



Bellrock Offshore Wind Farm

Wind Farm Development Area

Environmental Impact Assessment Report - Volume II

Chapter 20: Summary

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Glossary of Terminology

Term	Definition
Applicant	Bellrock Offshore Wind Farm Limited, the legal entity submitting Section 36 Consent and Marine Licence applications for Bellrock Wind Farm Development Area.
Bellrock Offshore Wind Farm (or the Bellrock Project)	<p>An offshore wind farm capable of exporting up to 1.8 GW of renewable energy to the National Electricity Transmission System.</p> <p>The Wind Farm Development Area is located 120 km east of Stonehaven, and will connect to the National Electricity Transmission System at the proposed SSEN Transmission Hurlie substation, west of Stonehaven in Aberdeenshire. The Bellrock Offshore Wind Farm comprises of the following Development Areas:</p> <ul style="list-style-type: none"> ▪ Wind Farm Development Area; ▪ Offshore Transmission Development Area; and ▪ Onshore Transmission Development Area.
Cable protection	Protective measure to minimise the effects of scour and hazards along the inter-array cables and protecting these cables at infrastructure crossing points.
Floating offshore unit	The combined wind turbine generator and floating substructure.
Floating substructure	A floating structure which provides buoyancy and, in conjunction with the station keeping system, supports a superstructure (e.g. wind turbine generator or offshore substation), and maintaining its position within the structure's excursion limit.
Inter-array cable	Armoured cable containing electrical and fibre optic cores, which link the wind turbine generators to each other and to the subsea cable hubs and/or the offshore substations and include dynamic inter-array cable and static inter-array cable sections.
Scour protection	Protective material positioned around anchors to avoid sediment being eroded as a result of the flow of water.
Station keeping system	The system (including mooring lines and anchors) used to hold a floating offshore unit within its excursion limit and maintain the intended orientation of the floating offshore unit.
Wind Farm Development Area	The boundary within which the Wind Farm Infrastructure will be constructed, operated and maintained, and decommissioned.
Wind Farm Infrastructure	Infrastructure located within the Wind Farm Development Area including wind turbine generators; floating substructures, station keeping systems and associated scour protection; inter-array cables and associated cable protection; subsea cable hubs; and ancillary infrastructure including buoys (including activities associated with the Wind Farm Infrastructure construction, operation and maintenance, and decommissioning).
Wind turbine generator	A wind turbine generator converts wind energy into electrical energy. The main components include rotor assembly (composed of three blades and a hub); nacelle (containing the generator, shaft and gearbox, power electronic converter and transformer); and a tower (containing lifting equipment and switchgear).

Glossary of Abbreviations

Term	Definition
ADD	Acoustic deterrent device
ALARP	As low as reasonably practicable
CBRA	Cable Burial Risk Assessment
CES MU	Crown Estate Scotland Management Unit
DIO	Defence Infrastructure Organisation
DRC	Dose-response curve
EIA	Environmental impact assessment
EMF	Electromagnetic field
EMP	Environmental Management Plan
ERCoP	Emergency Response Cooperation Plan
FOU	Floating offshore unit
GHG	Greenhouse gas
GVA	Gross value added
HMRI	Helicopter main routing indicator
HSE	Health and Safety Executive
IEMA	Institute for Environmental Management and Assessment
INNS	Invasive non-native species
JNCC	Join Nature Conservation Committee
LMP	Lighting and Marking Plan
MGN	Marine Guidance Note
MMMP	Marine Mammal Mitigation Protocol
MPCP	Marine Pollution Contingency Plan
O&M	Operation and maintenance
OfTDA	Offshore Transmission Development Area
OnTDA	Onshore Transmission Development Area
PAD	Protocol of Archaeological Discoveries
PMF	Priority marine feature

Term	Definition
PTS	Permanent threshold shift
RLoS	Radar Line of Sight
SAR	Search and Rescue
SKS	Station keeping systems
SSC	Suspended sediment concentration
TEZ	Temporary exclusion zone
UXO	Unexploded ordnance
VMNSP	Vessel Management and Navigational Safety Plan
WFDA	Wind Farm Development Area
WTG	Wind turbine generator

20 Summary

20.1 Introduction

1. This Chapter of the Bellrock Wind Farm Development Area (WFDA) Environmental Impact Assessment (EIA) Report presents a summary of the potential effects related to each technical chapter from the construction, operation and maintenance (O&M), and decommissioning phases of the Bellrock Wind Farm Infrastructure.
2. The technical chapters of the Bellrock WFDA EIA Report that have been used to inform this Chapter are:
 - **Chapter 6: Marine Geology, Oceanography and Physical Processes (Volume II);**
 - **Chapter 7: Benthic Ecology (Volume II);**
 - **Chapter 8: Fish and Shellfish Ecology (Volume II);**
 - **Chapter 9: Marine Mammals (Volume II);**
 - **Chapter 10: Offshore Ornithology (Volume II);**
 - **Chapter 11: Commercial Fisheries (Volume II);**
 - **Chapter 12: Shipping and Navigation (Volume II);**
 - **Chapter 13: Aviation and Radar (Volume II);**
 - **Chapter 14: Marine Infrastructure and Other Users (Volume II);**
 - **Chapter 15: Marine Archaeology and Cultural Heritage (Volume II);**
 - **Chapter 16: Socioeconomics, Tourism and Recreation (Volume II);**
 - **Chapter 17: Greenhouse Gas Assessment (Volume II);**
 - **Chapter 18: Climate Change Risk (Volume II); and**
 - **Chapter 19: Major Accidents and Disasters (Volume II).**
3. The summaries of potential effects, including mitigation, and residual effects for the technical topics listed above are presented in **Sections 20.2.1 to 20.2.14**. Each summary should be read in conjunction with the relevant technical chapter.

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20.2 Summary of Potential Effects

20.2.1 Marine Geology, Oceanography and Physical Processes

4. The table below provides a summary of the potential effects for marine geology, oceanography and physical processes receptors from the construction, O&M and decommissioning phases of the Bellrock Wind Farm Infrastructure.

Table 20.1: Summary of Potential Effects for Marine Geology, Oceanography and Physical Processes

Potential Impact	Receptor(s)	Sensitivity	Magnitude of Impact	Significance of Effect	Secondary Mitigation	Residual Significance of Effect	Cumulative Residual Significance of Effect
Construction							
C1: Changes in suspended sediment concentrations (SSCs) and seabed levels	Seabed Bedforms	Negligible	Negligible	Negligible adverse	None	Negligible adverse (not significant)	Negligible adverse (not significant)
	Relict Geomorphological Features	Negligible	Negligible	Negligible adverse	None	Negligible adverse (not significant)	Negligible adverse (not significant)
C2: Changes in bedload sediment transport regime and seabed morphology	Seabed Bedforms	Low	Low	Minor adverse	None	Minor adverse (not significant)	Minor adverse (not significant)

Potential Impact	Receptor(s)	Sensitivity	Magnitude of Impact	Significance of Effect	Secondary Mitigation	Residual Significance of Effect	Cumulative Residual Significance of Effect
Operation and Maintenance							
O1: Changes in SSCs and seabed levels	Seabed Bedforms	Negligible	Negligible	Negligible adverse	None	Negligible adverse (not significant)	Negligible adverse (not significant)
	Relict Geomorphological Features	Negligible	Negligible	Negligible adverse	None	Negligible adverse (not significant)	Negligible adverse (not significant)
O2: Changes in bedload sediment transport regime and seabed morphology	Seabed Bedform	Low	Low	Minor adverse	None	Minor adverse (not significant)	Minor adverse (not significant)
	Relict Geomorphological Features	Negligible	Low	Minor adverse	None	Minor adverse (not significant)	Minor adverse (not significant)
O3: Changes to Water Column Structure	Water Column Structure	Low	Low	Minor adverse	None	Minor adverse (not significant)	Minor adverse (not significant)
Decommissioning							
D1: Changes in SSCs and seabed levels	During decommissioning, the receptors, sensitivity, magnitude and significance of effect for Impact D1 and Impact D2 is expected to be equal to or less than the receptors, sensitivity, magnitude and significance of effect during construction.						
D2: Changes in bedload sediment transport regime and seabed morphology							

20.2.2 Benthic Ecology

5. The table below provides a summary of the potential effects for benthic ecology receptors from the construction, O&M and decommissioning phases of the Bellrock Wind Farm Infrastructure.

Table 20.2: Summary of Potential Effects for Benthic Ecology

Potential Impact	Receptor(s)	Sensitivity	Magnitude of Impact	Significance of Effect	Secondary Mitigation	Residual Significance of Effect	Cumulative Residual Significance of Effect
Construction							
C1: Physical disturbance and temporary habitat loss	Ocean quahog	High	Negligible	Minor adverse	None	Minor adverse (not significant)	Minor adverse (not significant)
	All other receptors	Medium	Low	Minor adverse	None	Minor adverse (not significant)	Minor adverse (not significant)
C2: Increased SSCs and Sediment Re-deposition	A5.272	Low	Low	No significance of effect	None	No significance of effect	No significance of effect
	A5.371	Low	Low	Minor adverse	None	Minor adverse (not significant)	Minor adverse (not significant)
	A5.376	Not sensitive	Low	No significance of effect	None	No significance of effect	No significance of effect
	Phosphorescent sea pen	Not sensitive	Low	No significance of effect	None	No significance of effect	No significance of effect
	Ocean quahog	Not sensitive	Low	No significance of effect	None	No significance of effect	No significance of effect

Potential Impact	Receptor(s)	Sensitivity	Magnitude of Impact	Significance of Effect	Secondary Mitigation	Residual Significance of Effect	Cumulative Residual Significance of Effect
C3: Introduction of Invasive Non-native Species (INNS)	All priority marine feature (PMF) habitats	Not relevant	Negligible	No significance of effect	None	No significance of effect	N/A
	Phosphorescent sea pen and ocean quahog	Low	Negligible	Negligible adverse	None	Negligible adverse (not significant)	N/A
Operation and Maintenance							
O1: Physical Disturbance and Temporary Loss of Seabed Habitat	Ocean quahog	High	Negligible	Minor adverse	None	Minor adverse (not significant)	Minor adverse (not significant)
	All other receptors	Medium	Low	Minor adverse	None	Minor adverse (not significant)	Minor adverse (not significant)
O2: Increased SSCs and Sediment Re-deposition	A5.272	Low	Negligible	Negligible adverse	None	Negligible adverse (not significant)	Minor adverse (not significant)
	A5.371	Low	Negligible	Negligible adverse	None	Negligible adverse (not significant)	Minor adverse (not significant)
	A5.376	Not sensitive	Negligible	No significance of effect	None	No significance of effect	No significance of effect
	Phosphorescent sea pen	Not sensitive	Negligible	No significance of effect	None	No significance of effect	No significance of effect
	Ocean quahog	Not sensitive	Negligible	No significance of effect	None	No significance of effect	No significance of effect

Potential Impact	Receptor(s)	Sensitivity	Magnitude of Impact	Significance of Effect	Secondary Mitigation	Residual Significance of Effect	Cumulative Residual Significance of Effect
O3: Introduction of INNS	All PMF habitats	Not relevant	Negligible	No significance of effect	None	No significance of effect	N/A
	Phosphorescent sea pen and ocean quahog	Low	Negligible	Negligible adverse	None	Negligible adverse (not significant)	N/A
O4: Permanent Habitat Loss	All receptors	High	Negligible	Minor adverse	None	Minor adverse (not significant)	Minor adverse (not significant)
O5: Colonisation of Introduced Substrate	All receptors	High	Negligible	Minor adverse	None	Minor adverse (not significant)	Minor adverse (not significant)
O6: Interactions with Electromagnetic Fields (EMF)	All receptors	Low	Negligible	Negligible adverse	None	Negligible adverse (not significant)	Negligible adverse (not significant)
O7: Thermal Emissions from Inter-array Cables	All PMF habitats	Medium	Negligible	Negligible adverse	None	Negligible adverse (not significant)	N/A
	Phosphorescent sea pen	Low	Negligible	Negligible adverse	None	Negligible adverse (not significant)	N/A
	Ocean quahog	Medium	Negligible	Negligible adverse	None	Negligible adverse (not significant)	N/A

Potential Impact	Receptor(s)	Sensitivity	Magnitude of Impact	Significance of Effect	Secondary Mitigation	Residual Significance of Effect	Cumulative Residual Significance of Effect
Decommissioning							
D1: Physical Disturbance and Temporary Loss of Seabed Habitat	Ocean quahog	High	Negligible	Minor adverse	None	Minor adverse (not significant)	Minor adverse (not significant)
	All other receptors	Medium	Low	Minor adverse	None	Minor adverse (not significant)	Minor adverse (not significant)
D2: Increased Suspended Sediment Concentrations and Sediment Re-deposition	A5.272	Low	Low	Negligible adverse	None	Negligible adverse (not significant)	Minor adverse (not significant)
	A5.371	Low	Low	Negligible adverse	None	Negligible adverse (not significant)	Minor adverse (not significant)
	A5.376	Not sensitive	Low	No significance of effect	None	No significance of effect	No significance of effect
	Phosphorescent sea pen	Not sensitive	Low	No significance of effect	None	No significance of effect	No significance of effect
	Ocean quahog	Not sensitive	Low	No significance of effect	None	No significance of effect	No significance of effect
D3: Introduction of INNS	All PMF habitats	Not relevant	Negligible	No significance of effect	None	No significance of effect	N/A
	Phosphorescent sea pen and ocean quahog	Low	Negligible	Negligible adverse	None	Negligible adverse (not significant)	N/A

Potential Impact	Receptor(s)	Sensitivity	Magnitude of Impact	Significance of Effect	Secondary Mitigation	Residual Significance of Effect	Cumulative Residual Significance of Effect
D4: Permanent Habitat Loss	All receptors	High	Negligible	Minor adverse	None	Minor adverse (not significant)	Minor adverse (not significant)
D5: Removal of Introduced Substrate	All receptors	Low	Low	Minor adverse	None	Minor adverse (not significant)	Minor adverse (not significant)

20.2.3 Fish and Shellfish Ecology

6. The table below provides a summary of the potential effects for fish and shellfish ecology receptors from the construction, O&M and decommissioning phases of the Bellrock Wind Farm Infrastructure.

