8 EIA APPROACH AND METHODOLOGY

8.1 Introduction

This chapter describes the approach to, and method for, completing the Environmental Impact Assessment (EIA). This assessment methodology described has been developed to meets the requirements of both the Marine Works (Environmental Impact Assessment) Regulations 2007 and the Offshore Electricity Development (Environmental Impact Assessment) Regulations (Northern Ireland) 2008.

8.2 EIA approach

As illustrated in Figure 8.1, EIA is the process of systematically identifying the potential impacts of a project or development, in this case the offshore components of the Torr Head Tidal Array Project, on the environment. The process requires a detailed understanding of the Project e.g. proposed installation, operation and maintenance, and decommissioning activities, and the environment within which the Project will be located. Potential impacts are then evaluated to determine how the Project will affect the environment and the significance of those impacts. Where potential impacts are likely to be significant specific measures will need to be taken either directly or through design, construction, operation and decommissioning of the Project to reduce, remove or offset such impacts. The EIA process also requires the identification of any appropriate monitoring to either confirm impacts predicted in the ES and/or demonstrate compliance with legal requirements.

As described in Chapter 5, for all EIA topics the approach has been to assess the maximum potential impact of the Project based on the worst case parameters as defined by the Project design envelope. Further detail on specific design envelope parameters identified for each EIA topic is provided in each of the relevant ES chapters (Chapters 9 to 20).

8.3 EIA scoping

An EIA Scoping Report was submitted to the Department of Environment (DoENI) Marine Division and Department of Enterprise, Trade and Investment (DETI) in July 2013. This report (TVL, 2013) included an introduction to, and description of the Project (based on Project design information available at the time), information on relevant planning and legislative requirements and an initial description of the baseline for the key EIA topics that could be affected by the Project. The EIA Scoping Report also identified a number of potential impacts that would need to be assessed in more detail as part of the EIA.

A combined EIA Scoping Opinion from DoENI Marine Division and DETI was received in February 2014 (DoENI Marine Division and DETI, 2014). Information provided within this EIA Scoping Opinion, together with responses from other consultees and information included in the EIA Scoping Report (TVL, 2013) has been reviewed and implications for the overall Project and EIA considered where necessary. All issues relevant to individual EIA studies are highlighted in the relevant impact assessment chapters of this Environmental Statement (ES).

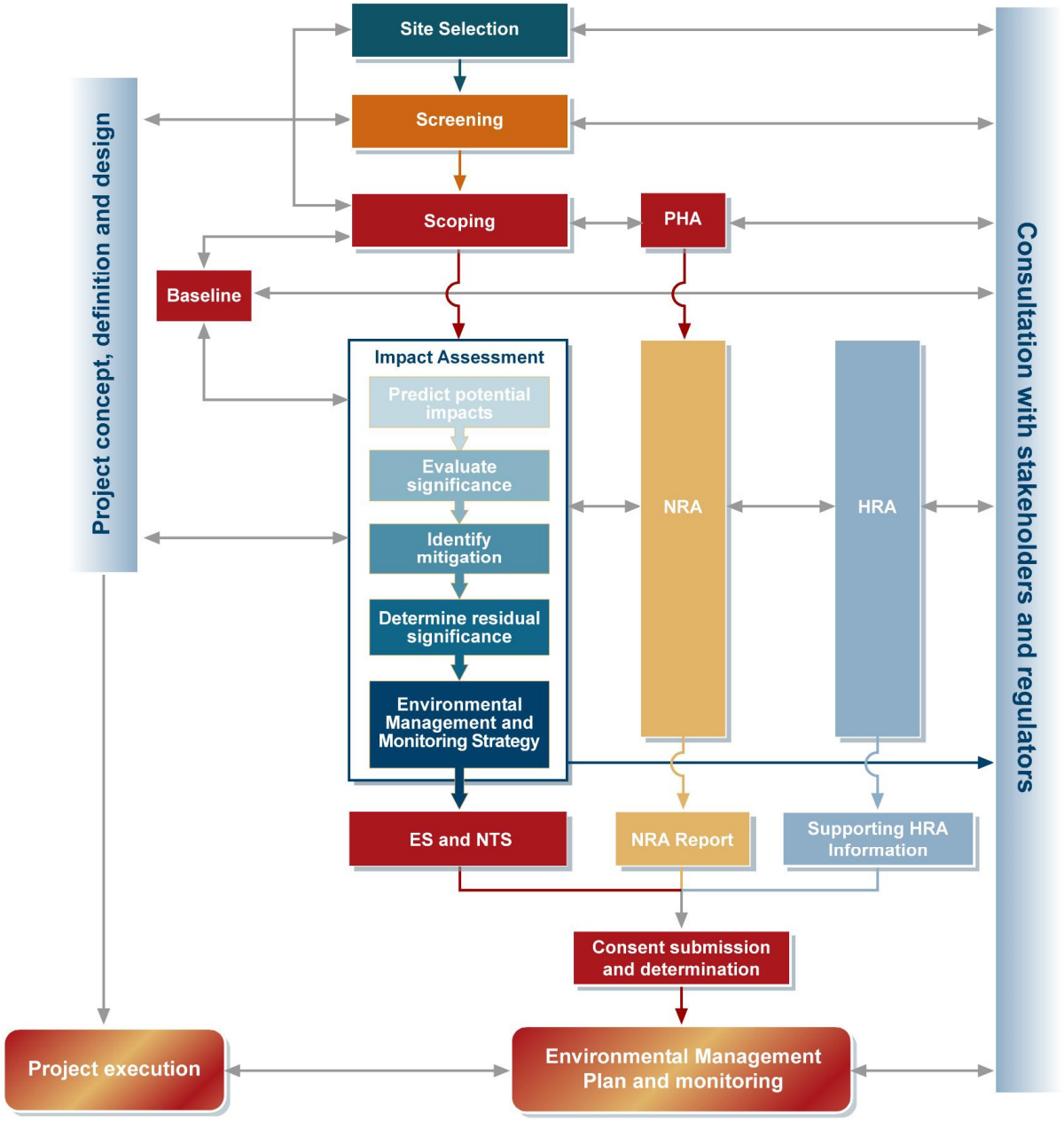
The EIA Scoping Report and EIA Scoping Opinion are provided on the CD that can be found on the inside of the front cover of this ES.

