



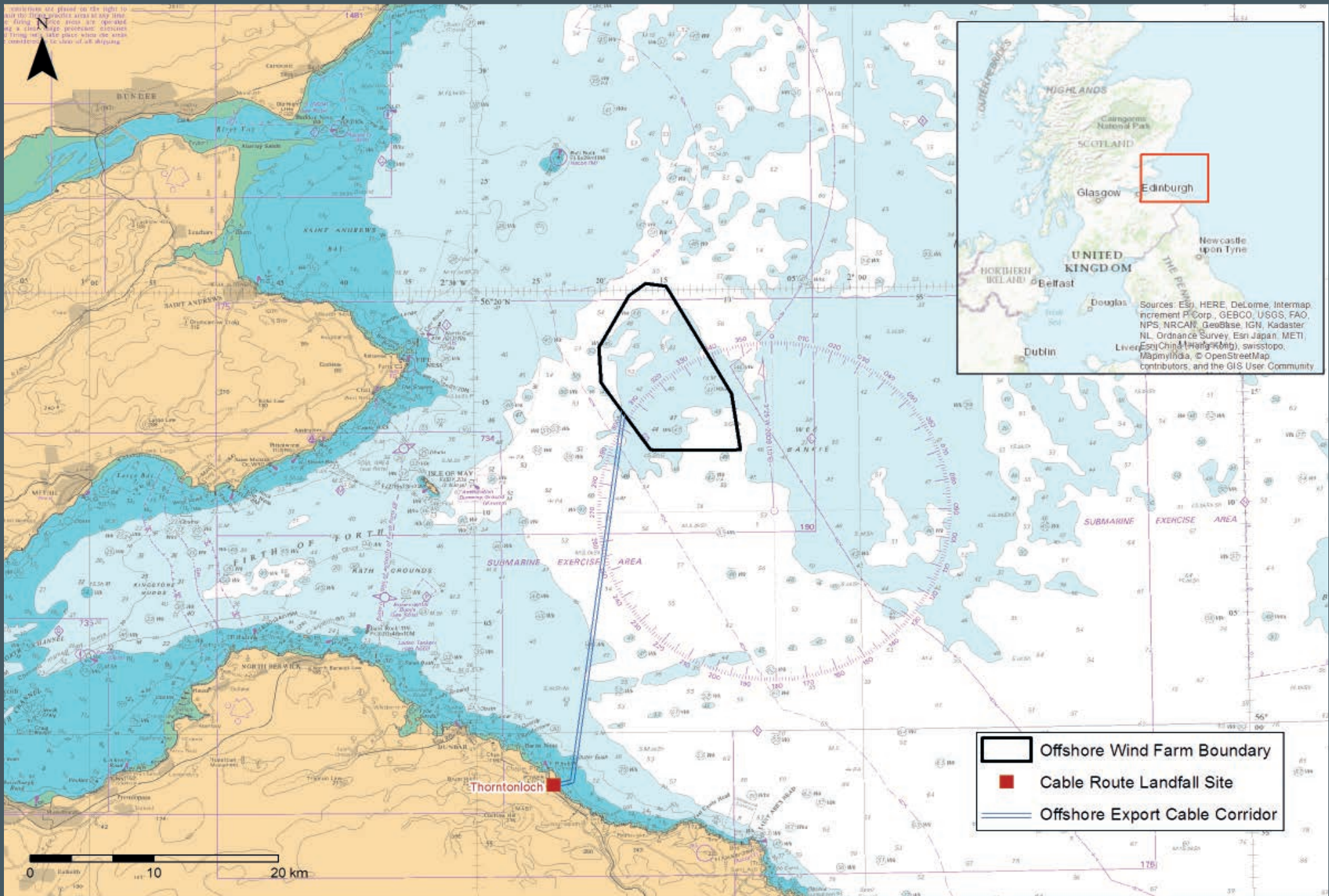
Neart na Gaoithe
Offshore Wind Farm

Environmental Impact
Assessment Report

**NON-TECHNICAL
SUMMARY**

March 2018

contour are placed on the right to
show the depth profile area at any time
in being. Note that the area is
a single depth profile, not a
3D view, and that the area
contour is to the left of the
profile.



- Offshore Wind Farm Boundary
- Cable Route Landfall Site
- Offshore Export Cable Corridor

0 10 20 km

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1

Introduction

This Non-Technical Summary (NTS) has been prepared in respect of the Environment Impact Assessment (EIA) process relating to the proposed Neart na Gaoithe Offshore Wind Farm. It provides a summary of the contents of the EIA Report prepared by Neart na Gaoithe Offshore Wind Ltd (NnGOWL) to accompany the applications for Section 36 Consent and Marine Licences for an offshore wind farm located in the outer Firth of Forth, with a maximum output of 450 megawatts (MW) (hereafter referred to as ‘the Application’).



1.1 Project Overview

NnGOWL, a wholly owned subsidiary of Mainstream Renewable Power Limited, is developing the Neart na Gaoithe Offshore Wind Farm (hereafter referred to as 'the Project').

In May 2008, The Crown Estate (TCE) (now Crown Estate Scotland (CES)) 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) of offshore wind power. Mainstream Renewable Power was awarded one of these exclusivity agreements for the site now known as Neart na Gaoithe.

The Project is located approximately 15.5 kilometres (km) directly east of Fife Ness and will cover an area of up to 105 km², comprising a maximum of 54 turbines.

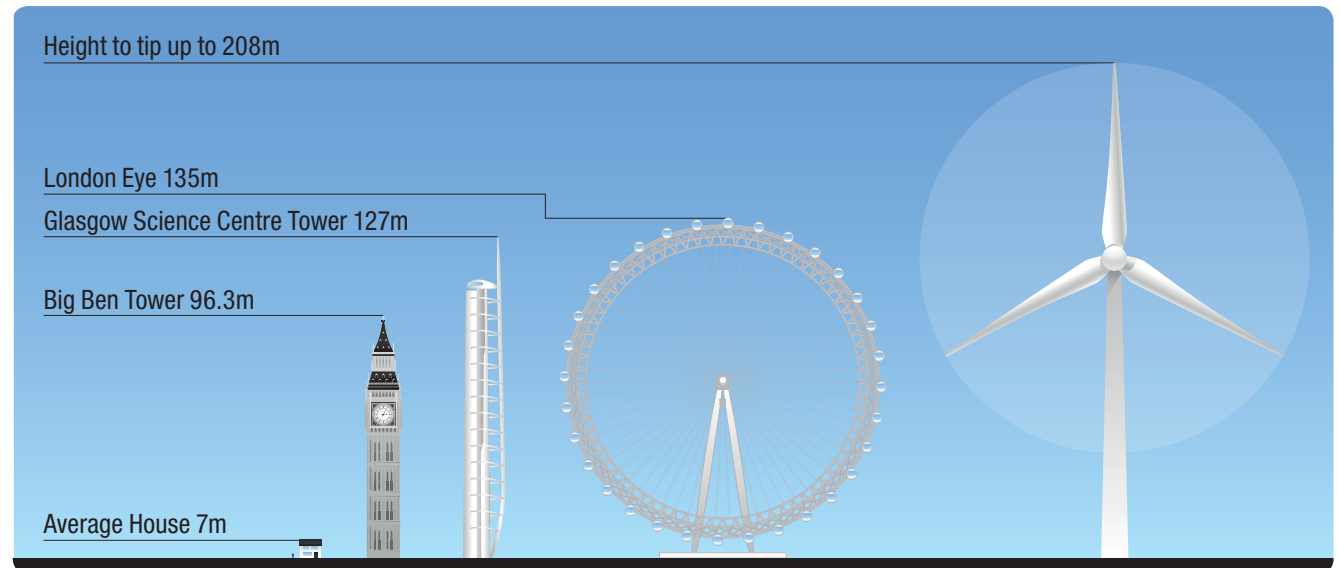
The Project will comprise the Offshore Wind Farm (the wind turbines, their foundations and associated inter-array cabling and meteorological mast); and the Offshore Transmission Works (OfTW) (comprising the Offshore Substation Platform(s) (OSP(s)), their foundations and the Offshore Export Cables).

