

2 PURPOSE AND SCOPE OF THE ENVIRONMENTAL IMPACT ASSESSMENT

2.1 Introduction

- 2.1 The Environmental Impact Assessment (EIA) process identifies the areas of a project or development where significant environmental effects may occur and outlines mitigation measures or management techniques aimed at reducing or offsetting these effects. Several different EIA Regulations (Section 3) enforce the EIA requirements in relation to the Project.
- 2.2 The purpose of the EIA process is to:
- Identify likely significant effects to be taken into account by the relevant decision maker;
 - Integrate environmental considerations into the project planning and design activities in order to achieve a high standard of environmental performance for the Project; and
 - Consult with stakeholders and address their concerns.
- 2.3 The Environmental Statement (ES) details the findings of the EIA process and provides explanations on how conclusions were reached. Recommendations for an appropriate environmental management plan and a proposed environmental monitoring strategy are also included.
- 2.4 The Scope of the EIA is to assess the impact of the following:
- The installation and operation of up to 86 tidal stream turbines in the Inner Sound;
 - The installation of cable connections between the tidal turbines and onshore infrastructure;
 - Horizontal Directional Drilling (HDD) of the cable landfalls;
 - Construction and operation of the onshore Power Conversation Centre (PCC);
 - Connection of the Project to the grid; and
 - Decommissioning.

2.2 Consideration of Design Options

2.2.1 Rochdale Envelope

- 2.5 Throughout the EIA process the approach has been to assess the maximum potential impacts (also sometimes referred to as a “worst case”) of the Project. This approach has been established through relevant case law (R. v Rochdale MBC ex parte Milne (No. 1) and R. v Rochdale MBC ex parte Tew [1999] and R. v Rochdale MBC ex parte Milne (No. 2) [2000]) and is referred to as the “Rochdale Envelope”.
- 2.6 These case precedents have established a custom and practice that has evolved in relation to projects where the final design is not available at the consent application stage. This approach has been confirmed by the courts and endorsed by the Scottish Government as enabling the legal requirements of the relevant EIA Regulations to be complied with, so long as appropriate conditions are placed in the resulting consents to ensure that the maximum potential likely impacts will not be exceeded by the final built development, and will not give rise to a likely significant effect on the environment which has not been assessed.
- 2.7 The commercial wave and tidal energy industry is rapidly evolving, with on-going improvements in turbine technology, infrastructure and installation techniques. The Rochdale Envelope approach provides essential flexibility to enable projects to take full advantage of these improvements. To commit to a detailed project design at this stage would also prevent the Project benefiting from the lessons learned from other work being done in the tidal energy industry, including the continued testing of the proposed tidal technology to

be taken into consideration. The Rochdale Envelope approach allows the detailed design of a project or scheme to vary within specific defined parameters. Full details of the approach are provided in Section 8.

2.2.2 Onshore project area

- 2.8 At the commencement of the EIA process, the onshore Project area was not defined, with a number of different cable routes from the PCC site to grid connection having been identified and the precise boundaries of the PCC sites not determined. The onshore EIA assessment and subsequent ES section write up has considered a more extensive potential project area (Figure 2.1) than included in the planning applications. The results of the EIA surveys and studies have informed project design and allowed the refinement of the onshore Project area for the planning application (Figure 1.3).

- 2.9 Following the completion of the EIA, landowner consultation has identified potential issues with small areas of the proposed cable route. It has therefore been necessary to include areas outside that surveyed for the onshore impact assessments. The area is 0.50km² and is shown in Figure 2.1. Unfortunately this issue was not identified at the time of ES compilation and therefore is not addresses in this document. Work to survey and assessment of any changes required to the original impact assessment as a result of the altered cable route is ongoing and will be provided in an ES addendum.**

2.2.3 Offshore project area

- 2.10 The offshore Project area is defined by the potential areas for turbine and cable deployment (Figure 1.3). Further refinement of these areas will be carried out through future design work and turbine layout analysis.

2.3 Consent Applications

2.3.1 Overview of required consents

- 2.11 Table 2.1 provides a list of the consent applications and the Project assets covered by each application.