8.3.1 Scoped out issues

As part of the EIA Scoping process it was concluded that potential impacts on air quality and climate would be of negligible significance and therefore this topic has been scoped out of the EIA. However, information on climate and the benefits of the developing renewable energy sources to help combat climate change are discussed in Chapter 2: Need for the Project.

Further information on the specific impacts that have been scoped out of the EIA is provided in each of the topic specific impact assessment sections of the ES (Chapters 9 to 20).

Figure 8-1 EIA process



8.4 EIA and preparation of the Environmental Statement (ES)

The main focus of the EIA is to assess the potentially significant impacts of the Project on the environment. This requires input from a number of specialists with expertise in each of the environmental disciplines covered as part of the EIA in order to develop a detailed understanding of the baseline environment, establish the importance and sensitivity of that environment and evaluate the significance of any potential impacts.

The impact assessment methodology applied to each of the EIA topics is described in Section 8.5 below.

Results from the assessment of impacts on specific EIA topics and explanations on how conclusions were reached are presented in Chapters 9 to 20 of this ES. Recommendations for environmental management procedures and strategies for environmental monitoring are also included where appropriate.

The overall EIA process is delivered through a number of stages, namely screening, scoping, the environmental assessment, planning and monitoring. Information included in the EIA is also informed by results from the Project Navigational Risk Assessment (NRA); and the Habitat Regulations Appraisal (HRA), both of which, although subject to different legislative requirements form an integral part of the overall EIA process as illustrated in Figure 8.1.

8.4.1 Navigational Risk Assessment (NRA)

Anatec were appointed by TVL to carry out a NRA to assess the potential impacts of the Project on shipping and navigation. The initial part of the NRA involved carrying out a desk based Preliminary Hazard Analysis (PHA) which focused on identifying navigational features and vessel activity in the area, potential hazards to shipping and navigation associated with the Project and key navigational stakeholders to be consulted as part of the NRA. The PHA also set out the proposed scope and method for the NRA (Anatec, 2014a).

In addition to the PHA, vessel surveys were carried out over two 2-week periods, one during winter 2013 and the other during summer 2014. Further information on the vessel surveys is provided in Chapter 16.

The NRA has been conducted in accordance with the Marine Navigational Safety Risks of Offshore Wind Farms contained in the DTI/BERR publication – Guidance on the Assessment of the Impact of Offshore Wind Farms and is required to address the issues raised in the Maritime and Coastguard Agency's (MCA) Marine General Notice 371(M+F) – Proposed Offshore Renewable Energy Installations (OREI) – Guidance on Navigational Safety Issues. Further detail on the approach to the NRA and assessment method is described within the NRA Report (Anatec, 2014b) and is summarised in Chapter 16.

Copies of both the PHA Report (Anatec, 2014a) and NRA Report (Anatec, 2014b) are provided on the CD that can be found on the inside of the front cover of this ES.

8.4.2 Habitat Regulation Assessment (HRA)

In accordance with Article 6 of the Habitats Directive a Habitat Regulations Assessment (HRA) has also been carried out as part of the Torr Head Tidal Energy Array Project. The purpose of the HRA is to obtain information on the implications of the Project on the integrity of a European site(s) (Special Areas of Conservation (SACs)) or Birds Directive (Special Protection Areas (SPAs)) in view of the site(s) conservation objectives. This information is submitted with the ES to DoENI Marine Division as the Competent Authority to enable them to carry out an Appropriate Assessment of the Project.

Information from the HRA is presented in the Torr Head Tidal Energy Array Habitat Regulation Assessment (HRA) Report (Xodus, 2014). Information from this report has been incorporated into the relevant impact assessment chapters of the ES where required. A description of the approach to the HRA and collection of information to inform the Appropriate Assessment is also included in the HRA Report.

