nos** 7770, 7866**Coastlength** 1.60**Coast edge** 1**Map No** 2/3**Direction** NW
Facing**Coastal Description**

The coast edge is formed by the new sea wall with a shingle bank in front and sandy foreshore. Behind the sea wall lies the Promenade and railway. Although the coast edge is now stable, there remains the threat of inundation and erosion during extreme conditions.

Archaeology

The only archaeology consists of a prehistoric anvil stone (PRN 100485) found on the beach.

Record no 17 TOWYN**Grid References** SH956792-SH963795**Erosion threat** Stable**GLCS Nos** 7866**Coastlength** 0.70**Coast edge** 4**Map No** 3**Direction** NW
Facing**Coastal Description**

The coast edge is formed by a new boulder dump alongside the railway, with holiday camps along the land edge. The foreshore is mostly sand with shingle along the HWM. Although the coast edge is now stable, there remains the threat of inundation and erosion during extreme conditions.

Archaeology

No archaeological sites were identified along this section.

Record no 18	TOWYN		Map No 3
Grid References	SH963795-SH966796	Coastlength 0.25	Direction NW
Erosion threat	Stable	Coast edge 1	Facing
GLCS Nos	7866		

Coastal Description

The old sea wall survives as the coast edge, with a shingle bank between this and the railway, which has holiday camps to the S. The beach is mostly sand, with shingle at the HWM. Although the coast edge is now stable, there remains the threat of inundation and erosion during extreme conditions.

Archaeology

No archaeological sites were identified along this section.

Record no 19	TOWYN		Map No 3
Grid References	SH966796-SH977802	Coastlength 1.10	Direction NW
Erosion threat	Stable	Coast edge 4	Facing
GLCS Nos	7868		

Coastal Description

A new boulder dump forms the coast edge, behind which is a narrow grassy strip alongside the railway which has holiday camps to the S. The beach is mostly sand, with shingle at the HWM. Although the coast edge is now stable, there remains the threat of inundation and erosion during extreme conditions.

Archaeology

No archaeological sites were identified along this section.

Record no 20	TOWYN		Map No 3
Grid References	SH977802-SH979803	Coastlength 0.30	Direction NW
Erosion threat	Stable	Coast edge 1	Facing
GLCS Nos	7766		

Coastal Description

A concrete sea wall forms the coast edge. The foreshore is mostly sand, with shingle at the HWM. Although the coast edge is now stable, there remains the threat of inundation and erosion during extreme conditions. The land edge is occupied by a holiday camp.

Archaeology

No archaeological sites were identified along this section.

Record no 21	KINMEL BAY		Map No 3
Grid References	SH979803-SH994811	Coastlength 1.60	Direction NW
Erosion threat	Stable	Coast edge 1	Facing
GLCS Nos	7765		

Coastal Description

The coast edge is formed by a sea wall with shingle along the HWM and a sandy foreshore. Some dunes survive along the land edge, although this is mostly occupied by holiday camps and caravan sites. Although the coast edge is now stable, there remains the threat of inundation and erosion during extreme conditions.

Archaeology

No archaeological sites were identified along this section.

Record no 22	FORYD		Map No 3/4
Grid References	SH994811-SH997810	Coastlength 0.35	Direction N
Erosion threat	Moderate	Coast edge 10	Facing
GLCS Nos	7215, 7210		

Coastal Description

A shingle bank lies a the HWM with dunes behind, backed by wasteland. The foreshore is shingle and sand.

Archaeology

The only archaeological site in this section is the site of the Foryd Telegraph Station (PRN 102875), now demolished.

Record no 23	FORYD HARBOUR		Map No 3/4
Grid References	SH997810-SH994806	Coastlength 0.50	Direction SE
Erosion threat	Stable	Coast edge 1/13	Facing
GLCS Nos	7201, 7205		

Coastal Description

The mouth of the Clwyd is occupied largely by Foryd Harbour. The NW side of the harbour consists of a stone revetted quayside with a shingle bank at the seaward end. The harbour is largely silted, although still used for small vessels. the harbour area is occupied by small buildings with derelict land behind.

Archaeology

Foryd Harbour (PRN 34277) is itself of some archaeological significance due to its historic important as a port and shipyard. The quayside survives but is in a state of disrepair. Within the harbour, lying in the estuarine mud, are the remains of two timber wrecks. The larger is the wreck of a hopper barge, the Alice (PRN 34274), sited on the west side near the road bridge. At the NE end of the harbour are the remain of what appears to be a small timber vessel (PRN 34276) lying in the mud and only visible at low water.

Record no 24 FORYD

Map No 3/4

Grid References SH994806-SH997802

Coastlength 0.50

Direction NE

Erosion threat Slight

Coast edge 11

Facing

GLCS Nos

Coastal Description

The west bank of the River Clwyd is formed by estuarine mud with a series of buildings and workshops on the reclaimed land between this and the old marsh reclamation bank.

Archaeology

The only archaeological feature is the west abutment of the old Rhyl bridge (PRN 34281).

Record no 25 RIVER CLWYD

Map No 4

Grid References SH997802-SJ017783

Coastlength 2.60

Direction NE

Erosion threat Stable

Coast edge 2

Facing

GLCS Nos

Coastal Description

The SW bank of the River Clwyd is formed by a substantial man-made bank, constructed during the reclamation of Rhuddlan Marsh. An area of salt marsh and estuarine mud lies between the bank and the normal river course. Behind the bank, the reclaimed land is largely either arable or pasture.

Archaeology

The only archaeological feature is the reclamation bank itself (PRN 34210).

Record no 26 RIVER CLWYD

Map No 4

Grid References SJ017783-SJ022780

Coastlength 0.55

Direction NE

Erosion threat Stable

Coast edge 2

Facing

GLCS Nos

Coastal Description

This section of the River Clwyd immediately NW of Rhuddlan Bridge is characterised by the flood protection bank behind which are caravan sites and former industrial buildings. A new river crossing is currently under construction.

Archaeology

Rhuddlan Bridge (PRN 102034), which is listed grade 1, is of stone two arch construction. A timber bridge was rebuilt in stone in 1358, and remodelled in 1595, with part of the present structure dating from this period. The riverside area was formerly occupied by a tannery (PRN 103605) and Phoenix Foundry (PRN 103603). The former is now destroyed while the latter is disused and partly derelict. The site of a second foundry (PRN 103601) on Marsh Road is now partly built over.

Record no 27 RIVER CLWYD**Grid References** SJ022780-SJ005795**Coastlength** 2.10**Erosion threat** Stable**Coast edge** 2**Map No** 4**Direction** SW**Facing****GLCS Nos****Coastal Description**

The River Clwyd is bounded along the NE bank by the bank constructed during the reclamation of Cwybr Marsh, behind which the land is a series of arable and pasture fields.

Archaeology

A map of 1810 (NT/M/93) shows a quay (PRN 34301) along this section of the river bank, which is also shown on an earlier print of 1795 (CRO 879). A watching brief during pipelaying in 1984 revealed a section of a possible timber trackway laid on a stone foundation (PRN 35189, Owen 1984) which may be associated with the quay. A reclamation bank (PRN 34209) runs along the entire length of the riverside. The river is overlooked by St.Mary's Church (PRN 102048) which dates from c. 1300 but has been substantially altered.

Work by Clwyd Archaeology Service during the construction of the Rhuddlan Bypass revealed a substantial assemblage of Mesolithic flint and chert, mostly consisting of waste from tool manufacture (PRN 35030).

Record no 28 RIVER CLWYD**Grid References** SJ005795-SH998802**Coastlength** 0.90**Erosion threat** Stable**Coast edge** 2**Map No** 4**Direction** SW**Facing****GLCS Nos****Coastal Description**

The NE bank of the River Clwyd is formed by a bank fronting an area of recently reclaimed land.

Archaeology

No archaeological sites were found within this section.

Record no 29 FORYD**Grid References** SH998802-SH996807**Coastlength** 0.50**Erosion threat** Stable**Coast edge** 2**Map No** 3/4**Direction** SW**Facing****GLCS Nos****Coastal Description**

A man-made bank lines the River Clwyd, behind which lies Marine Lake.

Archaeology

The only archaeological site is the east abutment of the former Rhyl Bridge (PRN 34282).

Record no 30	FORYD HARBOUR		Map No 3/4
Grid References	SH996807-SH999810	Coastlength 0.55	Direction NW
Erosion threat	Stable	Coast edge 1	Facing
GLCS Nos	7760		

Coastal Description

The SE side of Foryd Harbour consists of a sea wall/quayside. A road runs along the quayside with an amusement park inland.

Archaeology

The remains of a timber vessel (PRN 34275) lie in the mud against the quay wall. The City of Ottawa was built on the St. Lawrence River, Canada in 1860 and sailed the world before ending her days at Foryd in 1906 after being sold for salvage. A shipyard (PRN 34292) formerly existed on the east bank of the river, but the site is now built over.

Record no 31	RHYL		Map No 5
Grid References	SH999810-SJ021824	Coastlength 2.45	Direction NNW
Erosion threat	Stable	Coast edge 1	Facing
GLCS Nos	7756-9		

Coastal Description

The entire length of Rhyl seafront is protected by a sea wall, behind which lies the promenade and a series of tourist developments. The beach is mostly sand with a wide foreshore.

Archaeology

Rhyl Pier (PRN 34208) has been demolished and no trace remains. There is evidence for changes in sea level in the form of exposures of boulder clay at several sites along the beach (PRN 17103). This is thought to be part of up to ten marine transgressions dating from the Mesolithic to Medieval period. The elevated boulder clay on the beach may have been a peninsula or island. New test borings have indicated the distribution of peat along the coastal area, suggesting a former coastline between 100 and 400m inland of the present coastline (Manley 1989). A stone causeway (PRN 106402) has been recorded on the beach, although the current survey failed to identify any such feature, which is thought more likely to be a deposit of pebbles eroding from the boulder clay exposures.

Numerous finds have been recovered from the beach and seafront area, including at least 70 prehistoric artefacts (Manley 1989, 185) although only three are recorded in the SMR along this section: two Roman coins (PRNs 102176 and 106441), and a Bronze Age chisel (PRN 101903).

Record no 32	RHYL		Map No 5
Grid References	SJ021824-SJ023824	Coastlength 0.20	Direction NNE
Erosion threat	Stable	Coast edge 1	Facing
GLCS Nos	7755		

Coastal Description

A sea wall forms the coast edge, behind which lies the promenade and tourist developments. The foreshore is largely sandy and protected by groynes.

Archaeology

Several Bronze Age finds (PRNs 101936 and 101937) have been reported from the beach, as well as an antler mattock (PRN 33099) dated to 6560 BP from Splash Point (Bonsall & Smith 1990).

Record no 33	RHYL GOLF COURSE		Map No 5
Grid References	SJ023824-SJ037828	Coastlength 1.75	Direction NNW
Erosion threat	Stable	Coast edge 1	Facing
GLCS Nos	7752		

Coastal Description

The coast edge is formed by a sea wall with a wide sandy foreshore protected by groynes. The land edge is occupied by Rhyl Golf Course.

Archaeology

No archaeological sites were found within this section.

Record no 34	FFRITH BEACH		Map No 5
Grid References	SJ037828-SJ047833	Coastlength 1.10	Direction NNW
Erosion threat	Stable	Coast edge 1	Facing
GLCS Nos	7750		

Coastal Description

The coast edge is formed by a sea wall with a wide sandy foreshore protected by groynes. The landedge consists of low dunes behind which lies Ffrith Beach holiday park.

Archaeology

No archaeological sites were found within this section.

Record no 35	PRESTATYN		Map No 5/6
Grid References	SJ050834-SJ069841	Coastlength 2.10	Direction NNW
Erosion threat	Stable	Coast edge 1	Facing
GLCS Nos	7745, 7742		

Coastal Description

Prestatyn seafront has its entire length protected by a concrete sea wall and stepped coastal defence, which was constructed between 1958 and 1971. Older timber groynes have more recently been replaced by substantial groynes composed of large boulders in a further attempt to prevent loss of sand. Within the last 20 years sand has been dredged from offshore and deposited on the beach to replace eroded deposits.

The seafront itself consists of the coastal drive with low sand dunes on the landward side at the west end and carparks, an amusement centre and yacht club to the east.

Although the sea defences are substantial and generally control coastal erosion in this area, they do not provide absolute protection from flooding. During the storms of 1990 there was considerable overtopping of the defences leading to serious flooding of the immediate coastal strip.

Archaeology

No surviving archaeological sites were noted within the area of study.

Record no 36	PRESTATYN		Map No 6
Grid References	SJ069841-SJ074842	Coastlength 0.40	Direction NNW
Erosion threat	Stable	Coast edge 4	Facing
GLCS Nos	7741		

Coastal Description

The coastal edge is formed by a dump of caged and loose rocks, fronting high, stable dunes. Behind the dunes lies Prestatyn Golf Course. The area of dunes and foreshore forms a part of the Gronant Dunes and Talacre Warren SSSI, an area of botanical, entomological and ornithological interest. This section, known as Gronant Dunes, consists of a single ridge of stable dunes.

Archaeology

The only archaeological evidence within the study area relates to the former Prestatyn Alkali Works (PRN26571), which was located north of the railway at the junction of Barkby Road and Marine Road East. The Works are depicted on the OS 1st Edition of 1872 as inactive, and the site is now built over. Three associated sites were revealed during the survey, lying in the field between Marine Drive East and the Prestatyn Gutter. An embankment (PRN26568) leads northwards to the site of the former landing stage (PRN26569) for the Alkali Works, located on the Prestatyn Gutter, and to the west lies the site of an Engine House (PRN26570), all of which appear on the OS 1st Edition and a plan of Nant Hall Estates dated 1879.

Record no 37 PRESTATYN/GRONANT**Grid References** SJ074842-SJ087845**Coastlength** 1.40**Erosion threat** Slight**Coast edge** 10**GLCS Nos** 7730, 7735/6, 7740**Map No** 6**Direction** NNW**Facing****Coastal Description**

The area is characterised by high, stable dunes, with a mix of shingle/sand/pebbles forming bars along the foreshore which absorb most of the wave energy. Only one section, c.20m in length, shows signs of active erosion where a face c.1.8m high is exposed in the dunes. The area of dunes and foreshore forms a part of the Gronant Dunes and Talacre Warren SSSI, an area of botanical, entomological and ornithological interest. This section, known as Gronant Dunes, consists of a single ridge of stable dunes at the west, dividing into a series of ridges towards the mouth of the Prestayn Gutter, with shingle banks and dune ridges on the landward side, between which are tidal channels with developing salt marsh.

Archaeology

No sites of archaeological interest were noted within the study area.

Record no 38 TALACRE WARREN**Grid References** SJ083845-SJ122853**Coastlength** 3.35**Erosion threat** Moderate**Coast edge** 10/2**GLCS Nos** 7735**Map No** 6**Direction** NNW**Facing****Coastal Description**

The area of dunes and foreshore forms a part of the Gronant Dunes and Talacre Warren SSSI, an area of botanical, entomological and ornithological interest. This section, known as Talacre Warren, consists essentially of two dune ridges between which are a series of dune slacks, or hollows, which are of particular botanical interest as habitats ranging from damp slacks to brackish marsh.

At the west end a bar of low dunes with sandy foreshore protects an area of salt marsh at the mouth of the Prestatyn Gutter. The Gutter, which was once navigable, is now blocked by flood control defences consisting of an embankment c.120m long with a sluice. East of the sluice, the Gutter has silted to form the salt marsh which is backed by low dunes and Presthaven Sands Caravan Park. Slight erosion is evident along the sand/dunes bar. Further east, a wide, sandy foreshore is backed by high, sable dunes with the caravan park to the rear. Slight erosion of the dune face is evident, increasing to moderate erosion with some slumping of the dunes towards Point of Ayr Lighthouse.

Archaeology

No known archaeological sites had been identified within the study area, although the survey revealed two new sites. At the western end, close to the entrance to Presthaven Sands Caravan Park, a stone building (PRN26550), now the Anchorage Public House, was formerly part of the Life Boat Station, depicted on the OS 1st Edition of 1872. The building has been much altered with recent additions.

Further to the east, on the beach in front of Talacre Warren, lie the remains of two Second World War Pillboxes (PRNs 26575-6). The Pillboxes are cylindrical, 2m in diameter, with six gun slits, and constructed of reinforced concrete. They are part of a series of four such features, of which three still survive. The pillboxes appear to be of a type known as Norcon pre-cast concrete pipe pillboxes (Wills 1985, 20). The structures are now badly damaged and displaced, with the original siting unclear.

There are several historical references to a turbary at "Gronandesmore" during the mid 14th century, and one dated 1357 which refers to the drainage of the "more" and protection from the sea by "great bunds".

However, the location of the turbary is unknown, and there is no evidence remaining for the drainage works or sea defences.

