



Offshore Wind Power Limited

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2 NEED FOR THE PROJECT

2.1 Introduction

This chapter of the Offshore Environmental Impact Assessment (EIA) Report presents a summary of the need for renewable energy developments such as the Project, the main climate change and energy objectives and targets, and the underpinning legislation, policy and strategy documentation.

Scotland has great potential for renewable energy development. The policy context in support of renewable energy and offshore wind in Scottish Waters is outlined in this chapter, in addition to the key political discussions and Scottish Government position on climate change strategy.

The Project will act to offset Greenhouse Gas (GHG) emissions¹ that might otherwise be produced by other means of electricity generation and will also increase the security of electricity supply, thereby assisting with the delivery of United Kingdom (UK) and Scottish government policy and the meeting of renewable energy commitments and net-zero targets. It will also provide socio-economic benefits to Scotland and the UK and contribute to the development of the offshore wind industry in domestic markets (see chapter 19: Socio-economics). This will be in line with the Projects commitments outlined within the Supply Chain Development Statement (SCDS).

The beneficial impact of the Project is outlined in the following sections, centred around four key areas which summarise the need for the Project:

- Climate change;
- New energy infrastructure;
- Energy security; and
- Economic benefit.

Finally, quantification of emissions reduction, energy provision and emissions² offset periods calculated for the Project are also provided in section 2.7.

¹¹ GHG is a generic term for the collection of gaseous constituents in the atmosphere. In this chapter a focus is on anthropogenic GHGs, such as Carbon Dioxide (CO₂), associated with the offshore Project.



2.2 Climate change

2.2.1 Overview

In April 2019, the First Minister of the Scottish Government ('First Minister') and subsequently the UK Parliament, declared a climate emergency, publicly stating their concern about climate change and its consequences (CED, 2019a; CED, 2019b).

The United Nations (UN) has been leading on global climate summits ('Conference of the Parties', COP) for nearly three decades. International consensus on the need to tackle climate change is reflected in The Paris Agreement³, adopted at COP21 in 2015 by 196 parties to the UN Framework Convention on Climate Change (UNFCCC). For the first time it created a legally-binding, international agreement towards tackling climate change. The UK (and hence Scotland) is legally bound to the Paris Agreement. The member governments agreed:

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

The Intergovernmental Panel on Climate Change (IPCC) is currently in its Sixth Assessment cycle and have published reports from its three working groups. In August 2021, Working Group I issued Climate Change 2021: The Physical Science Basis. The Working Group I report emphasised that global evidence of the effects of human-induced climate change (e.g. heatwaves, heavy precipitation, droughts) have strengthened. Global surface temperatures will continue to increase until at least mid-century under all emissions scenarios considered and global warming of 1.5°C and 2°C will be exceeded within the 21st Century unless significant reductions in Carbon Dioxide (CO₂) and GHG emissions occur in the coming years (IPCC, 2021). Limiting human-induced global warming requires limiting cumulative CO₂ emissions, reaching at least net-zero CO₂ emissions and strong reductions in other GHGs (IPCC, 2021). In February 2022, Working Group II issued Climate Change 2022: Impacts, Adaptation and Vulnerability. The Working Group II report emphasised that human-induced climate change, including more frequent and intense extreme events, has caused widespread adverse impacts and related losses and damage to nature and people, beyond natural climate variability. In April 2022, Working Group III issued Climate Change 2022: Mitigation of Climate Change. The Working Group III report emphasises that modelled pathways that limit global warming involve rapid, deep and immediate GHG emission reductions in all sectors. The strategies to achieve these reductions include transitioning from fossil fuels to very low and zero-carbon energy sources such as renewables, alternative energy carriers and energy efficiency, in line with the draft Energy Strategy and Just Transition Plan (Scottish Government, 2023a).

The UK hosted the 26th UN Climate Change Conference of the Parties (COP26) in Glasgow, Scotland, in November 2021. The COP26 summit focused on accelerating action towards achieving the goals of the Paris Agreement and the UNFCCC. The principal outcome of COP26 was the Glasgow Climate Pact, a series of decisions and resolutions

³ <https://unfccc.int/process-and-meetings/the-paris-agreement/the-paris-agreement>.



that build on the Paris Agreement and establish what needs to be done to accelerate action on climate change within the current decade. Whilst every Party at COP26 – representing almost 200 countries – agreed to the Glasgow Climate Pact, the pact itself is not legally binding. The First Minister addressed the COP26 delegation, detailing how Scotland will continue to play a leading role in tackling climate change (Scottish Government, 2021a). The address reaffirmed Scotland’s renewable energy potential and the role that renewable energy developments, including offshore wind, can play in realising Scotland’s targets of becoming a net-zero country by 2045 at the latest. Following COP26, the First Minister went on to address the Scottish Parliament outlining the progress made through the Glasgow Climate Pact, but also the steps that still need to be taken (Scottish Government, 2021b). The First Minister stated:

“the world is still on a path to temperature increases of well over 2 degrees.... To keep 1.5 degrees in reach, global emissions must be almost halved by the end of this decade”

The key drivers underpinning the need for renewable energy given the climate emergency follow from the international policies and obligations. In order to tackle the climate emergency and significantly reduce GHGs, there needs to be a transition from high carbon energy sources and increase in reliance on zero or low carbon energy.

Following COP26, the 27th climate change COP (COP27) was held in Egypt in November 2022. The conference’s key aim was to ensure full implementation of the Paris Agreement and to put negotiations into concrete actions. After a period of intense negotiations, countries reached agreement on establishing a fund to compensate vulnerable nations for ‘loss and damage’ from climate change induced disasters.

The Project, as a renewable energy source, is aligned with these drivers and requirements and will contribute to ensuring the delivery of low carbon energy in support of net-zero emission targets.

2.2.2 Climate change and renewable energy legislation and policy

This section summarises the overarching climate change and renewable energy legislation and policy context that drives the need for the Project at an international and national level. The various policies and legislation which are relevant to the Project are summarised in Figure 2-1 below and link the similarities between Scottish, UK, European, and International policy and legislation. Legislation and policy relating to marine planning, consenting and EIA requirements is provided in chapter 3: Planning policy and legislative context.