8.5 Environmental Impact Assessment process

8.5.1 Introduction

The following section describes in detail the methods applied to the following stages of the impact assessment process applied to this Project:

- Characterisation of the baseline environment;
- Identification of impacts;
- Determine sensitivity of the receptors / resources likely to be impacted;
- Assessment of impact magnitude;
- Evaluate the significance of potential impacts;
- Develop mitigation measures to reduce, remedy or offset potentially significant impacts and establish how they are to be integrated into the Project;
- Identify any residual impacts and evaluate the significance of those impacts;

- Assess potential cumulative impacts; and
- Implement mitigation measures and environmental monitoring as required.

The assessment process covers all phases of the Project from turbine installation through to decommissioning.

The EIA has not addressed impacts associated with the potential repowering of the Project. Repowering would be subject to a new lease and consent application and therefore falls out with the scope of this EIA.

All impacts are taken into account throughout this period regardless of their duration (e.g. short-term vessel activities to longer term impacts relating to the physical presence of the tidal energy devices). The environment is considered to include physical, ecological and socio-economic components and linkages between different aspects of the environment are also considered.

Impacts to one receptor that may affect another are considered where a clear pathway is identified between the two receptors. This connectivity between receptors has been considered within each technical assessment in order to provide a holistic assessment that assesses all impacts, both direct and indirect.

The geographical extent of the environment considered will vary between identified impacts e.g. the area over which fishermen using towed gear (commercial fisheries) will potentially be a larger area than the area of seabed / benthic habitat affected by the installation and presence of the Project on the seabed. The geographical area relevant to each topic specific assessment has been defined on a topic by topic basis.

8.6 Characterisation of the baseline environment

In order to make an assessment of potential impacts on the environment it is necessary to firstly characterise the different aspects of the environment that could potentially be affected (the baseline environment). Characterisation of the baseline environment is usual achieved through topic specific desk based studies combined with additional site-specific studies such as surveys and modelling. Information obtained through consultation with key stakeholders is also used to help characterise specific aspects of the environment in more detail.

DoENI Marine Division and DETI were consulted on the scope of, and methods for carrying out, all proposed baseline characterisation studies including additional site-specific surveys and modelling. All study methodologies are based on current best practice and published guidance available at the time and took into account as appropriate any advice received through consultation with regulators and other consultees.

Where necessary the results from certain site-specific studies (including surveys and modelling) have been presented in separate technical reports with a summary of the key findings from the study presented in the baseline section of the impact assessment chapter. The scope and methods used for these additional studies are also described in detail in these technical reports. All additional supporting studies undertaken as part of this EIA were listed in Chapter 1: Introduction (Table 1-2). Copies of the relevant technical reports are provided on the CD that can be found on the inside of the front cover of this ES.

8.6.1 Data gaps and uncertainties

As part of the EIA process it is necessary to identify where data gaps and uncertainties remain even after detailed baseline studies (and impact assessments) have been completed as these can influence the results of the EIA. Due to the nature of the marine environment in particular it can often be very challenging to establish an exact understanding of the key characteristics of certain aspects of the environment. This is due to a number of reasons mainly the relative inaccessibility of the marine environment in comparison to terrestrial environments. This makes it difficult to establish exactly what receptors are present within the area that is to be developed (ranging from wildlife through to fishermen), how the area is being used by the different receptors and therefore the importance of the area.

Refinements in survey techniques and increased working knowledge of the marine environment means that our understanding of which receptors are present in certain locations and how certain areas are used has increased significantly. While all baseline characterisation and impact assessment work carried out as part of this EIA has been based on best practice and robust scientific data it is acknowledged that some data gaps and uncertainties still exist. Where possible necessary measures have been taken in order to minimise these data gaps and uncertainties to ensure that they do not affect the robustness of the impact assessment. Where data gaps and uncertainties remain these have been identified, and their implications for the assessment discussed, in the relevant impact assessment chapters.

8.6.2 Assessment of impact

Overview

As part of the impact assessment process it is necessary to provide a description of the impact being assessed. This includes information on the source of the impact (e.g. placing turbine foundations on the seabed), the receptor (benthic habitat / community type) and a description of the nature of the interaction that is likely to occur between the impact source and the receptor (e.g. disturbance to, or loss, of that habitat / community). This description will also include information on the sensitivity / value of the receptor and magnitude of the impact.

Where appropriate, any measures that have already been incorporated in the design of the Project (as included in Chapter 5: Project Description and defined within the parameters of the design envelope) to specifically reduce or prevent the likelihood of a significant impact occurring (mitigation by design) have also been referred to as part of the impact description.

Impacts considered include:

- Direct – a direct impact on a receptor caused by physical changes occurring within the Project area;
- Indirect – an impact experienced by a receptor as a result of a direct impact or sequence of events occurring elsewhere (spatially) or at a different time (temporarily);
- Interactions (receptor specific) - impacts on a single receptor from multiple sources and pathways; and
- Inter-relationships (impact specific) – impacts (from same impact source) affecting different receptors across EIA topics e.g. benthic ecology and coastal processes.