Works	Consent	Description	Authority
Tidal turbines	Section 36 consent under the Electricity Act 1989	Section 36 consent is required for development of offshore generating stations over 1MW within Scottish territorial waters.	Scottish Ministers (through Marine Scotland)
Turbines, Turbine Support Structures (TSS), inter-array cables and export cable to shore	Marine licence under Section 25 of the Marine (Scotland) Act 2010	Consent under a Marine License covers construction and deposit of structures below Mean High Water Springs (MHWS). The covers the following offshore areas of the Project: <ul style="list-style-type: none"> ▪ Deposit of objects on the seabed, e.g. turbines, cables and TSS; ▪ The deposit of objects under the seabed, e.g. cables to shore with HDD boreholes; and, ▪ Construction on and under the seabed, e.g. drilling for piling or HDD bores. 	Scottish Ministers (through Marine Scotland)
Onshore underground cables, PCC, HDD compound and associated infrastructure.	Planning permission under Section 28 of the Town and Country Planning (Scotland) Act 1997	Planning permission under Section 28 will be required for all onshore aspects of the Project to the Mean Low Water Springs (MLWS).	The Highland Council
Turbines, Turbine Support Structures (TSS), inter-array cables and export cables to shore.	Energy Act 2004	Once the Project is granted Section 36 consent, the Department of Energy and Climate Change (DECC) will request production of a Decommissioning Programme (DP) which must be approved prior to the commencement of installation.	Secretary of State (DECC)

