SEASCAPE AND VISUAL IMPACT ASSESSMENT

PROPOSED GALWAY BAY MARINE ENERGY TEST FACILITY

SPIDDAL,

CO. GALWAY

January 2016

SEASCAPE AND VISUAL ASSESSMENT

1.1 INTRODUCTION

This report describes the seascape context of the proposed Marine Energy Test Facility and assesses the likely impacts of the scheme on the receiving environment in terms of both seascape character and visual amenity.

Like landscape assessment, seascape assessment relates to changes in the physical environment, brought about by a proposed development, which may alter its character. This requires a detailed analysis of the individual elements and characteristics of a landscape or seascape that go together to make up the overall character of that area. By understanding the aspects that contribute to this character it is possible to make judgements in relation to its quality (integrity) and to identify key sensitivities. This, in turn, provides a measure of the ability of the landscape or seascape in question to accommodate the type and scale of change associated with the proposed development, without causing unacceptable adverse changes to its character.

Visual Impact Assessment (VIA) relates to changes in the composition of views as a result of changes to the landscape, how these are perceived and the effects on visual amenity. Such impacts are population based rather than resource based as in the case of landscape / seascape impacts.

This seascape and visual impact assessment is based on:

- Landscape Institute and the Institute of Environmental Management and Assessment publication entitled Guidelines for Landscape and Visual Impact Assessment (GLVIA-2013).
- Natural England publication 'An approach to Seascape Character Assessment' (2012)
- Environmental Protection Agency (EPA) publication 'Guidelines on the Information to be contained in Environmental Impact Statements (2002) and the accompanying Advice Notes on Current Practice in the Preparation of Environmental Impact Statements (2003)

In relation to Seascape assessment, GLVIA-2013 states that it is important to take account of the particular characteristics of the marine and coastal environment, including those associated with the natural environment, cultural and social characteristics, and perceptual and aesthetic qualities. These will include;

- Coastal features;
- Views to and from the sea;
- Particular qualities of the open sea;
- The importance of dynamic changes due to weather and tides;
- Change in seascapes due to coastal processes;

- Cultural associations;
- Contributions of coastal features to orientation and navigation at sea.

1.1.1 Statement of Authority

This Seascape and Visual Assessment report was prepared by Richard Barker MLA MILI, Principal Landscape Architect at Macro Works Ltd. Relevant experience includes over 90 wind farms, electricity transmission infrastructure, telecommunications masts and a wide range of industrial and commercial developments.

1.1.2 Description of the Proposed Development

The Department of the Marine proposes to place 3 no. prototype, marine based, energy producing machines (25% scale) within a 37ha site some 1.3km offshore from the northern coast of Galway Bay and 2.4km southeast of the coastal settlement of Spiddal. There will also be cardinal markers located at the four corners of the test facility area, a data buoy for scientific research, as well as a "SeaStation", - a floating research platform and power dissipation unit. In brief, the proposed development will consist of;

- 4 no. Cardinal Markers to demarcate the 'Marine and Renewable Energy Test Site' (approximate dimensions 3m diameter with 1m freeboard)
- 1 no. SeaStation (approximate dimensions 14m X 11m with 3m above waterline)
- 1 no. Data Buoy (approximate dimensions 3m diameter with 6m above waterline)
- 1 no. Floating wind turbine (approximate dimensions – hub height 25m, blade diameter 20m, with a trio of floats rising 4m above the waterline
- 1 no. wave device approximate dimensions (5m diameter with 4m above waterline)
- 1 no. wave device (approximate dimensions 2no. 15m X 7.5m pontoons linked by 2m long lever arm - maximum 2m above waterline)

In terms of duration, the lease is being applied for a 35 year period. The only long-term structures will be the cardinal points and the SeaStation. The wave energy converters will be in place for periods ranging between 12 – 18 months and the wind turbine will be in place for 2-3 month periods at a time.

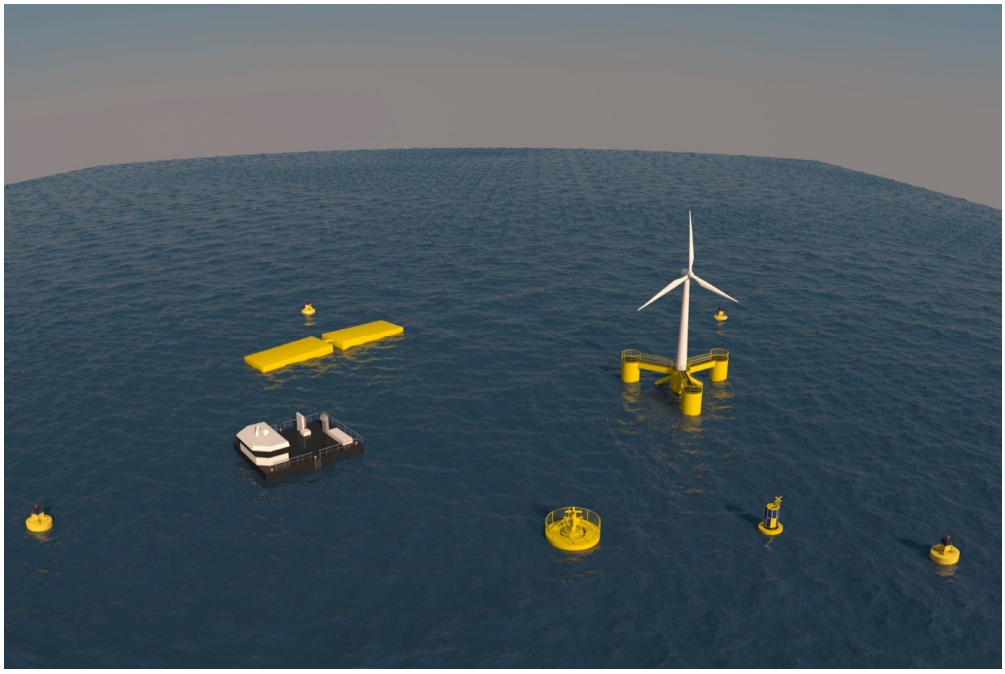

Figure 1 – Proposed marine energy test equipment (does not reflect actual arrangement on site)