Results from the assessment of cumulative impacts are discussed separately.

The EIA Regulations require that the EIA should consider the likely significant environmental impacts. The decision process related to defining whether or not a project is likely to significantly impact the environment is the core principal of the EIA process. The regulations themselves do not provide specific details of how significance should be assessed. However, they do indicate that the methods used for identifying and assessing impacts should be transparent and verifiable.

The method detailed here has been developed by reference to the principals and guidance provided by SNH in their handbook on EIA (SNH, 2009), the MarLIN species and ecosystem sensitivities guidelines (Tyler-Walters *et al.,* 2001), the Chartered Institute of Ecology and Environmental Management (CIEEM) guidelines for marine impact assessment (IEEM, 2010), and the Equator Principles for determining, assessing and managing social & environmental risk in project financing.

After reviewing various approaches to the evaluation of impact significance, certain common policies exist which have been taken into account. These include:

- Environmental significance is a value judgement based on professional experience;
- The degree of environmental significance is related to the specific impact;
- The significance of the impact is related to sensitivity of the receptor and its capacity to accommodate/recover from change;
- The amount of any type of change, (impact magnitude) includes timing, scale, size, duration and frequency / probability of impact;
- Potential impacts of the proposed project may be wide ranging in nature, for example they could be direct, indirect; short, medium or long term, permanent or temporary and have positive or negative impacts; and
- Even where a specific impact is unlikely to happen or the likelihood is uncertain; the significance may still be ranked high if the consequence is severe or irreversible.

As the determination of the significance of an impact is subjective, primarily based on professional judgement, this highlights the requirement for an extensive scoping and consultation process throughout the development of the Project. This is something that TVL has given particular attention to throughout the Project and details of the consultation strategy employed have previously been detailed in Chapter 6 of this ES (Consultation Summary).

Despite the assessment of impact significance being a subjective process, a defined methodology outlined below, is used to make the assessment as objective as possible and consistent across different topics. As the environmental factors under consideration can vary considerably depending on what is being assessed there is some variation in the process, in particular for this Project which has the potential to impact biological, physical and socio economic environments.

Sensitivity / value of receptor

The sensitivity of receptor is a function of its capacity to accommodate change and reflects its ability to recover if it is impacted. Sensitivity of the receptor is quantified via the following factors:

- Tolerance to change: the ability of a receptor to accommodate temporary or permanent change;
- Recoverability: the ability of a receptor to return to a normal state following the cessation of an impact;
- Adaptability: the ability of a receptor to avoid or adapt to an impact; and
- Value: a measure of the receptors importance, rarity and worth.

Specific sensitivity criteria relevant to the different impact assessment topics covered in this ES are presented in a table in each of the impact assessment sections of the ES.

The sensitivity / value of receptor categories are as follows:

- Very high;
- High;
- Medium;
- Low; and
- Negligible.

It is important to note that the above approach to assessing sensitivity is not appropriate in all circumstances and in some instances professional judgement has been used in developing the sensitivity category used. For instance, there is a degree of uncertainty with regard to the sensitivity of many fish species to electromagnetic fields (EMF) and as a result professional judgement based on available information and previous impact assessments on EMF from other industries has been used to determine the sensitivity of the receptor. In some instances it has also been necessary to take a precautionary approach where stakeholder concern exists with regard to a particular receptor. This is considered when assessing the sensitivity of the receptor to an impact.

Magnitude of impact

The magnitude or size of impact can be characterised by considering the following:

- Duration over which the impact is likely to occur i.e. days, weeks;
- Timing: when the impact is likely to occur;
- Size and scale: geographical area; and
- Frequency: how often the impact is predicted to occur.

Specific magnitude criteria relevant to the different impact assessment topics covered in the ES are presented in a table in each of the impact assessment sections of the ES. Magnitude categories used are:

- Severe;
- Major;
- Moderate;
- Minor; and
- Negligible.

Likelihood of impact

The likelihood of an impact occurring is another factor that should be considered in the assessment of potential impacts. This captures the probability that the impact will occur and also the probability that the receptor will be present and is generally based on knowledge of the receptor and experienced professional judgement. Consideration of likelihood is described in the impact characterisation text and used to provide context to the specific impact being assessed. Likelihood of impact is described as:

- Certain;
- Likely;
- Unlikely; or
- Very unlikely.

Impact consequence

The sensitivity of receptor and magnitude of impact are combined to define the consequence of the impact.

Table 8-1 Definitions for consequence

Magnitude	Sensitivity				
	Very high	High	Medium	Low	Negligible
Severe	Severe consequence	Severe consequence	Major consequence	Moderate consequence	Minor consequence
Major	Severe consequence	Major consequence	Major consequence	Moderate consequence	Minor consequence
Moderate	Major consequence	Major consequence	Moderate consequence	Minor consequence	Negligible consequence
Minor	Moderate consequence	Moderate consequence	Minor consequence	Minor consequence	Negligible consequence
Negligible	Minor consequence	Minor consequence	Negligible consequence	Negligible consequence	Negligible consequence
Positive	Positive consequence	Positive consequence	Positive consequence	Positive consequence	Positive consequence

Impact significance

Once the consequence of the impact has been identified (Section 8.6.5 above) and as required by the EIA regulations, the significance of impact is determined based on the level of impact as defined in Table 8.2.