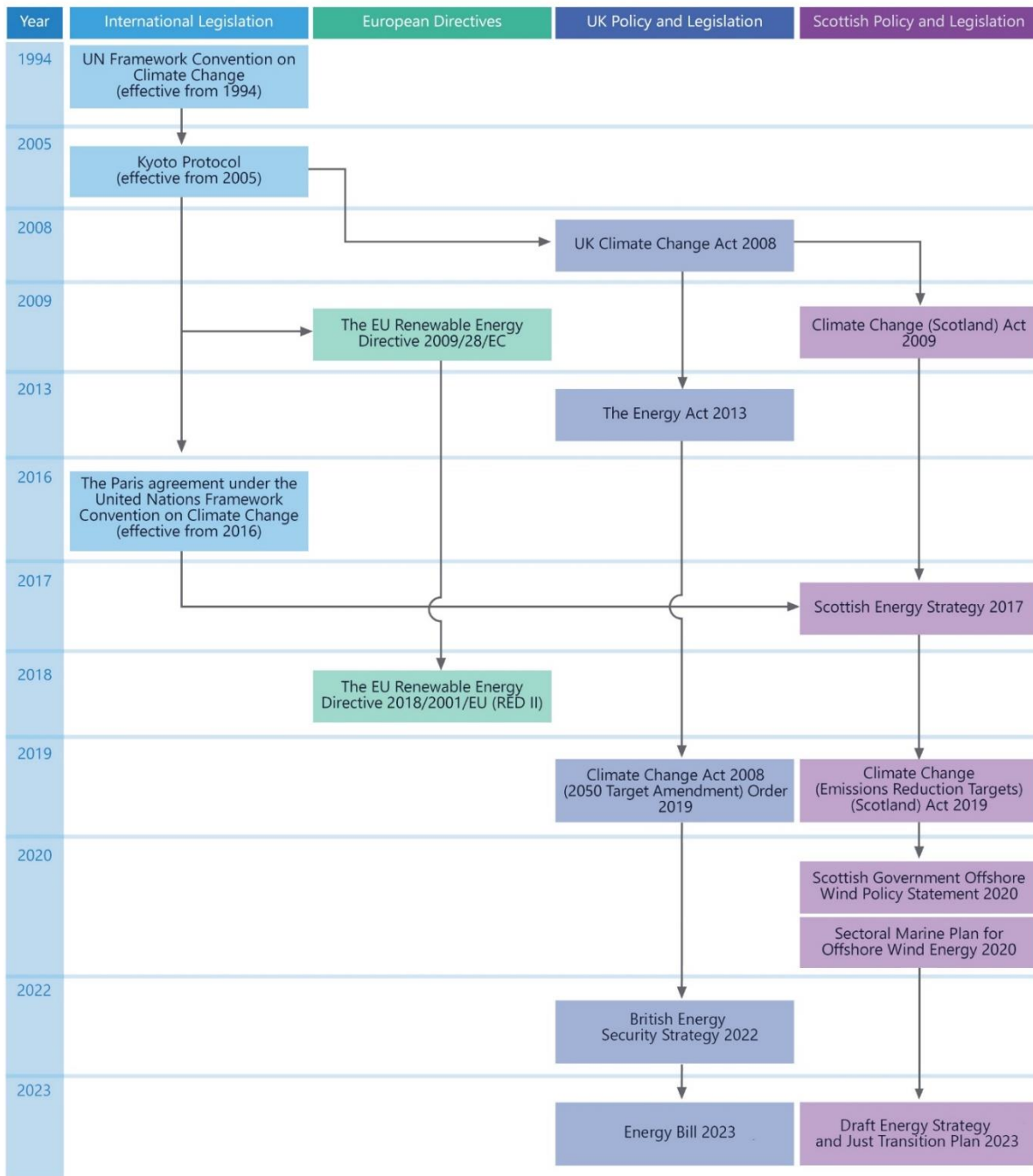


Figure 2-1 Climate change and renewable energy legislation and policy

2.2.3 International legislation

Table 2-1 outlines the key relevant legislation for the offshore Project relating to international obligations on climate change and renewable energy. The Project will address global climate change and emissions reductions targets by contributing towards renewable energy generation.



Table 2-1 International legislation

RELEVANT LEGISLATION	DESCRIPTION
<p>United Nations Framework Convention on Climate Change (UNFCCC)</p>	<p>The UNFCCC is an international environmental treaty for addressing climate change. Signed in 1992, and subsequently ratified by 198 countries, it was established to combat 'dangerous' human interference with the climate system by stabilising GHG concentrations in the atmosphere. The UNFCCC was primarily designed to support the development of future agreements, protocols, and amendments that would impose obligations and enforceable requirements to reduce GHG emissions on state parties.</p>
<p>The Kyoto Protocol under the United Nations Framework Convention on Climate Change</p>	<p>The Kyoto Protocol 'operationalised' the UNFCCC by committing state parties to reduce GHG emissions. The UK is a signatory to the Kyoto Protocol, which is a legally binding international agreement that commits state parties to specific emissions reduction targets. The protocol came into effect in 2005 and its commitments were transposed into UK law by the Climate Change Act 2008 and the Climate Change (Scotland) Act 2009. The Kyoto protocol has been superseded by the Paris Agreement (see below).</p>
<p>The Paris Agreement under the United Nations Framework Convention on Climate Change</p>	<p>The Paris Agreement (in full, Paris Agreement Under the United Nations Framework Convention on Climate Change) is a legally binding international treaty which aims to reduce the emission of gases that contribute to global warming by limiting global warming to well below 2°C and pursuing efforts to limit it to 1.5°C. The Paris Agreement supersedes the Kyoto Protocol. It entered into force on 4th November 2016 and was ratified by the UK as of November 2016. Under the UNFCCC, the annual Conference of Parties (COP) brings governments together to discuss and review how climate change is being managed domestically and internationally. It is the main decision-making body of the UNFCCC. In order to contribute towards delivering the targets under the Paris Agreement, the Climate Change Act (Emissions Reductions Targets (Scotland) Act 2019 introduced binding targets for the reduction in emissions by 100% below 1990 levels by 2045 in Scotland and the Climate Change Act 2008 (2050 Target Amendment) Order 2019 sets a similar reduction target for the rest of the UK by 2050.</p>