The Project will generate electricity to feed into the national grid and will contribute towards a reduced reliance on fossil fuels, thereby reducing future emissions of atmospheric carbon dioxide (CO₂) and other greenhouse gases (GHGs).

The Project will be connected to the national grid via the Onshore Transmission Works (OnTW), which were subject to a separate planning application (under the Town and Country Planning (Scotland) Act 1997), which was granted by East Lothian Council in June 2013. The permission was subsequently amended by a Section 42 application in November 2015, and advance construction works were undertaken to implement the planning permission in August 2016.

Project Parameters

No. of turbines:	Maximum 54
Capacity:	450 MW
Turbine height:	Maximum 208 metres (m) above lowest astronomical tide (LAT) to tip
Space between turbines:	Minimum 800m
Site area:	Maximum 105km ²
Water depth:	Between 45m and 55m



Wind turbine dimensions compared to known landmarks

1.2 The Project Background

1.2.1 The Originally Consented Project

NnGOWL submitted applications for consent under Section 36 of the Electricity Act 1989 and for associated Marine Licences under the Marine (Scotland) Act 2010, in July 2012. The applications were supported by an Environmental Statement (ES) (hereafter referred to as the 'Original EIA') and subsequently, in June 2013, by an Addendum of supplementary environmental information.

The Section 36 Consent and the Marine Licence were granted by the Scottish Ministers in October 2014, following over five years of project development, including environmental surveys, engineering design studies and wide-ranging stakeholder engagement. The development as consented in October 2014 is hereafter referred to as 'the Originally Consented Project'.

In 2015, NnGOWL applied for a variation to the Section 36 Consent, seeking to modify a number of parameters relating to the wind turbines. This 'Section 36 Consent Variation' was granted by the Scottish Ministers in March 2016. The varied Section 36 Consent and the Marine Licences granted in October 2014 are hereafter collectively referred to as 'the Original Consent'.

1.2.2 RSPB Legal Challenge

The decision by the Scottish Ministers to consent the Originally Consented Project in 2014 (as well as the neighbouring Inch Cape and Seagreen offshore wind farms) was challenged by the Royal Society for the Protection of Birds (RSPB) by way of Judicial Review (JR), in January 2015.

The Outer House of the Scottish Court of Session ruled in favour of the RSPB in July 2016. The JR decision was appealed by the Scottish Ministers and the developers, including NnGOWL, at the Inner House of the Scottish Court of Session,

and the outcome of that appeal was announced on 16 May 2017 whereby the original JR judgement was overturned.

An application by the RSPB to the Scottish Court of Session to appeal to the Supreme Court was refused on 19 July 2017. On 15 August 2017, the RSPB made an application directly to the Supreme Court for permission to appeal.

On 7 November 2017, the Supreme Court refused permission to appeal on the grounds that *"...the application does not raise an arguable point of law of general public importance which ought to be considered at this time, bearing in mind that the case has already been the subject of judicial decision and reviewed on appeal."*

The 7 November 2017 ruling was the final stage in the JR process and resulted in the Scottish Ministers' decisions to grant consent for the three developments being retained.

1.2.3 Status of the Original Consents

Following the decision on 7 November 2017, the Original Consent remains valid. It is NnGOWL's intention to construct either the Originally Consented Project (as amended by the Section 36 Consent Variation) or the Project, but not both. Whilst NnGOWL's preference is to develop the Nearth na Gaoithe Offshore Wind Farm as described in the Application, the submission of the Application does not affect the status of the Original Consent, and the Originally Consented Project could still be constructed in the event of delay or other unforeseen issues with the Application.

1.3 The Need for the Project


Scotland has great potential for renewable energy development. It is estimated that Scotland has up to 25% of Europe's offshore wind resource (Scottish Government, 2011).

The Project will act to offset GHG emissions that might otherwise be produced by other means of electricity generation and will also increase the security of electricity supply, thereby assisting with the delivery of UK and Scottish Government policy, and the meeting of renewable energy commitments. It will also provide socio-economic benefits to Scotland and the UK and contribute to the development of the offshore wind industry in the domestic markets.

The Project will provide renewable electricity throughout its operational life. It is estimated that enough electricity will be produced every year to meet the needs of the equivalent of 376,000 households (using a generic industry calculation*) or 454,800 (using wind data collected at the Nearth na Gaoithe site**).

*Calculation based on the Renewable UK average UK offshore wind capacity factor of 37.2% from statistics published by the Department of Business, Energy and Industrial Strategy.

**Calculation based on the project specific capacity factor of 45%.



**Enough electricity
to power
approximately
376,000
households**

2

The Project

The Project is located in the outer Firth of Forth, approximately 15.5 km east of Fife Ness. The location of the Project is known as the 'Development Area'. This is further divided into two discrete areas known as the 'Wind Farm Area', comprising: (i) the geographical area where the wind turbines, inter-array cables, OSPs and other associated infrastructure will be located; and (ii) the 'Offshore Export Cable Corridor', comprising the geographical area within which the Offshore Export Cables will be located and the landfall area.