Table 8-2 Definitions for significance

Consequence	Significance	
Positive	Positive – to be encouraged	Positive
Severe	Intolerable risk and/or significance	Significant impact under EIA Regulations
Major	Highly significant and requires immediate action	
Moderate	Significant – requires additional control measures and/or management	
Minor	Not significant – however will require some management to ensure remains within acceptable levels	Insignificant impact under EIA Regulations
Negligible	Not Significant	

8.6.3 Deviations from the standard approach

The following assessments have used a process which has deviated from the standard approach e.g. due to topic specific guidance / practices endorsed by professional accreditation, organisations and/or consultees. Xodus has worked with each of the specialists to ensure, where possible, that a consistent approach between topics has been used in the assessment of potentially significant impacts.

Table 8-3 Reasons for deviation from standard assessment methodology

EIA topic	Reason for deviation in EIA assessment methodology
Shipping and Navigation	The assessment of impacts on shipping and navigation is based on results from the Navigational Risk Assessment (NRA) which is a risk based assessment where impacts are described as hazards. NRAs are required to be carried out in line with specific guidance prepared by the Maritime and Coastguard Agency (MCA), Department of Environment and Climate Change (DECC) and International Maritime Organisation (IMO).
Marine archaeology and cultural heritage	The assessment of impact significance approach used for this assessment varies slightly from the core methodology due to the very specific assessment guidance on marine historic interests. There is a need to assess the importance of historic features. The methodology also needs to take account of the potential uncertainties around geophysical anomalies and their historic interest.

8.6.4 Mitigation

Where potentially significant impacts (i.e. those ranked as being of moderate consequence or higher) are identified mitigation measures have been considered. The intention is that such measures should remove, reduce or manage the impacts to a point where the resulting residual significance is at an acceptable or insignificant level. The three main types of mitigation considered in as part of the impact assessment for this Project include:

- Mitigation by design (measures that are integrated into the Project at the design stage to remove or reduce the likelihood of a significant impact occurring as defined in the Project description and by parameters of the design envelope). These measures will have already been discussed in the description of the impact. However, to ensure these measures are fully implemented once the relevant consents have been awarded, these measures have been listed as part of the impact specific mitigation which will be incorporated into the Project commitments register and relevant licence conditions;
- Standard practice measures based on specific legislation, regulations, standards, guidance and recognised industry good practice that are put in place to ensure significant impacts do not occur; and
- Additional impact specific mitigation measures identified either to reduce, remove or manage potentially significant impacts identified during the impact assessment, or required to ensure that impacts identified as not being significant remain insignificant. This could include for example specific measures to be implemented / applied through detailed design e.g. micro-siting the location of mooring anchors; additional post consent surveys or studies; development of monitoring programmes; further research; or on-going consultation etc.

8.6.5 Residual impacts

Residual impacts are those that remain once all options for removing, reducing or managing potentially significant impacts have been taken into account. Ideally, taking into account of relevant mitigation the resulting significance of any residual impact should no longer be significant (i.e. reduced to an acceptable or insignificant level).

However, in some cases a significant residual impact may still remain. Where this is the case, it will be the role of the regulator with necessary advice from statutory bodies, as part of the decision making process to determine how the remaining residual impact influences the determination of the consent application.

8.6.6 Cumulative and in-combination impacts

Cumulative and in-combination impacts have been considered throughout the EIA process and have been considered for all phases of the Project. TVL has, in consultation with the DoENI Marine Division and DETI, identified a list of other projects, which together with the Project may result in potential cumulative or in-combination impacts. These projects and associated project details are provided in Table 8-4. The location of these projects is shown in Figure 8-2.

When considering cumulative and in-combination impacts it is necessary to consider the following (Scottish Government, 2013):

- Additive or incremental impacts: impacts that results from incremental changes caused by past, present and reasonably foreseeable actions together with the project; and
- Impact interactions: reactions between impacts of one project or between impacts of other projects in the area.

Due to the relatively undeveloped nature of the marine environment it can be difficult to define in sufficient detail for purpose of an impact assessment past and present actions that could lead to incremental impacts with the proposed Project. Therefore the proposed approach for assessing cumulative and in-combination impacts was to consider only those projects that are at EIA scoping stage (i.e. for those Projects that formally require an EIA scoping response such as those that require Marine Licence and for which an EIA Scoping Report has been submitted) and beyond. Inevitably the assessment of these 'future projects' was dependent upon the level of information available on those projects at the time of undertaking the cumulative assessment.