2.2.4 European legislation

The Renewable Energy Directive (2009/28/EC) (RED I) was enacted in 2009 and the mandated levels of renewable energy use in EU countries between 2009 and 2021. The UK was committed to sourcing 15% of its total energy needs from renewable sources by 2020 under RED I, including electricity, heat and transport. RED I was revised in 2018 with the passage of the Renewable Energy Directive (2018/2001/EU) (RED II). Under RED II, the UK is committed to sourcing 32% of its total energy needs from renewable sources by 2030. The UK and Scottish Governments have also made legally binding commitments through the Climate Change Act 2008 and the Climate Change (Scotland) Act 2009 (as described below).

2.2.5 UK legislation

Table 2-2 outlines the main UK legislation pertinent to the Project that cover national climate change and renewable energy targets.



Table 2-2 UK legislation

LEGISLATION	DESCRIPTION
Climate Change Act (2008)	The Climate Change Act 2008, as amended by the Climate Change Act 2008 (2050 Target Amendment) Order 2019, requires the UK to reduce emissions by 100% below 1990 levels by 2050. The Act provides a legal framework for ensuring that the UK Government meets its commitments to tackle climate change, and its passage established the UK as the first Group of Seven (i.e. G7) nation to set such a goal.
The Energy Act (2013)	The Energy Act 2013 outlines the UK's commitment to a low carbon energy industry and investments in low carbon electricity generation. The Act establishes the legislative framework to enable secure, affordable, low-carbon energy. It includes provisions for the following: <ul style="list-style-type: none"> • The Secretary of State is granted authority to set a 2030 decarbonisation target range for electricity in secondary legislation; and • Electricity Market Reform, which consists of measures aimed at attracting the £110 billion investment needed for the low-carbon transition. It introduces Contracts for Difference (CfD), which are long-term contracts that are designed to encourage investment in low-carbon electricity generation.
The Energy Bill (2023)	The Energy Security Bill, now known as the Energy Bill, was introduced to Parliament on the 6 th July 2022 to deliver a cleaner, more affordable, and more secure energy system in the UK. It makes provisions affecting the energy sector, focused on three areas: <ul style="list-style-type: none"> • Leveraging investment in clean technologies; • Reforming the UK's energy system and protecting consumers; and • Maintaining the safety, security, and resilience of the energy systems across the UK. <p>The measures in the Energy Bill will help to enable the increase in offshore wind necessary to deliver the 50 Gigawatt (GW) ambition for the UK (as set by the British Energy Security Strategy, see Table 2-4), whilst maintaining environmental protections.</p> <p>The Bill is next due to have its Report Stage and third reading in September 2023. Amendments may be made to the Bill at Report Stage.</p>

2.2.6 Scottish legislation and policy

Scotland is committed to addressing climate change and its net-zero goals, and the utilisation of Scottish seas for marine renewables is one way in which Scotland is committed to fulfilling these goals.

Table 2-3 outlines the main Scottish legislation and policy which establishes the need for the Project, including the Sectoral Marine Plan documents which underpin the ScotWind leasing process that the Project is associated with, alongside other climate change and renewable energy policy and legislation.



Table 2-3 Scottish legislation and policy

LEGISLATION OR POLICY	DESCRIPTION
<p>Climate Change (Scotland) Act (2009)</p>	<p>The Climate Change (Scotland) Act 2009 originally set a legally binding target for reducing GHG emissions by 80% below 1990 levels by 2050. As amended by the Climate Change (Emissions Reduction Targets) (Scotland) Act 2019, the Act now includes a net-zero emissions target whereby GHG emissions must be 100% lower than 1990 levels by 2045 in Scotland, five years earlier than the rest of the UK. The Act also places sustainable development duties on Scottish Ministers and public bodies relating to climate change. Offshore wind’s contribution towards achieving the government’s GHG emission reduction commitments has been considered in a climate change and carbon assessment (Offshore EIA Report, Supporting Study (SS) 1: Climate and carbon assessment)).</p> <ul style="list-style-type: none"> • The Climate Change (Scotland) Act (2009) has further supporting secondary legislation. The relevant secondary legislation includes: <ul style="list-style-type: none"> – The Climate Change (Scotland) Act 2009 (Commencement No. 1) Order 2009 - Specifies dates which the various provisions in the Act come into force; – The Climate Change (International Aviation and Shipping) (Scotland) Order 2010 – Describes method for calculating GHG emissions from international aviation / shipping calculations which are attributed to Scotland; – The Climate Change (Duties of Public Bodies: Reporting Requirements) (Scotland) Order 2015 - Requires bodies to prepare reports on compliance with climate change duties; – The Climate Change (Additional Greenhouse Gas) (Scotland) Order 2015 – Addition of nitrogen trifluoride as an additional GHG to gases in The Climate Change (Scotland) Act 2009 in addition to designating 1995 as the baseline year; – The Carbon Accounting Scheme (Scotland) Amendment Regulations 2017 (2010 amendment) – updated scheme for monitoring compliance with the annual emissions reduction targets. This secondary legislation also covers a range of administrative issues which are related to emissions accounting, including specifying the circumstances in which carbon units may be credited to or debited from the net Scottish emissions account; and – The Climate Change (Emissions Reduction Targets) (Scotland) Act 2019 - Revised and established new GHG emissions reduction targets to allow for Scotland to contribute to the Paris Agreement goals. This includes a reduction of all GHG to net-zero by 2045 with interim targets for reductions of at least 75% by 2030 and 90% by 2040. The Scottish Climate Change Plan outlines the strategies and approach of the Scottish Government to deliver on the GHG emissions reductions targets between 2018 and 2023. The plan was updated in 2020 to align with the updated GHG emissions reductions targets under the Climate Change (Emissions Reductions Targets) (Scotland) Act 2019 (Scottish Government, 2020a).