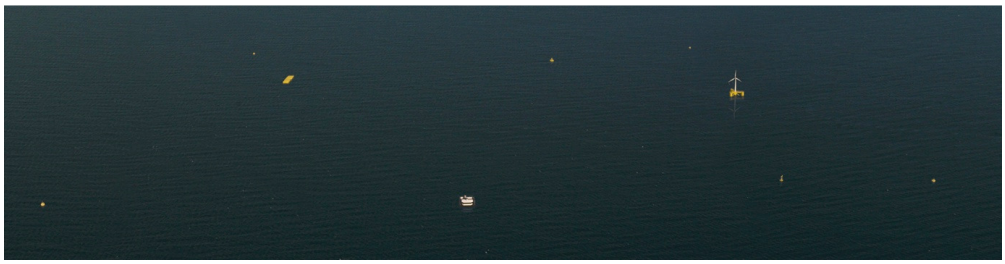

Figure 2 – Actual array of proposed test equipment on site

1.1.3 Definition of Study Area

The proposed marine energy test facility is 1.3km offshore and most of the components will not rise more then a few metres above the waterline. Whilst some of the components of the proposed development may be discernable from distances up to 10km in optimal viewing conditions, they are likely to be barely discernable. Thus, they would be very unlikely to give rise to any significant visual impacts at such distances. For this reason, a more focussed 5km radius study area has been applied in this instance.

1.1.4 Assessment Methodology

Production of this Landscape and Visual Impact Assessment involved;

- A desktop study to establish an appropriate study area, relevant landscape and visual designations in the Galway County Development Plan (2015-2021) as well as other sensitive visual receptors. This stage culminates in the selection of a set of potential viewpoints from which to study the effects of the proposal;
- Fieldwork to establish the landscape character of the receiving environment and to confirm and refine the set of viewpoints to be used for the visual assessment stage;
- Assessment of the significance of the landscape impact of the proposal as a function of seascape sensitivity weighed against the magnitude of the seascape impact;
- Assessment of the significance of the visual impact of the proposal as a function of visual receptor sensitivity weighed against the magnitude of the visual impact;

1.2 EXISTING ENVIRONMENT

1.2.1 Seascape Baseline

The Seascape baseline represents the existing seascape context and is the scenario against which any changes to the landscape brought about by the proposal will be assessed.

1.2.1.1 Coastline characteristics

The northern coastline of Galway Bay runs in a fairly consistent east-west direction with only occasional shallow sandy/pebbly coves between longer sections of rocky shoreline. Galway Bay is a large inlet (c. 10km wide and 30km long) and given the relative absence of significant coves along its northern shoreline as well as the proximity to the Atlantic Ocean, it is a rugged and exposed coastline. The tidal zone consists of rock outcrops and tidal pools, but there is not a dramatic change to the setting between high and low tides as might occur in an estuarine environment. The proposal site is currently identified by 4 no. buoys at each corner, which are discernable in clear viewing conditions, but are unlikely to draw the attention of casual observers. It should also be noted in terms of baseline conditions that the marine energy test facility has been in operation since 2006 with various temporary installations of test equipment.

Above the high water mark the terrain rises at a moderate rate forming undulating hillocks and coastal spurs with a wind swept land cover of scrubby grassland and small clumps of hardy coastal tree species. Occasional small conifer plantations also occur beyond the shoreline. Further upslope is a zone of marginal grazing land interspersed with a more naturalistic land cover of costal scrub. Within 1-2km of the shoreline, hummocky moorland land cover takes over on the higher slopes above Galway Bay.

Plate 1 – Hummocky coastal zone of marginal grazing and windswept scrub interspersed with frequent dwellings

1.2.1.2 Centres of Population and Houses

The northern coast of Galway Bay is lined with a series of coastal villages including Barna, Furbogh and Spiddal, which line the R336 regional road (the coast road). Between these settlements is a consistent string of residential development lining the coast road and the narrow bohereens that run both upslope and downslope from it. It should be noted that this is a Gaeltacht area and the dense yet dispersed coastal settlement pattern is somewhat synonymous with the west coast Gaeltacht areas from Donegal to Cork.

Plate 2 – Coastal Promenade at Spiddal

1.2.1.3 Transport Routes

The principal transport route in this area is the R336 coastal road which loops from Galway City along the northern coast of Galway Bay and then veers inland through Connemara to join the N59 at Maam Cross. Otherwise transport routes within the study area consist of a tight network of Bohereens emanating from the coast road.

1.2.1.4 Public Amenities and Facilities

The northern coast of Galway Bay is a popular tourist area hosting numerous hotels, B&Bs, restaurants and pubs. There is also a craft village in Spiddal. The R336 coast road forms part of the recently inaugurated and highly popular 'Wild Atlantic Way' tourist driving route and also provides access to the Aran Islands via a Ferry service at Rossaveel and an aerodrome at Inverin.

Piers are provided at Barna and Spiddal forming a nucleus for these coastal settlements where fishing is a vital part of both the historic and current way of life. Galway Bay is also used by day tour operators and water based recreationalists such as divers, sailors, windsurfers and fishermen.

1.2.1.5 Landscape Policy Context and Designations

1.2.1.5.1 Galway County Development Plan (2015 – 2021)

A Landscape Character Assessment has been prepared for County Galway, which divides the county into a range of landscape character areas (LCAs). The proposed marine test facility is located just offshore of LCA 9 – 'Inverin to Galway City Coastline'. This LCA is shown on the associated maps to have a 'High' landscape value rating (the second highest of four possible ratings). It is also shown to have a 'Class 3 - High' landscape sensitivity rating (the median of five possible classes).