Table 2.1: Consent application supported by this ES

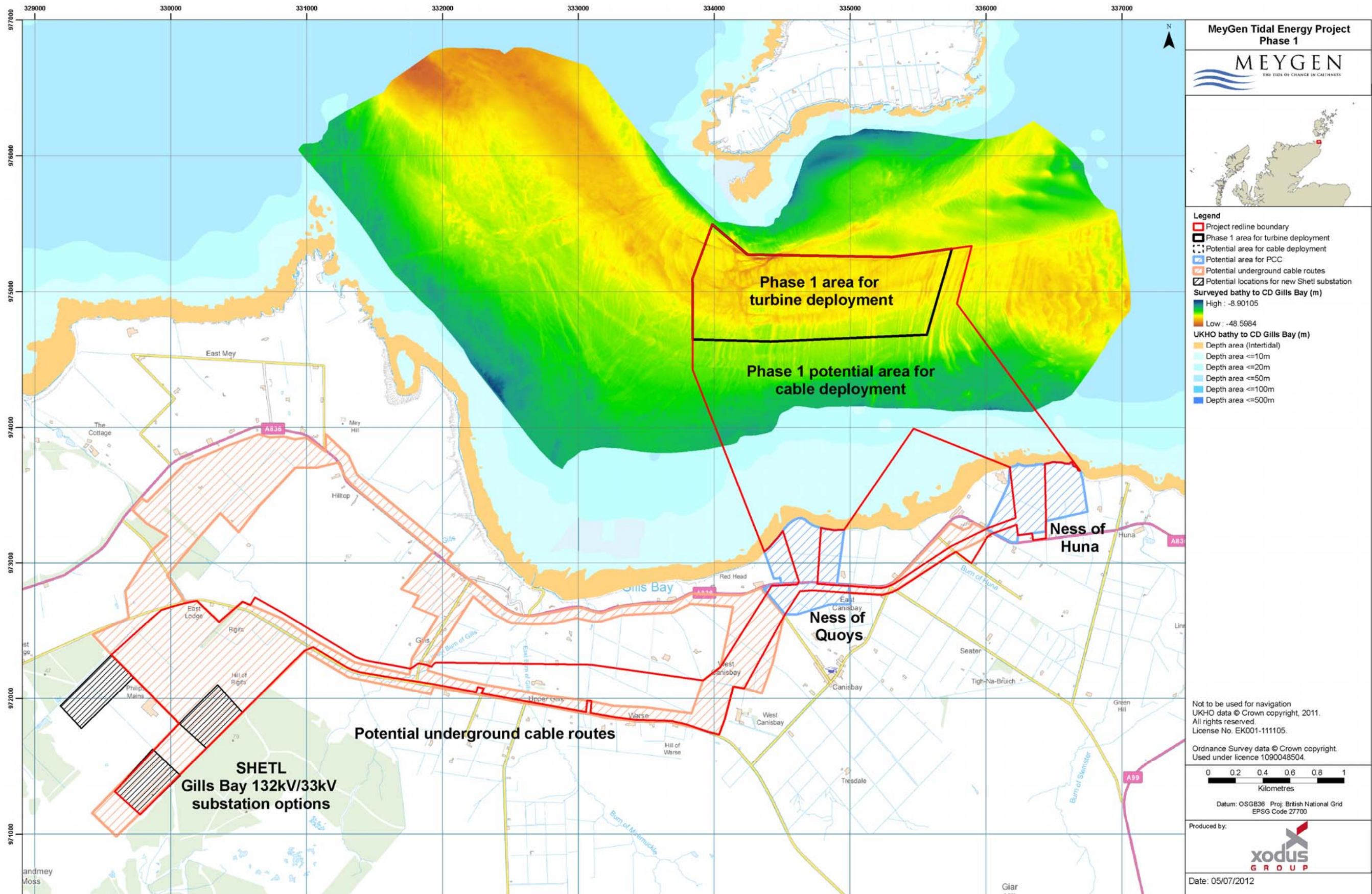


Figure 2.1: Potential project areas at EIA commencement

2.12 At the time of ES compilation two sites are being considered for the onshore location of the cable landfalls and PCC; Ness of Quoys and Ness of Huna (Figure 1.3). A planning application will be submitted for both of these sites. The final chosen site will be determined by land availability, technical and environmental constraints.

2.3.2 Scoping of the Environmental Impact Assessment

2.13 The EIA Scoping Document (and accompanying navigational preliminary hazard analysis (PHA)) formed MeyGen's written request to the Marine Scotland Licencing Operations Team and The Highland Council, for their opinion as to the information to be provided in the ES for the Project. A formal EIA Scoping Opinion was received on the 30th September 2011. Following receipt of the EIA Scoping Opinion each issue raised (of which there were over 250) was reviewed and implications for the overall Project and EIA considered. All issues relevant to individual EIA studies are highlighted in individual ES sections.

2.14 The EIA Scoping Document, PHA and EIA Scoping Opinion can be found on the supporting studies CD that can be found inside the front cover of the ES.

2.4 Data Gaps and Uncertainties

2.4.1 Environmental Impact Assessment surveys and studies

2.15 Where uncertainties in scientific understanding were identified, specific studies to address the issues were commissioned. These included undertaking a range of surveys to help characterise the environmental receptors and other technical studies to inform the impact assessment.

2.16 The relevant regulators (Marine Scotland and The Highland Council) were consulted regarding the scope of surveys before the studies were undertaken. Initial draft guidance from Scottish Natural Heritage (SNH) on survey and monitoring in relation to marine renewables deployments was published in September 2011. At the time of publication of this draft guidance, the majority of the surveys and studies were already underway. Having reviewed the document, MeyGen are satisfied that the surveys are consistent with the guidance. The methodologies of the surveys and studies within this EIA represent best practice at the time the studies were undertaken and were based on available published guidance and advice received through consultation with Marine Scotland, The Highland Council and statutory consultees.

2.17 The final EIA scope has involved the study of 16 different topics. The results of these studies are summarised in Sections 9 to 24 of the ES. In addition all supporting studies are provided on a CD located inside the front cover of the ES. All supporting studies relevant to each ES section are summarised at the beginning of each section. The ES structure is detailed in Figure 2.2 and a full list of ES contributors and ES supporting studies is provided in Table 2.2.

2.18 **Following the completion of the EIA, landowner consultation has identified potential issues with small areas of the proposed cable route. It has therefore been necessary to include areas outside that surveyed for the onshore impact assessments. The area is 0.50km² and is shown in Figure 2.1. Unfortunately this issue was not identified at the time of ES compilation and therefore is not addresses in this document. Work to survey and assessment of any changes required to the original impact assessment as a result of the altered cable route is ongoing and will be provided in an ES addendum.**

2.4.2 Survey, Deploy and Monitor policy

2.19 Due to the emerging nature of the tidal energy industry there are some potential impacts that have yet to be verified by operational monitoring in the industry. Where single turbines have been installed and potential environmental impacts monitored, MeyGen has made use of the available data. However, MeyGen recognises that there is little data currently available and its application to the assessment of a commercial array of turbines is limited. MeyGen therefore propose to implement a Survey, Deploy and Monitor strategy.

