

# SHORELINE MANAGEMENT PLANS



Prepared by Dyfed Archaeological Trust  
For: Cadw

ymddiriedolaeth archaeolegol  
**DYFED**  
archaeological trust

# DYFED ARCHAEOLOGICAL TRUST

REPORT NO. 2022-18

EVENT RECORD NO. 128456

CADW PROJECT NO. DAT 172

March 2022

## SHORELINE MANAGEMENT PLANS

By  
**Charles Enright**

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Llywodraeth Cymru  
Welsh Government

Ymddiriedolaeth Archaeolegol Dyfed Cyf  
Corner House, 6 Stryd Caerfyrddin, Llandeilo,  
Sir Gaerfyrddin SA19 6AE  
Ffon: Ymholiadau Cyffredinol 01558 823121  
Adran Rheoli Treftadaeth 01558 823131  
Ebost: [info@dyfedarchaeology.org.uk](mailto:info@dyfedarchaeology.org.uk)  
Gwefan: [www.archaeolegdyfed.org.uk](http://www.archaeolegdyfed.org.uk)

Corner House, 6 Carmarthen Street, Llandeilo,  
Carmarthenshire SA19 6AE  
Tel: General Enquiries 01558 823121  
Heritage Management Section 01558 823131  
Email: [info@dyfedarchaeology.org.uk](mailto:info@dyfedarchaeology.org.uk)  
Website: [www.dyfedarchaeology.org.uk](http://www.dyfedarchaeology.org.uk)

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## Shoreline Management Plans

<b>Client</b>	Cadw
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**Event Record No** 128456

<b>Report No</b>	2022-18
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**Project Code** DAT A126

<b>Report Prepared By</b>	Charles Enright
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**Fieldwork Directed By** Charles Enright

<b>Illustrated By</b>	Charles Enright
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**Report Approved By** Ken Murphy

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## SHORELINE MANAGEMENT PROJECT

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## **SHORELINE MANAGEMENT PROJECT**

### **CRYNODEB GWEITHREDOL**

*Mae'r adroddiad hwn yn disgrifio blwyddyn gyntaf prosiect a gafodd gymorth grant gan Cadw ac a gynhaliwyd gan Ymddiriedolaeth Archeolegol Dyfed rhwng Chwefror a Mawrth 2022.*

*Mae morlin Cymru wedi'i rhannu gan Gynlluniau Rheoli Traethlin (CRhT) mewn 928 o adrannau yn hysbys fel unedau polisi. Mae pob un o'r unedau hyn yn diffinio sut bydd y rhan benodol o morlin yn cael ei rheoli yn y tymor byr, y tymor canolig a tymor hir. Mae'r amgylchedd hanesyddol yn ystyriaeth o reoli'r draethlin, fodd bynnag, nid yw'r data CAH sy'n hysbysu CRhT yn gyfredol. Bydd y prosiect hwn yn darparu data cyfredol ar asedau hanesyddol yn y ardaloedd sy'n gorchuddiedig gan y cynlluniau gweithredu. Mae'r adroddiad hwn yn nodi'r fethodoleg a ddefnyddiwyd a chanlyniadau prosiect peilot.*

### **EXECUTIVE SUMMARY**

This report describes the first year of a project grant-aided by Cadw and carried out by Dyfed Archaeological Trust in February-March 2022.

The Welsh coastline has been divided up by Shoreline Management Plans (SMPs) into 928 sections known as policy units. Each of these units define how the specified section of coastline will be managed in the short-term, medium-term, and long-term. The historic environment is a consideration of shoreline management, however, HER data which informs SMPs is not current. This project will provide up to date data on historic assets in the areas covered by the action plans. This report sets out the methodology used and the results of a pilot project.

