Bellrock Offshore Wind Farm

Wind Farm Development Area

Environmental Impact Assessment Report - Volume I

Non-technical Summary

Date: April 2026

Document Number: RHDV_BEL_CST_REP_0001

Revision Number: 1

Classification: Public

Revision History

Rev.	Prepared By	Checked By	Approved By	Date
1	Haskoning	ES	BMcG	01/04/2026

This page is intentionally blank

Contents

List of Tables

List of Plates

1 Introduction

1.1 Overview

1. In January 2022, Crown Estate Scotland awarded Bellrock Offshore Wind Farm Limited (the **Applicant**) the rights to develop an area of seabed for the Bellrock Wind Farm Development Area (**WFDA**), which forms part of the proposed Bellrock Offshore Wind Farm (the **Bellrock Project**).

2. Located in the central North Sea, 120 km east of Stonehaven and 116 km southeast of Peterhead (Aberdeenshire), the Bellrock WFDA covers an area of 280 km^2 (as shown on **Plate 1.1**).

3. The Applicant has submitted the following consent and licence applications to the Marine Directorate - Licensing Operations Team, acting on behalf of Scottish Ministers, for the Bellrock Wind Farm Infrastructure located within the Bellrock WFDA:

   - Section 36 Consent under the Electricity Act 1989; and
   - Marine Licence under the Marine and Coastal Access Act 2009.

4. The Bellrock WFDA Environmental Impact Assessment (**EIA**) Report accompanies the above consent and licence applications and has been prepared in accordance with the Electricity Works (EIA) (Scotland) Regulations 2017 and The Marine Works (EIA) Regulations 2007 (the EIA Regulations).

5. The Bellrock WFDA EIA Report assesses the potential impacts of the construction, operation and maintenance, and decommissioning of the Bellrock Wind Farm Infrastructure which includes:

   - Wind turbine generators which will be mounted on floating substructures, platforms designed to keep the wind turbine generators stable;
   - Mooring lines and anchors that secure the floating substructures to the seabed;
   - Subsea cable hubs laid on the seabed to connect multiple inter-array cables;
   - Inter-array cables linking wind turbine generators, subsea cable hubs and/or offshore substations[1];
   - Scour protection (as required) to prevent seabed movement around the anchors;
   - Cable protection (as required) to prevent damage to the inter-array cables; and
   - Ancillary infrastructure including buoys.

[1] Offshore substations will be assessed within a separate Offshore Transmission Development Area EIA Report and will be subject to a separate consent application.

6. The Bellrock Project also includes two other Development Areas, namely the:

- Offshore Transmission Development Area (**OfTDA**) within which the Offshore Transmission Infrastructure will be developed; and the
- Onshore Transmission Development Area (**OnTDA**) within which the Onshore Transmission Infrastructure will be developed.

7. **Plate 1.2** illustrates the key Offshore Transmission Infrastructure and Onshore Transmission Infrastructure. The Bellrock OfTDA and Bellrock OnTDA do not form part of the Bellrock WFDA consent applications, and will require the following consents which will be applied for in due course:

- Bellrock OfTDA: Marine Licence under the Marine and Coastal Access Act 2009 and Marine (Scotland) Act 2010. A Marine Licence application will be submitted to the Marine Directorate - Licensing Operations Team, supported by an EIA Report; and
- Bellrock OnTDA: Planning Permission in Principle under the Town and Country Planning (Scotland) Act 1997. An application for Planning Permission in Principle will be submitted to Aberdeenshire Council, supported by an EIA Report.

8. The Offshore Transmission Infrastructure and Onshore Transmission Infrastructure will export the renewable electricity generated by the wind turbine generators, to the National Electricity Transmission System via SSEN Transmission's proposed Hurlie substation, west of Stonehaven in Aberdeenshire (shown on **Plate 1.1**).

9. At the time of writing, the Applicant is undertaking site selection studies for the Bellrock OfTDA and OnTDA. The site selection process considers potential environmental impacts, engineering requirements and feedback from stakeholders, including local communities.

10. The Bellrock WFDA EIA Report considers the relationship and interactions between the Wind Farm Infrastructure and the other components of the Bellrock Project. The likely significant effects of the Wind Farm Infrastructure together with the Offshore Transmission Infrastructure and Onshore Transmission Infrastructure, so far as these can be ascertained at this stage, are assessed primarily as part of the Cumulative Effects Assessments presented within the Bellrock WFDA EIA Report.

1.2 Purpose of this Non-technical Summary

11. This document is a Non-technical Summary of the Bellrock WFDA EIA Report, which supports the Bellrock WFDA Section 36 Consent and Marine Licence applications.

12. This Non-technical Summary provides, in non-technical language, a summary of the key environmental information which has been gathered to carry out an assessment of the likely significant environmental effects of the Bellrock Wind Farm Infrastructure, and presents the key outcomes of these assessments. The complete Bellrock WFDA EIA Report is presented in **Volume II** to **Volume IV**.

Plate 1.1: Location of the Bellrock Wind Farm Development Area

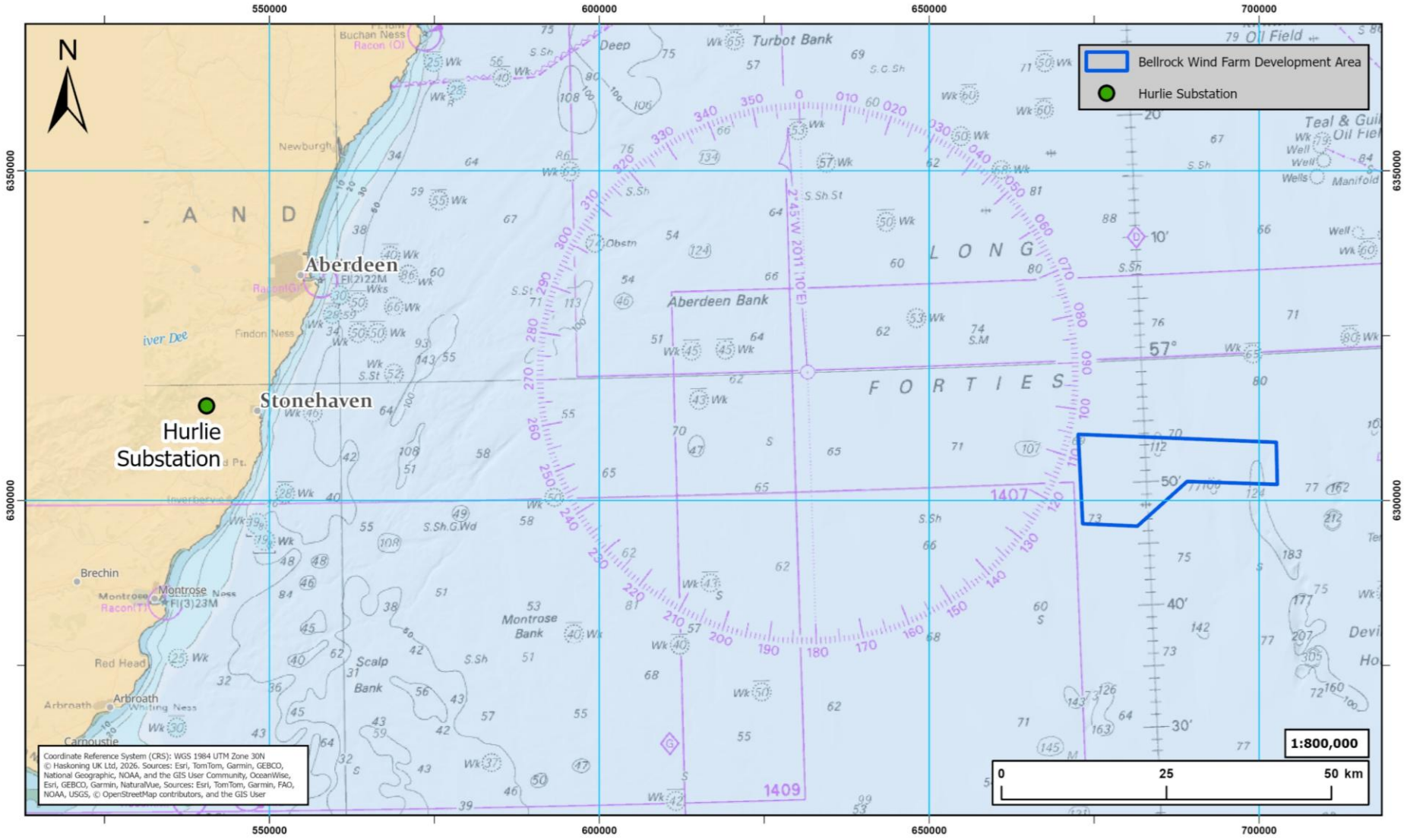
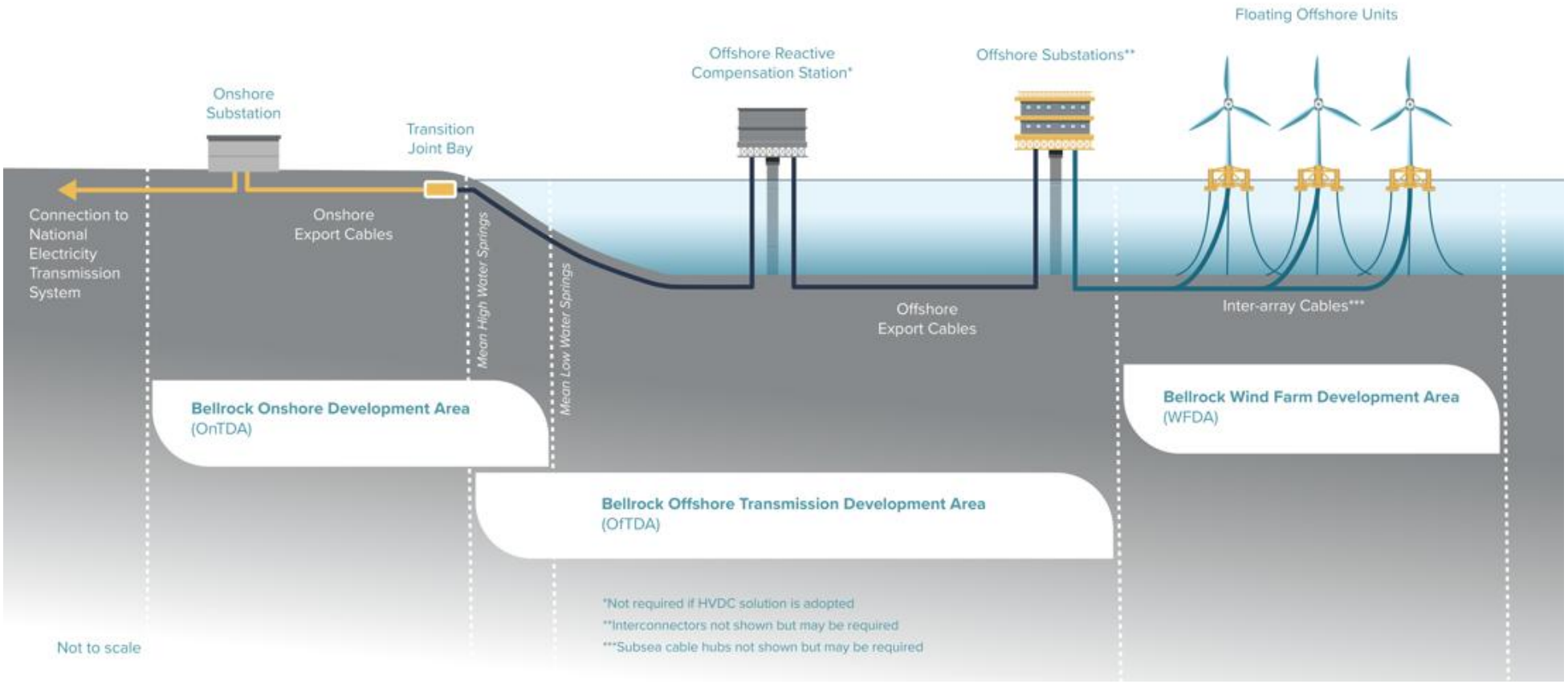


Plate 1.2: Overview of the Bellrock Project Development Areas



1.3 The Applicant

13. The Bellrock Project is being developed by Bellrock Offshore Wind Farm Limited, which, headquartered in Edinburgh, is a wholly owned subsidiary of Nadara Limited (**Nadara**). Nadara is a leading UK-based renewables company and one of the largest independent power producers in Europe.

