Muir Mhòr Offshore Wind Farm

Habitats Regulations Appraisal: Derogation Case

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Glossary

Term	Definition
Array Area	The area in which the generation infrastructure (including Wind Turbine Generators and associated foundations and inter-array cables), Offshore Electrical Platform(s), and an interconnector cable will be located.
Baseline	The status of the environment at the time of assessment without the development in place.
Benthic Ecology	Benthic ecology encompasses the study of the organisms living in and on the sea floor, the interactions between them and impacts on the surrounding environment.
Design Envelope	A description of the range of possible elements that make up the Proposed Development's design options under construction, as set out in detail in the project description. This envelope is used to define the Proposed Development for Environmental Impact Assessment (EIA) purposes when the exact engineering parameters are not yet known. This is often referred to as the "Rochdale Envelope" approach.
Developer	Muir Mhòr Offshore Wind Farm Limited
E2	The ScotWind Plan Option Area within the Proposed Development is located.
Effect	Term used to express the consequence of an impact. The significance of an effect is determined by correlating the magnitude of an impact with the sensitivity of a receptor, in accordance with defined significance criteria.
Floating Foundations	The floating structures on which the Wind Turbine Generators are installed.
Foundation anchors	The structures which anchor the Floating Foundations to the seabed, connected to the foundation mooring.
Foundation mooring	The mooring structures which connect the Floating Foundations to the anchors.
Habitats Regulations Appraisal	A statutory process by which planned projects must be assessed before a formal decision to proceed can be made. It involves the assessment of potential impacts on designated habitats and species as determined by the Habitats Regulations.
Impact	An impact to the receiving environment is defined as any change to its baseline condition, either adverse or beneficial.
Inter-array cables	Cables which link the Wind Turbines Generators to each other and the Offshore Electrical Platform(s).
Interconnector cable	Cable which links the Offshore Electrical Platform(s) to one another, allowing for power to be transferred between the platforms.
Intertidal	The intertidal zone, sometimes referred to as the littoral zone, is the area where the marine and terrestrial environments meet between the tide's highest and lowest points. Intertidal ecology encompasses the substrate found in that zone, as well as the flora and fauna there.
Landfall	The area between Mean High-Water Springs (MHWS) and Mean Low Water Springs (MLWS) where the offshore export cables are brought onshore.
Offshore Electrical Platform (OEP)	Offshore platform consisting of High Voltage Alternating Current (HVAC) equipment, details depending on the final electrical set up of the Project.
Offshore Export Cable Corridor (ECC)	The area within which the offshore export cables will be installed.
Offshore export cables	The subsea electricity cable circuits running from the Offshore Electrical Platform(s) to the landfall which will transmit the electricity generated by the offshore wind farm to the onshore export cables for transmission onwards to the onshore substation and the national electrical transmission system along with auxiliary cables such as fibre optic cables.

Term	Definition
Offshore transmission infrastructure	The proposed transmission infrastructure comprising: Offshore Electrical Platform(s) and associated foundations and substructures; the interconnector cable, the offshore export cables; and the landfall area up to Mean High Water Springs (MHWS).
Project	Muir Mhòr Offshore Wind Farm – comprises the wind farm and all associated offshore and onshore components.
Proposed Development	The offshore Muir Mhòr Offshore Wind Farm project elements to which this Offshore EIA Report relates.
Receptor	A distinct part of the environment on which effects could occur and can be the subject of specific assessments. Examples of receptors include species (or groups) of animals or plants, people (often categorised further such as 'residential' or those using areas for amenity or recreation), watercourses etc.
Subtidal	The region of shallow waters which are below the level of low tide.
Transboundary Impacts	Transboundary effects arise when impacts from the development within one European Economic Area state affects the environment of another European Economic Area state(s).
Transition Joint Bays (TJBs)	The offshore and onshore cable circuits are jointed on the landward side of the sea defences/beach in Transition Joint Bays (TJBs). The TJBs are underground chambers constructed of reinforced concrete which provides a secure and stable environment for the cable. The TJBs have the potential to extend 1.5m above ground level.
Trenched technique	Trenching is a construction excavation technique that involves digging a narrow trench in the ground for the installation, maintenance, or inspection of pipelines, conduits, or cables.
Wind Turbine Generator (WTG)	The wind turbines that generate electricity consisting of tubular towers and blades attached to a nacelle housing mechanical and electrical generating equipment.
Worst Case Design Scenario	The maximum design parameters of the combined project assets that result in the greatest potential for change in relation to each impact assessed.

Acronyms

Term	Definition
AA	Appropriate Assessment
BEIS	Department for Business Energy and Industrial Strategy (now the Department for Energy Security and Net Zero)
CAT	Climate Action Tracker
CCC	Climate Change Committee
CES	Crown Estate Scotland
DESNZ	Department for Energy Security and Net Zero (formerly the Department for Business Energy and Industrial Strategy)
DTA	David Tyldesley & Associates
EC	European Commission
ECC	Export Cable Corridor
EEZ	Exclusive Economic Zone
EIA	Environmental Impact Assessment
EIAR	Environmental Impact Assessment Report
ESO	Electricity System Operator
EU	European Union
GHG	Greenhouse Gas
GVA	Gross Value Added
HAT	Highest Astronomical Tide
HM	His Majesty
HRA	Habitat Regulations Appraisal
INNS	Invasive Non-Native Species
IPCC	Inter-Governmental Panel on Climate Change
IROPI	Imperative Reasons of Overriding Public Interest
JNCC	Joint Nature Conservation Committee
JV	Joint Venture
LAT	Lowest Astronomical Tide
LSE	Likely Significant Effect
MCAA	Marine and Coastal Access Act
MN 2000	Managing Natura 2000
MSL	Mean Sea Level
NSN	National Site Network
OEP	Offshore Electrical Platform
OWF	Offshore Wind Farm
RIAA	Report to Inform Appropriate Assessment
SAC	Special Area of Conservation
SMP	Sectoral Marine Plan
SPA	Special Protection Area
SSC	Suspended Sediment Concentration
TCE	The Crown Estate
UN	United Nations
WTG	Wind Turbine Generator

1. INTRODUCTION

1.1. BACKGROUND TO THE PROPOSED DEVELOPMENT

1.1.1. As part of the Crown Estate Scotland (CES) ScotWind Leasing process in January 2022, Muir Mhòr Offshore Wind Farm Limited (a joint venture (JV) between Fred. Olsen Seawind Limited and Vattenfall Wind Power Limited.) (hereafter 'the Developer') were identified as the successful bidder and awarded an Option Agreement (granting exclusive rights) for what the Developer has named the Muir Mhòr Offshore Wind Farm (OWF) (hereafter 'the Project'), located within the E2 Plan Option area.

1.1.2. The Muir Mhòr Array Area covers an area of approximately 200 km^2 and is located approximately 63 km east of Peterhead on the east coast of Scotland. The Project is anticipated to have a capacity of approximately 1 GW comprising floating offshore wind technology.

1.1.3. The Project is comprised of both the offshore and onshore infrastructure required to generate and transmit electricity from the Muir Mhòr Array Area to the National Grid. The subject of this derogation case is the offshore infrastructure only (hereafter 'the Proposed Development'). The offshore infrastructure of the Proposed Development includes Wind Turbine Generators (WTGs) and associated floating foundations, the Offshore Electrical Platform(s) (OEP(s)), and associated foundations, the inter-array cables, interconnector cable, offshore export cables and landfall. The Array Area is located wholly in the United Kingdom (UK) Exclusive Economic Zone (EEZ), and the offshore export cable corridor (ECC) is located within the EEZ and then into Scottish Territorial Waters to landfall.

1.1.4. The Developer therefore intends to apply for the relevant consents and permissions required to enable construction, Operation and Maintenance (O&M) and decommissioning of the Proposed Development. The consents, licences and permissions which will be sought by the Developer for the Proposed Development include:

- A Section 36 consent under the Electricity Act 1989;
- A Marine Licence under the Marine and Coastal Access Act (MCAA) 2009 for the generating assets of the Proposed Development which are located beyond 12nm limit within the EEZ; and
- A Marine Licence under the Marine (Scotland) Act 2010 for the offshore transmission infrastructure, which is within 12nm of the coast, and under the MCAA for the offshore transmission infrastructure located beyond the 12nm limit within the EEZ.

1.1.5. This document has been drafted as the Report to Inform Appropriate Assessment (RIAA) for the Proposed Development (Muir Mhòr Offshore Wind Farm Limited, 2024) concluded that there is the potential for an Adverse Effect on Integrity (AEoSI) on the National Site Network (see Section 2.2). The derogation case demonstrates the need for the Proposed Development in the context of the identified potential AEoSI, the absence of alternative solutions, the Imperative Reasons of Overriding Public Interest (IROPI) in the Proposed Development proceeding, as well as presenting the compensatory measures to be secured. The derogation case provides the necessary information to enable the Scottish Ministers to grant consent, notwithstanding the risk of AEoSI identified, and demonstrates to the Scottish Ministers the importance of the Proposed Development, and how the benefits outweigh the potential adverse effects that it may have.

1.2. SUMMARY OF THE PROPOSED DEVELOPMENT

1.2.1. The infrastructure of the Proposed Development includes WTG and associated floating foundations, the OEP(s) and associated foundations, the inter-array cables, interconnector cable, and offshore export cables. The relevant aspects of the offshore design envelope for the Proposed Development are provided in Table 1-1.

Table 1-1 Offshore design envelope for the Proposed Development

Design Parameter	Worst Case Design Scenario
Number of WTGs	67
Number of blades	3
Axis	Horizontal
Rotor diameter	300 m
Spacing between WTGs	1000 m
Blade tip hight (to Mean Sea Level (MSL))	340 m
Blade tip clearance (to MSL)	30 m
Hub height (to MSL)	195 m
WTG Foundation Types considered	• Semi-submersible steel; • Concrete; • Barge; • Tension leg platform; • Multi-tower semi-submersible; and • Buoy.
Number of export cable circuits	3
Export cable system voltage	275 kV
Total length of export cables	270 km (90 km per cable)
Total length of inter-array cables	250 km
Inter-array cable voltage	132 kV
Number of OEP(s)	Up to 2
Total length of interconnector cable	3 km
OEP topside length	60 m
OEP topside width	50 m
OEP topside height (above Highest Astronomical Tide (HAT) excluding crane antennas and helideck)	60 m
OEP topside height (above HAT including crane antennas and helideck)	80 m
OEP foundation types	• Jacket with pin piles; and • Jacket with suction caissons.

1.3. STRUCTURE OF THIS DOCUMENT

1.3.1. This document is set out following the guidance for the derogation provisions of the Habitats Regulations Appraisal (HRA) process (as set out in Section 2.1). The overall structure for the document is as follows:

- Section 1: Introduction – Providing a background to the Proposed Development, including its purpose, where supporting information can be found, and an overview of consultation undertaken;
- Section 2: Legal Framework and Guidance – Setting out the legislation underpinning the HRA process, as well as the specific guidance for derogations in Scotland and the examples set by other projects;
- Section 3: The Need for the Proposed Development – Establishing why the Proposed Development is required in the context of environmental and socio-economic factors;
- Section 4: No Alternative Solutions – Demonstrating that there are no feasible alternative solutions to the Proposed Development;
- Section 5: Imperative Reasons of Overriding Public Interest – Identifying the relevant residual adverse effects of the Proposed Development and evidencing the public benefits of the Proposed Development which are sufficient to override the harm which may be caused;
- Section 6: Compensatory Measures – Presenting the need for compensatory measures to be considered;
- Section 7: Derogation Case Conclusions – Summarising the assessment undertaken to conclude the Developer's position relating to the derogation case which is that the Scottish Ministers would have sufficient information before them to grant consent, notwithstanding the conclusion of risk of AEoSI in the RIAA; and
- Section 8: References – The full references for all literature/ data used to throughout the derogation case.

1.4. SUPPORTING INFORMATION

1.4.1. There are several other documents which supplement the understanding of this report, including several chapters from the Environmental Impact Assessment Report (EIAR, Volumes 1-4). Some of the key aspects of the supporting documents are repeated here for ease of understanding, however for conciseness, many references to supporting documents are used throughout. The supporting documents are as follows:

- Volume 1, Chapter 3 (Project Description);
- Volume 1, Chapter 4 (Site Selection and Consideration of Alternatives);
- Volume 2, Chapter 17 (Socio-economics, Tourism and Recreation);
- RIAA (Muir Mhòr Offshore Wind Farm Limited, 2024); and
- Compensation Documents (Derogation Case: Appendix A – G).

2. LEGAL FRAMEWORK AND GUIDANCE

2.1. THE HABITATS REGULATIONS

2.1.1. The Habitats Directive (92/43/EEC) on the conservation of natural habitats and of wild fauna and flora (the 'Habitats Directive') and the Birds Directive (2009/157/EC), were adopted in 1992 and 1979 respectively and led to the establishment of designated European sites (including European offshore marine sites) for conservation purposes. These came in the form of Special Areas of Conservation (SACs), designated under the Habitats Directive to promote the protection of flora, fauna and habitats, and Special Protection Areas (SPAs), designated under the Birds Directive to protect rare, vulnerable and migratory birds. SACs and SPAs combined to create a network of protected sites, which became known as the Natura 2000 Network.

2.1.2. The following regulations apply the Habitats Directive in the UK:

- The Conservation (Natural Habitats, &c.) Regulations 1994 (the Habitats Regulations 1994), which apply in Scotland and its territorial waters;
- The Conservation of Habitats and Species Regulations 2017 (the Habitats Regulations 2017), which apply in terrestrial areas of the UK and territorial waters out to 12 nautical miles (nm) (excluding Scotland) and also apply to applications for Section 36 consents (including in Scotland and Scottish territorial and offshore waters); and
- The Conservation of Offshore Marine Habitats and Species Regulations 2017 (the Offshore Habitats Regulations 2017) which apply in UK waters beyond 12 nm (including Scottish offshore waters).

2.1.3. Throughout this Derogation Case, the Habitat Regulations 1994, Habitat Regulations 2017, Offshore Habitat Regulations 2017 are referred to collectively as the Habitats Regulations. There is no material difference between the provisions of the different sets of Habitats Regulations which is relevant to this Derogation Case, and together they protect a network of designated sites within the UK referred to as the national site network (NSN). Each of these sites is designated for specific features, those that were protected under either Annex I or Annex II of the Habitats Directive for habitats and species respectively.

2.1.4. The Habitats Regulations set the process of assessing designated sites, which is referred to in Scotland as a HRA and is accepted to be a three-stage process as follows:

- Stage 1: Determination of no potential for Likely Significant Effect (LSE);
- Stage 2: Appropriate assessment (AA); and
- Stage 3: The derogation provisions.

2.1.5. Stage 1 of the HRA process is recorded in an HRA Screening Report, and Stage 2 is recorded within the RIAA, while this document presents Stage 3. It is worth noting that under the Habitats Regulations, the types of designated sites considered are SACs, candidate SACs (cSACs), SPAs, potential SPAs (pSPAs), and Sites of Community Importance (SCIs). Ramsar sites (as designated under the Ramsar Convention) are also afforded the same protection as sites within the NSN by Scottish Government policy (Policy 4 of the 4th National Planning Framework (NPF4), Scottish Government, 2023d).

OVERVIEW OF HRA STAGES 1 – 2: SCREENING AND APPROPRIATE ASSESSMENT

2.1.6. The first two stages of the HRA process in Scotland are designed to identify the potential for likely significant effects of the Proposed Development on the NSN. The final determination of the effects on the NSN is made by the relevant 'competent authority'', which for Section 36 Consent and Marine Licence applications, is the Scottish Ministers. However, the Developer has an obligation to provide information to the Scottish Ministers so that they are able to effectively carry out the AA.