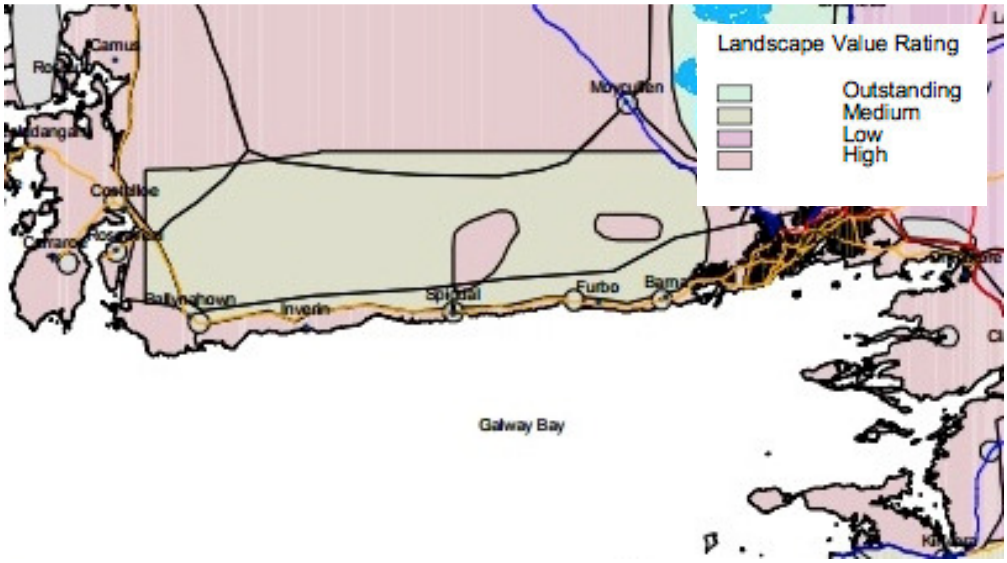

Figure 3 – Excerpt from Landscape Character Assessment map (Landscape Value – Figure 2)

Relevant landscape objectives in the Galway County Development Plan include;

> ***Objective LCM 1 – Landscape Sensitivity Classification***
> *The Planning Authority shall have regard to the landscape sensitivity classification of sites in the consideration of any significant development proposals and, where*

necessary, require a Landscape/ Visual Impact Assessment to accompany such proposals. This shall be balanced against the need to develop key strategic infrastructure to meet the strategic aims of the plan, and having regard to the zoning objectives of serviced development land within the Galway Metropolitan Areas.

Objective LCM 2 – Landscape Sensitivity Ratings

Consideration of landscape sensitivity ratings shall be an important factor in determining development uses in areas of the County. In areas of high landscape sensitivity, the design and the choice of location of proposed development in the landscape will also be critical considerations.

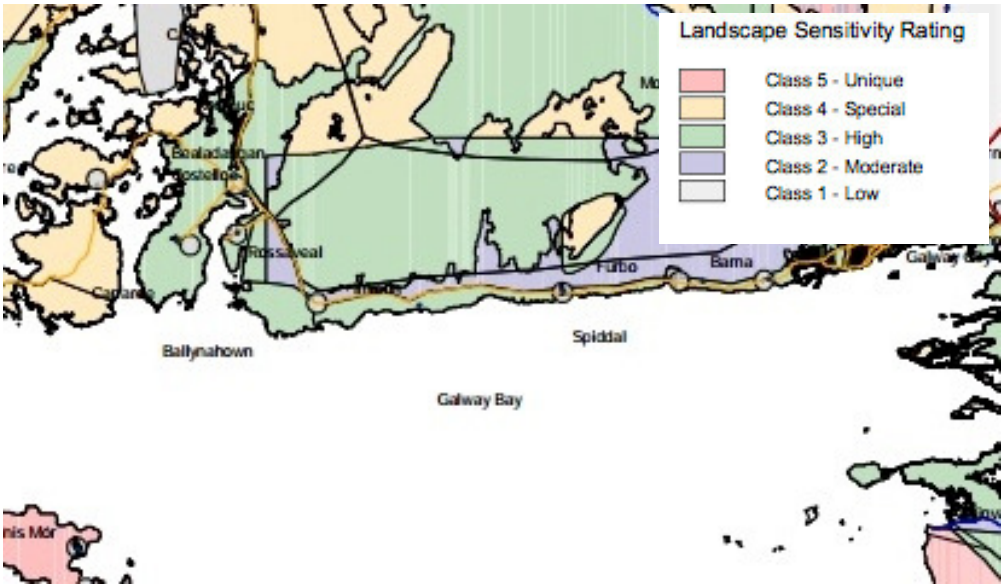

Figure 4 – Excerpt from Landscape Character Assessment map (Landscape Sensitivity – Figure 3)

1.2.2 Visual Baseline

The visual baseline for this proposed marine energy test facility establishes both the nature of visibility within the study area and the important receptor locations from which the development might be visible. The most salient visual receptors in this instance are the residents and visitors along the northern coast of Galway Bay, particularly at the nearest settlement of Spiddal.

1.2.2.1 Views of Recognised Scenic Value

Views of recognised scenic value are primarily indicated within County Development Plans in the context of scenic views/routes designations, but they might also be indicated on touring maps, guide books, road side rest stops or on post cards that represent the area. In this instance there are a

number of pull-in areas and promenades along the R336 coast road that are considered to be recognised coastal viewing locations that are not necessarily represented by designations contained in the Galway County Development Plan.

1.2.2.2 Galway County Development Plan (2015 – 2021)

There is a series of designated focal points and views indicated on map FPV1 in the Galway County Development Plan that are potentially relevant to this proposal. These are set out below and indicated on the following map excerpt (Figure 3);

- View 71 – 'View of the headland Illaunafaumona' (east of Barna)
- View 72 - 'View of the sea from north of Barna'
- View 73 – 'View of Lough Inch from surrounding 3rd class roads'
- View 74 – 'View of north Clare Coast'
- View 77 – 'View of Catholic Church and High Tower in An Spideal'

Of the above designated views, the most pertinent are considered to be View no. 72 and View no. 74 as they both relate to views of the sea. However, it should be noted that elevated views from local roads around Barna and Spiddal were investigated during fieldwork and clear views of the proposal site were difficult to obtain due to the moderate incline and degree of screening from vegetation and buildings.

