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13. Marine and Coastal Historic Environment

13.1 Introduction

This chapter considers the possible impact on the marine and coastal historic environment of marine renewable energy devices in the waters around Guernsey, Herm and Sark. The islands have a rich historic and archaeological record, including many hundreds of sites and finds both on land and underwater. These sites are a finite and non-renewable resource, forming not only part of the cultural heritage of the Bailiwick, but also making a significant contribution to education, leisure and tourism in the islands.

This section of the REA will begin with a summary of the key elements of the baseline historic environment. It will then consider the likely effects on this environment of renewable energy schemes, and suggest possible measures for mitigating any adverse effects. Recommendations for monitoring the predicted effects will then be presented.

13.2 Baseline environment

13.2.1. Marine environment

13.2.1.1 Historic Wreck

The waters around the Bailiwick of Guernsey are known to contain several hundred historic wrecks, dating from the Gallo-Roman period to the twentieth century. The locations of at least one hundred of these can be pinpointed with a reasonable degree of accuracy – to within 100m or so – while others can be associated with particular rocks or reefs. Many more wrecks are recorded (for example in medieval or post-medieval literature) but remain unlocated.

Fig. 13.2.1 shows the position of approximately 330 wrecks which can be located with some degree of certainty. The position and details of these more reliably located wrecks are recorded on the Sites and Monuments Record (SMR) maintained at Guernsey Museum. The data on the SMR has been collated from various sources, including published accounts (David 1961; Rule and Monaghan 1993; Dafter 2001), the records of the UK Hydrographic Office, and information received from local sailors and divers. A summary of this data is presented here in Appendix I.

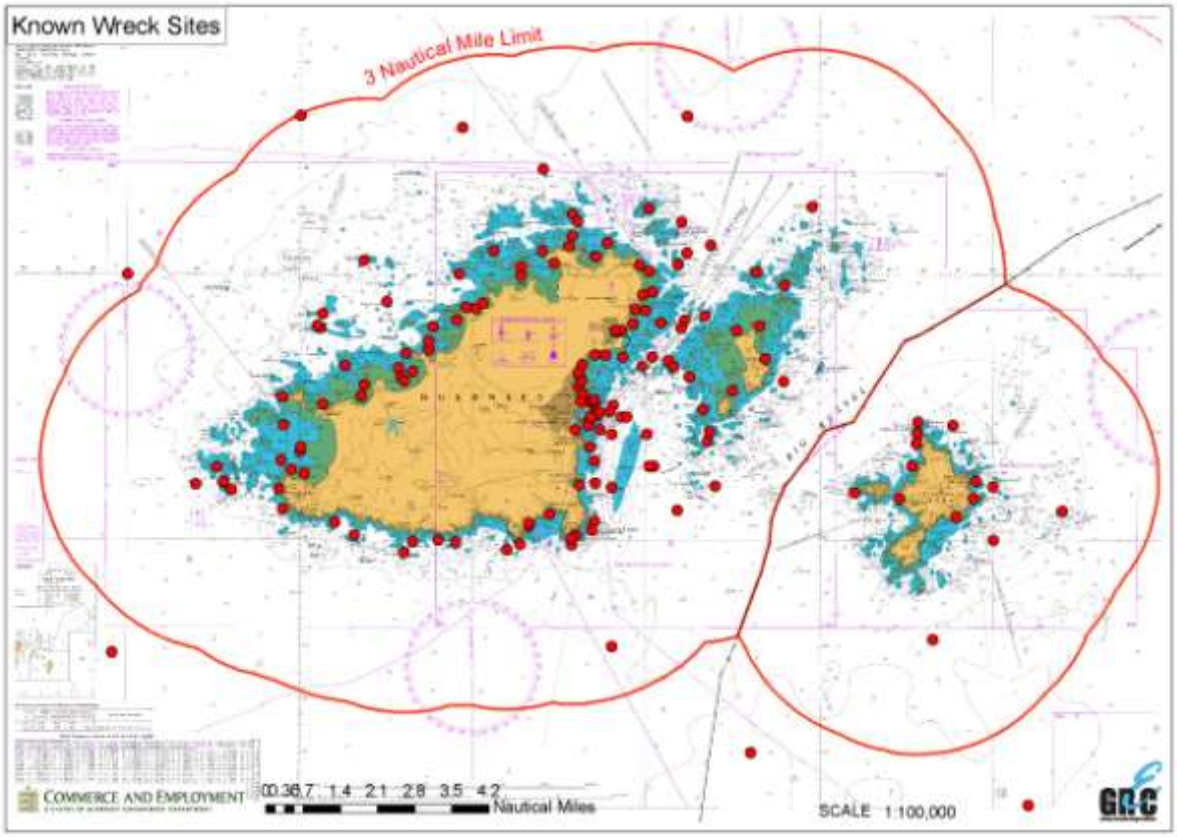

Fig. 13.2.1 – Know Wreck Sites

Historic wreck is protected by the The Wreck and Salvage (Vessels and Aircraft) (Bailiwick of Guernsey) Law, 1986. It includes any 'vessel, aircraft or its cargo that has lain wrecked for 50 years or more'. A licence is required to disturb historic wreck and there is also a requirement to report new discoveries. War graves require a significant exclusion zone at all times.

