19 Landscape and Seascape Character

19.1 Introduction

This chapter will discuss the impacts that marine renewable energy development may have on the landscape and seascape character of the coastline of Guernsey. It will focus particularly on the visual amenity provided to residents and tourists.

19.2 Baseline Environment

19.2.1. The Rural Area Plan

The REA Scoping report identified a number of potential energy resource areas as shown in the figure below.

A Rural Area Plan has been prepared by the States of Guernsey Environment Department[1].. This is a Detailed Development Plan that sets out Guernsey's planning policy for the whole of the rural area, which makes up approximately 90% of the area of Guernsey. A similar document, the Urban Area Plan, covers the remaining area around St Peter Port and The Bridge. It is anticipated that the development of Marine Renewable Energy is likely to present the greatest challenges to landscape amenity in rural areas, and as such, the Rural Area Plan will be used as the main reference with regard to this subject.

The Rural Area Plan has been developed around States policies that are set out in the Strategic and Corporate Plan. These emphasise the overriding strategic importance of conserving and enhancing the rural environment. Accordingly, the primary objective of the Rural Area Plan is the conservation and enhancement of the rural environment

Key sensitivities may be identified from the Rural Area Plan as:

- Areas of High Landscape Quality
- Conservation Areas (with respect to the built environment)
- Non-designated areas – because these are in rural areas, there is an intention to maintain and enhance the openness of the countryside.

[1] Rural Area Plan, Review No. 1, Environment Dept. 2005

Within the Rural Area Plan, the following policies are identified that may have a bearing on the assessment of landscape impact and any development that may be allowed:

Table 19.2.1: Policies that may be relevant to Marine Renewable Energy Development

Policy Reference	Title
RGEN3	LANDSCAPE, ECOLOGY & WILDLIFE
RGEN4	BUILT HERITAGE
RGEN5	CHARACTER & AMENITY
RGEN7	SAFE & CONVENIENT ACCESS
RGEN10	PUBLIC ENJOYMENT
RCE1	PROTECTION OPEN LAND AND AVOIDING UNNECESSARY DEVELOPMENT
RCE2	LANDSCAPE CHARACTER
RCE3	AREAS OF HIGH LANDSCAPE QUALITY
RCE7	PUBLIC VIEWS
RCE8	LANDSCAPE DESIGN
RCE10	CONSERVATION AREAS
RD1	ESSENTIAL DEVELOPMENT

It is clear from a review of these policies that they have been prepared to address the potential impacts of development on land, rather than at sea. However, they indicate a clear purpose to protect the public's enjoyment of Guernsey's unique landscape. Furthermore, the development of renewable energy installations is likely to require some shoreside development in terms of control buildings and substations, and the design of these should reflect the value placed on the landscape character and the guidance provided within the Plan.

The Rural Area Plan states that 'the process of change should not be allowed to erase historic evidence or obscure the essential and unique character of the landscape and its component features.'

19.2.2. Existing Landscape Character Assessment

Within the Rural Area Plan, Annex 1 provides a Landscape Character Assessment of the whole of the rural area of Guernsey. Whilst it would be inappropriate to replicate the text of the Assessment in the document, some key points are extracted as follows.