14. Nadara aims to contribute to a world-leading floating offshore wind industry in the UK, combining innovative technology with a plan to attract and grow a skilled Scottish workforce and stimulate a thriving local supply chain, and is well placed to deliver world class floating offshore wind farm projects.

1.4 Need for the Bellrock Project

15. The Bellrock Project represents a major national-scale renewable energy development that will help achieve Scotland's net zero targets whilst providing energy security for future generations.

16. It will expand floating offshore wind capability and deliver significant supply chain expenditure within Scotland, with long-term employment and economic benefits.

17. With a capacity to export up to 1.8 GW of electricity, it has the potential to power the equivalent energy needs of over 1.7 million homes with cleaner, home-grown renewable energy.

1.5 Purpose and Structure of the Bellrock WFDA EIA Report

18. The Bellrock WFDA EIA Report provides a description of the Wind Farm Infrastructure and details the environmental information gathered, and the conclusions of a series of assessments of the likely significant effects of the Wind Farm Infrastructure on the receiving environment.

19. The Bellrock WFDA EIA Report is structured as follows:

- Volume I: Non-technical Summary;
- Volume II: EIA Chapters;
- Volume III: EIA Figures; and
- Volume IV: EIA Appendices.

20. Based on the Scoping Opinion (**Appendix 1.2: Bellrock WFDA Scoping Opinion (Volume IV)**) issued by Marine Directorate - Licensing Operations Team on behalf of Scottish Ministers in August 2024, and subsequent discussions with stakeholders, the Bellrock WFDA EIA Report considers the following EIA topic areas:

- Chapter 6: Marine Geology, Oceanography and Physical Processes;
- Chapter 7: Benthic Ecology;
- Chapter 8: Fish and Shellfish Ecology;
- Chapter 9: Marine Mammals;
- Chapter 10: Offshore Ornithology;
- Chapter 11: Commercial Fisheries;
- Chapter 12: Shipping and Navigation;
- Chapter 13: Aviation and Radar;
- Chapter 14: Marine Infrastructure and Other Users;
- Chapter 15: Marine Archaeology and Cultural Heritage;
- Chapter 16: Socioeconomics, Tourism and Recreation;
- Chapter 17: Greenhouse Gas Assessment;
- Chapter 18: Climate Change Risk; and
- Chapter 19: Major Accidents and Disasters.

21. The Scoping Opinion also agreed that the following topics did not need to be considered within the EIA Report:

- Seascape, Landscape, and Visual Impact Assessment, due to the Bellrock WFDA's distance from shore; and
- Offshore Air Quality, due to a lack of pathway for vessel and helicopter emissions to impact on human or ecological receptors.

1.6 Management Plans

22. Management plans are structured, site-specific frameworks used to implement mitigation measures identified during the EIA process, and ensure adherence to proposed mitigation measures, regulations and standards.

23. A number of management plans (provided in **Volume V**) will be prepared and implemented by the Applicant. These management plans will ensure that any proposed mitigation and monitoring measures to minimise environmental effects are fully implemented during the construction, and operation and maintenance of the Bellrock Wind Farm Infrastructure. Many of the management plans will require the approval of Scottish Ministers prior to the commencement of construction.

24. A number of these management plans will be developed through consultation with relevant stakeholders, and will be informed by the final design and construction methods to be adopted for the Bellrock Wind Farm Infrastructure. The Applicant has developed and submitted eight management plans as part of the Section 36 Consent and Marine Licence applications (see **Table 1.1**), four of which are outline management plans and will be updated after the Bellrock WFDA application is consented.

Table 1.1: List of Management Plans Submitted as Part of the Section 36 Consent and Marine Licence Applications

Plan/Programme	Purpose
Outline Marine Mammal Mitigation Protocol	Presents marine mammal mitigation measures to be adopted during construction, addressing noise created by piling, geophysical surveys, and unexploded ordnance (**UXO**) clearance.
Outline Vessel Management and Navigational Safety Plan	Presents measures to be adopted to ensure navigational safety and effective vessel management during construction and operation and maintenance.
Outline Lighting and Marking Plan	Presents aviation and marine lighting and marking requirements to be adopted to ensure navigational and aviation safety during construction, and operation and maintenance.
Outline Environmental Management Plan	Presents management measures to minimise environmental effects to be adopted during construction and operation and maintenance.
Fisheries Mitigation, Monitoring and Communication Plan	Presents mitigation, monitoring, and communication measures to be adopted during construction, and operation and maintenance, to avoid or minimise adverse effects on commercial fisheries.
Written Scheme of Investigation and Protocol for Archaeological Discoveries	Presents mitigation measures to be adopted during construction and operation and maintenance, to avoid or minimise adverse effects on marine archaeology and cultural heritage.
Marine Pollution Contingency Plan	Presents procedures, responsibilities, and response measures to be adopted during construction and operation and maintenance, to prevent, manage, and respond to accidental pollution incidents.
Invasive Non-native Species Mitigation Plan	Presents mitigation, control, and monitoring measures to avoid or minimise the risk of marine invasive non-native species during construction and operation and maintenance.

25. In addition to the submitted plans outlined above, the Applicant has committed to the development and implementation of the following plans and programmes:

- Construction Programme;
- Construction Method Statement;
- Decommissioning Programme;
- Development Specification and Layout Plan;
- Emergency Response Cooperation Plan;
- Inter-array Cable Plan;
- Operation and Maintenance Plan;
- Piling Noise Mitigation Plan;
- Project Environmental Monitoring Plan;
- Radar Mitigation Plan; and
- Seabed Obstruction Mitigation Plan

1.7 Other Assessments and Supporting Documentation

26. In addition to the Bellrock WFDA EIA Report, the following related assessments have also been undertaken to inform the Bellrock WFDA application:

- **Shadow Habitats Regulations Appraisal (Shadow HRA)**, comprising a:
  - **Report to Inform Appropriate Assessment** (**Volume VI**), which assesses the potential for effects of the Bellrock Wind Farm Infrastructure on European Sites designated for their plant, animal or bird life in accordance with the Conservation of Habitats and Species Regulations 2017 and the Conservation of Offshore Marine Habitats and Species Regulations 2017; and a
  - **Shadow HRA Derogation Case** (**Volume VI**), which provides justification for the Bellrock Wind Farm Infrastructure to proceed where adverse effects on site integrity of a European Site cannot be ruled out. The HRA documentation is provided in **Volume VI**.
- **Shadow Nature Conservation Marine Protected Areas Assessment**, comprising a:
  - **Report to Inform Nature Conservation Marine Protected Area Assessment** (**Volume VII**), which assesses the risks to Nature Conservation Marine Protected Areas designated under the Marine (Scotland) Act 2010 for their marine habitats, species, geology and undersea landforms.

27. A **Planning Statement** has also been prepared as a supporting document to the Section 36 Consent and Marine Licence application for the Bellrock WFDA. The **Planning Statement** demonstrates the need and benefits of the Wind Farm Infrastructure as part of the Bellrock Project. It also provides an assessment of compliance with relevant legal and policy requirements, and justification for the granting of the Bellrock WFDA consents.

2 Site Selection and Alternatives

28. In 2020, the Scottish Government published the Sectorial Marine Plan for Offshore Wind Energy (Scottish Government, 2020) which provided the spatial strategy to support Crown Estate Scotland's ScotWind leasing round and identified 15 sustainable areas for commercial-scale offshore wind development.

29. Within one of these areas, the Applicant defined the Bellrock WFDA boundary based on a range of environmental, commercial, socioeconomic, engineering, constructability, and technical considerations. In July 2021, the Applicant submitted a seabed lease application to Crown Estate Scotland seeking development rights for the Bellrock WFDA.

30. In January 2022, Crown Estate Scotland awarded the Applicant the rights to develop an area of seabed for the Bellrock WFDA (shown on **Plate 1.1**) under the ScotWind leasing round.

31. The Bellrock WFDA EIA has been carried out using a "project design envelope" approach. The EIA uses this approach because the final project design is not fixed at the EIA stage. By looking at the full range of possible design options and identifying the realistic worst-case scenario for each environmental receptor, the assessment ensures that all potential impacts are fully considered. This means that, even if the final design of the Wind Farm Infrastructure changes in the future, the EIA will remain valid and robust, as the Bellrock Wind Farm Infrastructure will not exceed the impacts assessed within the Bellrock WFDA EIA Report.

32. Through the collection of data and information the Applicant was able to refine the Bellrock Wind Farm Infrastructure's project design envelope, based upon:

- Increased understanding of site conditions (for example seabed/ground conditions) from data collected during surveys;
- Design and engineering studies;
- Feedback from stakeholders, including feedback during scoping; and
- Development of embedded mitigation to reduce potential environmental impacts from the Wind Farm Infrastructure.

33. Since scoping, the key refinements to the project design envelope have been as follows:

- Increased number of wind turbine generators, reflecting the Bellrock Project's export capacity increase from 1.2 GW to 1.8 GW (see **paragraphs 35 and 36** for detail);
- Reduced maximum wind turbine generator blade tip height;
- Removal of fixed bottom foundations for the wind turbine generators, confirming the Bellrock Project as a fully floating offshore wind farm;
- Refinement of floating substructure design options;

- Refinement of anchor design options, including the addition of gravity-based anchors which do not require piling, and the addition of shared anchors which allow multiple mooring lines from multiple floating substructures to connect to a single anchor point (rather than individual mooring lines connecting to a dedicated anchor) and therefore reducing the number of anchors required;
- Removal of the shared mooring line system, a design where the mooring lines connect to a buoy, with a mooring line connecting the buoy to an anchor; and
- Selection of trenching methods for the inter-array cables that, based on seabed conditions within the WFDA, are considered to disturb less seabed than other cable installation options available.

34. In April 2025, the National Energy System Operator confirmed that the Bellrock Project's grid connection location would change from an offshore connection at an SSEN Transmission offshore substation, to an onshore connection at SSEN Transmission's proposed Hurlie substation, located west of Stonehaven, Aberdeenshire (NESO, 2025).

35. This change in grid connection significantly increases development costs due to the additional transmission infrastructure required. In seeking to improve cost efficiency and competitiveness, the Applicant increased the Bellrock Project's export capacity to the National Electricity Transmission System from 1.2 GW to 1.8 GW. Although the number of wind turbine generators has increased, the boundary of the Bellrock WFDA remains unchanged from that presented in the Bellrock WFDA Scoping Report (refer to **Appendix 1.1: Bellrock WFDA Scoping Report (Volume IV)**.

36. The final design and layout of the Wind Farm Infrastructure will be determined post-consent and will comply with Maritime Coastguard Agency requirements. The final design and layout will ensure safe transit through the Bellrock WFDA for search and rescue helicopters; consider environmental and air defence radar constraints (if any); optimise generation based on predicted wind resource; and consider seabed conditions.

37. The final layout will be set out in the Development Specification and Layout Plan, which will be approved by the Scottish Ministers before construction commences, in accordance with the anticipated Bellrock WFDA consent conditions.