13.2.1.2 Submerged Landscapes

Ancient land surfaces can potentially be preserved in the seabed. Until at least the late Mesolithic period the Channel Islands were connected to continental Europe; people and animals lived upon and moved across a now inundated landscape. Evidence for these ancient land surfaces in the waters of the Bailiwick of Guernsey is slight, but a summary of present and potential evidence is given below.

Palaeolithic (to 12000 years BP)

Evidence for Palaeolithic occupation in the Bailiwick is currently known only from the seabed between Crevichon and Jethou, where flint scatters of the late Palaeolithic period are exposed at very low spring tides. It is possible that other, similar exposures occur elsewhere in the waters around the islands, but no sites comparable to Crevichon/Jethou have yet been discovered.

Mesolithic (12000 – 7000 years BP)

By the late Mesolithic period (c.9500 years BP), the island of Guernsey was detached from the other Channel Islands. A flint-knapping site of this period (c.7500 BC) has been excavated on the north-east coast of Lihou, bordering the current high water mark. Other sites of a similar date may be present around the coast. At Vazon, on the west coast of Guernsey, there are extensive peat deposits which occasionally become exposed by the removal of sand in certain extreme weather conditions. Human bones and artefacts have been recovered from these peat deposits and although none have been scientifically dated, they may in some cases be of Mesolithic date.

Neolithic (7000 – 4500 years BP)

Remains of the Neolithic period are far more common in the Bailiwick than those of either the Palaeolithic or the Mesolithic, not least because there are more structures of these periods surviving well above the high-water mark. Evidence for underwater Neolithic surfaces is either present or implied in areas such as the Humps, north of Herm, where a buried land surface exists beneath sand dunes (on Herm itself) and where there is a flint knapping site on Longue Pierre, now an isolated rock but in the Neolithic period probably part of a larger land surface extending to the north of the island. Material recovered from the peat deposits at Vazon may also be of Neolithic date.

Evidence for archaeological sites after the Neolithic (i.e. from c. 2500 BC to the present day) will be considered in section 13.2.2, below.

13.2.2. Coastal historic environment

The coastal area of the Bailiwick of Guernsey includes a very large number of archaeologically important sites. The Sites and Monuments Record lists more than 360 in a zone within 50m of mean high water. A list of these sites with reference to the SMR is provided in Appendix J. Table 13.2.1, below, gives a broad analysis of the sites in terms of their date and location. Clearly not all of these sites are of the same 'value', but as a general rule it is not unreasonable to stress the importance of the earliest category, the prehistoric and Gallo-Roman. These sites tend to be more fragile, to both human and natural interference. A large proportion of the medieval, post-medieval and German sites are fortifications, and so for the most part are rather less vulnerable. Even so, they include some of the most distinctive historical locations within the Bailiwick and thus deserve to be sufficiently protected from both human and environmental degradation.

Table 13.2.1. Summary of sites forming the coastal historic environment.

	Guernsey	Herm and Jethou	Sark	*total*
prehistoric/Gallo-Roman (including flint scatters, earthworks etc)	119	15	3	137
medieval (mostly fortifications)	22	-	-	22
post-medieval (mostly defensive, some other structures)	109	1	9	119
German (WW II)	88	-	-	88
total	338	16	12	**366**

13.3 Potential effects

The development of marine renewable energy devices around the Bailiwick of Guernsey has the potential to impact on the marine and coastal historic environments, in the course both of installation of the devices and of their operation.

13.3.1. Installation effects

Effects on marine archaeological remains

The installation of (possibly massive) structures on the seabed evidently has the potential to destroy wreck sites, whether they are lying on the seabed or are concealed in silts. It ought to be possible to avoid this with detailed pre-installation survey (see 13.7, below). Ancient land surfaces may also be damaged during installation; this may be avoided by siting structures in areas where the seabed is rocky and where there are no substantial silt deposits. Initial, exploratory operations – such as coring to investigate the geology – should also be considered potentially damaging, and cores should be inspected for any archaeological material.

Cable laying operations may also damage sites and artefacts in the marine environment.