2.3 New energy infrastructure

The UK requires new energy transmission infrastructure in order to:

- Reduce the carbon footprint of electricity generation capacity in order to achieve net-zero climate change targets;
- Enable the transition from fossil fuels to renewable energy sources;
- Ensure adequate supply due to changes in the demands on transmission infrastructure; and
- Ensure security of supply through replacing and upgrading infrastructure systems to meet increased demands.

The key new energy and infrastructure policy and strategies for the wider UK and for Scotland are detailed in Table 2-4 which highlights the vital role and need for rapid large-scale deployment of GWs of offshore wind to decarbonisation the energy industry and meet the need for additional electricity generation.



Table 2-4 Key new energy and infrastructure policies and strategies

POLICY/ STRATEGY	DESCRIPTION
<p>Overarching National Policy Statement (EN-1) (Department of Energy and Climate Change (DECC), 2011)</p>	<p>The Overarching National Policy Statement (NPS) (EN-1) (DECC, 2011) sets out the UK Government’s policy for delivery of major energy infrastructure in the UK over the next 40 years. It considers that 59 GW of new build electricity generation capacity is required in that period, of which 33 GW should be from renewables in order to achieve 2050 emission targets for the UK. The NPS is currently under revision and the consultation on the revised Draft NPS (EN-1) came to its completion in June 2023 (Department for Energy Security and Net Zero, 2023). The Draft NPS EN-1 looks to update the NPS EN-1 to align with net-zero emissions targets for 2050 which came into force in 2019. In order for this to occur the Draft NPS (EN1) states that:</p> <p><i>“Meeting these objectives necessitates a significant amount of energy infrastructure, both large and small-scale. This includes the infrastructure needed to convert primary sources of energy (e.g. wind) into energy carriers (e.g. electricity or hydrogen), and to store and transport them into and around the country... We will need to dramatically increase the volume of energy supplied from low carbon sources and reduce the amount provided by fossil fuels... We need to transform the energy system, tackling emissions while continuing to ensure secure and reliable supply, and affordable bills for households and businesses.”</i></p> <p>The offshore Project will allow for low carbon energy transmission from offshore wind and as such is aligned with the principals of the NPS and Draft NPS.</p>
<p>UK Government’s Clean Growth Strategy (2017)</p>	<p>The UK Government’s Clean Growth Strategy (BEIS, 2017) presents the UK’s proposed policies and strategies to facilitate decarbonisation in the UK whilst delivering economic growth. The strategy commits to working with the industry to <i>“develop an ambitious Sector Deal for offshore wind”</i> and to <i>“work with the Crown Estate and Crown Estate Scotland (CES) to understand the potential for deployment of offshore wind in the late 2020s and beyond”</i>.</p>
<p>British Energy Security Strategy (2022)</p>	<p>The British Energy Security Strategy (UK Government, 2022) outlines how the UK Government plans to bring clean, affordable, secure power to future generations. Specifically, in relation to renewables it states:</p> <p><i>“Accelerating the transition from fossil fuels depends critically on how quickly we can roll out new renewables. Our ‘Ten point plan for a green industrial revolution’ has already put the UK at the forefront of many renewable technologies, delivering £40 billion of private investment in under two years. By the end of 2023 we are set to increase our capacity by a further 15%. But now we must go further and faster, building on our global leadership in offshore wind”</i>.</p> <p>The British Energy Security Strategy establishes the ambition to deliver up to 50 GW of offshore wind by 2030, an increase of 10 GW from the previous 40 GW target set by the Energy White Paper.</p>



POLICY/ STRATEGY	DESCRIPTION
<p>Energy White Paper 2020 and the Net Zero Strategy: Build Back Greener 2021</p>	<p>The Energy White Paper (BEIS, 2020) builds on the Ten point plan for a green industrial revolution, including policies and goals for the decarbonisation of the energy system in the UK, such as the continued deployment of clean electricity generation, including offshore wind.</p> <p>The Net Zero Strategy: Build Back Greener (BEIS, 2021) builds on the Ten point plan for a green industrial evolution and the Energy White Paper to outline a strategy to achieve UK’s sixth carbon budget (2033-2037) and ultimately net-zero by 2050. Key commitments are laid out to achieve the decarbonisation of the power system by 2035 and include a commitment to take actions for all electricity is from low carbon sources by 2035.</p>
<p>Scottish Energy Strategy (2017)</p>	<p>Scotland's Energy Strategy: The Future of Energy in Scotland (2017 Strategy) (Scottish Government, 2017) sets out a vision for the energy system in Scotland to 2050. The strategy sets a 2030 target for the equivalent of 50% of the energy for Scotland's heat, transport, and electricity consumption to be supplied by renewable sources. In accordance with the 2017 Strategy, Scotland's Energy Strategy Position Statement was published in 2021 (Scottish Government, 2021c). The Position Statement notes that:</p> <p><i>“Since the publication of the 2017 strategy, the Scottish Government has committed to achieving our ambitious targets of net-zero greenhouse gas emissions by 2045 and a 75% reduction by 2030. In light of the economic crisis created by the COVID-19 pandemic, the Scottish Government is now striving to deliver a green economic recovery aligned to those net-zero ambitions.”</i></p> <p>The Position Statement sets out the programme of work required across the energy sector to support the energy targets and outlines key energy priorities for Scotland, including priorities for renewable energy.</p> <p>The Position Statement also states that the 2017 Strategy will remain in place until an Energy Strategy refresh is adopted by the Scottish Ministers.</p>
<p>Draft Scottish Energy Strategy and Just Transition Plan (2023)</p>	<p>The Scottish Government has recently published the ‘Draft Energy Strategy and Just Transition Plan – delivering a fair and secure zero carbon energy system for Scotland’ in January 2023 (Scottish Government, 2023a). The Draft is currently in consultation. Nonetheless, key themes in relation to new energy infrastructure required for Scotland are apparent.</p> <p><i>“To realise our climate change ambitions, we need to transform the way Scotland generates, transports and uses energy. We must seize the huge opportunity this presents and deliver maximum benefits to Scotland's people, workers, communities and economy from our vast renewable energy resource.”</i></p> <p>The draft emphasises the need for Scotland to ensure systems are put in place to allow for net-zero emissions by 2045 and provides a road map of how this can be accomplished. The draft heavily references a need to reduce reliance on fossil fuel consumption, in particular those produced from the oil and gas sector.</p>