2.1.7. It is stated within the Habitats Regulations (regulation 63 of the Habitats Regulations 2017) that:

'63. -(1) A competent authority, before deciding to undertake, or give any consent, permission or other authorisation for, a plan or project which—

(a)is likely to have a significant effect on a European site or a European offshore marine site (either alone or in combination with other plans or projects), and

(b)is not directly connected with or necessary to the management of that site,

must make an appropriate assessment of the implications of the plan or project for that site in view of that site's conservation objectives.'

2.1.8. Screening for LSE, as required by regulation 63(1)(a), is Stage 1 of the HRA process, where a screening exercise is undertaken, ultimately produces a screening report. This report determines where there is potential or LSE on designated sites and features, and states where a potential for LSE from the Proposed Development cannot be excluded. This screening exercise in turn informs the assessment within Stage 2 as undertaken by both the Developer and the competent authority.

2.1.9. Stage 2 of the process involves an assessment of the identified LSEs, to determine if there will be an AEoSI at a designated site from the Proposed Development. This assessment is presented within a RIAA and provided to the competent authority to inform their assessment.

2.1.10. If the assessment in Stage 2 enables the competent authority to conclude beyond reasonable scientific doubt that there is no AEoSI on any designated site (both within the NSN and transboundary sites), consent can be awarded. However, if an AEoSI is identified, then Stage 3 (the derogation process) must be undertaken to a satisfactory level in order for consent to be awarded.

OVERVIEW OF HRA STAGE 3: DEROGATION PROVISIONS

2.1.11. As described above, where Stage 2 concludes an AEoSI, the derogation process must be undertaken as Stage 3 of the HRA process. Regulation 64 of the Habitats Regulations (2017) states the derogation process as follows:

'64.—(1) If the competent authority is satisfied that, there being no alternative solutions, the plan or project must be carried out for imperative reasons of overriding public interest (which, subject to paragraph (2), may be of a social or economic nature), it may agree to the plan or project notwithstanding a negative assessment of the implications for the European site or the European offshore marine site (as the case may be).

(2) Where the site concerned hosts a priority natural habitat type or a priority species, the reasons referred to in paragraph (1) must be either—

(a)reasons relating to human health, public safety or beneficial consequences of primary importance to the environment; or

(b)any other reasons which the competent authority, having due regard to the opinion of the appropriate authority, considers to be imperative reasons of overriding public interest.'

2.1.12. Following this guidance, Stage 3 is broken up into several key tests, namely demonstrating that there are no alternative solutions (Section 4), and that there are IROPI (Section 5). If these tests are met, and it is considered that the Proposed Development should proceed with AEoSI, any necessary compensatory measures must be developed for the affected site and species to offset the potential impacts of the Proposed Development (Section 1).

2.1.13. If both of the tests are met and compensatory measures can be secured and satisfactory to the competent authority, then the Proposed Development may proceed.

2.2. HRA PROCESS TO DATE AND THE DEVELOPER'S POSITION ON AEOSI

2.2.1. Stage 1 and 2 of the HRA for the Proposed Development are presented within the HRA Screening Report and the RIAA respectively.

2.2.2. Pending the Scottish Ministers AA conclusions, this derogation case is presented for the NSN sites and species where the Developer's RIAA concludes that either an AEoSI cannot be ruled out; or no AEoSI is concluded but it is considered there is a risk that Scottish Ministers may disagree with these conclusions. In the latter case, the derogation case is therefore presented "without prejudice" to the Developer's conclusions.

2.2.3. For the following sites and species, the Developer's RIAA concludes that an AEoSI cannot be ruled out and therefore the Developer accepts that a derogation case is likely to be required:

- Buchan Ness to Collieston Coast SPA – Kittiwake (*Rissa tridactyla*);
- East Caithness Cliffs SPA – Kittiwake;
- Fowlsheugh SPA – Kittiwake;
- Troup, Pennan and Lion's Heads SPA – Kittiwake; and
- Forth Islands SPA – Kittiwake.

2.2.4. However, for the following sites and species the Developer's RIAA concludes no AEoSI, however a derogation case is provided for on a "without prejudice" basis, if Scottish Ministers were to disagree with these conclusions:

- Buchan Ness to Collieston Coast SPA – Guillemot (*Uria aalge*);
- Forth Islands SPA – Puffin (*Fratercula arctica*); and
- Forth Islands SPA – Gannet (*Morus bassanus*).

2.3. HRA DEROGATIONS GUIDANCE AND PRECEDENT GUIDANCE

2.3.1. A variety of Scottish, UK and European guidance documents have been followed to draft this derogation case. Given the basis of the Habitats Regulations within the EU Habitats Directive, European guidance is still considered of relevance where it does not contradict Scottish or UK guidance.

2.3.2. Relevant Scottish guidance referenced for this derogation case includes (presented in publication order):

- Scottish Natural Heritage (SNH) (2010) – Natura Casework Guidance: How to consider proposals affecting SACs and SPAs in Scotland. The essential quick guide;
- David Tyldesly Associates (DTA) (2015) – Habitats regulations appraisal of plans: Guidance for plan-making bodies in Scotland;
- Scottish Government (2015) – Scotland's National Marine Plan: A Single Framework for Managing Our Seas;
- Scottish Government (2020b) – Policy paper 'EU Exit: The Habitats Regulations in Scotland';
- CMS Scotland (2021) – Habitats Regulations Appraisal (HRA) Derogations for Offshore Wind Projects in Scotland – Legal Framework for Decisions
- DTA (2021a, in draft) – Policy guidance document on demonstrating the absence of Alternative Solutions and imperative reasons for overriding public interest under the Habitats Regulations for Marine Scotland;
- DTA (2021b) – Framework to Evaluate Ornithological Compensatory Measures for Offshore Wind. Process Guidance Note for Developers. Advice to Marine Scotland;
- Scottish Government, 2023a – Scotland's Draft Energy Strategy and Just Transition Plan: Ministerial statement; and
- Marine Directorate (2024) – Marine Licensing and consenting: Habitats Regulations Appraisal.

2.3.3. Relevant UK guidance includes (presented in publication order):

- Department for Environment, Food and Rural Affairs (Defra, 2012) – Habitats Directive: guidance on the application of article 6(4);
- Defra (2021a) – Policy paper 'Changes to the Habitats Regulations 2017;
- Defra (2021b) – Draft best practice guidance for developing compensatory measures in relation to Marine Protected Areas;
- Defra (2024) - Consultation on policies to inform updated guidance for Marine Protected Area assessments;
- DTA (2021c) – The Habitats Regulations Assessment Handbook;
- Department for Energy Security and Net Zero (DESNZ, 2022) – British Energy Security Strategy; and
- DESNZ, 2022 – Net Zero Strategy: Build Back Greener.

2.3.4. Relevant EU guidance includes (presented in publication order):

- EC (2018) – Managing Natura 2000 Sites (MN 2000): The provisions of Article 6 of the Habitats Directive 92/43/EEC;
- EC (2021a) – Guidance document on wind energy developments and EU nature legislation; and
- EC (2021b) – Methodological guidance on the provisions of Article 6(3) and (4) of the Habitats Directive 92/43/EEC and Annex (the EC Methodological Guidance).

PLANNING PRECEDENT

2.3.5. To date, four OWF derogation cases have been submitted to the Scottish Ministers, for the West of Orkney, Berwick Bank, Green Volt, and Ossian projects. At the time of writing, Green Volt is the only one of these to have achieved consent. It is worth noting that the derogation cases submitted for both West of Orkney and Green Volt projects were all approached on a 'without prejudice' basis (where it was concluded no AEoSI on all European sites, including offshore marine sites, within the respective RIAAs), whereas the Berwick Bank and Ossian RIAAs concluded AEoSI on several SPAs therefore requiring Stage 3 of the HRA process.

2.3.6. Green Volt was the most recent Scottish project from the above to be awarded consent in 2024 following the AA by the Scottish Ministers, with the Minister's disagreeing on the 'without prejudice' nature of the derogation case, however ultimately determining that the project did not have any alternative solutions, IROPI are sufficient for the project, and adequate compensation was designed and securable. In addition, the Developer has also considered the approach used on several UK OWFs which have received consent on the basis of a derogation case. These are, in chronological order of consent award, as follows:

- Hornsea Three OWF (consented 2020; Department for Business, Energy & Industrial Strategy (BEIS), 2020a);
- Norfolk Boreas OWF (consented 2021; BEIS, 2021);
- Norfolk Vanguard OWF (consented 2022; BEIS, 2022a);
- East Anglia ONE North OWF (consented 2022; BEIS, 2022b);
- East Anglia TWO OWF (consented 2022; BEIS, 2022c);
- Hornsea Four OWF (consented 2023; DESNZ, 2023); and
- Sherringham Shoal and Dudgeon OWF Extension Project (consented 2024; DESNZ, 2024).

3. THE NEED FOR THE PROPOSED DEVELOPMENT

3.1. OVERVIEW

3.1.1. Given the conclusions of the potential for AEoSI on the NSN, and in order to demonstrate why the Proposed Development should proceed, it is important to understand the need for the Proposed Development and why it is so important. It is considered that the need can be broken down into several key areas informed by Scottish policy and guidance, as follows:

- Climate change, net zero and decarbonisation: demonstrating the importance of the various legally-binding climate change and net zero targets;
- Security of supply: assessing the importance of reducing our dependency on imported energy; and
- Affordability of supply: ensuring that consumers can receive energy at as low of a cost as possible.

3.2. CLIMATE CHANGE, NET ZERO AND DECARBONISATION

THE CLIMATE EMERGENCY

3.2.1. Climate change is the largest threat to both humanity and the natural environment, on a global scale. Climate change is not a recent phenomenon, with international summits and agreements being held and established for several decades. These are organised by the United Nations (UN). The first piece of legally binding international policy reflecting the climate change emergency was The Paris Agreement, as adopted in 2015 by 196 UN Member States, including the UK and, therefore, Scotland.

3.2.2. The Member States signed up to the Paris Agreement agreed to the following:

- A long-term goal of keeping the increase in global average temperature to well below 2°C above pre-industrial levels;
- An aim to limit the increase to 1.5°C since this would significantly reduce risks and the impacts of climate change;
- The need for global Greenhouse Gas (GHG) emissions to peak as soon as possible; and
- Undertake rapid reductions thereafter in accordance with the best scientific guidance available.

3.2.3. Given the significance of this agreement, all subsequent Scottish and UK policies and legislation relating to the mitigation of climate change is based on The Paris Agreement.

3.2.4. As of the 6th Assessment Report (AR6) published by the Inter-Governmental Panel on Climate Change (IPCC), published in parts between August 2021 and March 2023, human-induced warming has already resulted in a 1ºC increase when compared to pre-industrial levels. The key messages from AR6 include the following:

- Without urgent and large-scale reductions in GHG, limiting warming close to 1.5°C or even 2°C will be unattainable;
- Any delay in concerted global action will result in the loss of a ‘liveable’ future;

- Global GHG emissions must peak before 2025 and be reduced by 43% bfuture.in order to limit warming to around 1.5°C; and
- Major changes in the energy sector are required to lead this reduction, primarily a reduction in fossil fuel usage, widespread electrification, improved energy efficiency and the adoption of alternative fuels.

3.2.5. The main conclusion of the AR6 report is that there is a chance humanity can combat climate change in the timescale required, however as of the time of the report, it was increasingly unlikely. A rapid and immediate change to non-fossil fuel energy sources is considered the best way to counter climate change within the timescales required.

NET ZERO

3.2.6. The urgency of climate action has been recognised on a national level as well as international, with the Scottish Government officially declaring a 'Climate Emergency' in April 2019 (Scottish Government, 2019). Net Zero is considered to be the only way of achieving long-term survivability against climate change.

3.2.7. The legal obligations to achieve Net Zero for Scotland and the UK have been further enforced through additional legislation, namely:

- Climate Change (Scotland) Act 2009, as amended by the Climate Change (Emissions Reduction Targets) (Scotland) Act 2019); and
- The Climate Change Act 2008, as amended by the Climate Change Act 2008 (2050 Target Amendment) Order 2019.

3.2.8. The targets for Net Zero are set to 2045 and 2050 in Scotland and the UK respectively. Additional interim targets are also in place, including a 75% reduction target by 2030 and 90% by 2040 within Scotland. However, the Climate Change Committee (CCC) concluded in 2024, that the 2030 target of 75% emission reduction is no longer credible (CCC, 2024), and following this assessment the Scottish Government abandoned this target, solely focusing on the 2045 Net Zero target (Reuters, 2024).

3.2.9. Furthermore, the need for the Proposed Development is greater than just the established targets, as it is widely accepted that countries must go above and beyond their own national targets to try and counter climate change as quickly as possible, for the sake of the global population.

DECARBONISATION

3.2.10. Decarbonisation refers to the act of reducing the carbon footprint of energy use throughout Scotland and the UK. Reducing the amount of GHG produced will greatly help to minimise the warming effect caused by anthropogenic activities. It is considered that the only way to truly achieve Net Zero, is by urgently increasing the use of renewable energy and removing the release of GHG as a byproduct from other hydrocarbon-based energy sources.

3.2.11. However, given the nature of the large scale of the infrastructure required for renewable energy projects (nuclear power stations, OWFs, solar farms, etc.), it takes a significant amount of time to get for projects to be developed, often up to a decade for the full process from inception to generation. Therefore, it is considered that given the current and increasing significant threat of climate change and the 2045 Net Zero target in Scotland, there is an urgent need to develop as many operational renewable energy projects as possible, in as short a period of time as possible.

3.2.12. The scale of decarbonisation within Scotland is established through the draft Energy and Just Transition Plan (Scottish Government, 2023). This document sets out clear strategies, policy

positions and a route map of actions to provide focus towards government targets. There is a significant focus on the transition to Net Zero, including key considerations of affordability, community benefits and ownership for local communities. While this transition can be led by the Scottish Government, there are several key aspects that the UK Government is responsible for and action is required, including the following general points:

- Increasing support for households who rely on alternative fuels and struggle to pay current bills;
- Introducing a windfall tax on all companies benefiting from significant higher profits; and
- Maximising community benefits from renewable energy developments to encourage shared ownership.

3.2.13. Furthermore, the following points relate specifically to offshore wind energy:

- Improvements to the licensing and consenting system to allow an increased pace of development in Scottish waters; and
- A reform to the existing Environmental Impact Assessment (EIA) and HRA processes to reduce the time it takes for projects to achieve consent.

HOW DECARBONISATION HAS BEEN ACHIEVED TO DATE

3.2.14. GHG emissions within the UK had decreased by 52.7% in 2023 when compared to 1990 (Figure 3-1; DESNZ, 2024b). This change was driven by a reduction in gas demand from the electricity supply. GHG emissions from UK electricity generation fell by 19.6% (10.8 million tonnes of carbon dioxide equivalent (MtCO2e)) in 2023, primarily due to higher electricity imports from France, unlike 2022 when the UK had higher than usual exports, meaning less gas was needed to meet the electricity demand, which has also been continuously declining (DESNZ 2024a).

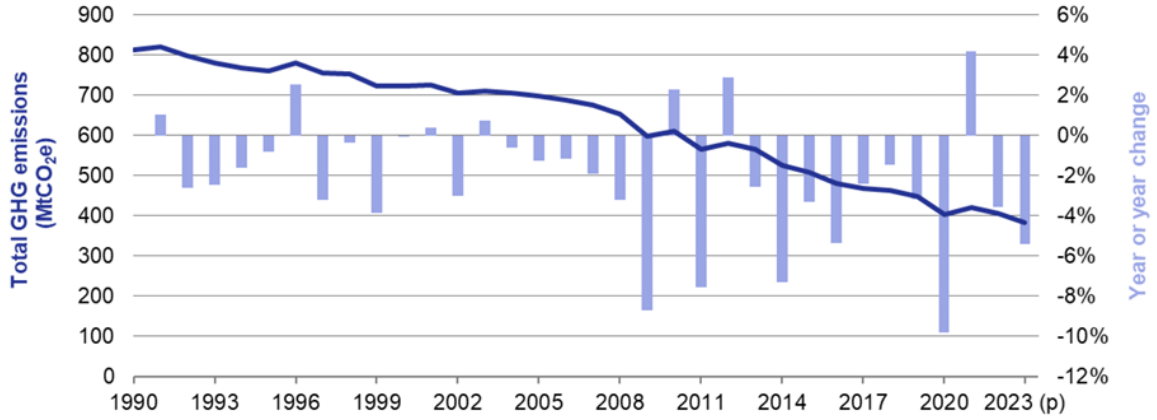

Figure 3-1 UK GHG emissions between 1990 and 2023 (DESNZ, 2024b)

3.2.15. The change is primarily caused by a reduction in the amount of power that has been produced from coal and gas-powered power stations, for example the Large Combustible Plant Directive (as updated in 2010 to Version 3, Department for Environment Food and Rural Affairs, 2010) was introduced to manage the emissions from large combustion plants to help minimise environmental damage and has led to a significant amount of decommissioning of older coal and gas plants throughout the UK. Scotland's last coal fuelled power station closed in 2016, alongside the 11.5 GW of coal fired power stations that were decommissioned between 2012 and 2015.