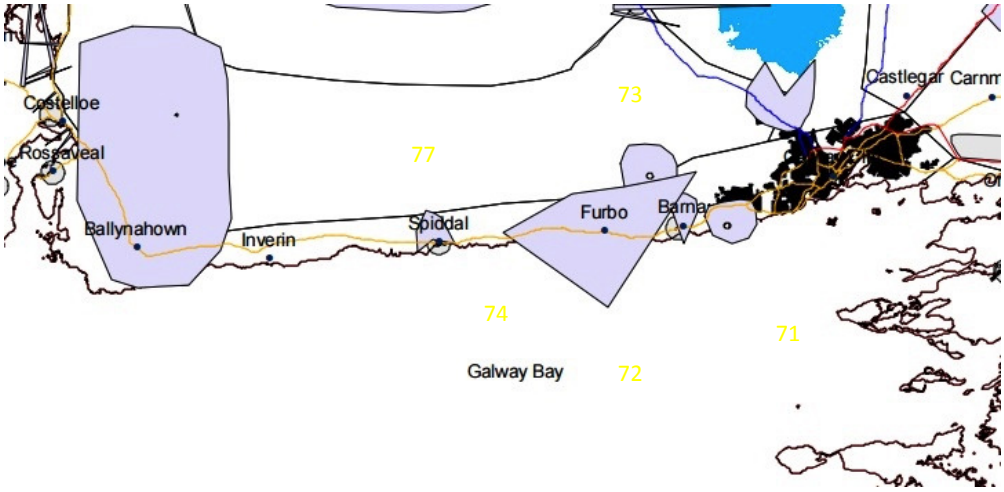

Figure 5 – Excerpt from Galway County Development Plan Map FPV1 showing designated focal points and views in the vicinity of the proposal site (numbering added)

The only planning objective relating to focal points and views is set out below;

> ***Objective FPV 1 – Development Management***
> *Preserve the focal points and views as listed in Map FPV1 from development that in the view of the Planning Authority would negatively impact on said focal points and views.*

This shall be balanced against the need to develop key infrastructure to meet the strategic aims of the plan, and have regard to the zoning objectives of serviced development land within the Galway Metropolitan Area.

1.2.2.3 Identification of Viewshed Reference Points as a Basis for Assessment

Viewshed Reference Points (VRP's) are the locations used to study the visual impacts of the proposal in detail. It is not warranted to include each and every location that provides a view of this development as this would result in an unwieldy report and make it extremely difficult to draw out the key impacts arising from the project. Instead, the selected viewpoints are intended to reflect a range of different receptor types, distances and angles. The visual impact of a proposed development is assessed using up to 6 categories of receptor type as listed below:

- Key Views - from features of national or international importance;
- Designated Scenic Routes and Views;
- Local Community views;
- Centres of Population;
- Major Routes; and
- Amenity and heritage features;

The Viewshed Reference Points selected in this instance are set out in table 1-1 and shown on Figure 6 below.

Table 1-1 Outline Description of Selected Viewshed Reference Points (VRPs)

VRP No.	*Location*	*Direction of view*
VP1	Amenity area at the base of Spiddal Pier	SE
VP2	Promenade along R336 coast road at Spiddal	SE
VP3	Coastal walking track at Spiddal East	S
VP4	R336 coast road at Doorath	S
VP5	Promenade along R336 coast road at Furbogh	SW

Viewpoints map indicating the locations chosen for photomontages

Figure 6 – Viewpoint location map

1.3 IMPACT ASSESSMENT

1.3.1 Seascape Impact

1.3.1.1 Assessment Criteria

When assessing the potential impacts on the seascape resulting from a proposed development, the following criteria are considered:

- seascape character, value and sensitivity
- Magnitude of likely impacts; and
- Significance of landscape effects

The sensitivity of the seascape to change is the degree to which a particular receptor (Landscape / Seascape Character Area (LCA) or feature) can accommodate changes or new features without unacceptable detrimental effects to its essential characteristics. Landscape Value and Sensitivity is classified using the following criteria;

Table 1-2 Seascape Value and Sensitivity

Sensitivity	Description
Very High	Areas where the seascape character exhibits a very low capacity for change in the form of development. Examples of which are high value seascapes, protected at an international or national level (World Heritage Site/Marine Park), where the principal management objectives are likely to be protection of the existing character.
High	Areas where the seascape character exhibits a low capacity for change in the form of development. Examples of which are high value seascapes, protected at a national or regional level (Area of Outstanding Natural Beauty), where the principal management objectives are likely to be considered conservation of the existing character.
Medium	Areas where the seascape character exhibits some capacity and scope for development. Examples of which are seascapes, which have a designation of protection at a county level or at non-designated local level where there is evidence of local value and use.
Low	Areas where the seascape character exhibits a higher capacity for change from development. Typically this would include lower value, non-designated seascapes that may also have some elements or features of recognisable quality, where seascape management objectives relate to enhancement rather than protection.
Negligible	Areas of seascape character that include dereliction and industrial uses where there would be a reasonable capacity to embrace change or the capacity to include the development proposals. Management objectives in such areas could be focused on change, creation of seascape improvements and/or restoration to realise a higher value.

The magnitude of a predicted seascape impact is a product of the scale, extent or degree of change that is likely to be experienced as a result of the proposed development. The magnitude takes into account whether there is a direct physical impact resulting from the loss of seascape components and/or a change that extends beyond the proposal site boundary that may have an effect on the seascape character of the area.

Table 1-3 Magnitude of Seascape Impacts

Magnitude of Impact	Description
Very High	Change that would be large in extent and scale with the loss of critically important seascape elements and features, that may also involve the introduction of new uncharacteristic elements or features that contribute to an overall change of the seascape in terms of character, value and quality.
High	Change that would be more limited in extent and scale with the loss of important seascape elements and features, that may also involve the introduction of new uncharacteristic elements or features that contribute to an overall change of the seascape in terms of character, value and quality.

