GREEN VOLT

Chapter 2
Need for the Project

Offshore EIA Report: Volume 1

Revision history

Revision	Date	Description	Prepared	Checked	Approved
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Acronyms

Acronym	Description
BEIS	Department for Business, Energy and Industrial Strategy
CCC	Climate Change Committee
CfD	Contracts for Difference
CH_4	Methane
CNOOC	China National Offshore Oil Corporation
CO_2	Carbon Dioxide
EEZ	Exclusive Economic Zone
EIA	Environmental Impact Assessment
EU	European Union
GW	Gigawatt
INTOG	Innovation and Targeted Oil and Gas
MHWS	Mean High Water Springs
MW	Megawatt
NSTA	North Sea Transition Authority
OGA	Oil and Gas Authority (now NSTA)
OMFE	Outer Moray Firth Electrification
OWIC	Offshore Wind Industry Council
SOWEC	Scottish Offshore Wind Energy Council
UK	United Kingdom
UNFCCC	United Nations Framework Convention on Climate Change

Glossary

Term	Description
Applicant	Green Volt Offshore Windfarm Ltd.
Buzzard	Buzzard Platform Complex.
Buzzard Export Cable Corridor	The area in which the export cables will be laid, from the perimeter of the Windfarm Site to Buzzard Platform Complex.
Green Volt Offshore Windfarm	Offshore windfarm including associated onshore and offshore infrastructure development (Combined On and Offshore Green Volt Projects).
Horizontal Directional Drilling	Mechanism for installation of export cable at landfall.
Inter-array cables	Cables which link the wind turbines to each other and the offshore substation platform.
Landfall Export Cable Corridor	The area in which the export cables will be laid, from the perimeter of the Windfarm Site to landfall.
Mean High Water Springs	At its highest and 'Neaps' or 'Neap tides' when the tidal range is at its lowest. The height of Mean High Water Springs (MHWS) is the average throughout the year, of two successive high waters, during a 24-hour period in each month when the range of the tide is at its greatest (Spring tides).
Moorings	Mechanism by which wind turbine generators are fixed to the seabed.
NorthConnect Parallel Export Cable Corridor Option	Landfall Export Cable Corridor between NorthConnect Parallel Landfall and point of separation from St Fergus South Export Cable Corridor Option.
NorthConnect Parallel Landfall	Southern landfall option where the offshore export cables come ashore.
Offshore Development Area	Encompasses i) Windfarm Site, including offshore substation platform ii) Offshore Export Cable Corridor to Landfall, iii) Export Cable Corridor to Buzzard Platform Complex.

Offshore export cables	The cables which would bring electricity from the offshore substation platform to the Landfall or to the Buzzard Platform Complex.
Offshore Export Cable Corridor	The proposed offshore area in which the export cables will be laid, from offshore substation to landfall or to the Buzzard Platform Complex.
Offshore infrastructure	All of the offshore infrastructure, including wind turbine generators, offshore substation platform and all inter-array and export cables.
Offshore substation platform	A fixed structure located within the Windfarm Site, containing electrical equipment to aggregate the power from the wind turbine generators and convert it into a more suitable form for export to shore.
Onshore Export Cable Corridor	The proposed onshore area in which the export cables will be laid, from landfall to the onshore substation.
Project	Green Volt Offshore Windfarm project as a whole, including associated onshore and offshore infrastructure development.
Safety zones	An area around a structure or vessel which must be avoided.
St Fergus South Export Cable Corridor Option	Landfall Export Cable Corridor between St Fergus South Landfall and point of separation from NorthConnect Parallel Export Cable Corridor Option.
St Fergus South Landfall	Northern landfall option where the offshore export cables come ashore.
Windfarm Site	The area within which the wind turbine generators, offshore substation platform and inter-array cables will be present.

CHAPTER 2: NEED FOR THE PROJECT

2.1 Introduction

1. This chapter of the **Offshore Environmental Impact Assessment (EIA) Report** provides an overview of the need for the Project (in this instance the Project refers to the offshore elements of the Green Volt Offshore Windfarm only, up to Mean High Water Springs (MHWS)). It describes how the decarbonisation of offshore oil and gas industry operations through the provision of renewable electricity contributes towards meeting international and national policy commitments to reduce greenhouse gas emissions from offshore industry, further development of renewable energy and also wider policy objectives for United Kingdom (UK) energy security, decarbonisation and economic growth. The legislation outlined in this chapter will be cross referenced and discussed in further detail in **Chapter 3: Policy and Legislative Context** of this **Offshore EIA Report**.