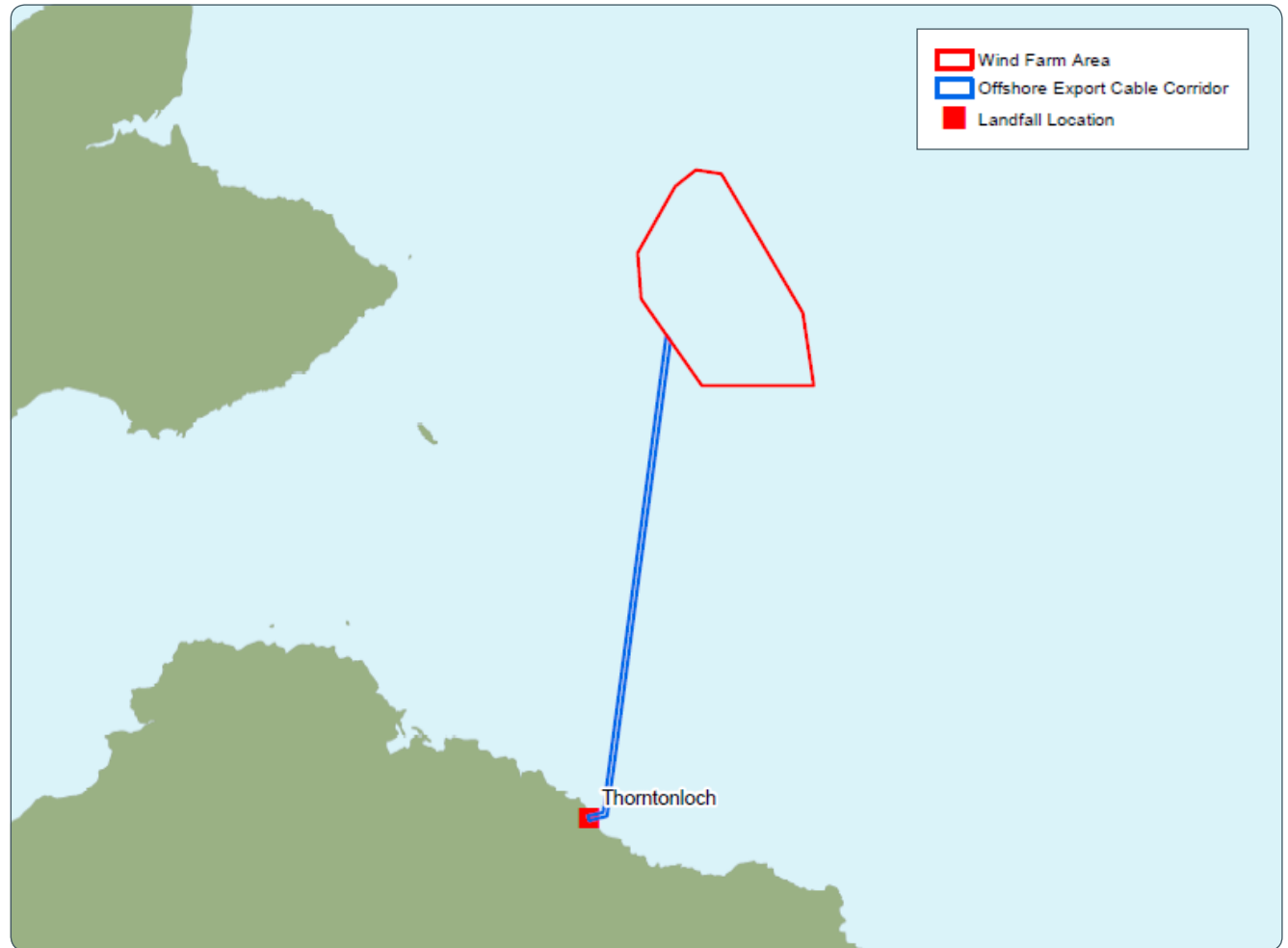
2.1 Project Location

The Wind Farm Area will cover an area of approximately 105 km². A maximum of 54 wind turbines will be installed in the Wind Farm Area. The turbine foundations will utilise a steel lattice jacket with piled foundation design. In addition to the turbines, up to two OSPs will be installed, and a meteorological mast may also be installed within the Wind Farm Area. If two OSPs are required, inter-connector cables will be installed to connect the OSPs.

Subsea inter-array cables will be required to connect the turbines to each other and to the OSP(s). A pair of Offshore Export Cables, each 43 km in length, will run from the OSP(s) to the landfall point at Thorntonloch, south of Torness Power Station in East Lothian.



Thorntonloch Beach



Project Location

Underground Onshore Export Cables will connect the Project to a new onshore substation located adjacent to the Crystal Rig II wind farm substation, where the Project will be connected to the national grid. The Onshore Export Cable and new onshore substation are collectively known as the Onshore Transmission Works (OnTW). The OnTW will also include up to two transition pits at the landfall where the Offshore Export Cable and Onshore Export Cable will be connected.

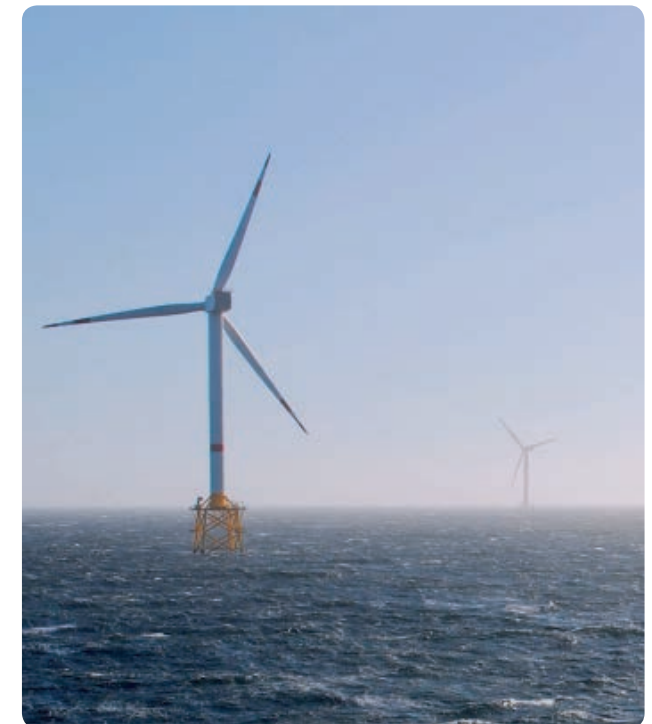
Chapter 4 of the EIA Report includes a summary of the design parameters upon which the project is based.

Parameter	Originally Consented Project	The Project
Maximum number of wind turbines	75 (Original Application was for 125)	54
Maximum rotor tip height (above LAT)	197m	208m
Maximum hub height	115m	126m
Maximum rotor diameter	154m	167m
Minimum spacing between wind turbines	450m	800m
Blade clearance above LAT	30.5m	35m
Maximum number of piles per foundation (jackets)	4	6
Foundation options	<ul style="list-style-type: none"> • Gravity Base Structures • Jackets 	<ul style="list-style-type: none"> • Jackets only
Inter-array cables	<ul style="list-style-type: none"> • Up to 6 turbines per collector circuit • Up to 15 circuits • 140km cable length 	<ul style="list-style-type: none"> • Up to 10 turbines per collector circuit • Up to 14 circuits • 140km cable length
OSP(s) – maximum level of topside above LAT	18m	21m
Offshore Export Cable length (per cable)	33km	43km

Summary of changes between the design envelope for the Originally Consented Project and the Project

2.2 The Project Compared to the Originally Consented Project

The Project will take advantage of evolving offshore wind technology, allowing the same output as the Originally Consented Project but using fewer turbines. In general terms this will lead to a reduction in the potential environmental impacts (when compared to the Original Application and the Originally Consented Project).



3

The EIA Process

The EIA Report is provided to accompany the applications to the Scottish Ministers for a Section 36 Consent under the Electricity Act 1989 and Marine Licences under the Marine (Scotland) Act 2010.