3 Consultation

38. Consultation undertaken in parallel with the EIA process has shaped the Bellrock WFDA EIA Report. The EIA Regulations set out specific consultation requirements relating to the voluntary scoping process, which was undertaken for the Bellrock WFDA.

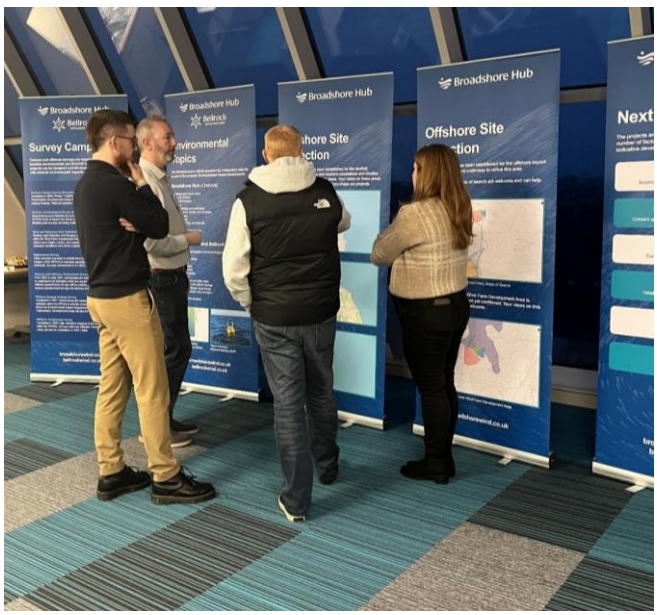
39. Engagement undertaken with fisheries stakeholders has involved quarterly on-line meetings, since early 2023, and two in-person fisheries specific consultation events in May 2023. These have been supplemented with an in person public consultation event in February 2024 (**Plate 3.1**) and virtual consultation event in November 2025. These were carried out to provide updates on project progress and assist the Applicant in understanding potential interactions of the Bellrock Wind Farm Infrastructure with commercial fisheries activity.

40. Prior to submitting the Scoping Request, the Applicant held a pre-scoping workshop with Marine Directorate - Licensing Operations Team, Marine Directorate – Science Evidence Data Digital and NatureScot in October 2023. The workshop was an early opportunity to present the proposed approach to scoping and the Bellrock WFDA EIA, including obtaining feedback on key receptors specific for each topic and assessment methodologies (refer to **Section 6** for details on the receptors assessed as part of the EIA). Insights from this workshop helped shape the Bellrock WFDA Scoping Report.

41. The first public consultation events were held by the Applicant on 5 to 9 February 2024 in:

- Crimond Community Hub;
- Fraserburgh Golf Club;
- Longside Football Social Club;
- Peterhead Football Club; and
- MACBI Community Hub (Mintlaw).

Plate 3.1: Bellrock Project and Broadshore Hub Public Consultation (February 2024)



42. These events provided information on the Bellrock WFDA (and the Broadshore Hub Offshore Wind Farms), gathered feedback from stakeholders and provided opportunities for discussions with the project team.

43. A Bellrock Project consultation letter, which outlined key updates on the Bellrock Project since the Bellrock WFDA Scoping Opinion was received, was sent to 210 stakeholders in mid-October 2025 (see Annex E in **Appendix 5.2: Pre-application Consultation Report (Volume IV)**).

44. The stakeholders included statutory and non-statutory consultees, fisheries organisations, ports, community councils, marine users, other offshore wind developers, and environmental organisations. This letter also informed stakeholders of the November 2025 virtual public consultation event.

45. The virtual public consultation event was held by the Applicant between 17 and 30 November 2025. This event presented preliminary environmental information relating to the Bellrock WFDA EIA, with the aim of obtaining stakeholder feedback as part of the EIA process. The event also provided an update on the Offshore Transmission Infrastructure site selection process.

46. Feedback from these consultation events has informed the Applicant's understanding of the baseline environment; identified opportunities to reduce the impact of the Bellrock Wind Farm Infrastructure; and reinforced the importance of ongoing communication with stakeholders, and the importance of developing local skills and education opportunities.

47. Details of consultations undertaken are provided in **Appendix 5.2: Pre-application Consultation Report (Volume IV)**.

4 Project Description

4.1 Wind Farm Infrastructure

48. The main components of the Bellrock Wind Farm Infrastructure are:

- Up to 132 wind turbine generators (each comprised of three rotor blades, a nacelle housing the generating unit, hub and tower) on floating substructures (specialist platforms designed to keep the wind turbine generators stable);
- Up to nine mooring lines and anchoring systems attached to each floating substructure holding it in place on the seabed. These mooring lines may include extra components such as buoyancy devices and weights to keep them secure;
- A network of up to 300 km of inter-array cables that link the wind turbine generators to the subsea cable hubs or offshore substations[2];
- Scour protection (as required) such as depositing rocks or concrete mattresses on or around the anchors to protect them from exposure or damage from shifting sands or sediments;
- Cable protection (as required) such as depositing rocks or concrete mattresses over the cables to prevent damage from marine activity such as fishing or vessel anchors;
- Up to 18 subsea cable hubs to gather multiple inter-array cables together before they connect to the offshore substations; and
- Additional infrastructure such as mooring buoys (e.g. for vessels), metocean buoys (to monitor, for example, wind, waves, currents, air pressure, water temperature).

49. It is yet to be decided which size of wind turbine generators will be installed. The physical size of each wind turbine generator will influence its maximum power output and therefore the number of wind turbine generators required to reach the Bellrock WFDA's maximum export capacity. Key elements of the Bellrock WFDA project design envelope are set out in **Table 1.2**.

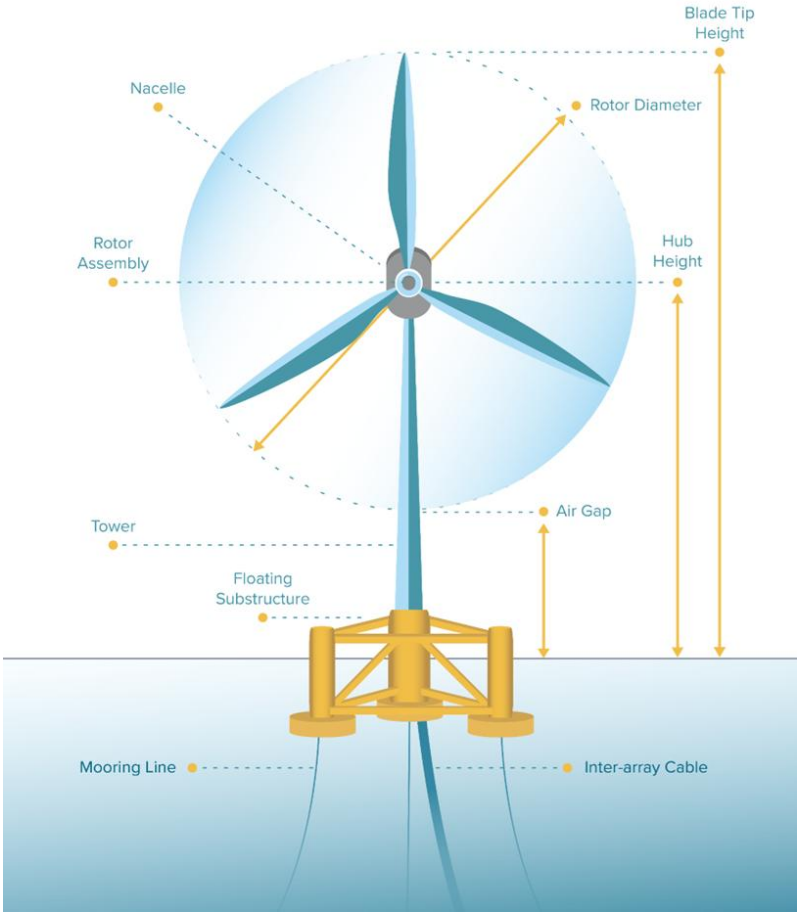
[2] Offshore substations are not part of the Bellrock WFDA consent applications. They will form part of the Bellrock OfTDA consent application which will be submitted in due course.

Table 1.2: Key Elements of the Bellrock WFDA Project Design Envelope

Parameter	**Design Envelope**	
Wind Turbine Generator	**Type 1**	**Type 2**
Maximum number of wind turbine generators	132	90
Maximum wind turbine generator rotor diameter (m)	236	300
Maximum wind turbine generator blade tip height above sea surface (m)	271	335
Minimum blade clearance above sea surface (m)	22	22
Other Wind Farm Infrastructure	**Design Envelope**	
Maximum number of mooring lines for each floating substructure	9	
Maximum number of anchors for each floating substructure	9	
Maximum length of inter-array cables (km)	300	
Maximum number of subsea cable hubs	18	

50. **Plate 4.1** illustrates the key features of a typical wind turbine generator on a floating substructure.

Plate 4.1: Key Features of a Typical Wind Turbine Generator on a Floating Substructure



4.2 Site Preparation Works

51. Site preparation works involve early works carried out within the Bellrock WFDA for up to a year before commencement of construction. Some of these activities may also continue once construction commences, as construction works.

52. Site preparation works within the Bellrock WFDA may include the following activities:

- Seabed surveys including geophysical surveys (which use sound waves to map the seabed), geotechnical surveys (which take samples to understand the strength and type of seabed materials), and diver or remotely operated vehicle surveys (to identify and record archaeological and other features on the seabed). Together, these help identify seabed features, ground conditions, and any objects that might interfere with construction works;
- Preparing the seabed surface through levelling the sand waves (natural underwater sand ridges), levelling slopes for certain types of anchors (i.e. gravity based anchor), and removing boulders. These steps help create a stable, flat area for anchors, inter-array cables and subsea cable hubs;
- Pre-lay grapnel runs will be carried out before laying the inter-array cables. This involves a specialised tool called a grapnel which is pulled along the planned inter-array cable route to clear debris such as old fishing nets, ropes, or other items on, or buried just below, the seabed surface. This ensures that the inter-array cable can be installed safely and without obstruction;
- UXO survey and clearance will be undertaken. In some offshore areas, historic military items such as historic ordinance (i.e. old bombs, mines, torpedoes or shells) may still be present. Surveys are carried out to detect these objects, and if any are found, they are carefully managed or removed by specialists to ensure safety;
- General debris clearance to remove any unwanted materials on the seabed, such as lost or discarded equipment, to create a safe working environment; and
- Removal of out-of-service cables or pipelines (if any) to prevent interference with the Bellrock Wind Farm Infrastructure.

53. Site preparation works are outside the scope of the Bellrock WFDA Section 36 Consent and Marine Licence applications and will be consented (where required) through separate Marine Licence applications. However, to ensure a comprehensive EIA that considers all impacts associated with the Bellrock Wind Farm Infrastructure, site preparation works have been assessed in the relevant technical chapters of the Bellrock WFDA EIA Report as part of the construction phase assessments.