Medium	Changes that are modest in extent and scale involving the loss of seascape characteristics or elements that may also involve the introduction of new uncharacteristic elements or features that would lead to changes in seascape character, and quality.
Low	Changes affecting small areas of seascape character and quality, together with the loss of some less characteristic seascape elements or the addition of new features or elements.
Negligible	Changes affecting small or very restricted areas of seascape character. This may include the limited loss of some elements or the addition of some new features or elements that are characteristic of the existing seascape or are hardly perceivable.

The significance of a seascape impact is based on a balance between the sensitivity of the seascape receptor and the magnitude of the impact. The significance of seascape impacts is arrived at using the following matrix;

Table 1-4 Seascape Impact Significance Matrix

	Sensitivity of Receptor				
Scale/Magnitude	*Very High*	*High*	*Medium*	*Low*	*Negligible*
Very High	Profound	Profound-substantial	Substantial	Moderate	Minor
High	Profound-substantial	Substantial	Substantial-moderate	Moderate-slight	Slight-imperceptible
Medium	Substantial	Substantial-moderate	Moderate	Slight	Imperceptible
Low	Moderate	Moderate-slight	Slight	Slight-imperceptible	Imperceptible
Negligible	Slight	Slight-imperceptible	Imperceptible	Imperceptible	Imperceptible

Note: those categories indicated in orange are considered to be equivalent to 'Significant' impacts in EIA terms

1.3.1.2 Seascape Value and Sensitivity

This is something of an iconic coastal area that combines rugged scenic values with cultural and heritage values. It is a popular destination for both tourists and the residents of Galway with the piers amenity areas hotels, pubs and restaurants all strongly associated with the coastal environment and views out to sea. The coast road forms part of the 'Wild Atlantic Way' tourist driving route and this area epitomises the crossover of nature and culture that route users are seeking.

Aside from the attraction to tourists and visitors this is also a working coastline where marine based industries such as fishing are part of the heritage as well as the current way of life. Being a Gaeltacht area there are also a range of small industries and craft related businesses that add to the productive character of the area. Many of these also have associated retail outlets.

Compared to much of Irelands west coast, this is a relatively densely populated section of coastline. The various villages along the coast road form slightly denser nodes of development rather than distinctive settlements, due to the dispersal of detached dwellings along the entire northern coast of Galway Bay.

Being within the enclosure of Galway Bay and the Aran Islands at the mouth of the Bay, there is some sense of protection from the full force of the Atlantic Ocean even if this is only perceptual. It is not considered to be as rugged, exposed and isolated as many west facing sections of the Atlantic coastline. There is also a lesser sense of the naturalistic due to the density of population and degree of built development.

The rugged scenery of this section of coastline, particularly seaward of the high-water mark, is balanced in seascape sensitivity terms by the relative density of built development and variety of anthropogenic land uses above the high-water mark. Although this coastal strip, identified as LCA 9 – 'Inverin to Galway City Coastline' in the Galway County Development Plan, is designated as a 'high' sensitivity landscape therein, two higher categories (Unique and Special) were not applied. This is presumably on the basis of the same balance of factors described above. Using a slightly more universal categorisation system outlined in table 1.2 above it is considered that the landscape / seascape sensitivity of this section of coastline is Medium.

1.3.1.3 Magnitude of Seascape Effects

There will be no physical effects on the landscape or coastal features as a result of the proposed development so the appraisal of impacts is limited, in this instance, to those affecting seascape character only.

In clear viewing conditions the proposed marine energy test facility will be a noticeable concentration of variant, but apparently associated, structures covering a small geometric section of Galway Bay. The structures may appear slightly ambiguous compared to vessels and structures that might be more familiar in the marine environment this far offshore. As an iconic renewable energy form, the floating turbine structure, in particular, is likely to hint at the purpose of the structures and provide some legibility to the view of the facility. It is also important to note that this marine energy test facility has been in operation for nearly 10 years and the occasional placement of wave energy devices will not be an unfamiliar occurrence for the local population.

Along a rugged section of coastline there is potential that the view of a geometric array of offshore structures could generate a sense of developing and taming of the naturalistic seascape. However, in this instance the section of coastline in question is not synonymous with the wild Atlantic and has been influenced by cultural activities for hundreds of years. The existing test facility site is contained within a large bay that accommodates the daily activities of a relatively high coastal population who are already familiar with similar activities taking place at the site. For this reason, it is not considered that the proposed structures will conflict with the seascape values associated with the northern portion of Galway Bay. Furthermore, two of the most distinctive features; being the floating turbine and long, hinged wave device will only be temporary features at the site (2-3 months and 12-18 months per installation respectively)

On the basis of the reasons outlined above, it is considered that the magnitude of seascape impact is 'Low'.

1.3.1.4 Significance of Seascape Impact

When the magnitude judgement of Medium-low is coupled with the earlier sensitivity judgement of 'Medium', the overall significance of seascape impact is deemed to be **Slight**.

1.3.2 Visual Impact

As with the seascape impact, the visual impact of the proposed marine energy test facility will be assessed as a function of sensitivity versus magnitude. In this instance the sensitivity of the visual receptor (viewer), weighed against the magnitude of the visual effect.

1.3.2.1 Sensitivity of Visual Receptors

Unlike landscape / seascape sensitivity, the sensitivity of visual receptors has an anthropocentric basis. It considers factors such as the perceived quality and values associated with the view, the landscape context of the viewer, the likely activity they are engaged in and whether this heightens their awareness of the surrounding landscape. A list of the factors considered by the assessor in estimating the level of sensitivity for a particular visual receptor is outlined below and used in table 1-5 to establish visual receptor sensitivity at each VRP:

1. **Recognised scenic value of the view** (County Development Plan designations, guidebooks, touring maps, postcards etc.). These represent a consensus in terms of which scenic views and routes within an area are strongly valued by the population because in the case of County Developments Plans, at least, a public consultation process is required;

2. **Views from within highly sensitive landscape areas**. Again, highly sensitive landscape designations are usually part of a county's Landscape Character Assessment, which is then incorporated with the County Development Plan and is therefore subject to the public

consultation process. Viewers within such areas are likely to be highly attuned to the landscape around them;