## 1. INTRODUCTION

- 1.1 The coastline of Wales is covered by four Shoreline Management Plans (SMPs); The Severn Estuary SMP, The South Wales SMP, The West of Wales SMP & The North Wales and Northwest England SMP.
- 1.2 The SMPs breaks the coastline down into 928 small sections known as "policy units". Each policy unit defines how the section of coastline will be managed over a long-term period divided into three epochs (short-term (2005 – 2025), medium-term (2025 – 2055) and long-term (2055 – 2105)), with one of four management policies chosen for each period:
- **Hold The Line** – Maintaining or changing the existing standard of protection.
  - **Advance The Line** - By extending new defences into the sea (Policy not applied in Wales).
  - **Managed Realignment** – Allows the shoreline to move backwards and forwards with management to control or limit the movement.
  - **No Active Intervention** – Where there is no investment in coastal defences and natural processes are allowed.
- 1.3 SMPs are essentially designed to protect people and property. However, the historic environment is a consideration of shoreline management, however, HER data which informs SMPs is not current, with the condition of most historic environment assets not updated since the Trust's coastal surveys in the mid-1990s.
- 1.4 This project will provide up to date information on historic assets in the areas covered by the action plans. The project is grant-aided by Cadw.

## **1.2. Project Aim and Objectives**

1.2.1 The aim of the project is:

- The production of high-quality historic environment data to ensure there is better decision-making on the potential impact of coastal change on the historic environment

1.2.2 The objectives of the project are:

- To produce up-to-date HER records for the coastal zone.
- Create GIS polygonal HER site data for incorporation into SMP datasets
- Disseminate new and enhanced HER data bilingually through Archwilio

## **1.3 Report Outline**

1.3.1 This report summarises the methodology used to achieve the above aim and objectives.

## **1.4 Abbreviations**

1.4.1 Sites recorded on the regional Historic Environment Record (HER) are identified by their Primary Record Number (PRN) and located by their National Grid Reference (NGR). Sites recorded on the National Monument Record (NMR) held by the Royal Commission on the Ancient and Historical Monuments of Wales (RCAHMW) are identified by their National Primary Record Number (NPRN). Scheduled Monument (SM). Altitude is expressed to Ordnance Datum (OD). References to cartographic and documentary evidence and published sources will be given in brackets throughout the text, with full details listed in the sources section at the rear of the report.

## **1.5 Illustrations**

1.5.1 Printed map extracts are not necessarily produced to their original scale.

## **1.6 Timeline**

1.6.1 The following timeline (Table 1) is used within this report to give date ranges for the various archaeological periods that may be mentioned within the text.