Effects on the coastal historic environment

The principal impact on the coastal historic environment will take place where the cables come ashore. Any trenches dug for this purpose are likely to damage or destroy sites and should be either routed to avoid known sites, or subject to a watching brief while being dug (see section 13.7, below).

13.3.2. Operation effects

Effects on marine archaeological remains

The presence of marine renewable energy devices and their associated infrastructure will almost certainly lead to localised changes in tidal flow and wave energy, which will in turn affect the patterns of sedimentation around these sites. This may lead to new sites being exposed; in contrast, other sites may be buried beneath new accumulations of sediment.

Effects on the coastal historic environment

Once the installation of trenching/cabling is complete, there should be no further disturbance of the coastal historic environment, though it is conceivable that repair or maintenance work could impinge on previously undisturbed elements of a historic site.

13.4 Sensitivity of receptors

Marine archaeological remains

As a general rule, the earlier the site, the more important it is likely to be: Palaeolithic and Mesolithic sites are very rare and comparatively very ephemeral, and thus highly sensitive to damage. Sites from the later prehistoric period are less likely to be unique, but are still of considerable importance and sensitive to disturbance. Any wooden ship or vessel of almost any period before the nineteenth century should be regarded as extremely valuable and sensitive to damage; a prehistoric log-boat or a Gallo-Roman shipwreck, for example, would be as important as a Palaeolithic land surface, if not more so.

Coastal historic environment

The sensitivity of coastal archaeological remains is broadly similar to that of the marine environment: the earlier sites are likely to be the most important and most sensitive. However there are also historic structures of later periods which would be regarded as particularly sensitive, such as the iconic medieval fortification of Castle Cornet. Table 13.4.1 identifies the coastal zones regarded as especially sensitive in the study area, on the basis of their historic sites (see also Fig. 13.4.1).

Table 13.4.1. Zones of particular archaeological and historic sensitivity.

Guernsey
Castle Cornet/St Peter Port harbour area
Coast below Fort George
Fermain Bay
Jerbourg headland
Corbière headland
Rocquaine Bay
L'Erée headland
Lihou Island
Le Crocq headland
Vazon Bay
Hommet headland
Grandes Rocques headland
Port Soif
Pulias headland
L'Ancresse (Pembroke Bay)
Bordeaux area
Belle Greve Bay
Coastal
West and north coasts of Herm
The Humps, Herm (particularly Godin, Galeu, Long Pierre)
Crevichon
Sark
L'Eperquerie, Sark

Fig. 13.4.1. Coastal zones of particular archaeological and historic sensitivity.

13.5 Potential significance of effects

The assessment of the significance of effects is based on the criteria outlined below, adapted from the Scottish Marine Renewables SEA: Environmental Report (C11, Marine and Coastal Historic Environment) (March 2007).

Table 13.5.1. Significance Criteria.

Significance level	Determining criteria
Major	Damage or destruction of a protected monument Damage or destruction of a known site or remains Damage or destruction of prehistoric submerged remains Damage or destruction of a war grave Damage or destruction of known historic wreck Damage or destruction of a site or remains that warrant protection after discovery Damage or destruction of a site or remains where no other examples are known
Moderate	Disturbance or interference with a protected monument, prehistoric submerged remains, war grave or other known historic wreck Damage or destruction of other wreck sites Damage or destruction of a coastal site of local or regional importance Damage or destruction of a site or remains where other examples are known
Minor	Disturbance or interference of other (non-historic) wreck sites Disturbance or interference of a coastal site of local or regional importance Minor damage to sites or remains where other examples are known

It is important to note that the discovery of archaeological remains can also present an opportunity for the developer: correctly handled, the discovery of a site and the preservation of important objects or sites can generate good publicity and improved public relations.

Results of potential effect significance without mitigation

The measures of significance in the table below are based on potentially adverse effects without mitigation. In practice it is considered that certain mitigation measures will be applied (see section 13.7, below).

Table 13.5.2. Potential significance of effects on the marine and coastal historic environment

Potential effects	Development phase*	Receptor	Potential significance of effects	Likely extent of impact	Confidence
Submarine historic environment					
Direct damage to wrecks or artefacts during excavation or deployment of devices or cables	CD	Submerged prehistoric remains Historic wreck and war graves	Major	Within disturbed area	High
Covering of wrecks or artefacts due to use of rock mattresses during installation of devices or cables	CD and CC		Moderate	Within disturbed area	Medium
Cable laying	CC		Major	Within disturbed area	High
Exploratory coring	CD		Moderate (locally major?)	Within disturbed area	Medium
Energy extraction	OD		Minor (and possibly beneficial?)	Uncertain	Low
Coastal historic environment					
Cable laying	CC	Prehistoric or later coastal sites Listed buildings or other structures	Major to moderate	Within disturbed area	High
Onshore device installation	CD		Major	Within disturbed area	Medium
Long-term visual impact affecting the setting of an historic structure	OD	Setting of an historic structure	Moderate to Minor	Setting of an historic structure (varies)	Medium