POLICY/ STRATEGY	DESCRIPTION
<p>Scottish Government Offshore Wind Policy Statement (2020)</p>	<p>The draft sets out key ambitions for Scotland including producing more than 20 GW of additional renewable electricity both on and offshore by 2030 and energy security through the development of Scotland’s own resources and additional energy storage.</p> <p>The draft notes that <i>“ScotWind represents a massive step forward in delivering an energy revolution with market ambitions to deliver up to 27.6 GW of capacity - more than double our renewable energy generation capacity currently in operation”</i>. Further information on ScotWind is provided in section 2.3.1.</p> <p>With regard to transmission and distribution infrastructure, the draft also states that <i>“we encourage, promote and facilitate all forms of renewable energy development onshore and offshore. This includes energy generation, storage, new and replacement transmission and distribution infrastructure and emerging low-carbon and zero emissions technologies”</i> and that <i>“Significant infrastructure investment in Scotland’s transmission system is needed to ameliorate constraints and enable more renewable power to flow to centres of demand”</i>.</p> <p>The offshore Project, will enable renewable energy generation, will thus aid the success of these ambitions.</p>
<p>Sectoral Marine Plan for Offshore Wind Energy (2020)*</p>	<p>The Offshore Wind Policy Statement (Scottish Government, 2020b) sets out ambitions to capitalise on offshore wind development and discusses the role this technology could play in meeting the net-zero by 2045 target. It builds upon the ambitions outlined in the 2017 Strategy, which establishes the 2050 energy vision. The 2017 Strategy is integral to the implementation of the Offshore Wind Policy Statement, through the identification of suitable offshore wind farm development areas.</p> <p>The first Sectoral Marine Plan for Offshore Wind Energy (Blue Seas Green Energy) (Scottish Government, 2011) was adopted in 2011. In July 2013, Marine Scotland⁴ published the Draft Sectoral Marine Plan for Offshore Wind, Wave and Tidal Energy in Scottish Waters (Scottish Government, 2013). It identified potential future options for commercial-scale (i.e. greater than 100 Megawatts (MW) offshore wind energy developments).</p> <p>The final Sectoral Marine Plan for Offshore Wind Energy (SMP) was published in October 2020 (Scottish Government, 2020c). The SMP builds on the work undertaken in the development of the 2011 and 2013 plans and incorporates recent technological, policy, regulatory, and market developments to develop a new strategic planning process.</p> <p>The SMP has been developed in accordance with the strategic aims of Scotland’s National Marine Plan (Scottish Government, 2015), which addresses the potential for interactions between renewable energy development and other marine users. The SMP seeks to contribute to the achievement of Scottish and UK climate change</p>

⁴ Now Marine Directorate.



POLICY/ STRATEGY	DESCRIPTION
	<p>policy objectives and targets through the provision of a spatial strategy to inform the seabed leasing process for commercial offshore wind energy in Scottish territorial waters and the offshore marine area. It aims to maximise the benefits for Scotland, and its communities and people, whilst minimising the potential adverse effects on other marine users, economic sectors, and the environment that may result from further commercial-scale offshore wind development. The SMP identifies 15 final Plan Options (POs) across four Scottish regions that are capable of generating several GW of renewable energy.</p> <p>The SMP guides the relevant consenting bodies when making decisions on individual Marine Licence and consent applications but is not considered to pre-determine those decision-making processes. The outputs of future project-level assessments will be used to support the iterative plan review process for the SMP.</p>
<p>National Planning Framework 4 (NPF4)*</p>	<p>After two years of extensive consultation the Scottish Government laid the ‘Revised Draft National Planning Framework (NPF)4’ before parliament on the 8th November 2022. The draft was approved in January 2023 and NPF4 was adopted by Scottish Ministers on 13th February 2023 (Scottish Government, 2023b). NPF4 replaces the NPF3 and the Scottish Planning Policy.</p> <p>NPF4 sets out a spatial strategy until 2045 to coincide with the GHG net-zero emission and sustainability targets. The strategy and policies are in support of developments that helps to meet GHG emissions targets. The global climate emergency and the nature crisis have formed the foundations for the spatial strategy as a whole. The strategy focuses on three key aims including sustainable liveable and productive places which support the underlying draft policies of the strategy.</p> <p>Of these three key aims, ‘Sustainable Places’ is of most relevance to the offshore Project. Key points include:</p> <ul style="list-style-type: none"> • <i>“Scotland’s high quality environment, and the natural capital it supports, underpin our approach to tackling climate change and the economy and is fundamental to our health and wellbeing;</i> • <i>Scotland’s Energy Strategy will set a new agenda for the energy sector in anticipation of continuing innovation and investment. The interplay between land and sea will be critical, given the scale of offshore renewable energy resources; and</i> • <i>Scotland’s future places will be net-zero, nature-positive places that are designed to reduce emissions and adapt to the impacts of climate change, whilst protecting, recovering, and restoring our environment. Meeting our climate ambition will require a rapid transformation across all sectors of our economy and society.”</i> <p>The national spatial strategy also states that <i>“We will encourage low and zero carbon design and energy efficiency, development that is accessible by sustainable travel, and expansion of renewable energy generation. It is also crucial that we build resilience to the future impacts of climate change including water resources and assets and development on our coasts.”</i></p> <p>The policies of relevance to the offshore Project, which underly these aims, include:</p> <ul style="list-style-type: none"> • Policy 1 which gives significant weight to the global climate emergency in order to ensure that it is recognised as a priority in all plans and decisions;