Table 20.3: Summary of Potential Effects for Fish and Shellfish Ecology

Potential Impact	Receptor(s)	Sensitivity	Magnitude of Impact	Significance of Effect	Secondary Mitigation	Residual Significance of Effect	Cumulative Residual Significance of Effect
Construction							
C1: Physical disturbance and temporary habitat loss	Spawning Grounds	Low	Negligible	Negligible adverse	None	Negligible adverse (not significant)	Minor adverse (not significant)
		High for herring spawning	Negligible	Minor adverse	None	Minor adverse (not significant)	Minor adverse (not significant)
		High for sandeel spawning	Negligible	Minor adverse	None	Minor adverse (not significant)	Minor adverse (not significant)
	Nursery Grounds	Low	Negligible	Negligible adverse	None	Negligible adverse (not significant)	Minor adverse (not significant)
	Diadromous Fish	Low	Negligible	Negligible adverse	None	Negligible adverse (not significant)	Minor adverse (not significant)
	Elasmobranchs	Low	Negligible	Negligible adverse	None	Negligible adverse (not significant)	Minor adverse (not significant)

Potential Impact	Receptor(s)	Sensitivity	Magnitude of Impact	Significance of Effect	Secondary Mitigation	Residual Significance of Effect	Cumulative Residual Significance of Effect
	Marine Demersal Fish	Low	Negligible	Negligible adverse	None	Negligible adverse (not significant)	Minor adverse (not significant)
	Marine Pelagic Fish	Low	Negligible	Negligible adverse	None	Negligible adverse (not significant)	Minor adverse (not significant)
	Cephalopods	Low	Negligible	Negligible adverse	None	Negligible adverse (not significant)	Minor adverse (not significant)
	Molluscs and Crustaceans	Low	Negligible	Negligible adverse	None	Negligible adverse (not significant)	Minor adverse (not significant)
C2: Increased SSCs and sediment re-deposition	Spawning Grounds	Low	Negligible	Negligible adverse	None	Negligible adverse (not significant)	Minor adverse (not significant)
		Medium for herring spawning	Negligible	Negligible adverse	None	Negligible adverse (not significant)	Minor adverse (not significant)
		Medium for sandeel spawning	Negligible	Negligible adverse	None	Negligible adverse (not significant)	Minor adverse (not significant)
	Nursery Grounds	Low	Negligible	Negligible adverse	None	Negligible adverse (not significant)	Minor adverse (not significant)
	Diadromous Fish	Low	Negligible	Negligible adverse	None	Negligible adverse (not significant)	Minor adverse (not significant)

Potential Impact	Receptor(s)	Sensitivity	Magnitude of Impact	Significance of Effect	Secondary Mitigation	Residual Significance of Effect	Cumulative Residual Significance of Effect
	Elasmobranchs	Low	Negligible	Negligible adverse	None	Negligible adverse (not significant)	Minor adverse (not significant)
	Marine Demersal Fish	Low	Negligible	Negligible adverse	None	Negligible adverse (not significant)	Minor adverse (not significant)
	Marine Pelagic Fish	Low	Negligible	Negligible adverse	None	Negligible adverse (not significant)	Minor adverse (not significant)
	Cephalopods	Low	Negligible	Negligible adverse	None	Negligible adverse (not significant)	Minor adverse (not significant)
	Crustaceans	Low	Negligible	Negligible adverse	None	Negligible adverse (not significant)	Minor adverse (not significant)
	Molluscs	Low to Medium	Negligible	Negligible adverse	None	Negligible adverse (not significant)	Minor adverse (not significant)
C3: Underwater noise and vibration	Spawning Grounds	Low for Group 1 and Group 2	Low	Minor adverse	None	Minor adverse (not significant)	Minor adverse (not significant)
		Medium for adult Group 3 and Group 4	Low	Minor adverse	None	Minor adverse (not significant)	Minor adverse (not significant)

Potential Impact	Receptor(s)	Sensitivity	Magnitude of Impact	Significance of Effect	Secondary Mitigation	Residual Significance of Effect	Cumulative Residual Significance of Effect
		High for herring spawning	Negligible	Minor adverse	None	Minor adverse (not significant)	Minor adverse (not significant)
	Nursery Grounds	Low	Low	Minor adverse	None	Minor adverse (not significant)	Minor adverse (not significant)
	Diadromous Fish	Low	Low	Minor adverse	None	Minor adverse (not significant)	Minor adverse (not significant)
	Elasmobranchs	Low	Low	Minor adverse	None	Minor adverse (not significant)	Minor adverse (not significant)
	Marine Demersal Fish	Medium (cod)	Low	Minor adverse	None	Minor adverse (not significant)	Minor adverse (not significant)
	Marine Pelagic Fish	Medium (for herring and sprat)	Low	Minor adverse	None	Minor adverse (not significant)	Minor adverse (not significant)
	Cephalopods	Low	Low	Minor adverse	None	Minor adverse (not significant)	Minor adverse (not significant)
	Crustaceans	Low	Low	Minor adverse	None	Minor adverse (not significant)	Minor adverse (not significant)
	Molluscs	Low	Low	Minor adverse	None	Minor adverse (not significant)	Minor adverse (not significant)

Potential Impact	Receptor(s)	Sensitivity	Magnitude of Impact	Significance of Effect	Secondary Mitigation	Residual Significance of Effect	Cumulative Residual Significance of Effect
C4: Changes in fishing activity	Spawning Grounds	Low	Negligible	Negligible adverse	None	Negligible adverse (not significant)	N/A
		Medium for herring spawning	Negligible	Negligible adverse	None	Negligible adverse (not significant)	N/A
		Medium for sandeel spawning	Negligible	Negligible adverse	None	Negligible adverse (not significant)	N/A
	Nursery Grounds	Low	Negligible	Negligible adverse	None	Negligible adverse (not significant)	N/A
	Diadromous Fish	Low	Negligible	Negligible adverse	None	Negligible adverse (not significant)	N/A
	Elasmobranchs	Low	Negligible	Negligible adverse	None	Negligible adverse (not significant)	N/A
	Marine Demersal Fish	Low	Negligible	Negligible adverse	None	Negligible adverse (not significant)	N/A
	Marine Pelagic Fish	Low	Negligible	Negligible adverse	None	Negligible adverse (not significant)	N/A
	Cephalopods	Low	Negligible	Negligible adverse	None	Negligible adverse (not significant)	N/A

Potential Impact	Receptor(s)	Sensitivity	Magnitude of Impact	Significance of Effect	Secondary Mitigation	Residual Significance of Effect	Cumulative Residual Significance of Effect
	Crustaceans	Low	Negligible	Negligible adverse	None	Negligible adverse (not significant)	N/A
	Molluscs	Medium	Negligible	Negligible adverse	None	Negligible adverse (not significant)	N/A
C5: Vessel collision for basking shark	Basking shark	Medium	Negligible	Negligible	None	Negligible adverse (not significant)	N/A
Operation and Maintenance							
O1: Physical disturbance and temporary habitat loss	Spawning Grounds	Low	Negligible	Negligible adverse	None	Negligible adverse (not significant)	Negligible adverse (not significant)
		High for herring spawning	Negligible	Minor adverse	None	Minor adverse (not significant)	Negligible adverse (not significant)
		High for sandeel spawning	Negligible	Minor adverse	None	Minor adverse (not significant)	Negligible adverse (not significant)
	Nursery Grounds	Low	Negligible	Negligible adverse	None	Negligible adverse (not significant)	Negligible adverse (not significant)
	Diadromous Fish	Low	Negligible	Negligible adverse	None	Negligible adverse (not significant)	Negligible adverse (not significant)
	Elasmobranchs	Low	Negligible	Negligible adverse	None	Negligible adverse	Negligible adverse

Potential Impact	Receptor(s)	Sensitivity	Magnitude of Impact	Significance of Effect	Secondary Mitigation	Residual Significance of Effect	Cumulative Residual Significance of Effect
						(not significant)	(not significant)
	Marine Demersal Fish	Low	Negligible	Negligible adverse	None	Negligible adverse (not significant)	Negligible adverse (not significant)
	Marine Pelagic Fish	Low	Negligible	Negligible adverse	None	Negligible adverse (not significant)	Negligible adverse (not significant)
	Cephalopods	Low	Negligible	Negligible adverse	None	Negligible adverse (not significant)	Negligible adverse (not significant)
	Crustaceans	Low	Negligible	Negligible adverse	None	Negligible adverse (not significant)	Negligible adverse (not significant)
	Molluscs	Low	Negligible	Negligible adverse	None	Negligible adverse (not significant)	Negligible adverse (not significant)
O2: Increased SSCs and sediment re-deposition	Spawning Grounds	Low	Negligible	Negligible adverse	None	Negligible adverse (not significant)	Negligible adverse (not significant)
		Medium for herring spawning	Negligible	Negligible adverse	None	Negligible adverse (not significant)	Negligible adverse (not significant)
		Medium for sandeel spawning	Negligible	Negligible adverse	None	Negligible adverse (not significant)	Negligible adverse (not significant)
	Nursery Grounds	Low	Negligible	Negligible adverse	None	Negligible adverse	Negligible adverse

Potential Impact	Receptor(s)	Sensitivity	Magnitude of Impact	Significance of Effect	Secondary Mitigation	Residual Significance of Effect	Cumulative Residual Significance of Effect
						(not significant)	(not significant)
	Diadromous Fish	Low	Negligible	Negligible adverse	None	Negligible adverse (not significant)	Negligible adverse (not significant)
	Elasmobranchs	Low	Negligible	Negligible adverse	None	Negligible adverse (not significant)	Negligible adverse (not significant)
	Marine Demersal Fish	Low	Negligible	Negligible adverse	None	Negligible adverse (not significant)	Negligible adverse (not significant)
	Marine Pelagic Fish	Low	Negligible	Negligible adverse	None	Negligible adverse (not significant)	Negligible adverse (not significant)
	Cephalopods	Low	Negligible	Negligible adverse	None	Negligible adverse (not significant)	Negligible adverse (not significant)
	Crustaceans	Low	Negligible	Negligible adverse	None	Negligible adverse (not significant)	Negligible adverse (not significant)
	Molluscs	Low to Medium	Negligible	Negligible adverse	None	Negligible adverse (not significant)	Negligible adverse (not significant)
O3: Underwater noise and vibration	Spawning Grounds	Low for Group 1 and Group 2	Low	Minor adverse	None	Minor adverse (not significant)	N/A
		Medium for adult Group	Low	Minor adverse	None	Minor adverse	N/A

Potential Impact	Receptor(s)	Sensitivity	Magnitude of Impact	Significance of Effect	Secondary Mitigation	Residual Significance of Effect	Cumulative Residual Significance of Effect
		3 and Group 4				(not significant)	
		High for herring spawning	Negligible	Minor adverse	None	Minor adverse (not significant)	N/A
	Nursery Grounds	Low	Low	Minor adverse	None	Minor adverse (not significant)	N/A
	Diadromous Fish	Low	Low	Minor adverse	None	Minor adverse (not significant)	N/A
	Elasmobranchs	Low	Low	Minor adverse	None	Minor adverse (not significant)	N/A
	Marine Demersal Fish	Medium (cod)	Low	Minor adverse	None	Minor adverse (not significant)	N/A
	Marine Pelagic Fish	Medium (herring, sprat)	Low	Minor adverse	None	Minor adverse (not significant)	N/A
	Cephalopods	Low	Low	Minor adverse	None	Minor adverse (not significant)	N/A
	Crustaceans	Low	Low	Minor adverse	None	Minor adverse (not significant)	N/A

Potential Impact	Receptor(s)	Sensitivity	Magnitude of Impact	Significance of Effect	Secondary Mitigation	Residual Significance of Effect	Cumulative Residual Significance of Effect
	Molluscs	Low	Low	Minor adverse	None	Minor adverse (not significant)	N/A
O4: Changes in fishing activity	Spawning Grounds	Low	Negligible	Negligible adverse	None	Negligible adverse (not significant)	N/A
		Medium for herring spawning	Negligible	Negligible adverse	None	Negligible adverse (not significant)	N/A
		Medium for sandeel spawning	Negligible	Negligible adverse	None	Negligible adverse (not significant)	N/A
	Nursery Grounds	Low	Negligible	Negligible adverse	None	Negligible adverse (not significant)	N/A
	Diadromous Fish	Low	Negligible	Negligible adverse	None	Negligible adverse (not significant)	N/A
	Elasmobranchs	Low	Negligible	Negligible adverse	None	Negligible adverse (not significant)	N/A
	Marine Demersal Fish	Low	Negligible	Negligible adverse	None	Negligible adverse (not significant)	N/A
	Marine Pelagic Fish	Low	Negligible	Negligible adverse	None	Negligible adverse (not significant)	N/A

Potential Impact	Receptor(s)	Sensitivity	Magnitude of Impact	Significance of Effect	Secondary Mitigation	Residual Significance of Effect	Cumulative Residual Significance of Effect
	Cephalopods	Low	Negligible	Negligible adverse	None	Negligible adverse (not significant)	N/A
	Crustaceans	Low	Negligible	Negligible adverse	None	Negligible adverse (not significant)	N/A
	Molluscs	Medium	Negligible	Negligible adverse	None	Negligible adverse (not significant)	N/A
O5: Vessel Collision for basking sharks	Basking shark	Medium	Negligible	Negligible adverse	None	Negligible adverse (not significant)	N/A
O6: EMFs	Spawning Grounds	Low	Negligible	Negligible adverse	None	Negligible adverse (not significant)	Negligible to Minor adverse (not significant)
	Nursery Grounds	Low	Negligible	Negligible adverse	None	Negligible adverse (not significant)	Negligible to Minor adverse (not significant)
	Diadromous Fish	Low	Negligible	Negligible adverse	None	Negligible adverse (not significant)	Negligible to Minor adverse (not significant)
	Elasmobranchs	Medium	Negligible	Negligible adverse	None	Negligible adverse (not significant)	Negligible to Minor adverse (not significant)