Record no 39	POINT OF AYR		Map No 7
Grid References	SJ122852-SJ128852	Coastlength 0.70	Direction N
Erosion threat	Major	Coast edge 10	Facing
GLCS Nos	7020, 7735		

Coastal Description

This stretch of coast extends from Point of Ayr Lighthouse to the tip of Point of Ayr, at the mouth of the Dee Estuary. The area lies within the Dee Estuary SSSI, designated for its importance for waders and wildfowl. The coast edge is formed by low dunes and sand forming a spit, behind which lies an area of mudflats and salt marsh, with some scrub land and residential development at the landward edge. The foreshore consists of a wide expanse of sand backed by low dunes. Coastal erosion is a serious problem, with the dunes under constant threat. There is evidence that the high dunes further west were formerly more extensive but have been eroded in this area.

Archaeology

The only previously known site is the find spot of a silver groat (PRN103002), found somewhere on the beach. The survey has added five new sites to the SMR. Point of Ayr Lighthouse (PRN26551), standing to five storeys, was designed by Walker and Burgess Engineers of London, and constructed in 1776 on piles driven into the sand. Later replaced by the Dee lightship in 1883, it was converted to a dwelling in 1977 (Thomas 1993, 40). The lighthouse is located on the beach c. 70m in front of the dunes. A print of 1815 shows the lighthouse amongst high dunes, indicating the extent of erosion during the past 180 years. Adjacent to the lighthouse are the remains of a slipway (PRN26552) constructed of dressed stone slabs, and presumably associated with a former lifeboat station, which was closed in 1923, and its location now lost. This feature has suffered considerable erosion and damage from the sea.

The beach and dunes at both Point of Ayr and Talacre Warren were used by the military during the Second World War as a training ground, and several sites survive from this period. A Pillboxes (PRN 26574) is situated on the beach, east of the lighthouse. It is cylindrical, 2m in diameter, and constructed of reinforced concrete, and appears to be of a type known as Norcon pre-cast concrete pipe pillboxes (Wills 1985, 20). It is severely damaged and displaced and the position so far from the High Water Mark may be evidence for considerable erosion of the dunes since their construction. Along the foreshore within this area are a series of rows of larch poles (PRN26573) which are assumed to be the remains of glider defences. All of these military features are under serious threat from erosion by the sea, and a study has been commissioned by BHP Petroleum from AC Archaeology to assess their importance, survival and future management.

Record no 40 TALACRE**Grid References** SJ128852-SJ125840**Erosion threat** Stable**GLCS Nos** 7020**Coastlength** 1.10**Coast edge** 2**Map No** 7**Direction** E
Facing**Coastal Description**

A coastal protection bank forms the coastal edge, with sand and mudflats along foreshore forming part of the Dee Estuary SSSI. The area is important for waders and wildfowl, and is managed as a nature reserve by the RSPB. Inland, there is residential/tourist development at the northern end with the BHP Petroleum Gas Terminal to the south and a small area of nature reserve in between.

Archaeology

The only archaeological feature identified within the area was the early 18th-century coastal protection bank (PRN26553), which still forms the coast edge. The bank was constructed to protect reclaimed areas to the west, and the earliest reference is dated 1787 on a map of Talacre Harbour.

Record no 41 POINT OF AYR COLLIERY**Grid References** SJ127840-SJ132829**Erosion threat** Stable**GLCS Nos** 7010, 7150**Coastlength** 1.25**Coast edge** 5**Map No** 7**Direction** NE
Facing**Coastal Description**

The entire coastal edge is formed by waste tips and structures relating to Point of Ayr Colliery, with the colliery itself occupying most of the land strip, separated from the BHP Petroleum Gas Terminal by the former Coastal Protection Bank (PRN26554). At the southern end, a small area of pasture lies between the railway and the former Coastal Protection Bank. The foreshore consists of a wide expanse of sand and mudflats, which lies within the Dee Estuary SSSI.

Archaeology

The archaeology of this stretch of coast is associated with two sites, Talacre Harbour (PRN26555) and Point of Ayr Colliery (PRN26558). The Harbour is assumed to date back at least to the 18th century, and appears on a map of 1787. The main development of the Harbour dates to the 1830s and 1840s, although its later incorporation into the Colliery, has significantly changed its appearance, resulting in the loss of jetties at the eastern end. Picton Pool, which lies to the west of the Harbour and is now silted, may originally have been used as a flushing pond for the harbour.

The first borings for Point of Ayr Colliery occurred in 1865 but there was no significant production there until the 1880s. The colliery has recently closed and been stripped of machinery. Modern additions and improvements to the plant have damaged or destroyed earlier features, although it was not possible to gain access to inspect the site. RCAHMW have conducted a thorough photographic and descriptive survey of the surface workings.

Two other features associated with the colliery and harbour are the sites of former tramways. The earlier, Crockford's Tramway (PRN26557), served the harbour and dates to 1840-50, located between the modern access road and the former coastal protection bank. No visible trace remains. The later colliery tramway (PRN26556) ran along the eastern side of Tanlan Road, which is now the main access road for the colliery.

Record no 42	FFYNNONGROYW		Map No 7/8
Grid References	SJ132829-SJ153811	Coastlength 2.85	Direction NE
Erosion threat	Stable	Coast edge 1	Facing
GLCS Nos	7146, 7870		

Coastal Description

The long stretch of coast edge is formed by the sea defensive wall associated with and along side the railway. The recently constructed Ffynnongoyw bypass follows the SW side of railway for much of the length, the remainder of the land edge being formed by pasture, with small areas of woodland. The foreshore consists of a wide expanse of sand and mudflats, forming part of the Dee Estuary SSSI.

Although the coast edge is generally stable, the sea defences were breached during the severe storm of 1990, leading to flooding within Ffynnongroyw. This demonstrates the vulnerability of low lying areas along the coast.

Archaeology

A boundary stone (PRN26559) located on the beach at Ffynnongroyw bears the initials of the River Dee Company, and a date of 1785. Also, a disused colliery shaft (PRN26560) and two further shafts (PRN26561) lie within 150m of the HWM. At the edge of the landstrip lies Llwyn y Bedd cross base (PRN102475). The pedestal of a cross c.0.45m square lies in the NW corner of the wood and is assumed to be post-medieval.

Record no 43	MOSTYN QUAY		Map No 8
Grid References	SJ153811-SJ156814	Coastlength 0.35	Direction NW
Erosion threat	Moderate	Coast edge 5	Facing
GLCS Nos	7135		

Coastal Description

The coast edge is formed by the old Mostyn Quay, consisting of a dump of material forming the breakwater, with a badly eroded stone facing at the NE tip. The foreshore consists of a wide expanse of sand and mudflats, forming part of the Dee Estuary SSSI.

Mostyn Docks have recently been granted permission to expand and the development will almost certainly have an impact on the surviving archaeology, although the details are not clear at present.

Archaeology

The Old Quay (PRN26562) survives, but with no trace of original features. The coastal side is actively eroding, particularly noticeable at the tip of the breakwater where the stone facing is now in a poor state. A late 19th-century flour mill and a saw mill have now disappeared, and the only buildings are recent warehouses.

The dock area is probably that constructed as part of the Darwen and Mostyn Iron works during the late 18th century (Richards 1970), and is still in use. A triangular flushing pond (PRN26563) survives between the dock and the railway, and together with a second pond further east but now lost, was used to prevent silt deposits building up within the dock.

A Second World War pillbox (PRN 34286) survives intact on the end of the quay.

Record no 44 MOSTYN DOCKS**Grid References** SJ156814-SJ161807**Coastlength** 0.85**Erosion threat** Slight**Coast edge** 5**GLCS Nos** 7130, 7730**Map No** 8**Direction** NE
Facing**Coastal Description**

The coast edge is formed by the docks and spoil dumps from the colliery and ironworks. Although the immediate docks area is still in use, the remainder of the area forming the land edge is now either derelict or occupied by industrial units, to which it was not possible to gain access. The coast is generally stable apart from slight erosion along the old breakwater which has caused undercutting.

The foreshore consists of a wide expanse of sand and mudflats, forming part of the Dee Estuary SSSI.

Mostyn Docks have recently been granted permission to expand and the development will almost certainly have an impact on the surviving archaeology, although the details are not clear at present.

Archaeology

Mostyn Docks (PRN26564) is now a small ports authority, but was originally constructed as part of the Darwen and Mostyn Ironworks (PRN26567) around 1890. At this time iron ore was imported from Spain with large steamers discharging their cargoes into lighters in Mostyn Deep, before landing at the Docks. Prior to this the site was occupied by a foundry and shipyard c.1840 (Richards 1970; Mostyn History Preservation Soc. 0000). The Docks still operate but the remainder of the dockyard and ironworks area has been almost completely levelled and is largely occupied by industrial units.

Associated with the docks is a flushing pond (PRN26565), as well as the site of the Isolation Hospital (PRN26566), which is located on the old breakwater (PRN26572). Within the docks, along the northern side, lie the remains of three timber barges settled in the mud (PRNs 26577, 34284, 34285). The only surviving remains associated with Mostyn Colliery (PRN106098) is a brick collar for a capped shaft which is located within the docks area.

A hexagonal Second World War pillbox (PRN 34287), constructed in 1940, lies midway along the breakwater.

Record no 45 MOSTYN INDUSTRIAL ESTATE**Grid References** SJ161807-SJ164803**Coastlength** 0.35**Erosion threat** Slight**Coast edge** 2**GLCS Nos** 7725**Map No** 8**Direction** NE
Facing**Coastal Description**

The coast edge is formed by man-made spoil dumps associated with the former ironworks and collieries. The land edge is mostly derelict land which is gradually being incorporated into the industrial estate.

Archaeology

The site of the former Hanmer Colliery (PRN 34211) has now been levelled and partly built over by the new industrial estate, with areas of spoil tips surviving as derelict land.

Record no 46 MOSTYN**Grid References** SJ164803-SJ177795**Coastlength** 1.45**Erosion threat** Stable**Coast edge** 2**GLCS Nos** 7872**Map No** 8**Direction** NNE
Facing**Coastal Description**

A man-made bank forms the coast edge, enclosing an area of reclaimed marsh land, now pasture. The foreshore is a mix of sand and estuarine mud.

Archaeology

No archaeological sites were recorded within this section.

Record no 47 HOLYWELL MARSH**Grid References** SJ177795-SJ200780**Coastlength** 2.50**Erosion threat** Stable**Coast edge** 4**GLCS Nos** 7874**Map No** 8**Direction** NNE
Facing**Coastal Description**

Holywell Marsh, originally enclosed and reclaimed by the construction of a substantial stone clad earth bank is now protected by a dump of large boulders. The deep water channel of the River Dee runs close to the coast edge with only a slight foreshore of estuarine mud. The land between the bank and the railway is now pasture or arable fields.

Archaeology

Llannerch-y-mor Quay (PRN 34212), once an important port associated with the nearby leadworks, is now largely disused with little trace of the original quay area which has been reconstructed. A large ocean-going vessel, the City of Lancaster, is permanently beached at the entrance to the quay. Two reclamation banks (PRNs 34213 and 34272) survive mostly intact while the sites of five boundary markers (PRNs 34214, 34215, 34293-5) are lost beneath the recent protection works.

Record no 48 GREENFIELD INDUSTRIAL EST.**Grid References** SJ200780-SJ206774**Coastlength** 0.80**Erosion threat** Stable**Coast edge** 3**GLCS Nos** 7720**Map No** 9**Direction** NE
Facing**Coastal Description**

The area of Greenfield Quay is now redeveloped, while the coast edge to the SE is formed by a dump of rubble, behind which is an area of wasteland and the new industrial estate. The foreshore consists of a wide expanse of estuarine mud and sand.

Archaeology

Greenfield Quay (PRN 34216) has been recently reclaimed as a tourist facility with the resulting loss of any archaeological features. However, the flushing pond (PRN 34273) survives although silted and overgrown. The sites of three boundary markers (PRNs 34217-19) are now lost beneath recent rubble dumps.

Record no 49	GREENFIELD INDUSTRIAL EST.		Map No 9
Grid References	SJ206774-SJ208772	Coastlength 0.30	Direction NE
Erosion threat	Moderate	Coast edge 3	Facing
GLCS Nos	7715		

Coastal Description

The coast edge was formerly protected by a substantial bank, which has now been replaced by a bank of large boulders, behind which is an area of wasteland and the new industrial estate. The foreshore consists of a wide expanse of estuarine mud and sand.

Archaeology

The reclamation bank (PRN 34224) which originally enclosed and reclaimed an area of salt marsh has now been lost beneath modern dumped material.

Record no 50	GREENFIELD MARSH		Map No 9
Grid References	SJ208772-SJ215766	Coastlength 0.80	Direction NE
Erosion threat	Moderate	Coast edge 2/11	Facing
GLCS Nos	7127		

Coastal Description

The coast edge is formed by a stone clad embankment, constructed to reclaim and protect an area of former marsh. The normal HWM lies up to 250m from the embankment, with an area of raised mudflats in between which is steadily eroding back towards the embankment. Behind the embankment the land is mostly down to pasture as far as the railway.

Archaeology

Apart from the embankment (PRN 34224), the only other archaeological feature is the site of a boundary stone (PRN 34221), now lost.

Record no 51	BAGILLT LEADWORKS		Map No 9
Grid References	SJ215766-SJ217763	Coastlength 0.30	Direction NE
Erosion threat	Moderate	Coast edge 5/11	Facing
GLCS Nos	7127		

Coastal Description

The normal HWM is the edge of a mudflat terrace which is gradually eroding. The landward edge of the mudflats is marked by the spoil tips from the former Bagillt leadworks. The foreshore is a wide expanse of sand and estuarine mud.

Archaeology

The area of the former leadworks (PRN 103980) is now derelict although some structural remains survive amongst the spoil tips.

The site of a boundary stone (PRN 34222) is now lost. A Rope Walk (PRN 34296) is shown on the 1st edition of 1870, but no remains are visible.

Record no 52	BETTISFIELD		Map No 9
Grid References	SJ217763-SJ221762	Coastlength 0.40	Direction NNE
Erosion threat	Moderate	Coast edge 5/11	Facing
GLCS Nos	7122, 7125		

Coastal Description

The normal HWM is the edge of a mudflat terrace which is gradually eroding. The landward edge of the mudflats is marked by the spoil tips from the former Bettisfield Colliery. The foreshore is a wide expanse of sand and estuarine mud. The majority of the former colliery site is now a landfill site, while the area around the colliery buildings is a car breakers.

Archaeology

The engine house for the former colliery (PRN 103981) still survives. The associated quay (PRN 34270), situated on a shallow inlet, survives as a series of timber revetting with a small stone platform, possibly for a crane shown on the OS 1st edition. At the head of the inlet lies the portal for the Milwr Tunnel (PRN 12000), which was begun in 1897 to drain mines in the Holywell area and continued in use until 1987 by which time it had been extended for 10 miles (Ebbs 1993).

Record no 53	BAGILLT		Map No 9
Grid References	SJ221762-SJ225756	Coastlength 0.50	Direction NE
Erosion threat	Moderate	Coast edge 2/11	Facing
GLCS Nos	7710		

Coastal Description

The normal HWM is the edge of a mudflat terrace which is gradually eroding. The landward edge of the mudflats is marked by a former railway embankment leading to the quayside. The foreshore is a wide expanse of sand and estuarine mud.

Archaeology

The embankment for a railway (PRN 34271) which led from Bettisfield Colliery to Bagillt Quay survives mostly intact. A boundary stone for the River Dee Comp. (PRN 34248) survives near the quayside. The site of a second boundary stone (PRN 34223) is now lost.

Record no 54	BAGILLT		Map No 9
Grid References	SJ225756-SJ227755	Coastlength 0.40	Direction NE
Erosion threat	Moderate	Coast edge 2/11	Facing
GLCS Nos	7120		

Coastal Description

The normal HWM is the edge of a mudflat terrace which is gradually eroding. The landward edge of the mudflats is marked by an embankment and the railway. The foreshore is a wide expanse of sand and estuarine mud.

Archaeology

Bagillt Quay (PRN 104002) survives as a series of timber revetments along a shallow inlet.

Record no 55 BAGILLT MARSH**Grid References** SJ227755-SJ238742**Coastlength** 1.60**Map No** 9**Erosion threat** Moderate**Coast edge** 2/11**Direction** NE
Facing**GLCS Nos** 7876**Coastal Description**

The normal HWM is the edge of a mudflat terrace which is gradually eroding. The landward edge of the mudflats is marked by the embankment constructed to reclaim the marsh. The foreshore is a wide expanse of sand and estuarine mud.

Archaeology

Apart from the embankment (PRN 34225) the only archaeological features are a series of five boundary stones belonging to the River Dee Comp. (PRNs 104006-10), only one of which survives (PRN 104007).