4.3 Construction

4.3.1 Programme and Installation Activities

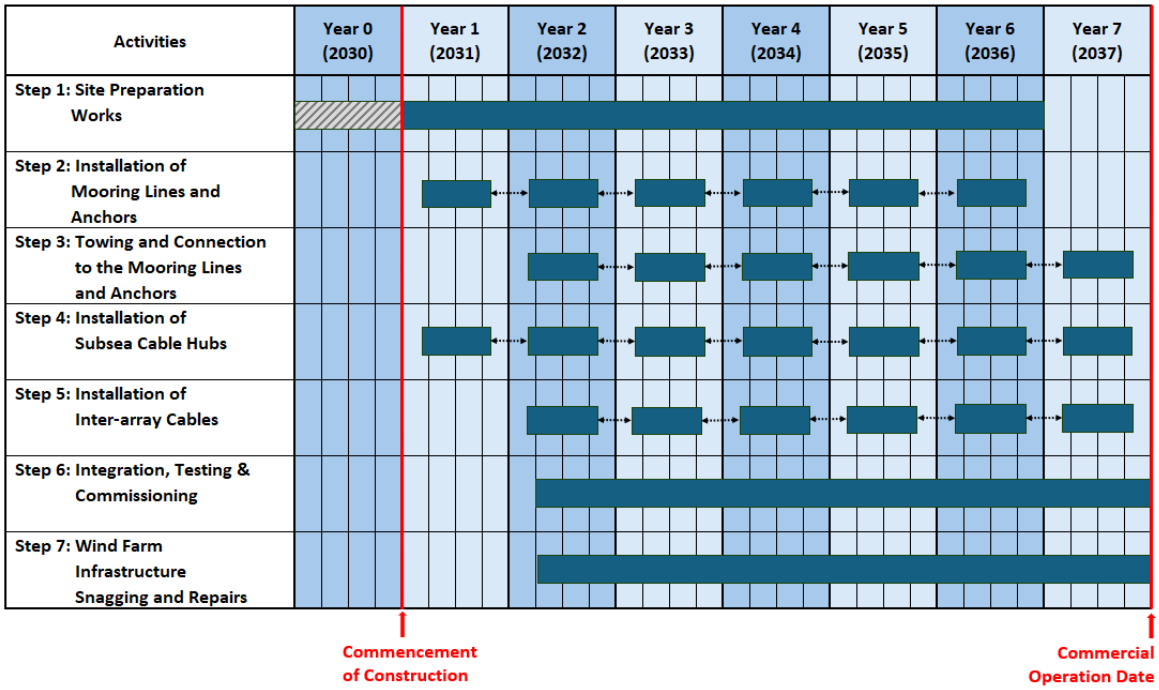
54. The construction of the Wind Farm Infrastructure will follow the general sequence below:

- Step 1: Carry out site preparation works as described in **Section 4.2**;
- Step 2: Install anchors into the seabed and attach mooring lines to the anchors;
- Step 3: Tow the wind turbine generators (already attached to their floating substructures) to the Bellrock WFDA and position at their design location. Once they are in place, connect them to the mooring lines to ensure they are safely anchored;
- Step 4: Install the subsea cable hubs on a pre-laid gravel pad, on the seabed;
- Step 5: Lay the inter-array cables and connect them between the wind turbine generators, subsea cable hubs and the offshore substations and, where required, cable protection will be positioned to keep the inter-array cables safe from damage;
- Step 6: Connection of the Wind Farm Infrastructure with the Offshore Transmission Infrastructure, including testing and commissioning of the systems to ensure the infrastructure is operating correctly; and
- Step 7: Finally, all components within the Bellrock WFDA will be checked for any faults, with any such faults being repaired prior to completion of installation.

55. Some of the steps presented above may occur in parallel depending on weather, equipment availability, and construction planning.

56. These steps are set out in the indicative Bellrock WFDA construction programme presented in **Plate 4.2**. The commencement of construction for the Bellrock Wind Farm Infrastructure is anticipated in 2031 (with site preparation works commencing in 2030) and commercial operation is anticipated in 2037.

Plate 4.2: Bellrock WFDA Indicative Construction Programme



4.3.2 Vessels and Helicopters

57. A range of vessels will be used during the construction phase. It is anticipated that during construction there will be up to 1,615 vessel return trips[3], and 816 helicopter return trips, to and from the Bellrock WFDA.

58. The construction ports have not yet been selected. They may be located across Scotland, the UK, Europe and potentially further afield, however the Applicant is focused on the significant utilisation of Scottish ports in the first instance.

4.4 Operation and Maintenance

59. The Bellrock Project is expected to be operational for 35 years. During this time, a range of scheduled and unscheduled maintenance activities will be carried out to ensure safe and efficient performance. This may include routine maintenance of all infrastructure, inspections and repairs, replacement of parts, and monitoring for biofouling and entangled fishing gear which may require removal.

60. A range of vessels will be used during operation and maintenance. It is anticipated that during operation there will be up to 211 vessel return trips, and 986 helicopters return trips, to and from the Bellrock WFDA annually.

[3] One return trip comprises two movements (i.e. one to and one from the Bellrock WFDA).

61. The operation and maintenance port is yet to be selected. The final selection will consider, for example, distance from the Bellrock WFDA, port facilities for berthing and operating vessels, storage space for parts and tooling, office space, transport links and availability of personnel.

4.5 Decommissioning

62. It is expected that the Bellrock Wind Farm Infrastructure will be fully removed at the end of its operational life. In accordance with Scottish Government Guidance, exceptions to this would be where removal would create unacceptable risks to personnel or to the marine environment, be technically unfeasible or involve extreme costs (Scottish Government, 2022).

63. Before construction begins, the Applicant will prepare a Decommissioning Programme in consultation with stakeholders for submission to Scottish Ministers for approval. The Decommissioning Programme will follow good industry practice, relevant guidance and legislation, and outline expected decommissioning costs and financial arrangements.

64. Decommissioning is anticipated to take around seven years and will generally follow the reverse order of construction, using similar vessels and equipment.

5 Environmental Impact Assessment Methodology

5.1 Methodology

65. The EIA has been undertaken independently and provides a structured evaluation of how the Bellrock Wind Farm Infrastructure may affect the physical, biological and human environment across its construction, operation and maintenance, and decommissioning phases. The EIA follows the requirements of the EIA Regulations, ensuring that potential direct and indirect impacts are proportionately assessed. Potential cumulative effects (i.e. those which may have a combined impact with other projects) and transboundary effects (i.e. those that may affect another country) have also been considered.

66. Throughout the EIA process, ongoing consultation and engagement with stakeholders has been undertaken by the Applicant as described in **Section 3**.

67. Each environmental topic has been assessed in a dedicated technical chapter of the EIA Report that systematically covers the following:

- Identification of the study area or area of potential influence;
- A summary and description of relevant legislation, policy and guidance;
- A summary of relevant consultation, including feedback received in the Scoping Opinion;
- A description of the EIA process and methodology relevant to the chapter;
- The baseline environment within the defined study area, with reference to the technical, spatial and temporal scope of the assessment;
- Identification of embedded and additional mitigation measures (see **Section 5.2**) committed to by the Applicant; and
- Using the project design envelope approach and realistic worst-case scenarios, an assessment of the likely significant effects from impacts on receptors as a result of the Bellrock Wind Farm Infrastructure.

68. The potential for likely significant effects (adverse or beneficial) is evaluated using the following:

- **Receptor sensitivity:** High to negligible, based on adaptability, tolerance and recovery potential;
- **Impact magnitude:** High to no change, reflecting the scale, duration, frequency and nature of change; and
- **Significance of effect:** Determined through the standardised matrix (**Table 1.3**) where moderate and major effects are considered to be ‘significant’ in EIA terms.

Table 1.3: Matrix for Identifying Significance of Effects

Sensitivity	Magnitude				
	High	Medium	Low	Negligible	No Change
High	Major	Major	Moderate	Minor	No effect
Medium	Major	Moderate	Minor	Negligible	No effect
Low	Moderate	Minor	Minor	Negligible	No effect
Negligible	Minor	Negligible	Negligible	Negligible	No effect
Notes: Red and orange cells represent significant effects in EIA terms and could be adverse or beneficial.					

69. Shipping and navigation, greenhouse gas, and major accidents and disasters assessments use methodologies that are different from the significance of effect matrix approach outlined above and used across the other technical chapters.

5.2 Mitigation and Monitoring Measures

70. Each technical chapter of the EIA Report commits to mitigation measures to reduce or eliminate the identified impacts. Mitigation is categorised as:

- **Primary mitigation (embedded):** Measures that are built into the project design and are treated as an inherent part of the Bellrock Wind Farm Infrastructure. These may include modifications to the location or design made during the pre-application phase (e.g. adoption of methods and equipment for seabed preparation which have been designed to minimise the potential for sediment suspension and dispersal);
- **Secondary mitigation (additional):** Measures proposed where embedded measures are considered insufficient and when a significant effect is predicted to occur (e.g. engaging with the local community and local authority once assembly and integration ports have been identified); and
- **Tertiary mitigation (embedded):** Standard practices used to manage commonly occurring environmental effects and actions that will be undertaken to meet other existing legislative requirements. These would occur with or without input from the EIA. These measures are treated as an inherent part of the Bellrock Wind Farm Infrastructure (e.g. preparation of and adherence to the management plans (see **Section 1.6**)).

71. All mitigation measures committed to by the Applicant are summarised in **Appendix 5.1: Mitigation and Monitoring Register (Volume IV)**.

5.3 Cumulative and Inter-related Effects

5.3.1 Approach to Assessing Whole Project and Cumulative Effects

72. The Cumulative Effects Assessment identifies potential significant effects that could arise because of the development of the Bellrock Wind Farm Infrastructure cumulatively with:

- Bellrock OfTDA and OnTDA; and
- Other plans, projects or activities such as other offshore wind farms, marine and coastal developments.

73. Plans and projects were initially screened for their potential to interact with the Bellrock Wind Farm Infrastructure. Where potential interactions were identified, a full assessment of the potential likely significant cumulative effects of the relevant plans or projects was undertaken.

74. As noted above, the Bellrock WFDA EIA Report considers the relationship and interactions between the Wind Farm Infrastructure and the other components of the Bellrock Project. The likely significant effects of the Wind Farm Infrastructure together with the Offshore and Onshore Transmission Infrastructure, so far as these can be ascertained at this stage, are assessed as part of the Bellrock WFDA EIA Report.

75. For socioeconomics and greenhouse gas (refer to **Appendix 16.2: Economic Impact of the Bellrock Project (Volume IV)** and **Chapter 17: Greenhouse Gas Assessment in the Bellrock WFDA EIA Report (Volume II)**, respectively) it has been possible for the Applicant to identify at this stage the likely significant effects of the Bellrock Project as a whole. These whole project assessments will be updated in the future Bellrock OfTDA and OnTDA EIA Reports as project details for those components of the Bellrock Project are refined.

76. For the other topics, there is sufficient information on the project design envelopes for the OfTDA and OnTDA to present the worst-case scenarios for each topic and assess their potential impacts ‘cumulatively’ with the Bellrock Wind Farm Infrastructure. These effects are assessed as part of the Cumulative Effects Assessment undertaken throughout the Bellrock WFDA EIA Report.

77. It should be noted that there is limited interaction between the Bellrock OnTDA and the Bellrock WFDA, and their respective receptors. There are no identified pathways for cumulative effects to arise, mainly due to the large distance between these Development Areas and lack of overlap with receptors. As a result, the Onshore Transmission Infrastructure has not influenced impacts, alternatives or mitigations considered in the Bellrock WFDA EIA Report.

78. Further assessment of the effects of the Bellrock Project as a whole will be included within the Bellrock OfTDA and OnTDA EIA Reports. These will include updated assessments of cumulative environmental impacts of the different components of the Bellrock Project. This staged approach aligns with the EIA Regulations and will ensure further assessment of the effects of the Bellrock Project as project details for the Offshore Transmission Infrastructure and Onshore Transmission Infrastructure are refined.

5.3.2 Approach to Assessing Inter-related Effects

79. Inter-related effects refer to the inter-relationships between EIA topics and interactions between impacts which may lead to different or greater environmental effects than if considered solely in isolation, and presents an understanding of potential impacts at a wider ecosystem scale. This assessment is also reported on within each technical chapter of the Bellrock WFDA EIA Report **(Volume II)**.

6 Environmental Impact Assessment

80. The following sections summarise the results of the technical assessments presented in the Bellrock WFDA EIA Report (**Volume II**).