2.20 The Survey, Deploy and Monitor strategy is recognised by the Scottish Government as an important mechanism for the development of marine renewable energy in Scotland. Marine Scotland has produced

guidance for Survey, Deploy and Monitor strategies and MeyGen has and will continue to, consult with the regulatory body to ensure the Project strategy is properly aligned with Scottish Government policy.

2.21 The MeyGen Tidal Energy Project is to be developed in two distinct phases, consistent with Scottish Government Policy. Phase 1 (i.e. the Project) will be monitored to increase knowledge and reduce uncertainty for the development of Phase 2. The programme itself will also enable monitoring to be undertaken as the works progress.

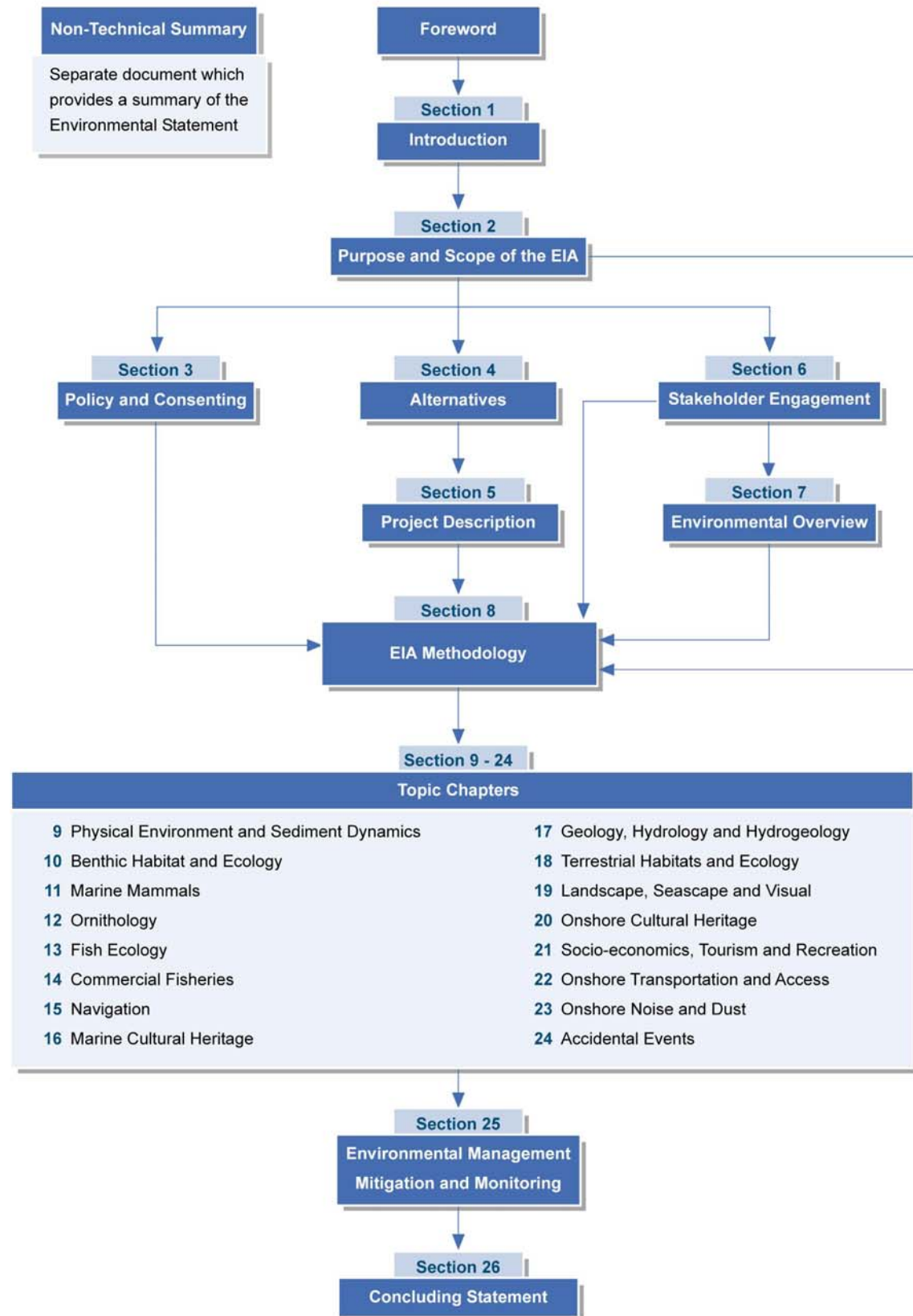


Figure 2.2: Environmental Statement Structure

2.22 Through the EIA process, MeyGen has recognised that being the first application for a commercial scale tidal stream project in Scotland and the first from The Crown Estate’s Pentland Firth and Orkney Waters leasing round, means there is a degree of uncertainty in respect of the impact assessment due to the nascent status of the industry and in some cases a lack of data on a particular receptor at a regional, national or international scale. In response MeyGen has identified two approaches to the monitoring programme.

- Where MeyGen identifies a monitoring requirement for Project specific issues, a Project specific monitoring programme will be developed in consultation with the regulators and stakeholders.
- Where uncertainties in the assessment are identified that are considered of strategic importance to the development of the tidal steam industry, MeyGen would participate in a collaborative effort with the wider industry, regulators and stakeholders to reduce the uncertainty in this area. In the monitoring programme MeyGen would wish to engage the wider marine renewables industry in discussions in how best to take this forward in the most efficient way for the benefit of the Project and future marine projects elsewhere in Scotland and the UK.