Record no 56 FLINT MARSH**Grid References** SJ238742-SJ246739**Coastlength** 0.70**Map No** 9/10**Erosion threat** Moderate**Coast edge** 9/11**Direction** NNE
Facing**GLCS Nos** 7112, 7115**Coastal Description**

The normal HWM is the edge of a mudflat terrace which is gradually eroding towards a flat boulder clay exposure, much of which is covered by spoil from the former smelting works. The foreshore is a wide expanse of sand and estuarine mud.

Archaeology

Much of the area is occupied by the spoil tips of the former smelting works (PRN 104014)

Record no 57 FLINT INDUSTRIAL ESTATE**Grid References** SJ246739-SJ246735**Coastlength** 0.40**Map No** 10**Erosion threat** Stable**Coast edge** 4**Direction** ENE
Facing**GLCS Nos** 7112, 7110**Coastal Description**

The present coast edge is formed by a boulder dump, behind which lie the spoil tips from the former smelting works. The foreshore consists of a narrow strip of estuarine mud with the deep water channel of the River Dee flowing close to the shore.

Archaeology

Flint Quay (PRN 34269) lies at the head of a shallow, now silted inlet. All that remains is a length of stone revetment wall and some timbers visible at low tide, possibly part of a wreck (PRN 106396) documented alongside the quay. The site of the former smelting works (PRN 104014) is now lost beneath the industrial estate with only the spoil tips surviving. Roman finds (PRN 100331) were reported in the area of the castle, while the site of a boundary stone (PRN 104011) is now lost.

Record no 58	FLINT CASTLE		Map No 10
Grid References	SJ246735-SJ249734	Coastlength 0.20	Direction NE
Erosion threat	Slight	Coast edge 11	Facing
GLCS Nos	7110		

Coastal Description

The normal HWM is formed by a terrace of mudflats and salt marsh, although at high tides the water extends to the castle. The foreshore consists of a narrow strip of estuarine mud with the deep water channel of the River Dee flowing close to the shore. The land edge is occupied by the castle and housing development.

Archaeology

Flint Castle (PRN 100325, SAM F3) lies on a low rock outcrop, possibly originally an intertidal island. Constructed in 1272 as part of the Edwardian castle building programme, the main structure is reasonably well preserved, consisting of four towers surrounding a courtyard with a separate circular keep at the SE corner accessed via a drawbridge. There has been some speculation about the location of a harbour south-east of the castle which may have been used during the construction of the castle when materials were brought in via the estuary. Subsequently, a harbour may have been used to supply both the castle and the new town. The outer ward is now landscaped but formerly held the county jail (PRN 100332), built in 1784. A boundary stone (PRN 104012) is now lost.

Record no 59	FLINT		Map No 10
Grid References	SJ249734-SJ253731	Coastlength 0.40	Direction NE
Erosion threat	Moderate	Coast edge 4/11	Facing
GLCS Nos	7700		

Coastal Description

The normal HWM is formed by a terrace of mudflats and salt marsh, although at high tides the water extends to the newly constructed coastal defence boulder dump. The foreshore consists of a narrow strip of estuarine mud with the deep water channel of the River Dee flowing close to the shore. The land edge is occupied by a sports ground and derelict land.

Archaeology

No archaeological sites were recorded in this section.

Record no 60 PENTRE FFWRNDAN**Grid References** SJ253731-SJ259727**Coastlength** 0.70**Erosion threat** Moderate**Coast edge** 2/11**GLCS Nos** 7105**Map No** 10**Direction** NNE
Facing**Coastal Description**

The normal HWM is formed by a terrace of mudflats and salt marsh, although at high tides the water extends to the bank enclosing a reclaimed area of formed salt marsh. The foreshore consists of a narrow strip of estuarine mud with the deep water channel of the River Dee flowing close to the shore. The land edge between the bank and the railway is pasture.

Archaeology

The former use of the salt marsh as a rifle range is evident with the survival of a shooting butt (PRN 34289). The site of a former boundary stone (PRN 34290) is now lost.

Record no 61 PENTRE FFWRNDAN**Grid References** SJ259727-SJ262725**Coastlength** 0.40**Erosion threat** Stable**Coast edge** 5/11**GLCS Nos** 7105**Map No** 10**Direction** NNE
Facing**Coastal Description**

The spoil tips from the former alkali works form the coast edge during the highest tides, with salt marsh extending to the normal HWM.

Archaeology

The site of the former alkali works (PRN103985) survives only as a series of spoil tips extending onto the salt marsh. Pentre Farm Roman site (PRN 100133) lies on the SW side of the railway. Excavations have revealed an early 2nd century timber villa which was later rebuilt in stone by the mid 3rd century. The site is presumed to be associated with the lead trade, suggesting the possibility of a Roman quay in the area (O'Leary 1989). A bronze Celt (PRN 100134) was found in the area.

Record no 62 OAKENHOLT**Grid References** SJ262725-SJ267720**Coastlength** 0.80**Erosion threat** Moderate**Coast edge** 1/11**GLCS Nos** 7102**Map No** 10**Direction** NE
Facing**Coastal Description**

The normal HWM is formed by a terrace of mudflats and salt marsh, although at high tides the water extends to the spoil tips of the former alkali works. The foreshore consists of sand and estuarine mud. The land edge is occupied by the railway with pasture behind.

Archaeology

No archaeological sites were revealed in this section

Record no 63 OAKENHOLT**Grid References** SJ267720-SJ280713**Erosion threat** Slight**GLCS Nos** 7100**Coastlength** 1.40**Coast edge** 2**Map No** 10/11**Direction** NNE
Facing**Coastal Description**

An area of enclosed and reclaimed salt marsh is protected by a bank which forms the coast edge. The foreshore is composed of sand and estuarine mud. Behind the coast bank the land is partly pasture with some industrial use.

Archaeology

No archaeological sites were identified in this section.

Record no 64 CONNAH'S QUAY POWER STATION**Grid References** SJ280713-SJ290702**Erosion threat** Slight**GLCS Nos****Coastlength** 1.40**Coast edge** 2**Map No** 10/11**Direction** NE
Facing**Coastal Description**

An area of enclosed and reclaimed salt marsh is protected by a bank which forms the coast edge. The foreshore is composed of sand and estuarine mud. Behind the coast bank the land is largely occupied by Connah's Quay power station and the construction of the new Dee crossing, with some pasture.

Archaeology

The only archaeological sites consist of the coastal bank (PRN 432227) and a Roman coin find (PRN 100133).

Record no 65 CONNAH'S QUAY**Grid References** SJ290702-SJ292700**Erosion threat** Stable**GLCS Nos****Coastlength** 0.30**Coast edge** 11**Map No** 11**Direction** NE
Facing**Coastal Description**

The normal HWM is formed by an area of salt marsh which is only occasionally flooded. The slight foreshore is composed of estuarine mud, while the land edge consists of the railway and housing development.

Archaeology

No archaeological sites were identified in this section.

Record no 66 CONNAH'S QUAY**Grid References** SJ292700-SJ294699**Coastlength** 0.20**Erosion threat** Stable**Coast edge** 3**Map No** 11**Direction** NNE**Facing****GLCS Nos****Coastal Description**

The area immediately west of Connah's Quay docks is now derelict land with small workshops, the coast edge being formed by a rubble dump with the deep water channel running close to the shore.

Archaeology

No archaeological sites were identified in this section.

Record no 67 CONNAH'S QUAY**Grid References** SJ294699-SJ300698**Coastlength** 0.60**Erosion threat** Stable**Coast edge** 1**Map No** 11**Direction** N**Facing****GLCS Nos****Coastal Description**

The area of Connah's Quay docks has been largely reclaimed for light industrial use with part of the quayside recently rebuilt. The deep water channel runs close to the quayside.

Archaeology

The port of Connah's Quay dates from 1772, and while much of the area has been reclaimed and levelled, the western dock (PRN 34230) survives. The Old Quay House Inn has a date stone of 1777 and together with associated buildings is presumably part of the original dockside. The eastern dock (PRN 34231) has recently been infilled and partly built over.

Record no 68 CONNAH'S QUAY**Grid References** SJ300698-SJ303697**Coastlength** 0.40**Erosion threat** Stable**Coast edge** 11**Map No** 11**Direction** N**Facing****GLCS Nos****Coastal Description**

The area between Connah's Quay and Wepre Gutter is reclaimed salt marsh, formerly partly industrial but now derelict. The normal HWM is formed by the salt marsh which is occasionally flooded as far as a former railway embankment.

Archaeology

No archaeological sites were identified in this section.

Record no 69 HAWARDEN BRIDGE**Grid References** SJ303697-SJ311693**Coastlength** 0.70**Erosion threat** Stable**Coast edge** 2/11**Map No** 11**Direction** NNE**Facing****GLCS Nos****Coastal Description**

The area between Wepre Gutter and Hawarden Bridge is reclaimed salt marsh, now mostly used for pasture. The normal HWM is formed by the salt marsh which is occasionally flooded as far as the original reclamation embankments.

Archaeology

The two reclamation embankments (PRNs 34232 and 34233) survive intact. An intact World War 2 pillbox (PRN 34258) is situated on one of the banks, facing the river, while the remains of a second (PRN 34259) lie further to the west. Two boundary stones (PRNs 34260 and 34262) lie on the Community Boundary.

Record no 70 QUEENSFERRY**Grid References** SJ311693-SJ322687**Coastlength** 1.30**Erosion threat** Stable**Coast edge** 2**Map No** 11**Direction** NNE**Facing****GLCS Nos****Coastal Description**

The area is entirely reclaimed salt marsh, with two embankments surviving, one forming the present river bank with a narrow strip of land between it and the HWM. The majority of the land edge is pasture.

Archaeology

The two reclamation embankments (PRNs 34232 and 34233) survive intact. An intact World War 2 pillbox (PRN 34257) is situated on one of the banks, facing the river, with a second (PRN 34256) badly damaged pillbox further east. The site of the former quay at Queensferry (PRN 34241) is marked by a series of low timber posts in the tidal mud.

Record no 71 QUEENSFERRY**Grid References** SJ322687-SJ323686**Coastlength** 0.20**Erosion threat** Stable**Coast edge** 1**Map No** 11**Direction** NNE**Facing****GLCS Nos****Coastal Description**

The section between the two road bridges at Queensferry consists of a wall along the river's edge with buildings behind.

Archaeology

No trace remains of the slipway for the original ferry, known as Lower Kings Ferry and later Queensferry (PRN 34243). The stone abutment for an earlier road bridge (PRN 34267) is clearly visible with the former road and a housing terrace on its SW approach.

Record no 72 ASTON QUAY**Grid References** SJ323686-SJ325684**Coastlength** 0.30**Erosion threat** Stable**Coast edge** 1**Map No** 11**Direction** NNE**Facing****GLCS Nos****Coastal Description**

The area of the former Aston Quay is now partly derelict with some light industry. The river bank consists of a brick and stone wall belonging to the old quay, with river mud exposed at low tide.

Archaeology

Aston Quay (PRN 34240) has been largely destroyed although the some features still survive. The quay possibly originally occupies the inlet on the west side, although there is no evidence of any structures surviving. Along the waterside the remains of a timber landing stage lies in the river mud, with the former quayside wall behind. A second landing stage (PRN 34255) lies just to the east.

Record no 73 SANDYCROFT**Grid References** SJ325684-SJ338676**Coastlength** 1.40**Erosion threat** Stable**Coast edge** 2**Map No** 11/12**Direction** NNE**Facing****GLCS Nos****Coastal Description**

The area is entirely reclaimed salt marsh, with the embankment surviving, forming the present river bank with a narrow strip of land between it and the HWM. The majority of the land edge is either derelict or industrial.

Archaeology

The First World War gun cotton factory (PRN 34291) lies alongside the river embankment. The factory was constructed c. 1915 to produce TNT and nitro-cellulose and was at the time possibly the largest in the world. Substantial structural remains may still survive and are worthy of further investigation and recording. A large timber landing stage (PRN 34254) associated with the factory, formerly with a piered access tramway and aerial ropeway, lies on the river bank. The remains of two other substantial timber landing stages (PRNs 34251, 34253) lie elsewhere along the river's edge. On the reclamation embankment (PRN 34285) lies an intact World War 2 pillbox (PRN 34252).

Record no 74 SANDYCROFT QUAY**Grid References** SJ338676-SJ340675**Coastlength** 0.30**Erosion threat** Stable**Coast edge** 5**Map No** 12**Direction** NNE**Facing****GLCS Nos****Coastal Description**

Sandycroft Quay provides a man-made waterfront, behind which lies a series of industrial units and small workshops.

Archaeology

The Quay itself (PRN 34242) survives, with the stone revetted dockside situated on a narrow inlet. The quayside buildings have largely been reused as workshops, or lie derelict. Along the waterfront lies the remains of a timber landing stage (PRN 34246) only visible at low tide. Along the east side of the Quay, and associated with it, is the site of the former Sandycroft Foundry (PRN 34297) which manufactured mining

equipment between 1862 and 1925. It would seem likely that the quayside area contains significant evidence for its former use, particularly in the area of derelict land east of the main quay.

The remains of Sandycroft Munitions Factory (PRN 34299) lie immediately south-east of the quay. Associated with this are purpose built factory housing (PRN 34300) and possible Second World War transit sheds (PRN 34298).

Record no 75	HAWARDEN		Map No 12
Grid References	SJ340675-SJ373655	Coastlength 3.80	Direction NNE
Erosion threat	Stable	Coast edge 2	Facing
GLCS Nos			

Coastal Description

The area is entirely reclaimed salt marsh, with an embankment stretching along the river bank and a narrow strip of land between it and the HWM. The majority of the land edge is pasture.

Archaeology

Apart from the reclamation bank (PRN 34202), the only archaeological sites consist of a small timber jetty near Sandycroft Quay (PRN 34250), and a stone jetty (PRN 34345) near Higher Ferry Bridge.

Record no 76	SALTNEY		Map No 12
Grid References	SJ373655-SJ386654	Coastlength 1.30	Direction N
Erosion threat	Stable	Coast edge 1/2	Facing
GLCS Nos			

Coastal Description

The area is entirely reclaimed salt marsh, now occupied by industrial or former industrial buildings. The riverside is largely man-made protection with mudflats visible in to river at low water.

Archaeology

No archaeological sites were recorded within this section.

Record no 77 SEALAND**Grid References** SJ386655-SJ377654**Coastlength** 1.00**Erosion threat** Stable**Coast edge** 2**Map No** 12**Direction** S
Facing**GLCS Nos****Coastal Description**

The area is entirely reclaimed salt marsh, with an embankment forming the river's edge. The majority of the land edge is either arable or pasture.

Archaeology

No archaeological sites were recorded along this section.

Record no 78 SEALAND**Grid References** SJ377654-SJ324686**Coastlength** 6.20**Erosion threat** Stable**Coast edge** 2**Map No** 11/12**Direction** SSW
Facing**GLCS Nos****Coastal Description**

The area is entirely reclaimed salt marsh, with an embankment forming the present river bank. The majority of the land edge is either arable or pasture.

Archaeology

Apart from the reclamation embankment (PRN 34236) along the riverside, there are a series of others (PRNs 34267-9) further NE representing earlier encroachments onto the salt marsh. The slipway for the former Higher Kings Ferry (PRN 34244) is still partly visible beneath the new footbridge, with the remains of a small stone jetty (PRN 34249) to the west. At the western end of the section, a timber landing stage (PRN 34247)

Record no 79 GARDEN CITY**Grid References** SJ324686-SJ323697**Coastlength** 0.20**Erosion threat** Stable**Coast edge** 2**Map No** 11**Direction** SSW
Facing**GLCS Nos****Coastal Description**

The area between the two road bridges consists of a reclamation bank along the riverside, with various buildings and structures along the land edge.

Archaeology

The stone abutment for previous road bridge (PRN 34268) lies alongside and to the west of its successor.

Record no 80	GARDEN CITY		Map No 11
Grid References	SJ323697-SJ311694	Coastlength 1.30	Direction SSW
Erosion threat	Stable	Coast edge 2	Facing

GLCS Nos

Coastal Description

The area is entirely reclaimed salt marsh, with an embankment forming the present river bank. The land edge is occupied by pasture to the east, with industrial development to the west..

Archaeology

Apart from two reclamation embankments (PRNs 34234-5), the only archaeology consists of the remains of a former timber landing stage (PRN 34247).

Record no 81	SHOTTON STEELWORKS		Map No 11
Grid References	SJ311694-SJ291705	Coastlength 2.20	Direction SSW
Erosion threat	Stable	Coast edge 2	Facing

GLCS Nos

Coastal Description

The area is entirely reclaimed salt marsh, with parts of two embankments surviving, one forming the present river bank. The land edge is occupied by Shotton Steelworks and associated structures.