Landscape Types

Coastal – Cliffs, Western Bays and Northern Shores

Lowland – Wetlands, Lowland Hills and the Central Plain

Upland – Escarpment, Valleys and Plateaux

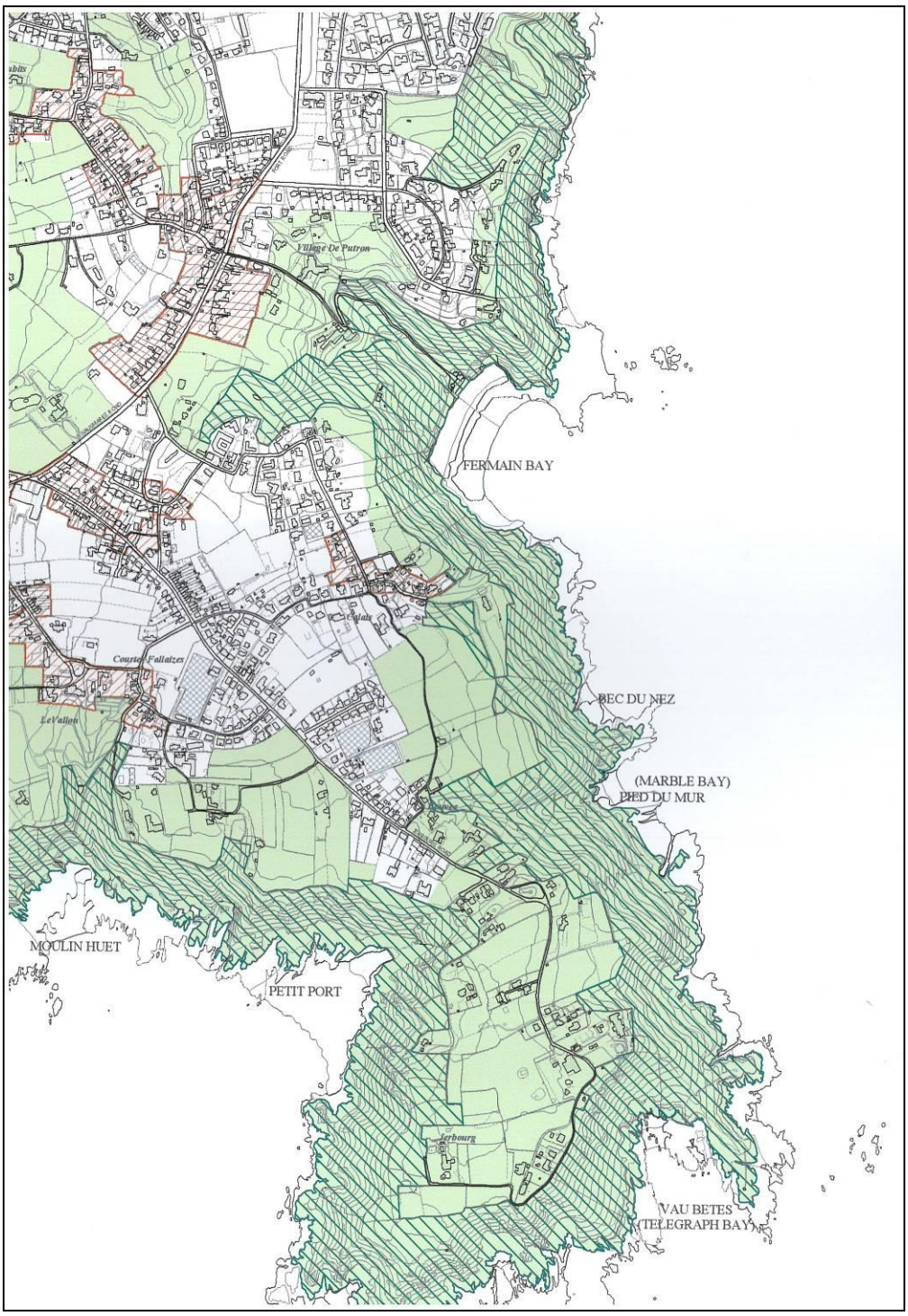
These types are defined in detail in the Rural Area Plan. Clearly, it is the coastal landscapes that are likely to be most affected by marine renewable energy development.

Key aspects of landscape conservation and enhancement are that it provides a number of benefits:

- It maintains a historic record of changes in land use, economics, customs and taste over time
- Guernsey enjoys a unique form of small, intricate, closely occupied island landscape
- The landscape creates a sense of identity and a backdrop for daily life
- It provides open spaces, pathways, habitat, and opportunities for good views for the enjoyment of residents and visitors

The whole of the coastline on Guernsey is defined in the Plan as an Area of High Landscape Character, as shown on the extract below (Figure X.2.1). It is likely that any offshore development in the study area that includes floating or surface piercing components will be clearly visible from at least a part of the coastal footpath, beaches or properties that enjoy coastal views.

Figure 19.2.1 – Extract from Rural Action Plan (RAP)



Below are shown some typical coastal scenes.

Figure 19.2.2 – Typical view of the south coast cliffs (Looking East from Le Gouffre)

Figure 19.2.3 – Sunset view from the west coast (open unbroken horizons)

Figure 19.2.4 – Sandy Beach on North Coast (L'Ancresse Bay)

Figure 19.2.5 – St Peter Port (Havelet Bay and Castle Cornet)

19.3 Potential Effects

19.3.1. Onshore Elements

With respect to the onshore elements of the scheme, the following potential impacts have been identified:

- Effect of cable laying on the visual amenity of the beach during construction;
- Permanent effect of cable laying on landscape features, specifically any exposed sections of cable over rocky foreshore or on sea-walls or dunes;
- Effect of completed sub-station / control building on visual amenity and landscape character
- Effect of the cable on visual amenity if exposed due to natural beach processes.