**Table 1:** Archaeological and historical timeline for Wales.

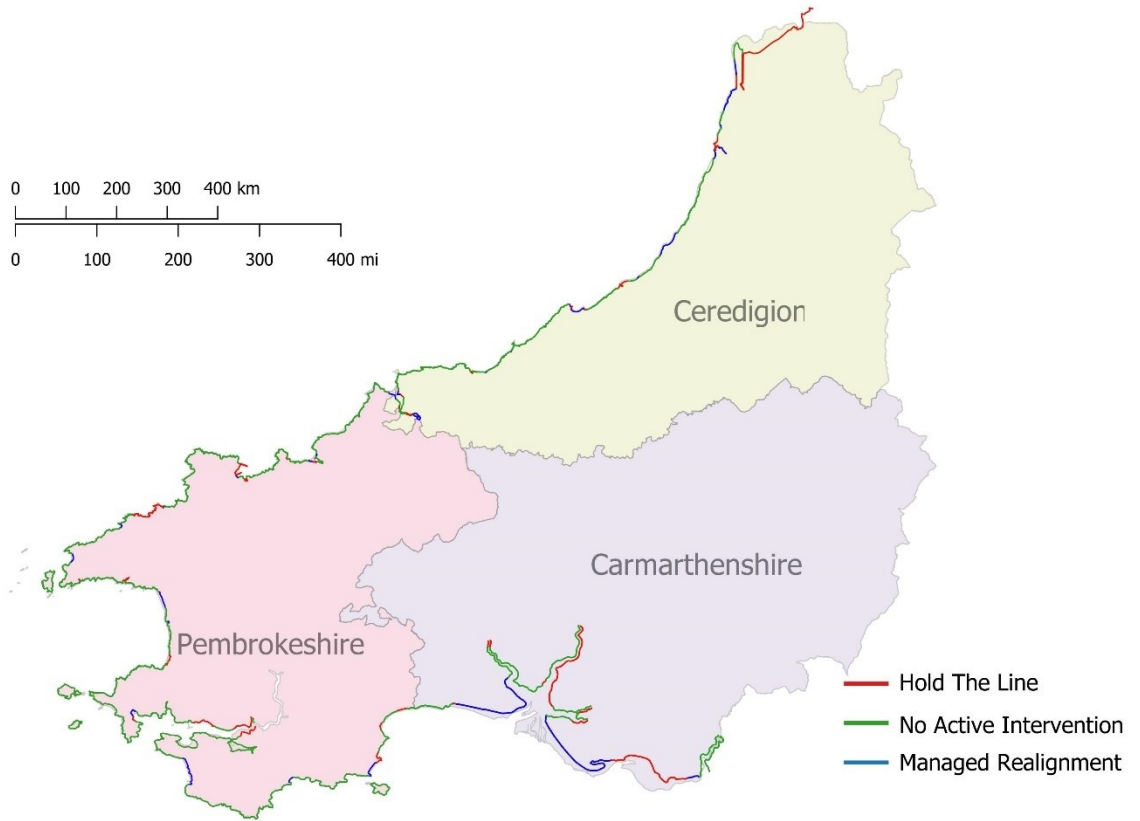
<b>Period</b>	<b>Approximate date</b>	
Palaeolithic –	c.450,000 – 10,000 BC	<b>Prehistoric</b>
Mesolithic –	c. 10,000 – 4400 BC	
Neolithic –	c.4400 – 2300 BC	
Bronze Age –	c.2300 – 700 BC	
Iron Age –	c.700 BC – AD 43	
Roman (Romano-British) Period –	AD 43 – c. AD 410	<b>Historic</b>
Post-Roman / Early Medieval Period –	c. AD 410 – AD 1086	
Medieval Period –	1086 – 1536	
Post-Medieval Period <sup>1</sup> –	1536 – 1750	
Industrial Period –	1750 – 1899	
Modern –	20 <sup>th</sup> century onwards	

<sup>1</sup> The post-medieval and industrial periods are combined as the post-medieval period on the Regional Historic Environment Record as held by Dyfed Archaeological Trust