2.23 MeyGen is committed to producing a robust monitoring programme, giving the regulators the security to consent the Project and enabling the development of commercial scale tidal energy projects, benefiting the industry as a whole.

2.5 Contributors to the Environmental Impact Assessment

2.24 The ES has been compiled by Xodus and presents the results of a number of assessments carried out by specialist consultants. The area of expertise of these consultants and their contribution to the ES is detailed in Table 2.2.

ES section	Contributors	Supporting studies
EIA Coordinator	Xodus	None
Legal advice	Burges Salmon	None
Non-Technical Summary	Xodus	None
Foreword	MeyGen	None
Sections 1 – 8	Xodus MeyGen Burges-Salmon	None
Section 9 Physical Environment and Sediment Dynamics	Xodus - Section author DHI – Coastal processes modelling	MeyGen EIA Coastal Processes Modelling – Modelling setup, calibration and results (DHI, 2012) Benthic survey for Phase 1 of the MeyGen Tidal Stream Energy Project, Inner Sound, Pentland Firth – Report (ASML, 2011) Report of Survey for Atlantis Resources Corporation for Site Survey Stroma. JN3475 (IXSurvey, 2009)
Section 10 Benthic Habitats and Ecology	Xodus – Section author Aquatic Surveys and Monitoring Limited (ASML) - Benthic surveys	Benthic survey for Phase 1 of the MeyGen Tidal Stream Energy Project, Inner Sound, Pentland Firth – Report (ASML, 2011) MeyGen EIA Coastal Processes Modelling – Modelling setup, calibration and results (DHI, 2012) Report of Survey for Atlantis Resources Corporation for Site Survey Stroma. JN3475 (IXSurvey, 2009)
Section 11 Marine Mammals	Xodus – Section author RPS – Marine mammal surveys and baseline report	Distribution and abundance of marine mammals and basking sharks in the Inner