POLICY/ STRATEGY	DESCRIPTION
	<ul style="list-style-type: none"> • Policy 2 which will ensure that emissions from new development are minimised as far as possible; • Policy 11 which supports renewable energy development; and • Policy 33 which explicitly states that fossil fuel exploration, development, and production (excluding unconventional oil and gas) will not be supported other than in exceptional circumstances. <p>In addition to these key aims and policies, NPF4 details the regional spatial priorities across Scotland which will inform the preparation of regional spatial strategies and Local Development Plans by planning authorities. For the Project this is relevant to the 'North and West Coast and Islands' region. The commentary for the North and West Coast and Islands, whereby the onshore Project is located, states that: <i>"This part of Scotland will be at the forefront of our efforts to reach net-zero emissions by 2045... As one of the most renewable energy rich localities in Europe with significant natural resources, there is a real opportunity for this area to support our shared national outcomes."</i></p> <p>In line with this and 'The Scottish Governments Blue Economy Vision for Scotland' (Scottish Government, 2022), the key priorities for the region include:</p> <ul style="list-style-type: none"> • <i>"Maximising the benefits of renewable energy whilst enhancing blue and green infrastructure, decarbonising transport and building resilient connections;</i> • <i>Support coastal and island communities to become carbon neutral, thus contributing to net-zero commitments and reducing fuel poverty; and</i> • <i>Seize the opportunities to grow the blue and green economy, recognising the world-class environmental assets that require careful management and opportunities to develop skills and diversify employment."</i> <p>It is also noted that the North and West Coast and Islands regional spatial area will be supported by the 'Strategic Renewable Electricity Generation and Transmission Infrastructure' National Development. This national development will <i>"support electricity generation and associated grid infrastructure throughout Scotland, providing employment and opportunities for community benefit, helping to reduce emissions and improve security of supply."</i></p> <p>In this way the offshore Project need is clear as the key objectives of the offshore Project and the Project as a whole are aligned with the NPF4 national and regional strategy.</p>

** Further detail of these planning frameworks and policies are provided in chapter 3: Planning policy and legislative context.*



2.3.1 ScotWind

The CES ScotWind leasing initiative was the first round of offshore wind leases in Scottish waters for a decade. The process involved making areas of seabed available for commercial-scale offshore wind development and will benefit Scottish businesses and communities as well as providing a major boost to UK clean energy production (CES, 2022). The intention for the ScotWind leasing round was initially announced in 2017 as a result of the UK Government's Clean Growth Strategy and the Scottish Government's Energy Strategy, which confirmed Scottish Ministers' commitment to furthering offshore wind, as part of the approach to meeting the 2030 target of 50% of energy consumption (heat, transport and electricity) being from renewable sources and the net-zero emissions by 2045. These two strategies, in addition to other legislation and policy underpinning the need for the Project are discussed in full in section 2.2 and Table 2-4. The round was launched in June 2020 and option agreements were initially announced in January 2022. A further three option agreements were awarded through the ScotWind clearing process in November 2022. The 20 option agreement sites are illustrated in Figure 2-2.

2.4 Energy security

Energy consumers need to have access to a reliable, secure and affordable energy supply. With the movement towards low carbon energy systems in order to support the UK and Scotland's net-zero targets this presents a real need for energy security, which includes the need to a secure energy supply; the need for new energy infrastructure; and the need to maximise economic and supply opportunities in Scotland and the UK. The First Minister has recently stated that (Scottish Government, 2021d):

"Countries must prioritise, as far as we can, an approach to energy security that focuses on sustainability, with measures to promote energy efficiency, and to accelerate the development renewable and low carbon energy"

In emerging strategies and plans it is clear that development of renewable energy systems and transmission infrastructure are key to achieving these aims. The recent 'Draft Energy Strategy and Just Transition Plan' published by the Scottish Government in January 2023 highlights that development of Scotland's own resources and additional energy storage is key to energy security (Scottish Government, 2023a). The draft emphasises that

"In addition to building our renewable capacity, we also now need to focus significant efforts on decarbonising energy for heat, transport and industry, on reforming markets to ensure energy security and affordability, and on maximising the benefits from the transition to net-zero for our economy and our communities. The opportunities that creates are immense."

The UK and Scotland need to secure large scale, low carbon sources of energy, and the development of offshore wind electricity and transmission systems will improve energy security, through low carbon means. This remains a priority for the UK Government and the Scottish Government, and the onshore Project, through supporting the transmission of low carbon electricity from offshore wind can provide a significant contribution to securing a low carbon home grown energy supply.

The Project has an expected capacity of around 2 GW and will be capable of powering the equivalent of more than two million homes with clean electricity and as such will provide significant contributions to energy security.

