

Chapter 1 Introduction to the Neart na Gaoithe Proposed Offshore Wind Farm Development

1.1 Introduction

1 This Environmental Statement (ES) documents the Environmental Impact Assessment (EIA) process and conclusions as carried out in support of an application for consent to build and operate the Neart na Gaoithe Offshore Wind Farm.

1.2 The Aim of the Document

2 The aim of the ES is to present, in a logical and comprehensive fashion, the findings and outcomes of the EIA.
 3 In consultation with statutory and non-statutory stakeholders, the focus of the EIA and subsequent ES was developed during the Scoping Phase of the process (refer to Chapter 6: Environmental Impact Assessment Methodology for additional information). The ES encompasses all aspects of the environment where it is considered there could be a potential impact, concentrating on topics which were highlighted by stakeholders.
 4 The Scoping Report (EMU Limited (EMU), 2009) and corresponding Scoping Opinion (Scottish Government, 2010) received from the Scottish Government are available online via www.neartnagaoithe.com. In addition, the Scoping Opinion received from the Scottish Government is appended in Appendix 6.1: Scoping Opinion.

1.3 Statutory Consents and Permissions

5 The ES will be submitted to Marine Scotland in line with The Marine Works (Environmental Impact Assessment) Regulations 2007 (as amended) and the Electricity Works (Environmental Impact Assessment) (Scotland) Regulations 2000 (as amended) in support of applications for Marine Licences under the Marine (Scotland) Act 2010 and consent under Section 36 of the Electricity Act 1989 to construct and operate a generating station.
 6 The consenting process is described in more detail in Chapter 3: Regulatory and Policy Context. The regime in Scotland was revised in 2010 by the enactment of the Marine (Scotland) Act 2010. Under this Act, Marine Scotland, a new directorate of the Government, was formed with the purpose of managing Scotland's seas "for prosperity and environmental sustainability".
 7 Under this revised consenting regime the application for consent under Section 36 of the Electricity Act 1989 and the applications for Marine Licences under the Marine (Scotland) Act 2010 are made to Marine Scotland.

1.4 Background to the Proposed Development

8 In May 2008, The Crown Estate (TCE) invited developers to bid for potential offshore wind farm sites within Scottish territorial waters (STW). Following the bid, TCE offered exclusivity agreements for ten sites around Scotland, with the potential to generate over 6 Gigawatts (GW)¹ of offshore wind power. Mainstream Renewable Power (Mainstream) was awarded one of these exclusivity agreements and is now seeking to apply to the Scottish Government for consent to construct and operate an offshore wind farm in this area. The location of Neart na Gaoithe is shown in Figure 1.1.

1.5 The Developer

9 Neart na Gaoithe Offshore Wind Farm Limited (NnGOWL) is the developer of Neart na Gaoithe Offshore Wind Farm. NnGOWL is a wholly owned subsidiary of Mainstream and was incorporated specifically for the development of Neart na Gaoithe Offshore Wind Farm.

¹ One GW is equal to 1,000 Megawatts (MW).