Due to the fact that different levels of detail are available for different projects, the cumulative impact assessment (CIA) for all EIA topics except marine mammals has been undertaken qualitatively as sufficient data was not always available in the public domain to allow a fully quantified cumulative impact assessment. With regard to marine mammals due to the proximity of the Project to the proposed adjacent Fair Head Tidal Energy Development, it was deemed appropriate to carry out a quantitative assessment of potential cumulative impacts relating to encounter risk for harbour porpoise. The assessment methodology and results from this quantitative assessment are presented in Chapter 10: Marine Mammals.

The projects considered as part of the cumulative and in-combination impact assessment also differ from receptor to receptor depending on the nature of the impacts associated with a specific EIA topic e.g. whether impacts are site specific or affect receptors in a wider area. The potential for individual projects to result in cumulative or in-combination impacts is also dependent on the type and scale of the project, distance of the project from the Torr Head Tidal Energy Array and the nature of the impacts associated with the Project.

Details of the projects to be considered for the cumulative impact assessment were provided to all EIA study leads. The study leads have then considered which of these projects could result in potential cumulative or in-combination impacts with the Project. This decision was based on the results of the specific impact assessment together with the expert judgement of the specialist consultant undertaking the impact assessment.

Table 8-4 Projects considered for Cumulative Impact Assessment (CIA)

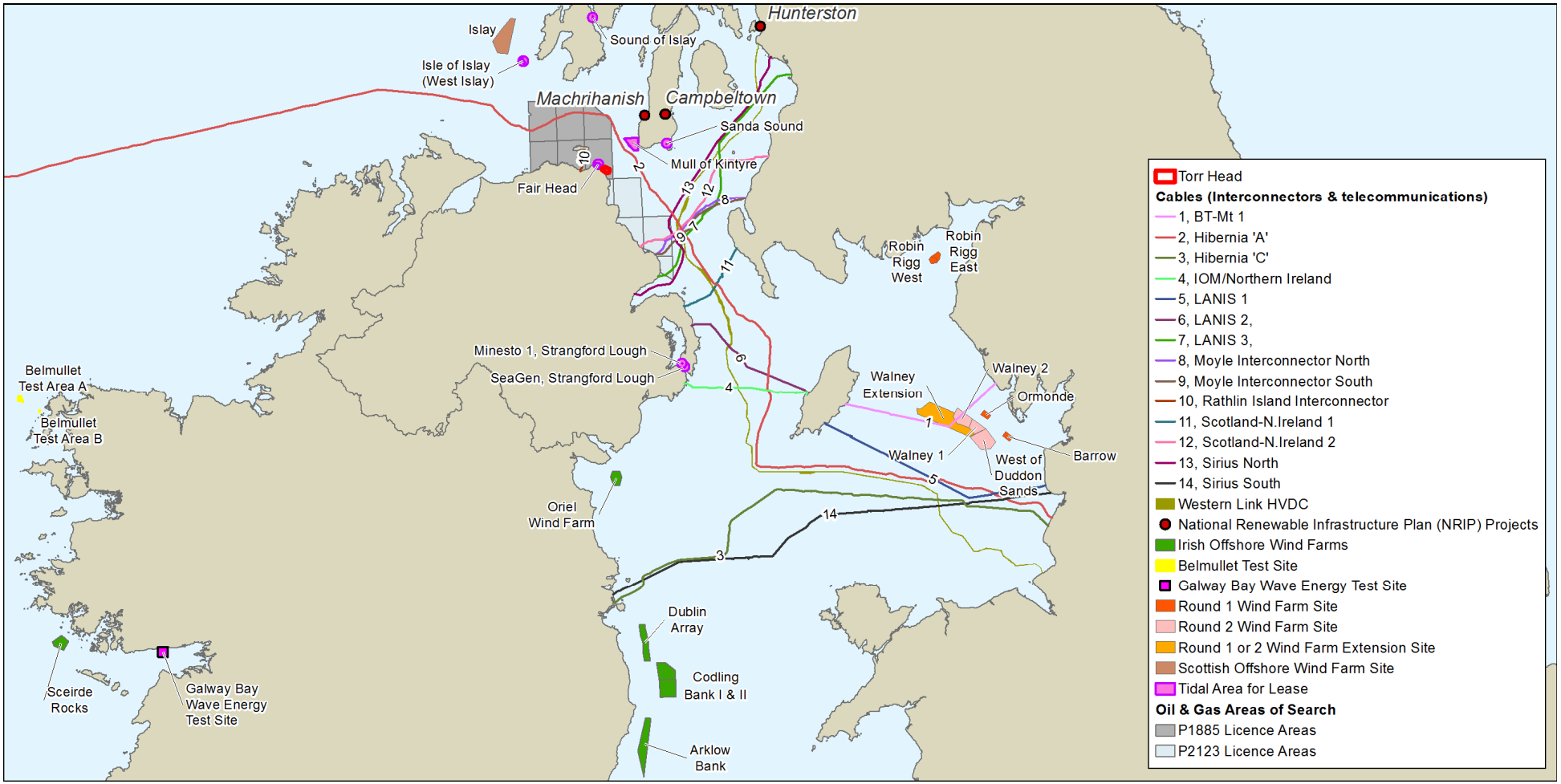
Project name	Distance from centre of Torr Head AfL	Project developer	High level description	Project status (as of November 2014)
Offshore marine renewables projects				
Fair Head	2.7 km	DP Marine Energy Ltd (DPME) and DEME Blue Energy (DBE)	Commercial scale 100 MW tidal energy array located offshore of Fair Head, County Antrim, NI	In planning
Mull of Kintyre, Argyll	15.5 km	Argyll Tidal Ltd	3 MW tidal site	In planning
Sanda Sound, South Kintyre	30.5 km	Oceanflow Development Ltd (Oceanflow)	35 KW tidal test site for understanding the long term performance of the Evopod device	In planning
The West Islay Project - Isle o Islay	62 km	DP Marine Energy Ltd	30 MW tidal project. 6 km off the Rimms of Islay. To be installed end 2016	In planning
Sound of Islay	70 km	ScottishPower Renewables UK Ltd	Demonstration tidal array consisting of ten tidal stream generating devices with a 10 MW capacity. ANDRITZ HYDRO Hammerfest HS100 seabed turbines	Planning consent received 17/03/11
Strangford Lough (SeaGen)	99 km	SeaGeneration Ltd	1.2 MW tidal device. Marine Current Turbines (MCT) SeaGen S 1.2 MW device. World's first grid connected commercial scale tidal device	Operational since 2008
Strangford Lough (Minesto 1)	99 km	Minesto AB	3 KW tidal test or demonstration site	Operational since 2013
Kyle Rhea	226 km	SeaGeneration (Kyle Rhea) Ltd	Tidal stream array with 8 MW capacity. MCT turbines	In planning
Proposed Bellmullet Test Site A	290 km	Sustainable Energy Authority Ireland (SEAI)	Wave test site off west coast of Ireland	In planning
Proposed Bellmullet Test Site B	285 km	Sustainable Energy Authority Ireland (SEAI)	Wave test site off west coast of Ireland	In planning
Galway Bay ¼ Test Site	303 km	Sustainable Energy Authority Ireland (SEAI)	Wave test site in Galway Bay	Operational
Offshore wind projects				
Isle of Islay offshore wind	70 km	SSE	690 MW development of offshore wind	Agreement for Lease – (on hold 16/03/14)