3.2.16. Other sectors also reduced emissions, with emissions from buildings and carbon generating products having fallen by 6.2% (5.1 MtCO2e) in 2016, with high energy prices likely to have

been a factor in reduced gas use for heating buildings. Industry sector emissions also fell by 8% (4.6 MtCO2e), largely due to reduced fuel consumption in the iron and steel industry.

3.2.17. There was also a 1.4% (1.6 MtCO2e) fall in greenhouse gas emissions from domestic transport. Compared to 2019, the most recent pre-pandemic (COVID-19) year, domestic transport emissions are down 11.1%. Domestic transport remains the largest source of emissions in the UK, accounting for 29.1% in 2023 (DESNZ, 2024b).

3.2.18. In addition to sectors reducing their GHG emissions through decreased gas use, the electricity supply from other sources has increased. In 2020, 97% of Scotland's gross electricity consumption was provided from renewables (Figure 3-2; Scottish Renewables, 2024).

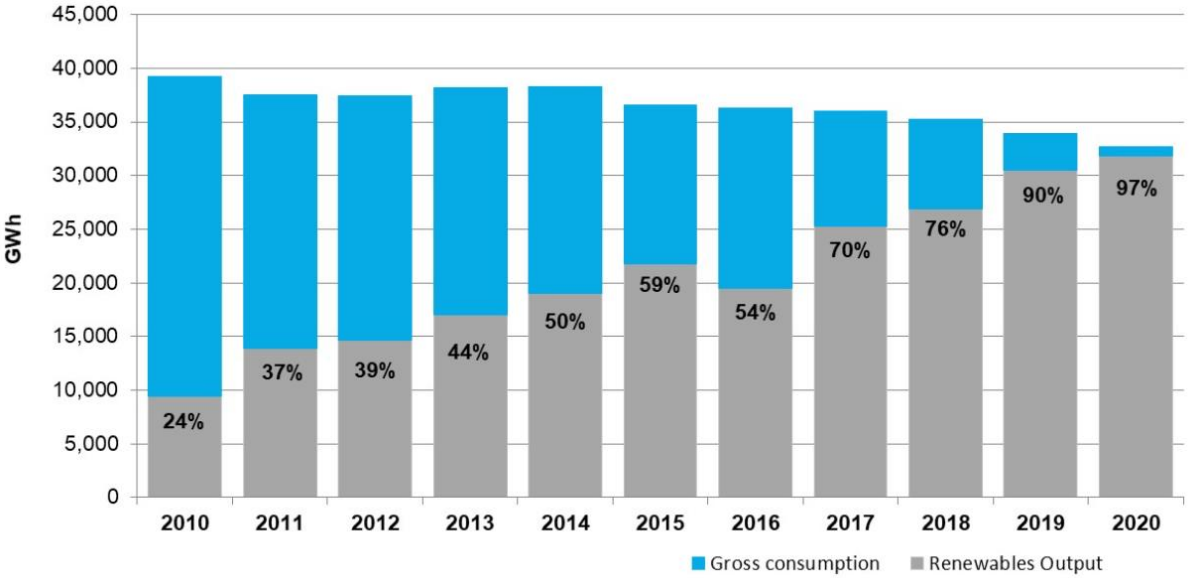

Figure 3-2 Scottish gross electricity consumption and percentage renewables output (Scottish Renewables, 2024)

3.2.19. The energy mix has changed significantly since 2010, with nuclear power, coal and gas dominating in 2010, with renewables dominating as of 2018, with nuclear power in a close second (Figure 3-3) (Scottish Renewables, 2024).

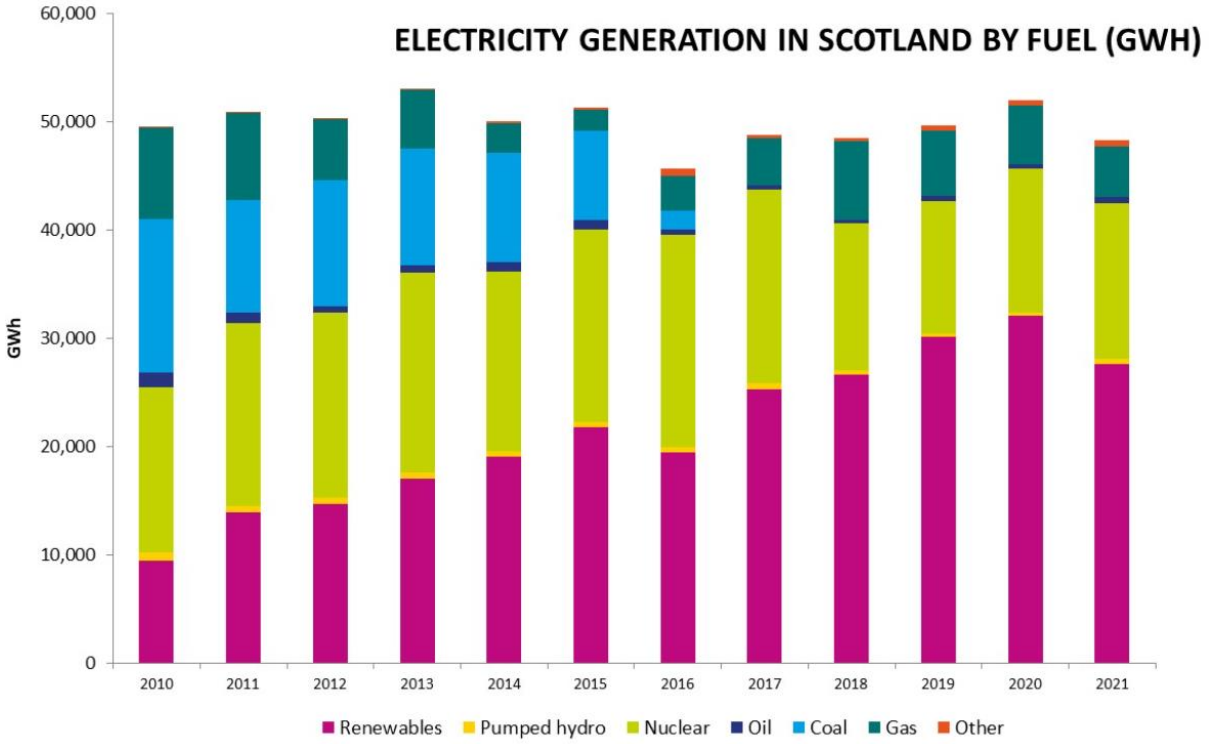

Figure 3-3 Electricity generation in Scotland by fuel (Gwh) (Scottish Renewables, 2024)

OFFSHORE WIND AND DECARBONISATION

3.2.20. Offshore wind is a critical and essential part of future renewable energy generation throughout the UK and Scotland. The need for electrification to achieve decarbonisation will only grow to meet Scotland's legislative Net Zero targets, and the need for growth is clear. Offshore wind is a proven low-carbon generation asset that can be deployed at scale and is anticipated to become a significant source of decarbonisation throughout Scotland and the UK.

3.2.21. The National Grid Electricity System Operator (NGESO) has produced reports on the predicted energy supply throughout the UK (NGESO, 2023) and all of the scenarios presented in that report that would enable the UK to meet Net Zero (all aside from the 'Falling Short scenario', where net zero emissions are not achieved by 2050) demonstrate a significant increase in renewables, and specifically offshore wind. With 39% of the UK's wind resource (Scottish Government, 2023e), Scotland is uniquely placed to provide a significant amount of the offshore wind generation capacity required to support future energy demand.

3.2.22. Whilst it is acknowledged that other technologies will be necessary to supplement the offshore wind capacity, including nuclear power, solar energy, tidal power, and hydrogen fuels, the commercial, technical and legal feasibility of these technologies suggest they are not reliable to be the basis of the UKs energy mix through to 2050. However, with the infrastructure that is already in place and the technological advancements within the field of offshore wind farms, it is considered that offshore wind farms such as the Proposed Development are the leading renewable energy source to achieve the UK and Scotland's legislative targets.

3.2.23. Therefore, it is considered that offshore wind developments should be prioritised and progressed with urgency to ensure the best possible future for Scotland and the UK with respect to decarbonisation and overall increases in energy supply.

FLOATING OFFSHORE WIND FARMS

3.2.24. Bottom-fixed foundations are currently the main technology used within offshore wind farms. However, they are limited in where they can be constructed as they require relatively shallow

waters for installation to be successfully undertaken. Floating offshore wind farms, however, can overcome this limitation and be deployed in deeper waters, providing more opportunities for development.

3.2.25. The UK government is aiming to be generating 60GW of offshore capacity by 2030, and this includes up to 5GW of floating wind. Floating wind will be key in accelerating the rate of decarbonisation throughout the UK and Scotland, as it allows access to a significantly greater amount of wind resource than would be unavailable if limited to shallow waters. This enables wider regions of seabed to be exploited, providing many advantages to different areas of Scotland, including additional areas within the ScotWind lease options. It is anticipated that floating offshore wind farms are going to be a key element in the future energy mix.

3.2.26. Many trials of floating projects have been undertaken, which demonstrates the potential of the technology. This includes Europe's first commercial floating OWF, Wind Float Atlantic, which was also developed by the Developer and to date has produced 159 GWh of electricity while increasing the potential areas available to offshore wind. It is considered that not only will the use of floating technologies will allow access to an increased quantity of available sites, but it will also increase the capacity of existing sites, as there are parts of the Plan Option areas which can be developed beyond the capacity which bottom-fixed turbines can provide.

3.2.27. The Offshore Renewable Energy Catapult anticipate that the first large-scale and commercially viable floating offshore project within the UK will be deployed around 2030 or potentially slightly sooner, which aligns with the timescales of the Proposed Development,

SCOTLAND'S ENERGY REQUIREMENTS

3.2.28. The UK has an exceptional amount of potential wind resource, and Scotland itself has 39% of the UK's wind resource capacity, and approximately 5% of European and 1% of global installed wind capacity (Scottish Government, 2023e). Therefore, it is considered that Scotland has an exceptional resource for an abundance of affordable electricity. Due to this significant volume, it is considered that capitalising on this resource would add a significant amount of energy to the system, therefore increasing the overall resilience and security of Scotland's energy supply.

3.2.29. Scotland's focus on renewable energy sources has the potential to increase Scotland's annual generation of electricity beyond its current and predicted usage, with it being anticipated to be more than double by 2030 and more than three times greater by 2045. The CCC state that to accomplish the doubling of supply using low-carbon sources, a total of around 15 GW of offshore wind will be required in Scotland, and around 75 GW will be required to triple supply by 2045.

3.2.30. The Scotwind leasing round, of which the Proposed Development is a part of, combined has proposed up to 27.6 GW of additional energy capacity, which doubles the operational renewable capacity as of Q1 2023. Figure 3-4 shows the predicted electricity generation capacity of Scotland in time for Net Zero (2045), and the significant expected contribution from renewable energy sources.

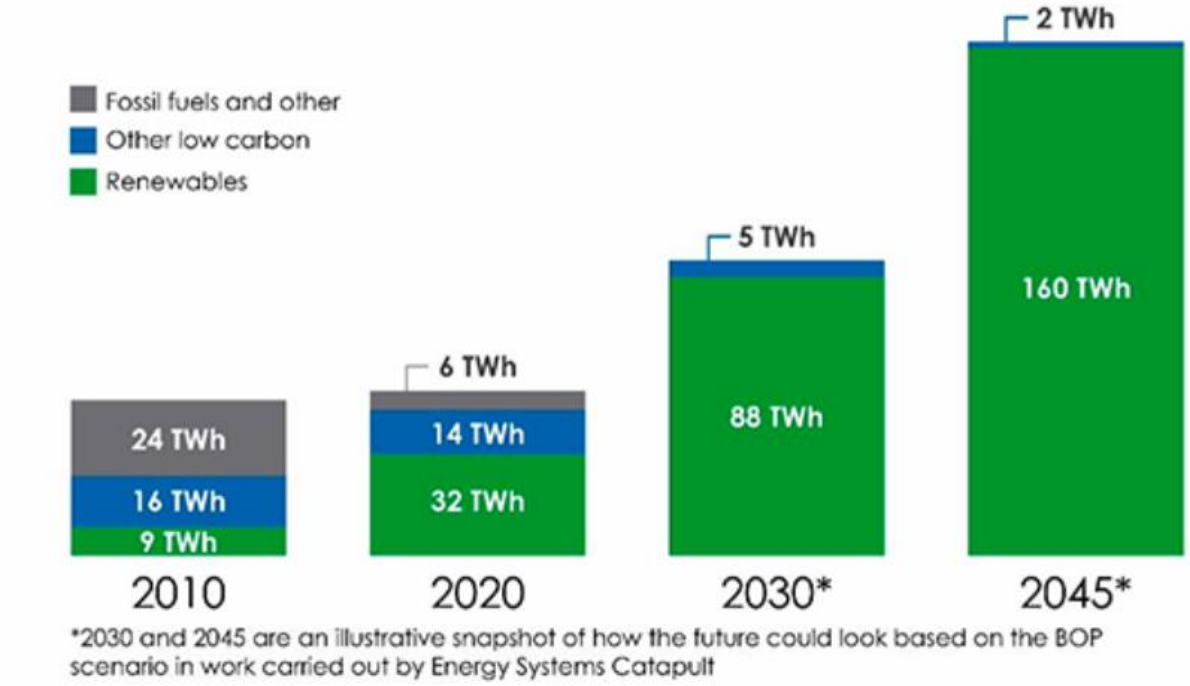

Figure 3-4 Predicted electricity generation capacity in Scotland (Scottish Government, 2023a).

3.2.31. The NGESO Future Energy Scenarios present different possible options for how the future energy supply will look for Scotland based on the demand, and any changes in government policies. However, they are not the only metric, and are not completely flawless themselves as they do not factor in consented capacity, only operational. Further, they do not discuss the capacity for delivery of supply from the various sources, as they only consider the functional and operational capacity within Scotland. However, even with those limitations, they provide a good understanding of the potential pathways leading to different outcomes regarding climate change and Net Zero.

3.2.32. The Future Energy Scenarios reports have consistently highlighted the need for increased capacity within the UK, and the more reports that are published, the more the need for offshore wind is emphasised. They have consistently reported that the amount of energy fed into the national grid from offshore wind farms is consistently high/ stable. This provides a strong evidence base to the reliability of offshore wind going forward, on top of evidencing the high reliability of large-scale offshore wind projects in the long-term.

3.2.33. Within the 2023 Future Energy Scenarios report, the UK will reach it's 2050 Net Zero targets in three of the four modelled scenarios, one scenario reaching Net Zero in 2046, and two in 2050. The report considers that moving away from fossil fuels is key to achieving the successful future scenarios, with offshore wind making up 24.6% of the capacity even in the failing scenario (Falling Short), and 29.2% in the most successful scenario (Leading the Way) (Figure 3-5).