19.3.2. Offshore Elements

With respect to the offshore elements, the following potential impacts have been identified:

- Temporary effects of the offshore construction process, including increased boat traffic, on views from land;
- Permanent effects of floating and fixed generation equipment and support infrastructure on views from land, including:
    - Floating wave energy converters
    - Navigational marking buoys
    - Surface piercing tidal energy generators
    - Other surface piercing structures such as platforms for offshore cable connections, switchgear and transformation equipment
- Effect of navigation lighting on night-time views from land.

19.3.3. Uncertainties relating to Potential Offshore Visual Impacts

The existing landscape character of Guernsey's coastline is well understood. However, the nature and location of renewable energy devices that may be installed is not known, and therefore a high standard of impact assessment is not possible at this time. On completion of site selection, detailed assessment of specific device proposals should be undertaken to inform project specific Environmental Statements.

19.4 Sensitivity of receptors

The presence of the coastal footpath and the designation of the whole of the rural coastline as an Area of High Landscape Character suggests that the landscape and seascape character of Guernsey has a high sensitivity. The coastline, although not unique in the Channel Islands or in Europe, is of significant value to those living and visiting Guernsey. Therefore, the landscape character is considered to be of Regional importance.

Previous discussions with interest groups such as the Sark Chamber of Commerce and the Guernsey Renewable Energy Forum (GREF) indicate that there will a public perception that offshore energy generation equipment that is clearly visible from the coast will be considered to be unsightly and disruptive to landscape views. This corroborates press reporting of public objection to UK wind farms. Therefore, this assessment assumes that the visual impact of visible items of equipment will be negative.

19.5 Potential Significance of Effects

The study area is defined as including territorial waters to 3 Nautical Miles of the coast. Any significant offshore development that projects above the surface of the sea will be clearly visible from the coast, and will be experienced by a large number of people.

Developments at sea cannot be easily hidden, and mitigation measures (see below) will need to focus on reducing the height of structures. Shoreside development, whilst closer to potential receptors, is likely to impact on fewer receptors and can be screened or carefully sited to minimise visual impact.

The following table records the severity of the impacts and, through reference to the sensitivity recorded above, shows the Significance of the affects.

Table 19.5.1: Sensitivity of Receptors

Receptor	Sensitivity	Effect	Magnitude of Impact	Significance of Effect
Landscape and Seascape Character from offshore structures and devices	Regional	Reduction in visual amenity due to increased marine traffic during construction and maintenance.	Low	Minor
		Reduction in visual amenity due to permanent visible structures	High	Moderate
Landscape and Seascape Character from shoreside works	Regional	Reduction in visual amenity during construction	Low	Minor
		Reduction in visual amenity due to permanent structures	High	Moderate

19.6 Likelihood of Occurrence

The following table identifies the perceived probability of the receptors being affected by the potential effects based on currently available information. For the purpose of this assessment, these impacts are considered, at this stage, as unmitigated.

Table 19.6.1: Table outlining the probability of effect on receptors

Receptor	Effect	Likelihood of Occurrence
Landscape and Seascape Character from offshore structures and devices	Reduction in visual amenity due to increased marine traffic during construction and maintenance.	High
	Reduction in visual amenity due to permanent visible structures	Medium
Landscape and Seascape Character from shoreside works	Reduction in visual amenity during construction	High
	Reduction in visual amenity due to permanent structures	Medium

19.7 Mitigation Measures

19.7.1 Potential impacts during construction, and Potential Mitigation Measures

Potential impact of cable laying across a beach or foreshore

Possible annoyance at the temporary visual impacts experienced may be reduced if information were made available to the public at entrance points onto the beach, along the coast path, and at other public places and in the media. The information should inform the public of the reasons for disruption. Once buried to an appropriate depth, there should be no further impacts on visual amenity unless the cable becomes unintentionally exposed due to beach level changes. The depth of cable burial should be determined with reference to historic beach level records, and the route of the cable should be monitored throughout the life of the project to ensure that any exposure is quickly identified and corrected.

Potential impact of cable laying on landscape features, particularly rocky shores, sand dunes and coastal scrub

Cable laying could potentially directly affect the integrity and vegetation cover of coastal areas, which in turn could present a visual impact. Mitigation for this can be provided by installing the cable by directional drilling, instead of excavation or fixing the cable to exposed rocky surfaces.