2. The UK requires a range of energy generation infrastructure to ensure it has a secure and affordable energy supply and can meet its binding commitments to addressing climate change and adopting renewable technologies as a significant proportion of its energy generation mix. Offshore wind, as a source of renewable energy, offers Scotland a wide range of benefits from an economic growth, energy security and decarbonisation perspective. The Project presents an opportunity to demonstrate decarbonisation of existing oil and gas facilities in the Outer Moray Firth and has the potential to make a significant contribution to both reducing carbon dioxide (CO_2) emissions and securing renewable energy supply. The incorporation of floating offshore wind technologies into the Project will also present an opportunity for the Scottish floating offshore wind industry to further develop the existing maritime infrastructure and support the creation of highly skilled jobs in Scotland. Furthermore, the development of the Project will help provide social, economic and environmental benefits to Scotland, the UK and globally.

2.2 The Need to Address Climate Change

3. The emissions of greenhouse gases have been identified as a significant source of anthropogenic climate change (IPCC,2018). The burning of fossil fuels for electricity production has been established as a significant greenhouse gas emission source. A focus on the development of renewable energy for electricity production is presented as a solution to reducing CO_2 emissions and the resulting anthropogenic climate change. To enable the development of renewable energy for electricity production, numerous climate change protocols and agreements and renewable energy policies and legislation are being implemented. These are discussed in **Chapter 3: Policy and Legislative Context**, and include:

   - The Kyoto Protocol;
   - The Paris Agreement;
   - The Climate Change (Scotland) Act 2009, amended by the Climate Change (Emissions Reduction Targets) (Scotland) Act 2019;
   - The Climate Change (Annual Targets) (Scotland) Order 2011; and
   - UK Oil and Gas North Sea Transition Deal.

4. The Scottish Government, along with many others across the world, declared a climate emergency in 2019, outlining the need for swift and decisive action to limit the warming of the planet by 1.5 degrees compared to 1990 levels.

5. In October 2021, the UK Government published the Net Zero Strategy (BEIS, 2021), which sets out its intended pathway for decarbonisation over the period until 2037, the end of the Sixth Carbon

Budget (Climate Change Committee; CCC, 2020) period, on the way to Net Zero by 2050. The Net Zero Strategy sets a clear and credible range for emissions reduction in each sector of the economy. The UK is one of the few countries with emissions targets in line with the long-term temperature goal of the Paris Agreement. CCC's most recent progress report (CCC, 2022) records that Emissions in 2021 bounced back to some extent after COVID-19 but remain 10% below 2019 levels. The report also tracks progress and highlights risks to the delivery of the UK Net zero Strategy.

2.3 Offshore Wind and the Oil & Gas Industry

6. Emissions from the fossil fuel supply sector were 34 $MtCO_2e$ in 2020, which represented 8% of the UK total. Around 87% of the emissions came from oil and gas production, processing and refining (CCC 2021). CCO_2 comprised 83% and methane (CH_4) emissions 16% of the sector's total emissions. The Energy Security Strategy signalled an increase in North Sea oil and gas production to contribute to displacing the substantial portion of global fossil fuel supply that comes from Russia. As an immediate measure to provide incentives for the sector, on 26th May 2022 the UK Government announced the Energy Profits Levy which notably introduced a 90% tax relief for firms that invest in oil and gas extraction. Increased oil and gas production in the UK would have implications for emissions if new oil and gas installations lead to additional unabated energy use (CCC, 2021).

7. As of 2021, approximately 70% of offshore emissions associated with oil and gas production in the North Sea are caused by offshore power generation (Rystad Energy, 2020). To reduce the emissions from these facilities, the development of floating offshore wind farm projects to provide renewable electricity is increasingly being explored. Green Volt Offshore Windfarm Limited (the Applicant) would demonstrate the technological feasibility of using a floating offshore wind, at industrial output levels, to support the decarbonisation of the UK's oil and gas industry North Sea operations. The Project would be the UK's first and largest array of floating wind turbines with onshore grid connection to commercially support this process and will strengthen a leading position for Scotland in the development and deployment of floating wind technology. The Project embodies a bridging of the current divide between offshore renewables and the oil and gas sector.