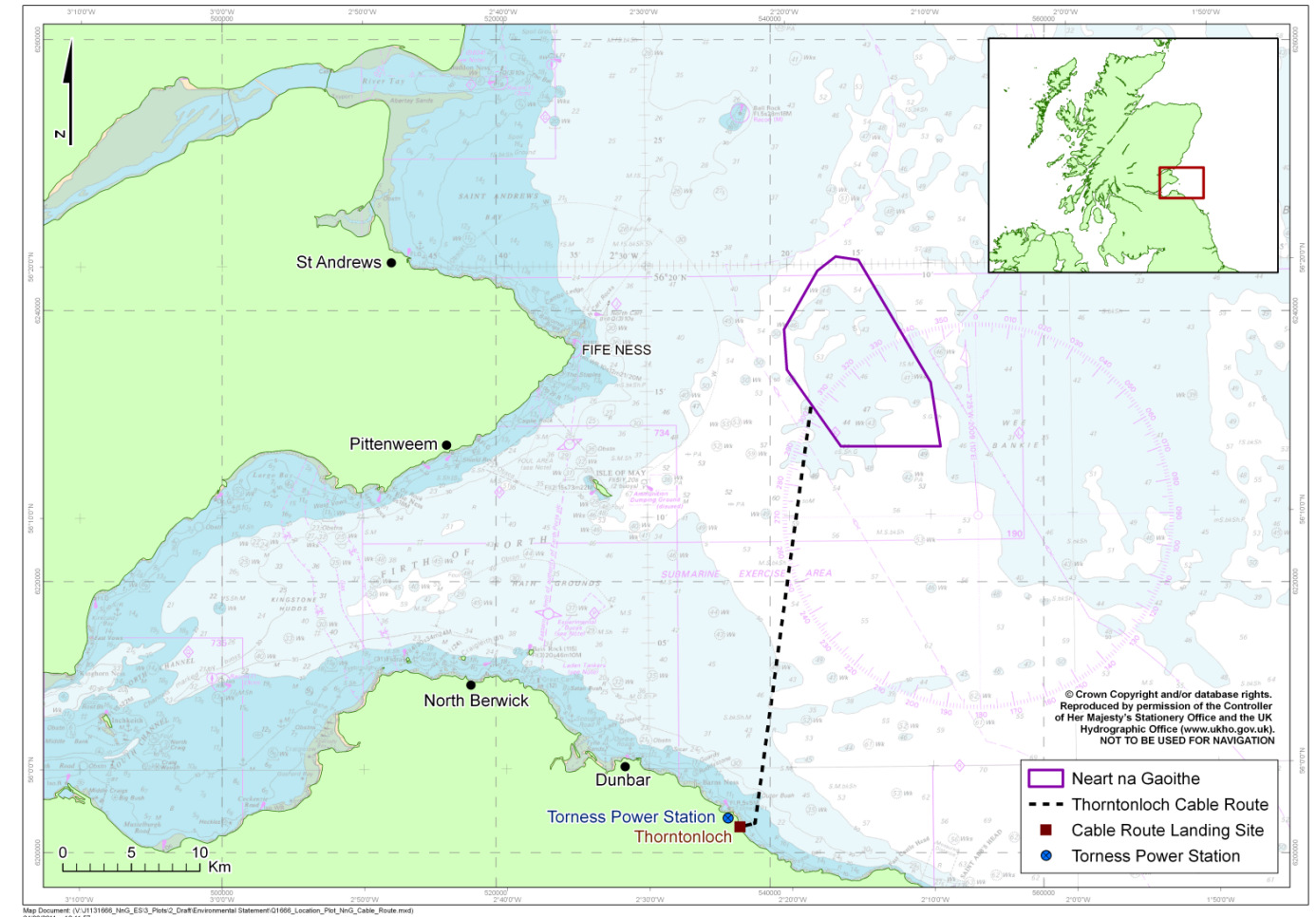


Figure 1.1: The proposed Neart na Gaoithe offshore development and cable route

1.6 The Promoter

10 International Mainstream Renewable Power Limited (Mainstream) is the promoter of Neart na Gaoithe Offshore Wind Farm. Mainstream was founded by Eddie O'Connor in 2008 to develop wind and solar plants around the world. The company has a global development portfolio of over 15 GW, consisting of both onshore (wind and solar) and offshore wind projects across four continents.

"Mainstream is a group of people driven by a unique mission to lead the transition to a world where electricity is made from renewable sources."

Mainstream Renewable Power

11 Mainstream is one of Europe's leading offshore wind developers with up to 7.6 GW over three projects in Scotland, England and Germany (Mainstream, 2011). Collectively, Mainstream has over 600 years of combined experience in those areas critical to project development. Mainstream has a set of values which create a strong foundation for decision making at the project and company level. These values include a focus on working with

others and respecting those that the organisation works with, and these have been reflected in the extensive consultation carried out for the Neart na Gaoithe project. Mainstream’s values are illustrated in the box below, and further information is available at www.mainstreamrp.com.

Mainstream Renewable Power: Values

- **We believe in a Safe Environment for our people.** By putting safety first, we have created an environment in which people work at their best – assured in the knowledge that their security is priority.
- **We believe in showing Personal Respect for everyone we deal with.** Respect forms the core of the most successful relationships, and relationships are the foundation block of our business. Where there is mutual respect, trust is established and partnerships thrive.
- **We believe that by Working Together as a team, we deliver more.** We won’t achieve our vision in isolation. By coming together, sharing information and working towards a common goal, we empower each other to deliver a sustainable future and share in its success.
- **We believe that an Entrepreneurial Approach will find the solutions others can’t see.** The world is facing monumental challenges. We won’t overcome them by conventional thinking. This is the time for finding new ways. Those with innovative concepts and creative solutions, coupled with the commitment to delivering them, will lead the way forward.
- **We believe in a Sustainable Approach to everything we do.** We think about tomorrow and how today’s actions will impact our future. It’s central to everything we do. Taking the long-term view is fundamental to the success of our business; to the relationships that we form; and for the future of our planet.
- **We believe that by Embracing Innovation we will stay ahead of the game.** Our success reflects our flexibility and openness to embrace innovation across all our markets and business activities, reducing cost and maximising performance. Only by driving good practice and new ideas will we develop as a team, grow as a business and evolve as an industry.