3. **Primary views from dwellings**. A proposed development might be seen from anywhere within a particular residential property with varying degrees of sensitivity. Therefore, this category is reserved for those instances in which the design of dwellings or housing estates, has been influenced by the desire to take in a particular view. This might involve the use of a slope or the specific orientation of a house and/or its internal social rooms and exterior spaces;

4. **Intensity of use, popularity**. This relates to the number of viewers likely to experience a view on a regular basis and whether this is significant at county or regional scale;

5. **Connection with the landscape**. This considers whether or not receptors are likely to be highly attuned to views of the landscape i.e. commuters hurriedly driving on busy national route versus hill walkers directly engaged with the landscape enjoying changing sequential views over it;

6. **Provision of elevated panoramic views**. This relates to the extent of the view on offer and the tendency for receptors to become more attuned to the surrounding landscape at locations that afford broad vistas.

7. **Sense of remoteness and/or tranquillity.** Receptors taking in a remote and tranquil scene, which is likely to be fairly static, are likely to be more receptive to changes in the view than those taking in the view of a busy street scene, for example;

8. **Degree of perceived naturalness**. Where a view is valued for the sense of naturalness of the surrounding landscape it is likely to be highly sensitive to visual intrusion by distinctly manmade features;

9. **Presence of striking or noteworthy features.** A view might be strongly valued because it contains a distinctive and memorable landscape feature such as a promontory headland, lough or castle;

10. **Historical, cultural and / or spiritual significance.** Such attributes may be evident or sensed by receptors at certain viewing locations, which may attract visitors for the purposes of contemplation or reflection heightening the sense of their surroundings;

11. **Rarity or uniqueness of the view**. This might include the noteworthy representativeness of a certain landscape type and considers whether the receptor could take in similar views anywhere in the broader region or the country;

12. **Integrity of the landscape character**. This looks at the condition and intactness of the landscape in view and whether the landscape pattern is a regular one of few strongly related components or an irregular one containing a variety of disparate components;

13. **Sense of place**. This considers whether there is special sense of wholeness and harmony at the viewing location; and

14. **Sense of awe**. This considers whether the view inspires an overwhelming sense of scale or the power of nature.

Those locations which are deemed to satisfy many of the above criteria are likely to be in the higher order of magnitude in terms of sensitivity and vice versa. No relative importance is inferred by the order of listing in the table 1-5 below. Overall sensitivity may be a result of a number of these factors or, alternatively, a strong association with one or two in particular.

Table 1-5 Analysis of Visual Receptor Sensitivity at Viewshed Reference Points

Strong association	Moderate association	Mild association	Negligible association

Assessment Criteria	VP1	VP2	VP3	VP4	VP5
Recognised scenic value of the view					
Views from within highly sensitive landscape areas					
Primary views from residences					
Intensity of use, popularity (number of viewers)					
Viewer connection with the landscape / seascape					
Provision of vast, elevated panoramic views					
Sense of remoteness / tranquillity at the viewing location					
Degree of perceived naturalness					
Presence of striking or noteworthy features					
Sense of Historical, cultural and / or spiritual significance					
Rarity or uniqueness of the view					
Integrity of the landscape character within the view					
Sense of place at the viewing location					
Sense of awe					
Overall sensitivity assessment	**H**	**H**	**H**	**HM**	**H**

N = Negligible; **L** = low sensitivity; **M** = medium sensitivity; **H** = high sensitivity; **VH** = very high sensitivity

1.3.2.2 Visual Impact Magnitude

The magnitude of visual effects is determined on the basis of two factors; the visual presence (relative visual dominance) of the proposal and its effect on visual amenity.

Given that the proposed Marine Energy Test Facility does not represent significant bulk, visual impacts will result almost entirely from visual 'intrusion' rather than visual 'obstruction' (the blocking of a view). The magnitude of visual impacts is classified in the following table;

Table 1-6 Magnitude of Visual Impact

Criteria	Description
Very High	The proposal intrudes into a large proportion or critical part of the available vista and is without question the most noticeable element. A high degree of visual clutter or disharmony is also generated, strongly reducing the visual amenity of the scene
High	The proposal intrudes into a significant proportion or important part of the available vista and is one of the most noticeable elements. A considerable degree of visual clutter or disharmony is also likely to be generated, appreciably reducing the visual amenity of the scene
Medium	The proposal represents a moderate intrusion into the available vista, is a readily noticeable element and/or it may generate a degree of visual clutter or disharmony, thereby reducing the visual amenity of the scene. Alternatively, it may represent a balance of higher and lower order estimates in relation to visual presence and visual amenity
Low	The proposal intrudes to a minor extent into the available vista and may not be noticed by a casual observer and/or the proposal would not have a marked effect on the visual amenity of the scene
Negligible	The proposal would be barely discernible within the available vista and/or it would not detract from, and may even enhance, the visual amenity of the scene

1.3.2.3 Visual Impact Significance

As stated above, the significance of visual impacts is a function of visual receptor sensitivity and visual impact magnitude. This relationship is expressed in the same significance matrix and applies the same EPA definitions of significance as used earlier in respect of landscape impacts (table 1-4).

1.3.2.4 Estimation of Visual Impacts at VRPs

To be read in conjunction with the viewpoint map and photomontages contained in Appendix A.