Potential Impact of Substation and Control Building

The need for some shoreside development is likely to be unavoidable. However, it is likely that mitigation will be in the form of careful site selection, design of structures and buildings to be as low as possible, and careful design of screening such as fencing or planting.

Potential impact of offshore construction in views from land

Mitigation that should be employed is directly related to the methods of construction. The number of vessels deployed to complete the works must be optimised in order to complete the work as safely and as quickly as possible. The construction of the devices themselves will be done off site which will minimise the time required for installation.

Potential impact of floating or surface piercing offshore elements

The best mitigation would be the selection of energy devices and other offshore equipment that may be deployed below the surface of the sea. However, where this is not possible for technical reasons, and where sub-sea equipment is to be protected by navigational marker buoys, there will remain a residual impact. Further measures could be to site the devices as far from land as possible and to limit the size and height of the equipment above the water.

The colouring of equipment and markers is likely to be determined by navigational safety requirements as to be as bright as possible (eg. yellow) and in this respect, the impact cannot be mitigated. Similarly, the impact of lighting of devices on the night sky light pollution will be determined by navigational safety requirements.

19.7.2 Public Perception of Impacts on Landscape Character

There is a large body of public opinion in the UK that is opposed to the siting of renewable energy facilities within or in clear view of areas of acknowledged landscape value. A common viewpoint expressed (insert ref to wind farms study) is that the uncluttered but ever-changing views of the sea and sky provided by coastal views are of paramount importance to the quality of life, and the siting of permanent structures within such a setting would damage this. However, these views are often countered by some that express that renewable energy installations could be a point of interest or a talking point to those experiencing coastal views.

Nonetheless, one of the attractions of tidal and wave energy production over offshore wind farms is that many technologies can be located predominantly on the seabed or floating on the surface of the sea (rather than projecting high in the air), thus reducing the risk of impacting significantly on visual amenity. However, to deliberately preclude certain technologies that are surface piercing could potentially obstruct the introduction of the most technologically beneficial solution.

However, there may be some scope for public education and debate to challenge the perception that offshore structures are unsightly. This could reflect on the fact that throughout history new technologies, for example windmills, canals or railways, will have caused a significant change to the landscapes that they were sited within. Over time, these impacts have been absorbed and tolerated by society and in many cases valued and protected as items of landscape value. Such a programme of public consultation and involvement could be considered as a specific mitigation that may be applied, should surface piercing or floating structures be considered to be essential.

19.8 Confidence and Knowledge Gaps

The potential impacts described in this section cannot adequately reflect the variation in impacts provided by different device types or infrastructure solutions. It must be acknowledged that some wave energy device types may project significantly above the waterline, whilst others lie along the surface or even below the waterline. Similarly, some devices occupy a long length or plan area of sea, whilst others take the appearance of large navigation marker buoys, and may not look too out of place in a marine environment.

The majority of tidal energy devices lie well below the surface. However, these do not benefit from access to the stronger currents that exist higher in the water column. Surface piercing devices may also benefit from better maintenance access arrangements.

Electrical power export infrastructure solutions for marine renewable energy developments, including cable connections and transformer equipment, has been developed on the offshore wind industry. The siting of infrastructure platforms adjacent to wind farms presents little additional visual impact in relation to the scale of a large farm. However, a single such platform, if used with an array of sub-surface tidal energy generators would have a more significant visual impact. It is for this and other technical reasons that designs are in development for placing this electrical infrastructure either on the sea-bed, or (through the use of additional export cables) on land. These new methods would have the potential to reduce visual impact over other technologies.

Another cause of uncertainty would be the level of lighting required to navigation markers used in association with a project. Generation devices and infrastructure that is predominantly on the seabed may not require the same level of protection as floating or surface-piercing equipment. Also, arrays that are sited close to shipping routes would require more significant level of marking and lighting.

19.9 Residual Effects

If all mitigation measures were fully incorporated, then there would be very little residual landscape impact, leading to the following residual significance.

Table 19.9.1: Residual effects

Receptor	Effect	Significance of Effect	Mitigation	Residual Significance
Landscape and Seascape Character from offshore structures and devices	Reduction in visual amenity due to increased marine traffic during construction and maintenance.	Minor	Public information about works Optimise vessel movements	Minor
	Reduction in visual amenity due to permanent visible structures	Moderate	Careful site selection Minimise use of surface-floating or surface-piercing devices	Minor
Landscape and Seascape Character from shoreside works	Reduction in visual amenity during construction	Minor	Public information about works	Minor
	Reduction in visual amenity due to permanent structures	Moderate	Screening	Minor

However, the full implementation of mitigation measures could constrain the selection of technologies to those that lie completely below the surface of the sea. Therefore, the desire to mitigate against landscape impacts should be balanced against operational requirements and cost.