8. Floating substructures open the possibility for future offshore wind farms to be located further from shore in the deeper waters of the Exclusive Economic Zone (EEZ), eliminating visual impacts from the Scottish coastline whilst accessing hitherto untapped wind resources. Floating structures also offer benefits over conventional fixed foundations in terms of reduced construction and installation costs, with limited use of very large offshore construction vessels at the development site and none of the extensive piling operations associated with a fixed offshore wind farm. Floating wind therefore also minimises potential noise impacts upon marine mammals and fish during construction and installation phase of the development and lowers impacts to other users of the sea from reduced installation time and vessel presence.

9. The North Sea Transition Deal, agreed between the UK Government and UK oil and gas industry, was announced in March 2021. The sector deal will support workers, businesses, and the supply chain through the transition to a low carbon future by harnessing the industry's existing capabilities, infrastructure and private investment potential to exploit new and emerging technologies such as hydrogen production, Carbon Capture Usage and Storage, offshore wind, as well as supporting decommissioning.

10. Key commitments in the North Sea Transition Deal include:

- The sector setting early targets to reduce emissions by 10% by 2025 and 25% by 2027 and committing to cut emissions by 50% by 2030; and
- Joint government and oil and gas sector investment of up to £16 billion by 2030 to reduce carbon emissions. This includes up to £3 billion to replace fossil fuel-based power supplies on oil and gas platforms with renewable energy.

11. Platform electrification is a key component of the North Sea Transition Authority's (NSTA) (previously the Oil and Gas Authority (OGA)) vision for an integrated energy basin. The OGA's Energy Integration Report (OGA, 2019) found that the UK Continental Shelf could (through a mix of platform electrification, carbon capture and storage, offshore wind and hydrogen) absorb up to 60% of the UK's entire CO_2 abatement needed to achieve net zero emissions by 2050.

12. Power generation accounts for around two thirds of oil and gas production emissions. It is anticipated that powering installations using electricity either from a cable to the shore or from a nearby wind farm, could lead to two to three million tonnes per annum of CO_2 emissions reductions by 2030, which is equivalent to the annual carbon emissions from households in a city the size of Dundee and would reduce current production emissions by 20%, rising to 40% by 2030 (NSTA, 2021). With an indicative capacity of 560 MW, a key target of the Project is to reduce the emissions of the Buzzard Platform Complex (Buzzard) by 300,000 tonnes of CO_2 per annum whilst offering a nearby connection point for other oil and gas installations in the Outer Moray Firth looking to decarbonise their onboard power generation.

13. In September 2019, OGA (now NSTA) Chief Executive said: "Electrification of oil and gas installations is a vital part of industry's licence to operate and to meet its North Sea Transition Deal emissions reduction targets. This is also a big opportunity for industry to support offshore wind expansion, with lasting infrastructure that will provide benefits beyond oil and gas, long into the future."

14. The Applicant has been liaising with the Outer Moray Firth Electrification (OMFE) Group, which includes China National Offshore Oil Corporation (CNOOC) Petroleum Europe Ltd, Harbour Energy, Repsol Sinopec, Ithaca Energy and Jersey Oil & Gas to discuss supply and gridding options for their assets in the Outer Moray Firth region of the UK North Sea.

15. The Project would directly contribute to the early targets for emissions reduction set out in the North Sea Transition Deal by making 100% renewable power available for Buzzard and could form the basis for future developments to power a wider offshore grid. The concept has strong alignment with the NSTA's position on platform electrification and infrastructure integration.

2.3.1 Crown Estate Scotland's Innovation Targeted Oil and Gas (INTOG) Decarbonisation Leasing

16. The Scottish and UK Governments are currently encouraging the development of floating offshore wind farms as a method of reducing the greenhouse gas emissions generated from the operations of oil and gas facilities. Crown Estate Scotland has established the Innovation Targeted Oil and Gas (INTOG) leasing round, in line with Marine Scotland's Initial Plan Framework for INTOG projects, to encourage developers to submit lease applications to develop floating offshore wind projects that will specifically power renewable electricity for offshore oil and gas facilities in Scottish waters (Crown Estate Scotland, 2021). The areas designated in the leasing round are situated next to oil and gas facilities which are actively seeking to support their operations with renewable electricity production to reduce greenhouse gas emissions. The creation of the INTOG leasing round, alongside the development of floating offshore wind technology, is expected to increase the number of floating offshore wind projects that provide renewable electricity to power oil and gas facilities.