The EIA Report has been prepared pursuant to the requirements of The Marine Works (Environmental Impact Assessment) (Scotland) Regulations 2017 and the Electricity Works (Environmental Impact Assessment) (Scotland) Regulations 2017. These regulations transpose the amendments made to the Environmental Impact Assessment (EIA) Directive 2011/92/EU by Directive 2014/52/EU and came into effect on 16 May 2017. Since NnGOWL requested a Scoping Opinion prior to this date, this EIA Report has been prepared in accordance with the transitional arrangements set out within these Regulations.

3.1 EIA Report Structure

The EIA Report is based upon the following structure:

- Volume 1: Main Text;
- Volume 2: Figures;
- Volume 3: Seascape, Landscape and Visual Impact Assessment Visualisations and Figures; and
- Volume 4: Appendices.



Volume 1 contains the EIA Report chapters and is structured as follows:

Introduction and background

- Chapter 1 – Introduction;
- Chapter 2 – Policy and Legislation;
- Chapter 3 – The Need for the Project, Site Selection and Alternatives;
- Chapter 4 – Project Description;
- Chapter 5 – Scoping and Consultation; and
- Chapter 6 – EIA Methodology.

Offshore biological environment

- Chapter 7 – Fish and Shellfish Ecology;
- Chapter 8 – Marine Mammals; and
- Chapter 9 – Ornithology.

Offshore human environment

- Chapter 10 – Commercial Fisheries;
- Chapter 11 – Shipping and Navigation;
- Chapter 12 – Military and Civil Aviation;
- Chapter 13 – Cultural Heritage;
- Chapter 14 – Seascape, Landscape and Visual Impact Assessment; and
- Chapter 15 – Socio-economics.

Summary and conclusion

- Chapter 16 – Summary of the EIA; and
- Chapter 17 – Summary of the Mitigation Measures.



3.2 The Scoping Process

Since the potential effects of the Originally Consented Project on the environment have been thoroughly assessed, and the outcomes of that assessment considered by the Scottish Ministers in their determination of the Original Application, the approach to scoping was to apply the findings of the original EIA process as a basis for identifying the likely significant effects that could arise from the Project.

The Original Application also presented a large body of existing data and knowledge regarding the environmental characteristics of the Development Area, acquired through site specific surveys, technical studies and data gathering to inform the Original EIA.

The Scoping Report therefore drew on the Original ES in order to:

- Characterise the baseline environment to inform the Scoping Report, where data was sufficient and it was appropriate to do so;
- Scope out impacts where there was clear justification for doing so; and
- Where impacts were scoped in, use the available data to inform the baseline conditions where appropriate in carrying out this EIA.

The scope of the EIA Report was developed through the request by NnGOWL for a Scoping Opinion from the Scottish Ministers, and through consultation with statutory and non-statutory consultees. The formal request for a Scoping Opinion was submitted to the Scottish Ministers by NnGOWL in May 2017, supported by a Scoping Report. A Scoping Opinion was subsequently provided by the Scottish Ministers in September 2017.

3.2.1 Stakeholder and Community Consultation

The organisations consulted by the Scottish Ministers during the scoping process are listed below.

- Angus Council (AC)
- Arbroath Sailing and Boating Club
- Bond Offshore Helicopters
- Bristow Helicopters
- British Telecom (Radio Network Protection Team) (BT)
- Civil Aviation Authority
- Chamber of Shipping (CoS)
- CHC Helicopters
- Crown Estate Scotland
- Defence Infrastructure Organisation (DIO)
- Dundee City Council (DCC)
- East Lothian Council (ELC)
- Esk District Salmon Fishery Board (Esk DSFB)
- Fife Council (FC)
- Fife Fish Producers Organisation
- Firth of Forth Lobster Hatchery
- Fisheries Management Scotland
- Fife Fishermen's Association (FFA)
- Fishermen's Mutual Association (Pittenweem) Limited (FMA)
- Forth District Salmon Fishery Board (Forth DSFB)
- Forth Ports
- Health and Safety Executive
- Historic Environment Scotland (HES)
- Inch Cape Offshore Limited
- Marine Safety Forum
- Marine Scotland Compliance – Anstruther
- Marine Scotland Compliance – Eyemouth
- Marine Scotland Compliance – Aberdeen
- Maritime and Coastguard Agency (MCA)
- Marine Scotland Science (MSS)
- National Air Traffic Services (NATS)
- National Trust for Scotland
- North Sea Regional Advisory Council
- North East Regional Inshore Fishery Group
- Planning Aid Scotland
- Northern Lighthouse Board (NLB)
- Royal Society for the Protection of Birds (RSPB)
- Royal Yachting Association (Scotland) (RYAS)
- Scottish Borders Council (SBC)
- River Tweed Commission (RTC)
- Scottish Enterprise
- Scottish Canoe Association (SCA)
- Scottish Federation of Sea Anglers
- Scottish Environment LINK
- Scottish Fisherman's Organisation
- Scottish Fishermen's Federation (SFF)
- Scottish Natural Heritage (SNH)
- Scottish Government Planning
- Scottish Surfing Federation
- Scottish Seabird Centre
- Seagreen Wind Energy Limited
- Scottish Wildlife Trust
- Surfers Against Sewage
- Scottish Environment Protection Agency (SEPA)
- The 10 Metre and Under Association
- Tay District Salmon Fishery Board
- Transport Scotland (TS)
- Torness Power Station
- Transport Scotland (Ports and Harbours) (TS(P&H))
- Whale and Dolphin Conservation (WDC)

To support the scoping process, a number of meetings were organised by MS-LOT in order to facilitate structured discussion between the Scottish Ministers, NnGOWL and stakeholders. The meetings were intended to allow for early engagement between stakeholders and NnGOWL. The meetings were topic related and covered marine mammals, fish and benthic ecology, commercial fisheries and ornithology.

In addition, NnGOWL has undertaken extensive pre-application consultation in compliance with the specific requirements set out under the Marine Licensing (Pre-application Consultation) (Scotland) Regulations 2013.

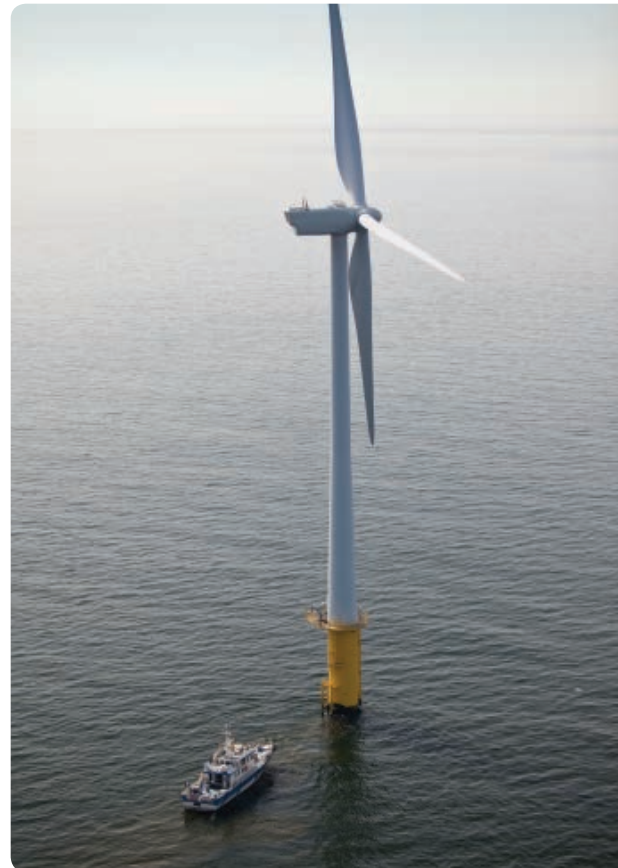
The details of the consultation undertaken, and the outcomes of the consultation are presented separately in the Pre-application Consultation Report, which accompanies the Application and conforms to the prescribed requirements set out in the Marine Licensing (Pre-application Consultation) (Scotland) Regulations 2013. It summarises the feedback gathered from public events held at the following locations:

- 25 September 2017 – North Berwick;
- 26 September 2017 – Dunbar;
- 27 September 2017 – Carnoustie;
- 28 September 2017 – Crail; and
- 4 October 2017 – St Andrews.

Details of the consultation undertaken during the Pre-application process are provided within the accompanying Pre-application Consultation Report and within Chapter 5 of the EIA Report.

3.2.2 Scope of the assessment

The approach to scoping was intended to focus the Project EIA on the potential impacts that were most likely to give rise to significant effects (or where significant uncertainty existed in relation to the validity of the previous assessments), and thereby avoid revisiting assessments which had previously demonstrated that significant effects would not be likely to occur. The scope of the assessment is based on advice provided by the Scottish Ministers in the Scoping Opinion and is summarised within Section 4 of this NTS.



3.3 Assessment Methodology

The methodology for assessing environmental impacts is generally consistent across technical chapters and is based upon the following structure:

- **Guidance, Policy and Legislation:** provides a summary of the relevant legislation, national policy and guidance that have been taken into account in assessing each individual topic;
- **Data Sources:** provides a summary of the data sources used to inform the baseline description;
- **Relevant Consultation:** provides a summary of the topic-specific consultation responses received to date and outcomes of the scoping process (both formal EIA scoping and subsequent discussions with consultees);
- **Impact Assessment Methodology:** provides detail confirming the extent of the study area and topic specific detail on the approach to the impact assessment;
- **Baseline Description:** provides a description of the existing environment;
- **Impact Assessment:** presents the key design envelope parameters for assessment of the most likely (or realistic) worst-case scenario and identifies the potential impacts to be addressed. This section goes on to present the magnitude of the potential impacts that may arise during the construction, operation and decommissioning of the Project, taking account of any embedded mitigation measures (see Section 3.5), and presents the subsequent significance of the effects. An assessment of any cumulative impacts arising from interaction with other projects, plans or activities is also presented;
- **Mitigation and Residual Impacts:** identifies any relevant additional mitigation measures (i.e. those beyond the

embedded mitigation) necessary to avoid, prevent or reduce and, if possible, offset likely significant adverse effects and presents the residual effects; and

- **Monitoring Requirements:** sets out any proposals for the monitoring of potentially significant effects.

3.3.1 Evaluating the Significance of Effects

Effects are either adverse or beneficial. The significance of an effect is determined using a combination of:

- The magnitude of the impact;
- The sensitivity of the receptor;
- The degree of uncertainty encountered in the assessment; and
- The probability of an effect occurring.

A matrix approach will normally be applied (see below) unless otherwise described in the topic specific EIA methodology.

Whether an impact is significant or not significant is a key consideration in the EIA process. For the purposes of this EIA Report, effects rated as being of either moderate or major significance are considered to be potentially significant in EIA terms, and therefore may require further consideration and/or mitigation.

NnGOWL has adopted a precautionary approach to the EIA process. As discussed in Section 1.2.3, the Original Consents remain valid, and in respect of a number of environmental topics, the Project compares favourably with the Originally Consented Project. An appropriate EIA methodology could have been to assess the Project against a baseline comprising the Originally Consented Project. A number of such assessments would likely have resulted in positive impacts. Instead, NnGOWL adopted a precautionary approach and assessed the Project against the existing (i.e. no development) baseline. Whilst the approach effectively assesses the Project against an unrealistic baseline, it ensures that the protection afforded to environmental sensitivities is appropriately recognised.

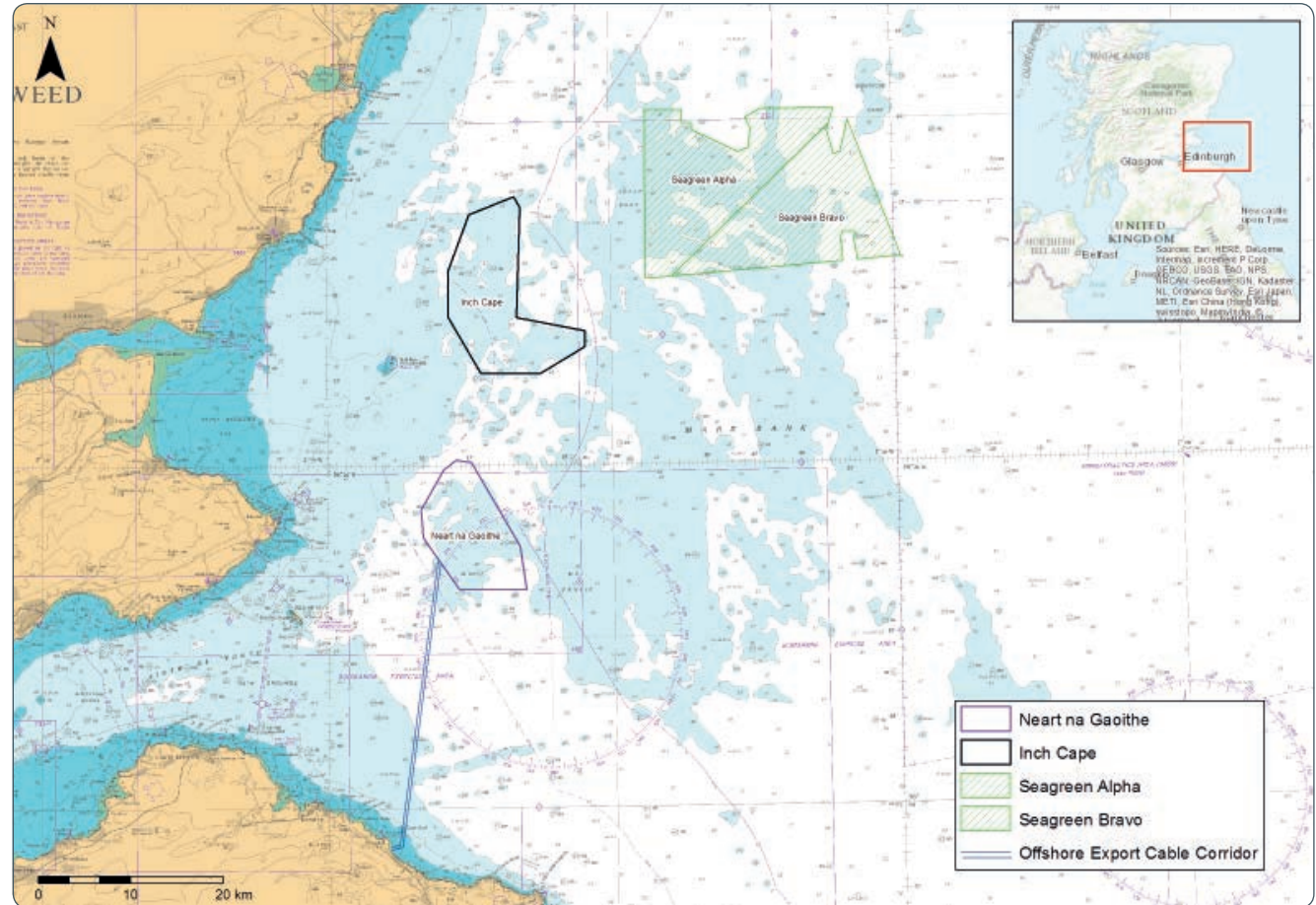
		Magnitude			
		High	Medium	Low	Negligible
Sensitivity	High	Major	Major	Moderate	Minor
	Medium	Major	Moderate	Minor	Negligible
	Low	Moderate	Minor	Minor	Negligible
	Negligible	Minor	Negligible	Negligible	Negligible