3.2.34. It is also concluded that the UK's installed electrical generation capacity needs to reach between 156 and 209 GW by 2030 to meet the anticipated demand. Not only does the capacity need to increase, but 70% of it needs to be from the UK's own renewable/low-carbon sources to meet the UK's Net Zero targets. The NSEGO predicts that a further 7-9% will come from low-carbon imported sources, leaving between 9 and 17% of the required energy supply to be from traditional, high-carbon sources.

3.2.35. The National Infrastructure Commission also modelled scenarios for future energy capacities, where they estimate that 129 – 237GW of renewable capacity must be in operation by 2050,

including 54 – 86GW of offshore wind. These are like that of the Future Energy Scenarios report, as are the Energy System Catapult models stating that 165 – 285GW of capacity will be required in 2050, including 33 – 66GW of offshore wind.

3.2.36. Regardless of the scenario and how it has been modelled, there is a significant increase in offshore wind required in the immediate future, with it providing the majority of energy supply not just to Scotland, but to the whole UK by 2045/2050 to meet the Net Zero targets.

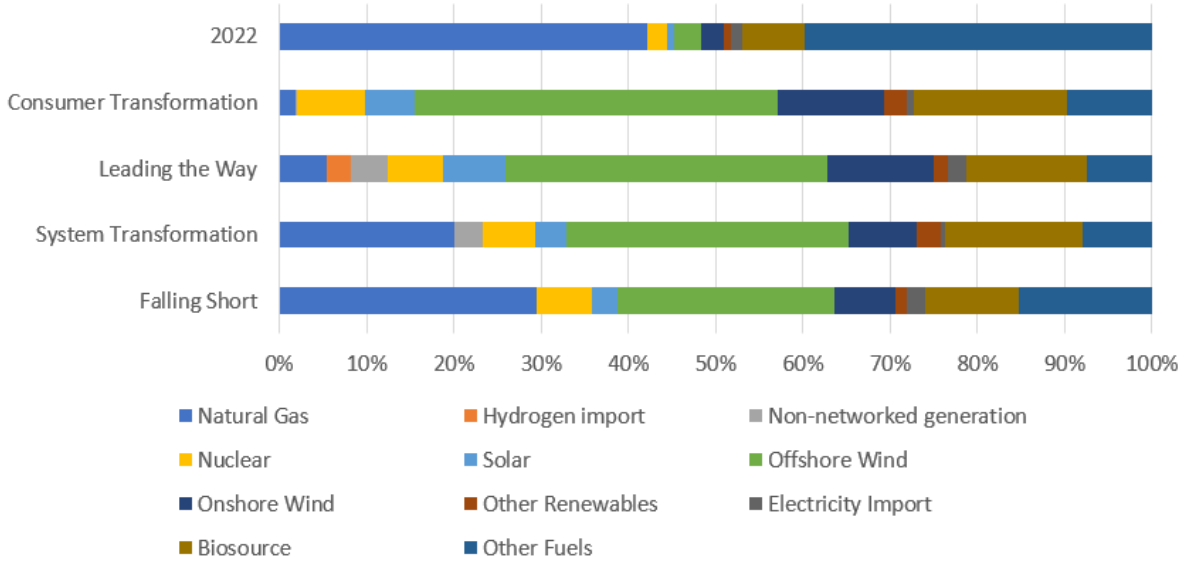

Figure 3-5 Generation sources for UK energy supply (adapted from NGESO, 2023).

THE ENERGY GAP

3.2.37. There is currently a gap between the decarbonisation policies in place, and the pathway required to limit warming to 1.5°C, as illustrated in Figure 3-6 (Climate Action Tracker, 2023). The current policies do not appear to be sufficient to meet the required targets and, although renewable energy projects are being deployed at scale, there is still no guarantee of achieving the established Net Zero targets. Furthermore, considering the global threat of climate change, it is considered that there is no upper limit to the amount of renewable energy projects that should be considered for Scotland, or the UK. It is also considered that all nations should contribute as much as they can to combatting the climate emergency regardless of individual nation policies.

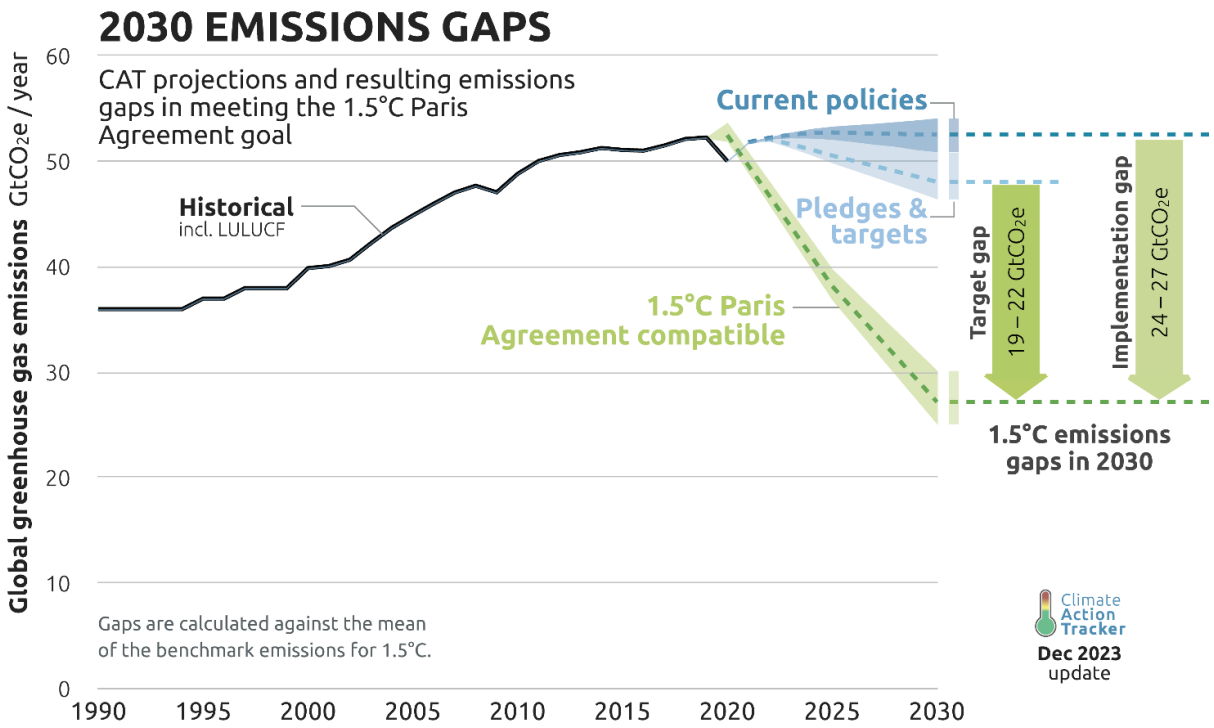

Figure 3-6 The Emission Gap between current policies and the Paris Agreement compliant targets (Climate Action Tracker, 2023)

THE NEED FOR ADDITIONAL OFFSHORE WIND DEVELOPMENT

3.2.38. The Crown Estate (TCE) and the CES have access to a significant amount of offshore seabed which has the potential for developments. Associated with this, comes a significant amount of offshore wind resource. Given the scale of climate change as a global threat, it is considered that as much of that resource as possible should be allocated for renewable energy usage.

3.2.39. There is a significant amount of Scottish and UK Government policy setting out the need for large scale offshore wind, including:

- A Blue Economy Vision for Scotland (Scottish government, 2022) – sets out the long term ambition for Scotland's blue economy, including the importance of offshore wind within the Scottish economy;
- British Energy Security Strategy (BESS, HM Government, 2022) – setting a target of 50 GW of offshore wind by 2030;
- Draft Energy Strategy and Just Transition (Scottish Government 2023a) - sets out a clear vision to capitalise on the opportunities that a net zero energy system offers the industry, the climate and local communities/ economies through just transition;
- Energy White Paper (DESNZ, 2020) – evidences the need for renewable energy and specifically offshore wind with respect to climate change and legislative targets; and
- National Grid Electricity System Operator (ESO): Future Energy Scenarios (National Grid ESO, 2023) requirement for 38 – 47 GW offshore wind in 2030, 68 – 83 GW in 2040, and 87 – 113 GW by 2050.
- National Planning Framework 4 (Scottish Government, 2023d) – setting out the strategic spatial strategy for Scotland through to 2045 and enforcing national planning policy particularly around increasing sustainable developments;
- National Policy Statement for renewable energy infrastructure (EN-3) DESNZ, 2024c) – detailing the consenting regime and constraints/impacts required for consenting

offshore wind farms under the Planning Act 2008 regime, but capable of being a material consideration outside of that regime;

- Net Zero Strategy for the UK (DESNZ, 2022) – Build Back Greener, setting a target that the UK's electricity will come from low carbon sources, including offshore wind by 2035;
- Offshore Wind Policy Statement (Scottish Government, 2020c) - targeting 11GW of offshore wind capacity by 2030;
- Overarching National Policy Statement for energy (EN-1) (DESNZ, 2024d) – where the UK government concluded that there is a critical national priority (CNP) for the provisional of nationally significant low carbon infrastructure (including offshore wind), capable of being a material consideration in the determination of projects outside of the Planning Act 2008 regime;
- Powering Up Britain (HM Government, 2023) – establishes a plan to enact the policies set out in the BESS, including the need for offshore renewable energy in light of Russia's illegal invasion of Ukraine;
- Scotland's Energy Strategy Position Statement (Scottish Government, 2021) – considers offshore wind as a key part of the Scottish Energy Strategy in the future, with particular respect given to offshore wind being a priority area for international engagement;
- Scotland's National Marine Plan (Scottish Government, 2015) - includes the objectives of developing more offshore wind, including contributing to the 2030 decarbonisation target of 50g CO2/kWh;
- Sectoral Marine Plan (SMP) for Offshore Wind Energy (Scottish Government, 2020a) - identifies 15 Plan Option areas split across 4 regions in Scottish waters, with a potential generation capacity of 10 GW of renewable energy; and
- UK Offshore Wind Sector Deal (BEIS, 2020b) – deepens the integration between the UK Government and the offshore wind industry, committing to support, guidance and financial systems.

3.2.40. It is clear through the wide range of policy regarding offshore wind developments that the deployment of further offshore wind will be an essential part of the energy mix going forward into 2030 and beyond.

3.2.41. Currently, the UK has 11.3 GW of operational wind developments, with a forecast of 19.5 GW by the mid-2020s. However, as shown in Figure 3-7, a significant increase in the amount of offshore wind is required to meet any of the modelled scenarios, even the 'Falling Short' model which still fails to meet the necessary targets. The target for 50 GW of offshore wind to be installed by 2030 is met only in the 'Leading the Way' scenario, including non-networked and networked wind. Therefore, it is considered the there is a significant need to develop offshore wind at scale as soon as possible to ensure that relevant targets are met.

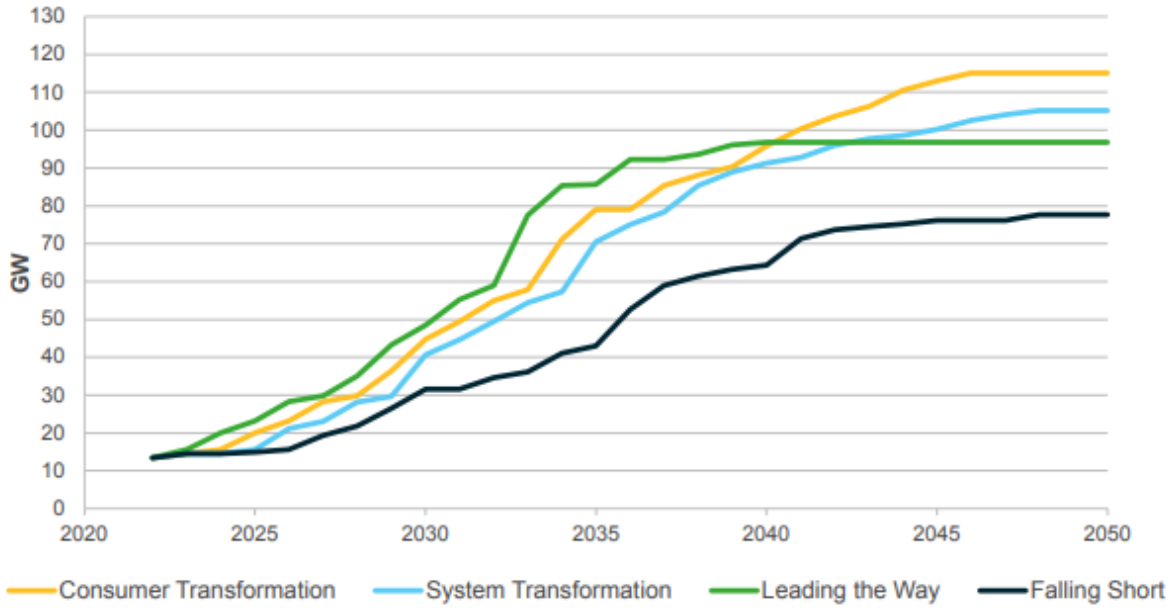

Figure 3-7 Offshore wind capacity in GW, excluding non-networked wind (National Grid ESO, 2023).

3.2.42. Additionally, it is worth noting that while many OWF projects are proposed, not all will be developed through to commercial operation, and several of those that do are likely to be at reduced capacities than initially proposed. Therefore, it is imperative that as many OWF projects are consented as possible, to ensure that Scotland and the UK has the best chance possible to meet relevant policy targets.

3.2.43. It is clear that a significant increase in offshore wind is required to decarbonise Scotland and the UK's energy supply, and it must be done with great urgency to achieve all the relevant targets, both international and national.

SECURITY OF SUPPLY

3.2.44. Energy security is an important issue for both the UK and Scotland, and it is considered essential for the health and safety for citizens, on top of increasing prosperity and commercial growth within the country. Energy security has become of much greater concern in the last few years due to both the Covid-19 pandemic and Russia's illegal invasion of Ukraine, which has resulted in a significant increase in the price of imported gas and coal (over 200% and 100% in 2021, respectively).

3.2.45. Given the nature of the UK Grid, it is considered that the energy sourced from Scottish Waters is shared among UK citizens, and vice versa. Therefore, while Scotland has its own decarbonisation and development targets, a wider UK context must be considered when assessing availability and security of energy.

3.2.46. The most imperative thing for energy security is ensuring that there is enough energy within the UK-wide system to cover the peak demand, including any unexpected increases in usage, with adequate additional energy to account for any losses in input (e.g., closure of a power station). While currently there is technology able to store the generated energy during times of low usage/ over-production so that it may be released when usage is higher than anticipated, with the increasing demand for energy across both the UK and Scotland, increases in the number of sources is key to improving the resilience of the system.

3.2.47. In addition to increasing the supply of energy, the type of energy is an important aspect to consider for security. Recent world events (e.g., Covid-19 pandemic and Russia's invasion of Ukraine) have demonstrated the significance of the UK's reliance on imported hydrocarbons specifically. Given the renewable energy resource within the UK, it is considered that the move

to renewable sources within the UK is urgent for climate change, decarbonisation, political stability and a reduction in dependence on foreign states.

3.2.48. With the above said, it is considered that having a diverse range of sources is imperative to energy security, with a variety of sources adding resilience to the system, therefore ensuring that if there is a loss of one source, there are enough alternatives to fill the gap. Given the current reliance on fossil fuels within the UK, it is considered that the increased development of alternative sources, including renewable energy, is key to increasing the diversity of UK supply. Given the resources available in Scotland and the UK, the infrastructure already in place and the ability to deploy at scale, it is considered that solar and wind will make up the majority of the renewable sources to be used to achieve Net Zero.

3.2.49. With offshore wind already established in Scotland connecting to an existing transmission system, increasing the amount of offshore wind is considered to be a logical step in reducing Scotland's reliance on imported sources. It is also working towards decarbonisation to achieve Net Zero, as early as possible compared to the rest of the UK and other nations.