Viewshed Reference Point		Viewpoint Location
VP1	Amenity area at the base of Spiddal Pier	

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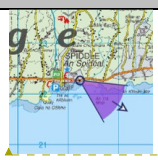
Representative of:	• A coastal settlement • An amenity area
Receptor Sensitivity	**High**
Existing View	This is a relatively enclosed coastal view from just above the beach at Spiddal Pier. To the left is a small, grassed area containing a beach hut, beyond which can be seen a rocky coastline characterised by small promontory outcrops and sandy inlets. Above the high-water line is a scattering of residential dwellings set amongst scrubby coastal vegetation on gently rising slopes. To the right is a stout stone pier that truncates the view at a short distance to the southwest. However, the view across the bay to the southeast is extensive between the pier and rocky shoreline. Whilst the inland portion of Burren headland can be seen beyond the pier, the only other containment of the view is the Slieve Aughty mountains in the far distance to the southeast.
Visual Impact of the marine energy structures	The proposed marine energy test facility will be seen as a linear cluster of structures lining the horizon between the waters of Galway Bay and the base of the Slieve Aughty range beyond. The most noticeable features will be the wind turbine due to its height, the twin-float wave machine due to its length and the SeaStation due to its bulk. The remaining structures are likely be perceived as large buoys. All of the structures are seen at a relatively small scale from this distance and in the context of the overall coastal vista they are considered to have a minimal visual presence. In aesthetic terms, the various structures will add a minor degree of visual clutter to the seaward view, but without intruding on or detracting from the view of any seascape features beyond, or indeed, in the foreground. Visitors may experience a minor degree of confusion as to the purpose of this collection of variant structures. However, local residents are likely to be more familiar with such structures being temporarily introduced at the facility over the past 10 years. On the basis of the reasons outlined above, the magnitude of visual impact is deemed to be Low-negligible and only in a scenario where all proposed structures are in place at the same time.
Summary	Based on the assessment criteria and matrices outlined at section 1.4 the significance of visual impact is summarised below.

Visual Receptor	Visual Impact	**Significance of Visual**

Sensitivity	Magnitude	**Impact**
High	Low-negligible	**Slight**

Viewshed Reference Point		**Viewpoint Location**
VP2	Promenade along R336 coast road at Spiddal	

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Representative of:

- A coastal settlement
- A major route
- The 'Wild Atlantic Way' tourist driving route

Receptor Sensitivity **High**

Existing View

This is a broad panoramic vista cross Galway Bay from the coastal promenade walkway along the R336 at Spiddal. On the inland side of the road is a craft village that is a popular visitor attraction. The shoreline consists of rounded boulders with rock outcrops and patches of sand. Although the coast is oriented in a fairly consistent east – west direction, there are small inlets and tidal pools providing some sense of enclosure. Across the bay in the far distance is Black Head and the other domed forms of the Burren limestone region, which defines the southern side of Galway Bay.

Visual Impact of the marine energy structures

The proposed marine energy test facility will be seen as a horizontal array of floating structures with a backdrop of terrain on the opposite side of the bay. The structures are all seen at a small scale from this distance and are not likely to be visible at all in anything but clear viewing conditions. The most distinctive features are the wind turbine, the SeaStation and the long wave machine. Nonetheless, the marine energy test facility is still likely to have minimal visual presence in this complex coastal scene.

Aesthetically, the array of variant structures may appear slightly anomalous within the waters of the bay, particularly for visitors who might be unfamiliar with the existence of the test facility. However given the low degree of visual presence of the structures and the anthropogenic context of this seascape

setting, they will not noticeably detract from visual amenity at this location.

Overall, it is considered that the magnitude of visual impact is Low-negligible.

Summary

Based on the assessment criteria and matrices outlined at section 1.4 the significance of visual impact is summarised below.

Visual Receptor Sensitivity	Visual Impact Magnitude	**Significance of Visual Impact**
High	Low-negligible	**Slight**

Viewshed Reference Point		**Viewpoint Location**
VP3	Coastal walking track at Spiddal East	

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Representative of:

- A local amenity walkway
- Coastal community views

Receptor Sensitivity

High

Existing View

This view is from a small coastal loop walk, which runs between dry stonewalls and scrubby coastal vegetation. It encompasses the hummocky terrain that is typically found in coastal zone between the shoreline and the coast road. This is a slightly elevated view over Galway Bay with the Burren headland forming a distinctive backdrop in the distance. This is the nearest section of shoreline to the proposed marine energy test facility.

Visual Impact of the marine energy structures

The proposed structures of the marine energy test facility will be visible from here in a linear cluster just below the waterline that defines the far side of Galway Bay (due to the effects of perspective). They will be seen as relatively small scale features from here, but they are directly aligned with the path at this point making them more likely to be noticed by walkers approaching the shore. In terms of visual presence, the proposed facility is considered to be sub-dominant within this visual context.

From this closest land-based viewpoint there is a slightly greater sense of the varying designs of this cluster of marine structures and this may lead to some visual confusion for those unfamiliar with the test facility (10 years). However, this is likely to be more on the basis of interest rather than a sense that they are out of place in this coastal setting. Mainly because this is a modified and richly varied coastal setting, not a pristinely naturalistic one. The three dimensional layout of the facility is apparent from here due to the slightly elevated nature of the view. This marginally reduces the sense of visual clutter that occurs in relation to shoreline views (such as VP1 and VP2 above).

On the basis of the reasons outlined above the magnitude of visual impact is deemed to be Low.

Summary

Based on the assessment criteria and matrices outlined at section 1.4 the significance of visual impact is summarised below.

Visual Receptor Sensitivity	Visual Impact Magnitude	**Significance of Visual Impact**
High	Low	**Moderate-slight**

Viewshed Reference Point		**Viewpoint Location**
VP4	R336 coast road at Doorath	

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Representative of:

- A major route
- Coastal community views
- The 'Wild Atlantic Way' tourist driving route

Receptor Sensitivity **High-medium**

Existing View

This is a slightly elevated, panoramic vista across Galway Bay to the south from the R336 coast road. It takes in a foreground of marginal grazing and reverting scrubland on shallow slopes that lead down to the shore in the near middle distance. Only a small section of the rocky shoreline can be seen jutting out into the bay. Across the broad expanse of water can be seen the

humpbacked form of the Burren Peninsula in the distance. The low forms of the Aran Islands can also be seen at the mouth of Galway Bay to the southwest.

Visual Impact of the marine energy structures

The proposed structures of the marine energy test facility will be appear in the heart of the bay despite being much nearer to its northern coastline. They will be seen in a relatively narrow horizontal array and the variant forms of the structures may draw attention, particularly the floating wind turbine. The proposed facility is judged to have a sub-dominant visual presence in this coastal scene.