Project name	Distance from centre of Torr Head AfL	Project developer	High level description	Project status (as of November 2014)
Oriel Wind Farm	140 km	Oriel Wind Farm Limited	330 MW offshore wind farm located to the south of Carlingford Lough towards the Irish / NI border	Consent application submitted
Dublin Array	212 km	Saorgus Energy Ltd	The site has the potential capacity of 520MW. The wind farm has secured an agreement of 364MW capacity connection from Eirgrid	Consent application submitted
Codling Wind Park	230 km	Codling Wind Park Ltd (Fred Olson and Hazel Shore)	1000 MW offshore wind farm off east coast of Ireland, to the south east of Dublin Array	Consent authorised The project has been granted a Foreshore Lease and Grid Connection
Arklow Bank Phases 1 and 2	255 km	SSE Renewables, ACCIONIA Energia, GE Energy	494.8 MW offshore wind farm located of east coast Ireland	Consent authorised
Solway Firth / Robin Rigg (East and West)	155 km	E.ON	Robin Rigg began full generation in April 2010 and have 30turbines and a capacity of 90MW	Operational
Walney 1 and 2	200 km	DONG / SSE	51 turbines with a maximum capacity of 367.2 MW	Operational
Walney Extension	182 km	DONG / SSE	Wind farm with planned capacity of up to 750 MW	Planning
Barrow	222 km	Centrica/DONG	30turbines with a capacity of 90 MW	Operational (completed June 2006)
Ormonde	208 km	Vattenfall	30 turbines with a maximum capacity of 150 MW	Operational (completed 2010)
West of Duddon Sands	210 km	DONG and Scottish Power Renewables	A joint venture comprising 108 turbines with a capacity of 389 MW	Construction (2012 – 2014)
Interconnector projects				
Western HVDC Link	39 km (at closest point)	National Grid and Scottish Power Joint Venture	HVDC Interconnector cable from South West Scotland to Deeside on England / North Wales border. Part of the cable route passes through Northern Ireland waters. 2 GW cable, 370 km length	Construction