Significance of potential effects

3.4 Assessment of Cumulative Impacts

The EIA Directive requires the consideration of the potential impacts of a project not only in isolation but also how it might act cumulatively with other plans or projects to create a cumulative impact greater than or different to that of each individual project. The term cumulative assessment is used in the EIA Report to describe the assessment of incremental changes caused by other reasonably foreseeable actions alongside the Project.

Cumulative assessment is undertaken in each technical chapter and often focuses upon the cumulative impact of the Project alongside neighbouring offshore wind farm developments Inch Cape and Seagreen. Other projects which might contribute towards the assessment of cumulative impacts are identified on a chapter-by-chapter basis.



Map of the Project and other offshore wind farms in the area

3.5 Embedded Mitigation and Consent Conditions

3.5.1 Embedded Mitigation

Embedded mitigation is the term applied to mitigation measures that are effectively ‘built in’ to the Project i.e. they are assumed to be in place as up-front commitments rather than mitigation proposed in response to the EIA process and being necessary to specifically mitigate a significant effect.

In concluding whether a particular impact or receptor should be scoped in to the EIA process, the commitment to embedded mitigation was considered. The Scoping Report, and the resulting Scoping Opinion, were based on an assessment of the likely significant effects that might arise from the Project with assumed or embedded mitigation as identified for each of the topics considered.

The Scoping Opinion therefore relies on these embedded mitigation measures being implemented in addition to any additional mitigation identified through the detailed EIA process. For each of the topics which have been ‘scoped-out’, Marine Scotland have confirmed that they are content that the embedded mitigation measures are sufficient to manage the potential effects and as a basis for scoping a topic out of further consideration through the EIA process.

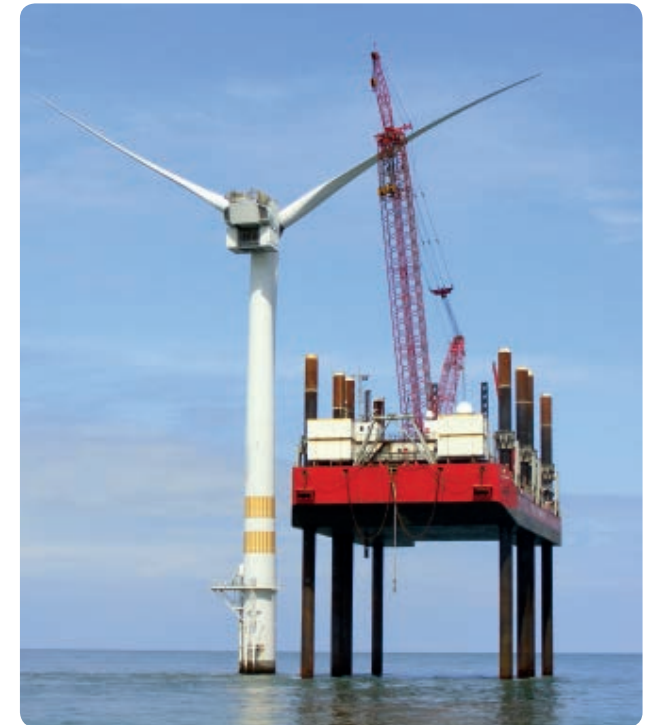


3.5.2 Consent Conditions

The Original Consent included a number of conditions and requirements relating to the mitigation or management of the proposed wind farm development activities (many of which incorporate the requirements set out as embedded mitigation).

NnGOWL recognises that the Scottish Ministers, in granting consents for the Project, would be likely to require similar conditions and requirements (where they are considered to remain relevant) – and indeed may wish to prescribe additional conditions. However, NnGOWL would expect that, broadly, the main requirements encapsulated by the conditions set out in the Original Consents, where relevant and necessary to the Project, will remain a requirement in some form and have incorporated these into the Project accordingly. For example, NnGOWL anticipates that the following plans will be required by conditions of the consents:

- Construction Programme to confirm the timing and programming of construction;
- Design Specification and Layout Plan detailing the final specification and layout of the Offshore Wind Farm and OfTW;
- Construction Method Statement to confirm the installation methods and management of construction taking into account any required mitigation measures;
- Piling Strategy setting out the key pile parameters, installation method and mitigation to be applied during construction;
- Cable Plan setting out the installation methods taking into consideration all environmental and navigational issues; and
- Operation and Maintenance Programme setting out the requirements and programme of ongoing operation and maintenance activities.



4

The Environmental Impact Assessment

4.1 Fish and Shellfish Ecology

Chapter 7 of the EIA Report considers the impacts of the Project upon relevant fish and shellfish ecological receptors. The scope of assessment and its findings are summarised below.

4.1.1 Scope of Assessment

As agreed through the aforementioned scoping process, the assessment focuses upon the potential particle motion effects, whilst also providing clarity on the effects of suspended sediment on scallop populations and catching grounds, and a review of the cumulative assessment undertaken in respect of the Originally Consented Project. All other potential impacts were scoped out of the assessment.

4.1.2 Summary of Findings

A number of potential impacts are assessed, with the following findings:

- Disturbance or injury as a result of particle motion arising from pile driving during construction – Minor adverse effects are defined on all relevant fish and shellfish species. No additional mitigation measures are required and the residual effects are considered not significant in EIA terms;
- Disturbance resulting from particle motion arising from turbine operation, during the operational phase of the Project – Minor adverse effects are identified for all species. Such impacts are not considered to require additional mitigation and the overall residual effect is not significant in EIA terms; and
- Both of these potential impacts are also considered in cumulative terms. In terms of the significance of the effects, both are defined as minor adverse for all species, such residual effects being not significant in EIA terms.

No significant effects were identified on fish and shellfish ecology.