Archaeology

A stone clad embankment (PRN 34236) forms the riverside, with the remains of an earlier embankment (PRN 34229) inland. The timber remains of three landing stages (PRNs 34263-5), presumably associated with the steelworks, lie along the river edge, with the wreck of a small coastal vessel (PRN 34266) alongside one.

Record no 82	SHOTTON STEELWORKS QUAY		Map No 11
Grid References	SJ291705-SJ290708	Coastlength 0.30	Direction WSW
Erosion threat	Stable	Coast edge 1	Facing

GLCS Nos

Coastal Description

The quayside consists of a revetment wall with yard area and port buildings behind, now largely disused.

Archaeology

The quay (PRN 34288) is presumably associated with the steelworks and survives as a timber landing stage alongside the quay wall.

Record no 83 WHITE SANDS**Grid References** SJ290708-SJ301733**Coastlength** 2.90**Map No** 10/11**Erosion threat** Stable**Coast edge** 2/11**Direction W**
Facing**GLCS Nos****Coastal Description**

The area is entirely reclaimed salt marsh, with an embankment running roughly N-S and an area of salt marsh extending to the HWM. Part of the marsh area has been encroached for industrial use and also the new Dee crossing.

Archaeology

The reclamation embankment (PRN 34228) survives mostly intact with a breakwater (PRN 34226) extending along the edge of the salt marsh for c. 250m along the north side of the River Dee.

Appendix 1: Gazetteer of Coast Units

1	GLCS 6403, 6405, 6410, 6710, 6970	RHOS ON SEA	NGR SH832814-SH842812
Map 9	Length 1.10 Facing N	Coast edge 4 Land edge 1	Foreshore 2/4 Erosion Stable
2	GLCS 6970	RHOS ON SEA	NGR SH843812-SH843808
Map 9	Length 0.35 Facing ENE	Coast edge 4 Land edge 1	Foreshore 2/4 Erosion Stable
3	GLCS 6701, 6965, 6966	RHOS ON SEA HARBOUR	NGR SH843808-SH843805
Map 9	Length 0.30 Facing E	Coast edge 1 Land edge 1	Foreshore 2/4 Erosion Stable
4	GLCS 6701	RHOS ON SEA PROMENADE	NGR SH843805-SH847796
Map 9	Length 1.10 Facing ENE	Coast edge 1 Land edge 1	Foreshore 3/4 Erosion Stable
5	GLCS 6860, 6953, 6955, 6960	COLWYN BAY	NGR SH847796-SH877787
Map 9-11	Length 3.10 Facing NNE	Coast edge 1 Land edge 1	Foreshore 3/4 Erosion Stable
6	GLCS 6950	PENMAENRHOS	NGR SH877787-SH880788
Map 11	Length 0.40 Facing N	Coast edge 4 Land edge 1	Foreshore 2 Erosion Stable
7	GLCS 6947	PENMAEN HEAD	NGR SH880788-SH883787
Map 11	Length 0.25 Facing NE	Coast edge 6 Land edge 1	Foreshore 1 Erosion Slight
8	GLCS 6945	LLANDDULAS	NGR SH883787-SH897785
Map 11-12	Length 1.55 Facing N	Coast edge 5 Land edge 1/4	Foreshore 2/4 Erosion Stable
9	GLCS 6862	LLANDDULAS	NGR SH897785-SH900786
Map 12	Length 0.30 Facing N	Coast edge 4 Land edge 1/4	Foreshore 2/4 Erosion Stable
10	GLCS 6936	LLANDDULAS	NGR SH900786-SH902786
Map 12	Length 0.15 Facing N	Coast edge 4 Land edge 1/4	Foreshore 2/4 Erosion Slight
11	GLCS 6935	LLANDDULAS	NGR SH902786-SH912787
Map 12	Length 1.00 Facing N	Coast edge 4 Land edge 1	Foreshore 3/4 Erosion Stable
12	GLCS 6920	LLANDDULAS	NGR SH912787-SH918783
Map 13	Length 0.70 Facing NE	Coast edge 13 Land edge 1	Foreshore 3/4 Erosion Moderate
13	GLCS 6910	LLANDDULAS	NGR SH918783-SH926782
Map 13	Length 0.80 Facing N	Coast edge 2/4 Land edge 1/6	Foreshore 3/4 Erosion Stable
14	GLCS 7220	LLANDDULAS	NGR SH926782-SH929783
Map 13	Length 0.30 Facing N	Coast edge 4 Land edge 1	Foreshore 3/4 Erosion Stable
15	GLCS 7770	LLANDDULAS	NGR SH929783-SH941786
Map 14	Length 1.25 Facing NNW	Coast edge 13 Land edge 1	Foreshore 3/4 Erosion Slight
16	GLCS 7770, 7866	ABERGELE	NGR SH941786-SH956792
Map 14-15	Length 1.60 Facing NW	Coast edge 1 Land edge 1	Foreshore 3/4 Erosion Stable

17	GLCS 7866			TOWYN		NGR SH956792-SH963795
Map 15	Length 0.70	Facing NW	Coast edge 4	Land edge 1	Foreshore 3/4	Erosion Stable
18	GLCS 7866			TOWYN		NGR SH963795-SH966796
Map 15	Length 0.25	Facing NW	Coast edge 1	Land edge 1	Foreshore 3/4	Erosion Stable
19	GLCS 7868			TOWYN		NGR SH966796-SH977802
Map 15-16	Length 1.10	Facing NW	Coast edge 4	Land edge 1	Foreshore 3/4	Erosion Stable
20	GLCS 7766			TOWYN		NGR SH977802-SH979803
Map 16	Length 0.30	Facing NW	Coast edge 1	Land edge 1	Foreshore 4	Erosion Stable
21	GLCS 7765			KINMEL BAY		NGR SH979803-SH994811
Map 16-17	Length 1.60	Facing NW	Coast edge 1	Land edge 1/4	Foreshore 3/4	Erosion Stable
22	GLCS 7215, 7210			FORYD		NGR SH994811-SH997810
Map 17	Length 0.35	Facing N	Coast edge 10	Land edge 10	Foreshore 3/4	Erosion Moderate
23	GLCS 7201, 7205			FORYD HARBOUR		NGR SH997810-SH994806
Map 17	Length 0.50	Facing SE	Coast edge 1/13	Land edge 1/4	Foreshore 4/5	Erosion Stable
24	GLCS			FORYD		NGR SH994806-SH997802
Map 17-18	Length 0.50	Facing NE	Coast edge 11	Land edge 1	Foreshore 5	Erosion Slight
25	GLCS			RIVER CLWYD		NGR SH997802-SJ017783
Map 20-21	Length 2.60	Facing NE	Coast edge 2	Land edge 2/3	Foreshore 5	Erosion Stable
26	GLCS			RIVER CLWYD		NGR SJ017783-SJ022780
Map 21	Length 0.55	Facing NE	Coast edge 2	Land edge 1	Foreshore 5	Erosion Stable
27	GLCS			RIVER CLWYD		NGR SJ022780-SJ005795
Map 20/21	Length 2.10	Facing SW	Coast edge 2	Land edge 2/3	Foreshore 5	Erosion Stable
28	GLCS			RIVER CLWYD		NGR SJ005795-SH998802
Map 20	Length 0.90	Facing SW	Coast edge 2	Land edge 2/6	Foreshore 5	Erosion Stable
29	GLCS			FORYD		NGR SH998802-SH996807
Map 17	Length 0.50	Facing SW	Coast edge 2	Land edge 6	Foreshore 5	Erosion Stable
30	GLCS 7760			FORYD HARBOUR		NGR SH996807-SH999810
Map 17	Length 0.55	Facing NW	Coast edge 1	Land edge 1	Foreshore 5	Erosion Stable
31	GLCS 7756-9			RHYL		NGR SH999810-SJ021824
Map 17-18	Length 2.45	Facing NNW	Coast edge 1	Land edge 1	Foreshore 4	Erosion Stable
32	GLCS 7755			RHYL		NGR SJ021824-SJ023824
Map 18	Length 0.20	Facing NNE	Coast edge 1	Land edge 1	Foreshore 4	Erosion Stable
33	GLCS 7752			RHYL GOLF COURSE		NGR SJ023824-SJ037828
Map 18	Length 1.75	Facing NNW	Coast edge 1	Land edge 6	Foreshore 4	Erosion Stable
34	GLCS 7750			FFRITH BEACH		NGR SJ037828-SJ047833
Map 19	Length 1.10	Facing NNW	Coast edge 1	Land edge 4/1	Foreshore 4	Erosion Stable

35	GLCS 7745, 7742			PRESTATYN		NGR SJ050834-SJ069841
Map	Length 2.10	Facing NNW	Coast edge 1	Land edge 1	Foreshore 4	Erosion Stable
36	GLCS 7741			PRESTATYN		NGR SJ069841-SJ074842
Map	Length 0.40	Facing NNW	Coast edge 4	Land edge 6	Foreshore 4	Erosion Stable
37	GLCS 7730, 7735/6, 7740			PRESTATYN/GRONANT		NGR SJ074842-SJ087845
Map 2	Length 1.40	Facing NNW	Coast edge 10	Land edge 6	Foreshore 3/4	Erosion Slight
38	GLCS 7735			TALACRE WARREN		NGR SJ083845-SJ122853
Map 3/4	Length 3.35	Facing NNW	Coast edge 10/2	Land edge 1/6	Foreshore 3/4	Erosion Moderate
39	GLCS 7020, 7735			POINT OF AYR		NGR SJ122852-SJ128852
Map 5	Length 0.70	Facing N	Coast edge 10	Land edge 4	Foreshore 4	Erosion Major
40	GLCS 7020			TALACRE		NGR SJ128852-SJ125840
Map 5	Length 1.10	Facing E	Coast edge 2	Land edge 1/5	Foreshore 4/5	Erosion Stable
41	GLCS 7010, 7150			POINT OF AYR COLLIERY		NGR SJ127840-SJ132829
Map 5/6	Length 1.25	Facing NE	Coast edge 5	Land edge 1/3	Foreshore 4/5	Erosion Stable
42	GLCS 7146, 7870			FFYNNONGROYW		NGR SJ132829-SJ153811
Map 6-8	Length 2.85	Facing NE	Coast edge 1	Land edge 1/3	Foreshore 4/5	Erosion Stable
43	GLCS 7135			MOSTYN QUAY		NGR SJ153811-SJ156814
Map 8	Length 0.35	Facing NW	Coast edge 5	Land edge 1	Foreshore 4/5	Erosion Moderate
44	GLCS 7130, 7730			MOSTYN DOCKS		NGR SJ156814-SJ161807
Map 8	Length 0.85	Facing NE	Coast edge 5	Land edge 1	Foreshore 4/5	Erosion Slight
45	GLCS 7725			MOSTYN INDUSTRIAL ESTATE		NGR SJ161807-SJ164803
Map 8	Length 0.35	Facing NE	Coast edge 2	Land edge 1	Foreshore 5	Erosion Slight
46	GLCS 7872			MOSTYN		NGR SJ164803-SJ177795
Map 22	Length 1.45	Facing NNE	Coast edge 2	Land edge 3	Foreshore 4/5	Erosion Stable
47	GLCS 7874			HOLYWELL MARSH		NGR SJ177795-SJ200780
Map 22-23	Length 2.50	Facing NNE	Coast edge 4	Land edge 2/3	Foreshore 4/5	Erosion Stable
48	GLCS 7720			GREENFIELD INDUSTRIAL EST.		NGR SJ200780-SJ206774
Map 24	Length 0.80	Facing NE	Coast edge 3	Land edge 1	Foreshore 4/5	Erosion Stable
49	GLCS 7715			GREENFIELD INDUSTRIAL EST.		NGR SJ206774-SJ208772
Map 24	Length 0.30	Facing NE	Coast edge 3	Land edge 1	Foreshore 4/5	Erosion Moderate
50	GLCS 7127			GREENFIELD MARSH		NGR SJ208772-SJ215766
Map 24	Length 0.80	Facing NE	Coast edge 2/11	Land edge 3	Foreshore 4/5	Erosion Moderate
51	GLCS 7127			BAGILLT LEADWORKS		NGR SJ215766-SJ217763
Map 24	Length 0.30	Facing NE	Coast edge 5/11	Land edge 6	Foreshore 4/5	Erosion Moderate
52	GLCS 7122, 7125			BETTISFIELD		NGR SJ217763-SJ221762
Map 24-25	Length 0.40	Facing NNE	Coast edge 5/11	Land edge 6	Foreshore 4/5	Erosion Moderate

53	GLCS 7710			BAGILLT		NGR SJ221762-SJ225756
Map 25	Length 0.50	Facing NE		Coast edge 2/11	Land edge 1	Foreshore 4/5 Erosion Moderate
54	GLCS 7120			BAGILLT		NGR SJ225756-SJ227755
Map 25	Length 0.40	Facing NE		Coast edge 2/11	Land edge 1	Foreshore 4/5 Erosion Moderate
55	GLCS 7876			BAGILLT MARSH		NGR SJ227755-SJ238742
Map 25-26	Length 1.60	Facing NE		Coast edge 2/11	Land edge 3	Foreshore 4/5 Erosion Moderate
56	GLCS 7112, 7115			FLINT MARSH		NGR SJ238742-SJ246739
Map 26	Length 0.70	Facing NNE		Coast edge 9/11	Land edge 6	Foreshore 4/5 Erosion Moderate
57	GLCS 7112, 7110			FLINT INDUSTRIAL ESTATE		NGR SJ246739-SJ246735
Map 26	Length 0.40	Facing ENE		Coast edge 4	Land edge 6	Foreshore 5 Erosion Stable
58	GLCS 7110			FLINT CASTLE		NGR SJ246735-SJ249734
Map 26	Length 0.20	Facing NE		Coast edge 11	Land edge 1	Foreshore 5 Erosion Slight
59	GLCS 7700			FLINT		NGR SJ249734-SJ253731
Map 26/27	Length 0.40	Facing NE		Coast edge 4/11	Land edge 5	Foreshore 5 Erosion Moderate
60	GLCS 7105			PENTRE FFWRNDAN		NGR SJ253731-SJ259727
Map 27	Length 0.70	Facing NNE		Coast edge 2/11	Land edge 3	Foreshore 5 Erosion Moderate
61	GLCS 7105			PENTRE FFWRNDAN		NGR SJ259727-SJ262725
Map 27	Length 0.40	Facing NNE		Coast edge 5/11	Land edge 1/3	Foreshore 5 Erosion Stable
62	GLCS 7102			OAKENHOLT		NGR SJ262725-SJ267720
Map 27	Length 0.80	Facing NE		Coast edge 1/11	Land edge 1/3	Foreshore 5 Erosion Moderate
63	GLCS 7100			OAKENHOLT		NGR SJ267720-SJ280713
Map 27-28	Length 1.40	Facing NNE		Coast edge 2	Land edge 1/4	Foreshore 5 Erosion Slight
64	GLCS			CONNAH'S QUAY POWER		NGR SJ280713-SJ290702
Map 28	Length 1.40	Facing NE		Coast edge 2	Land edge 1/4	Foreshore 5 Erosion Slight
65	GLCS			CONNAH'S QUAY		NGR SJ290702-SJ292700
Map 29	Length 0.30	Facing NE		Coast edge 11	Land edge 1	Foreshore 5 Erosion Stable
66	GLCS			CONNAH'S QUAY		NGR SJ292700-SJ294699
Map 29	Length 0.20	Facing NNE		Coast edge 3	Land edge 1	Foreshore 5 Erosion Stable
67	GLCS			CONNAH'S QUAY		NGR SJ294699-SJ300698
Map 29	Length 0.60	Facing N		Coast edge 1	Land edge 1	Foreshore 5 Erosion Stable
68	GLCS			CONNAH'S QUAY		NGR SJ300698-SJ303697
Map 29	Length 0.40	Facing N		Coast edge 11	Land edge 4/1	Foreshore 5 Erosion Stable
69	GLCS			HAWARDEN BRIDGE		NGR SJ303697-SJ311693
Map 29	Length 0.70	Facing NNE		Coast edge 2/11	Land edge 4/1	Foreshore 5 Erosion Stable
70	GLCS			QUEENSFERRY		NGR SJ311693-SJ322687
Map 30	Length 1.30	Facing NNE		Coast edge 2	Land edge 3/1	Foreshore 5 Erosion Stable