AFFORABILITY OF SUPPLY

3.2.50. It is stated within the Offshore Wind Policy Statement (Scottish Government, 2020c) that:

'Offshore wind is one of the lowest cost forms of electricity generation at scale, offering cheap, green electricity for consumers, with latest projects capable of generating power at below wholesale electricity prices.'

3.2.51. It is therefore considered that increasing the supply of offshore wind energy will work to improve the affordability of supply for the citizens of Scotland and the wider UK. This is especially relevant in the current economic climate with the recent cost of living crisis, especially in relation to energy (e.g., increase in the price of imported gas and coal (over 200% and 100% in 2021 respectively).

3.2.52. The average cost of energy in the UK has increased significantly since 2013, costing approximately £73.34 per megawatt hour (MWh) in January 2024 compared to £42.96 per MWh in January 2013 (an increase of 70.7%). However, it is worth noting that the recent price is lower than the peak in August 2022, where the price was £363.71 per MWh (an increase of 746.6% from January 2013; Figure 3-8) (Statista Research Department, 2024).

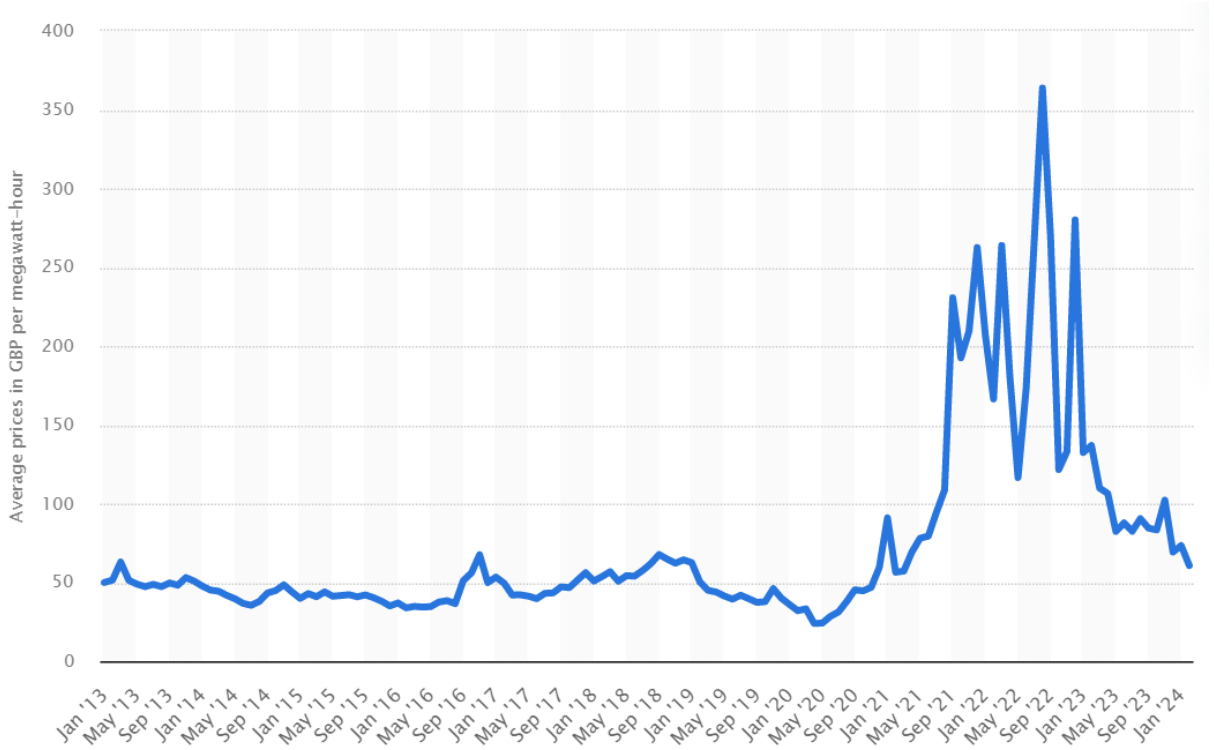

Figure 3-8 Average price of energy per megawatt-hour since January 2013 (Statista Research Department, 2024)

3.2.53. During the COVID-19 pandemic, the price of energy reached an all-time low of £24.01 per MWh in April 2020, a 44% decrease from January 2013 (Statista Research Department, 202430). This was due to a mix of a reduction in the need for fossil fuels and falling international gas prices. Furthermore, reduced generation costs meant that approximately £1.3 billion was saved in supply costs over Q2 2020 (Staffell *et al*., 2020).

3.2.54. However, in January 2021 prices began to rise again, reaching £90.94 per MWh, a 112% increase from January 2013. As a COVID-19 lockdown was still in place across the UK at this time it is considered that this increase was due to outages of conventional power plants rather than changes in demand (Matson and Gogna, 2021).

3.2.55. The large economic recovery in 2021 was responsible for the increasing price throughout 2021, with Russia's invasion of Ukraine causing a dramatic increase in energy prices across all of Europe, not just the UK, eventually reaching the peak in August 2022 as discussed above. Although it is worth nothing the high rates throughout 2022 rather than the August peak in isolation.

3.2.56. In 2023, the price began to fall and has resulted in a price of £60.69 per MWh in February 2024. While this is still a rise of 141% since January 2013, the current trend is a decreasing price per MWh for the consumer (Statista Research Department, 2024).

3.2.57. As established above, offshore wind is one of the cheapest available energy sources within the UK. Most commercial wind farms in the UK to date have been using traditional bottom-fixed monopiles; however, the Proposed Development is proposing to use floating turbines.

3.2.58. Floating turbines are anticipated to start at a higher cost than traditional bottom-fixed monopiles as are new to the commercial market; however, it is anticipated that the price will fall rapidly once commercial operation begins as each commercial deployment will reduce subsequent costs. This is because projects will be able to learn from bottom-fixed foundation projects and share in a lot of the resource heavy aspects of developments, including a more efficient turbine design from years of development, sharing operation and maintenance resources with existing projects, and utilising the same supply chain and existing skills within the region.

3.2.59. The risks are also much better understood for floating wind farms than they were for the beginning of bottom-fixed projects, as the knowledge and skills applied to those projects is transferable to the development of floating developments. Therefore, it is considered that the speed in which the price will fall will be considerably faster than for bottom-fixed foundations, increasing the rate that affordable energy can be supplied.

3.2.60. Scotland is considered to have a significant amount of seabed area available for exploitation, which makes the large-scale development of offshore wind an achievable way to increase the supply of low-cost energy.

3.2.61. Additionally, policy is already in place for OWFs to ensure that the price of energy produced is affordable for customers through the Contract for Difference (CfD) auction process for generation assets and the offshore transmission owner regime for transmission assets. These policies work to increase investment in the industry by ensuring good rates for the developer and in turn for the customer. Furthermore, as the offshore wind industry has continued to develop and technology improves, the efficiency of infrastructure (e.g., foundations, WTGs) has continued to increase, enabling the price per unit to decrease over time which results in a reduced cost to the consumer per unit of energy.

3.2.62. OWFs have also been proven to be affordable at scale for consumers, unlike other low-carbon projects (e.g., tidal or nuclear) which have not been developed to the same scale and are less technically and commercially feasible with more questions around their deliverability at the scale required. While any, and all, low-carbon-based projects will be essential to reach Scotland's decarbonisation targets, only offshore wind is considered established enough to produce a significant amount of affordable energy in the required short-term timescales.

ROLE AND NEED FOR THE PROPOSED DEVELOPMENT

3.2.63. Following the established need for renewable energy in the sections above, it is considered that there is an established need for the Proposed Development. The primary reasons evidencing this need are:

- The potential delivery of 2 GW of renewable energy, providing a substantial contribution to decarbonisation and Net Zero targets;
- Decarbonisation is urgent, with as much renewable energy as possible required to mitigate climate change. The Proposed Development will not only contribute to the ambitious 2045 target, but begin to counter climate change by offsetting millions of tonnes of CO2 every year;
- The loss of potential energy generation by not progressing the Proposed Development would need to be produced from other renewable sources, of which options are limited. It is considered that all potential renewable energy sources are required to combat climate change;
- Energy security is more important than ever, and a diversity of supply is essential to avoid repeating the recent impacts of the Covid-19 pandemic and Russia's illegal invasion of Ukraine;
- The Proposed Development will contribute to the Just Transition away from non-renewable energy sources, particularly relevant to those who rely on the fossil fuel industry within the Northeast of Scotland;
- The Proposed Development is considerably advanced compared to other Plan Option areas within Scotland enabling the delivery of low cost, low carbon energy sooner than other projects (further supporting the Just Transition);

- The Proposed Development may incorporate relatively novel technologies in floating WTG foundations, therefore driving the development of a local Scottish supply chain in a way that some other Plan Options are not; and
- The use of floating technologies allows for the optimisation of the available resource within the NE4 Plan Option area, increasing the contribution to combatting global climate change, increasing decarbonisation and energy security.

3.2.64. For the above reasons, the Proposed Development is therefore considered to be vital to the Scotland's energy supply through the 2030's and beyond. If the Proposed Development is not undertaken, then not only would the Scottish decarbonisation targets (primarily the 2045 target) potentially be more challenging or failed to be met, but Scotland would struggle to deliver the outputs as per the SMP for Offshore Wind Energy (Scottish Government, 2020a), Scottish Energy Strategy (Scottish Government, 2017), UK Net Zero Strategy (DESNZ, 2022) and UK Offshore Wind Sector Deal (BEIS, 2020b), as well as the targets set by the Climate Change (Scotland) Act 2009, Climate Change (Emissions Reduction Targets) (Scotland) Act 2019, and the (UK) Climate Change Act 2008 (as amended).

4. NO ALTERNATIVE SOLUTIONS

4.1. OVERVIEW

4.1.1. This section demonstrates the absence of alternative solutions to the Proposed Development, as required within the derogation provisions, by identifying and assessing whether potential alternatives are feasible. As there is no prescribed process within the Habitats Regulations, and an absence of guidance from the Scottish government, the methodology and approach to demonstrating the absence of alternatives is guided by the appropriate European guidance where possible and previous OWF projects that have submitted derogation cases in both the UK and Scotland. The relevant guidance documents for the alternatives test are:

- Managing Natura 2000 Sites: The provisions of Article 6(3) of the 'Habitats' Directive 92/43/EEC (2000) published by the EC in 2000 but updated in November 2018 (MN 2000);
- EC Methodological Guidance: Assessment of plans and projects significantly affecting Natura 2000 sites (the Methodological Guidance);
- Guidance document on Article 6(4) of the 'Habitats Directive' 92/43/EEC (Article 6(4) Guidance); and
- Habitats Regulations Appraisal (HRA) Derogations for Offshore Wind Projects in Scotland - Legal Framework for Decisions (CMS, 2021).

4.1.2. Several key documents within the EIAR support the assessment of alternatives, with reference made throughout. The key documents are:

- Volume 4, Appendix 9 (Offshore Planning Statement);
- Volume 1, Chapter 3 (Project Description); and
- Volume 1, Chapter 4 (Site Selection and Consideration of Alternatives).

4.1. APPROACH TO DEMONSTRATING THE ABSENCE OF ALTERNATIVE SOLUTIONS

INTRODUCTION

4.1.1. Based on the guidance documents established above, the assessment of alternatives is presented using the following three step process:

- Step 1: Identification and characterisation of the core Project objectives;
- Step 2: Identification of any feasible alternative solutions; and
- Step 3: Comparative assessment of any feasible alternative solutions.

APPROACH TO STEP 1

4.1.2. It is considered that for an alternative to be considered feasible, it must achieve the same purpose and aim of the Proposed Development, as defined by the Project's objectives. Therefore, the objectives must be established at an early stage of the process. The assessment of alternatives must determine if is possible to achieve the same outcome with reduced impacts, which in the context of the derogation provisions, a feasible alternative

solution is therefore defined as one which meets the same objectives while being less damaging to the NSN when compared to the original proposal.

4.1.3. This approach has also been endorsed by the English High Court in Spurrier, which commented as follows:

'Even by itself, the noun 'alternative' carries the ordinary, Oxford English Dictionary meaning of 'a thing available in place of another', which begs the question what are the relevant objectives or purposes which an alternative would need to serve. However, article 6(4) does not refer simply to the absence of an 'alternative' but to an 'alternative solution', 'alternative' appearing as an adjective, which makes this meaning plain beyond any doubt. In our view, 'an alternative' must necessarily be directed at identified objectives or purposes; but it is beyond doubt that 'an alternative solution' must be so aimed.'

4.1.4. Defra (2012) also states that an alternative solution must have the same objectives, and also setting a precedent for the exclusion of consideration of alternative project types, which in the context of this derogation case would be the consideration of alternative energy sources:

'For example, in considering alternative solutions to an offshore wind renewable energy development the competent authority need only consider alternative offshore wind renewable energy developments. Alternative forms of energy generation are not alternative solutions to this project as they are beyond the scope of its objective. Similarly, alternative solutions to a port development will be limited to other ways of delivering port capacity, and not other options for importing freight.'

4.1.5. This is reaffirmed in Defra (2021b) guidance;

'Examples of alternatives that may not meet the original objective include a proposal that…offers nuclear instead of offshore wind energy',

4.1.6. and MN 2000 which states;

"it is for the competent national authorities to ensure that all feasible alternative solutions that meet the plan/project aims have been explored to the same level of detail. This assessment should be made against the species and habitats for which the site has been designated and the site's conservation objectives."

4.1.7. The core objectives are therefore imperative to understanding the scope of alternatives, and they must be understood in the context of relevant policy and need which the Proposed Development serves (Section 3). It is noted that a similar approach has been followed in other Scottish and UK HRA derogation cases for OWF projects.

APPROACH TO STEP 2

4.1.8. Once the core objectives of the Project are established, the established guidance requires that all feasible alternatives are assessed (Step 3). However, it does not require the assessment of alternatives without any practical feasibility, and therefore the identification of realistically feasible measures must be undertaken in advance of the assessment and forms Step 2 of the process.

4.1.9. As detailed in paragraphs 4.1.4 and 4.1.5, guidance clarifies that alternative energy generation sources do not count as alternative solutions, a precedent which has been applied throughout other derogation cases for OWF throughout Scotland and the UK. Following this, alternative sources of energy generation are not considered appropriate to the Proposed Development.

APPROACH TO STEP 3

4.1.10. Once the alternatives are identified, each proposed alternative must be assessed to determine whether it is a feasible alternative with respect to the original proposal. For an alternative to be considered as an option, the assessment must determine that the alternative meets all of the original Project objectives, is feasible and has a reduced impact on the NSN (CMS, 2021).

4.1.11. An alternative's overall feasibility can be determined through three categories: financial, legal and technical. Financial feasibility means that the proposed alternative can be more expensive than the original proposal, but not prohibitively so, the alternative solution must still be economically viable for the developer otherwise it is not feasible. Legal feasibility means that there are no legal impediments to the potential alternative proceeding. Technical feasibility refers to the ability to implement the alternative through proven means, without relying on untested or unsafe technologies and/or methods that do not meet industry safety and regulatory requirements (CMS, 2021).

4.1.12. Where feasible alternatives are identified within this step, they must then be assessed with respect to their potential impact on the UK's NSN as a whole, in addition to the specific site and feature(s) for which potential AEoSI was concluded for the Proposed Development. It is worth noting that an alternative solution with an impact less than the original proposal does not result in a failure of the alternatives test (i.e. it does not automatically mean an alternative solution exists) as it is considered that there must be a significant material reduction in impact for it to be considered as an effective alternative solution (CMS, 2021).

4.2. STEP 1 – IDENTIFICATION AND CHARACTERISATION OF THE CORE PROJECT OBJECTIVES

4.2.1. Following the process established by guidance, the core Project objectives have been determined and are presented within Table 4-1. Each objective is considered to address different aspects of the need case as identified within Section 3.