Grey Seal



Seabed habitat - 'Dead Mens Fingers'

4.2 Marine Mammals

Chapter 8 of the EIA Report details the potential impacts of Project on marine mammals.

4.2.1 Scope of Assessment

The marine mammals assessment considers:

- Noise and underwater noise impacts on bottlenose dolphin, harbour seal, grey seal, harbour porpoise, minke whale and white beaked dolphin;
- Use of management unit populations and additional recommended literature to assess distribution and impacts on the same species;
- Species specific impact and cumulative impact assessments, as required; and
- Population level effects on the same species.

All other marine mammal-related impacts were scoped out of the assessment.

4.2.2 Summary of Findings

The assessment considers the effects of pile driving noise, drilling noise, geophysical surveys and aircraft and helicopter disturbance on each of the species referenced in the first bullet point of Section 4.2.1, above, both in terms of the Project alone, and cumulatively alongside other relevant development projects.

Negligible adverse impacts are projected in all cases, with the exception of the effect of pile driving noise upon harbour porpoise, bottlenose dolphin, minke whale and harbour seal, where minor adverse impacts are anticipated when considering the Project in isolation. The assessment of cumulative impacts considered the potential effects of pile driving noise in relation to all offshore wind farm projects in the Firths of Forth and Tay, and in the Moray Firth, and concluded potential significant effects on bottlenose dolphin, minke whale and grey seal. A range of mitigation measures are detailed in Chapter 8 of the EIA Report, to minimise the potential effects on marine mammals during piling.

4.3 Ornithology

The impacts of the Project on ornithology are considered in Chapter 9 of the EIA Report.

4.3.1 Scope of Assessment

The scope of ornithological assessment was agreed as follows:

- Assessment of potential impacts on key seabird species as follows:
 - Collision effects for gannet, kittiwake, lesser black-backed gull, greater black backed gull and herring gull;
 - Displacement effects for puffin, guillemot, razorbill, gannet and kittiwake;
- Population Viability Analysis; and
- Assessment of cumulative impacts.

The need for additional survey and consideration of all others species were scoped out of the EIA process.

The impacts scoped in to the EIA process were:

- Offshore Export Cable installation;
- Displacement and barrier impacts during the operational phase;
- Collision impacts during operation;
- Impacts during the decommissioning phase;
- Cumulative displacement and barrier impacts; and
- Cumulative collision impacts.

4.3.2 Summary of Findings

All impacts assessed in respect of the Project alone were considered to be of negligible or minor significance. No additional measures beyond the embedded mitigation are therefore proposed in respect of the majority of impacts.

In respect of cumulative collision impacts, two scenarios were assessed:

- Scenario 1: The Project alongside the 2017 design parameters for Seagreen Phase 1 and Inch Cape; and
- Scenario 2: The Project alongside the 2014 consented designs for Seagreen and Inch Cape.

Scenario 1 predicts no significant effects.

Scenario 2 predicts moderate impacts in terms of cumulative kittiwake collisions in the non-breeding season and by association throughout the year. In order to mitigate this impact NnGOWL will explore collision reduction technologies with Forth and Tay Regional Advisory Group (FTRAG) following the granting of consent.

NnGOWL considers it highly unlikely that Inch Cape and Seagreen will be built to the maximum extent of their consented envelopes, therefore the scenario 2 outcome is underpinned by a precautionary approach.



Kittiwake tagging



Guillemots

4.4 Commercial Fisheries

Chapter 10 considers the impacts of the Project on commercial fisheries.

4.4.1 Scope of Assessment

All potential impacts on commercial fisheries, as well as an updated cumulative assessment, were scoped in to the assessment. The commercial fisheries baseline data was completely updated, which included discussions with a range of commercial fisheries stakeholders.

4.4.2 Summary of Findings

A wide range of potential impacts are summarised in the EIA Report, both for the Project alone, and cumulatively, in relation to all phases of the Project and a range receptors. Whilst some moderate adverse effects were initially identified, the implementation of additional mitigation measures reduced these effects to minor significance, which is not significant in EIA terms.



4.5 Shipping and Navigation

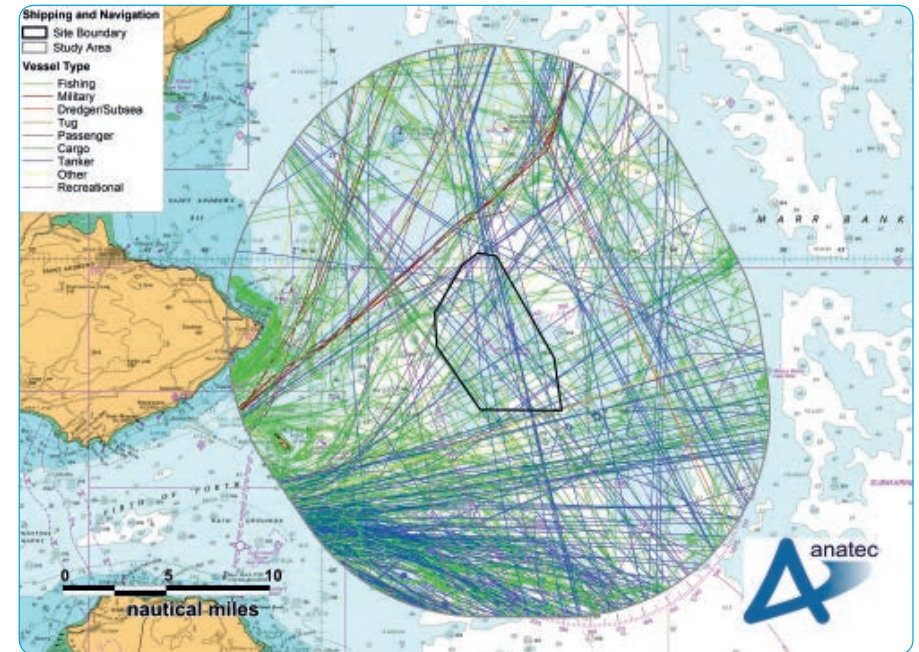
Chapter 11 of the EIA Report details the impact of the Project on shipping and navigation activities.

4.5.1 Scope of Assessment

Updated shipping baseline data with marine traffic survey data was required, alongside an updated cumulative assessment. NnGOWL were required to discuss the need for an updated Navigational Risk Assessment (NRA) with the Maritime Coastguard Agency (MCA), who agreed an updated NRA was not required. Shipping and navigation receptors which were not considered to be significantly affected by the Project were scoped out of the assessment.

The following potential impacts are considered for both the Project alone and cumulatively, in the context of commercial, fishing and recreational vessels:

- Physical presence of Offshore Wind Farm structures leading to a loss of navigable sea room and deviations around structures resulting in an increased collision risk (vessel-to-vessel); and
- Physical presence of Offshore Wind Farm structures leading to a loss of navigable sea room and deviations around structures resulting in an increased allision risk (vessel-to-structure).



Map of shipping routes

4.5.2 Summary of Findings

In all contexts the residual effects of these potential impacts are considered to be of minor significance, which is not significant in EIA terms.