Potential Impact	Receptor(s)	Sensitivity	Magnitude of Impact	Significance of Effect	Secondary Mitigation	Residual Significance of Effect	Cumulative Residual Significance of Effect
	Crustaceans	Medium	Negligible	Negligible adverse	None	Negligible adverse (not significant)	Negligible to Minor adverse (not significant)
	All other receptor groups	Low	Negligible	Negligible adverse	None	Negligible adverse (not significant)	Negligible to Minor adverse (not significant)
O7: Permanent habitat loss	Spawning Grounds	Low	Negligible	Negligible adverse (Minor adverse for herring spawning)	None	Negligible adverse (not significant)	Minor adverse (not significant)
		High for herring spawning	Negligible	Minor adverse	None	Minor adverse (not significant)	Minor adverse (not significant)
		Medium for sandeel spawning	Negligible	Negligible adverse	None	Negligible adverse (not significant)	Minor adverse (not significant)
	Nursery Grounds	Low	Negligible	Negligible adverse	None	Negligible adverse (not significant)	Minor adverse (not significant)
	Diadromous Fish	Low	Negligible	Negligible adverse	None	Negligible adverse (not significant)	Minor adverse (not significant)
	Elasmobranchs	Low	Negligible	Negligible adverse	None	Negligible adverse (not significant)	Minor adverse (not significant)

Potential Impact	Receptor(s)	Sensitivity	Magnitude of Impact	Significance of Effect	Secondary Mitigation	Residual Significance of Effect	Cumulative Residual Significance of Effect
	Marine Demersal Fish	Low (Medium for sandeel)	Negligible	Negligible adverse	None	Negligible adverse (not significant)	Minor adverse (not significant)
	Marine Pelagic Fish	Low	Negligible	Negligible adverse	None	Negligible adverse (not significant)	Minor adverse (not significant)
	Cephalopods	Low	Negligible	Negligible adverse	None	Negligible adverse (not significant)	Minor adverse (not significant)
	Crustaceans	Low (Medium for Nephrops)	Negligible	Negligible adverse	None	Negligible adverse (not significant)	Minor adverse (not significant)
	Molluscs	Low	Negligible	Negligible adverse	None	Negligible adverse (not significant)	Minor adverse (not significant)
O8: Introduction of hard substrate	Spawning Grounds	Low	No Change	No significance of effect	None	No significance of effect	N/A
	Nursery Grounds	Low	No Change	No significance of effect	None	No significance of effect	N/A
	Diadromous Fish	Low	No Change	No significance of effect	None	No significance of effect	N/A
	Elasmobranchs	Low	No Change	No significance of effect	None	No significance of effect	N/A
	Marine Demersal Fish	Low	No Change	No significance of effect	None	No significance of effect	N/A

Potential Impact	Receptor(s)	Sensitivity	Magnitude of Impact	Significance of Effect	Secondary Mitigation	Residual Significance of Effect	Cumulative Residual Significance of Effect
	Marine Pelagic Fish	Low	No Change	No significance of effect	None	No significance of effect	N/A
	Cephalopods	Low	Negligible	Negligible beneficial	None	Negligible beneficial (not significant)	N/A
	Crustaceans	Low	Negligible	Negligible beneficial	None	Negligible beneficial (not significant)	N/A
	Molluscs	Low	No Impact	No significance of effect	None	No significance of effect	N/A
O9: Secondary Entanglement with Station keeping systems (SKSs)	Spawning Grounds	Low	Low	Minor Adverse	Monitoring mooring lines for mechanical strain, and visual inspection by ROV. Set out in MMMP and Operation and Maintenance Programme	Negligible adverse (not significant)	N/A
	Nursery Grounds	Low	Low	Minor Adverse		Negligible adverse (not significant)	N/A
	Diadromous Fish	Low	Low	Minor Adverse		Negligible adverse (not significant)	N/A
	Elasmobranchs	Low (Medium for basking shark)	Low	Minor Adverse		Negligible adverse (not significant)	N/A
	Marine Demersal Fish	Low	Low	Minor Adverse		Negligible adverse (not significant)	N/A
	Marine Pelagic Fish	Low	Low	Minor Adverse		Negligible adverse (not significant)	N/A

Potential Impact	Receptor(s)	Sensitivity	Magnitude of Impact	Significance of Effect	Secondary Mitigation	Residual Significance of Effect	Cumulative Residual Significance of Effect
	Cephalopods	Low	Low	Minor Adverse		Negligible adverse (not significant)	N/A
	Crustaceans	Low	Low	Minor Adverse		Negligible adverse (not significant)	N/A
	Molluscs	Low	Low	Minor Adverse		Negligible adverse (not significant)	N/A
Decommissioning							
D1: Physical disturbance and temporary habitat loss	Spawning Grounds	Low	Negligible	Negligible adverse	None	Negligible adverse (not significant)	Minor adverse (not significant)
		High for herring spawning	Negligible	Minor adverse	None	Minor adverse (not significant)	Minor adverse (not significant)
		High for sandeel spawning	Negligible	Minor adverse	None	Minor adverse (not significant)	Minor adverse (not significant)
	Nursery Grounds	Low	Negligible	Negligible adverse	None	Negligible adverse (not significant)	Negligible adverse (not significant)
	Diadromous Fish	Low	Negligible	Negligible adverse	None	Negligible adverse (not significant)	Negligible adverse (not significant)
	Elasmobranchs	Low	Negligible	Negligible adverse	None	Negligible adverse (not significant)	Negligible adverse (not significant)

Potential Impact	Receptor(s)	Sensitivity	Magnitude of Impact	Significance of Effect	Secondary Mitigation	Residual Significance of Effect	Cumulative Residual Significance of Effect
	Marine Demersal Fish	Low	Negligible	Negligible adverse	None	Negligible adverse (not significant)	Negligible adverse (not significant)
	Marine Pelagic Fish	Low	Negligible	Negligible adverse	None	Negligible adverse (not significant)	Negligible adverse (not significant)
	Cephalopods	Low	Negligible	Negligible adverse	None	Negligible adverse (not significant)	Negligible adverse (not significant)
	Crustaceans	Low	Negligible	Negligible adverse	None	Negligible adverse (not significant)	Negligible adverse (not significant)
	Molluscs	Low	Negligible	Negligible adverse	None	Negligible adverse (not significant)	Negligible adverse (not significant)
D2: Increased SSCs and sediment re-deposition	Spawning Grounds	Low	Negligible	Negligible adverse	None	Negligible adverse (not significant)	Minor adverse (not significant)
		Medium for herring spawning	Negligible	Negligible adverse	None	Negligible adverse (not significant)	Minor adverse (not significant)
		Medium for sandeel spawning	Negligible	Negligible adverse	None	Negligible adverse (not significant)	Minor adverse (not significant)
	Nursery Grounds	Low	Negligible	Negligible adverse	None	Negligible adverse (not significant)	Minor adverse (not significant)

Potential Impact	Receptor(s)	Sensitivity	Magnitude of Impact	Significance of Effect	Secondary Mitigation	Residual Significance of Effect	Cumulative Residual Significance of Effect
	Diadromous Fish	Low	Negligible	Negligible adverse	None	Negligible adverse (not significant)	Minor adverse (not significant)
	Elasmobranchs	Low	Negligible	Negligible adverse	None	Negligible adverse (not significant)	Minor adverse (not significant)
	Marine Demersal Fish	Low	Negligible	Negligible adverse	None	Negligible adverse (not significant)	Minor adverse (not significant)
	Marine Pelagic Fish	Low	Negligible	Negligible adverse	None	Negligible adverse (not significant)	Minor adverse (not significant)
	Cephalopods	Low	Negligible	Negligible adverse	None	Negligible adverse (not significant)	Minor adverse (not significant)
	Crustaceans	Low	Negligible	Negligible adverse	None	Negligible adverse (not significant)	Minor adverse (not significant)
	Molluscs	Low to Medium	Negligible	Negligible adverse	None	Negligible adverse (not significant)	Minor adverse (not significant)
D3: Underwater noise and vibration	Spawning Grounds	Low for Group 1 and Group 2	Low	Minor adverse	None	Minor adverse (not significant)	Minor adverse (not significant)
		Medium for adult Group	Low	Minor adverse	None	Minor adverse (not significant)	Minor adverse (not significant)

Potential Impact	Receptor(s)	Sensitivity	Magnitude of Impact	Significance of Effect	Secondary Mitigation	Residual Significance of Effect	Cumulative Residual Significance of Effect
		3 and Group 4					
		High for herring spawning	Negligible	Minor adverse	None	Minor adverse (not significant)	Minor adverse (not significant)
	Nursery Grounds	Low	Negligible to Low	Minor adverse	None	Minor adverse (not significant)	Minor adverse (not significant)
	Diadromous Fish	Low	Negligible to Low	Minor adverse	None	Minor adverse (not significant)	Minor adverse (not significant)
	Elasmobranchs	Low	Negligible to Low	Minor adverse	None	Minor adverse (not significant)	Minor adverse (not significant)
	Marine Demersal Fish	Medium (cod)	Negligible to Low	Minor adverse	None	Minor adverse (not significant)	Minor adverse (not significant)
	Marine Pelagic Fish	Medium (for herring and sprat)	Negligible to Low	Minor adverse	None	Minor adverse (not significant)	Minor adverse (not significant)
	Cephalopods	Low	Negligible to Low	Minor adverse	None	Minor adverse (not significant)	Minor adverse (not significant)
	Crustaceans	Low	Negligible to Low	Minor adverse	None	Minor adverse (not significant)	Minor adverse (not significant)

Potential Impact	Receptor(s)	Sensitivity	Magnitude of Impact	Significance of Effect	Secondary Mitigation	Residual Significance of Effect	Cumulative Residual Significance of Effect
	Molluscs	Low	Negligible to Low	Minor adverse	None	Minor adverse (not significant)	Minor adverse (not significant)
D4: Changes in fishing activity	Spawning Grounds	Low	Negligible	Negligible adverse	None	Negligible adverse (not significant)	N/A
		Medium for herring spawning	Negligible	Negligible adverse	None	Negligible adverse (not significant)	N/A
		Medium for sandeel spawning	Negligible	Negligible adverse	None	Negligible adverse (not significant)	N/A
	Nursery Grounds	Low	Negligible	Negligible adverse	None	Negligible adverse (not significant)	N/A
	Diadromous Fish	Low	Negligible	Negligible adverse	None	Negligible adverse (not significant)	N/A
	Elasmobranchs	Low	Negligible	Negligible adverse	None	Negligible adverse (not significant)	N/A
	Marine Demersal Fish	Low	Negligible	Negligible adverse	None	Negligible adverse (not significant)	N/A
	Marine Pelagic Fish	Low	Negligible	Negligible adverse	None	Negligible adverse (not significant)	N/A

Potential Impact	Receptor(s)	Sensitivity	Magnitude of Impact	Significance of Effect	Secondary Mitigation	Residual Significance of Effect	Cumulative Residual Significance of Effect
	Cephalopods	Low	Negligible	Negligible adverse	None	Negligible adverse (not significant)	N/A
	Crustaceans	Low	Negligible	Negligible adverse	None	Negligible adverse (not significant)	N/A
	Molluscs	Medium	Negligible	Negligible adverse	None	Negligible adverse (not significant)	N/A
D5: Vessel collision for basking shark	Basking shark	Medium	Low	Minor adverse	None	Minor adverse (not significant)	N/A

20.2.4 Marine Mammals

7. The table below provides a summary of the potential effects for marine mammals receptors from the construction, O&M and decommissioning phases of the Bellrock Wind Farm Infrastructure.

Table 20.4: Summary of Potential Effects for Marine Mammals

Potential Impact	Receptor(s)	Sensitivity	Magnitude of Impact	Significance of Effect	Mitigation (Primary and Tertiary)	Residual Significance of Effect	Cumulative Residual Significance of Effect
Construction							
C1: Underwater Noise During Unexploded Ordnance (UXO) Clearance <i>Permanent Threshold Shift (PTS) for Unmitigated High-order Clearance</i>	Harbour porpoise	High	Medium	Major adverse	Implementation and compliance with the Bellrock WFDA Marine Mammal Mitigation Protocol (MMMP) for UXO clearance.	Minor adverse (not significant)	N/A
	All other marine mammal receptors	High	Negligible	Minor adverse	None required, but MMMP for UXO clearance would reduce potential for effect.	Minor adverse (not significant)	N/A
C1: Underwater Noise During UXO Clearance PTS for Low-order Clearance	All marine mammal receptors	High	Negligible	Minor adverse	None required, but MMMP for UXO clearance would reduce potential for effect.	Minor adverse (not significant)	N/A
C1: Underwater Noise During UXO Clearance	Baleen whales	Medium	Medium	Moderate adverse	MMMP for UXO clearance would reduce potential for effect.	Minor adverse (not significant)	N/A

Potential Impact	Receptor(s)	Sensitivity	Magnitude of Impact	Significance of Effect	Mitigation (Primary and Tertiary)	Residual Significance of Effect	Cumulative Residual Significance of Effect
Disturbance from High-order UXO Clearance	All other marine mammal receptors	Medium/Low	Negligible	Negligible adverse	None	Negligible adverse (not significant)	N/A
C1: Underwater Noise During UXO Clearance Disturbance from Acoustic Deterrent Device (ADD) activation	All marine mammal receptors	Medium/Low	Negligible	Negligible adverse	None	Negligible adverse (not significant)	N/A
C2: Underwater Noise During Geophysical Surveys Auditory injury (PTS)	All marine mammal receptors	High	Negligible	Minor adverse	None required, but mitigation measures in line with the Joint Nature Conservation Committee JNCC (2017) guidance will be in place.	Minor adverse (not significant)	N/A
C2: Underwater Noise During Geophysical Surveys Behavioural Disturbance	All marine mammal receptors	Medium	Negligible	Negligible adverse	None required, but mitigation measures in line with the JNCC (2017) guidance will be in place.	Negligible adverse (not significant)	N/A
C3a: Underwater Noise during Piling Auditory injury	Harbour porpoise and baleen whales	High	Medium	Major adverse	Implementation and compliance with the Bellrock WFDA Piling Noise Mitigation Plan (PNMP) and MMMP for piling would reduce potential for effect which would include ADD activation.	Minor adverse (not significant)	N/A

Potential Impact	Receptor(s)	Sensitivity	Magnitude of Impact	Significance of Effect	Mitigation (Primary and Tertiary)	Residual Significance of Effect	Cumulative Residual Significance of Effect
	Dolphin species and harbour seal	High	Negligible/N/A	Minor adverse	Implementation and compliance with the Bellrock WFDA PNMP and MMMP for piling would reduce potential for effect which would include ADD activation.	Minor adverse (not significant)	N/A
C3b: Underwater Noise during Piling Disturbance	Harbour porpoise	Medium	Low ¹	Minor adverse	None required, but PNMP and MMMP for piling would reduce potential for effect.	Minor adverse (not significant)	N/A
	Baleen whales	Medium	Low	Minor adverse	None required, but PNMP and MMMP for piling would reduce potential for effect.	Minor adverse (not significant)	N/A
	Bottlenose dolphin and white-beaked dolphin	Low	Low	Minor adverse	None required, but PNMP and MMMP for piling would reduce potential for effect.	Minor adverse (not significant)	N/A
	Common dolphin, killer whale and seal species	Low	Negligible	Negligible adverse	None required, but PNMP and MMMP for piling would reduce potential for effect.	Minor adverse (not significant)	N/A
C4: Underwater Noise from Non-Piling Construction Activities	Harbour porpoise	High	Low	Minor adverse	None	Minor adverse (not significant)	N/A