Table 4-1 The core objectives of the Project

Objective		Basis of the Objective
1	To generate low carbon renewable energy from offshore wind to support both UK and Scottish Government targets and commitments for renewable energy generation, offshore wind generation and decarbonisation	• Urgent decarbonisation is required in order to combat climate change and meet decarbonisation targets, including achieving Net Zero by 2045. • A significant amount of renewable energy is required in order to meet these targets, of which the Proposed Development will contribute
2	To increase energy security and stability in the UK and reduce reliance on international sources of supply	• Energy security is very important to public safety, and with recent events including the Covid-19 pandemic and Russian invasion of Ukraine, the UK's reliance on imported fossil fuels has been made clear. • Increasing the renewable capacity within the UK will reduce the reliance on imported sources and therefore increase the UK's security with respect to both quantity and cost of energy
3	To maximise renewable energy generation in Scottish waters within the 2030s	• There is limited seabed suitable to current technologies, and therefore a limited generation capacity within Scotland. • Following decarbonisation targets and the threat of climate change, maximising the volume of generation is of great significance
4	To lower electricity costs for the consumer in Scotland	• Imported fossil fuels have increased in end cost for the consumer following recent events (Covid-19 and Russia's invasion of Ukraine) • Increasing UK energy sources will reduce the impact of external price fluctuations and reduce the end cost for the consumer • Low carbon renewable energy will help with the energy transition away from fossil fuels.
5	To develop a Scottish supply chain for offshore wind and other renewable energy sources	• Infrastructure must be developed for the construction and maintenance of the Proposed Development, which will result in an increased economic investment in the region
6	To provide short and long term socio-economic benefits to local communities in Scotland	• The Proposed Development will bring investment to the local areas around the site (particularly the landfall location) resulting in increased jobs, investment, tourism and socio-economic benefits in local communities

4.3. STEP 2 – IDENTIFICATION OF ANY FEASIBLE ALTERNATIVE SOLUTIONS

SCOPE OF ALTERNATIVES CONSIDERED

4.3.1. As prescribed in the guidance, there are several primary alternative solutions including a 'do nothing' scenario, alternative locations, alternative project designs and methodologies. Each of these alternatives are introduced below and assessed within Section 4.4.

THE 'DO NOTHING' SCENARIO

4.3.2. The first alternative that can be considered is not progressing with the Proposed Development at all which is referred to as the 'do nothing' scenario. While it is generally not considered to be a true alternative, it is still a consideration given the pre-requisite for derogations being that there is an adverse effect on the NSN, and therefore not progressing the Proposed Development could be a better option than progressing with a potential for AEoSI. It is noted that the need for the Proposed Development (Section 3) dictates that offshore renewable projects are imperative for public health and safety, however the 'do nothing' scenario is still considered on a precautionary basis. The 'do nothing' scenario is assessed against the core objectives of the Proposed Development, following other previous OWF examples.

ALTERNATIVE ARRAY AREA LOCATIONS

4.3.3. Given that the nature of potential effects on the NSN is primarily a factor of proximity, it is important that alternative locations for the Proposed Development are considered. Due to the different technical and legal challenges associated with different locations and for ease of the assessment, the assessment of alternative locations is split into three groups; locations outside the UK, locations within the UK but outside Scottish waters, and locations within Scottish waters.

ALTERNATIVE DESIGN SOLUTIONS FOR THE PROPOSED DEVELOPMENT

4.3.4. Once alternative locations have been discounted as an alternative, it is important to consider the potential impacts that altering the design of the Proposed Development could have. Throughout the evolution of the Proposed Development, several alternative designs have been considered to accommodate for technical and environmental constraints, ultimately reaching the current project design (see Volume 1, Chapter 3 (Project Description)). Some of the key design parameters to consider when assessing alternatives include:

- The size of the developable area;
- The overall number of WTGs;
- The type of WTGs;
- The minimum tip height; and
- The size of the rotors/swept area.

4.4. STEP 3 - COMPARATIVE ASSESSMENT OF POTENTIAL ALTERNATIVE SOLUTIONS

THE 'DO NOTHING' SCENARIO

4.4.1. As this scenario would result in not progressing the Proposed Development, and without the Proposed Development a significant volume of offshore wind generation capacity would be lost within Scottish waters, failing to meet Project objectives 1, 2, 3, and 4. Furthermore, there would be no investment in the development of a Scottish supply chain which would not lead to local socio-economic benefits, failing to meet objectives 5 and 6. Therefore, it is considered that none of the Project objectives would be met and the 'do nothing' scenario can be discounted as an alternative solution.

4.4.2. The assessment of the 'do nothing' scenario is summarised within Table 4-2.

Table 4-2 The assessment of the 'do nothing' scenario in relation to the Project objectives and feasibility

Alternative Solution	Does it meet the Project objectives?						Is it financially feasible?	Is it legally feasible?	Is it technically feasible?	Conclusion
	Objective 1: To generate low carbon renewable energy from offshore wind to support both UK and Scottish Government targets and commitments for renewable energy generation, offshore wind generation and decarbonisation	**Objective 2: To increase energy security and stability in the UK and reduce reliance on international sources of supply**	**Objective 3: To maximise renewable energy generation in Scottish waters within the 2030s**	**Objective 4: To lower electricity costs for the consumer in Scotland**	**Objective 5: To develop a Scottish supply chain for offshore wind and other renewable energy sources**	**Objective 6: To provide short- and long-term socio-economic benefits to local communities in Scotland**				
'Do nothing' scenario	No – would not contribute towards decarbonisation targets	No – would not contribute to increasing energy security	No – would not generate any renewable energy in Scottish waters	No – would not contribute to changing energy costs, potential increase in cost due to reliance on non-renewable sources	No – would not develop the Scottish supply chain	No – would not provide any socio-economic benefits	Yes	Yes	Yes	The 'do nothing' scenario does not meet any of the Project objectives and therefore is not considered a feasible alternative.

ALTERNATIVE ARRAY AREA LOCATIONS

LOCATIONS OUTSIDE THE UK

4.4.3. Alternative development locations outside of the UK would result in a loss of energy generation within UK and Scottish waters, failing to meet objectives 1 and 3. Furthermore, other countries will also have their own decarbonisation targets through various legal policies (e.g., the Paris Agreement) and, therefore, countries with territories outside the UK Renewable Energy Zone (REZ) will require the available space to maximise their own renewable energy resource and meet their own legal obligations.

4.4.4. With the Proposed Development outside of the UK, there would be no increase in energy security, no reduction in costs to Scottish consumers, no development of a Scottish supply chain, and no socio-economic benefits to Scottish communities, therefore failing to meet objectives 2, 4, 5 and 6. Furthermore, it is considered that an alternative site that is outside of a CES leasing zone as identified through the SMP is not legally feasible for the Proposed Development.

4.4.5. Therefore, it is considered that none of the Project objectives would be met, and it is not legally feasible, alternative locations outside of the UK can be discounted as an Alternative solution.

4.4.6. The assessment of locations outside of the UK is summarised within Table 4-2.

LOCATIONS WITHIN THE UK BUT OUTSIDE OF SCOTTISH WATERS

4.4.7. Alternative development locations within the UK but outside of Scottish waters would result in a loss of generation capacity within Scotland (failing objectives 1, and 3), while failing to reduce costs for Scottish consumers (failing objective 4), not developing a local Scottish supply chain (failing objective 5), and not providing socio-economic benefits to Scottish communities (objective 6).

4.4.8. Furthermore, TCE and CES are ultimately responsible for the rights to lease and exploit the seabed within the UK, including the awarding of sites for OWF developments, undertaken in leasing rounds. Following guidance (e.g. CMS, 2021), it is determined that the only alternative locations that can be considered are those subject to leasing by the CES, through the Scotwind leasing round. The ScotWind leasing round (determined by the SMP for Offshore Wind Energy (Scottish Government, 2020c)), identified 15 Plan Option areas, of which the Developer has legally secured development rights to one area. As this area is within Scottish waters, it is considered that anywhere outside of the Plan Option area (including outside of Scottish waters) is not a legally feasible alternative.

4.4.9. Therefore, it is considered that the majority of the Project objectives would be met, and it is not legally feasible, alternative locations within the UK but outside of Scottish waters can be discounted as an Alternative solution.

4.4.10. The assessment of locations within the UK but outside of Scottish waters is summarised within Table 4-3.

LOCATIONS WITHIN SCOTTISH WATERS

4.4.11. As described above, guidance dictates that the only alternative locations that can be considered are those subject to leasing by the CES, through the ScotWind leasing round or INTOG. Of these 15 Plan Option Areas in ScotWind in addition to the INTOG sites, the Developer has secured development rights to one site. Any other area within Scottish Waters, is not considered legally accessible to the Developer and cannot be considered as an

alternative. The purpose of the remaining ScotWind and INTOG projects is to provide additional capacity towards Scottish and UK renewables and offshore wind targets, likely with an attrition rate which must be a factor in considering the availability of alternative solutions. In the case of INTOG, the objective is to demonstrate innovation and decarbonise the oil and gas sector. Substantially more offshore wind capacity is required in Scotland to meet the net zero target and thus project objective 1, with other ScotWind and INTOG projects not presenting alternative solutions to the Proposed Development. Given the wide foraging ranges of qualifying species of SPAs in Scotland, it is also considered that all ScotWind and INTOG leasing areas will have connectivity with the NSN and thus the potential to contribute to an AEoSI. Any future seabed leasing in Scotland is also currently purely speculative and can be discounted.

4.4.12. Therefore, it is considered that while an alternative location within Scotland *may* contribute to the Project objectives, each of these projects under development in Scotland is required (particularly given project attrition rates) and they are not alternatives to each other. Any future unspecified projects in Scotland are purely speculative and cannot constitute an alternative solution. As such, this alternative is not legally feasible and thus alternative locations within Scottish waters can be discounted as an Alternative solution.

4.4.13. The assessment of locations within Scottish waters is summarised within Table 4-3.

Table 4-3 The assessment of alternative Array Area locations in relation to the Project objectives and feasibility

Alternative Solution	Does it meet the Project objectives?						Is it financially feasible?	Is it legally feasible?	Is it technically feasible?	Conclusion
	Objective 1: To generate low carbon renewable energy from offshore wind to support both UK and Scottish Government targets and commitments for renewable energy generation, offshore wind generation and decarbonisation	**Objective 2: To increase energy security and stability in the UK and reduce reliance on international sources of supply**	**Objective 3: To maximise renewable energy generation in Scottish waters within the 2030s**	**Objective 4: To lower electricity costs for the consumer in Scotland**	**Objective 5: To develop a Scottish supply chain for offshore wind and other renewable energy sources**	**Objective 6: To provide short- and long-term socio-economic benefits to local communities in Scotland**				
Locations outside of the UK	No – would not contribute towards UK and Scottish decarbonisation targets	No – would not contribute to increasing energy security in the UK	No – would not generate any renewable energy in Scottish waters	No – would not reduce energy costs in Scotland	No – would not develop the Scottish supply chain	No – would not provide any socio-economic benefits for Scottish communities	Not assessed as not a feasible alternative	No	Not assessed as not a feasible alternative	Locations outside of the UK are not feasible alternatives as it does not meet any of the Project objectives and is it not legally feasible, and therefore is not considered a feasible alternative.
Locations within the UK but outside of Scottish waters	No – would not contribute towards Scottish decarbonisation targets	Yes – would contribute to increasing energy security in the UK	No – would not generate any renewable energy in Scottish waters	No – would not reduce energy costs in Scotland	No – would not develop the Scottish supply chain	No – would not provide any socio-economic benefits for Scottish communities	Not assessed as not a feasible alternative	No	Not assessed as not a feasible alternative	Locations within the UK but outside of Scottish waters are not feasible alternatives as it does not meet Project objectives 1, 3, 4, 5, or 6, and is it not legally feasible, and therefore is not considered a feasible alternative.
Locations within Scottish waters	Possibly – could contribute towards Scottish decarbonisation targets but all projects required to meet targets	Yes – would contribute to increasing energy security in the UK	No – would generate renewable energy in Scottish waters but would not maximise available seabed without the Proposed Development	Possibly – could reduce energy costs in Scotland depending on offtake solution (e.g. INTOG projects to decarbonise oil and gas sector)	Yes – could develop the Scottish supply chain	Yes – could provide socio-economic benefits for Scottish communities	Not assessed as not a feasible alternative	No	Not assessed as not a feasible alternative	While locations within Scottish waters may meet some of the Project objectives, they would not meet Project objective 3 as it would not maximise the available seabed for offshore wind generation in Scotland, is not legally feasible, and therefore is not considered a feasible alternative.

ALTERNATIVE DESIGN SOLUTIONS FOR THE PROPOSED DEVELOPMENT

4.4.14. A range of alternative designs have been considered to understand if they represent a feasible alternative solution for the Proposed Development which would lead to a reduction in impacts. Each of these are considered below in turn.

THE SIZE OF THE DEVELOPABLE AREA

4.4.15. The size of the developable area for the Proposed Development has been driven by a several key factors, initially by the ScotWind Leasing process where the E2 Plan Option was formally identified (Scottish Government, 2020a).

4.4.16. The Developer, on choosing to bid for the E2 Plan Option, undertook extensive desktop reviews of known existing constraints (such as existing infrastructure (subsea cables, wells, known (charted) wrecks, shipping lanes, exclusion zones), and geology, which combined let to the determination of the Proposed Development boundary.

4.4.17. Any reduction in the array areas limits the potential generating capacity of the Proposed Development, which impacts the financial feasibility of the site and limits the opportunity for the site to contribute to the UK and Scottish governments targets and the project objectives. Therefore, reducing the developable area is not considered a feasible alternative.

4.4.18. In terms of extending the developable area, it is considered that the developable area cannot be increased without exceeding the legally secured area and therefore expanding the developable area is not considered a feasible alternative.

4.4.19. In conclusion, modifying the size of the developable area would limit the volume of offshore wind generation capacity would be lost within Scottish waters, failing to meet Project objective 3, and reducing the effectiveness of all remaining Project objectives.

THE OVERALL NUMBER OF WTGS

4.4.20. A maximum of 67 WTGs are being considered for the Proposed Development. The number of turbines specified allows optimisation of the capacity that the Proposed Development can generate. Reducing the number of WTGs from this number is not considered to be commercially feasible.

4.4.21. Therefore, as it would fail to meet Project objective 3, and reduce the effectiveness of all remaining Project objectives, reducing the number of WTGs is discounted as a feasible alternative to the Proposed Development.

THE TYPE OF WTG FOUNDATIONS

4.4.22. The Proposed Development is based on floating WTGs rather than traditional fixed bottom foundations. The selection of floating WTGs for the Proposed Development is driven primarily by the environmental constraints of the E2 Plan Option Area, a key aspect being the water depth of the site, with deeper waters requiring floating foundations.

4.4.23. If fixed foundation turbines are selected for the Proposed Development, this may result in greater environmental impacts on other (non-ornithological) receptors compared to floating, as effects from for example underwater noise and suspended sediment would likely be higher due to the increased requirement for traditional piling methods and offshore installation activities. Additionally, the water depth would mean a significant cost increase for fixed foundations.

4.4.24. The Developer carried out a technological review of the different WTG concepts coming to market. This review considered site data, concept readiness, and complexity parameters, with a focus on local supply opportunities and risk limitation. This analysis was conducted in close collaboration with suppliers, resulting in floating technology being preferred. The local supply chain for delivery of floating foundations is seen as a vital part of the technical feasibility study and included a review of potential contributions from manufacturers in delivering components, competences, and services.

4.4.25. Floating turbines were found to have the following benefits over bottom fixed turbines from an installation perspective:

- Floating turbines can be fully assembled at suitable local Scottish ports. The areas have extensive local employment and supply chain from the Oil and Gas Industry and the assembly will support that transition away from fossil fuels;
- Foundation fabrication and anchoring point installation is taken off the critical path, increasing schedule flexibility;
- Reduction in overall offshore installation activity, benefiting safety, cost, and risk. Offshore heavy lifting equipment is a significant project cost, which is increased in the event of weather delay. If wind turbines are assembled and commissioned inshore, a significant reduction in weather, and therefore financial, risk can be achieved as well as providing safe working for the employees; and
- During O&M, the ability to tow turbines back to a port or harbour for repairs or major component exchange, eliminates the need for unscheduled offshore heavy lifting with weather downtime risk.