71	GLCS			QUEENSFERRY		NGR SJ322687-SJ323686
Map 30	Length 0.20	Facing NNE	Coast edge 1	Land edge 1	Foreshore 5	Erosion Stable
72	GLCS			ASTON QUAY		NGR SJ323686-SJ325684
Map 30	Length 0.30	Facing NNE	Coast edge 1	Land edge 1	Foreshore 5	Erosion Stable
73	GLCS			SANDYCROFT		NGR SJ325684-SJ338676
Map 30-31	Length 1.40	Facing NNE	Coast edge 2	Land edge 1	Foreshore 5	Erosion Stable
74	GLCS			SANDYCROFT QUAY		NGR SJ338676-SJ340675
Map 31	Length 0.30	Facing NNE	Coast edge 5	Land edge 1	Foreshore 5	Erosion Stable
75	GLCS			HAWARDEN		NGR SJ340675-SJ373655
Map 31-3	Length 3.80	Facing NNE	Coast edge 2	Land edge 2/3/1	Foreshore 5	Erosion Stable
76	GLCS			SALTNEY		NGR SJ373655-SJ386654
Map 33	Length 1.30	Facing N	Coast edge 1/2	Land edge 1	Foreshore 5	Erosion Stable
77	GLCS			SEALAND		NGR SJ386655-SJ377654
Map 33	Length 1.00	Facing S	Coast edge 2	Land edge 2/3	Foreshore 5	Erosion Stable
78	GLCS			SEALAND		NGR SJ377654-SJ324686
Map 30-3	Length 6.20	Facing SSW	Coast edge 2	Land edge 2/3	Foreshore 5	Erosion Stable
79	GLCS			GARDEN CITY		NGR SJ324686-SJ323697
Map 30	Length 0.20	Facing SSW	Coast edge 2	Land edge 1	Foreshore 5	Erosion Stable
80	GLCS			GARDEN CITY		NGR SJ323697-SJ311694
Map 30	Length 1.30	Facing SSW	Coast edge 2	Land edge 2/1	Foreshore 5	Erosion Stable
81	GLCS			SHOTTON STEELWORKS		NGR SJ311694-SJ291705
Map 29-30	Length 2.20	Facing SSW	Coast edge 2	Land edge 1	Foreshore 5/6	Erosion Stable
82	GLCS			SHOTTON STEELWORKS QUAY		NGR SJ291705-SJ290708
Map 29	Length 0.30	Facing WSW	Coast edge 1	Land edge 1	Foreshore 5	Erosion Stable
83	GLCS			WHITE SANDS		NGR SJ290708-SJ301733
Map 28-29	Length 2.90	Facing W	Coast edge 2/11	Land edge 1	Foreshore 5/6	Erosion Stable

Appendix 2: Gazetteer of sites by category

PRN	Threat	Coast Unit	Period	Name
Category A				
25354	development	5	Modern	Colwyn Bay Pier
26551	sl. erosion	39	Post Medieval	Point of Ayr Lighthouse
100325	none	58	Medieval	Flint Castle
100500	none	1	Medieval	Trillo's Chapel
102034	none	26	Medieval	Rhuddlan Bridge
102048	none	27	Medieval	St Mary's Church Rhuddlan
103981	industry	52	Modern	Bettisfield Colliery
Category B				
12000	none	51	Modern	Milwr Tunnel Portal
26558	industry	41	Modern	Point of Ayr Colliery
26562	industry	43	Post Medieval	Mostyn Quay
26563	industry	43	Modern	Mostyn Docks Flushing Pond 1
26564	industry	44	Modern	Mostyn Docks
26565	industry	44	Modern	Mostyn Docks Flushing Pond 2
26573	ser. erosion	39	Modern	Point of Ayr Anti Glider Poles
26574	ser. erosion	39	Modern	Point of Ayr Pill Box 1
26575	ser. erosion	38	Modern	Point of Ayr Pill Box 2
26576	ser. erosion	38	Modern	Point of Ayr Pill Box 3
34252	none	73	Modern	Sandycroft Pillbox
34257	none	70	Modern	Hawarden Bridge Pillbox 1
34278	mod. erosion	4	Medieval	Llandrillo-yn-Rhos Fishing Weir
34286	development	43	Modern	Mostyn Dock Pillbox 1
34287	development	44	Modern	Mostyn Dock Pillbox 2
34291	development	73	Modern	Queensferry Munitions Factory
34298	development	74	Modern	Sandycroft Transit sheds
34299	development	74	Modern	Sandycroft Munitions Factory
34300	development	74	Modern	Sandycroft Munitions Factory Housing
100133	development	62	Roman	Pentre Farm Roman Site
100501	mod. erosion	2	Medieval	Rhos Fynach Weir
102475	none	42	Post Medieval	Llwyn y Bedd Cross base
Category C				
26550	development	38	Modern	Gronant Lifeboat House
26552	ser. erosion	39	Post Medieval	Point of Ayr Slipway
26559	mod. erosion	42	Post Medieval	Ffynnongroyw Boundary Stone
26568	development	36	Modern	Prestatyn Alkali Works Trackway
26572	mod. erosion	44	Modern	Mostyn Docks Breakwater
26577	mod. erosion	44	Modern	Mostyn Dock Wreck
34200	development	2	Modern	Rhos-on-Sea Pier
34207	development	11	Modern	Llanddulas Lifeboat House
34216	development	48	Post Medieval	Greenfield Quay
34230	development	67	Post Medieval	Connah's Quay Dock 1
34240	development	72	Post Medieval	Aston Quay

PRN	Threat	Coast Unit	Period	Name
34241	development	70	Post Medieval	Queensferry Quay
34242	development	74	Post Medieval	Sandycroft Quay
34244	sl. erosion	78	Post Medieval	Higher Kings Ferry Slipway
34250	mod. erosion	75	Modern	Sandycroft Quay Jetty
34251	mod. erosion	73	Modern	Sandycroft Landing Stage
34253	mod. erosion	73	Modern	Aston Quay Landing Stage 3
34254	mod. erosion	73	Modern	Aston Quay Landing Stage 2
34255	mod. erosion	72	Modern	Aston Quay Landing Stage 1
34258	none	69	Modern	Hawarden Bridge Pillbox 2
34263	mod. erosion	81	Modern	Shotton Steelworks Landing Stage 1
34264	mod. erosion	81	Modern	Shotton Steelworks Landing Stage 2
34265	mod. erosion	81	Modern	Shotton Steelworks Landing Stage 3
34266	mod. erosion	81	Modern	Shotton Steelworks Wreck
34269	development	57	Post Medieval	Flint Quay
34270	industry	52	Post Medieval	Bettisfield Quay
34273	development	48	Modern	Greenfield Quay Flushing Pond
34274	mod. erosion	23	Modern	Foryd Harbour Wreck The Alice
34275	mod. erosion	30	Modern	Foryd Harbour Wreck City of Ottawa
34276	mod. erosion	23	Modern	Foryd Harbour Wreck 3
34277	development	23	Post Medieval	Foryd Harbour
34280	development	10	Modern	Llysfaen Quarry Incline
34283	industry	51	Modern	Bagillt Leadworks Leat
34284	mod. erosion	44	Modern	Mostyn Dock Wreck 2
34285	mod. erosion	44	Modern	Mostyn Dock Wreck 3
34297	development	74	Post Medieval	Sandycroft Foundry
34301	development	27	Post medieval	Rhuddlan Quay
103980	industry	51	Modern	Bagillt Leadworks
104002	sl. erosion	54	Post Medieval	Bagillt Quay
106396	sl. erosion	57	Undated	Flint Dock Hulk

Category D

17103	sl. erosion	31		Rhyl Beach Sea Level Change
26553	none	40	Post Medieval	Talacre Coastal Protection Bank
26554	none	41	Post Medieval	Tanlan Coastal Protection Bank
26555	industry	41	Post Medieval	Talacre Harbour
26556	industry	41	Modern	Point of Ayr Colliery Tramway
26557	destroyed	41	Modern	Point of Ayr Crockford's Tramway (site of)
26560	none	42	Modern	Llinegar Mine Shaft
26561	none	42	Modern	Mostyn Mine Shafts
26566	destroyed	44	Modern	Mostyn Docks Isolation Hospital (site of)
26567	destroyed	44	Modern	Darwen and Mostyn Ironworks
26569	destroyed	36	Modern	Prestatyn Alkali Works Landing Stage (site of)
26570	development	36	Modern	Prestatyn Alkali Works Engine House (site of)
26571	destroyed	35	Modern	Prestatyn Alkali Works (site of)
26861	none	27	Post medieval	Ruddlan Quay trackway
33099	find	31	Mesolithic	Splash Point antler mattock
34202	none	75	Post Medieval	Saltney River Embankment
34203	sl. erosion	6	Modern	Penmaenrhos Jetty
34204	destroyed	7	Post Medieval	Penmaenrhos Quarry
34205	none	8	Modern	Raynes Quarry Jetty
34206	none	8	Modern	Llysfaen Quarry Jetty

PRN	Threat	Coast Unit	Period	Name
34208	destroyed	31	Modern	Rhyl Pier
34209	none	27	Post Medieval	Cwybr Marsh Coast Protection Bank
34210	none	25	Post Medieval	Rhuddlan Marsh Coastal Protection Bank
34211	destroyed	45	Modern	Hanmer Colliery
34212	development	47	Post Medieval	Llannerch-y-mor Quay
34213	none	47	Post Medieval	Holywell Marsh Coastal Protection Bank 1
34214	unknown	47	Post Medieval	Holywell Marsh Boundary Stone 1
34215	unknown	47	Post Medieval	Holywell Marsh Boundary Stone 2
34217	unknown	48	Post Medieval	Holywell Marsh Boundary Stone 3
34218	unknown	48	Post Medieval	Holywell Marsh Boundary Stone 4
34219	unknown	48	Post Medieval	Holywell Marsh Boundary Stone 5
34220	unknown	49	Post Medieval	Holywell Marsh Boundary Stone 6
34221	unknown	50	Post Medieval	Holywell Marsh Boundary Stone 7
34222	unknown	51	Post Medieval	Holywell Marsh Boundary Stone 8
34223	unknown	52	Post Medieval	Bagillt Marsh Boundary Stone
34224	none	50	Post Medieval	Holywell Marsh Embankment
34225	none	55	Post Medieval	Panton Cop Embankment
34226	mod. erosion	83	Post Medieval	White Sands Breakwater
34227	development	64	Post Medieval	Kelsterton Embankment
34228	development	83	Post Medieval	Shotwick Embankment 1
34229	none	81	Post Medieval	Shotwick Embankment 2
34231	development	67	Post Medieval	Connah's Quay Dock 2
34232	none	69	Post Medieval	Shotton Embankment 1
34233	none	69	Post Medieval	Shotton Embankment 2
34234	none	80	Post Medieval	Shotwick Embankment 3
34235	none	80	Post Medieval	Sealand Embankment 1
34236	none	78	Post Medieval	Sealand Embankment 2
34237	none	78	Post Medieval	Sealand Embankment 3
34238	none	78	Post Medieval	Sealand Embankment 4
34239	none	78	Post Medieval	Sealand Embankment 5
34243	destroyed	71	Post Medieval	Lower Kings Ferry
34245	sl. erosion	75	Post Medieval	Higher Kings Ferry Jetty
34246	mod. erosion	74	Modern	Sandycroft Quay Landing Stage
34247	mod. erosion	80	Modern	Garden City Landing Stage
34248	none	53	Post Medieval	Bagillt Boundary stone
34249	sl. erosion	78	Modern	Higher Kings Ferry Jetty 2
34256	none	70	Modern	Queensferry Pillbox
34259	none	69	Modern	Hawarden Bridge Pillbox 3
34260	none	69	Post Medieval	Wepre Boundary Stone 1
34262	none	69	Post Medieval	Wepre Boundary Stone 2
34267	none	71	Modern	Queensferry Bridge SW Abutment
34268	none	79	Modern	Queensferry Bridge NE Abutment
34271	none	53	Modern	Bagillt Quay Railway
34272	none	47	Post Medieval	Holywell Marsh Coastal Protection Bank 2
34279	mod. erosion	10	Modern	Llysfaen Quarry Jetty 2
34281	none	24	Modern	Foryd Bridge West Abutment
34282	none	29	Modern	Foryd Bridge East Abutment
34288	industry	82	Modern	Shotton Steelworks Quay
34289	none	60	Modern	Pentre Ffwrndan Shooting Butt
34290	destroyed	60	Post Medieval	Pentre Ffwrndan Boundary Stone
34292	destroyed	30	Modern	Foryd Shipyard

PRN	Threat	Coast Unit	Period	Name
34293	destroyed	47	Post Medieval	Greenfield Boundary Stone 1
34294	destroyed	47	Post Medieval	Greenfield Boundary Stone 2
34295	destroyed	47	Post Medieval	Greenfield Boundary Stone 3
34296	destroyed	51	Post Medieval	Bettisfield Rope Walk
100134	find	62	Bronze Age	Leadbrook Bronze Celt
100135	find	64	Roman	Green acres Roman Coin
100331	find	57	Roman	Castle Works Roman Finds
100457	find	5	Neolithic	Colwyn Beach Axe
100485	find	16	Prehistoric	Abergele Anvil Stone
100502	find	3	Roman	Rhos Abbey Hotel Coins
100505	find	3	Neolithic	Rhos Abbey Axe
100506	find	3	Neolithic?	Rhos Abbey Hotel Chisel
100565	find	29	Roman	Rhyl Marine Lake Roman Coins
101903	find	31	Bronze Age	Rhyl Foreshore Chisel
101936	find	32	Prehistoric	Rhyl Beach Finds
101937	find	32	Bronze Age	Rhyl Beach Bronze Finds
102176	find	31	Roman	Rhyl Beach Roman Coin
102875	destroyed	22	Modern	Foryd Telegraph Station
103002	find	39	Medieval	Talacre Beach Groat
103601	destroyed	26	Modern	Marsh Road Foundry
103603	development	26	Modern	Phoenix Iron Foundry
103605	destroyed	26	Modern	Marsh Road Tannery
103985	destroyed	62	Modern	Flint Alkali Works
104006	destroyed	55	Post Medieval	Panton Cob Boundary Stone 1
104007	sl. erosion	55	Post Medieval	Panton Cob Boundary Stone 2
104008	destroyed	55	Post Medieval	Panton Cob Boundary Stone 3
104009	unknown	55	Post Medieval	Panton Cob Boundary Stone 4
104010	unknown	55	Post Medieval	Flint Marsh Boundary Stone
104011	unknown	57	Post Medieval	Flint Castle Boundary Stone
104012	unknown	58	Post Medieval	Flint Marshes Boundary Stone
104014	destroyed	56	Modern	Flint Smelting Works
106098	destroyed	44	Modern	Mostyn Coalmine
106402	sl. erosion	31	Unkown	Rhyl Beach Causeway
106441	find	31	Roman	West promenade Roman Coin
106447	find	4	Roman	Rhos-on-Sea Brooch

Category E

34201	unknown	2	Modern	Rhosneigr Wreck
35030	none	27	Mesolithic	Rhuddlan Bypass prehistoric site
100503	unknown	3	Medieval	Llandrillo Monastery

Appendix 3: Gazetteer of sites by threat

PRN	Category	Coast unit	Name
Threat: destroyed			
26557	D	41	Point of Ayr Crockford's Tramway (site of)
26566	D	44	Mostyn Docks Isolation Hospital (site of)
26567	D	44	Darwen and Mostyn Ironworks
26569	D	36	Prestatyn Alkali Works Landing Stage (site of)
26571	D	35	Prestatyn Alkali Works (site of)
34204	D	7	Penmaenrhos Quarry
34208	D	31	Rhyl Pier
34211	D	45	Hanmer Colliery
34243	D	71	Lower Kings Ferry
34290	D	60	Pentre Ffwrndan Boundary Stone
34292	D	30	Foryd Shipyard
34293	D	47	Greenfield Boundary Stone 1
34294	D	47	Greenfield Boundary Stone 2
34295	D	47	Greenfield Boundary Stone 3
34296	D	51	Bettisfield Rope Walk
102875	D	22	Foryd Telegraph Station
103601	D	26	Marsh Road Foundry
103605	D	26	Marsh Road Tannery
103985	D	62	Flint Alkali Works
104006	D	55	Panton Cob Boundary Stone 1
104008	D	55	Panton Cob Boundary Stone 3
104014	D	56	Flint Smelting Works
106098	D	44	Mostyn Coalmine
Threat: development			
25354	A	5	Colwyn Bay Pier
26550	C	38	Gronant Lifeboat House
26568	C	36	Prestatyn Alkali Works Trackway
26570	D	36	Prestatyn Alkali Works Engine House (site of)
34200	C	2	Rhos-on-Sea Pier
34207	C	11	Llanddulas Lifeboat House
34212	D	47	Llannerch-y-mor Quay
34216	C	48	Greenfield Quay
34227	D	64	Kelsterton Embankment
34228	D	83	Shotwick Embankment 1
34230	C	67	Connah's Quay Dock 1
34231	D	67	Connah's Quay Dock 2
34240	C	72	Aston Quay
34241	C	70	Queensferry Quay
34242	C	74	Sandycroft Quay
34269	C	57	Flint Quay
34273	C	48	Greenfield Quay Flushing Pond
34277	C	23	Foryd Harbour