- 12 Health and safety is integral to all that Mainstream does. Ensuring a safe working environment for personnel and the public is Mainstream’s primary concern. In addition to ensuring all necessary and relevant legislation is adhered to, Mainstream will apply its certified Integrated Management System to all operations.
- 13 The company is developing the 4 GW Hornsea Zone off the east coast of England with its joint venture partner Siemens Projects Ventures and investor; Dong Energy. Mainstream was awarded the rights to develop the Hornsea Zone by TCE in December 2009. Mainstream is also actively developing wind and solar plants onshore in the US, Canada, Chile and South Africa and is currently progressing the 1.2 GW Horizont offshore wind farm off the coast of Germany.
- 14 The development of three offshore wind farm sites in parallel allows economies of scale to be built up in the development and construction processes. Environmental experience and knowledge is shared between projects, thereby reducing environmental risk.
- 15 The registered office and contact addresses of NnGOWL are shown in Table 1.1 below:

Registered Office
c/o Shepherd and Wedderburn LLP 191 West George Street Glasgow G2 2LB

Table 1.1: Registered office and contact address for NnGOWL

1.7 The Project Team

- 16 The Mainstream team is highly experienced in the project development and construction of renewable energy projects. The team has been supported during the EIA process by a number of specialist contractors.
- 17 EMU is the lead EIA manager for the project, assisting NnGOWL with data collection, analysis and interpretation in support of site selection, consenting, mitigation and monitoring.
- 18 EMU has been operating since 1990 and currently employs over 150 staff, working across a broad field of disciplines. The company has considerable experience in managing and undertaking offshore wind farm EIAs and supporting surveys, and has worked on over 20 offshore wind farm developments including Rounds 1, 2 and 3 and STW sites.
- 19 Specialist technical input has also been provided by the following consultants:
- Aardvarc Consulting – aviation;
 - Bactec – unexploded ordnance;
 - Cork Ecology – ornithology;
 - Intertek Metoc – physical processes modelling;
 - Natural Research Projects – ornithology and marine mammals;
 - QinetiQ – military, aviation and radar;
 - Land Use Consultants – seascape and visual;
 - Anatec – shipping and navigation;
 - Brown and May – commercial fisheries;
 - Xodus – air quality;
 - Subacoustech – underwater noise;
 - Pelagica – ecology, ornithology and marine mammals;
 - SQW – socioeconomics; and
 - Headland Archaeology – marine and coastal archaeology.

1.8 The Neart na Gaoithe Offshore Wind Farm

- 20 The proposed offshore wind farm project will be known as Neart na Gaoithe Offshore Wind Farm, hereafter named “Neart na Gaoithe” or “the project”, and is located to the northeast of the Firth of Forth, 15.5 km east of Fife Ness (see Figure 1.1). The proposed wind farm will cover an area of approximately 105 km², comprising between 75 and 125 turbines, and will have a maximum site capacity of 450 MW.
- 21 Turbines with a rated output of between 3.6 MW and 7 MW are currently being considered for Neart na Gaoithe. The foundations considered are jacket, gravity base or suction bucket types. Under the terms of the agreement for lease, the maximum permissible output is 450 MW which will dictate the maximum number of turbines at the installed capacity.
- 22 In addition to the turbines, there will be up to two offshore collector stations installed on site which will remain in position for the lifetime of the project. A meteorological mast will be installed on site ahead of the main project and will be covered by a separate consent application.
- 23 An estimated 175 km of subsea cables will be required to connect the turbines to the offshore substation and then transport the energy to shore. The inter-array cables will be arranged in a lattice formation linking the turbines to each other. There will then be a pair of export cables from the offshore collector station to the landing point at Thorntonloch.
- 24 Detailed information on the offshore infrastructure is provided in Chapter 5: Project Description.