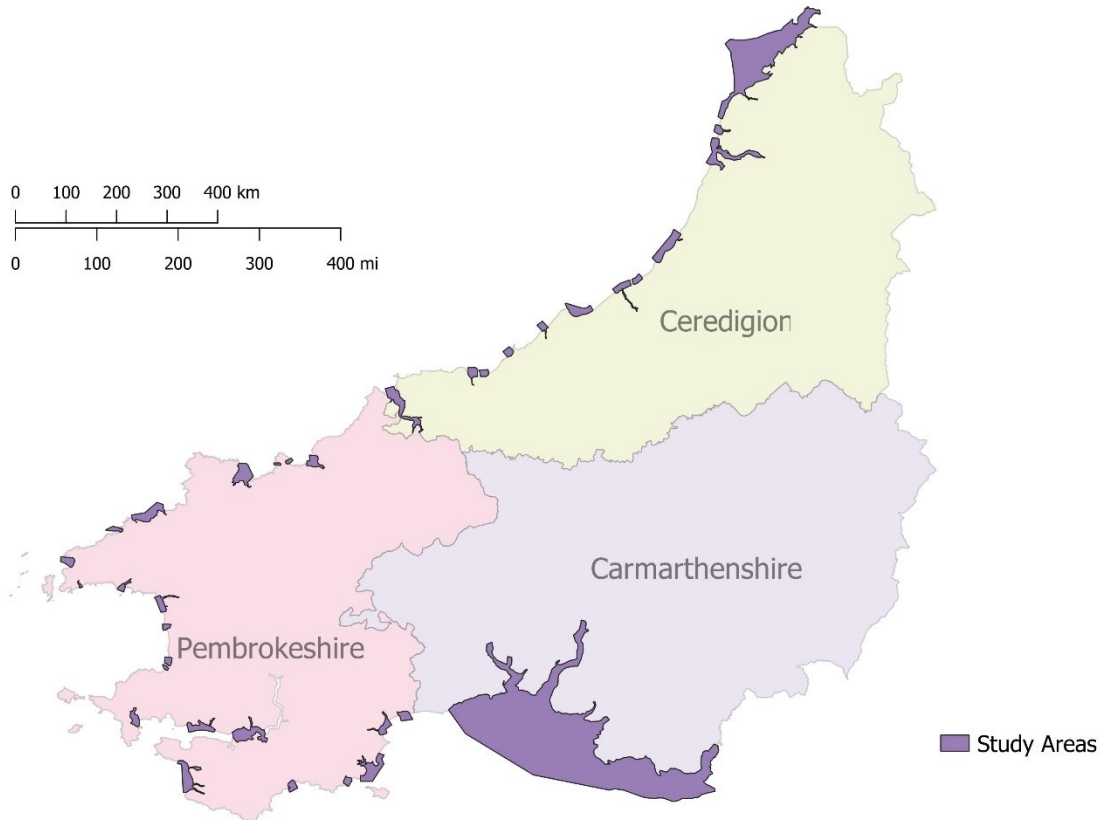


## 5. METHODOLOGY

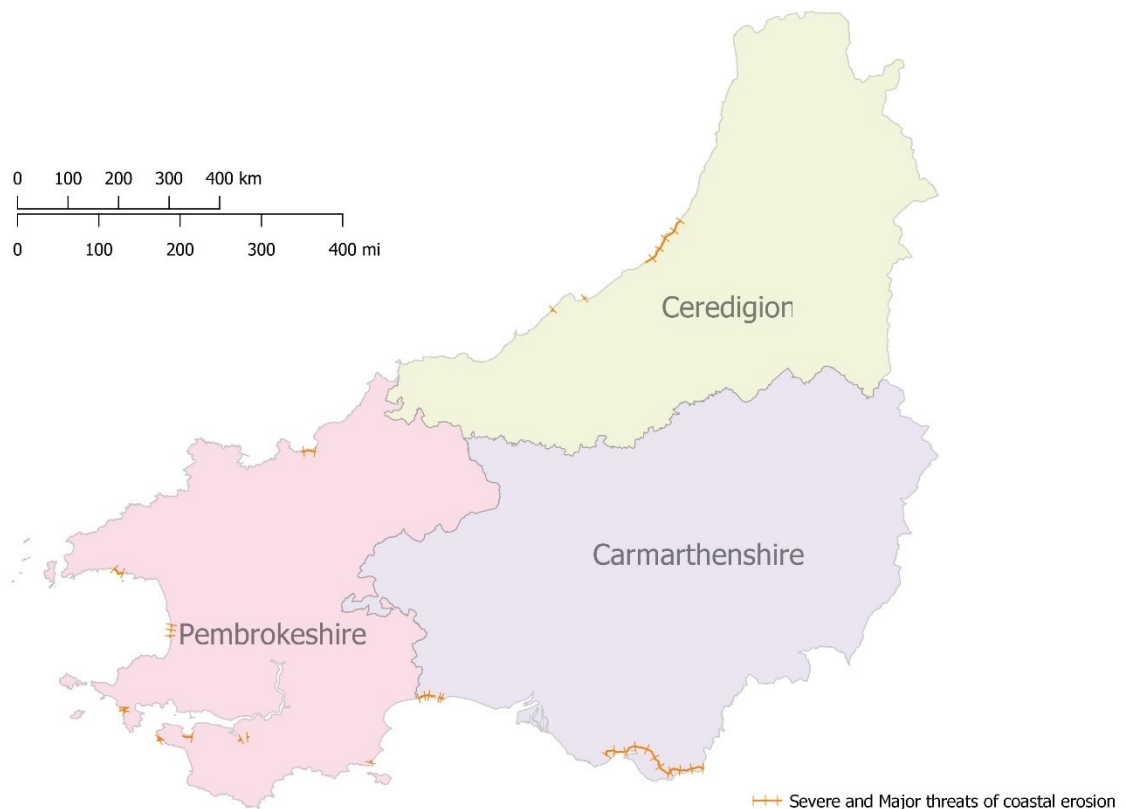
- 5.1 In order to identify historic assets in the action areas QGIS was used to undertake geospatial analysis. In the first instance action areas that fall within the Dyfed region were extracted from the SMPs for each of the three epochs (short-term, medium-term and long term) and saved as individual shapefiles. The medium-term SMPs are illustrated in Figure 1.
- 5.2 With the short-term epoch ending in 2025 it was decided that the medium-term SMPs would be used for further analysis. It is worth bearing in mind that this means a “refresh” of the data might be required as the medium-term ends and the long-term SMPs move into action in 2055.
- 5.3 To assess the archaeological assets along the entirety of coastline around the Dyfed region is beyond the resources of the current project. It was therefore decided to break areas down into smaller sections that could be fully assessed. It was decided to focus on ‘Hold the Line’ and ‘Managed Realignment’ policy units.
- 5.4 To identify areas of concern the Hold the Line and Managed Realignment policy units were compared with the Natural Resource Wales (NRW) flood map. Using this combined information polygons were drawn around areas that were identified as susceptible to significant change and would form potential study areas. These results are illustrated in Figure 2. Using these study area polygons shapefiles have been created that contain the extracted data of all recorded historic assets that fall within them. This includes Listed Buildings, Scheduled Monuments, Registered Parks & Gardens, Historic Environment Records, National Monument Records.