ES section	Contributors	Supporting studies
	SRSL – Modelling of marine mammal encounter rates Ecologic UK –Towed hydrophone survey Kongsberg – baseline underwater noise measurements, noise propagation modelling	Sound and wider Pentland Firth and Orkney waters (RPS, 2011a) MeyGen tidal-stream turbine array environmental impact assessment: modelling encounter rate between turbines and marine mammals (SRSL, 2012) Analysis of towed hydrophone data collected for MeyGen (Ecologic UK, 2011) Underwater noise impact study for tidal turbine development in Inner Sound, Pentland Firth (Kongsberg, 2012)
Section 12 Ornithology	RPS – Section author, ornithological surveys, modelling and technical report	MeyGen Tidal Energy Project Inner Sound, Pentland Firth Ornithological Technical Report (RPS, 2011b) Underwater noise impact study for tidal turbine development in Inner Sound, Pentland Firth (Kongsberg, 2012) Benthic survey for Phase 1 of the MeyGen Tidal Stream Energy Project, Inner Sound, Pentland Firth – Report (ASML, 2011)
Section 13 Fish Ecology	Xodus - Section author and technical report Kongsberg – baseline underwater noise measurements, noise propagation modelling	Estimating encounter rate for Atlantic salmon for the MeyGen Tidal Energy Project, Phase 1 and potential population effects. (Xodus, 2012) Underwater noise impact study for tidal turbine development in Inner Sound, Pentland Firth (Kongsberg, 2012) MeyGen EIA Coastal Processes Modelling – Modelling setup, calibration and results (DHI, 2012)
Section 14 Commercial fisheries	Xodus – Section author	Benthic survey for Phase 1 of the MeyGen tidal stream energy project, Inner Sound, Pentland Firth (ASML, 2011) Navigation Risk Assessment (NRA) MeyGen Inner Sound (Anatec, 2012)
Section 15 Navigation	Anatec – Section author, collision risk modelling and author of the Navigation Risk Assessment (NRA)	Navigation Risk Assessment MeyGen Inner Sound Phase 1 (Anatec, 2012) MeyGen EIA Coastal Processes Modelling – Modelling setup, calibration and results (DHI, 2012)
Section 16 Marine Cultural Heritage	Orkney Research Centre for Archaeology (ORCA) – Section author and Marine Cultural Heritage technical study and geophysical survey report	Inner Sound, Caithness Marine Cultural Heritage Environmental Impact Assessment (ORCA, 2011a) MeyGen EIA Coastal Processes Modelling – Modelling setup, calibration and results (DHI, 2012) Benthic survey for Phase 1 of the MeyGen Tidal Stream Energy Project, Inner Sound, Pentland Firth – Report (ASML, 2011)
Section 17 Geology, Hydrology and Hydrogeology	Mouchel – Section author and geology, hydrology and hydrogeology walkover survey of the onshore Project area	None
Section 18 Terrestrial Habitats and Ecology	Xodus – Section author and Extended Phase 1 habitat survey report	Extended Phase 1 Habitat Survey Report – MeyGen (Xodus, 2011a)
Section 19 Landscape, Seascape and Visual	HRI/Mike Wood Consulting – Section authors	MeyGen Socio Landscape, Seascape & Visual Impact Assessment. Technical Appendix (HRI, 2011)

ES section	Contributors	Supporting studies
Section 20 Onshore Cultural Heritage	ORCA – Section author, onshore archaeological walkover survey and report	Inner Sound, Canisbay Onshore Cultural Heritage Environmental Impact Assessment (ORCA, 2012) Inner Sound Canisbay, Caithness Geophysical Survey 2011 Final Report. Report for MeyGen Ltd (ORCA, 2011b) MeyGen Socio Landscape, Seascape & Visual Impact Assessment. Technical Appendix (HRI, 2011)
Section 21 Socio Economics, Tourism and Recreation	Roger Tym and Partners (RTP) – Section author and impact assessment report	Socio Economic Impact Assessment Report (RTP, 2011)
Section 22 Onshore Transportation and Access	Xodus – Section author and also undertook a site visit to the Project area to gather information on the road network and photographic evidence of condition of current road network	None
Section 23 Onshore Noise and Dust	Xodus – Section author, baseline onshore noise surveys and noise modelling report.	Baseline onshore noise survey results (Xodus, 2011b)
Section 24 Accidental Events	Xodus – Section author	None
Section 25 Environmental Management and Monitoring	Xodus – Section author	None
Section 26 Summary and Concluding Statement	Xodus	None

Table 2.2: ES contributors and supporting studies to the ES

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