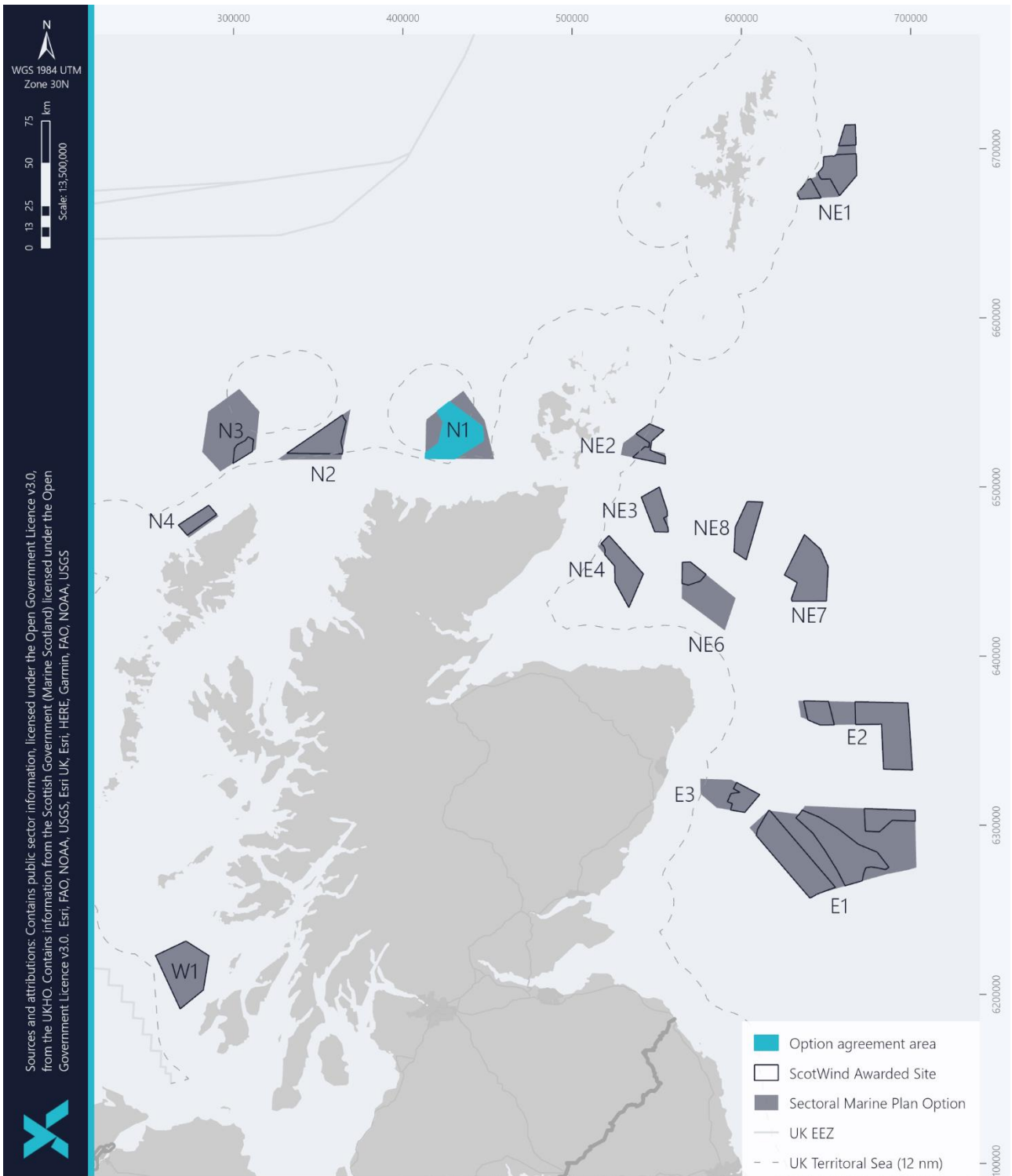


Figure 2-2 ScotWind Plan Options and the awarded option agreement sites (including the Option Agreement Area (OAA) for the offshore Project)



2.5 Economic benefit

The energy sector in the UK plays a central role in the economy and renewable energy can play a major role in boosting the economy. The development of home-grown renewable energy can help the UK to avoid paying to import energy.

The UK Government's Review of Electricity Market Arrangements (REMA) (BEIS, 2022) seeks views on a wide range of options to address the combined challenges of responding to higher global energy costs, the need to further boost energy security and move the UK to a cleaner energy system to ensure the full decarbonisation of the electricity system by 2035. The review states that:

"The only long-term, sustainable solution to high prices is to reduce our reliance on fossil fuel fired generation, and unlock the full potential of our abundant, cheap renewable resources – particularly wind and solar... We have the opportunity to design an electricity system which passes the savings of renewable electricity generation onto consumer bills, keeps us on our world-leading decarbonisation trajectory, and ensures our supply of energy is secure and stable. Our electricity markets will be the backbone of this future electricity system. So it is critical that they are designed right, with renewables (and the wider ecosystem they require) in mind"

Renewable energy continues to create investment opportunities and jobs throughout the supply chain. The Office for National Statistics (ONS) estimates that private investment in UK energy infrastructure reached £6.4 billion in 2020 (ONS, 2022). Offshore Energy UK (OEUK) estimate for every £1 million of oil and gas Gross Value Added (GVA), £2.1 million is generated elsewhere in the economy (OEUK, 2022). ScotWind will deliver over £750 million in revenues for the public purse through the initial awards alone, and developers have committed to invest an average of £1.4 billion per project, equating to more than £28 billion of potential investment in Scotland's supply chain. The 'Draft Energy Strategy and Just Transition Plan' (Scottish Government, 2023a) states that:

"Once operational, the [ScotWind] projects will raise billions more in annual rental revenues, which will be invested back into Scotland, benefitting our communities and our economy. We welcome the commitments from developers to invest an average of £1.4 billion in the Scottish supply chain across the 20 ScotWind projects. This equates to £28 billion of potential Scottish economic activity, and around £1 billion of investment for every gigawatt of capacity built."

ONS estimate that currently there are 20,500 people employed in the 'Low Carbon and Renewable' sector in Scotland, which has an estimated turnover of over £5 billion (ONS, 2020). Independent research carried out for the Scottish Trades Union Congress (STUC) shows that ScotWind could add between 2,500-14,400 Full Time Equivalent (FTE) employment (Scottish Government, 2023a). It is estimated for the Project alone, in a high case, up to 4,147 jobs will be created in the UK and up to 2,053 jobs in Scotland, across the lifetime of the Project (see chapter 19: Socio-economics). An SCDS was prepared for the Project and submitted to CES as part of the ScotWind leasing process and sets out how OWPL will meet its investment in developing supply chain capacity within the UK.

Furthermore, there are significant opportunities for the Scottish supply chain from Scotland offshore wind potential. In 2021, the Scottish Offshore Wind Energy Council (SOWEC), published its Strategic Infrastructure Assessment (SIA) for offshore wind (SOWEC, 2021). The SIA makes clear, that the sector must work collaboratively, both to help focus



activity and investment in Scottish ports, and to facilitate more meaningful engagement between Scottish suppliers and tier one manufacturers and installers.

SOWEC has developed a Collaborative Framework Charter which encourages developers, the public sector and the supply chain to work together to maximise deployment of offshore wind projects and supply chain opportunities. The Framework was launched by the First Minister for Scotland in May 2022 and has been signed by 24 offshore wind developers, of which the consortium of companies forming OWPL are signatories (Offshore Wind Scotland, 2022). As part of the Project proposal, the supply chain strategy has been specifically designed to maximise opportunities for the north of Scotland. This will be enabled by a £105 million project-level investment initiative that will be enhanced to £140 million by third parties, in advance of a final investment decision in 2026.