PRN	Category	Coast unit	Name
34280	C	10	Llysfaen Quarry Incline
34286	B	43	Mostyn Dock Pillbox 1
34287	B	44	Mostyn Dock Pillbox 2
34291	B	73	Queensferry Munitions Factory
34297	C	74	Sandycroft Foundry
34298	B	74	Sandycroft Transit sheds
34299	B	74	Sandycroft Munitions Factory
34300	B	74	Sandycroft Munitions Factory Housing
34301	C	27	Rhuddlan Quay
100133	B	62	Pentre Farm Roman Site
103603	D	26	Phoenix Iron Foundry

Threat: find

33099	D	31	Splash Point antler mattock
100134	D	62	Leadbrook Bronze Celt
100135	D	64	Green acres Roman Coin
100331	D	57	Castle Works Roman Finds
100457	D	5	Colwyn Beach Axe
100485	D	16	Abergele Anvil Stone
100502	D	3	Rhos Abbey Hotel Coins
100505	D	3	Rhos Abbey Axe
100506	D	3	Rhos Abbey Hotel Chisel
100565	D	29	Rhyl Marine Lake Roman Coins
101903	D	31	Rhyl Foreshore Chisel
101936	D	32	Rhyl Beach Finds
101937	D	32	Rhyl Beach Bronze Finds
102176	D	31	Rhyl Beach Roman Coin
103002	D	39	Talacre Beach Groat
106441	D	31	West promenade Roman Coin
106447	D	4	Rhos-on-Sea Brooch

Threat: industry

26555	D	41	Talacre Harbour
26556	D	41	Point of Ayr Colliery Tramway
26558	B	41	Point of Ayr Colliery
26562	B	43	Mostyn Quay
26563	B	43	Mostyn Docks Flushing Pond 1
26564	B	44	Mostyn Docks
26565	B	44	Mostyn Docks Flushing Pond 2
34270	C	52	Bettisfield Quay
34283	C	51	Bagillt Leadworks Leat
34288	D	82	Shotton Steelworks Quay
103980	C	51	Bagillt Leadworks
103981	A	52	Bettisfield Colliery

Threat: mod. erosion

26559	C	42	Ffynnongroyw Boundary Stone
26572	C	44	Mostyn Docks Breakwater
26577	C	44	Mostyn Dock Wreck
34226	D	83	White Sands Breakwater

PRN	Category	Coast unit	Name
34246	D	74	Sandycroft Quay Landing Stage
34247	D	80	Garden City Landing Stage
34250	C	75	Sandycroft Quay Jetty
34251	C	73	Sandycroft Landing Stage
34253	C	73	Aston Quay Landing Stage 3
34254	C	73	Aston Quay Landing Stage 2
34255	C	72	Aston Quay Landing Stage 1
34263	C	81	Shotton Steelworks Landing Stage 1
34264	C	81	Shotton Steelworks Landing Stage 2
34265	C	81	Shotton Steelworks Landing Stage 3
34266	C	81	Shotton Steelworks Wreck
34274	C	23	Foryd Harbour Wreck The Alice
34275	C	30	Foryd Harbour Wreck City of Ottawa
34276	C	23	Foryd Harbour Wreck 3
34278	B	4	Llandrillo-yn-Rhos Fishing Weir
34279	D	10	Llysfaen Quarry Jetty 2
34284	C	44	Mostyn Dock Wreck 2
34285	C	44	Mostyn Dock Wreck 3
100501	B	2	Rhos Fynach Weir

Threat: none

12000	B	51	Milwr Tunnel Portal
26553	D	40	Talacre Coastal Protection Bank
26554	D	41	Tanlan Coastal Protection Bank
26560	D	42	Llinegar Mine Shaft
26561	D	42	Mostyn Mine Shafts
26861	D	27	Ruddlan Quay trackway
34202	D	75	Saltney River Embankment
34205	D	8	Raynes Quarry Jetty
34206	D	8	Llysfaen Quarry Jetty
34209	D	27	Cwybr Marsh Coast Protection Bank
34210	D	25	Rhuddlan Marsh Coastal Protection Bank
34213	D	47	Holywell Marsh Coastal Protection Bank 1
34224	D	50	Holywell Marsh Embankment
34225	D	55	Panton Cop Embankment
34229	D	81	Shotwick Embankment 2
34232	D	69	Shotton Embankment 1
34233	D	69	Shotton Embankment 2
34234	D	80	Shotwick Embankment 3
34235	D	80	Sealand Embankment 1
34236	D	78	Sealand Embankment 2
34237	D	78	Sealand Embankment 3
34238	D	78	Sealand Embankment 4
34239	D	78	Sealand Embankment 5
34248	D	53	Bagillt Boundary stone
34252	B	73	Sandycroft Pillbox
34256	D	70	Queensferry Pillbox
34257	B	70	Hawarden Bridge Pillbox 1
34258	C	69	Hawarden Bridge Pillbox 2
34259	D	69	Hawarden Bridge Pillbox 3
34260	D	69	Wepre Boundary Stone 1

PRN	Category	Coast unit	Name
34262	D	69	Wepre Boundary Stone 2
34267	D	71	Queensferry Bridge SW Abutment
34268	D	79	Queensferry Bridge NE Abutment
34271	D	53	Bagillt Quay Railway
34272	D	47	Holywell Marsh Coastal Protection Bank 2
34281	D	24	Foryd Bridge West Abutment
34282	D	29	Foryd Bridge East Abutment
34289	D	60	Pentre Ffwrndan Shooting Butt
35030	E	27	Rhuddlan Bypass prehistoric site
100325	A	58	Flint Castle
100500	A	1	Trillo's Chapel
102034	A	26	Rhuddlan Bridge
102048	A	27	St Mary's Church Rhuddlan
102475	B	42	Llwyn y Bedd Cross base

Threat: ser. erosion

26552	C	39	Point of Ayr Slipway
26573	B	39	Point of Ayr Anti Glider Poles
26574	B	39	Point of Ayr Pill Box 1
26575	B	38	Point of Ayr Pill Box 2
26576	B	38	Point of Ayr Pill Box 3

Threat: sl. erosion

17103	D	31	Rhyl Beach Sea Level Change
26551	A	39	Point of Ayr Lighthouse
34203	D	6	Penmaenrhos Jetty
34244	C	78	Higher Kings Ferry Slipway
34245	D	75	Higher Kings Ferry Jetty
34249	D	78	Higher Kings Ferry Jetty 2
104002	C	54	Bagillt Quay
104007	D	55	Panton Cob Boundary Stone 2
106396	C	57	Flint Dock Hulk
106402	D	31	Rhyl Beach Causeway

Threat: unknown

34201	E	2	Rhosneigr Wreck
34214	D	47	Holywell Marsh Boundary Stone 1
34215	D	47	Holywell Marsh Boundary Stone 2
34217	D	48	Holywell Marsh Boundary Stone 3
34218	D	48	Holywell Marsh Boundary Stone 4
34219	D	48	Holywell Marsh Boundary Stone 5
34220	D	49	Holywell Marsh Boundary Stone 6
34221	D	50	Holywell Marsh Boundary Stone 7
34222	D	51	Holywell Marsh Boundary Stone 8
34223	D	52	Bagillt Marsh Boundary Stone
100503	E	3	Llandrillo Monastery
104009	D	55	Panton Cob Boundary Stone 4
104010	D	55	Flint Marsh Boundary Stone
104011	D	57	Flint Castle Boundary Stone
104012	D	58	Flint Marshes Boundary Stone

Appendix 4: Gazetteer of sites according to recommendations

Prn	Coast unit	Threat	Name
Recommendation: Monitor			
12000	51	none	Milwr Tunnel Portal
17103	31	sl. erosion	Rhyl Beach Sea Level Change
26550	38	development	Gronant Lifeboat House
26555	41	industry	Talacre Harbour
26556	41	industry	Point of Ayr Colliery Tramway
26557	41	destroyed	Point of Ayr Crockford's Tramway (site of)
26559	42	mod. erosion	Ffynnongroyw Boundary Stone
26562	43	industry	Mostyn Quay
26563	43	industry	Mostyn Docks Flushing Pond 1
26564	44	industry	Mostyn Docks
26565	44	industry	Mostyn Docks Flushing Pond 2
34200	2	development	Rhos-on-Sea Pier
34207	11	development	Llanddulas Lifeboat House
34212	47	development	Llannerch-y-mor Quay
34216	48	development	Greenfield Quay
34230	67	development	Connah's Quay Dock 1
34231	67	development	Connah's Quay Dock 2
34240	72	development	Aston Quay
34241	70	development	Queensferry Quay
34242	74	development	Sandycroft Quay
34244	78	sl. erosion	Higher Kings Ferry Slipway
34250	75	mod. erosion	Sandycroft Quay Jetty
34251	73	mod. erosion	Sandycroft Landing Stage
34253	73	mod. erosion	Aston Quay Landing Stage 3
34254	73	mod. erosion	Aston Quay Landing Stage 2
34255	72	mod. erosion	Aston Quay Landing Stage 1
34256	70	none	Queensferry Pillbox
34263	81	mod. erosion	Shotton Steelworks Landing Stage 1
34264	81	mod. erosion	Shotton Steelworks Landing Stage 2
34265	81	mod. erosion	Shotton Steelworks Landing Stage 3
34266	81	mod. erosion	Shotton Steelworks Wreck
34269	57	development	Flint Quay
34270	52	industry	Bettisfield Quay
34273	48	development	Greenfield Quay Flushing Pond
34274	23	mod. erosion	Foryd Harbour Wreck The Alice
34275	30	mod. erosion	Foryd Harbour Wreck City of Ottawa
34276	23	mod. erosion	Foryd Harbour Wreck 3
34277	23	development	Foryd Harbour
34280	10	development	Llysfaen Quarry Incline
34283	51	industry	Bagillt Leadworks Leat
34297	74	development	Sandycroft Foundry
34301	27	development	Rhuddlan Quay

Pnn	Coast unit	Threat	Name
100133	62	development	Pentre Farm Roman Site
100503	3	unknown	Llandrillo Monastery
103603	26	development	Phoenix Iron Foundry
103980	51	industry	Bagillt Leadworks
104002	54	sl. erosion	Bagillt Quay
106396	57	sl. erosion	Flint Dock Hulk
106402	31	sl. erosion	Rhyl Beach Causeway

Recommendation: Nil

26553	40	none	Talacre Coastal Protection Bank
26554	41	none	Tanlan Coastal Protection Bank
26560	42	none	Llinegar Mine Shaft
26561	42	none	Mostyn Mine Shafts
26566	44	destroyed	Mostyn Docks Isolation Hospital (site of)
26567	44	destroyed	Darwen and Mostyn Ironworks
26569	36	destroyed	Prestatyn Alkali Works Landing Stage (site of)
26571	35	destroyed	Prestatyn Alkali Works (site of)
26572	44	mod. erosion	Mostyn Docks Breakwater
26577	44	mod. erosion	Mostyn Dock Wreck
26861	27	none	Ruddlan Quay trackway
33099	31	find	Splash Point antler mattock
34201	2	unknown	Rhosneigr Wreck
34202	75	none	Saltney River Embankment
34203	6	sl. erosion	Penmaenrhos Jetty
34204	7	destroyed	Penmaenrhos Quarry
34205	8	none	Raynes Quarry Jetty
34206	8	none	Llysfaen Quarry Jetty
34208	31	destroyed	Rhyl Pier
34209	27	none	Cwybr Marsh Coast Protection Bank
34210	25	none	Rhuddlan Marsh Coastal Protection Bank
34211	45	destroyed	Hanmer Colliery
34213	47	none	Holywell Marsh Coastal Protection Bank 1
34214	47	unknown	Holywell Marsh Boundary Stone 1
34215	47	unknown	Holywell Marsh Boundary Stone 2
34217	48	unknown	Holywell Marsh Boundary Stone 3
34218	48	unknown	Holywell Marsh Boundary Stone 4
34219	48	unknown	Holywell Marsh Boundary Stone 5
34220	49	unknown	Holywell Marsh Boundary Stone 6
34221	50	unknown	Holywell Marsh Boundary Stone 7
34222	51	unknown	Holywell Marsh Boundary Stone 8
34223	52	unknown	Bagillt Marsh Boundary Stone
34224	50	none	Holywell Marsh Embankment
34225	55	none	Panton Cop Embankment
34226	83	mod. erosion	White Sands Breakwater
34227	64	development	Kelsterton Embankment
34228	83	development	Shotwick Embankment 1
34229	81	none	Shotwick Embankment 2
34232	69	none	Shotton Embankment 1

Prn	Coast unit	Threat	Name
34233	69	none	Shotton Embankment 2
34234	80	none	Shotwick Embankment 3
34235	80	none	Sealand Embankment 1
34236	78	none	Sealand Embankment 2
34237	78	none	Sealand Embankment 3
34238	78	none	Sealand Embankment 4
34239	78	none	Sealand Embankment 5
34243	71	destroyed	Lower Kings Ferry
34245	75	sl. erosion	Higher Kings Ferry Jetty
34246	74	mod. erosion	Sandycroft Quay Landing Stage
34247	80	mod. erosion	Garden City Landing Stage
34248	53	none	Bagillt Boundary stone
34249	78	sl. erosion	Higher Kings Ferry Jetty 2
34259	69	none	Hawarden Bridge Pillbox 3
34260	69	none	Wepre Boundary Stone 1
34262	69	none	Wepre Boundary Stone 2
34267	71	none	Queensferry Bridge SW Abutment
34268	79	none	Queensferry Bridge NE Abutment
34271	53	none	Bagillt Quay Railway
34272	47	none	Holywell Marsh Coastal Protection Bank 2
34279	10	mod. erosion	Llysfaen Quarry Jetty 2
34281	24	none	Foryd Bridge West Abutment
34282	29	none	Foryd Bridge East Abutment
34284	44	mod. erosion	Mostyn Dock Wreck 2
34285	44	mod. erosion	Mostyn Dock Wreck 3
34288	82	industry	Shotton Steelworks Quay
34289	60	none	Pentre Ffwrndan Shooting Butt
34290	60	destroyed	Pentre Ffwrndan Boundary Stone
34292	30	destroyed	Foryd Shipyard
34293	47	destroyed	Greenfield Boundary Stone 1
34294	47	destroyed	Greenfield Boundary Stone 2
34295	47	destroyed	Greenfield Boundary Stone 3
34296	51	destroyed	Bettisfield Rope Walk
35030	27	none	Rhuddlan Bypass prehistoric site
100134	62	find	Leadbrook Bronze Celt
100135	64	find	Green acres Roman Coin
100331	57	find	Castle Works Roman Finds
100457	5	find	Colwyn Beach Axe
100485	16	find	Abergele Anvil Stone
100502	3	find	Rhos Abbey Hotel Coins
100505	3	find	Rhos Abbey Axe
100506	3	find	Rhos Abbey Hotel Chisel
100565	29	find	Rhyl Marine Lake Roman Coins
101903	31	find	Rhyl Foreshore Chisel
101936	32	find	Rhyl Beach Finds
101937	32	find	Rhyl Beach Bronze Finds
102176	31	find	Rhyl Beach Roman Coin

Pm	Coast unit	Threat	Name
102475	42	none	Llwyn y Bedd Cross base
102875	22	destroyed	Foryd Telegraph Station
103002	39	find	Talacre Beach Groat
103601	26	destroyed	Marsh Road Foundry
103605	26	destroyed	Marsh Road Tannery
103985	62	destroyed	Flint Alkali Works
104006	55	destroyed	Panton Cob Boundary Stone 1
104007	55	sl. erosion	Panton Cob Boundary Stone 2
104008	55	destroyed	Panton Cob Boundary Stone 3
104009	55	unknown	Panton Cob Boundary Stone 4
104010	55	unknown	Flint Marsh Boundary Stone
104011	57	unknown	Flint Castle Boundary Stone
104012	58	unknown	Flint Marshes Boundary Stone
104014	56	destroyed	Flint Smelting Works
106098	44	destroyed	Mostyn Coalmine
106441	31	find	West promenade Roman Coin
106447	4	find	Rhos-on-Sea Brooch

Recommendation: Preserve

25354	5	development	Colwyn Bay Pier
26551	39	sl. erosion	Point of Ayr Lighthouse
34252	73	none	Sandycroft Pillbox
34257	70	none	Hawarden Bridge Pillbox 1
34258	69	none	Hawarden Bridge Pillbox 2
34286	43	development	Mostyn Dock Pillbox 1
34287	44	development	Mostyn Dock Pillbox 2
100325	58	none	Flint Castle
100500	1	none	Trillo's Chapel
100501	2	mod. erosion	Rhos Fynach Weir
102034	26	none	Rhuddlan Bridge
102048	27	none	St Mary's Church Rhuddlan
103981	52	industry	Bettisfield Colliery