- 25 Buried onshore cables will complete the circuit to the Crystal Rigg II substation where the electricity will be fed into the National Grid. Additional onshore infrastructure will include a transition pit and a converter station. Consent for the terrestrial aspects of the project will be sought in a separate application for planning permission under the Town and Country Planning (Scotland) Act 1997. These onshore elements are therefore not considered in this ES beyond that necessary to address coastal or intertidal elements.
- 26 There are some receptors that could be impacted by effects arising from both the offshore and onshore aspects of the project (such as those in the intertidal or coastal zone) and so there may be cumulative impacts arising from the development of the onshore aspects of the Neart na Gaoithe offshore wind farm.
- 27 Construction is anticipated to commence in 2015 and continue into late 2016, with the wind farm being operational and exporting energy to the National Grid from late 2016.
- 28 The lease agreement with TCE is up to 50 years and is likely to commence in 2013 once consent has been granted. It is unlikely that the infrastructure installed in 2015/16 will be capable of remaining in operation for the full term of the lease. Therefore, it is likely that “repowering” (installation of new turbines) will be necessary at some stage in the future. Repowering would involve the complete removal and disposal of obsolete equipment. Repowering is not considered in this ES as new consents accompanied by a full EIA would be required at that time.
- 29 At the end of the lease term, decommissioning of the offshore infrastructure will be required under conditions set out in the Marine Licence and under the terms of a decommissioning scheme which must be approved by Marine Scotland prior to commencement of construction. Decommissioning is likely to involve the complete removal of all structures and materials above the seabed. Decommissioning is discussed further in Chapter 5: Project Description.

1.9 Other Wind Farms in the Forth and Tay Area

- 30 As discussed above, TCE originally offered exclusivity agreements for ten offshore development sites in STW. Following TCE’s release of these sites the Scottish Government committed to undertake a Strategic Environmental Assessment (SEA) of the draft Plan to develop offshore wind in Scotland.
- 31 Following the conclusion of the SEA (refer to Chapter 4: Alternatives, and Chapter 7: Engagement and Commitments for more information), there are now five remaining offshore wind development sites in STW, of which two, Neart na Gaoithe and Inch Cape, are in the Firth of Forth and Tay area.
- 32 In addition to the STW sites, TCE released nine potential zones of development in 2009 (Round 3 of offshore wind development) with the final allocation of Zone Development Agreements issued in 2010. One such Zone, Firth of Forth Round 3 Zone 2, is also located in the Forth and Tay area. Figure 1.2 shows the location of these sites in relation to Neart na Gaoithe.

1.9.1 Inch Cape

- 33 Inch Cape Offshore Wind Farm site is approximately 150 km² and lies approximately 15-22 km east of the Angus coast (see Figure 1.2 and Chapter 5: Project Description). The site capacity is approximately 1 GW which is currently anticipated to be achieved through the installation of about 180 turbines.

1.9.2 Firth of Forth Round 3 Zone 2

- 34 The Firth of Forth Round 3 Zone 2 development is located outside of the STW limit, approximately 25 km east of Fife and covers an area of 2,852 km² in the outer Firth of Forth (see Figure 1.2 and Chapter 5: Project Description). The Firth of Forth Round 3 Zone 2 has a potential installed capacity of circa 3.5 GW and is currently separated into three Phases which are scheduled to be brought forward for development as follows: Phase 1 in Q2 2012, Phase 2 in Q3 2014, and Phase 3 in Q4 2016.
- 35 Individual project descriptions are detailed in Chapter 5: Project Description.