- 5.5 In addition to ‘Hold the Line’ and ‘Managed Realignment’ policy units, it was decided to include in this project those areas that had been identified as being under severe or major risk coastal erosion during coastal surveys undertaken by Dyfed Archaeological Trust in the 1990s. Areas indicated as being under severe or major threat of coastal erosion in DAT’s surveys were digitised and had a 200m buffer placed around them (Fig. 3). As before, all records of historic assets that fall within this buffer have been extracted and shapefiles created.
- 5.6 The two data sets described above have been merged into a single data set containing all known archaeological assets. This data can be used to plan future fieldwork and assessments.



**Figure 1:** Medium Term SMPs in Dyfed.



**Figure 2:** Study Areas identified as areas susceptible to change.



**Figure 3:** Severe and major threats of coastal erosion.

## 6. GIS DATA CREATED

### 6.1 Using QGIS the following shapefiles have been created:

- Polygons of areas identified as susceptible to change based on SMPs and NRW flood map.
- Point data and polygons of extracted data from archaeological assets (Listed Buildings, Registered Parks & Gardens, Scheduled Monuments, Historic Environment Records and National Monument Records) within the areas described above.
- Vector lines of areas deemed as being under severe and major threats of coastal erosion from the 1990s DAT coastal surveys.
- Point data and polygons of extracted data from archaeological assets (Listed Buildings, Registered Parks & Gardens, Scheduled Monuments, Historic Environment Records and National Monument Records) within 200m of areas of severe and major coastal erosion threat.
- Merged data from the SMPs/NRW flood map and the Dyfed coastal surveys.

## 7. THE PILOT STUDY

7.1 A pilot study area has been chosen between Newgale and Little Haven in Pembrokeshire (Fig. 4). These areas have been selected because they lie within areas identified through the SMPs as susceptible to change and/or a section of coastline identified as at severe or major threat of coastal erosion.