Recommendation: Survey

26552	39	ser. erosion	Point of Ayr Slipway
26558	41	industry	Point of Ayr Colliery
26568	36	development	Prestatyn Alkali Works Trackway
26570	36	development	Prestatyn Alkali Works Engine House (site of)
26573	39	ser. erosion	Point of Ayr Anti Glider Poles
26574	39	ser. erosion	Point of Ayr Pill Box 1
26575	38	ser. erosion	Point of Ayr Pill Box 2
26576	38	ser. erosion	Point of Ayr Pill Box 3
34278	4	mod. erosion	Llandrillo-yn-Rhos Fishing Weir
34291	73	development	Queensferry Munitions Factory
34298	74	development	Sandycroft Transit sheds
34299	74	development	Sandycroft Munitions Factory
34300	74	development	Sandycroft Munitions Factory Housing

Appendix 5: Archive reference material

Subject	Type	Date	Reference	Description
Location HAWARDEN				
BAGILLT	MAP		D/DM/734/3	
COLWYN	MAP	L 19th	D/M/4848	
DYSERTH	MAP		D/GW/664	
DYSERTH	MAP		D/DM/540/5	
DYSERTH	MAP	1814	DC/221	
DYSERTH	MAP	c.1736	NT/M/9	
FFYNNONGROYW	MAP	19th	D/MT/594	
FLINT	MAP		MS 8542	Mostyn manuscripts
FLINT	MAP	1737	D/DM/12/1	Plan of lead works
FLINT	MAP	1740	NT/M/28	
FLINT	MAP	1854	NT/M/90	
FLINT	MAP	1924	D/DM/136/5(d)	Plan of Flint and Bagillt lead works
FLINT	MAP	c1799	D/DM/50/1	Plan of Flint lead works
GREENFIELD	MAP	c.1843	D/M/5251	
HAWARDEN	MAP	1732	DC/199	
HAWARDEN	MAP	1733	D/HA/599	
HAWARDEN	MAP	1740	D/DM/8	
HAWARDEN	MAP	1740	D/HA/602	
HAWARDEN	MAP	1836	D/HA/622	
HAWARDEN	MAP	1858	DC/202-12	Plans of River Dee Co holdings
HAWARDEN	MAP	18th	NT/M/7	
HAWARDEN	MAP	Mid19	D/HA/623	
HOLYWELL	MAP	1717	D/DM/540/3	
HOLYWELL	MAP	1824	D/DM/136/a-f	
HOLYWELL	MAP	1833	D/DM/12/4	
HOLYWELL	MAP	19th	NT/M/98	River Dee Co. holdings
HOLYWELL	MAP	L18th	D/BC/302	
HOLYWELL	MAP	c1735	D/MT/593	
HOLYWELL	MAP	c1780	D/GW/670	
HOLYWELL	MAP	c1833	D/KK/550	
LLANERCH Y MOR	MAP	19th	D/BC/286,289	
MELIDEN	MAP	1820	D/DM/136/1	
MELIDEN	MAP	1858	D/BD/149	
MOSTYN	MAP		D/M/5139	Whitford Tithe map
MOSTYN	MAP	1742	D/M/5248	Mostyn Estates
MOSTYN	MAP	1743	NT/M/135	Manor of Mostyn by Thomas Badesdale
MOSTYN	MAP	1751	D/M/5139	Mostyn Pits by John Foulkes
MOSTYN	MAP	1814	D/M/5139	Coal Pits by John Farey
MOSTYN	MAP	1816	NT/M/136	Manor of Mostyn by Thomas Jones
MOSTYN	MAP	1848/1879	D/M/5134-8	Mostyn Colliery
MOSTYN	MAP	1865	QS/DP/4	Cambrian Docks 1866
MOSTYN	MAP	1870	D/DM/359/1	Mostyn Ironworks
MOSTYN	MAP	1870/1901	D/DM/359/1-3	Mostyn Colliery
MOSTYN	MAP	1879	D/DM/255/26	Sale plan of Mostyn Ironworks
MOSTYN	MAP	1888	QS/DP/9	Mostyn Docks 1888

Subject	Type	Date	Reference	Description
MOSTYN	MAP	1888-9	D/DM/161/5	Mostyn Docks
MOSTYN	MAP	1931-2	D/M/4893-7	Darwen and Mostyn Ironworks
MOSTYN	MAP	1938	D/M/5250	Mostyn Quay and Docks
MOSTYN	MAP	c1850	D/DM/315/1	Mostyn Colliery
POINT OF AYR	MAP	1885/1890	D/LA/103-5	Surface plan of colliery
QUEENSFERRY	MAP	1848	DC/775	
QUEENSFERRY	MAP	1861	D/BC/627	
RHUDDLAN	MAP	1756	NT/M/94(i-v)	
RHUDDLAN	MAP	1780	D/GW/663	
RHUDDLAN	MAP	1794	DC/219	
RHUDDLAN	PRINT	1795	CRO 879	
RHUDDLAN	MAP	1796	DC/220	
RHUDDLAN	MAP	1800	D/DM/136/11	
RHUDDLAN	MAP	1810	NT/M/93	
RHUDDLAN	MAP	1855	DC/233	
RHUDDLAN	MAP	1865	DC/237	
RHYL	MAP	1836	DC/240	
RHYL	MAP	1842	NT/M/10	
RHYL	MAP	1842	NT/M/11	
RHYL	MAP	1851	DC/243	
RHYL	MAP	1852	IC/3B	
RHYL	MAP	1852	DC/244	
RHYL	MAP	c1826	DC/228	
RIVER DEE	MAP	1674	D/M/5139(ii)	Map by Grenville Collins
RIVER DEE	MAP	1732	D/M/5139(iv)	Map by John Mackay
RIVER DEE	MAP	1736/1889	D/LA/64-82	
RIVER DEE	MAP	1737/1937	D/DM/223/29-3	River Dee Acts and Plan of Estuary
			5	
RIVER DEE	MAP	1740	D/HA/602	Plan of old and new course of Dee
RIVER DEE	MAP	1772	D/DM/819	River Dee Co Holdings
RIVER DEE	MAP	1787	D/LA/39	River Dee Co holdings
RIVER DEE	MAP	1807	D/M/4888	
SHOTTON	MAP	1758	D/BC/625	
TALACRE	MAP	1732-1952	D/LA/97	Talacre Harbour plans 1732 to 1952
Location NLW				
ABERGELE	MAP	1741	PENTRE (p12)	Map of estate of William Price
ABERGELE	MAP	1831	PENTRE (p28)	
ABERGELE	MAP	1835	ADMIRALTY CHART	Admiralty Chart Point Lynus to Abergele
CONNAH'S QUAY	MAP	1849	BRN 6242	
CONNAH'S QUAY	MAP	1862	BET p349	Mineral rights in Lordshire of Englefield
CONNAH'S QUAY	MAP	1864	BRN 1878	Connah's Quay Railway and Docks
CONNAH'S QUAY	MAP	?1866	BRN 6252	Buckley Railway and Docks at Connah's Quay
FLINT	MAP		BET p352	
FLINT	MAP	1850	BET p332	River Dee Co holdings
SALTNEY	MAP	1856	BRN 2180	
Location RUTHIN				
COLWYN	MAP	1745	DD/DM/488/6-7	
COLWYN	MAP	1872	DD/PO/2979	Pwylcrochan Estate