The same potential impacts are also considered in cumulative terms. A moderate level of significance is attributed to all vessel types in relation to both collision and allision risks. NnGOWL will consult with the MCA and NLB and other stakeholders to identify appropriate further mitigation as required. Further mitigation may include additional aids to navigation and additional means of communication to assist third party navigation.

4.6 Military and Aviation

The impacts of the Project on military and aviation receptors are considered in Chapter 12 of the EIA Report.

4.6.1 Scope of Assessment

The military and aviation assessment focussed upon the impacts of the increased turbine blade tip height on defence radar and other radar systems. The assessment also considered the ongoing effectiveness of previously proposed mitigation measures and included an updated cumulative assessment. Impacts on all other radar and telecommunications receptors were scoped out of the assessment.

The following potential impacts were considered in respect of the Project alone during its operational phase:

- Wind turbines causing persistent interference to the Leuchers Station Primary Surveillance Radar (PSR) from reflected turbine signals;
- Wind turbines causing persistent interference to the Leuchers Station Precision Approach Radar (PAR) from reflected turbine signals;
- Wind turbines causing persistent interference to Remote Radar Head (RRH) Brizlee Wood and RRH Buchan ADR from reflected turbine signals;
- Effects on activities carried out in military Practice and Exercise Areas (PEXA); and
- Use of helicopters for operation and maintenance of the Wind Farm Area.

The cumulative effects of wind turbines causing persistent interference to the Leuchers Station PSR from reflected turbine signals and of wind turbines causing persistent interference to RRH Brizlee Wood and RRH Buchan ADR from reflected turbine signals were also considered.

4.6.2 Summary of Findings

With the exception of those effects relating to the use of helicopters for operation and maintenance (the residual effect of which is minor and not significant), all effects are considered to be major adverse, which is significant in EIA terms.

However, a range of mitigation measures, some temporary until a long-term technical solution is established and agreed, have been identified. Following the implementation of these additional mitigation measures, the residual effects of all previously major adverse impacts is reduced to minor adverse, which is not significant in EIA terms.



Main Light lighthouse, Isle of May

4.7 Cultural Heritage

Chapter 13 considers the impacts of the taller turbines proposed as part of the Project upon relevant cultural heritage features.

4.7.1 Scope of Assessment

As agreed through the scoping process, the assessment focusses upon the visual impacts of the Project on the setting of cultural heritage assets. A setting-based cumulative impact assessment was also undertaken. All other potential impacts on maritime archaeology and cultural heritage were scoped out of the assessment.

4.7.2 Summary of Findings

The impact of the Project on the setting of a range of onshore receptors of varying degrees of cultural heritage significance has been assessed. In each case, the effect of the turbine height and layout in relation to the setting of each receptor is either of minor or negligible adverse significance, depending upon the receptor. In each of these cases the residual effect is not significant in EIA terms.

A cumulative assessment has also been undertaken, assessing the cumulative impact of the Project alongside turbines from Inch Cape and Seagreen Offshore Wind Farms in relation to the setting of each onshore receptor. In the vast majority of cases, the cumulative impact is either of minor or negligible adverse significance. In each of these cases the residual impact is not significant in EIA terms.

The only exception is the cumulative impact upon Isle of May Priory, a Scheduled Monument, where an uninterrupted view of wind turbines on the horizon will be visible to visitors of the priory. The cumulative effect on the setting of the Isle of May Priory is therefore predicted to be of moderate significance, which is significant in EIA terms.

4.8 Seascape and Landscape Visual Impact Assessment

Chapter 14 of the EIA Report considers the visual impacts of the Project, as well as its impacts upon the landscape and seascape.

4.8.1 Scope of Assessment

All seascape, landscape and visual impacts, including lighting, were scoped into the assessment.

4.8.2 Summary of Findings

The assessment concludes that the following potential effects are of minor or negligible adverse significance, which are not significant in EIA terms:

- Impact of landfall construction activities on landscape receptors at Thorntonloch Beach;
- Impact of landfall construction activities on visual receptors at Thorntonloch Beach;
- Impact of the operational wind farm on landscape character;
- Impact of aviation and navigation lighting on landscape character; and
- Cumulative impacts on landscape character arising from the additional presence of the offshore wind farms.



Fog horn, Isle of May

A number of potential effects are assessed as being significant in EIA terms:

- Impact of the Offshore Wind Farm on the coastal character on east Fife and north-east East Lothian;
- Impact of the Offshore Wind Farm on visual amenity within 35km;
- Impact of aviation and navigation lighting on coastal character along the eastern Fife coast;
- Impact of aviation and navigation lighting on visual amenity within 30km;
- Cumulative impacts on coastal character arising from the additional presence of the Offshore Wind Farm on receptors in east Fife and south-east Angus; and
- Cumulative impacts on visual amenity arising from views of the Offshore Wind Farm in addition to other wind farms, where both Neart na Gaoithe and Inch Cape are viewed at closer range.

The residual effects of these potential impacts remain significant in EIA terms since no additional mitigation measures beyond the embedded mitigation have been identified.

4.9 Socio-economics

Chapter 15 considers the socio-economic impacts of the Project.

4.9.1 Scope of Assessment

The agreed scope of assessment was wide ranging, considering the Project in Gross Value Added (GVA) and employment terms, whilst all impacts on tourism were scoped out of the assessment.

4.9.2 Summary of Findings

The potential impacts associated with the Project identified within the socio-economic assessment are positive. The effects that are quantifiable range from minor positive effects upon the Local Study Area, to moderate positive Scotland-wide effects.

Moderate positive significance effects, which are significant in EIA terms, were identified for:

- Impact of construction activity on direct and indirect employment creation in the construction supply chain – on Scotland and the Local Study Area; and
- Impact of operation activity on direct and indirect employment creation in the construction supply chain – on the Local Study Area.

Though cumulative impacts are expected to be positive, it is not possible to confidently predict the level of cumulative impact on employment within the supply chain. This depends on several factors, which are, at this time, unknown, including the overall costings and geographical sourcing of goods and services for the construction and operation and maintenance of other wind farms. As this is not yet known, it is impossible to provide a quantitative assessment of the potential cumulative effects.

List of Abbreviations

ADR	Air Defence Radar
CES	Crown Estate Scotland
CO₂	carbon dioxide
EIA	Environmental Impact Assessment
ES	Environmental Statement
FTRAG	Forth and Tay Regional Advisory Group
GHG	greenhouse gases
GVA	Gross Value Added
GW	Gigawatts
JR	Judicial Review
km	kilometres
LAT	lowest astronomical tide
m	metres
MCA	Maritime Coastguard Agency
MW	Megawatts
NnGOWL	Neart na Gaoithe Offshore Wind Ltd
NRA	Navigation Risk Assessment
NTS	Non-Technical Summary
OfTW	Offshore Transmission Works
OnTW	Onshore Transmission Works
OSP	Offshore Substation Platform
PAR	Precision Approach Radar
PEXA	Practice and Exercise Areas
PSR	Primary Surveillance Radar
RRH	Remote Radar Head
RSPB	Royal Society for the Protection of Birds
STW	Scottish Territorial Waters
TCE	The Crown Estate



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