*CD: construction of devices; CC: construction of cables; OD: operation of devices

13.6 Likelihood of occurrence

The areas identified as most likely locations for submerged prehistoric sites and artefacts are as follows:

- St Peter Port harbour and immediate vicinity
- Little Russel
- Fermain Bay
- Vazon Bay
- Lihou
- Crevichon/Jethou
- The Humps, Herm

Areas identified with the highest concentration of coastal historic sites and artefacts include the following (see also Table 13.4.1 above):

- St Peter Port harbour and immediate vicinity
- Lihou
- L'Erée headland
- L'Ancresse
- Herm (west and north coasts)
- The Humps, Herm

These areas are highlighted on the map below (Fig. 13.6.1).

Fig. 13.6.1. Areas with highest concentration of coastal historic sites, and most likely locations for submerged sites.

13.7 Mitigation measures

By the very nature of submerged archaeological sites and remains, it is impossible to predict exactly where new sites might be discovered. The best mitigation to deal with these unknown sites would involve full and detailed survey of the potential locations prior to the construction of any renewable energy devices. In addition to survey, where possible it would also be advisable to check material disturbed from the seabed in case it contains any archaeological artefacts. It should be noted that there is a legal obligation to report historic wreck material (i.e. older than fifty years) to the Receiver of Wreck.

If 'new' sites are discovered as a result of survey work, the preferred outcome would be to avoid them during development, leaving them undisturbed and in situ. Some flexibility in planning is therefore to be encouraged, so that avoiding the sites does not have a negative impact on the development timetable.

Table 13.7.1 summarizes the standard mitigation measures which should be applied.

Table 13.7.1. Mitigation measures for the marine and coastal historic environment.

Effect	Development phase*	Standard practice mitigation
Submarine historic environment		
Direct damage to wrecks or artefacts during excavation or deployment of devices or cables	CD	Involve archaeologists at site survey stage Carry out seabed survey and investigation in preferred site locations Avoid exclusion zones around protected sites Report any unusual objects
Covering of wrecks or artefacts due to use of rock mattresses during installation of devices or cables	CD and CC	
Cable laying	CC	
Exploratory coring	CD	
Energy extraction	OD	
Coastal historic environment		
Cable laying	CD	Consult with Guernsey Museum Archaeology Officer at site survey stage Carry out field visits to preferred site locations to determine need for investigation (trial trenches or geophysical survey) Maintain watching brief during installation Avoid protected sites Report any unusual objects
Onshore device installation	CD	
Long-term visual impact affecting the setting of an historic structure	OD	Careful site selection Project-specific landscape impact assessment

*CD: construction of devices; CC: construction of cables; OD: operation of devices

13.8 Confidence and knowledge gaps

The nature of archaeological remains is such that there will always be gaps in the data, without either extensive and detailed survey work across the entire area, and excavation where appropriate to elucidate the results of survey work. In the area under consideration here, these knowledge gaps could be largely obviated by detailed seabed survey.

13.9 Residual effects

The residual effects on the marine and coastal historic environment, taking into account the mitigation measures described in 13.7, above, are detailed in Table 13.9.1.

Table 13.9.1. Residual effects.

Potential effects	Development phase*	Receptor	Potential significance of effects	Likelihood of occurrence	Residual significance of effects with mitigation	Confidence
Submarine historic environment						
Direct damage to wrecks or artefacts during excavation or deployment of devices or cables	CD	Submerged prehistoric remains Historic wreck and war graves	Major	Low	Minor	High
Covering of wrecks or artefacts due to use of rock mattresses during installation of devices or cables	CD and CC		Moderate	Low	Minor	Medium
Cable laying	CC		Major	Low	Minor	High
Exploratory coring	CD		Moderate (locally major?)	Low	Minor	High
Energy extraction	OD		Minor (and possibly beneficial?)	Low	Minor (and beneficial?)	Medium
Coastal historic environment						
Cable laying	CC	Prehistoric or later coastal sites Listed buildings or other structures	Major to moderate	Low	Minor	High
Onshore device installation	CD		Major	Low	Minor	High
Long-term visual impact affecting the setting of an historic structure	OD	Setting of an historic structure	Moderate to Minor	Medium	Minor	Medium

*CD: construction of devices; CC: construction of cables; OD: operation of devices

13.10 Recommendations for survey and monitoring

Marine renewable energy devices on the seabed should be monitored once they are in place; this will provide valuable information on how the structures influence the scouring and/or deposition of sediments and silts around them, which will be relevant to archaeological considerations in the future.

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