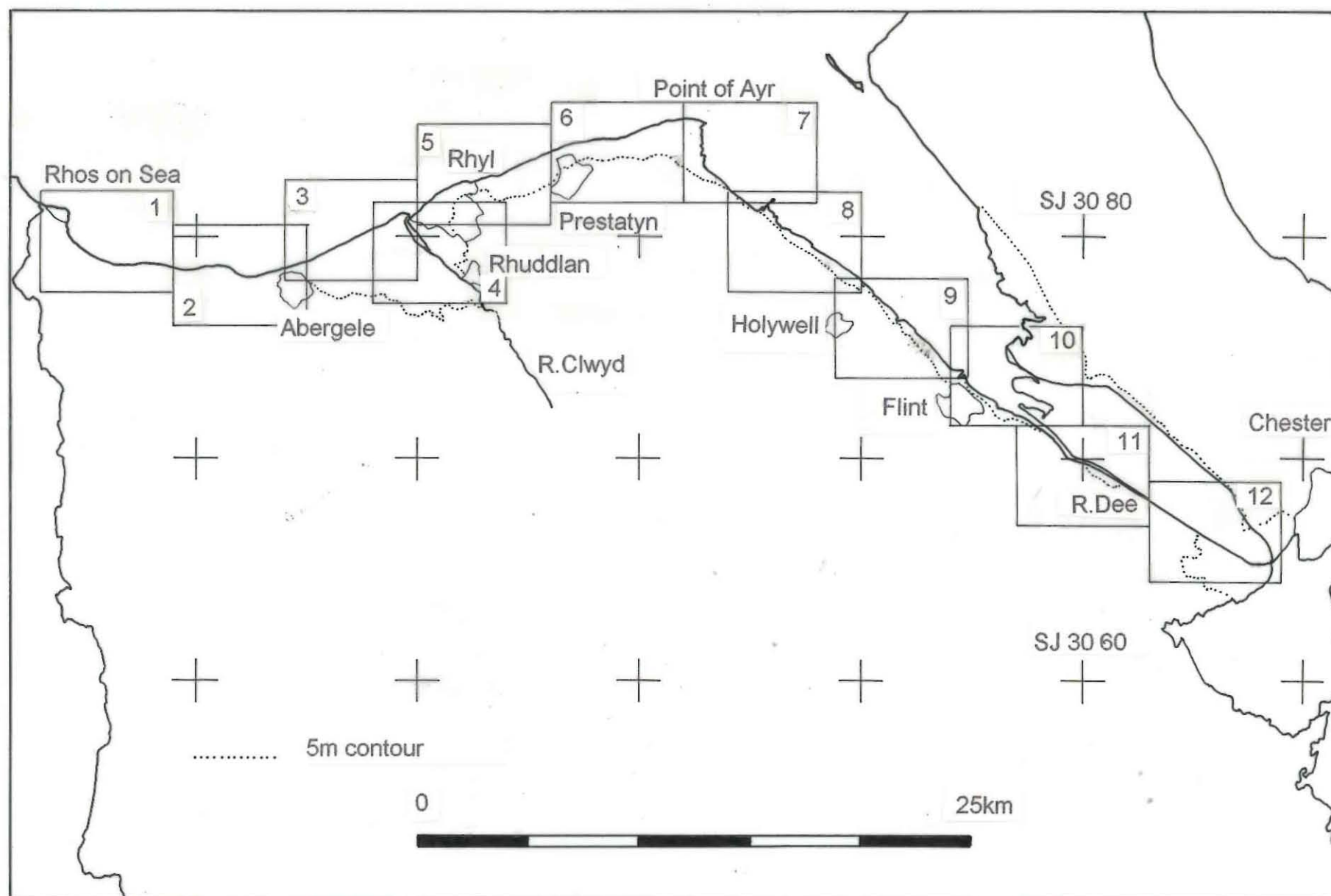


Fig. 1 Location

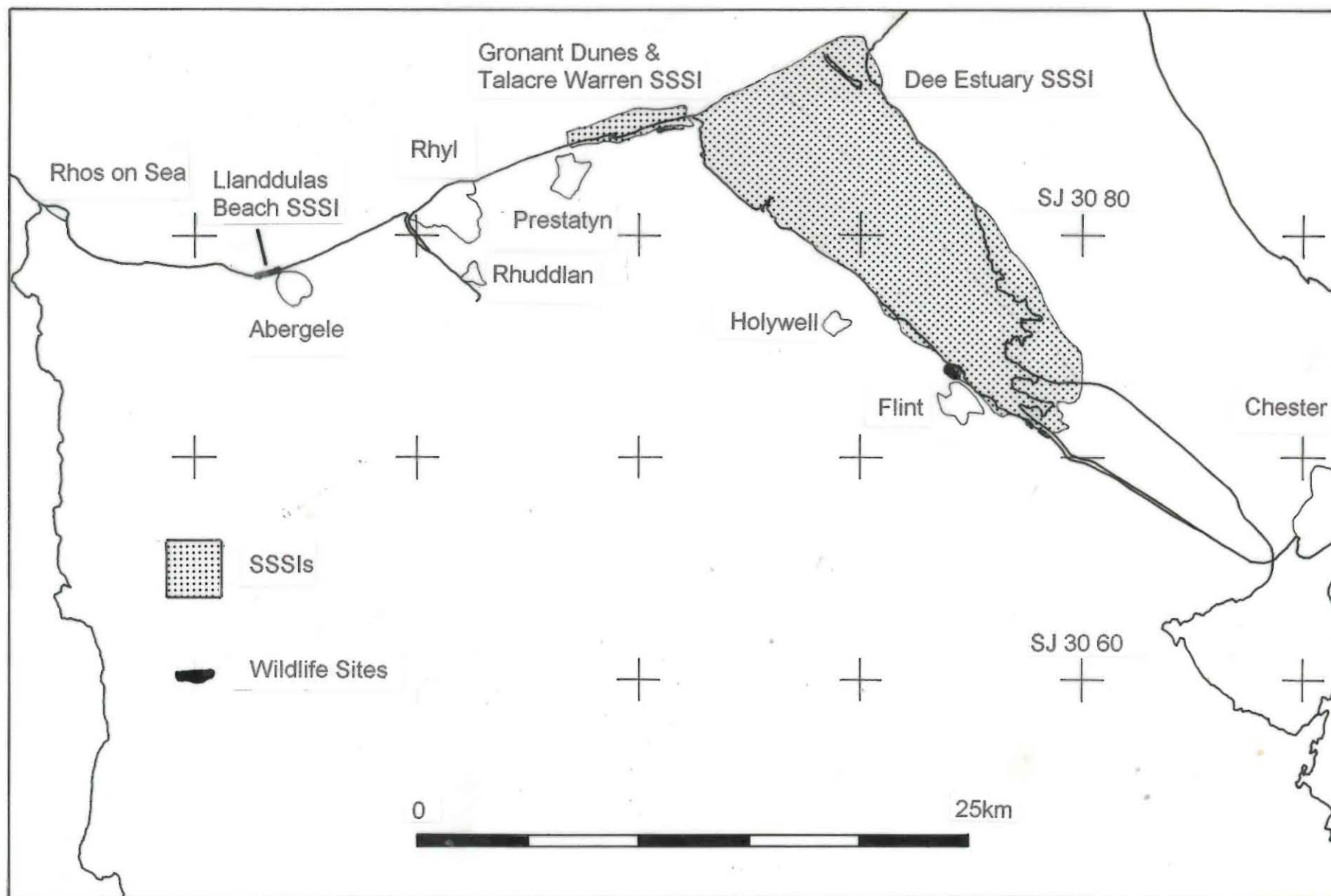
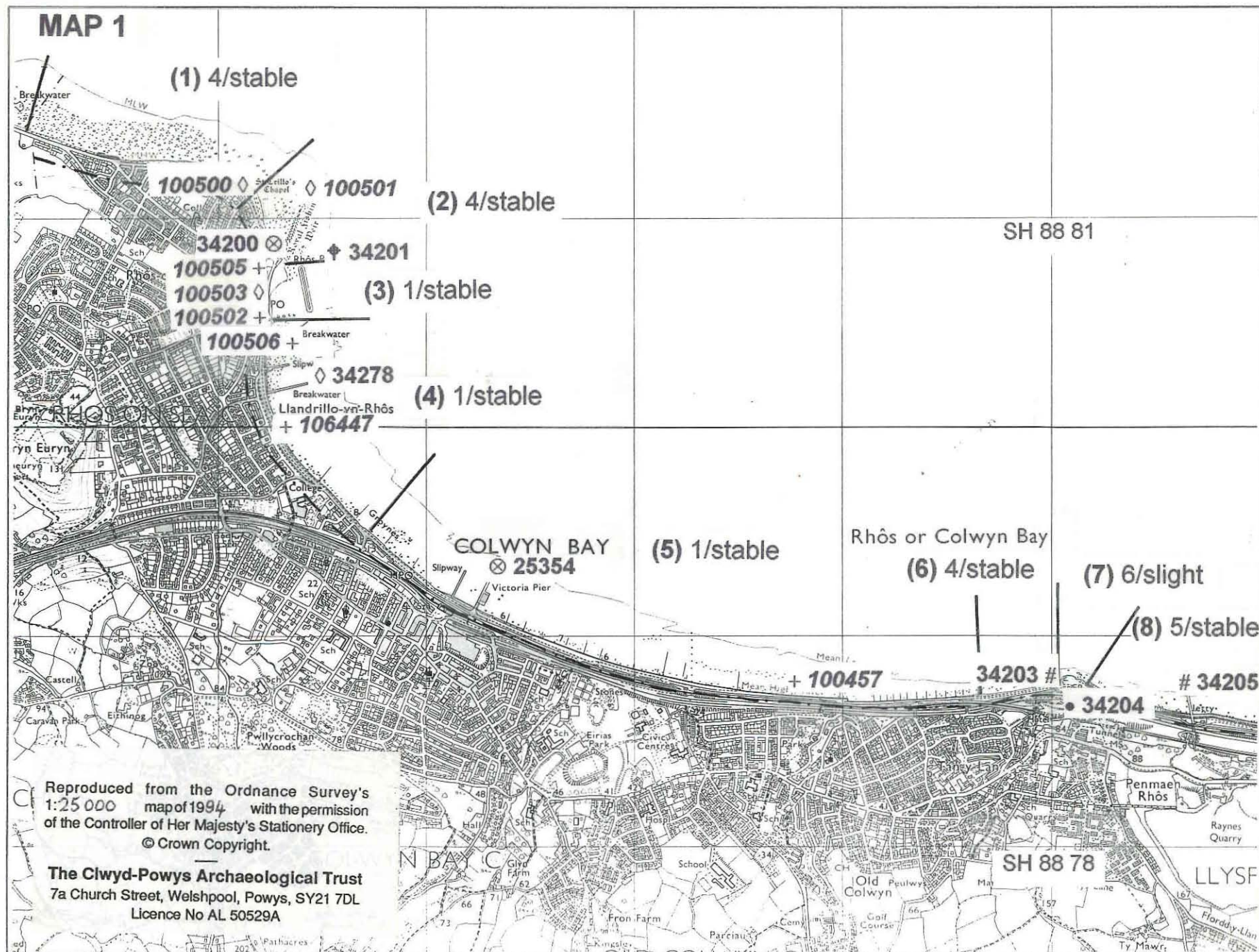
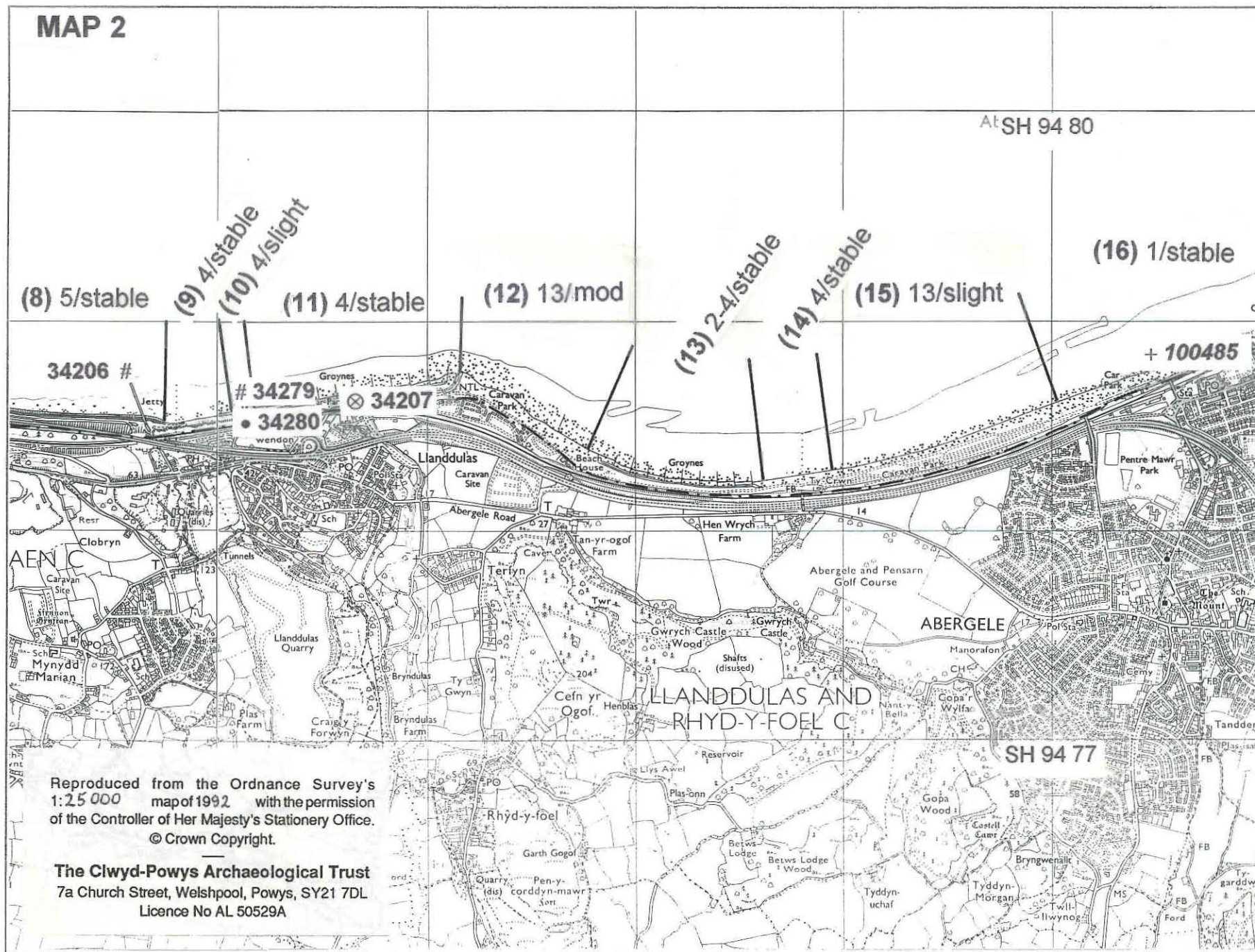
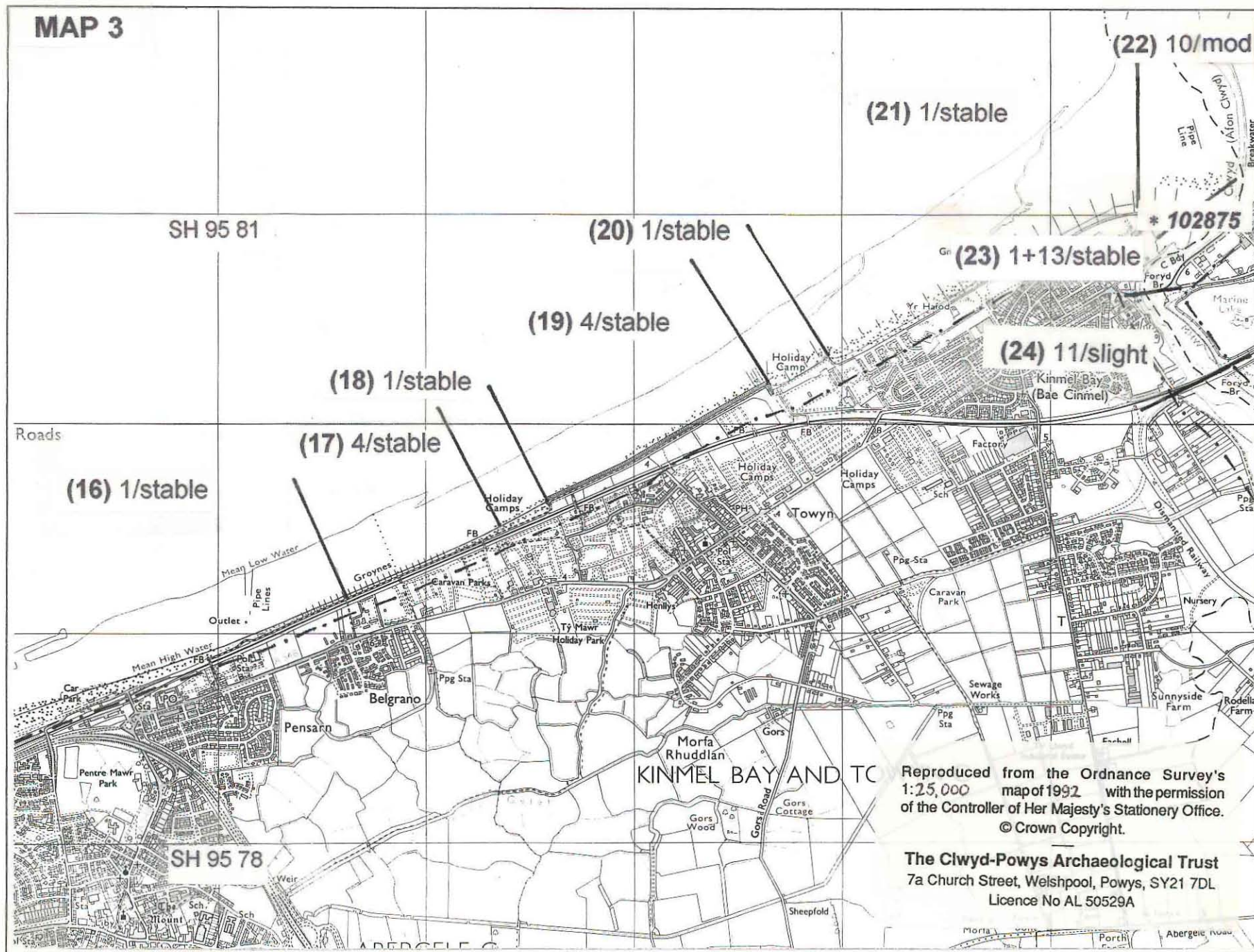
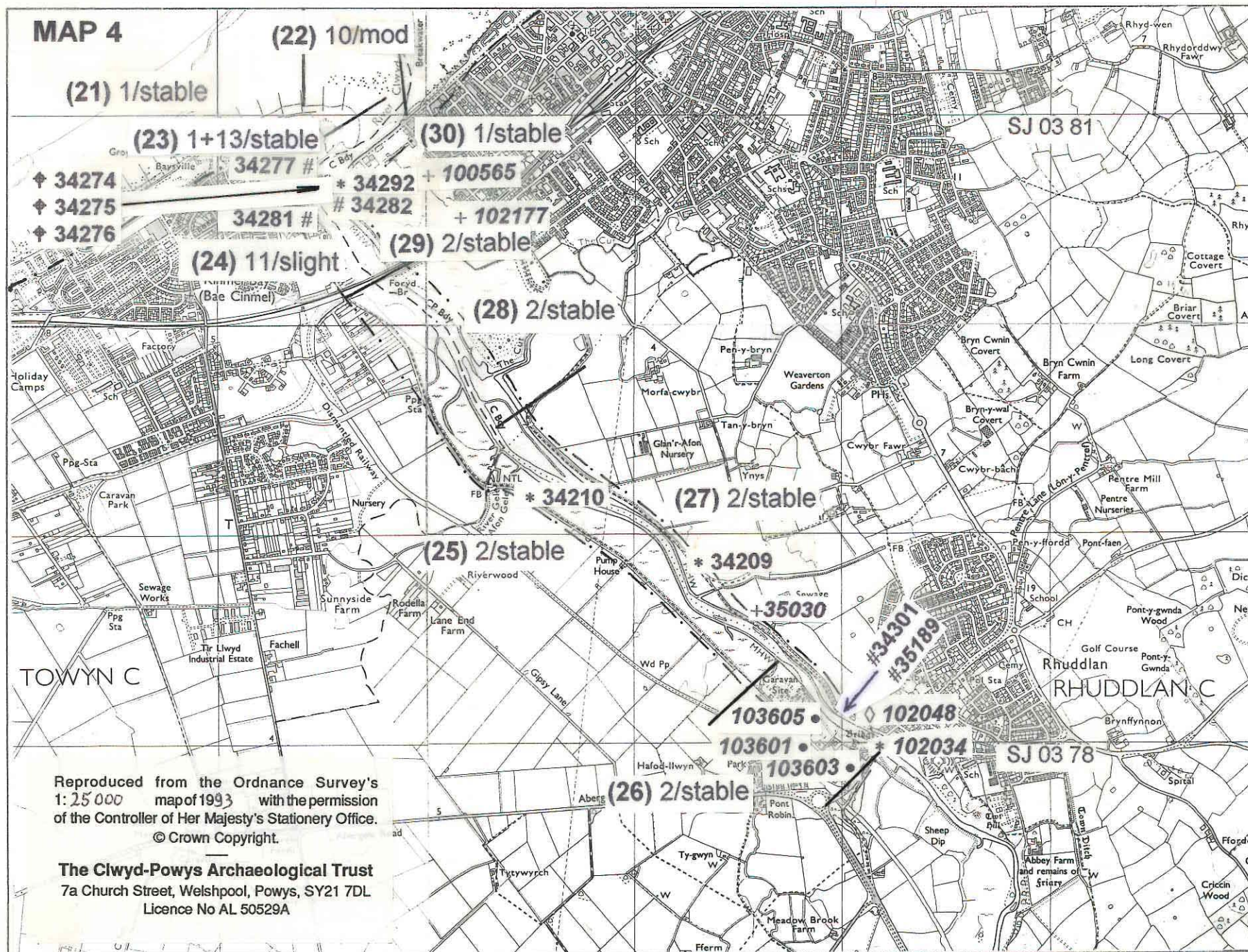


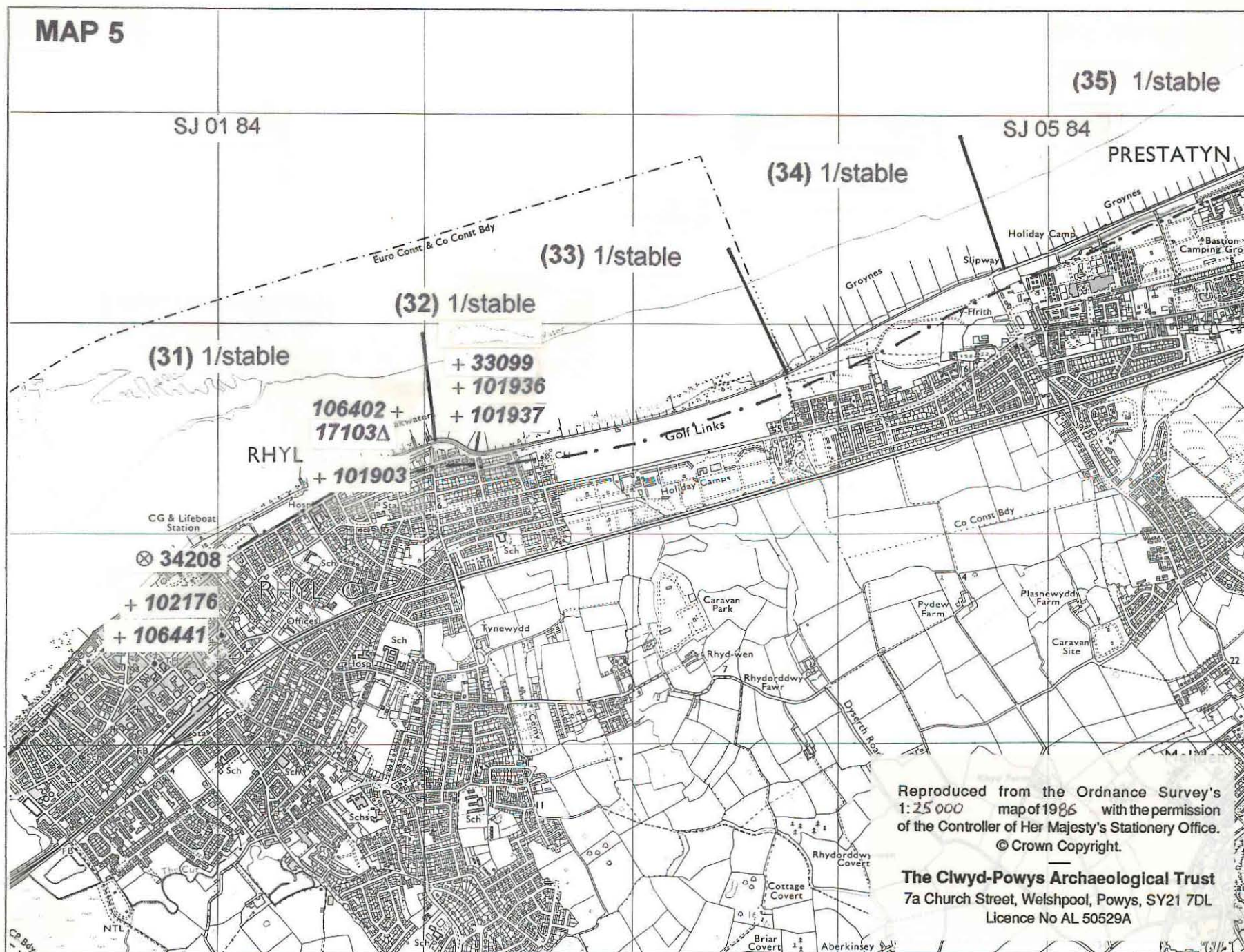
Fig. 2 Sites of Special Scientific Interest (SSSIs) and Wildlife Sites











MAP 6