4.4.26. In conclusion, aside from potentially increasing the magnitude of potential effects on non-ornithological receptors, using alternative WTG foundations would increase project costs and reduce local supply chain and associated socio-economic benefits, failing to meet Project objective 4, and reducing the effectiveness of all remaining Project objectives.

MINIMUM BLADE TIP CLEARANCE

4.4.27. The minimum blade tip clearance (clearance between the rotor blades and sea surface) requirements are set by MGN 654 where a 22 m minimal air gap is mandated for safe navigation.

4.4.28. Due to the horizontal and vertical movements resulting from the pitch of floating foundations, minimum blade tip clearance can result in increased stress on the tower, and greater wear on the turbine generator within the nacelle. Increased turbine heights could result in reduced operational lifespans of WTGs and require additional design elements to stiffen the tower and floating foundation and associated mooring and anchors therefore impacting technical and commercial feasibility.

4.4.29. Having regard to these points, the Proposed Development WTG design has an air gap of 30 m. This height has been driven by the balance of collision risk of protected seabird species with turbines and engineering considerations relating to the operational lifespan of the WTGs, with the conclusion drawn that the ability to further increase the air gap above 30 m is currently not commercially feasible and would not result in any further material benefit to seabirds.

4.4.30. In conclusion, further modifying the minimum blade tip clearance would provide increased commercial and operational risks (including longevity of the OWF), therefore failing to meet Project objective 4 and reducing the effectiveness of all remaining Project objectives.

SIZE OF THE ROTORS/SWEPT AREA

4.4.31. Smaller rotors for the same number of turbines would result in a lower capacity project which would limit the ability of the Proposed Development to contribute to the various UK and Scottish targets or the project objectives. It is considered by the Developer that most capacity currently in planning will be required to achieve the decarbonisation targets.

4.4.32. Smaller rotors to achieve the same offshore wind farm capacity would require a greater number of turbines which would increase the magnitude of potential effects on ornithology receptors and would potentially require an increased wind farm site area, and therefore increase the ecological impact associated with the Proposed Development. Therefore, this is not considered a feasible alternative.

4.4.33. In conclusion, modifying the size of the rotors/ swept area would reduce the volume of offshore wind generation capacity within Scottish waters, failing to meet Project objective 4, and reducing the effectiveness of all remaining Project objectives.

Table 4-4 The assessment of alternative Project designs in relation to the Project objectives and feasibility

Alternative Solution	Does it meet the Project objectives?						Is it financially feasible?	Is it legally feasible?	Is it technically feasible?	Conclusion
	Objective 1: To generate low carbon renewable energy from offshore wind to support both UK and Scottish Government targets and commitments for renewable energy generation, offshore wind generation and decarbonisation	**Objective 2: To increase energy security and stability in the UK and reduce reliance on international sources of supply**	**Objective 3: Maximise generation capacity in Scottish waters within the 2030s**	**Objective 4: To lower electricity costs for the consumer in Scotland**	**Objective 5: To develop a Scottish supply chain for offshore wind and other renewable energy sources**	**Objective 6: To provide short and long term socio-economic benefits to local communities in Scotland**				
Reduce the size of the developable area and/ or the total number of WTGs	Partially – would contribute towards Scottish decarbonisation targets at a reduced rate compared to the current design and would reduce contribution to targets	Partially – would contribute to increasing energy security in the UK at a reduced rate compared to the current design	No – would not maximise renewable energy in Scottish waters as would reduce generating capacity of the Proposed Development	Partially – would reduce energy costs in Scotland at a reduced rate compared to the current design	Partially – would develop the Scottish supply chain at a reduced rate compared to the current design	Partially – would provide socio-economic benefits for Scottish communities at a reduced rate compared to the current design	No	Yes	Yes	Modifications to the size of the developable area does not meet all of the Project objectives as it would not maximise renewable energy generation in Scottish waters and therefore fail Project objective 3 and would reduce the effectiveness of all other objectives, and therefore is not considered a feasible alternative.
Change the type of WTG foundations to fixed foundations	Partially – could contribute towards Scottish decarbonisation targets although likely to be subject to serious technical constraints limiting capacity	Partially – could contribute to increasing energy security in the UK	Partially – could maximise renewable energy in Scottish waters although likely to be subject to serious technical constraints limiting capacity	No – would not reduce energy costs in Scotland as would materially increase the cost of the Proposed Development, increasing the cost of energy and is not considered financially feasible	Partially – could develop the Scottish supply chain although likely to be subject to serious technical constraints limiting capacity	Partially – could provide socio-economic benefits for Scottish communities although likely to be subject to serious technical constraints limiting capacity	No	Yes	No	Modifications to the type of WTGs is not financially or technically feasible, and therefore is not considered a feasible alternative.
Increase the minimum blade tip clearance	Yes – would contribute towards Scottish decarbonisation targets	Yes – would contribute to increasing energy security in the UK	Yes – would maximise renewable energy in Scottish waters	No – would not reduce energy costs in Scotland as would materially increase the cost of the Proposed Development increasing the cost of energy and is not considered financially	Yes – would develop the Scottish supply chain	Yes – would provide socio-economic benefits for Scottish communities	No	Yes	No	Modifications to the minimum blade tip clearance would increase the cost to the consumer and fail to meet project objective 4, is not commercially feasible and repersents significant technical constraints with limited benefit to seabirds, and therefore is not considered a feasible alternative.

Alternative Solution	Does it meet the Project objectives?						Is it financially feasible?	Is it legally feasible?	Is it technically feasible?	Conclusion
	Objective 1: To generate low carbon renewable energy from offshore wind to support both UK and Scottish Government targets and commitments for renewable energy generation, offshore wind generation and decarbonisation	**Objective 2: To increase energy security and stability in the UK and reduce reliance on international sources of supply**	**Objective 3: Maximise generation capacity in Scottish waters within the 2030s**	**Objective 4: To lower electricity costs for the consumer in Scotland**	**Objective 5: To develop a Scottish supply chain for offshore wind and other renewable energy sources**	**Objective 6: To provide short and long term socio-economic benefits to local communities in Scotland**				
				feasible						
Reduce the size of rotors/swept area	Partially – would contribute towards Scottish decarbonisation targets at a reduced rate compared to the current design and would reduce contribution to targets	Partially – would contribute to increasing energy security in the UK at a reduced rate compared to the current design	No – would not maximise renewable energy in Scottish waters as would reduce generating capacity of the Proposed Development	Partially – would reduce energy costs in Scotland at a reduced rate compared to the current desig	Yes – would develop the Scottish supply chain	Yes – would provide socio-economic benefits for Scottish communities	Yes	Yes	yes	Modifications to the size of rotors is not a feasible alternative as as it would not maximise renewable energy generation in Scottish waters and therefore fail Project objective 3 and would reduce the effectiveness of other objectives or result in an increase in ecological impacts and therefore is not considered a feasible alternative.

4.5. SUMMARY OF NO ALTERNATIVE SOLUTIONS

4.5.1. The evidence presented within this section objectively illustrates the absence of feasible alternative solutions to the Proposed Development. A comprehensive design process has been undertaken for the Proposed Development, which has continued to evolve until reaching the final design presented within this application.

4.5.2. The consideration of alternative solutions has been approached proportionately, in relation to the genuine Project objectives and need of the development. All potential alternatives (as advised by guidance) have been identified and assessed, with no feasible alternative solutions identified. A summary of the conclusions is presented within Table 4-5.

Table 4-5 Summary of potential alternative options discounted for the Proposed Development

Alternative solution	Summary of reasons why discounted
'Do nothing'	The 'do nothing' scenario does not fulfil the need of the Proposed Development as it fails to meet any of the Project objectives and therefore is not considered feasible.
Alternative locations outside of the UK	Locations outside of the UK are not feasible alternatives because they do not fulfil the need of the Proposed Development by failing to meet any of the Project objectives and not being legally feasible, and therefore is not a feasible solution considered feasible.
Alternative locations within the UK but outside of Scottish waters	Locations within the UK but outside of Scottish waters are not feasible alternatives as it does not meet Project objectives 1, 3, 4, 5, or 6, and is it not legally feasible, and therefore is not considered feasible.
Alternative locations within Scottish waters	While locations within Scottish waters may partially meet some of the Project objectives, they would fail Project objective 3 as they would not maximise available seabed, and are not legally feasible, and therefore are not considered an alternative.
Alternative designs	None of the alternative designs are considered feasible alternatives as either fail the project Objectives, result in increased ecological impacts, or are not technically or financially feasible for the Developer.

5. IMPERATIVE REASONS OF OVERRIDING PUBLIC INTEREST (IROPI)

5.1. APPROACH TO THE ASSESSMENT OF IROPI

OVERVIEW

5.1.1. This section of the document sets out a compelling case that the Proposed Development must be carried out for IROPI in view of its environmental, social and economic benefits, which are needed to achieve the various global, UK and Scottish Government climate change targets/legal commitments. This is validated within Regulation 64 of the Habitats Regulations 2017 where it states:

'64.—(1) If the competent authority is satisfied that, there being no alternative solutions, the plan or project must be carried out for imperative reasons of overriding public interest (which, subject to paragraph (2), may be of a social or economic nature), it may agree to the plan or project notwithstanding a negative assessment of the implications for the European site or the European offshore marine site (as the case may be).

(2) Where the site concerned hosts a priority natural habitat type or a priority species, the reasons referred to in paragraph (1) must be either—

(a)reasons relating to human health, public safety or beneficial consequences of primary importance to the environment; or

(b)any other reasons which the competent authority, having due regard to the opinion of the appropriate authority, considers to be imperative reasons of overriding public interest.'

5.1.2. The consideration of IROPI requires a balance between preserving the conservation objectives of designated sites and the UK's NSN as a whole based on the predicted adverse effects from the Proposed Development, and the benefits provided by the project. For the Proposed Development to be consented, the competent authority must be confident that the public benefits in the Proposed Development override any residual predicted adverse effects on the NSN.

RELEVANT EXAMPLES OF IROPI DECISIONS

5.1.3. As discussed in Section 2.3, the following projects have been awarded consent with derogation cases that have passed the IROPI test:

- Hornsea Three OWF;
- Norfolk Boreas OWF;
- Norfolk Vanguard OWF;
- East Anglia ONE North OWF;
- East Anglia TWO OWF;
- Hornsea Four OWF;
- Sherringham Shoal and Dudgeon OWF Extension Project; and
- Green Volt OWF.

5.1.4. In each of these cases, the Competent Authority (Secretary of State in the UK and Scottish Ministers in Scotland) considered that the IROPI were significant, and the public benefits outweighed the adverse impacts of the project.

CONTENT AND STRUCTURE

5.1.5. Relevant guidance (DTA, 2024) defines the key aspects of IROPI as follows:

- Step 1: Imperative Reasons – demonstrating how the plan or project is 'required' and that it is important that the plan or project proceeds;
- Step 2: Public Interest – illustrating the public benefit served by the plan or project in addition to the private interest;
- Step 3: Overriding – weighing the public interest against the potential impacts of the Proposed Development to ensure that they must demonstrably outweigh the potential harm to the site; and
- Step 4: Long-term interest – establishing the long-term nature of the plan or projects benefits.

5.2. STEP 1 – IMPERATIVE REASONS

INTRODUCTION

5.2.1. Following the advice contained within guidance and the IROPI identified for the Proposed Development, this section is broken down into two sections:

- Human health, public safety and beneficial consequences of primary importance to the environment; and
- Economic and social benefits.

HUMAN HEALTH, PUBLIC SAFETY, AND BENEFICIAL CONSEQUENCES OF PRIMARY IMPORTANCE TO THE ENVIRONMENT

5.2.2. The imperative reasons that justify the Proposed Development are all based around the need case, as summarised in Section 3 of this report, with the most important aspect being the key contribution towards combatting climate change and providing energy security for both the UK and Scotland. These make up the reasons relating to 'human health, public safety or beneficial consequences of primary importance to the environment' which constitute IROPI as stated within the guidance.

HUMAN HEALTH

5.2.3. As described within Section 3.2, climate change is a significant risk to human health throughout the globe. The latest IPCC report (AR6) concludes that without immediate, rapid and large-scale reductions in GHG, limiting warming close to 1.5°C or even 2°C will be beyond reach. Some of the impacts of climate change that will impact human health include extreme weather events through droughts, floods and heat waves, while also resulting in general catastrophic environmental damage to systems that humans rely on to survive. This includes significant risk to water resources and agricultural systems, threatening citizens of Scotland and the UK.

5.2.4. While there are a range of projects throughout the UK to assist with decarbonisation (e.g., other OWF projects), there are not currently enough projects proposed to reach the 2050 Net Zero target, nor the 2045 Scottish Net Zero target. It is considered that not only is the contribution of the Proposed Development key to meeting the 2045 and 2050 targets, but it is also imperative to overcoming climate change in the short term and reducing the risk of climate change on human health. For full details surrounding the benefits of the proposed development to human health, see Section 3).

PUBLIC SAFETY

5.2.5. Given the dependence of the UK on electricity for almost all aspects of day-to-day life, and the increasing demand for energy (see Section 3.2), it is considered that security of supply is a matter of public safety. Reducing our dependency on foreign imported energy is key to ensuring a strong and secure supply for the UK.

5.2.6. As stated in the British energy security strategy (HM Government, 2022), this need for increased UK supply has been evidenced by Russia's illegal invasion on Ukraine, which resulted in a significant increase in the price of imported gas and coal (over 200% and 100% in 2021 respectively). The British energy security strategy also states that:

'The cleanest and most secure way to do this [reduce imports while ensuring we have enough energy] is to source more of it domestically with a second lease of life for our North Sea'.

5.2.7. It is clear there is an urgent need for electricity sources which are UK based and not based on imports of fossil fuels. This will help to protect consumers from rapid fluctuations in energy process which impacts their quality of life, as well as increasing our predictability of supply. For additional context please see Section 3.

5.2.8. As the Proposed Development would provide a significant contribution to the provision of renewable energy in Scotland, and the UK, it is considered that there is IROPI in the form of energy security (and therefore public safety) alone.

BENEFICIAL CONSEQUENCES OF PRIMARY IMPORTANCE TO THE ENVIRONMENT

5.2.9. The impacts of climate change on the environment are not limited to human impacts, the impact of increasing global temperatures above the suggested 1.5°C would result in significant ecological damage. This includes significant impacts on terrestrial species and habitats, soils, natural carbon stores (potentially releasing more GHG into the atmosphere and accelerating the impacts of climate change), agricultural and forestry productivity, and marine species, habitats and fisheries.

5.2.10. The immediate, rapid, and large-scale decarbonisation of the UK's energy supply is one of the recommended ways of preventing climate change from worsening and therefore resulting in beneficial consequences to the environment.

5.2.11. As the Proposed Development would provide a significant contribution to the provision of renewable energy, it is considered that there is IROPI in the form of beneficial consequences of primary importance to the environment alone.

SUMMARY

5.2.12. Based on all the above information, it is considered that the Proposed Development is both necessary and urgent and therefore imperative and is justified by IROPI based on delivery of beneficial consequences of primary importance to the environment, and for human health and public safety.

SOCIO-ECONOMIC BENEFITS

5.2.13. While socio-economic benefits are not a primary factor in the derogation case for the Proposed Development, it is still an important factor to consider within the overall balance of the Proposed Development.

5.2.14. During construction alone, the Proposed Development is anticipated to spend a total of £1,909 million, with £220 million spent in Scotland and £462 million in the wider UK economy. This expenditure will drive economic activity through the Gross Value Added (GVA) and jobs that it supports as presented within Table 5-1.