Potential Impact	Receptor(s)	Sensitivity	Magnitude of Impact	Significance of Effect	Mitigation (Primary and Tertiary)	Residual Significance of Effect	Cumulative Residual Significance of Effect
Auditory injury	All other marine mammal receptors	High	No change	Negligible adverse	None	Negligible adverse (not significant)	N/A
C4: Underwater Noise from Non-Piling Construction Activities Disturbance	Bottlenose dolphin (Crown Estate Scotland Management Unit; CES MU)	Low	Low	Minor adverse	None	Minor adverse (not significant)	N/A
	All other marine mammal receptors	Medium/Low	Negligible	Negligible adverse	None	Negligible adverse (not significant)	N/A
C5: Underwater Noise and Presence of Vessels Disturbance	Bottlenose dolphin (CES MU)	Low	Low	Minor adverse	None	Minor adverse (not significant)	N/A
	Harbour porpoise and baleen whales	Medium	Negligible	Negligible adverse	None	Negligible adverse (not significant)	N/A
	All other dolphins and seal species	Low	Negligible	Negligible adverse	None	Negligible adverse (not significant)	N/A
C6: Collision Risk with Vessels	Baleen whales	Medium	Low	Minor adverse	None required, but best practice measures for vessels will be in place in the Environmental Management Plan (EMP) and Vessel Management and	Minor adverse (not significant)	N/A

Potential Impact	Receptor(s)	Sensitivity	Magnitude of Impact	Significance of Effect	Mitigation (Primary and Tertiary)	Residual Significance of Effect	Cumulative Residual Significance of Effect
					Navigational Safety Plan (VMNSP).		
	All other marine mammal receptors	Low	Low	Minor adverse	None required, but best practice measures for vessels will be in place in the EMP and VMNSP.	Minor adverse (not significant)	N/A
C7: Disturbance at Seal Haul-Out Sites	Seals species	Medium	Low	Minor adverse	None	Minor adverse (not significant)	N/A
C8: Changes to Prey Availability	Harbour porpoise, baleen whales	Low to Medium	Negligible to Low	Negligible to Minor adverse	None	Negligible to Minor adverse (not significant)	N/A
	Dolphins, seals	Low	Negligible to Low	Negligible to Minor adverse	None	Negligible to Minor adverse (not significant)	N/A
Operation and Maintenance							
O1: Underwater Noise During Geophysical Surveys Auditory injury	All marine mammal receptors	High	Negligible	Minor adverse	None required, but mitigation measures in line with the JNCC (2017) guidance will be in place.	Minor adverse (not significant)	N/A
O1: Underwater Noise During Geophysical Surveys Disturbance	All marine mammal receptors	Medium to Low	Negligible	Negligible adverse	None required, but mitigation measures in line with the JNCC	Negligible adverse (not significant)	N/A

Potential Impact	Receptor(s)	Sensitivity	Magnitude of Impact	Significance of Effect	Mitigation (Primary and Tertiary)	Residual Significance of Effect	Cumulative Residual Significance of Effect
					(2017) guidance will be in place.		
O2: Underwater Noise from Operation and Maintenance Activities Auditory injury	Harbour Porpoise	High	Low	Minor adverse	None	Minor adverse (not significant)	N/A
	All other marine mammal receptors	High	No change	Negligible adverse	None	Negligible adverse (not significant)	N/A
O2: Underwater Noise from Operation and Maintenance Activities Disturbance	Bottlenose dolphin (CES MU)	Low	Low	Minor adverse	None	Minor adverse (not significant)	N/A
	All other marine mammal receptors	Medium to Low	Negligible	Negligible adverse	None	Negligible adverse (not significant)	N/A
O3: Underwater Noise and Presence of Vessels Disturbance	Bottlenose dolphin	Low	Medium	Minor adverse	None required, but best practice measures for vessels will be in place in the EMP.	Minor adverse (not significant)	N/A
	Harbour porpoise, white-beaked dolphin, killer whale and baleen whales	Medium to Low	Low	Minor adverse	None required, but best practice measures for vessels will be in place in the EMP.	Minor adverse (not significant)	N/A
	Grey seal and harbour seal	Medium to Low	Negligible	Negligible adverse	None required, but best practice measures for vessels	Negligible adverse (not significant)	N/A

Potential Impact	Receptor(s)	Sensitivity	Magnitude of Impact	Significance of Effect	Mitigation (Primary and Tertiary)	Residual Significance of Effect	Cumulative Residual Significance of Effect
					will be in place in the EMP.		
O4: Underwater Noise from Operational Wind Turbine Generators (WTGs) and Moorings on the Seabed Auditory injury	All marine mammal receptors	High	Negligible	Minor adverse	None	Minor adverse (not significant)	N/A
O4: Underwater Noise from Operational WTGs and Moorings on the Seabed Disturbance	All marine mammal receptors	Medium	Negligible	Negligible adverse	None	Negligible adverse (not significant)	N/A
O5: Secondary Entanglement	Harbour porpoise, dolphin and seals species	Medium	Low	Minor adverse	None	Minor adverse (not significant)	N/A
	Baleen whales	High	Low	Moderate adverse	Regular and periodic inspections and maintenance of all components of the wind farm infrastructure.	Minor adverse (not significant)	N/A
O6: Collision Risk with Vessels	Baleen whales	Medium	Low	Minor adverse	None	Minor adverse (not significant)	N/A
	All other species	Low	Low	Minor adverse	None	Minor adverse (not significant)	N/A

Potential Impact	Receptor(s)	Sensitivity	Magnitude of Impact	Significance of Effect	Mitigation (Primary and Tertiary)	Residual Significance of Effect	Cumulative Residual Significance of Effect
O7: Disturbance at Seal Haul-Out Sites	Seal species	Medium	Low	Minor adverse	None	Minor adverse (not significant)	N/A
O8: Changes to Prey Availability	Harbour porpoise and baleen whales	Low to Medium	Negligible	Negligible to Minor adverse	None	Negligible to minor adverse (not significant)	N/A
	Dolphin and seal species	Low	Negligible	Negligible adverse	None	Negligible adverse (not significant)	N/A
Decommissioning							
D1: Underwater Noise During Geophysical Surveys Auditory injury	All marine mammal receptors	High	Negligible	Minor adverse	None required, but mitigation measures in line with the JNCC (2017) guidance will be in place.	Minor adverse (not significant)	N/A
D1: Underwater Noise During Geophysical Surveys Disturbance	All marine mammal receptors	Low to Medium	Negligible	Negligible adverse	None required, but mitigation measures in line with the JNCC (2017) guidance will be in place.	Negligible adverse (not significant)	N/A
D2: Underwater Noise from Decommissioning Activities Auditory injury	All marine mammal receptors	High	Negligible	Minor adverse	None	Minor adverse (not significant)	N/A
D2: Underwater Noise from Decommissioning Activities	Bottlenose dolphin	Low	Low	Minor adverse	None	Minor adverse	N/A

Potential Impact	Receptor(s)	Sensitivity	Magnitude of Impact	Significance of Effect	Mitigation (Primary and Tertiary)	Residual Significance of Effect	Cumulative Residual Significance of Effect
Disturbance						(not significant)	
	All other species	Medium to Low	Negligible	Negligible adverse	None	Negligible adverse (not significant)	N/A
D3: Underwater Noise and Presence of Vessels Disturbance	All marine mammal receptors	Medium	Negligible	Negligible adverse	None required, but best practice measures for vessels will be in place in the EMP.	Negligible adverse (not significant)	N/A
D4: Collision Risk with Vessels	Baleen whales	Medium	Low	Minor adverse	None required, but best practice measures for vessels will be in place in the EMP and VMNSP.	Minor adverse (not significant)	N/A
	All other marine mammal receptors	Low	Low	Negligible adverse	None required, but best practice measures for vessels will be in place in the EMP and VMNSP.	Negligible adverse (not significant)	N/A
D5: Disturbance at Seal Haul-Out Sites	Seal species	Medium	Negligible to Low	Not Significant (Negligible to Minor adverse)	None	Negligible to minor adverse (not significant)	N/A
D6: Changes to Prey Availability	Harbour porpoise, baleen whales	Low to Medium	Negligible to Low	Negligible to Minor adverse	None	Negligible to minor adverse (not significant)	N/A

Potential Impact	Receptor(s)	Sensitivity	Magnitude of Impact	Significance of Effect	Mitigation (Primary and Tertiary)	Residual Significance of Effect	Cumulative Residual Significance of Effect
	Dolphins, seals	Low	Negligible to Low	Negligible to Minor adverse	None	Negligible to minor adverse (not significant)	N/A
Cumulative Effect Assessment							
CE1a: Indicative Assessment of Underwater Noise Impacts from Clearance of UXOs at Other Offshore Wind Farms	Baleen whales	Medium	High	Major adverse	Implementation and compliance with the Bellrock WFDA MMMP would reduce effects at the Project. All other projects would have mitigation measures in place for UXO clearance.	Minor adverse (not significant)	Minor to negligible adverse (not significant)
	Bottlenose dolphin, white-beaked dolphin and killer whale	Low	Low	Minor adverse	None required, but MMMP for Bellrock would reduce potential for effect.	Minor adverse (not significant)	Minor to negligible adverse (not significant)
	Harbour porpoise	Medium	Negligible	Negligible adverse	None required, but MMMP for Bellrock would reduce potential for effect.	Minor adverse (not significant)	Minor to negligible adverse (not significant)
	Common dolphin and seals	Low	Negligible	Negligible adverse	None required, but MMMP for Bellrock would reduce potential for effect.	Minor adverse (not significant)	Minor to negligible adverse (not significant)

Potential Impact	Receptor(s)	Sensitivity	Magnitude of Impact	Significance of Effect	Mitigation (Primary and Tertiary)	Residual Significance of Effect	Cumulative Residual Significance of Effect
CE1b: Indicative Assessment of Underwater Noise Impacts from Geophysical Surveys at other OWFs	harbour porpoise, bottlenose dolphin, white-beaked dolphin and killer whale	Medium	Low	Minor adverse	None required, but mitigation measures in line with the JNCC (2017) guidance will be in place for all projects.	Minor adverse (not significant)	Minor adverse (not significant)
	All other marine mammal receptors	Medium	Negligible	Negligible adverse	None required, but mitigation measures in line with the JNCC (2017) guidance will be in place for all projects.	Minor adverse (not significant)	Negligible adverse (not significant)
CE1c: Indicative Assessment of Underwater Noise Impacts from non-piling Construction Activities at other OWFs	harbour porpoise and baleen whales	Medium	Low	Minor adverse	None	Minor adverse (not significant)	Minor adverse (not significant)
	Bottlenose dolphin	Low	Medium	Minor adverse	None	Minor adverse (not significant)	Minor adverse (not significant)
	White-beaked dolphin and killer whale	Low	Low	Minor adverse	None	Minor adverse (not significant)	Minor adverse (not significant)
	All other marine mammal receptors	Low	Negligible	Negligible adverse	None	Minor adverse (not significant)	Negligible adverse (not significant)
CE1d: Indicative Assessment of Underwater Noise from Other Industries and Activities	Bottlenose dolphin	Medium	Medium	Moderate adverse	Implementation and compliance with the Bellrock WFDA PNMP and MMMP for piling would reduce potential	Minor adverse (not significant)	Minor adverse (not significant)

Potential Impact	Receptor(s)	Sensitivity	Magnitude of Impact	Significance of Effect	Mitigation (Primary and Tertiary)	Residual Significance of Effect	Cumulative Residual Significance of Effect
					for effect from the Project		
	Harbour porpoise, white-beaked dolphin, killer whale and baleen whales	Medium	Low	Minor adverse	None	Minor adverse (not significant)	Minor adverse (not significant)
	All other marine mammal receptors	Medium	Negligible	Negligible adverse	None	Minor adverse (not significant)	Negligible adverse (not significant)
CE1e: Assessment of Disturbance from Operational Offshore Turbines Generators	All marine mammal receptors	Medium	Low	Minor adverse	None	Minor adverse (not significant)	Minor adverse (not significant)
CE1f: Assessment of Underwater Noise and Presence of Vessels	All marine mammal receptors	Low to Medium	Low	Minor adverse	None, but best practice measures for vessels will be in place in the EMP.	Minor adverse (not significant)	Minor adverse (not significant)
CE2: Auditory Injury and Behavioural Impacts of Underwater Noise Impacts from Piling at Other OWFs	All marine mammal receptors	Medium	Low	Minor adverse	Implementation and compliance with the Bellrock WFDA PNMP and MMMP for piling would reduce potential for effect for the Project.	Minor adverse (not significant)	Minor adverse (not significant)
CE3: Vessel Collision Risk	Harbour porpoise, dolphins and seal species	Low	Low	Minor adverse	None required, but best practice measures for vessels	Minor adverse (not significant)	Minor adverse (not significant)

Potential Impact	Receptor(s)	Sensitivity	Magnitude of Impact	Significance of Effect	Mitigation (Primary and Tertiary)	Residual Significance of Effect	Cumulative Residual Significance of Effect
					will be in place in the EMP and VMNSP.		
	Baleen whales	Medium	Low	Minor adverse	None required, but best practice measures for vessels will be in place in the EMP and VMNSP.	Minor adverse (not significant)	Minor adverse (not significant)
CE4: Disturbance at Seal Haul-Out Sites	Seal species	Low	Low	Minor adverse	None	Minor adverse (not significant)	Minor adverse (not significant)
CE5: Secondary Entanglement	Harbour porpoise, dolphins and seal species	Medium	Low	Minor adverse	None	Minor adverse (not significant)	Minor adverse (not significant)
	Baleen whales	High	Low	Moderate adverse	Regular and periodic inspections and maintenance of all components of the wind farm infrastructure.	Minor adverse (not significant)	Minor adverse (not significant)
CE6: Changes to Prey Availability	Harbour porpoise, baleen whales	Low to Medium	Negligible to Low	Negligible to Minor adverse	None	Negligible to minor adverse (not significant)	Negligible to minor adverse (not significant)
	Dolphins, seals	Low	Negligible to Low	Negligible to Minor adverse	None	Negligible to minor adverse (not significant)	Negligible to minor adverse (not significant)

Potential Impact	Receptor(s)	Sensitivity	Magnitude of Impact	Significance of Effect	Mitigation (Primary and Tertiary)	Residual Significance of Effect	Cumulative Residual Significance of Effect
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Notes:

¹ Magnitude has been defined by considering the full evidence base of literature available, dose-response curve (DRC) assessment and outcome of the iPCoD modelling.