Project name	Distance from centre of Torr Head AfL	Project developer	High level description	Project status (as of November 2014)
Rathlin Island Interconnector	11 km	NI Electricity	11 km AC cable from Rathlin Island to NI mainland	Operational
Moyle Interconnector North	43 km	Mutual Energy	Ballycronan More, County Antrim to Auchencrosh, Ayrshire 500 MW capacity, 63.5 km	Operational
Moyle Interconnector South	46 km	Mutual Energy	Ballycronan More, County Antrim to Auchencrosh, Ayrshire 500 MW capacity, 63.5 km	Operational
Telecommunications cables				
Scotland-Northern Ireland 2	39 km	BT	83 km telecoms cable landing at Girvan, Scotland and Larne, Northern Ireland	Active
Sirius North	37 km	Virgin Media	147 km telecoms cable in the Irish Sea landing at Saltcoats, Scotland and Jordanstown, Northern Ireland	Active
Sirius South	185 km	Virgin Media	219 km telecoms cable from Portmarnock, Ireland to Lytham St. Annes, England	Active
Hibernia Atlantic	13 km	Hibernia Networks	12,200 km telecoms cable crossing the Atlantic; relevant landing points include Portrush, Northern Ireland, Dublin, Republic of Ireland and Southport, UK	Active
Scotland-Northern Ireland-1	71 km	BT	40 km telecoms cable in the Irish Sea landing at Port Patrick-Danaghadee	Active
Manx – Northern Ireland	106 km	BT	Ballyhornan to Peel, Isle of Man (60 km)	Active
BT-MTI	156 km	BT	Groudle Bay – Silecroft Beach (80 km)	Active
LANIS-1	155 km	Vodafone	Blackpool to Isle of Man (113 km)	Active
LANIS-2	83 km	Vodafone	Peel, Isle of Man to Ballywater (68 km)	Active
LANIS-3	48 km	Vodafone	122 km Telecoms cable from Troon, Whitehead, Northern Ireland to Scotland	Active

Project name	Distance from centre of Torr Head AfL	Project developer	High level description	Project status (as of November 2014)
National Renewable Infrastructure Plan (NRIP) projects				
Campbeltown/ Machrihanish	31 km	Scottish Government	First Phase Site to support further manufacturing and operation / maintenance. Cambletown Harbour site is undergoing improvements, including the construction of a new, deep water quay/new open piled pier, and increasing the dredge level from 5 m to 9 m. Machrihanish, as a former Ministry of Defence airbase, is suitable for large scale manufacturing, fabrication and construction in the renewable energy sector	Unknown
Hunterston	98 km	Scottish Government	First Phase site to support integrated manufacturing and is also able to offer significant laydown areas and deep water quayside access	Unknown
Oil and gas projects				
Offshore Frontier Licence P1885	0 km (AfL within this block)	Providence Resources UK Ltd	An offshore Frontier Licence awarded by DECC for an area covering 1,116 km^2 and consisting of six offshore blocks around Rathlin Island. No intrusive exploration activities have yet been undertaken within the PL5/10 Licence Area however the licence is granted under a 'drill or drop' policy whereby a decision has to be made within three years to drill an exploration well and it has to be drilled within 5 years of the licence having been awarded	Offshore licence awarded
Petroleum Exploration Licences P2123	4.5 km	Unknown	A licence application for five blocks, extending from an area south of Torr Head, is under consideration	Under consideration

Figure 8-2 Projects considered for the Cumulative Impact Assessment (CIA)



8.7 Environmental management and monitoring

Environmental assessment, including consultation with stakeholders, is an iterative process, which will continue beyond ES submission. As part of the conditions of the Marine Licence and Article 39 Consent it is likely that TVL will be required to prepare an Environmental Management Plan (EMP) and possibly a Project Environmental Monitoring Plan (PEMP) for the Project. The content of these plans will be defined by the conditions of the Article 39 consent and the Marine Licence. Chapter 22 provides more detail on the likely content of both an EMP and PEMP.

8.8 Habitat Regulation Assessment (HRA)

A Habitat Regulation Assessment has been carried out for this Project in line with the requirement Article 6 of the Habitats Directive, HRA Case Law and best practice guidance. The HRA was undertaken following completion of the EIA studies for marine mammals, ornithology and fish. This was to ensure sufficient information is available to be able to make a judgement with sufficient certainty at HRA screening as to whether the Project is likely or not likely to have a significant effect on a European protected site.

Results from the HRA are presented in the separate HRA Report which has been submitted with this ES. This HRA Report includes results from screening and information to support an Appropriate Assessment of European sites (Special Areas of Conservation (SACs) and Special Protection Areas (SPAs)) where Likely Significant Effects (LSE) could not be ruled out at screening.

By carrying out the HRA towards the end of the EIA process meant that there was more information available to inform the assessment of the potential effects of the Project on a European site. This meant that those sites where significant effects are not likely to occur (conclusion no LSE) could be properly screened out from the HRA process thereby reducing the total number of sites identified as requiring an Appropriate Assessment. By taking into account all available data and project information (including mitigation measures) this approach ensures that the HRA process is robust and that the Appropriate Assessment focuses on those sites where significant effects are most likely to occur.

A description of the HRA methodology is provided in the HRA Report.

8.9 References

Anatec (2014a). Preliminary Hazard Analysis (PHA) - Torr Head Tidal Energy Project – Technical Note.

Anatec (2014b). Navigation Risk Assessment (NRA) - Torr Head Tidal Energy Project.

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Tidal Ventures Limited (2013). Torr Head Tidal Energy Array EIA Scoping Report. Report prepared by RPS on behalf of TVL. June 2013.

Xodus (2014). Torr Head Tidal Array Project. Habitat Regulation Assessment (HRA) Report. Report A-100212-S00-HRA-001_A01.