Table 5-1 Offshore Construction Direct Impact, Scotland and the UK

Parameters	Scotland		UK	
	GVA	Years of Employment	GVA	Years of Employment
Turbine	£1 m	10	£53 m	780
Floating Foundation Manufacturing	£62 m	900	£82 m	1,190
Offshore Cable Installation	-	-	£2 m	30
Cables Supply	£26 m	400	£40 m	620
Offshore Substation	£1 m	20	£8 m	110
Development and Consenting Services	£1 m	20	£4 m	60
Floating Mooring Systems	-	-	£1 m	20
Floating Foundations Installation	£3 m	50	£3 m	50
Operation and Maintenance Base	<£1 m	<10	£1 m	10
Total Construction	**£94 m**	**1,400**	**£194 m**	**2,860**

5.2.15. During the operational phase, the Proposed Development is anticipated to spend a total of £91 million, with £32 million spent in Scotland and £66 million in the wider UK economy. This expenditure will drive economic activity through the Gross Value Added (GVA) and jobs that it supports as presented within Table 5-2.

Table 5-2 Offshore Operations and Maintenance Direct Impact, Scotland and the UK

Parameters	Scotland		UK	
	GVA	Jobs	GVA	Jobs
Operational Training	£1 m	20	£2 m	30
Operational Offshore Logistics	£1 m	10	£2 m	20
Health and Safety Inspections	<£1 m	<10	<£1 m	<10
Operational Insurance	-	-	£3 m	10
Operations Control Centre	£6 m	80	£6 m	80
Turbine Maintenance and	£3 m	40	£7 m	90

Parameters	Scotland		UK	
	GVA	Jobs	GVA	Jobs
Service				
Balance of Plant Maintenance and Service	£2 m	30	£4 m	70
Maintenance Vessels	<£1 m	10	£1 m	10
Maintenance Port	<£1 m	<10	<£1 m	<10
Total Operation and Maintenance	**£13 m**	**180**	**£25 m**	**320**

CONCLUSIONS

5.2.16. Throughout the whole lifecycle of the Proposed Development, there will be a significant socio-economic benefit to both Scotland and the UK. This is greater during construction however the operational phase still provides additional input to the economy of Scotland and the UK.

5.2.17. As noted above, these benefits or not the primary reason for IROPI and therefore can still be considered in the balancing exercise for this derogation case.

5.3. STEP 2 – PUBLIC INTEREST

5.3.1. It is noted that while the Developer is a private entity, the Proposed Development fills an essential public need, as evidenced above. The benefits extend beyond those for the Developer and to all citizens of Scotland and the wider UK. Additionally, given the cost and complexities associated with offshore wind infrastructure, it is not considered feasible for the public sector to be able to deliver the needs of the Proposed Development at the scale required (as set out within Section 3.2), which has been evidenced within all previously consented Scottish and UK offshore wind farm derogation cases. Therefore, as the public sector cannot meet either the core objectives or the need of the Proposed Development, the private sector is required to fulfil this public need.

5.3.2. The identification and development of offshore sites and the SMP for Offshore Wind Energy Plan Option areas (including the Proposed Development) is a fundamental national policy pursued within a clear framework. This seeks to protect the environment and human health from the consequences of energy supply shortages and climate change and promote public safety.

5.3.3. The primary public benefit relates to climate change, which as established above is a significant threat on a global scale. The Proposed Development helps to combat this by offsetting the amount of GHG released in the production of energy. Furthermore, increasing energy security is a key public benefit, ensuring a more robust and reliable supply of energy whilst reducing the cost of energy (as detailed above in Section 3.2).

5.3.4. Additionally, the Just Transition seeks to centre the interests of those that are most affected by the low-carbon transition, including workers, vulnerable communities, suppliers of goods and services, specifically small and medium-sized enterprises (SMEs), and consumers. This approach strongly advocates the inclusion of these stakeholders in shaping the net zero transition so that no one is left behind (The London School of Economics and Political Science (LSE), 2024).

5.3.5. It has been found that the impacts of climate change on people are uneven and so too are the impacts of attempts to mitigate carbon emissions, such as closing fossil fuel plants and expanding renewable energy. Action to enable a just transition tries to combat this inequality to bring about fairer outcomes as the world transitions to net zero carbon emissions, maximising the benefits of climate action and minimising the negative impacts for workers and their communities.

5.3.6. The importance of just transition is recognised at the international level through its inclusion in the 2015 Paris Agreement, which refers to:

"the imperatives of a just transition of the workforce and the creation of decent work and quality jobs in accordance with nationally defined development priorities".

5.3.7. Further, a declaration on the just transition was made at the 2018 meeting of the Conference of the Parties to the UN Framework Convention on Climate Change (COP24), and countries signed up to a set of just transition principles at the 2021 meeting, COP26. At COP28 in 2023, countries established a work programme on the implementation of just transition pathways through international cooperation.

5.3.8. In terms of Scottish Government support, the draft Energy Strategy and Just Transition Plan sets out a clear vision to capitalise on the opportunities that a net zero energy system offers the industry, the climate and local communities/ economies through just transition.

5.3.9. In 2023 the Scottish Government committed £500 million to a new 10-year Just Transition Fund to accelerate the energy transition in Aberdeen and the Northeast and establish the region as a world-leader in the transition to a net zero economy.

5.3.10. Delivery is ongoing of projects from year one of the Just Transition Fund, backed by £50 million of multi-year capital grant funding, including a skills passport for offshore energy workers, work to develop supply chain pathways, promotion of emerging technologies, and investment in community projects like ecovillages and local climate assemblies (Scottish Government, 2023c).

5.3.11. In 2023, former First Minister Humza Yousaf said:

"Delivering on our climate obligations is an absolute priority for this Government – but so too is our unwavering commitment to ensuring the journey to net zero is fair and just for everyone."

"The Northeast has long been known as the oil and gas capital of Europe. It can now become the net zero capital of the world."

"The Just Transition Fund for the Northeast and Moray is already helping communities seize these opportunities. By using a portion of the Fund to support the Scottish National Investment Bank, we can leverage further investment in the region to ensure a fair and just transition for the energy sector, and for the people of Scotland." (Scottish Government, 2023b)

5.3.12. Crucial to the future of this area is having enough jobs to sustain employment levels, and that workers have the skills to take up those roles (The Scottish Parliament, 2023c).

5.3.13. Without the Proposed Development, it is considered that the urgent need to mitigate climate change is not being adequately managed, and many Scottish and UK legislative policies are not being met. These policies are implemented with the aim of providing public benefits, and therefore the contribution of the Proposed Development to these policies will result in a clear public benefit.

5.3.14. Overall, it is considered that the contribution of the Proposed Development to combatting climate change, the decarbonisation of Scotland and the UK's energy supply, increasing the

security of supply, reducing the affordability of supply, and meeting national policy targets are all key public benefits and in the public interest. Therefore, there is a clear public need for the Proposed Development to proceed.

5.4. STEP 3 – OVERRIDING INTEREST

A BALANCING EXERCISE

5.4.1. As evidenced above, there is an imperative public interest for the Proposed Development to proceed. However, to successfully pass the IROPI test, these reasons must be overriding. In a practical sense, this means 'weighing up' the benefits of the Proposed Development against the potential impacts to the site, to achieve the correct balance of the two.

5.4.2. This balancing exercise is the responsibility of the Scottish Ministers as the competent authority to determine whether the benefits of the Proposed Development as described above are significant enough to be overriding and outweighing the potential impacts attributed to the identified sites and features. While the HRA process as described within Section 1.1.1 provides the context for this determination, and the Developer considers that the evidence presented within Sections 3 and 4 (and presented here within Section 5) above are satisfactory to pass the relevant tests, ultimately it is down to the competent authority to exercise their professional, rational and expert judgment in deciding the planning balance and whether the benefits detailed within this section are overriding.

THE RELEVANT CONSERVATION INTERESTS

5.4.3. The RIAA prepared by the Developer has concluded the risk of an AEoSI on the designated sites and species listed in Section 2.2. Full details around these designated sites, the potential effect pathways and the assessment of impacts can be found within the RIAA.

THE OVERRIDING FACTORS

5.4.4. As detailed throughout Section 5 above, the Developer is confident that the benefits served by the Proposed Development are imperative, of public interest and are long-term in nature. The Developer considers these benefits to override the risk of AEoSI identified within Section 2.2. It is also worth noting that the qualifying interests considered are not priority habitats or species (which are given the highest priority as per the Habitats Regulations).

5.4.5. The public interests served by the Proposed Development are considered to be of the highest level of urgency, both with roots in national and international policy, and for the general welfare of citizens across the globe. The benefit with the greatest urgency is decarbonisation of Scotland's energy supply, and the reduction in cost/increase in affordability of supply. As detailed above, these are relating to human health, public safety and beneficial consequences of primary importance to the environment, which are of the highest importance in the planning balance.

5.4.6. Furthermore, relevant guidance (DTA, 2021a) states that offshore wind projects are highly likely to override their impacts to UK's NSN sites:

'Given the urgency of the climate change crisis, and having demonstrated the absence of alternative solutions, Scottish Ministers anticipate that it is highly unlikely that the public interest served by delivery of offshore wind proposals will not override the conservation interests'.

5.4.7. This guidance aligns with the decisions made with respect to other offshore wind projects throughout the UK and Scotland.

5.4.8. As established in Section 3.2, climate change is considered to be the most significant threat to all considered qualifying interests, and it is only anticipated that the impacts on qualifying interests will become more intense due to the consistently increasing temperatures. Therefore, any additional measures that can be taken to reduce the impact of climate change (such as the Proposed Development) are considered to be significantly overriding the direct impact on qualifying features.

5.4.9. The Developer considers that under the tests described in the Habitats Regulations, the Proposed Development satisfies the planning balance with respect to overriding the identified potential AEoSI. The Developer does note however that this determination ultimately rests with the Scottish ministers.

5.5. STEP 4 – LONG TERM INTEREST

5.5.1. Due to the nature of offshore wind farms, the requirements of decarbonisation and climate change, the aspects of IROPI considered above are deemed to be long-term interests. For example, the operational lifetime of the Proposed Development is 35 years, therefore the energy supplied by the Proposed Development will be of benefit for the long-term, contributing to the supply past the 2045 Net Zero target.

5.5.2. Decarbonisation on the scale required for the UK and Scotland will take a long time to achieve and will continue to increase. Not only is the 2045 Net Zero target within Scotland still over two decades away and inherently a long-term aim, once it is achieved it will be maintained permanently. The targets are designed to result in a system where there is no reliance on hydrocarbon or imported fuels, and the environment is protected with significant mitigation afforded to climate change. Given the established energy infrastructure, it is considered that the transition to a purely renewable system will be a gradual one, acting over long-term timescales.

5.5.3. Additionally, the security of supply for Scotland and the UK is considered to be a long-term issue. As the demand for energy is continually increasing, ensuring there is enough supply for the current usage is not adequate and security must be afforded to all potential growth forecasts for energy within the UK. It is an essential long-term consideration to ensure Scotland and the UK are fully independent and not reliant on any foreign nations and imported supplies.

5.5.4. The economic benefits of the Proposed Development will also have a long-term impact. The development of local supply chains will impact Scotland not only during the construction, operation and maintenance of the Proposed Development, but the jobs created, infrastructure developed, and the local trades taught will endure into future offshore wind projects, enticing other development opportunities in the region. Furthermore, the development of the area and increase in jobs will encourage people to move to the local area, resulting in increased terrestrial development in addition to the offshore interest.

5.6. SUMMARY OF IROPI

5.6.1. In summary, it is the Developer's position that the Proposed Development passes all of the IROPI tests as required under the Habitats Regulations.

5.6.2. The Proposed Development significantly contributes to national and international decarbonisation targets, providing both short and long-term human and environmental benefits. The IROPI detailed within this section are for human health, public safety and benefits of primary importance of the environment, which are all considered to outweigh the impacts identified within the RIAA based on existing Scottish policy and guidance, and on previous OWF decisions in both Scotland and the wider UK.

The Developer considers the evidence provided within this report to conclusively demonstrate the importance of the Proposed Development and that there are IROPI for the Proposed Development to proceed.

6. COMPENSATORY MEASURES

6.1.1. As established, if the Scottish Ministers determine that there are no alternative solutions to the Proposed Development, and there are satisfactory IROPI, compensation must be secured to offset any potential impacts and maintain the coherence of the NSN within both Scotland and the wider UK.

6.1.2. A range of compensation measures have been considered by the Developer, beginning with an initial longlist of measures which have been assessed and consulted on, resulting in several measures being considered as feasible compensation for the potential impacts of the Proposed Development. These compensation measures are set out in the following document:

- Derogation Case: Appendix A – Ornithological Compensation Plan;
- Derogation Case: Appendix B – Artificial Nesting Structures for Kittiwake Evidence and Roadmap;
- Derogation Case: Appendix C – Predator Control Evidence and Roadmap;
- Derogation Case: Appendix D – Disturbance Reduction Evidence and Roadmap; and
- Derogation Case: Appendix E – Compensation Measures: Site Investigation Report.

6.1.3. A full assessment of the proposed compensatory measures can be found in the following documents:

- Derogation Case: Appendix F – Compensation Measures: Environmental Impact Assessment Report; and
- Derogation Case: Appendix G – Compensation Measures: No Likely Significant Effects Report.

6.1.4. The Developer considers that the range of compensatory measures considered provide adequate compensation for the potential impacts associated with the Proposed Development.

7. DEROGATION CASE CONCLUSIONS

7.1.1. This derogation case is provided for if Scottish Ministers conclude that an AEoSI cannot be ruled out for any of the sites listed in Section 2.2, and they are therefore required to determine whether there are no alternative solutions to the Proposed Development, whether there are satisfactory IROPI and whether compensation can be secured to offset any potential impacts and maintain the coherence of the NSN.

7.1.2. This derogation case provides the necessary information for Scottish Ministers to consider these derogation tests and conclude that they can be met for the Proposed Development.

7.1.3. As explained in this report, there is an imperative global need to help address the climate change emergency through decarbonisation of energy supplies, for the primary purpose of preserving life on planet Earth. Decarbonisation of the UK energy supply is therefore the primary objective of the Proposed Development.

7.1.4. Additional key objectives for Proposed Development include strengthening UK energy security of supply thus ensuring independence from imported sources and ensuring that energy is available to consumers at the lowest possible cost.

7.1.5. The urgent need for the Proposed Development is justified as follows:

- The OWF will deliver approximately 1GW of renewable energy, providing a substantial contribution to decarbonisation and Net Zero targets and further countering climate change by offsetting millions of tonnes of CO_2 every year;
- The loss of potential energy generation by not progressing the Proposed Development would need to be produced from other renewable sources, of which options are limited. It is considered that all potential renewable energy sources are required to combat climate change;
- Energy security is more important than ever, and a diversity of supply is essential to avoid repeating the recent impacts of the Covid-19 pandemic and Russia's illegal invasion of Ukraine;
- The Proposed Development may incorporate relatively novel technologies in floating WTG foundations, therefore driving the development of a local Scottish supply chain in a way that some other Plan Options are not; and
- The use of floating technologies allows for the optimisation of the available resource within the NE4 Plan Option area, increasing the contribution to combatting global climate change, increasing decarbonisation and energy security;
- The Proposed Development will contribute to the Just Transition away from non-renewable energy sources, particularly relevant to those people who rely on the fossil fuel industry within the Northeast of Scotland; and
- The Proposed Development is considerably advanced compared to other Plan Option areas within Scotland enabling the delivery of low cost, low carbon energy sooner than other projects (further supporting the Just Transition).

7.1.6. The Developer is confident this report and supporting documentation provide all the necessary information to support a clear and overriding case for the Proposed Development, to enable Scottish Ministers to conclude that here are no feasible alternative solutions, the Proposed Development should be carried out for reasons of IROPI and compensation measures can be secured to ensure the overall coherence of the UK NSN is protected.

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