20.2.5 Offshore Ornithology

8. The table below provides a summary of the potential effects for offshore ornithology receptors from the construction, O&M and decommissioning phases of the Bellrock Wind Farm Infrastructure.

Table 20.5: Summary of Potential Effects for Offshore Ornithology

Potential Impact	Receptor(s)	Sensitivity	Magnitude of Impact	Significance of Effect	Secondary Mitigation	Residual Significance of Effect	Cumulative Residual Significance of Effect
Construction							
C1: Temporary Disturbance and Displacement	Guillemot, razorbill, puffin and gannet	Medium	Negligible	Negligible adverse	Best practice measures to minimise disturbance risk included in VMNSP.	Negligible adverse (not significant)	Negligible adverse (not significant)
C2: Indirect Effects through Impacts to Habitats and Prey Species	Kittiwake, great black-backed gull, Arctic tern, Arctic skua, gannet, guillemot, razorbill and puffin	Medium	Low	Minor adverse	None	Minor adverse (not significant)	Minor adverse (not significant)
C3: Artificial Lighting	N/A (no sensitive seabird species present at the Bellrock WFDA)	Negligible	Negligible	Negligible adverse	None	Negligible adverse (not significant)	N/A
C4: Indirect Impacts from UXO Clearance	Kittiwake, great black-backed gull, Arctic tern, Arctic skua, gannet, guillemot, razorbill and puffin	Medium	Negligible	Negligible adverse	None	Negligible adverse (not significant)	N/A

Potential Impact	Receptor(s)	Sensitivity	Magnitude of Impact	Significance of Effect	Secondary Mitigation	Residual Significance of Effect	Cumulative Residual Significance of Effect
Operation and Maintenance							
O1: Temporary Disturbance and Displacement	Guillemot, puffin gannet and razorbill	Medium	Negligible	Negligible adverse	None	Negligible adverse (not significant)	N/A
O2: Indirect Effects through Impacts to Habitats and Prey Species	Kittiwake, great black-backed gull, Arctic tern, Arctic skua, gannet, guillemot, razorbill and puffin	Medium	Negligible	Negligible adverse	None	Negligible adverse (not significant)	N/A
O3: Disturbance and Displacement from the Physical Presence of WTGs	Kittiwake, guillemot, puffin and gannet	Medium	Negligible	Negligible adverse	None	Negligible adverse (not significant)	Minor adverse (not significant)
	Razorbill	Medium	Negligible	Negligible adverse	None	Negligible adverse (not significant)	Moderate adverse (significant) ¹
O4: Barrier to Movement	Migratory Non-seabirds	Low	Negligible	Negligible adverse	None	Negligible adverse (not significant)	N/A
O5: Collision with WTGs	Kittiwake and gannet	Medium	Negligible	Negligible adverse	None	Negligible adverse (not significant)	Minor adverse (not significant)
	Arctic tern and Arctic skua	Medium	Negligible	Negligible adverse	None	Negligible adverse (not significant)	N/A
	Great black-backed gull	High	Negligible	Minor adverse	None	Minor adverse (not significant)	N/A

Potential Impact	Receptor(s)	Sensitivity	Magnitude of Impact	Significance of Effect	Secondary Mitigation	Residual Significance of Effect	Cumulative Residual Significance of Effect
	Migratory non-seabird species	Medium	No effect to Low	No effect, negligible or minor adverse	None	Negligible adverse (not significant)	N/A
O6: Combined Collision and Displacement	Kittiwake and gannet	Medium	Negligible	Negligible adverse	None	Minor adverse (not significant)	Minor adverse (not significant)
O7: Secondary Entanglement with Subsea Infrastructure	Guillemot, razorbill and puffin	High	Negligible	Minor adverse	None	Minor adverse (not significant)	N/A
O8: Artificial Lighting	N/A (no sensitive seabird species present at Bellrock WFDA)	Negligible	Negligible	Negligible adverse	None	Negligible adverse (not significant)	N/A
Decommissioning							
D1: Temporary Disturbance and Displacement	Guillemot, razorbill, puffin and gannet	Medium	Negligible	Negligible adverse	None	Negligible adverse (not significant)	Negligible adverse (not significant)
D2: Indirect Impacts	Kittiwake, great black-backed gull, Arctic tern, Arctic skua, gannet, guillemot, razorbill and puffin	Medium	Low	Minor adverse	None	Minor adverse (not significant)	Minor adverse (not significant)
D3: Artificial Lighting	N/A (no sensitive seabird species present at Bellrock WFDA)	Negligible	Negligible	Negligible adverse	None	Negligible adverse (not significant)	N/A
<p>Notes:</p> <p>¹ As set out in Section 10.9.2.1.2.2.1 of Chapter 10: Offshore Ornithology (Volume II), the conclusion may exaggerate actual effects on this feature and should be treated with caution.</p>							

20.2.6 Commercial Fisheries

9. The table below provides a summary of the potential effects for commercial fisheries receptors from the construction, O&M and decommissioning phases of the Bellrock Wind Farm Infrastructure.

Table 20.6: Summary of Potential Effects for Commercial Fisheries

Potential Impact	Receptor(s)	Sensitivity	Magnitude of Impact	Significance of Effect	Secondary Mitigation	Residual Significance of Effect	Cumulative Residual Significance of Effect
Construction							
C1: Reduction in access to, or exclusion from established fishing grounds within the Bellrock WFDA	UK demersal otter trawl TR1: Whitefish	Medium	Low	Minor adverse	None	Minor adverse (not significant)	Minor adverse (not significant)
	UK demersal otter trawl TR2: Nephrops	Medium	Medium	Moderate adverse	None	Moderate adverse (significant)	Moderate adverse (significant)
	UK demersal seine	Low	Low	Minor adverse	None	Minor adverse (not significant)	Minor adverse (not significant)
	UK pelagic trawl and purse seine	Low	Low	Minor adverse	None	Minor adverse (not significant)	Minor adverse (not significant)
	Non-UK pelagic trawl and purse seine	Low	Low	Minor adverse	None	Minor adverse (not significant)	Minor adverse (not significant)
	UK scallop dredge	Low	Negligible	Negligible	None	Negligible adverse (not significant)	Negligible adverse (not significant)
	UK beam trawl	Low	Negligible	Negligible	None	Negligible adverse	Negligible adverse

Potential Impact	Receptor(s)	Sensitivity	Magnitude of Impact	Significance of Effect	Secondary Mitigation	Residual Significance of Effect	Cumulative Residual Significance of Effect
						(not significant)	(not significant)
	UK potting	Low	Low	Minor adverse	None	Minor adverse (not significant)	Minor adverse (not significant)
	UK gear with hooks	Low	Negligible	Negligible	None	Negligible adverse (not significant)	Negligible adverse (not significant)
C2: Displacement leading to gear conflict and increased fishing pressure on adjacent grounds	UK demersal otter trawl	Medium	Low	Minor adverse	None	Minor adverse (not significant)	Minor adverse (not significant)
	UK demersal seine	Medium	Low	Minor adverse	None	Minor adverse (not significant)	Minor adverse (not significant)
	UK pelagic trawl and purse seine	Low	Low	Minor adverse	None	Minor adverse (not significant)	Minor adverse (not significant)
	Non-UK pelagic trawl and purse seine	Low	Low	Minor adverse	None	Minor adverse (not significant)	Minor adverse (not significant)
	UK scallop dredge	Medium	Low	Minor adverse	None	Minor adverse (not significant)	Minor adverse (not significant)
	UK beam trawl	Medium	Negligible	Negligible	None	Negligible adverse (not significant)	Minor adverse (not significant)
	UK potting	Medium	Low	Minor adverse	None	Minor adverse (not significant)	Minor adverse (not significant)

Potential Impact	Receptor(s)	Sensitivity	Magnitude of Impact	Significance of Effect	Secondary Mitigation	Residual Significance of Effect	Cumulative Residual Significance of Effect
	UK gear with hooks	Negligible	Negligible	Negligible	None	Negligible adverse (not significant)	Minor adverse (not significant)
C3: Disturbance of commercially important fish and shellfish resources leading to displacement or disruption of fishing activity	UK demersal otter trawl	Low	Low	Minor adverse	None	Minor adverse (not significant)	Minor adverse (not significant)
	UK demersal seine	Low	Low	Minor adverse	None	Minor adverse (not significant)	Minor adverse (not significant)
	UK pelagic trawl and purse seine	Low	Low	Minor adverse	None	Minor adverse (not significant)	Minor adverse (not significant)
	Non-UK pelagic trawl and purse seine	Low	Low	Minor adverse	None	Minor adverse (not significant)	Minor adverse (not significant)
	UK scallop dredge	Low	Low	Minor adverse	None	Minor adverse (not significant)	Minor adverse (not significant)
	UK beam trawl	Low	Low	Minor adverse	None	Minor adverse (not significant)	Minor adverse (not significant)
	UK potting	Low	Low	Minor adverse	None	Minor adverse (not significant)	Minor adverse (not significant)
	UK gear with hooks	Low	Low	Minor adverse	None	Minor adverse (not significant)	Minor adverse (not significant)

Potential Impact	Receptor(s)	Sensitivity	Magnitude of Impact	Significance of Effect	Secondary Mitigation	Residual Significance of Effect	Cumulative Residual Significance of Effect
C4: Increased vessel traffic associated with the Bellrock Wind Farm Infrastructure within fishing grounds leading to interference with fishing activity	UK demersal otter trawl	Low	Low	Minor adverse	None	Minor adverse (not significant)	N/A
	UK demersal seine	Low	Low	Minor adverse	None	Minor adverse (not significant)	N/A
	UK pelagic trawl and purse seine	Low	Low	Minor adverse	None	Minor adverse (not significant)	N/A
	Non-UK pelagic trawl and purse seine	Low	Low	Minor adverse	None	Minor adverse (not significant)	N/A
	UK scallop dredge	Low	Low	Minor adverse	None	Minor adverse (not significant)	N/A
	UK beam trawl	Low	Low	Minor adverse	None	Minor adverse (not significant)	N/A
	UK potting	Medium	Low	Minor adverse	None	Minor adverse (not significant)	N/A
	UK gear with hooks	Low	Low	Minor adverse	None	Minor adverse (not significant)	N/A

Potential Impact	Receptor(s)	Sensitivity	Magnitude of Impact	Significance of Effect	Secondary Mitigation	Residual Significance of Effect	Cumulative Residual Significance of Effect
C5: Additional steaming to alternative fishing grounds for vessels that would otherwise fish within the Bellrock WFDA	UK demersal otter trawl	Medium	Low	Minor adverse	None	Minor adverse (not significant)	N/A
	UK demersal seine	Medium	Low	Minor adverse	None	Minor adverse (not significant)	N/A
	UK pelagic trawl and purse seine	Low	Low	Minor adverse	None	Minor adverse (not significant)	N/A
	Non-UK pelagic trawl and purse seine	Low	Low	Minor adverse	None	Minor adverse (not significant)	N/A
	UK scallop dredge	Medium	Low	Minor adverse	None	Minor adverse (not significant)	N/A
	UK beam trawl	Medium	Low	Minor adverse	None	Minor adverse (not significant)	N/A
	UK potting	Medium	Low	Minor adverse	None	Minor adverse (not significant)	N/A
	UK gear with hooks	Medium	Low	Minor adverse	None	Minor adverse (not significant)	N/A

Potential Impact	Receptor(s)	Sensitivity	Magnitude of Impact	Significance of Effect	Secondary Mitigation	Residual Significance of Effect	Cumulative Residual Significance of Effect
C6: Increased snagging risk, which could result in loss or damage to fishing gear	UK demersal otter trawl	Medium	Low	Minor adverse	None	Minor adverse (not significant)	N/A
	UK demersal seine	Medium	Low	Minor adverse	None	Minor adverse (not significant)	N/A
	UK pelagic trawl and purse seine	Medium	Low	Minor adverse	None	Minor adverse (not significant)	N/A
	Non-UK pelagic trawl and purse seine	Medium	Low	Minor adverse	None	Minor adverse (not significant)	N/A
	UK scallop dredge	Medium	Low	Minor adverse	None	Minor adverse (not significant)	N/A
	UK beam trawl	Medium	Low	Minor adverse	None	Minor adverse (not significant)	N/A
	UK potting	Medium	Low	Minor adverse	None	Minor adverse (not significant)	N/A
	UK gear with hooks	Medium	Low	Minor adverse	None	Minor adverse (not significant)	N/A

Potential Impact	Receptor(s)	Sensitivity	Magnitude of Impact	Significance of Effect	Secondary Mitigation	Residual Significance of Effect	Cumulative Residual Significance of Effect
Operation and Maintenance							
O1: Reduction in access to, or exclusion from established fishing grounds within the Bellrock WFDA	UK demersal otter trawl TR1: Whitefish	Medium	Low	Minor adverse	None	Minor adverse (not significant)	Minor adverse (not significant)
	UK demersal otter trawl TR2: Nephrops	Medium	Medium	Moderate adverse	None	Moderate adverse (significant)	Moderate adverse (significant)
	UK demersal seine	Low	Low	Minor adverse	None	Minor adverse (not significant)	Minor adverse (not significant)
	UK pelagic trawl and purse seine	Low	Low	Minor adverse	None	Minor adverse (not significant)	Minor adverse (not significant)
	Non-UK pelagic trawl and purse seine	Low	Low	Minor adverse	None	Minor adverse (not significant)	Minor adverse (not significant)
	UK scallop dredge	Low	Negligible	Negligible	None	Negligible adverse (not significant)	Negligible adverse (not significant)
	UK beam trawl	Low	Negligible	Negligible	None	Negligible adverse (not significant)	Negligible adverse (not significant)
	UK potting	Low	Low	Minor adverse	None	Minor adverse (not significant)	Minor adverse (not significant)
	UK gear with hooks	Low	Negligible	Negligible	None	Negligible adverse	Negligible adverse