6.1 Marine Geology, Oceanography and Physical Processes

81. Oceanography is the study of the physical, chemical, geological, and biological processes of the sea. Physical processes refer to how water levels, waves, tides and currents shape the shallow geology and morphology of the seabed, and the structure of the water column. The marine geology, oceanography and physical processes impact assessment has considered how the Bellrock Wind Farm Infrastructure may affect receptors during the construction, operation and maintenance, and decommissioning phases. Specifically, the assessment considered potential effects on seabed bedforms (such as sand waves), relict geomorphological features (formed by natural processes that are no longer active in that area, for example glacial meltwater valleys) and the water column structure as receptors.

82. The existing environment at the Bellrock WFDA was characterised by site-specific surveys, including geophysical, geotechnical, and seabed grab sampling surveys, and publicly available datasets. A floating LiDAR (Light Detection and Ranging system), which is a buoy, was positioned in the Bellrock WFDA from April 2023 to April 2025 and collected data such as wave data, which will be used to inform the detailed design of the Wind Farm Infrastructure (**Plate 6.1**). The assessment was undertaken using numerical modelling and evidence from comparable offshore wind farm developments.

83. At the Bellrock WFDA, water depth ranges from 69 to 121 m below Lowest Astronomical Tide. The seabed morphology includes glacial valleys, sand banks and sand waves. Seabed sediments are mostly fine sand with some gravel. Tidal currents are weak and the dominant waves come from the north. Sediment samples showed low contaminant levels, all below guideline thresholds. Tidal currents are weak and the dominant waves come from the north. In the summer, the water column consists of warmer surface waters sitting above cooler, more nutrient rich, deeper waters and mixing naturally occurs between the layers.

84. The following potential impacts were assessed:

- Changes to suspended sediment concentrations and seabed levels that impact the seabed bedforms and relict geomorphological features as the receptors;
- Changes to bedload sediment transport regime and seabed morphology that impact the seabed bedforms and relict geomorphological features as the receptors; and
- Changes to water column structure that impact the water column as the receptor.

85. Water quality was also included as a receptor, but this was not considered in the assessment as sediment contaminant concentrations are below sediment quality guidelines.

86. To minimise the potential impacts identified above, the Applicant has committed to embedded mitigation measures which include measures relating to pollution prevention, minimising seabed disturbance, methods to ensure inter-array cables remain buried where possible and routine monitoring.

87. Considering the embedded mitigation measures, the potential impacts were assessed to be of **negligible** or **minor adverse** significance and therefore **not significant** in EIA terms. No secondary mitigation measures were required beyond the embedded mitigation measures identified.

88. Cumulative impacts of the Bellrock Wind Farm Infrastructure together with other offshore wind, marine and coastal developments were assessed as **minor adverse** and **not significant** in EIA terms.

89. No transboundary effects are expected due to the distance between the proposed Bellrock WFDA and international boundaries.

Plate 6.1: Floating LiDAR Positioned within the Bellrock WFDA

6.2 Benthic Ecology

90. Benthic ecology are communities of organisms living on or in the seabed which can have interactions with each other and the surrounding environment. The benthic ecology impact assessment has considered how the Bellrock Wind Farm Infrastructure may affect benthic ecology receptors during the construction, operation and maintenance, and decommissioning phases.

91. Specifically, the assessment considered potential effects on seabed habitats, species of small organisms living in the seabed, ocean quahog (a species of large clam), and phosphorescent sea pen (a creature made of many tiny animals living together on the seabed – see **Plate 6.2**).

92. The baseline environment was established through a review of existing data and site-specific surveys. Seabed surveys included drop-down camera/video recording, seabed grab samples, and a geophysical survey to understand the benthic habitats and species present.

93. The seabed habitat within the Bellrock WFDA is mostly sand, with some muddy areas**.** The three main habitat types identified are offshore subtidal sands and gravels, burrowed mud, and offshore deep-sea muds, all of which are Priority Marine Features in Scotland. Sediment samples show low contaminant levels which are all below guideline thresholds. Within the Bellrock WFDA, several important species were identified, including the Priority Marine Features' ocean quahog and phosphorescent sea pens**,** although these occurred in low numbers and were unevenly distributed across the Bellrock WFDA.

94. The following potential impacts on benthic ecology were assessed:

- Physical disturbance and temporary habitat loss;
- Increased suspended sediment concentrations;
- Introduction of invasive non-native species;
- Permanent habitat loss;
- Colonisation of introduced hard surfaces;
- Effects from electromagnetic fields; and
- Heat from inter-array cables.

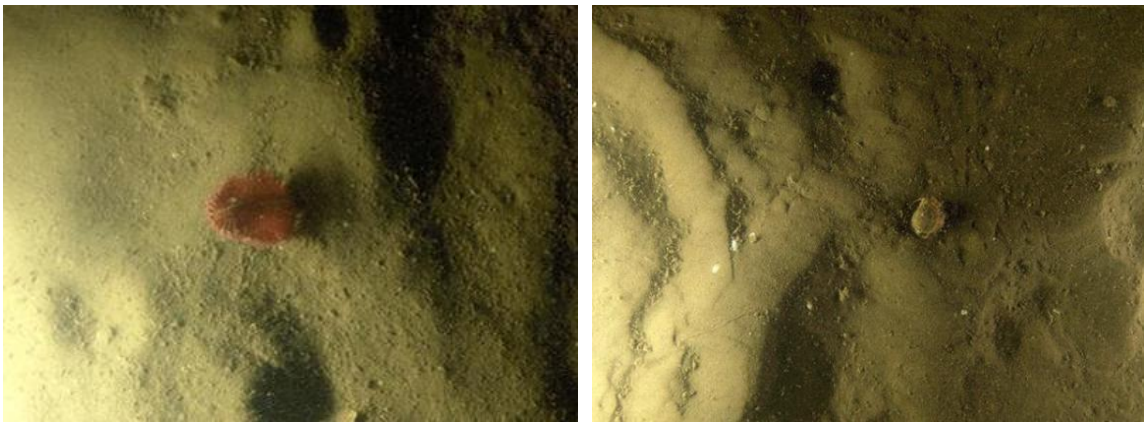
95. To minimise theses potential impacts, the Applicant has committed to embedded mitigation measures which include minimum spacings between the wind turbine generators; burial of inter-array cables where possible to reduce the disturbance footprint on the seabed, reduce impacts from electromagnetic fields and cable heat; limited use of cable and scour protection where burial cannot be achieved; and the implementation of an Invasive Non-native Species Mitigation Plan.

96. Considering the embedded mitigation, all the potential impacts were assessed to be of **negligible** or **minor adverse** significance, and therefore **not significant** in EIA terms. Even for sensitive species such as ocean quahog, potential effects were determined to be **minor adverse** because of their sparse distribution within the Bellrock WFDA. No secondary mitigation measures were required beyond the embedded mitigation measures identified.

97. Cumulative impacts of the Bellrock Wind Farm Infrastructure and other offshore wind, marine and coastal developments were assessed as **negligible** to **minor adverse** significance and therefore **not significant** in EIA terms.

98. Given the highly localised nature of the potential impacts, there is no potential for impacts on transboundary receptors, and therefore transboundary effects were scoped out.

Plate 6.2: Images from the Bellrock WFDA Seabed Survey Showing a Sea Pen (Left) and a Hermit Crab (Right)



6.3 Fish and Shellfish Ecology

99. The fish and shellfish ecology impact assessment has considered how the construction, operation and maintenance, and decommissioning of the Bellrock Wind Farm Infrastructure may affect fish and shellfish species and their habitats. Specifically, the assessment considered potential effects on adult fish, eggs and larvae, as well as spawning and nursery grounds, feeding habitats, and migration routes.

100. The baseline environment was established using existing datasets and scientific literature, including fisheries sensitivity maps, spawning and nursery ground data, the International Council for the Exploration of the Sea International Herring Larvae Survey, and species distribution models for key species such as sandeel. Site-specific benthic surveys were used to assess habitat suitability for herring and sandeel, and modelling was undertaken for underwater noise and electromagnetic fields.

101. The fish and shellfish ecology study area supports typical central North Sea species, including demersal fish such as cod (**Plate 6.3**), haddock, whiting, plaice, lemon sole, and common dab, and pelagic fish such as herring, mackerel, and sprat. Elasmobranchs, including rays, spurdog, and small-spotted catshark, may also occur. Migratory species such as Atlantic salmon, sea trout, and European eel may pass through the area during their marine freshwater migrations.

102. The following potential impacts on fish and shellfish were assessed:

- Physical disturbance and temporary habitat loss;
- Increased suspended sediment concentrations and sediment re-deposition;
- Underwater noise and vibration;
- Changes in fishing activity;
- Vessel collision for basking shark;
- Secondary entanglement with mooring lines;
- Electromagnetic field effects;
- Permanent habitat loss; and
- Introduction of hard structures.

103. To minimise theses potential impacts, the Applicant has committed to embedded mitigation measures which include:

- Use of soft start and ramp-up procedures during piling to reduce underwater noise impacts;
- Burial of inter-array cables where possible to reduce impacts from electromagnetic fields; and
- Adoption of best-practice environmental management measures including pollution prevention plans and cable installation methods designed to minimise sediment disturbance and best-practice vessel management.

104. Considering the embedded mitigation, all the potential impacts were assessed to be of **negligible** or **minor adverse** significance, and therefore **not significant** in EIA terms. None of the potential impacts are considered to be significant at the population level. No secondary mitigation measures were required beyond the embedded mitigation measures identified.

Plate 6.3: Atlantic Cod are Present Within the Bellrock WFDA

105. Cumulative impacts of the Bellrock Wind Farm Infrastructure and other offshore wind, marine and coastal developments were assessed as **negligible** to **minor adverse** significance and therefore **not significant** in EIA terms.

106. Given the highly localised nature of the potential impacts, fish or shellfish populations beyond UK waters would not be affected and no transboundary effects are expected.

6.4 Marine Mammals

107. The marine mammals impact assessment has considered how the construction, operation and maintenance, and decommissioning of the Bellrock Wind Farm Infrastructure may specifically affect porpoises, dolphins, whales and seals, as these animals have been identified to using the area for feeding and migration.

108. The baseline environment was established by undertaking site-specific monthly digital aerial surveys (using an ultra-high-resolution digital video camera system fixed to a light aircraft) over two years from March 2022 to February 2024. Publicly available datasets were also used.

109. Harbour porpoise were found to be the most common species in the Bellrock WFDA. Bottlenose, white-beaked and common dolphins, Minke whales and grey and harbour seals (**Plate 6.4**) were also identified within the Bellrock WFDA. Surveys showed marine mammals use the Bellrock WFDA throughout the year.

110. Marine mammals could be exposed to a range of potential impacts throughout the construction, operation and maintenance, and decommissioning phases of the Wind Farm Infrastructure, resulting in a range of potential effects, including physical injury, disturbance, behavioural effects. For example, these impacts could arise from:

- Underwater noise from UXO clearance, geophysical surveys, piling, construction, and vessels;
- Underwater noise from operational wind turbine generators or moorings on the seabed;
- Collision risk with vessels;
- Disturbance to seal haul-out sites;
- Changes to prey availability; and
- Secondary entanglement with cables and moorings.

111. Effects were assessed by considering how sensitive species are to impacts and how much of their population could be affected to quantify the potential effect. Disturbance, which is expected to be temporary, may occur during construction, particularly from piling and UXO clearance activities.

112. To minimise theses potential impacts, the Applicant has committed to embedded mitigation measures within the design which include soft start and ramp-up for piling to allow animals to move away; and minimum wind turbine generator spacing to reduce entanglement risk.

113. Other embedded mitigation measures, additional to those embedded into the design, include implementation of a Piling Noise Mitigation Plan and Marine Mammal Mitigation Protocol, and the implementation of a Vessel Management Plan to reduce collision and disturbance.