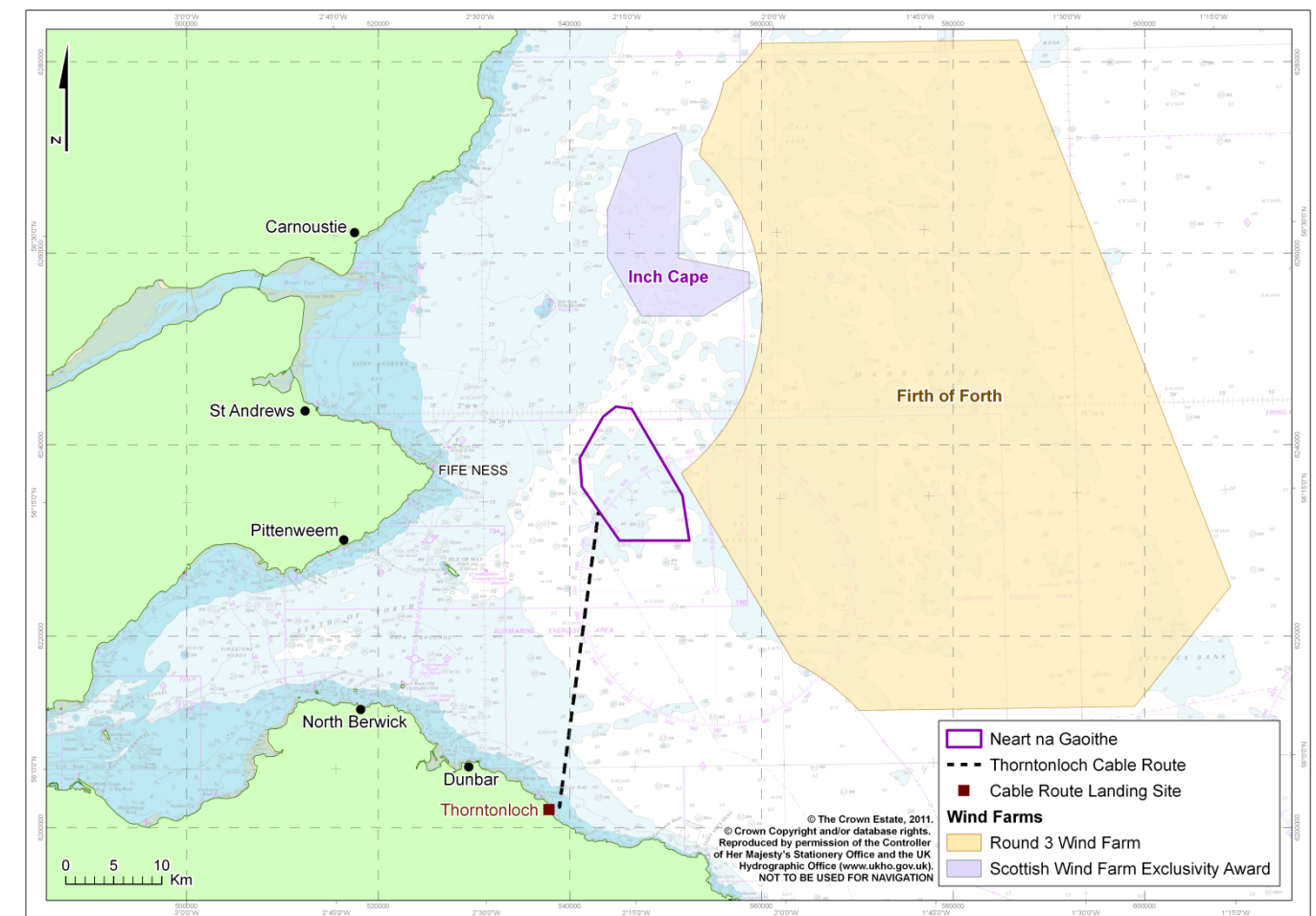


Figure 1.2: Wind farm developments in the Forth and Tay area

1.10 The Forth and Tay Offshore Wind Developers Group

- 36 Under the terms of the lease agreements, TCE actively encourages collaboration as far as reasonably practicable, between neighbouring wind farm sites. The objective of this co-operation is to “address the issues arising as a result of the cumulative and combined benefits and effects in the most efficient and effective manner.”
- 37 To facilitate this co-operation, Forth and Tay Offshore Wind Energy Developers Group (FTOWDG), originally chaired by TCE as an independent adjudicator, was established. In the early stages the Group consisted of four developers within STW, and the Firth of Forth Round 3 Zone 2 developer. Over time two of the STW sites were withdrawn, one as a result of the conclusions of the SEA and the other directly by the developer. The remaining two STW sites, Neart na Gaoithe and Inch Cape – and the Firth of Forth Round 3 Zone 2 development (outside the STW limit) – continued the collaboration.
- 38 Sub-groups to consider specific topics were set up and through these groups a Cumulative Discussion Document (Royal Haskoning, 2010), was developed. The discussion document outlined standard approaches which would be taken for offshore surveys and reiterated commitments by the developers to share data and co-operate to assess potential cumulative issues. The degree and limit of the cooperation are discussed in more detail in Chapter 7: Engagement and Commitments and also within the related ES chapter. The Cumulative Discussion documents are included in Appendix 6.2: Scottish Territorial Waters Offshore Wind Farms – East Coast – Discussion Document – Cumulative Effects and 6.3: Scottish Offshore Wind Farms – East Coast – Discussion Document – Approach to Cumulative Effects Assessment.