Potential Impact	Receptor(s)	Sensitivity	Magnitude of Impact	Significance of Effect	Secondary Mitigation	Residual Significance of Effect	Cumulative Residual Significance of Effect
						(not significant)	(not significant)
O2: Displacement leading to gear conflict and increased fishing pressure on adjacent grounds	UK demersal otter trawl	Medium	Low	Minor adverse	None	Minor adverse (not significant)	Minor adverse (not significant)
	UK demersal seine	Medium	Low	Minor adverse	None	Minor adverse (not significant)	Minor adverse (not significant)
	UK pelagic trawl and purse seine	Low	Low	Minor adverse	None	Minor adverse (not significant)	Minor adverse (not significant)
	Non-UK pelagic trawl and purse seine	Low	Low	Minor adverse	None	Minor adverse (not significant)	Minor adverse (not significant)
	UK scallop dredge	Medium	Low	Minor adverse	None	Minor adverse (not significant)	Minor adverse (not significant)
	UK beam trawl	Medium	Negligible	Negligible	None	Negligible adverse (not significant)	Minor adverse (not significant)
	UK potting	Medium	Low	Minor adverse	None	Minor adverse (not significant)	Minor adverse (not significant)
	UK gear with hooks	Negligible	Negligible	Negligible	None	Negligible adverse (not significant)	Minor adverse (not significant)
O3: Disturbance of commercially important fish and	UK demersal otter trawl	Low	Low	Minor adverse	None	Minor adverse (not significant)	Minor adverse (not significant)

Potential Impact	Receptor(s)	Sensitivity	Magnitude of Impact	Significance of Effect	Secondary Mitigation	Residual Significance of Effect	Cumulative Residual Significance of Effect
shellfish resources leading to displacement or disruption of fishing activity	UK demersal seine	Low	Low	Minor adverse	None	Minor adverse (not significant)	Minor adverse (not significant)
	UK pelagic trawl and purse seine	Low	Low	Minor adverse	None	Minor adverse (not significant)	Minor adverse (not significant)
	Non-UK pelagic trawl and purse seine	Low	Low	Minor adverse	None	Minor adverse (not significant)	Minor adverse (not significant)
	UK scallop dredge	Low	Low	Minor adverse	None	Minor adverse (not significant)	Minor adverse (not significant)
	UK beam trawl	Low	Low	Minor adverse	None	Minor adverse (not significant)	Minor adverse (not significant)
	UK potting	Low	Low	Minor adverse	None	Minor adverse (not significant)	Minor adverse (not significant)
	UK gear with hooks	Low	Low	Minor adverse	None	Minor adverse (not significant)	Minor adverse (not significant)
O4: Increased vessel traffic associated with the Bellrock Wind Farm Infrastructure within fishing grounds	UK demersal otter trawl	Low	Low	Minor adverse	None	Minor adverse (not significant)	N/A
	UK demersal seine	Low	Low	Minor adverse	None	Minor adverse (not significant)	N/A

Potential Impact	Receptor(s)	Sensitivity	Magnitude of Impact	Significance of Effect	Secondary Mitigation	Residual Significance of Effect	Cumulative Residual Significance of Effect
leading to interference with fishing activity	UK pelagic trawl and purse seine	Low	Low	Minor adverse	None	Minor adverse (not significant)	N/A
	Non-UK pelagic trawl and purse seine	Low	Low	Minor adverse	None	Minor adverse (not significant)	N/A
	UK scallop dredge	Low	Low	Minor adverse	None	Minor adverse (not significant)	N/A
	UK beam trawl	Low	Low	Minor adverse	None	Minor adverse (not significant)	N/A
	UK potting	Medium	Low	Minor adverse	None	Minor adverse (not significant)	N/A
	UK gear with hooks	Low	Low	Minor adverse	None	Minor adverse (not significant)	N/A
O5: Additional steaming to alternative fishing grounds for vessels that would otherwise fish within the Bellrock WFDA	UK demersal otter trawl	Medium	Low	Minor adverse	None	Minor adverse (not significant)	N/A
	UK demersal seine	Medium	Low	Minor adverse	None	Minor adverse (not significant)	N/A
	UK pelagic trawl and purse seine	Low	Low	Minor adverse	None	Minor adverse (not significant)	N/A

Potential Impact	Receptor(s)	Sensitivity	Magnitude of Impact	Significance of Effect	Secondary Mitigation	Residual Significance of Effect	Cumulative Residual Significance of Effect
	Non-UK pelagic trawl and purse seine	Low	Low	Minor adverse	None	Minor adverse (not significant)	N/A
	UK scallop dredge	Medium	Low	Minor adverse	None	Minor adverse (not significant)	N/A
	UK beam trawl	Medium	Low	Minor adverse	None	Minor adverse (not significant)	N/A
	UK potting	Medium	Low	Minor adverse	None	Minor adverse (not significant)	N/A
	UK gear with hooks	Medium	Low	Minor adverse	None	Minor adverse (not significant)	N/A
O6: Increased snagging risk, which could result in loss or damage to fishing gear	UK demersal otter trawl	Medium	Low	Minor adverse	None	Minor adverse (not significant)	N/A
	UK demersal seine	Medium	Low	Minor adverse	None	Minor adverse (not significant)	N/A
	UK pelagic trawl and purse seine	Medium	Low	Minor adverse	None	Minor adverse (not significant)	N/A
	Non-UK pelagic trawl and purse seine	Medium	Low	Minor adverse	None	Minor adverse (not significant)	N/A

Potential Impact	Receptor(s)	Sensitivity	Magnitude of Impact	Significance of Effect	Secondary Mitigation	Residual Significance of Effect	Cumulative Residual Significance of Effect
	UK scallop dredge	Medium	Low	Minor adverse	None	Minor adverse (not significant)	N/A
	UK beam trawl	Medium	Low	Minor adverse	None	Minor adverse (not significant)	N/A
	UK potting	Medium	Low	Minor adverse	None	Minor adverse (not significant)	N/A
	UK gear with hooks	Medium	Low	Minor adverse	None	Minor adverse (not significant)	N/A
Decommissioning							
D1: Reduction in access to, or exclusion from established fishing grounds within the Bellrock WFDA	UK demersal otter trawl TR1: Whitefish	Medium	Low	Minor adverse	None	Minor adverse (not significant)	Minor adverse (not significant)
	UK demersal otter trawl TR2: Nephrops	Medium	Medium	Moderate adverse	None	Moderate adverse (significant)	Moderate adverse (significant)
	UK demersal seine	Low	Low	Minor adverse	None	Minor adverse (not significant)	Minor adverse (not significant)
	UK pelagic trawl and purse seine	Low	Low	Minor adverse	None	Minor adverse (not significant)	Minor adverse (not significant)
	Non-UK pelagic trawl and purse seine	Low	Low	Minor adverse	None	Minor adverse	Minor adverse

Potential Impact	Receptor(s)	Sensitivity	Magnitude of Impact	Significance of Effect	Secondary Mitigation	Residual Significance of Effect	Cumulative Residual Significance of Effect
						(not significant)	(not significant)
	UK scallop dredge	Low	Negligible	Negligible	None	Negligible adverse (not significant)	Negligible adverse (not significant)
	UK beam trawl	Low	Negligible	Negligible	None	Negligible adverse (not significant)	Negligible adverse (not significant)
	UK potting	Low	Low	Minor adverse	None	Minor adverse (not significant)	Minor adverse (not significant)
	UK gear with hooks	Low	Negligible	Negligible	None	Negligible adverse (not significant)	Negligible adverse (not significant)
D2: Displacement leading to gear conflict and increased fishing pressure on adjacent grounds	UK demersal otter trawl	Medium	Low	Minor adverse	None	Minor adverse (not significant)	Minor adverse (not significant)
	UK demersal seine	Medium	Low	Minor adverse	None	Minor adverse (not significant)	Minor adverse (not significant)
	UK pelagic trawl and purse seine	Low	Low	Minor adverse	None	Minor adverse (not significant)	Minor adverse (not significant)
	Non-UK pelagic trawl and purse seine	Low	Low	Minor adverse	None	Minor adverse (not significant)	Minor adverse (not significant)
	UK scallop dredge	Medium	Low	Minor adverse	None	Minor adverse (not significant)	Minor adverse (not significant)

Potential Impact	Receptor(s)	Sensitivity	Magnitude of Impact	Significance of Effect	Secondary Mitigation	Residual Significance of Effect	Cumulative Residual Significance of Effect
	UK beam trawl	Medium	Negligible	Negligible	None	Negligible adverse (not significant)	Minor adverse (not significant)
	UK potting	Medium	Low	Minor adverse	None	Minor adverse (not significant)	Minor adverse (not significant)
	UK gear with hooks	Negligible	Negligible	Negligible	None	Negligible adverse (not significant)	Minor adverse (not significant)
D3: Disturbance of commercially important fish and shellfish resources leading to displacement or disruption of fishing activity	UK demersal otter trawl	Low	Low	Minor adverse	None	Minor adverse (not significant)	Minor adverse (not significant)
	UK demersal seine	Low	Low	Minor adverse	None	Minor adverse (not significant)	Minor adverse (not significant)
	UK pelagic trawl and purse seine	Low	Low	Minor adverse	None	Minor adverse (not significant)	Minor adverse (not significant)
	Non-UK pelagic trawl and purse seine	Low	Low	Minor adverse	None	Minor adverse (not significant)	Minor adverse (not significant)
	UK scallop dredge	Low	Low	Minor adverse	None	Minor adverse (not significant)	Minor adverse (not significant)
	UK beam trawl	Low	Low	Minor adverse	None	Minor adverse (not significant)	Minor adverse (not significant)

Potential Impact	Receptor(s)	Sensitivity	Magnitude of Impact	Significance of Effect	Secondary Mitigation	Residual Significance of Effect	Cumulative Residual Significance of Effect
	UK potting	Low	Low	Minor adverse	None	Minor adverse (not significant)	Minor adverse (not significant)
	UK gear with hooks	Low	Low	Minor adverse	None	Minor adverse (not significant)	Minor adverse (not significant)
D4: Increased vessel traffic associated with the Bellrock Wind Farm Infrastructure within fishing grounds leading to interference with fishing activity	UK demersal otter trawl	Low	Low	Minor adverse	None	Minor adverse (not significant)	N/A
	UK demersal seine	Low	Low	Minor adverse	None	Minor adverse (not significant)	N/A
	UK pelagic trawl and purse seine	Low	Low	Minor adverse	None	Minor adverse (not significant)	N/A
	Non-UK pelagic trawl and purse seine	Low	Low	Minor adverse	None	Minor adverse (not significant)	N/A
	UK scallop dredge	Low	Low	Minor adverse	None	Minor adverse (not significant)	N/A
	UK beam trawl	Low	Low	Minor adverse	None	Minor adverse (not significant)	N/A
	UK potting	Medium	Low	Minor adverse	None	Minor adverse (not significant)	N/A

Potential Impact	Receptor(s)	Sensitivity	Magnitude of Impact	Significance of Effect	Secondary Mitigation	Residual Significance of Effect	Cumulative Residual Significance of Effect
	UK gear with hooks	Low	Low	Minor adverse	None	Minor adverse (not significant)	N/A
D5: Additional steaming to alternative fishing grounds for vessels that would otherwise fish within the Bellrock WFDA	UK demersal otter trawl	Medium	Low	Minor adverse	None	Minor adverse (not significant)	N/A
	UK demersal seine	Medium	Low	Minor adverse	None	Minor adverse (not significant)	N/A
	UK pelagic trawl and purse seine	Low	Low	Minor adverse	None	Minor adverse (not significant)	N/A
	Non-UK pelagic trawl and purse seine	Low	Low	Minor adverse	None	Minor adverse (not significant)	N/A
	UK scallop dredge	Medium	Low	Minor adverse	None	Minor adverse (not significant)	N/A
	UK beam trawl	Medium	Low	Minor adverse	None	Minor adverse (not significant)	N/A
	UK potting	Medium	Low	Minor adverse	None	Minor adverse (not significant)	N/A
	UK gear with hooks	Medium	Low	Minor adverse	None	Minor adverse (not significant)	N/A

Potential Impact	Receptor(s)	Sensitivity	Magnitude of Impact	Significance of Effect	Secondary Mitigation	Residual Significance of Effect	Cumulative Residual Significance of Effect
D6: Increased snagging risk, which could result in loss or damage to fishing gear	UK demersal otter trawl	Medium	Low	Minor adverse	None	Minor adverse (not significant)	N/A
	UK demersal seine	Medium	Low	Minor adverse	None	Minor adverse (not significant)	N/A
	UK pelagic trawl and purse seine	Medium	Low	Minor adverse	None	Minor adverse (not significant)	N/A
	Non-UK pelagic trawl and purse seine	Medium	Low	Minor adverse	None	Minor adverse (not significant)	N/A
	UK scallop dredge	Medium	Low	Minor adverse	None	Minor adverse (not significant)	N/A
	UK beam trawl	Medium	Low	Minor adverse	None	Minor adverse (not significant)	N/A
	UK potting	Medium	Low	Minor adverse	None	Minor adverse (not significant)	N/A
	UK gear with hooks	Medium	Low	Minor adverse	None	Minor adverse (not significant)	N/A

20.2.7 Shipping and Navigation

10. The table below provides a summary of the potential effects for shipping and navigation receptors from the construction, O&M and decommissioning phases of the Bellrock Wind Farm Infrastructure.