17. The Project will seek to acquire a site lease through the INTOG process. At the time of writing in late 2022, the Development Area falls entirely within a proposed area of search included in the INTOG process (Area 3-b), with the Windfarm Site located in a marine brownfield site historically used by the oil and gas industry. Potential INTOG projects will be able to apply for exclusivity agreements at an early stage, although only project locations included within the final INTOG sectoral marine plan will be awarded option agreements. Projects that progress through the planning process will still require the appropriate development consents.

18. Whilst it is hoped that the Project will achieve an award of seabed rights from Crown Estate Scotland through the INTOG leasing process, it has not done so to date. The Project, as described in this **Offshore EIA Report**, is entirely subject to award, or not, of seabed rights by the Crown Estate Scotland within that process.

19. This **Offshore EIA Report** has been prepared by Royal HaskoningDHV and specialist subcontractors for the Project and does not reflect the views or intentions of Crown Estate Scotland or any other party. Any references in this report to general terms of seabed rights or timetable in relation thereto are indicative only and do not represent any confirmation of commercial terms as between Crown Estate Scotland and Flotation Energy Ltd and its joint venture partner Vårgrønn.

2.3.2 Power to the Grid

20. Whilst a renewable energy source is being developed to electrify and decarbonise offshore oil and gas assets, provision is also being built into the Project for any excess electricity generated to be exported to the UK grid via connection to the Scottish mainland near Peterhead. This will help contribute towards Scottish and UK renewable energy demand and targets out with the oil & gas industry. In addition, this extends the generating life of the Project beyond the lifetime of the Buzzard infrastructure to future-proof the Project. Surplus power from the wind farm exported to the UK grid, would provide enough renewable electricity to power at least 300,000 UK homes and mitigate an additional 200,000 tonnes of CO_2 emissions, if used to modify the current mix of renewable / non-renewable power on the UK grid.

2.4 Scottish Offshore Wind

21. Scotland is considered to have the most abundant natural wind resource in Europe with around 25% of the continent's wind resource (Scottish Government, 2021). The seabed around the coast of Scotland has a combination of both shallow and deeper waters which enables the development of both fixed and floating offshore wind projects. In addition to having a historical oil and gas industry with infrastructure and resources transferable to offshore wind development, Scotland has attracted numerous offshore wind projects. Acknowledging the available wind resource and offshore wind development opportunity, the UK and Scottish Government have committed to ensuring that offshore wind is a leading contributing source of renewable electricity to the UK National Grid.

22. There has been a significant increase in both the number and size of offshore wind farms being developed in Scotland. As of August 2021 in Scotland, 2.3 GW of offshore wind capacity is in operation or under construction and a further 2.9 GW is consented (Smith, 2021). As well as the INTOG leasing round process (**Section 2.3.1**), Scotland undertook a competitive offshore wind leasing round, ScotWind, which announced the successful projects in January 2022.The ScotWind tender process awarded a total of 26 GW of offshore wind projects, 10.4 GW of fixed offshore wind and 14.6 GW of floating offshore wind. The continued development of offshore wind within Scotland, including the advancement of floating wind farms in deeper waters further offshore is therefore seen as critical to ensuring that Scotland, the UK and Europe can meet their binding energy and climate change targets.

23. Scotland is therefore one of the best locations for innovative solutions to electrifying oil and gas infrastructure, through abundant wind resources, a substantial oil and gas industry and wealth of experience in floating wind farms development and offshore infrastructure installation already established.

2.5 Economic Benefits

24. It is estimated by the Offshore Wind Industry Council (OWIC) (OWIC, 2021) that the 26,000 jobs supported by the UK offshore wind industry in 2021 will rise to 69,800 by 2026, in addition to a £60

billion private investment in the UK over the same duration. This research shows that 30% of the UK's offshore wind workforce is currently based Scotland, with this set to increase to over 20,000 jobs in the next few years. Many of these highly skilled jobs are based in coastal and rural areas, bringing investment and opportunities to local communities which otherwise would not exist (Scottish Renewables, 2021).