There will be a minor degree of visual clutter generated within the seaward aspect of this view. However, this is tempered slightly by the perception of the three dimensional layout of the structures due to the slightly elevated nature of the view (actual separation distances between structures can be appreciated). Visitors may experience some visual confusion associated with the cluster of differing forms within a defined section of the bay. However, the facility has already been in place for nearly 10 years and it is not considered that the current proposal detracts from any sensitive qualities associated with this seascape context.

Overall, the magnitude of visual impact is considered to be Low.

Summary

Based on the assessment criteria and matrices outlined at section 1.4 the significance of visual impact is summarised below.

Visual Receptor Sensitivity	Visual Impact Magnitude	**Significance of Visual Impact**
High medium	Low	**Slight**

Viewshed Reference Point		**Viewpoint Location**
VP5	Promenade along R336 coast road at Furbogh	

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Representative of:

- A designated scenic view
- A coastal settlement
- A major route

- The 'Wild Atlantic Way' tourist driving route

Receptor Sensitivity **High**

Existing View This is a view from one of nearest sections of the R336 coast road to the sea at the dispersed coastal settlement of Furbogh. It takes in a foreground of a promenade footpath above a sandy inlet, which is defined at it western end by a cluster of residences and commercial buildings set against the immediate backdrop of a small coastal promontory headland. A lower promontory of rocky outcrops and tidal pools defines the eastern end of the beach. Black Head on the opposite side of Galway Bay is a distinctive background feature in the distance.

Visual Impact of the marine energy structures The proposed structures of the marine energy test facility will be barely discernable from here towards the mouth of Galway Bay (southwest) due to the viewing distance and the lack of contrast against the sky. In clear viewing conditions the floating wind turbine will be the structure most likely to be noticed. In the context of the dynamic and complex coastal setting in the foreground, the proposed marine energy test facility is considered to have a minimal visual presence. For the same reason it is not likely to noticeably detract from the visual amenity experienced at this location.

On the basis of the reasons outlined above, the magnitude of visual impact is judged to be negligible.

Summary Based on the assessment criteria and matrices outlined at section 1.4 the significance of visual impact is summarised below.

Visual Receptor Sensitivity	Visual Impact Magnitude	**Significance of Visual Impact**
High	Negligible	**Slight-imperceptible**

1.4 MITIGATION

One of the main issues associated with the view of the marine energy test facility is that the array of different structures might appear slightly anomalous to visitors who are unaware of the sites' purpose. Concern has also been expressed by local residents regarding the duration of the installations and whether this is just the precursor to a permanent commercial site. By way of mitigation, therefore, the Marine Institute intends to provide an interpretive installation on the shoreline (most likely at Spiddal), which provides information about the various marine renewable technologies and the purpose of the site for testing such devices. It is believed that there would be

genuine interest in the test facility and any visual ambiguity is likely be removed for those armed with information about the site.

1.5 CONCLUSION

1.5.1 Seascape Impacts

Seascape impacts are considered in the same way as landscape impacts would be for a normal LVIA. In this instance there will be no physical impacts on the coastal environment so the focus of the appraisal is impacts on the character of the seascape of north Galway Bay. In this regard, it is considered that the section of coastline in question is not synonymous with the wild Atlantic to the degree that much of Irelands west coast is. Instead, this is a settled section of coastline hosting an array of coastal industries and relatively dense yet dispersed population. This coastline therefore has an anthropogenic character and the continuing use of the marine energy test facility is not considered to significantly conflict with the seascape values associated with the northern portion of Galway Bay. The overall significance of seascape impact is judged to be Slight and this only applies to a worst case scenario where all of the structures are briefly in place at the same time. The temporary nature of most of the structures (wave energy converters 12-18 months and floating turbine 2-3 months per installation) is a strong ameliorating factor in this instance.

1.5.2 Visual Impacts

The sensitivity of visual receptors (people and groups of people at particular locations) is generally considered to be high in this coastal area, which hosts the Atlantic Way tourist driving route. Local residences are also generally oriented to take in the richly diverse coastal vistas on offer.

In terms of visual impacts, the proposed structures will generally be seen as small-scale features from shore-based viewing locations due to the viewing distances involved (generally greater than 2km) and none are of significant bulk. They will be most noticeable due to the concentration of variable floating structures in one portion of the bay. The three structures that will tend to stand out the most are the; floating turbine, due to its height and movement; the SeaStation, due to its bulk, and the twin-float wave machine, due to its length. The highest level of visual presence (relative noticeability within the view) is deemed to be 'sub-dominant' and this occurs at VP3 – the closest of the viewpoints (1.3km). Visual presence at the other locations is considered to range between sub-dominant and minimal.

In terms of aesthetics, it is considered that the cluster of variant structures may appear slightly anomalous, particularly when they first brought to site or for visitors who are unaware of their purpose. Local residents, on the other hand, are likely to be more familiar with the occasional placement of such structures at this facility, which has been operational for nearly 10 years. The proposed structures may also contribute a minor degree of visual clutter to the seaward view, particularly in low angle views from the shore where the three dimensional layout of the structures

is less apparent. Nonetheless, this is a living and working section of coastline that hosts an array of structures and land uses and it is not considered that the marine energy test facility conflicts with the character and values associated with the coastal vistas in this area. Important ameliorating factors in this instance are the temporary nature of the installations for most of the energy devices and the fact that it will be uncommon for all of the structures to be in place at any one time.

1.5.3 Overall Significance of Impact

Owing to the balance between the relatively high sensitivity of this seascape area versus the relatively low degree of impact arising from the proposed marine energy test facility, the highest overall significance of impact is deemed to be Moderate-slight (VP3). Given the pattern of impacts at the various viewpoints, this degree of impact is only likely to occur at viewing distances of less than 2km and only for the brief worst-case-scenario periods when all structures are in place at once. Beyond approximately 2km impact levels fall away quickly to slight and imperceptible. There will be no residual seascape or visual impacts once the various structures are eventually removed from the site.

Overall, it is not considered that the proposed marine energy test facility will give rise to any significant impacts in EIA terms.