Table 20.7: Summary of Potential Effects for Shipping and Navigation

Potential Impact	Receptor(s)	Frequency of Occurrence	Severity of Consequence	Significance of Effect	Secondary Mitigation	Residual Significance of Effect	Cumulative Residual Significance of Effect
Construction							
C1: Vessel displacement resulting in increased third-party collision risk	All vessels	Remote	Moderate	Tolerable with mitigation	N/A	Tolerable with mitigation	Tolerable with mitigation
C2: Collision risk between third-party vessels and project vessels	All vessels	Extremely unlikely	Serious	Tolerable with mitigation	N/A	Tolerable with mitigation	Tolerable with mitigation
C3: Reduced access to local ports and harbours	All vessels	Remote	Minor	Broadly acceptable	N/A	Broadly acceptable	Broadly acceptable
C4: Loss of station	All vessels	Negligible	Serious	Broadly acceptable	N/A	Broadly acceptable	N/A
Operation and Maintenance							
O1: Vessel displacement resulting in increased third-party collision risk	All vessels	Remote	Moderate	Tolerable with mitigation	N/A	Tolerable with mitigation	Tolerable with mitigation
O2: Collision risk between third-party vessels and project vessels	All vessels	Extremely unlikely	Serious	Tolerable with mitigation	N/A	Tolerable with mitigation	Tolerable with mitigation
O3: Reduced access to local ports and harbours	All vessels	Extremely unlikely	Minor	Broadly acceptable	N/A	Broadly acceptable	Broadly acceptable

Potential Impact	Receptor(s)	Frequency of Occurrence	Severity of Consequence	Significance of Effect	Secondary Mitigation	Residual Significance of Effect	Cumulative Residual Significance of Effect
O4: Creation of powered vessel to structure allision risk	All vessels	Remote	Serious	Tolerable with mitigation	N/A	Tolerable with mitigation	Tolerable with mitigation
O4: Creation of drifting vessel to structure allision risk	All vessels	Extremely unlikely	Serious	Tolerable with mitigation	N/A	Tolerable with mitigation	Tolerable with mitigation
O4: Creation of internal vessel to structure allision risk	All vessels	Extremely unlikely	Serious	Tolerable with mitigation	N/A	Tolerable with mitigation	Tolerable with mitigation
O5: Loss of station	All vessels	Negligible	Serious	Broadly acceptable	N/A	Broadly acceptable	N/A
O6: Reduction in under keel clearance	All vessels	Negligible	Moderate	Broadly acceptable	N/A	Broadly acceptable	N/A
O7: Anchor interaction with sub-surface infrastructure	All vessels	Extremely unlikely	Moderate	Broadly acceptable	N/A	Broadly acceptable	N/A
O8: Reduction of Search and Rescue (SAR) capability	All vessels	Remote	Serious	Tolerable with mitigation	N/A	Tolerable with mitigation	Tolerable with mitigation
Decommissioning							
D1: Vessel displacement resulting in increased third-party collision risk	All vessels	Remote	Moderate	Tolerable with Mitigation	N/A	Tolerable with Mitigation	Tolerable with mitigation
D2: Collision risk between third-party vessels and project vessels	All vessels	Extremely unlikely	Serious	Tolerable with mitigation	N/A	Tolerable with mitigation	Tolerable with mitigation
D3: Reduced access to local ports and harbours	All vessels	Remote	Minor	Broadly acceptable	N/A	Broadly acceptable	Broadly acceptable
D4: Loss of station	All vessels	Negligible	Serious	Broadly acceptable	N/A	Broadly acceptable	N/A

20.2.8 Aviation and Radar

11. The table below provides a summary of the potential effects for aviation and radar receptors from the construction, O&M and decommissioning phases of the Bellrock Wind Farm Infrastructure.

Table 20.8: Summary of Potential Effects for Aviation and Radar

Potential Impact	Receptor(s)	Sensitivity	Magnitude of Impact	Significance of Effect	Secondary Mitigation	Residual Significance of Effect	Cumulative Residual Significance of Effect
Construction							
C1: Creation of an Aviation Obstacle Environment	<ul style="list-style-type: none"> ▪ General military low flying training operations; ▪ Helicopter traffic utilising HMRI 113 and 116; and ▪ Other offshore fixed wing and helicopter operations, including those undertaking SAR operations over the North Sea. 	Medium	Low	Minor adverse	N/A	Minor adverse (not significant)	Not significant
C2: Increased Air Traffic in the Area in Relation to Wind Farm Activities	<ul style="list-style-type: none"> ▪ General military low flying training operations; ▪ Helicopter traffic utilising HMRI 113 and 116; and ▪ Other offshore fixed wing and helicopter operations, including those undertaking SAR operations over the North Sea. 	Medium	Low	Minor adverse	N/A	Minor adverse (not significant)	Not significant

Potential Impact	Receptor(s)	Sensitivity	Magnitude of Impact	Significance of Effect	Secondary Mitigation	Residual Significance of Effect	Cumulative Residual Significance of Effect
C3: Impact on Civil and Military PSRs	<ul style="list-style-type: none"> ▪ NATS Perwinnes; and ▪ RRH Buchan. 	High	High	Major adverse	<p>NATS has confirmed Perwinnes will not have RLoS of WTGs within the Bellrock WFDA.</p> <p>Should DIO demonstrate that the RLoS impact on RRH Buchan requires mitigation, the Applicant would not position WTGs with an equivalent tip height of 320 m above MSL within the RRH Buchan RLoS. In the event that DIO consider that a materially larger area of the Bellrock WFDA presents RLoS impact on RRH Buchan, the Applicant will consider mitigating the impact through new AD infrastructure procured under Programme NJORD, with the cost of such Programme NJORD deployment being borne by the UK Government.</p>	Minor adverse (not significant)	Not significant

Potential Impact	Receptor(s)	Sensitivity	Magnitude of Impact	Significance of Effect	Secondary Mitigation	Residual Significance of Effect	Cumulative Residual Significance of Effect
Operation and Maintenance							
O1: Creation of an Aviation Obstacle Environment	<ul style="list-style-type: none"> ▪ General military low flying training operations; ▪ Helicopter traffic utilising HMRIs 113 and 116; and ▪ Other offshore fixed wing and helicopter operations, including those undertaking SAR operations over the North Sea. 	Medium	Low	Minor adverse	N/A	Minor adverse (not significant)	Not significant
O2: Increased Air Traffic in the Area in Relation to Wind Farm Activities	<ul style="list-style-type: none"> ▪ General military low flying training operations; ▪ Helicopter traffic utilising HMRIs 113 and 116; and ▪ Other offshore fixed wing and helicopter operations, including those undertaking SAR operations over the North Sea. 	Medium	Low	Minor adverse	N/A	Minor adverse (not significant)	Not significant
O3: Impact on Civil and Military PSRs	<ul style="list-style-type: none"> ▪ NATS Perwinnes; and ▪ RRH Buchan. 	High	High	Major adverse	<p>NATS has confirmed Perwinnes will not have RLoS of WTGs within the Bellrock WFDA.</p> <p>Should DIO demonstrate that the RLoS impact on RRH Buchan requires mitigation, the Applicant would not position WTGs</p>	Minor adverse (not significant)	Not significant

Potential Impact	Receptor(s)	Sensitivity	Magnitude of Impact	Significance of Effect	Secondary Mitigation	Residual Significance of Effect	Cumulative Residual Significance of Effect
					with an equivalent tip height of 320 m above MSL within the RRH Buchan RLoS shown on Figure 13.1.8 in Appendix 13.1 (Volume IV) . In the event that DIO consider that a materially larger area of the Bellrock WFDA presents RLoS impact on RRH Buchan, the Applicant will consider mitigating the impact through new AD infrastructure procured under Programme NJORD, with the cost of such Programme NJORD deployment being borne by the UK Government.		
Decommissioning							
D1: Increased Air Traffic in the Area in Relation to Wind Farm Activities	<ul style="list-style-type: none"> ▪ General military low flying training operations; ▪ Helicopter traffic utilising HMRI 113 and 116; and ▪ Other offshore fixed wing helicopter operations, including those undertaking SAR operations over the North Sea. 	Medium	Low	Minor adverse	N/A	Minor adverse (not significant)	Not significant

20.2.9 Marine Infrastructure and Other Users

12. The table below provides a summary of the potential effects for marine infrastructure and other users receptors from the construction, O&M and decommissioning phases of the Bellrock Wind Farm Infrastructure.

Table 20.9: Summary of Potential Effects for Marine Infrastructure and Other Users

Potential Impact	Receptor(s)	Sensitivity	Magnitude of Impact	Significance of Effect	Secondary Mitigation	Residual Significance of Effect	Cumulative Residual Significance of Effect
Construction							
C1: Impacts on other offshore wind farms and/or disruption to associated activities	Ossian	High	Negligible	Minor adverse	None	Minor adverse (not significant)	N/A
C2: Impacts on offshore oil and gas operations and/or disruption to associated activities	Oil and gas operations	High	Negligible	Minor adverse	None	Minor adverse (not significant)	N/A
Operation and Maintenance							
O1: Impacts on other offshore wind farms and/or disruption to associated activities	Ossian	High	Negligible	Minor adverse	None	Minor adverse (not significant)	N/A
O2: Impacts on offshore oil and gas operations	Oil and gas operations	High	Negligible	Minor adverse	None	Minor adverse (not significant)	N/A

Potential Impact	Receptor(s)	Sensitivity	Magnitude of Impact	Significance of Effect	Secondary Mitigation	Residual Significance of Effect	Cumulative Residual Significance of Effect
Decommissioning							
D1: Impacts on other offshore wind farms and/or disruption to associated activities	Ossian	High	Negligible	Minor adverse	None	Minor adverse (not significant)	N/A
D2: Impacts on offshore oil and gas operations	Oil and gas operations	High	Negligible	Minor adverse	None	Minor adverse (not significant)	N/A

20.2.10 Marine Archaeology and Cultural Heritage

13. The table below provides a summary of the potential effects for marine archaeology and cultural heritage receptors from the construction, O&M and decommissioning phases of the Bellrock Wind Farm Infrastructure.

Table 20.10: Summary of Potential Effects for Marine Archaeology and Cultural Heritage

Potential Impact	Receptor(s)	Sensitivity	Magnitude of Impact	Significance of Effect	Secondary Mitigation	Residual Significance of Effect	Cumulative Residual Significance of Effect
Construction							
C1: Direct impacts to heritage asset	Known heritage assets	Medium/high	No impact	No significance of effect	None	No significance of effect	N/A
	Potential heritage assets (seabed prehistory - archaeological and palaeoenvironmental remains)	Low/medium	No impact	No significance of effect	None	No significance of effect	N/A
	Potential heritage assets (seabed prehistory – buried channels and paleoenvironmental deposits)	Low	Low beneficial	Minor beneficial	None	Minor beneficial (not significant)	Minor beneficial (not significant)
	Potential heritage assets (maritime and aviation – isolated finds)	Medium	Low adverse	Minor adverse	In the event of an unexpected discovery reported through the Protocol of Archaeological Discoveries (PAD), secondary mitigation	Minor adverse (not significant)	Minor adverse (not significant)

Potential Impact	Receptor(s)	Sensitivity	Magnitude of Impact	Significance of Effect	Secondary Mitigation	Residual Significance of Effect	Cumulative Residual Significance of Effect
					measures could include the implementation of a temporary exclusion zone (TEZ) followed by further investigation to confirm the significance of the discovery as a first step.		
C2: Indirect impact to heritage assets from changes to physical processes	Known and potential heritage assets	Low/medium/high	No Impact	No significance of effect	None	No significance of effect	
Operation and Maintenance							
O1: Direct impacts to heritage asset	Known heritage assets	Medium/high	No Impact	No significance of effect	N/A	No significance of effect	N/A
	Potential heritage assets (isolated finds)	Medium	Low adverse	Minor adverse	In the event of an unexpected discovery reported through the PAD, secondary mitigation measures could include the implementation of a TEZ followed by further investigation to confirm the significance of the discovery as a first step.	Minor adverse (not significant)	Minor adverse (not significant)
	Known and potential heritage assets	Low/medium/high	No impact	No significance of effect	None	No significance of effect	N/A

Potential Impact	Receptor(s)	Sensitivity	Magnitude of Impact	Significance of Effect	Secondary Mitigation	Residual Significance of Effect	Cumulative Residual Significance of Effect
Decommissioning							
D1: Direct impacts to heritage asset	Known Heritage Assets	Medium/high	No impact	No significance of effect	None		N/A
	Potential heritage assets (isolated finds)	Medium	Low adverse	Minor adverse	In the event of an unexpected discovery reported through the PAD, secondary mitigation measures could include the implementation of a TEZ followed by further investigation to confirm the significance of the discovery as a first step.	Minor adverse (not significant)	Minor adverse (not significant)
D2: Indirect impact to heritage assets from changes to physical processes	Known and potential heritage assets	Low/medium/high	No impact	No significance of effect	None	No significance of effect	N/A

20.2.11 Socioeconomics, Tourism and Recreation

14. The table below provides a summary of the potential effects for socioeconomics, tourism and recreation receptors from the construction, O&M and decommissioning phases of the Bellrock Wind Farm Infrastructure.

Table 20.11: Summary of Potential Effects for Socioeconomics, Tourism and Recreation

Potential Impact	Receptor(s)	Sensitivity	Magnitude of Impact	Significance of Effect	Secondary Mitigation	Residual Significance of Effect	Cumulative Residual Significance of Effect
Construction							
C1: Increase in employment and GVA	Assembly and Integration Port(s) (Least Sensitive)	Medium	High	Major beneficial	None	Major beneficial (significant)	N/A
	Assembly and Integration Port(s) (Most Sensitive)	High	High	Major beneficial	None	Major beneficial (significant)	N/A
	Scotland	Low	High	Moderate beneficial	None	Moderate beneficial (significant)	Minor beneficial (not significant)
	UK (including Scotland)	Negligible	Negligible	Negligible beneficial	None	Negligible beneficial (not significant)	Negligible beneficial (not significant)
C2: Demographic changes	Assembly and Integration Port(s) (Least Sensitive)	Low	Medium	Minor 1	None	Minor (not significant)	N/A
	Assembly and Integration Port(s) (Most Sensitive)	High	High	Major 1	Develop and implement a Stakeholder Engagement Plan	Major (significant)	N/A – see Section 16.9.2.2.3 of Chapter 16: Socioeconomics,

Potential Impact	Receptor(s)	Sensitivity	Magnitude of Impact	Significance of Effect	Secondary Mitigation	Residual Significance of Effect	Cumulative Residual Significance of Effect
					to engage with the local community and local authority once assembly and integration port(s) have been identified.		Tourism and Recreation (Volume II) for details.
C3: Changes to housing demand	Assembly and Integration Port(s) (Least Sensitive)	Low	Medium	Minor ¹	None	Minor (not significant)	N/A – see Section Error! Reference source not found. 16.9.2.3.3 of Chapter 16: Socioeconomics, Tourism and Recreation (Volume II) for details
	Assembly and Integration Port(s) (Most Sensitive)	High	High	Major ¹	Develop and implement a Stakeholder Engagement Plan to engage with the local community and local authority once assembly and integration port(s) have been identified.	Major (significant)	N/A – see Section 16.9.2.3.3 of Chapter 16: Socioeconomics, Tourism and Recreation (Volume II) for details.
C4: Changes to other local public and private services	Assembly and Integration Port(s) (Least Sensitive)	Low	Medium	Minor ¹	None	Minor (not significant)	N/A – see Section 16.9.2.4.3 of Chapter 16: Socioeconomics,

Potential Impact	Receptor(s)	Sensitivity	Magnitude of Impact	Significance of Effect	Secondary Mitigation	Residual Significance of Effect	Cumulative Residual Significance of Effect
							Tourism and Recreation (Volume II) for details.
	Assembly and Integration Port(s) (Most Sensitive)	High	High	Major ¹	Develop and implement a Stakeholder Engagement Plan to engage with the local community and local authority once assembly and integration port(s) have been identified.	Major (significant)	N/A – see Section 16.9.2.4.3 of Chapter 16: Socioeconomics, Tourism and Recreation (Volume II) for details.
C5: Socio-cultural effects	Assembly and Integration Port(s) (Least Sensitive)	Low	Medium	Minor ¹	None	Minor (not significant)	N/A – see Section 16.9.2.5.3 of Chapter 16: Socioeconomics, Tourism and Recreation (Volume II) for details.
	Assembly and Integration Port(s) (Most Sensitive)	High	High	Major ¹	Develop and implement a Stakeholder Engagement Plan to engage with the local community and local authority once assembly and integration	Major (significant)	N/A – see Section 16.9.2.5.3 of Chapter 16: Socioeconomics, Tourism and Recreation (Volume II) for details.