114. Considering the embedded mitigation, all the potential impacts were assessed to be of **negligible** or **minor adverse** significance, and therefore **not significant** in EIA terms. None of the potential impacts were considered to be significant at the population level, therefore secondary mitigation measures are not required beyond the embedded mitigation measures identified.

115. Cumulative impacts of the Bellrock Wind Farm Infrastructure and other offshore wind, marine and coastal developments were assessed. The assessment for underwater noise identified that there were **no significant** effects in EIA terms on any species. However, given the potential number of noisy activities that may take place at the same time from different projects, the Piling Noise Mitigation Plan and Marine Mammal Mitigation Protocol identify mitigation measures that could further reduce cumulative effects.

116. Given the spatial range of the potential impacts, marine mammal populations beyond UK waters would not be affected, and no transboundary effects are expected.

Plate 6.4: Minke Whale Photographed During Monthly Digital Aerial Surveys of the Bellrock WFDA (Left), and an Image of a Grey Seal Typical of Those Present Within the Bellrock WFDA (Right)

6.5 Offshore Ornithology

117. Seabirds spend most of their lives at sea and rely on a healthy marine environment for feeding and breeding. The development of offshore wind farms could interact with seabirds, potentially influencing the behaviour and wellbeing of seabirds that use the Bellrock WFDA for foraging or migration.

118. To assess the presence of seabirds, monthly site-specific digital aerial surveys (using an ultra-high-resolution digital video camera system fixed to a light aircraft) over two years from March 2022 to February 2024 were undertaken (**Plate 6.5**).

119. The main species recorded were gannet, kittiwake, razorbill, puffin and guillemot. These species are recognised as important because many have experienced population declines at a regional or national scale. Birds were present throughout the year, although numbers varied between months and between the two survey years. It is likely that this variation was influenced by natural cycles and disease events, such as avian influenza.

120. The following potential impacts on seabird populations were assessed:

- Disturbance from vessels;
- Barrier to movement or displacement caused by the presence of wind turbine generators;
- Risk of collisions with rotating blades;
- Attraction or confusion caused by lights at night;
- Entanglement with debris attached to mooring lines and dynamic inter-array cables; and
- Indirect effects if habitats or prey used by seabirds are disturbed.

121. Published research and guidance was used to understand how seabirds may respond to the Bellrock Wind Farm Infrastructure, and existing data on seabird populations and distribution used to provide context to the project's own surveys.

122. To minimise theses potential impacts, the Applicant has committed to embedded mitigation measures which include limiting disturbance from vessels, maintenance to remove debris that could cause entanglement, and use of lighting that reduces attraction.

123. Considering the embedded mitigation, all the potential impacts were assessed to be of **negligible** or **minor adverse** significance, and therefore **not significant** in EIA terms. None of the potential impacts were considered to be significant at the regional population level. No secondary mitigation measures were required beyond the embedded mitigation measures identified.

124. Cumulative impacts of the Bellrock Wind Farm Infrastructure and other offshore wind, marine and coastal developments were assessed. When combined with other wind farms, there would be a modest increase in the cumulative effect on seabirds. For razorbill, it was predicted that there would be a **moderate adverse** cumulative effect due to disturbance and displacement during operation which **is significant** in EIA terms. The Bellrock WFDA contribution to the cumulative total represents less than 1% of predicted mortality across all projects and in any event is considered precautionary and likely overstated.

125. With regards to transboundary effects, birds from other countries are unlikely to be affected as effects are considered to be minimal, and few birds from these populations are likely to occur at the Bellrock WFDA.

Plate 6.5: Typical Aeroplane Used for the Monthly Digital Aerial Surveys (Left) and an Image from the Digital Aerial Survey of the Bellrock WFDA Showing Fulmars (Right)

6.6 Commercial Fisheries

126. The commercial fisheries impact assessment has considered how the Bellrock Wind Farm Infrastructure may affect fishing activities during the construction, operation and maintenance, and decommissioning phases.

127. The baseline was established through a desktop study of landings and fishing activity data in addition to industry consultation, to understand commercial fishing activity within the Bellrock WFDA, and the local and regional study areas.

128. Nephrops (lobster) is the primary species targeted in the regional study area, with other important species being haddock, monkfish, turbot, and whiting. Between 2019 and 2023 average annual landings of all species caught within the regional study area (a large area of sea off the east coast of Scotland) was £12.2 million.

129. It was found that the following fishing fleets operate within the local and regional study areas for commercial fisheries and were considered within the assessment:

- UK demersal otter trawl, targeting primarily Nephrops, but also whitefish, such as haddock;
- UK demersal seine;
- UK and non-UK pelagic trawl and seine;
- UK scallop dredge;
- UK beam trawl;
- UK potting; and
- UK gear with hooks.

130. The following potential impacts on commercial fisheries were assessed:

- Reduction in access to fishing grounds;
- Displacement and gear conflict;
- Disturbance to commercially important fish and shellfish stocks;
- Interference with fishing activity as a result of increased vessel traffic;
- Additional steaming to alternative grounds; and
- Increased snagging risk and fishing gear loss.

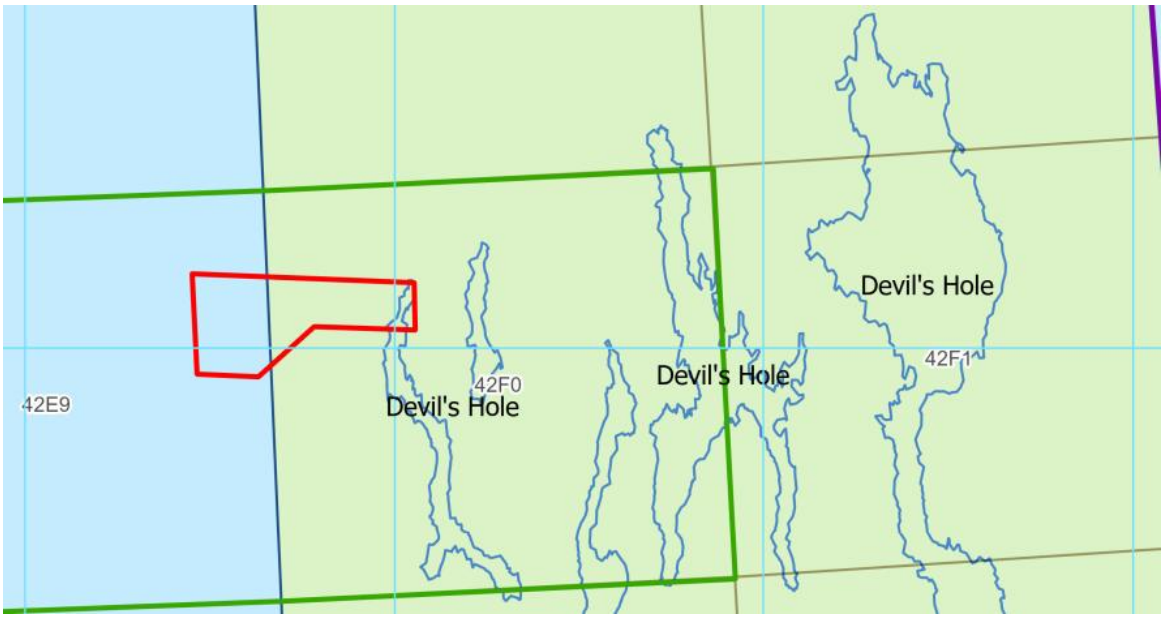
131. To minimise theses potential impacts, the Applicant has committed to embedded mitigation measures which include the implementation of a Fisheries Mitigation, Monitoring, and Communication Plan; cable burial where possible; minimising cable protection; appropriate use of Safety Zones; marine coordination; appropriate lighting and marking; and early communication with fishers.

132. With embedded mitigation taken into consideration, most of the potential impacts assessed resulted in effects of **negligible** to **minor adverse** significance, which are **not significant** in EIA terms. The exception is the UK demersal otter trawl fleet, targeting Nephrops (using TR2 gear), for which a **moderate adverse** effect is predicted (related to loss of access to a small portion of the Devil's Hole Nephrops grounds in the eastern area of the Bellrock WFDA (shown in **Plate 6.6** below)), during all phases of the Bellrock Wind Farm Infrastructure. This is assessed as **significant** in EIA terms during all phases. It is anticipated that this effect can be reduced to be not significant through ongoing engagement with fishers, and measures including the ongoing review of the construction programme, vessel movements, and working practices.

133. Cumulative impacts of the Bellrock Wind Farm Infrastructure and other offshore wind, marine and coastal developments were assessed. Of the potential impacts assessed, a significant cumulative effect was identified only for the UK demersal otter trawl fleet, targeting Nephrops (using TR2 gear), as a result of a cumulative reduction in access. It is expected that this effect could be mitigated through further engagement with fishers and undertaking monitoring measures before and during the construction phase. All other fleets were assessed as experiencing **negligible** to **minor** and therefore **not significant** cumulative effects.

134. The potential transboundary impact of effects on commercial fish stocks in the waters of other European Economic Area States on commercial fisheries was concluded to be **negligible** and therefore **not significant** in EIA terms.

Plate 6.6: Extract of Figure 11.1 (Volume III) Showing the Devil's Hole Nephrops Grounds Within the Bellrock WFDA (shown in red) and the Wider Devil's Hole Nephrops Grounds



6.7 Shipping and Navigation

135. Shipping and navigation considers how vessel movements at sea may be affected by the Bellrock Wind Farm Infrastructure during construction, operation and maintenance and decommissioning. This includes consideration of vessel safety, access to ports, and emergency response.

136. The baseline was established from a review of dedicated vessel traffic surveys, maritime incident records, admiralty charts and weather records. Site-specific surveys were conducted in 2023 and 2024 in agreement with the Maritime Coastguard Agency and the Northern Lighthouse Board. A hazard workshop was held on 23 July 2025 with various shipping and navigation stakeholders, including the Maritime Coastguard Agency and Northern Lighthouse Board, to inform the Navigation Risk Assessment (**Plate 6.7**).

137. Key navigational features near the Bellrock WFDA include the Catcher Oil Field, subsea cables and pipelines, and two wrecks. The closest ports are all in Aberdeenshire and include Peterhead, Aberdeen, Montrose and Stonehaven.

138. The vessel traffic surveys recorded an average of nine vessels per day in the summer period and three per day in the winter period passing through or within 10 nautical miles (nm) of the Bellrock WFDA. Vessels related to the oil and gas industries were the most common. The surveys also recorded cargo vessels, tankers, and passenger vessels together with a small proportion of recreational and fishing vessels.

139. The following potential impacts on shipping and navigation were assessed:

- Vessel displacement;
- Increased collision risk;
- Reduced access to ports due to project vessel movements;
- Loss of station of floating wind turbine generators or buoys;
- Allision risk (vessels striking structures);
- Reduction in under-keel clearance from the presence of sub-surface infrastructure;
- Snagging risk from inter-array cables and moorings;
- Interference with navigation, communications, and position-fixing equipment; and
- Reduced emergency response capability due to surface infrastructure.

140. To minimise theses potential impacts, the Applicant has committed to embedded mitigation measures which include appropriate marking and lighting of structures; use of safety zones and guard vessels; publishing information on potential obstructions for mariners; cable protection; and agreeing the final layout with the Maritime Coastguard Agency and Northern Lighthouse Board. All vessels operating for the Bellrock Project will comply with international maritime rules, and operation will be coordinated, in liaison with ports, harbours and fishing fleets.