### 7.2 Desk-top analysis

7,2.1 Prior to site visits to the pilot study area a rapid assessment was made of easily available sources, including:

- Digital area photographs
- LiDAR
- Historical Ordnance Survey maps
- Tithe maps

No new sites were noted in the pilot study on the above sources, which may be a reflection of the quality of work undertaken during the 1990s surveys. However, where appropriate HER records were updated. The above sources are useful when creating HER polygonal data.

### 7.3 Site visits

7.3.1 Site visits were made to historic environment assets within the pilot study area. Records made and photographs taken. A search was made for assets not previously recorded (none were identified in the pilot study area). Collected data was used to update the HER.

### 7.4 Digital Recording

7.4.1 As part of this project the opportunity was taken to test the feasibility of digital recording in the field. There are two new released apps being trialled that could potentially streamline projects of this nature.

#### *Input*

7.4.2 The *input* app is available on both android and IOS. It allows a user to capture geo-info easily through their mobile or tablet. The app is a free open-source app that aims to "remove the pain of transcribing paper field notes, manually georeferencing photos and transcribing GPS coordinates". It comes with the following key features:

- Capture points, lines or areas
- View your data and location on a map
- Take geotagged photos
- Effortlessly share and collaborate with others
- Works offline
- Accessible software runs on existing hardware

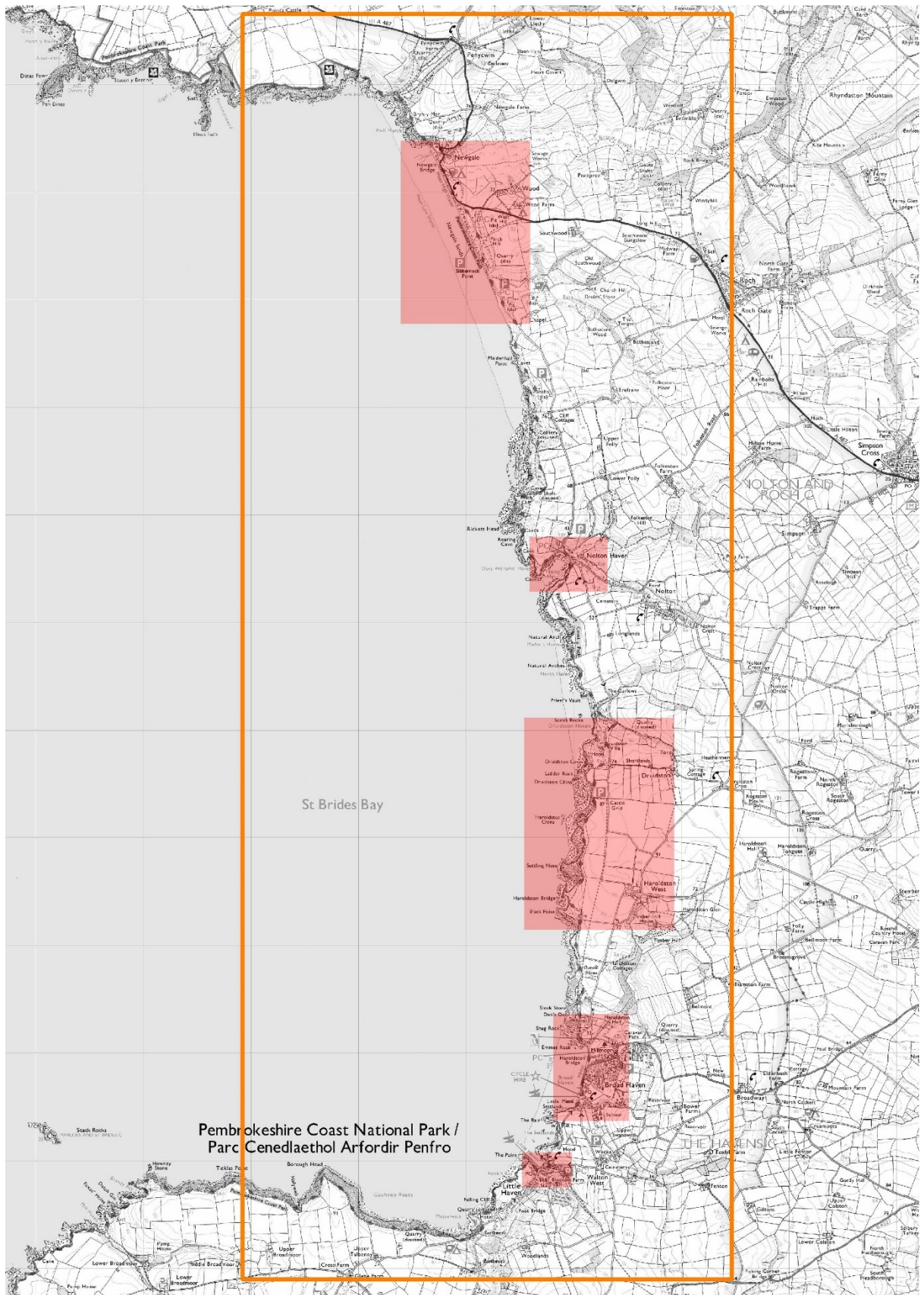
7.4.3 The app works with QGIS meaning project databases can be easily prepared by anyone with experience using QGIS. To store and synchronise projects across multiple devices a 'mergin account' is required. This is available with a free account with restricted memory space for projects or on a subscription service offering more project space. With a mergin account and a QGIS