Potential Impact	Receptor(s)	Sensitivity	Magnitude of Impact	Significance of Effect	Secondary Mitigation	Residual Significance of Effect	Cumulative Residual Significance of Effect
					port(s) have been identified.		
C6: Changes to tourism and recreation receptors	Tourism and Recreation Receptors	N/A	Negligible	Negligible adverse	None	Negligible adverse (not significant)	N/A
Operation and Maintenance							
O1: Increase in employment and GVA	O&M Port (Least Sensitive)	Medium	High	Major beneficial	None	Major beneficial (significant)	N/A
	O&M Port (Most Sensitive)	High	High	Major beneficial	None	Major beneficial (significant)	N/A
	Scotland	Low	Negligible	Negligible beneficial	None	Negligible beneficial (not significant)	Negligible beneficial (not significant)
	UK (including Scotland)	Negligible	Negligible	Negligible beneficial	None	Negligible beneficial (not significant)	Negligible beneficial (not significant)
Increased Competition for Resources (cumulative impact only)	Scotland	N/A	N/A	N/A	N/A	N/A	Negligible adverse (not significant)
	UK (including Scotland)	N/A	N/A	N/A	N/A	N/A	Negligible adverse (not significant)
O2: Demographic changes	O&M Port (Least Sensitive)	Negligible	Medium	Negligible ¹	None	Negligible (not significant)	N/A

Potential Impact	Receptor(s)	Sensitivity	Magnitude of Impact	Significance of Effect	Secondary Mitigation	Residual Significance of Effect	Cumulative Residual Significance of Effect
	O&M Port (Most Sensitive)	High	High	Major ¹	Develop and implement a Stakeholder Engagement Plan to engage with the local community and local authority once assembly and integration ports have been identified.	Major (significant)	N/A
O3: Changes to housing demand	O&M Port (Least Sensitive)	Negligible	Medium	Negligible ¹	None	Negligible (not significant)	N/A
	O&M Port (Most Sensitive)	High	High	Major ¹	Develop and implement a Stakeholder Engagement Plan to engage with the local community and local authority once assembly and integration ports have been identified.	Major (significant)	N/A
O4: Changes to other local public and private services	O&M Port (Least Sensitive)	Negligible	Medium	Negligible	None	Negligible (not significant)	N/A
	O&M Port (Most Sensitive)	High	High	Major ¹	Develop and implement a Stakeholder	Major (significant)	N/A

Potential Impact	Receptor(s)	Sensitivity	Magnitude of Impact	Significance of Effect	Secondary Mitigation	Residual Significance of Effect	Cumulative Residual Significance of Effect
					Engagement Plan to engage with the local community and local authority once assembly and integration ports have been identified.		
O5: Socio-cultural effects	O&M Port (Least Sensitive)	Negligible	Medium	Negligible	None	Negligible (not significant)	N/A
	O&M Port (Most Sensitive)	High	High	Major ¹	Develop and implement a Stakeholder Engagement Plan to engage with the local community and local authority once assembly and integration ports have been identified.	Major (significant)	N/A
O6: Changes to tourism and recreation receptors	Tourism and Recreation Receptors	N/A	Negligible	Negligible adverse	N/A	Negligible adverse (not significant)	N/A
Decommissioning							
D1: Increase in employment and GVA	Scotland	Low	Negligible	Negligible beneficial	N/A	Negligible beneficial (not significant)	N/A

Potential Impact	Receptor(s)	Sensitivity	Magnitude of Impact	Significance of Effect	Secondary Mitigation	Residual Significance of Effect	Cumulative Residual Significance of Effect
	UK (including Scotland)	Negligible	Negligible	Negligible beneficial	N/A	Negligible beneficial (not significant)	N/A
D2: Demographic Changes	Decommissioning Port(s)	N/A ²	N/A	N/A	N/A	N/A	N/A
D3: Changes to housing demand	Decommissioning Port(s)	N/A ²	N/A	N/A	N/A	N/A	N/A
D4: Changes to other local public and private services	Decommissioning Port(s)	N/A ²	N/A	N/A	N/A	N/A	N/A
D5: Socio-cultural effects	Decommissioning Port(s)	N/A ²	N/A	N/A	N/A	N/A	N/A

Notes:

¹ Where the type of significance of effect (beneficial/adverse) is omitted, this is because the impact cannot be considered inherently adverse or beneficial. See the relevant 'Significance of Effect' section within Section 16.7.2 of **Chapter 16: Socioeconomics Tourism and Recreation (Volume II)** for further detail.

² A standard assessment of effects cannot be undertaken for impacts D2, D3, D4 and D5. See sections 16.8.3.2, 16.8.3.3, 16.8.3.4, and 16.8.3.5 of **Chapter 16: Socioeconomics, Tourism and Recreation (Volume II)** respectively, for the rationale.

20.2.12 Greenhouse Gas Assessment

15. The table below provides a summary of the potential effects from the greenhouse gas (GHG) assessment from the construction, O&M and decommissioning phases of the Bellrock Wind Farm Infrastructure.

Table 20.12: Summary of the Assessment of the Effects of the Bellrock Wind Farm Infrastructure to Greenhouse Gas Assessment

Potential Impact	Receptor(s)	Sensitivity	Magnitude of Impact	Significance of Effect	Secondary Mitigation	Residual Significance of Effect	Cumulative Residual Significance of Effect ¹
Construction							
GHG emissions	Global atmosphere	High	N/A	Minor adverse (not significant)	None	Minor adverse (not significant)	N/A
Disturbance to blue carbon habitats	Blue carbon habitats	High	Negligible	Negligible (not significant)	None	Negligible (not significant)	Minor adverse (not significant)
Blue carbon loss	Global atmosphere	High	N/A	Negligible (not significant)	None	Negligible (not significant)	N/A
Operation and Maintenance							
GHG emissions	Global atmosphere	High	N/A	Beneficial (significant)	None	Beneficial (significant)	N/A
Disturbance to blue carbon habitats	Blue carbon habitats	High	Negligible	Negligible (not significant)	None	Negligible (not significant)	Minor adverse (not significant)
Blue carbon loss	Global atmosphere	High	N/A	Negligible (not significant)	None	Negligible (not significant)	N/A

Potential Impact	Receptor(s)	Sensitivity	Magnitude of Impact	Significance of Effect	Secondary Mitigation	Residual Significance of Effect	Cumulative Residual Significance of Effect ¹
Decommissioning							
GHG emissions	Global atmosphere	High	N/A	Minor adverse (not significant)	None	Minor adverse (not significant)	N/A
Disturbance to blue carbon habitats	Blue carbon habitats	High	Negligible	Negligible (not significant)	None	Negligible (not significant)	Minor adverse (not significant)
Blue carbon loss	Global atmosphere	High	N/A	Negligible (not significant)	None	Negligible (not significant)	N/A

Notes:

¹ The cumulative residual significance of effect is not applicable for GHG emissions or blue carbon loss, which are considered inherently cumulative. This is due to the nature of the global atmosphere receptor, which is impacted by all GHG emissions, regardless of the location (see Sections 17.4.1.1.1 and 17.4.2 of **Chapter 17: Greenhouse Gas Assessment (Volume II)**), as well as the whole project assessment approach for GHG emissions, which considers emissions from the Bellrock Offshore Transmission Development Area (OfTDA) and Bellrock Onshore Transmission Development Area (OnTDA).

20.2.13 Climate Change Risk

16. The climate change risk assessment has concluded that there are no likely significant effects on the Bellrock Wind Farm Infrastructure as a result of climate change impacts during the construction, O&M and decommissioning phases. Cumulative impacts were scoped out due to limited potential for interaction with other developments.

20.2.14 Major Accidents and Disasters

17. The table below provides a summary of the potential effects for major accidents and disasters from the construction, O&M and decommissioning phases of the Bellrock Wind Farm Infrastructure.

Table 20.13: Summary of the Assessment of the Effects of the Bellrock Wind Farm Infrastructure to Major Accident or Disasters

Risk Event	Source/ Pathway	Relevant Project Phase(s)	Source Document/ Chapter	Receptor(s)	Reasonable Worst Scenario if Event did Occur	Embedded Commitments to Mitigate Risk	Could this Reasonably Lead to a Major Accident and/or Disaster with Existing Control Measures in Place?	Is the Reasonable Worst Consequence Managed to an Acceptable Level with Existing Control Measures in Place?	If no, What Secondary Control Measures are Required to Reach and Acceptable Level?	Conclusion
Major Fire ^{1,2}	Caused by lightning strikes, system failures, or electrical or mechanical malfunctions	O&M	Scoping Report	Population and human health	Multiple WTG affected injury to workers, other sea users	Emergency Response Cooperation Plan (ERCoP)	No	Yes	Not required	Managed to as low as reasonably practicable (ALARP), no likely significant effects expected

Risk Event	Source/ Pathway	Relevant Project Phase(s)	Source Document/ Chapter	Receptor(s)	Reasonable Worst Scenario if Event did Occur	Embedded Commitments to Mitigate Risk	Could this Reasonably Lead to a Major Accident and/or Disaster with Existing Control Measures in Place?	Is the Reasonable Worst Consequence Managed to an Acceptable Level with Existing Control Measures in Place?	If no, What Secondary Control Measures are Required to Reach and Acceptable Level?	Conclusion
Exposed cables leading to vessel snagging ²	Inter-array cables being damaged or snagged by the placement of anchors, dropped objects or fishing activities	O&M	Scoping Report	Population and human health	Injury of other sea users and or associated loss or damage of fishing gear	Cable Burial Risk Assessment (CBRA) Lighting and Marking Plan (LMP) Compliance with Marine Guidance Note (MGN) 654	No	Yes	Not required	Managed to ALARP, no likely significant effects expected
Vessel collision/ collision ^{1, 2}	Increased vessel movement to and from the site may pose to navigational safety	Construction, O&M and Decommissioning	Chapter 12: Shipping and Navigation (Volume II) and Appendix 12.1: Navigational Risk Assessment (Volume IV).	Population and human health	Injury of other sea users associate and or associated damage or loss of vessel or equipment	VMNSP	No	Yes	Not required	Managed to ALARP, no likely significant effects expected

Risk Event	Source/ Pathway	Relevant Project Phase(s)	Source Document/ Chapter	Receptor(s)	Reasonable Worst Scenario if Event did Occur	Embedded Commitments to Mitigate Risk	Could this Reasonably Lead to a Major Accident and/or Disaster with Existing Control Measures in Place?	Is the Reasonable Worst Consequence Managed to an Acceptable Level with Existing Control Measures in Place?	If no, What Secondary Control Measures are Required to Reach and Acceptable Level?	Conclusion
Aviation collision ^{1,2}	Increased numbers of flights	Construction, O&M and Decommissioning	Chapter 13: Aviation and Radar (Volume II)	Population and human health	Injury of people and associated damage or loss of aircraft	ERCoP LMP Compliance with MGN 654	No	Yes	Not required	Managed to ALARP, no likely significant effects expected
Accidental spills of hazardous material ²	Accidental spills of these substances during refuel of equipment	Construction, O&M and Decommissioning	Chapter 4: Project Description (Volume II)	Marine Environment Population and human health	Contamination of the marine environment injury or intoxication of people	Marine Pollution Contingency Plan (MPCP) EMP	No	Yes	Not required	Managed to ALARP, no likely significant effects expected
Disturbance of UXO in the WFDA ^{1,2}	Encounter of UXO in areas where marine works are to be carried out	Construction and O&M	Chapter 4: Project Description (Volume II)	Marine Environment Population and human health	Explosive noise generation	ERCoP	No	Yes	Not required	Managed to ALARP, no likely significant effects expected

Risk Event	Source/ Pathway	Relevant Project Phase(s)	Source Document/ Chapter	Receptor(s)	Reasonable Worst Scenario if Event did Occur	Embedded Commitments to Mitigate Risk	Could this Reasonably Lead to a Major Accident and/or Disaster with Existing Control Measures in Place?	Is the Reasonable Worst Consequence Managed to an Acceptable Level with Existing Control Measures in Place?	If no, What Secondary Control Measures are Required to Reach and Acceptable Level?	Conclusion
Floating offshore unit (FOU) loss of station and breaking free during tow ^{1, 2}	Towing and/or mooring line failure	Construction, O&M and Decommissioning	Chapter 12: Shipping and Navigation (Volume II) and Appendix 12.1: Navigational Risk Assessment (Volume IV).	Population and human health	Risk of allision/ collision to other sea users	VMNSP LMP Compliance with MGN 654	No	Yes	Not required	Managed to ALARP, no likely significant effects expected
Workplace accidents ²	Human error	Construction and O&M		Population and human health	Injury to people	Adequate qualifications, training and regular project specific information (e.g. toolbox talks)	No	Yes	Not required	Managed to ALARP, no likely significant effects expected

Notes:

¹ Vulnerability of the Bellrock WFDA to Existing Accidents/Disasters.

² Potential for the Bellrock WFDA to Cause Accidents/Disasters.

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