1.10.1 Group Members

1.10.1.1 Mainstream Renewable Power

39 As a developer of Neart na Gaoithe, Mainstream is a member of FTOWDG.

1.10.1.2 Repsol

40 Repsol Nuevas Energías UK was formed following Repsol's purchase of SeaEnergy Renewables Limited in June 2011. It has development rights for a total of 1,190 MW in the UK, equivalent to a third of the offshore wind capacity currently installed worldwide. This comprises 33% of the Moray Firth project (Round 3, Zone 1) and 51% of the Inch Cape project with development partners Energias de Portugal Renováveis (EDPR), and 25% of the Beatrice project with Scottish and Southern Energy (SSE) Renewables.

1.10.1.3 Seagreen

41 In December 2009, Seagreen Wind Energy Limited (Seagreen), a joint venture partnership between SSE and Fluor, formed a partnership to develop the Firth of Forth Round 3 Zone 2 as part of the UK's Round 3 offshore wind farm development programme.

1.11 Structure of the Environmental Statement

42 The ES comprises 30 chapters and a stand-alone Non-Technical Summary (NTS) document. The full ES is available in electronic copy on request and the NTS is available for full download on the project website.

43 The ES is structured in a logical and sequential manner. Topics are discussed in full within a single chapter, i.e., the baseline description, impact assessment, mitigation measures and conclusions are combined in a single, stand-alone chapter for each receptor.

44 The ES is structured in the following sequence:

- Non-Technical Summary
- Introduction and Background
 - Chapter 1: Introduction (this chapter)
 - Chapter 2: Climate Change and the Need for the Project
 - Chapter 3: Regulatory and Policy Context
 - Chapter 4: Site Selection, Project Alternatives and Design Evolution
 - Chapter 5: Project Description
 - Chapter 6: The Approach to Environmental Impact Assessment
 - Chapter 7: Engagement and Commitments
- Offshore Physical Environment
 - Chapter 8: Geology and Water Quality
 - Chapter 9: Physical Processes
 - Chapter 10: Air Quality

- Offshore Biological Environment
 - Chapter 11: Nature Conservation
 - Chapter 12: Ornithology
 - Chapter 13: Marine Mammals
 - Chapter 14: Benthic Ecology
 - Chapter 15: Fish and Shellfish Ecology
- Offshore Human Environment
 - Chapter 16: Commercial Fisheries
 - Chapter 17: Shipping and Navigation
 - Chapter 18: Military and Aviation
 - Chapter 19: Maritime Archaeology and Cultural Heritage
 - Chapter 20: Ordnance
 - Chapter 21: Seascape, Landscape and Visual Impact
 - Chapter 22: Other Users
 - Chapter 23: Socioeconomics
- Summary and Conclusions
 - Chapter 24: Summary of Environmental Impact Assessment
 - Chapter 25: Summary of Mitigation
- Appendices and Technical Reports
 - Additional Supporting Documentation

45 Where technical reports have been submitted in support of the baseline and assessment sections, these are included as appendices.

46 Information supporting the Habitat Regulation Assessment (HRA) and corresponding Appropriate Assessment (AA) is summarised in Chapter 11: Nature Conservation.

1.12 References

EMU Limited, 2009. Neart na Gaoithe Proposed Offshore Wind Farm Scoping Report. EMU Limited.

Mainstream Renewable Power Ltd, 2011. *Our Projects*. Available online from: <http://www.mainstreamrp.com/our-projects/> [accessed 09 Jan 2012].

Royal Haskoning, 2010. *Scottish Offshore Wind Farms – East Coast. Discussion Document (2) – Approach to Cumulative Effects Assessment*. Report 9V9341 for Forth and Tay Offshore Wind Developers' Group, November 2010.

Scottish Government, 2010. *Neart na Gaoithe Offshore Wind Farm Scoping Opinion*. Available at <http://www.scotland.gov.uk/Topics/Business-Industry/Energy/Infrastructure/Energy-Consents/Applications-Database/Wind/NNG-Index/Scoping> [accessed Apr 2012].