plugin data can be seamlessly transferred between devices for use in the field.

- 7.4.4 All shapefiles containing geospatial data for archaeological assets were made available on the device including all attribute data. Several base layers can be made visible including open-source layers such as google satellite and maps. It was also possible to import OS maps onto a device using the raster files. Combining this with being able to see your location live on the map made it very easy to locate oneself and archaeological features.
- 7.4.4 Using the app to view and update records using a predefined form was simple and efficient in the field, with an intuitive interface it requires little training. Data can be collected as point data or polygons using predefined forms to record descriptions and conditions as well as attach photos. However, one of the drawbacks of this app is the restricted memory space available on a free mergin account, this limits the amount of data that can be transferred from the device back into QGIS. It was not obvious in the field to know when the data limit had been reached, and although the app allows you to continue collecting data in the field it might not be possible to synchronise it all. This can be overcome by purchasing a premium mergin account.

#### *QField*

- 7.4.5 This app is currently only available on Android but an IOS version is in the works. Similarly to the input app it allows users to survey and digitise data in the field with a handheld device such as a mobile phone or tablet. The app allows users to deploy existing QGIS projects in the field with an ability to open a range of spatial data formats.
- 7.4.6 Qfield is a free opensource app, once downloaded on to a device data can be seamlessly transferred from a desktop QGIS project using a QGIS plugin. There appears to be no cap on data transfer as with mergin with the only limit being the available space on the device to be used.
- 7.4.7 In the field the app allows users to view and update records using a predefined form as well as attach photos. Data can be recorded as points or polygons. With the ability to use a range of base maps it is possible to easily locate yourself as well as HER records.
- 7.4.8 Although slightly less intuitive than input it is still easy to use in the field and synchronise data back to a desktop to view recorded data.



**Figure 4:** Pilot Study Areas

## 8. SUMMARY OF RESULTS

- 8.1 As a result of the pilot project 15 HER records were enhanced, including assessments of threats and photographs. Using the datasets created, it will be possible to plan and implement fieldwork that will allow many more HER records to be enhanced.
- 8.2 In order to improve efficiency of collecting field data using digital recording two open-source apps were tested. This greatly streamlined data collection in the field and allowed for seamlessly synchronisation with a desktop to enhance the HER records in the office. Overall, the *input* app provided the best interface for doing this but can be limited to the amount of data collected if a subscription service is not purchased. *QField* appears to not have this restriction but the app is currently only available on android devices. Each app has the potential to reduce the carbon footprint of the project, seamlessly transfer a GIS workspace on to a mobile device or tablet and vice-versa and improve efficiency of collecting quality field data.