141. With the embedded mitigation taken into consideration, the risk assessment of both the Bellrock Wind Farm Infrastructure in isolation and cumulatively with other developments concluded that for all impacts, the risks would be termed **broadly acceptable** or **tolerable**, in line with the assessment method terminology required by the Maritime Coastguard Agency. This conclusion is deemed **not significant** in EIA terms.

142. International vessel routes were also assessed, and no significant transboundary effects were identified.

Plate 6.7: A Vessel Sailing Past an Offshore Wind Farm - the Navigation Risk Assessment Ensures Navigational Safety Around Wind Farms

6.8 Aviation and Radar

143. Wind turbine generators have the potential to affect aviation by creating physical obstacles and by interfering with the radars used by civilian and military air traffic controllers (**Plate 6.8**).

144. The baseline was established using desk-based assessments, airspace mapping, radar line of sight modelling, and consultation with aviation bodies, including nearby airports, helicopter operators and the Defence Infrastructure Organisation. Data sources included the UK Aeronautical Information Publication, the UK Military Aeronautical Information Publication, National Air Traffic Service radar data and offshore helicopter information.

145. The following potential impacts on aviation and radar were assessed:

- Creation of an obstacle environment for low flying aircraft;
- Increased helicopter traffic in relation to activities associated with the Bellrock WFDA; and
- Impacts to radar systems serving both civil and military agencies at Remote Radar Head Buchan and National Air Traffic Services Perwinnes.

146. To minimise theses potential impacts, the Applicant has committed to embedded mitigation measures which include appropriate lighting and marking. The Applicant will develop and adhere to a Lighting and Marking Plan and an Emergency Response and Cooperation Plan in line with relevant guidance. The layout of the wind turbine generators will be compliant with search and rescue requirements.

147. Most of the potential effects identified are considered **minor adverse** and **not significant** in EIA terms. The visibility of wind turbine generators to the military radar at Remote Radar Head Buchan was identified as a potentially significant effect, with modelling suggesting that a small area of the Bellrock WFDA could be visible to radar. If required, the Applicant has committed to building wind turbine generators with a maximum blade tip height low enough to not be visible from the radar line of sight of the Remote Radar Head Buchan within this small area. As a result, effects would be **not significant** in EIA terms.

148. Cumulative impacts of the Bellrock Wind Farm Infrastructure and other offshore wind, marine and coastal developments were assessed. Other offshore wind farms in the North Sea also have the potential to collectively increase obstacles and helicopter traffic, however with the mitigation in place, all impacts were assessed to be **minor adverse** and **not significant** in EIA terms.

149. As the Bellrock WFDA is located far from other national airspace boundaries, no transboundary aviation effects are predicted.

Plate 6.8: The Impact on Air Traffic Control Radar has been Assessed Within the Aviation and Radar Chapter

6.9 Marine Infrastructure and Other Users

150. The Bellrock Wind Farm Infrastructure has the potential to affect marine infrastructure and other users of the sea during construction, operation and maintenance and decommissioning.

151. The baseline was established through a desk-based study. No other industry's infrastructure is within the Bellrock WFDA, and therefore no potential impacts on subsea cables, dredging, aggregates, or defence areas were identified.

152. The only marine users identified within 10 nm of the Bellrock WFDA were:

- The proposed Ossian Offshore Wind Farm; and
- Activities and infrastructure associated with the oil and gas industry (**Plate 6.9**).

153. The Applicant has undertaken consultation with key marine users including offshore wind farm, transmission and oil and gas developers in the area, to discuss details of the Bellrock Project and management of any potential interactions with the Bellrock Wind Farm Infrastructure.

154. The Applicant will implement practices and procedures which would support the safe coexistence between the Bellrock Wind Farm Infrastructure with other projects and developments. Embedded mitigation measures include:

- Use of safety zones around wind turbine generators;
- Marine coordination and communication of activities, including publication of Notices to Mariners;
- Lighting and marking to national standards; and
- Adherence to environmental and emergency response plans.

155. Collaboration between renewables developers in the North Sea will also ensure good communication and coordination across the marine area. For all industries, activities associated with shipping and navigation and helicopters will be managed and regulated to ensure safe operations in the central North Sea.

156. Potential impacts on the proposed Ossian Offshore Wind Farm, and oil and gas activities and infrastructure, were assessed and determined to be of **minor adverse** significance as the effects are considered temporary, localised, and mitigated, and are therefore **not significant** in EIA terms.

157. The cumulative effects of the Bellrock Wind Farm Infrastructure with other offshore wind farms and nearby oil and gas operations were assessed to be **not significant** due to available sea room and coordinated working between operators.

158. Transboundary effects were scoped out due to the distance between the Bellrock WFDA and international boundaries.

Plate 6.9: Impact on Oil and Gas Infrastructure has been Assessed Within the Marine Infrastructure and Other Users Chapter

6.10 Marine Archaeology and Cultural Heritage

159. Marine archaeology studies the evidence of past human activity preserved on or beneath the seabed. This includes shipwrecks, aircraft remains, and traces of prehistoric landscapes. The Bellrock Wind Farm Infrastructure has the potential to affect these features during the construction, operation and maintenance and decommissioning phases.

160. To assess the extent to which marine archaeology is at risk, the Bellrock WFDA was investigated using desk-based sources and the archaeological assessment of site-specific geophysical survey data. Methods involved sea floor imaging, seabed depth mapping, the use of metal-detecting sensors and underground seabed scanning. Records from the United Kingdom Hydrographic Office and national heritage databases were also reviewed.

161. The archaeological assessment determined that no known prehistoric sites are present within the Bellrock WFDA. A total of 184 seabed features of possible archaeological interest were identified through the archaeological assessment of geophysical survey data. However, most of these were considered likely to be debris of limited archaeological interest.

162. Ten features were classified as medium potential and four as high potential, mainly wrecks. Three wrecks lie within the Bellrock WFDA, and one lies just outside, confirmed by geophysical survey (**Plate 6.10** shows examples). Their condition and metal construction suggest that they are relatively modern vessels. No aircraft remains were found within the WFDA, though the area may lie beneath historic wartime flight paths and has the potential to contain undiscovered aviation remains.

163. The following potential impacts relating to direct disturbance of wrecks or buried remains were assessed:

- Disturbance or damage to archaeology on the seabed during construction;
- Possible uncovering or burying of hidden archaeological material, due to construction activities This might either expose remains and make them vulnerable to erosion, or re-bury them and help protect them;
- Risk of accidental contact with undiscovered heritage items during maintenance, such as when jack-up vessel legs, anchors, or seabed tools interact with areas not previously disturbed; and
- Similar small-scale risks during decommissioning, when structures such as anchors and inter-array cables are removed, potentially disturbing any unknown items still in the seabed.

164. To minimise the identified potential impacts, the Applicant has committed to embedded mitigation measures which include:

- Archaeological exclusion zones placed around all known high- or medium-potential heritage features;
- Archaeologists to advise on future surveys and to assess geophysical and geotechnical data prior to construction; and
- Implementation of a Written Scheme of Investigation and a Protocol for Archaeological Discoveries to guide reporting and protection of unexpected finds.

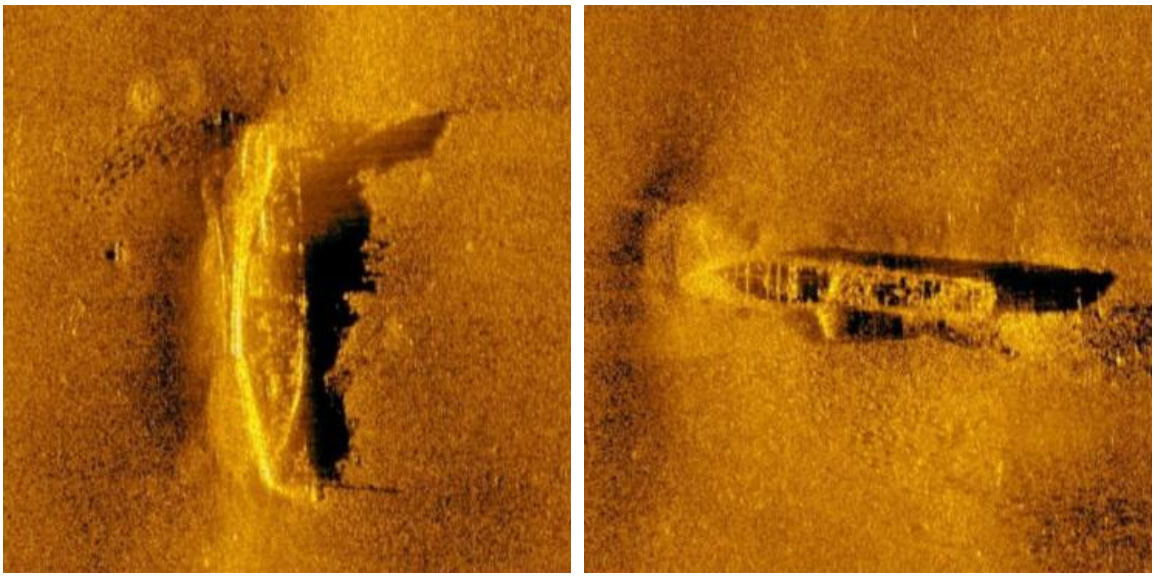
165. In addition to the embedded mitigation measures, an additional (secondary) measure has been committed to, which includes the conducting further investigation prior to the commencement of construction, or implementing temporary exclusion zones (if required), to protect relevant heritage features.

166. With proposed mitigation measures in place, all impacts were assessed as **not significant** in EIA terms.

167. Given that all projects will need to implement standard mitigation to reduce effects on known heritage, cumulative effects from the Bellrock Wind Farm Infrastructure alongside other projects will be **minor adverse** and **not significant** in EIA terms.

168. There are no impacts expected on marine archaeological heritage belonging to other nations, and therefore no transboundary effects are predicted.

Plate 6.10: Geophysical Survey Images of Wrecks Identified Within the Bellrock WFDA



6.11 Socioeconomics, Tourism, and Recreation

169. Socioeconomics, tourism and recreation considers how the Bellrock Wind Farm Infrastructure may impact socioeconomics (people, jobs, supply chain, economies, demographics and local services), the tourism industry, and recreational activities (for example sailing). The Applicant has considered the socioeconomics of the Bellrock Wind Farm Infrastructure in isolation, as well as the Bellrock Project as a whole (the Bellrock WFDA, OfTDA and OnTDA altogether).

170. The following potential impacts on socioeconomics, tourism and recreation were assessed:

- Increase in jobs and economic activity;
- Temporary population increases in port communities;
- Increased demand for housing and local services;
- Increased competition for resources such as ports (**Plate 6.11**), manufacturing facilities and skilled workers;
- Socio-cultural effects (changes in the way people live, work, and interact with one another); and
- Changes to tourism and recreation receptors.

171. With regards to the potential impact to tourism and recreation receptors, no impact pathway was identified. This is due to the Bellrock WFDA being located so far offshore. As a result, the assessment concluded **no significant effects** on tourism or recreation receptors.

172. To manage potential socioeconomic impacts, the Applicant has committed to embedded mitigation measures. These include the implementation of various management plans which mitigate socioeconomic impacts across multiple topics. For example, the Fisheries Mitigation, Monitoring Communication Plan will ensure ongoing engagement with fisheries stakeholders.

173. The Applicant is also committed to proactively engaging with potential suppliers to build local supply chain capacity. The Applicant will work with other developers, the Scottish Government and key stakeholders to assist in addressing barriers to local supply chain participation, with the aim of supporting and enhancing the participation of local businesses. The Applicant will ensure opportunities for supply chain spending in Scotland and the UK are maximised. The Applicant will collaborate with local and national agencies on enterprise and skills development programmes to train and upskill the workforce and ensure local residents have access to the opportunities created.

174. The significance of effects assessment has shown that local economic impacts are expected to be concentrated at the assembly and integration port(s) utilised for the Bellrock Wind Farm Infrastructure.