19.10 Recommendations for Survey and Monitoring

19.10.1. Scheme Specific Landscape and Visual Impact Assessment

As described above, the landscape character of the whole of the coastline of Guernsey may be considered to be equally sensitive to development. Therefore, further generic studies would not provide additional value. However, reference may be made to related studies being undertaken in the UK, such as the current work by PRIMaRE.

The best opportunities for understanding and mitigating the landscape impacts of renewable energy developments will emerge from project specific Landscape and Visual Impact Assessments to be undertaken by prospective developers in support of consent applications. The scoping advice given to developers regarding the scope of their Environmental Statements should make specific reference to the required standards and methodology of the assessments.

Although it would not be appropriate to fully define these in advance of receipt of a scoping request from a developer, the following may be included:

General

- Carried out by chartered landscape architect
- Based upon best practice guidance as outlined in the Landscape Institute/IEMA (2002) Guidelines for Landscape and Visual Impact Assessment (second edition).

Baseline Information

Baseline information on the landscape and visual context of the potential deployment site should be gathered from a desk study of publicly available information, site visits, and consultation with statutory consultees and local interest groups.

The desk study should include a review of OS maps, existing and emerging Local Plans and policies, and Guernsey's existing Landscape Character Assessment.

Information on existing light pollution affecting night skies should be sourced from the Campaign to Protect Rural England (CPRE) website and other local sources. Information on atmospheric conditions affecting visibility should be obtained from the UK Met Office and Guernsey Airport records.

Evaluation of existing landscape and visual sensitivity

The sensitivity of landscapes within the vicinity of the potential deployment site should be evaluated with reference to the coastline's designation as an Area of High Landscape Character, indicating landscape, recreational, cultural and historic value.

'Visual receptors' is a term that describes types of people who are likely to respond to visual change according to the reason why they are in a particular location. For the purposes of the assessment, the following distinctions should be made.

Table 19.10.1: Table outlining the sensitivity of visual receptors

Sensitivity to visual change	Type of visual receptor
High	Resident, walker; outdoor recreationist; tourist
Medium	Road user; commuter.
Low	Worker

The use of different sites in the vicinity of a development by different types of user will indicate its sensitivity.

The sensitivity of visual receptors is likely to be further affected by:

- The distance of the viewer from the proposed development site, whereby the further away the viewer is, the smaller the object becomes relative to the view as a whole;
- The influence of other similar elements in the view. This would reduce sensitivity to the proposals;
- How busy people are with other activities that draw focus away from the landscape and visual context, for example, driving on busy roads, working. Views from busy roads and from places of work are therefore considered less sensitive; and
- For offshore elements, the effects of different atmospheric and sea conditions, which would affect visibility of objects from land.

Evaluation of darkness of night skies

The International Occultation Timing Association (IOTA) has produced light pollution maps across France and the South of England including the Channel Islands.[2] These indicate that Guernsey, along with the other Channel Islands, experiences light pollution levels comparable with those of coastal towns of southern England and northern France.

This data, together with the predicted levels of illumination from existing offshore navigational lights and markers, should be used to assess the impact of specific lighting proposals associated with prospective developments.

How visual impact will be assessed

A number of viewpoints will be selected within the Zone of Theoretical Visibility (ZTV) of the proposals to represent the nature of the views experienced from sensitive landscapes and visual receptors from varying distances and directions. It is common for viewpoints to be selected from publicly accessible locations. However, if there are particular concerns regarding the impact on a private property, then these can also be selected. Viewpoints will be visited to verify visibility, and adjustments made so as to consider the worst-case view from a particular point.

Photographs from the representative viewpoints will be taken to allow panoramas to be produced by splicing standard photographs together using graphics software. minor retouching will be allowed to ensure that colour variations at joins in photographs are eliminated.

The potential visibility of offshore developments will be predicted by generating wireline perspectives from representative viewpoints using a 3D computer model.

The predicted magnitude of visual impact experienced from the representative viewpoints will then be assessed using the categories described above.

[2] International Occultation Timing Association (http://www.iota-es.de/light_poll.html)

References

States of Guernsey Environment Dept. 2005 - Rural Area Plan, Review No. 1

International Occultation Timing Association (http://www.iota-s.de/light_poll.html)