The Scottish Government have developed a Strategic Investment Model to facilitate timely, strategic investment through the pooling / sharing and coordination of public and private sector funds (Scottish Government, 2023a). The Strategic Investment Model was launched in May 2023.

Finally, the Scottish Government are currently updating their 'Good Practice Principles for Community Benefit from Offshore Renewable Energy Developments' (Scottish Government, 2018), and consultation on new draft guidance will be ongoing throughout 2023 (Scottish Government, 2023a). The consultation aims to build the evidence base of community benefits and explore the potential for shared ownership of offshore renewable energy, with an aim of 2 GW of community and locally owned renewable energy by 2030. OWPL are in the process of developing a Community Benefit Fund (CBF) with input from local communities to ensure the benefits of the Project meet the local public needs. The CBF will be shared across communities in Caithness, Sutherland, and Orkney and engagement with local communities will ensure that the fund is managed effectively and fairly.

2.6 Renewable energy production

The Project will provide renewable electricity throughout its operational life. The number of homes equivalent that can be supplied with energy generated by the Project has been calculated using the equation below, following Renewable UK guidance (Renewable UK, 2017).

$$\text{Homes supplied} = C \times 0.4022 \times 8760 / 3509$$

Whereby:

- C is the installed capacity of the wind farm in kilowatts (kW), in this case taken to be approximately 2 GW⁵;
- 0.4022 is the decimalised capacity factor for offshore wind calculated by Renewable UK as a rolling average of the past five years using data (on an unchanged configuration basis) from the Digest of UK Energy Statistics published by BEIS (dimensionless) using statistics from 2017–2021 (Renewable UK, 2022);
- 8,760 is the number of hours in a year; and
- 3,509 kWh is the average UK household annual energy consumption (kWh/household) (Renewable UK, 2022).

⁵ The expected installed capacity of the Project is 2 GW. However, this does not reflect a 'cap' on installed capacity and is subject to change with technological advancements at the time of construction in order to maximise the production of renewable energy to meet climate change targets.



Using this equation the Project is anticipated to produce enough electricity each year to meet the needs of the equivalent of 2,008,134 households. However, using a project specific capacity factor of approximately 55%, it is estimated that enough electricity will be produced each year to meet the needs of the equivalent of approximately 2,746,081 households.

2.7 Emissions reduction and carbon offset

All industries, including the renewable energy industry, emit GHGs. However, renewable energy generation also avoids the emission of GHG by replacing other, more carbon intensive forms of electricity generation. This emissions reduction is put into the wider energy generation industry context throughout this section.

A carbon assessment is a method of measuring a product or process's effect on the environment with regard to GHG emissions throughout its lifetime. During the fabrication, construction and operation of the Project, and as a result of its eventual decommissioning, GHG emissions will be generated and released. Over the lifetime of the Project, these emissions will be offset by the net reduction in emissions through the generation of energy via low carbon wind technology. The carbon assessment for the Project is provided in SS1: Climate and carbon assessment.

The potential GHG emissions savings of the Project have been determined by calculating the Carbon Dioxide Equivalent (CO₂e) emissions generated from other forms of electricity generation, assuming that the Project will displace the requirement for generation from these other sources. In GHG accounting, it is considered good practice to contextualise emissions against pre-determined carbon budgets (IEMA, 2022). In the absence of sector-based or local emissions budgets, the UK Carbon Budgets can be used to contextualise the level of significance.

The total emissions over the construction, operation and maintenance and decommissioning of the Project are estimated as 5 million tCO₂e and the carbon payback period (i.e. the period of time before the Project has avoided more CO₂e than has been produced by its construction and operation) is estimated to be 8 years. By way of a comparison and to demonstrate the reduction in CO₂e attributable to the Project, the potential CO₂e savings of the Project were also estimated by calculating the equivalent emissions generated from other forms of electricity generation. Based on the total electricity generation associated with the Project, the equivalent total emissions which would have resulted if the generation occurred via the national grid, is 16.5 million tCO₂e, 105% higher than that of the Project. The exact value for the emissions savings of the Project will ultimately depend on the size and number of Wind Turbine Generators (WTGs) installed, as such the carbon assessment provides an approximate range rather than a definitive total for the Project's total CO₂e emissions and carbon payback period.



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2.9 Abbreviations

ACRONYM	DEFINITION
BEIS	Department for Business, Energy and Industrial Strategy
CBF	Community Benefit Fund
CED	Climate Emergency Declaration
CES	Crown Estate Scotland
CfD	Contracts for Difference
CO ₂	Carbon Dioxide
CO ₂ e	Carbon Dioxide Equivalent
COP21	21 st United Nations Climate Change Conference of the Parties
COP26	26 th United Nations Climate Change Conference of the Parties
COP27	27 th United Nations Climate Change Conference of the Parties
DECC	Department of Energy and Climate Change
EIA	Environmental Impact Assessment
FTE	Full Time Equivalent
G7	Group of Seven
GVA	Gross Value Added
GW	Gigawatt
GHG	Greenhouse Gas
IPCC	Intergovernmental Panel on Climate Change



ACRONYM	DEFINITION
kW	Kilowatt
kWh	Kilowatt hour
MW	Megawatt
NPF	National Planning Framework
NPS	National Policy Statement
OAA	Option Agreement Area
OEUK	Offshore Energies UK
ONS	Office of National Statistics
RED	Renewable Energy Directive
REMA	Review of Electricity Market Arrangements
SCDS	Supply Chain Development Statement
SIA	Strategic Infrastructure Assessment
SMP	Sectoral Marine Plan
SOWEC	Scottish Offshore Wind Energy Council
STUC	Scottish Trades Union Congress
UK	United Kingdom
UN	United Nations
UNFCCC	United Nations Framework Convention on Climate Change
WTG	Wind Turbine Generator



ACRONYM	DEFINITION
°C	Degrees Celsius