25. This level of job creation and economic investment has been recognised by the UK government and has subsequently set a target of 50 GW of new offshore wind capacity to be installed by 2030 (UK Government, 2022a). In order to support offshore wind developers to achieve this target, the UK government has made financial support available under the Contracts for Difference (CfD) support scheme. This scheme provides a guaranteed rate to the developers for the electricity they produce over a 15-year period. The support from the scheme incentives offshore wind developers into the UK market, providing an economic contribution to the UK economy. Energy from offshore wind has previously been considered as being an expensive alternative to more conventional forms of energy generation such as coal, gas and nuclear, however the results of Allocation Round 4 CfD auctions announced on the 7th July 2022 showed a continued fall in the cost of offshore wind for projects which will be realised over the next several years. The cost of offshore wind, as measured by the CfD auction strike prices, reduced from £57.50/MWh in 2017 to £39.70 in 2019 and £37.35 in 2022, making offshore wind one of the most attractive and cost-effective methods of generating large quantities of low carbon energy.

26. There are currently several operational offshore wind projects located in Scottish waters such as Beatrice, Moray East, Aberdeen Bay, which are fixed-bottom wind farms, and Kincardine and Hywind Scotland Pilot Park, which are floating offshore wind farms. Additional offshore wind projects are currently in the pre-construction stage or being constructed such as Inch Cape, Neart na Gaoithe, Seagreen, Berwick Bank and Moray West. The Moray East project, currently the largest project in Scotland built to date, has a total project finance investment of £2.6 billion with a significant contribution to the Scottish economy (Moray East Offshore Wind Farm, 2018). This represents the level of investment that offshore wind projects can contribute to the UK and Scottish economy. Further assessment on socioeconomics is provided in **Chapter 19: Socioeconomics, Tourism and Recreation**.

2.6 The Need for Energy Security

27. Energy consumers within the UK market are required to be supplied with reliable, secure and affordable energy sources. The UK energy market has historically been dependant on energy supplies from the North Sea oil and gas reserves. Due to these North Sea oil and gas reserves being in decline since the 1990s, the UK has become increasingly reliant on energy supplies from other regions of the world (BEIS, 2020). This reliance on overseas energy supplies has meant the UK market can become exposed to global energy price fluctuations from global events. The fluctuations from global events can also become incorporated with a growth in energy demand from emerging markets, which can increase the wholesale cost of energy and reduction in energy security. This has been evident following the resumption of growth in economies following the Covid-19 pandemic leading to a surge in gas demand and a subsequent substantial increase in wholesale gas prices (OIES, 2022). In addition, the politics surrounding the Russo-Ukrainian war and the desire to reduce global dependency on Russian hydrocarbons adds further challenges to global energy.

28. The Secretary of State for Business, Energy and Industrial Strategy (BEIS) has called for accelerated investment in domestic oil and gas production and re-investment of profits into the North Sea, whilst doubling down in investments in the clean energy transition (UK Government, 2022b). The UK and Scottish Government have also identified offshore wind development as an important contribution towards energy security. The Project marries two important aspects of energy security through supporting the continuation of in-country/native/ indigenous oil and gas production, and growth of renewable electricity, which, particularly from offshore wind, is cost-effective and reliable. The Project

is working to an ambitious programme, ahead of the publication of the Sectoral Marine Plan for Offshore Wind Energy for INTOG (see **Chapter 3: Policy and Legislative Context** for details) due to the need to electrify the oil and gas industry to reach emission targets, and further support energy security for Scotland and wider UK, reducing reliance on imported energy supplies and associated stress on the UK economy.

2.7 Summary

29. In summary, the Project will contribute to the reduction in CO_2 emissions by supplying renewable electricity to the Buzzard oil and gas platform complex that would otherwise be generated by a non-renewable source. This supply of renewable electricity will contribute towards reducing CO_2 emissions that is central to the Scottish and UK Governments climate change policies. The Project will also contribute towards the Scottish and UK economy's by providing investment into the emerging floating offshore wind industry and supporting the associated growing skilled workforce.

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