175. With regards to jobs and economic activity at the assembly and integration ports, the effects are expected to be **major beneficial**. Jobs and economic activity within Scotland are expected to experience a **moderate beneficial** effect due to the resilient economy. Both are **significant** in EIA terms.

176. For smaller ports, temporary increases in population, increases in housing demand, pressure on local services and changes in the way people live, work, and interact with one another, may result in **significant** effects in EIA terms (adverse or beneficial has not assigned to this effect). This will be managed through additional (secondary) mitigation which includes the implementation of a Stakeholder Engagement Plan. Through this plan, the Application will carry out ongoing engagement with, for example, the local community and local authority once assembly and integration port(s) have been identified.

177. The cumulative effect of multiple offshore wind projects may add pressure on ports and communities, but they can also support long-term investment and skills development and give Scotland and the UK a competitive edge as a location for supply chain industries. In EIA terms, no significant cumulative effects were reported.

178. Overall, the Bellrock Project is expected to deliver significant economic value through creating jobs, stimulating local industries, and supporting the wider supply chain in manufacturing, engineering, and infrastructure in the local, Scottish and wider UK economy. Reporting on the economic impact of the Bellrock Project as a whole (for detail, refer to **Appendix 16.2: Economic Impact of the Bellrock Project (Appendix IV)**) shows that during its development and construction phase, the Bellrock Project is expected to generate £845 million GVA in Scotland, and £1,439 million GVA across the UK. During construction, peak employment is expected in 2032 with around 4,560 jobs supported in that year across the UK, of which 2,900 jobs are within Scotland. These include both direct employment by the Bellrock Project and its contractors, as well as indirect employment within the wider supply chain. Additionally, induced impacts arise from employee spending within the wider economy.

Plate 6.11: Aberdeen Harbour is One of the Locations Under Consideration as a Construction Port and Operation and Maintenance Port for the Bellrock WFDA

6.12 Greenhouse Gas Assessment

179. The construction, operation and maintenance and decommissioning phases of the Bellrock Wind Farm Infrastructure will produce greenhouse gas emissions and has the potential to impact carbon stored in seabed sediments (known as blue carbon). However, these effects must be seen in the context of the Bellrock Project as a whole and the emissions avoided by the generation of renewable energy.

180. To calculate the greenhouse gas emissions from the Bellrock Wind Farm Infrastructure, including those from materials, vessels, helicopters and equipment, standard emission factors and industry guidance were used. The Bellrock Wind Farm Infrastructure's emissions were also compared to Scotland's and the UK's carbon budgets, and emissions avoided by generating renewable energy were estimated. Indicative estimates of greenhouse gas emissions from the Bellrock OfTDA and Bellrock OnTDA were also made to carry out the whole-project assessment.

181. Currently, there are no major emissions-producing activities within the Bellrock WFDA and therefore, existing emissions are considered to be zero. Additionally, the seabed consists of sand and muddy sand habitats that store organic carbon.

182. Several potential greenhouse gas impacts were assessed:

- Emissions from construction activities of the Bellrock Wind Farm Infrastructure, including materials and vessel use;
- Emissions from operation and maintenance activities of the Bellrock Wind Farm Infrastructure, including vessels, spare parts and potential gas leaks;

- Emissions from decommissioning of the Bellrock Wind Farm Infrastructure;
- Emissions from the activities associated with the construction, operation and maintenance, and decommissioning of the Bellrock Offshore Transmission Infrastructure (within the Bellrock OfTDA) and Onshore Transmission Infrastructure (within the Bellrock OnTDA);
- Disturbance of blue carbon habitats in the Bellrock WFDA; and
- Disturbance of seabed sediments in the Bellrock WFDA leading to release of stored carbon.

183. The Applicant has committed to embedded mitigation measures including the implementation of an Environmental Management System to reduce emissions, and monitoring and minimising gas leaks from electrical equipment.

184. Emissions from the Bellrock Wind Farm Infrastructure construction and decommissioning phases will be low and considered as **minor adverse** and **not significant** in EIA terms. Overall, the Bellrock Project will provide a **major climate benefit** during operation by providing renewable electricity generation and avoiding GHG emissions from natural gas electricity generation. This will result in a **net beneficial effect**.

185. No additional mitigation measures were considered to be required.

186. No project specific cumulative assessment has been undertaken for the greenhouse gas assessment, the whole project assessment nor the blue carbon loss assessment; however, cumulative effects on blue carbon habitats have been assessed (informed by the **Chapter 7: Benthic Ecology**) and are **not significant**.

6.12.1 Blue Carbon Assessment

187. Blue carbon is the term for carbon captured by the world's ocean, seas and coastal ecosystems. The blue carbon assessment evaluated the potential impacts the Bellrock Wind Farm Infrastructure would have on blue carbon habitats, the release of stored carbon or changes to carbon sequestration rates due to the disturbance or loss of seabed habitats and sediments.

188. Impacts on blue carbon within the Bellrock WFDA were considered **negligible** or **minor adverse** and not significant. No additional mitigation measures were considered to be required.

6.13 Climate Change Risk

189. The climate change risk assessment assesses the potential for climate change to affect the Bellrock Wind Farm Infrastructure and the people working offshore. Potential climate hazards include storms (**Plate 6.12**), extreme temperatures, heavy rain, sea level rise, and changes in average climate conditions.

190. The Bellrock WFDA is expected to experience warmer temperatures, more frequent storms, higher sea levels and changes in rainfall patterns during its operational lifetime. Risks will be greater during operation and decommissioning, when long-term climate change becomes more pronounced.

191. The climate change risk assessment concluded that there would be **no likely significant effects** on the Bellrock Wind Farm Infrastructure as a result of climate change impacts during the construction, operation and maintenance, and decommissioning phases.

192. The Applicant is committed to embedded mitigation measures into the design of the Bellrock Wind Farm Infrastructure. These include:

- Emergency Response Cooperation Plan for all phases, including storm protocols;
- Construction Method Statement with weather-based planning and safe-working limits;
- Design standards that ensure wind turbine generators and floating substructures are resilient to future climate conditions; and
- Regular inspections and adaptive maintenance throughout the project's life.

193. No additional mitigation measures were considered to be required.

194. For cumulative effects, climate-related risks from neighbouring developments were scoped out because the Bellrock Wind Farm Infrastructure operates independently and is designed to withstand marine conditions.

195. Transboundary effects were scoped out because climate risks apply only to the Bellrock Wind Farm Infrastructure and not to receptors in other countries.

Plate 6.12: Offshore Wind Farms are Expected to be Exposed to an Increase in Storms Throughout Their Lifespan Due to Climate Change

6.14 Major Accidents and Disasters

196. The Bellrock Wind Farm Infrastructure could be affected by, or contribute to, major accidents or disasters during the construction, operation and maintenance, and decommissioning phases. Although these events are considered unlikely, they could have serious consequences to human health and the marine environment.

197. To assess the potential risks, a four-stage process was used, which included identifying and screening hazards, evaluating risks, and assessing mitigation. The assessment followed best practice guidance and was informed by existing studies, expert judgement, and the UK National Risk Register.

198. A wide range of hazards were considered for this assessment including, for example, the potential for malicious attacks, pandemics and natural hazards such as earthquakes and extreme weather events, as well as various major accidents scenarios. Many of these hazards were screened out because they pose limited risk to the WFDA or because the Bellrock Wind Farm Infrastructure would be no more vulnerable to this type of hazard than any other development.

199. The relevant hazards, with potential to cause a major accident that could affect or, be caused by the Bellrock Wind Farm Infrastructure include fires, vessel collisions, aviation accidents, UXO, mooring failures, cable snagging, and hazardous material spills. The risk of these hazards developing into a major accident are managed to as low as reasonably possible, through mitigation measures embedded into the design of the Bellrock Wind Farm Infrastructure including:

- Compliance with marine safety regulations and international navigation rules;
- Safety Zones during construction and major maintenance;
- Burial or protection of cables and a Cable Burial Risk Assessment;
- Emergency response planning, including an Emergency Response Cooperation Plan;
- Lighting and marking of structures for vessels and aircrafts; and
- Marine coordination and guard vessels, where required.

200. With the implementation of the embedded mitigation, effects are expected to be **not significant** in EIA terms as a result from major accidents that could affect or be caused by the Bellrock Wind Farm Infrastructure and no further mitigation measures were required.

201. There are **no significant** cumulative effects expected as nearby offshore wind projects will be at least 8 km away, therefore combined risks are minimal.

202. The effects of the Bellrock Wind Farm Infrastructure would be restricted to the Bellrock WFDA and, therefore, no transboundary impacts are predicted.

7 Summary

203. Overall, the majority of the technical assessments in the Bellrock WFDA EIA Report have concluded that there will be **no adverse significant effects** with the implementation of mitigation measures committed to by the Applicant.

204. Considering the Bellrock WFDA alone, the predicated significant effects (in EIA terms) are:

- A **moderate adverse** effect on UK demersal otter trawl fleet which targets Nephrops (using TR2 gear). This relates to the loss of access to a small portion of the Devil's Hole Nephrops grounds in the eastern area of the Bellrock WFDA during all development phases of the Bellrock Wind Farm Infrastructure. It is however anticipated that this effect can be reduced to not significant, through ongoing engagement with fishers, and measures including the ongoing review of the construction programme, vessel movements, and working practices;
- A **major beneficial** effect for jobs and economic activity at assembly and integration port(s) during construction, and at operation and maintenance port(s). During construction, jobs and economic activity within Scotland are expected to experience a **moderate beneficial** effect due to the resilient economy; and
- **Significant effects** (adverse or beneficial has not been assigned) for temporary increases in population, increases in housing demand, pressure on local services and changes in the way people live, work, and interact with one another, at smaller ports that may be used during construction, and operation and maintenance. This will be managed through implementation of a Stakeholder Engagement Plan which will set out ongoing engagement, for example, with the local community, local authority and ports.

205. Considering the Bellrock WFDA cumulatively with other plans and projects, the only significant adverse effect (in EIA terms) is:

- A **moderate adverse** cumulative effect on the displacement of razorbill when the Bellrock Wind Farm Infrastructure is combined with other offshore wind farms. The Bellrock WFDA contribution to the cumulative total represents less than 1% of predicted mortality across all projects and in any event is considered precautionary and likely overstated.

206. The Bellrock Project as a whole will provide major benefits. It has been predicted to have major climate benefit during operation by providing renewable electricity generation and avoiding greenhouse gas emissions from natural gas electricity generation.

207. The Bellrock Project aligns closely with both Scottish and UK renewable energy strategies. In addition to its strategic importance, the Bellrock Project has the potential to generate considerable economic activity in both the Scottish and wider UK economy. It is expected to deliver significant economic value through creating jobs, stimulating local industries, and supporting the wider supply chain in manufacturing, engineering, and infrastructure in the local, Scottish and wider UK economy.

8 References

DEA Aero/HiDef (N.D.). Image shown in Plate 6.5: Typical Aeroplane Used for the Monthly Digital Aerial Surveys.

NESO (2025) HND and HNDFUE Impact Assessments Ossian and North Cluster 2 Outcome Summary. Available at: https://www.neso.energy/document/358431/download.

Scottish Government (2022). Decommissioning of Offshore Renewable Energy Installations in Scottish waters or in the Scottish part of the Renewable Energy Zone under The Energy Act 2004 Guidance notes for industry (in Scotland). Available at: https://assets.publishing.service.gov.uk/media/5f5b2724e90e0718e212a22d/decommisioning-offshore-renewable-energy-installations-energy-act-2004-guidance-industry__1_.pdf

This page is intentionally blank

Bellrock
OFFSHORE WIND

www.bellrockwind.co.uk