



Cenos Offshore Windfarm Limited



Cenos EIA

Chapter 18 – Military and Civil Aviation

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REVISIONS & APPROVALS

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ACRONYMS

ACRONYM	DEFINITION
AARA	Air-to-Air Refuelling Area
AD	Air Defence
ANO	Air Navigation Order
AOC	Aircraft Operator Certificate
ATC	Air Traffic Control
ATS	Air Traffic Services
BP	British Petroleum
CAA	Civil Aviation Authority
CAP	Civil Aviation Publication
CNS	Communication, Navigation and Surveillance
DGC	Defence Geographic Centre
DSLPP	Development Specification and Layout Plan
EEA	European Economic Area
EIA	Environmental Impact Assessment
EIAR	Environmental Impact Assessment Report
EICC	Export/Import Cable Corridor
EMP	Environmental Management Plan
ERCoP	Emergency Response Cooperation Plan
ES	Environmental Statement
EOWDC	European Offshore Wind Deployment Centre
FIR	Flight Information Region
FL	Flight Level
ft	Feet
HMRI	Helicopter Main Route Indicator
IAC	Inter-Array Cables
IMC	Instrument Meteorological Conditions
INNS	Non Native Species
INNSMP	Non Native Species Management Plan
INTOG	Innovation and Targeted Oil & Gas
IFP	Instrument Flight Procedures
km	Kilometre

ACRONYM	DEFINITION
LAT	Lowest Astronomical Tide
LMP	Lighting and Marking Plan
m	Metre
MAA	Military Aviation Authority
MAP	Missed Approach Procedure
MCA	Maritime and Coastguard Agency
MD-LOT	Marine Directorate – Licensing Operations Team
Met	Meteorological
MGN	Marine Guidance Note
MHWS	Mean High Water Springs
Mil AIP	Military Aeronautical Information Publication
MLA	Marine Licence Application
MoD	Ministry of Defence
MPCP	Marine Pollution Contingency Plan
MSA	Minimum Safe Altitude
MW	Megawatt
NATS	National Air Traffic Services
NCMPA	Nature Conservation Marine Protected Area
NERL	NATS (En Route) Public Limited Company
NLB	Northern Lighthouse Board
NM	Nautical Mile
NOTAM	Notice to Aviation
NPI	Non-Productive Platform
OMP	Operations and Maintenance Programme
OREI	Offshore Renewable Energy Installations
OSCP	Offshore Substation Converter Platform
OWF	Offshore Wind Farm
PEXA	Practice and Exercise Area
PSR	Primary Surveillance Radar
RAF	Royal Air Force
RLOS	Radar Line of Sight
SAR	Search and Rescue
UK	United Kingdom

ACRONYM	DEFINITION
UKHO	United Kingdom Hydrographic Office
UK IAIP	United Kingdom Integrated Aeronautical Information Package
UXO	Unexploded Ordnance
VFR	Visual Flight Rules
VMC	Visual Meteorological Conditions
WTG	Wind Turbine Generator

GLOSSARY

TERM	DEFINITION
2023 Scoping Opinion	Scoping Opinion received in June 2023, superseded by the 2024 Scoping Opinion.
2023 Scoping Report	Environmental Impact Assessment (EIA) Scoping Report submitted in 2023, superseded by the 2024 Scoping Report.
2024 Scoping Opinion	Scoping Opinion received in September 2024, superseding the 2023 Scoping Opinion.
2024 Scoping Report	EIA Scoping Report submitted in April 2024, superseding the 2023 Scoping Report.
Area of Opportunity	The area in which the limits of electricity transmission via High Voltage Alternating Current (HVAC) cables can reach oil and gas assets for decarbonisation. This area is based on assets within a 100 kilometre (km) radius of the Array Area.
Array Area	The area within which the Wind Turbine Generators (WTGs), floating substructures, moorings and anchors, Offshore Substation Converter Platforms (OSCPs) and Inter-Array Cables (IAC) will be present.
Cenos Offshore Windfarm ('the Project')	'The Project' is the term used to describe Cenoss Offshore Windfarm. The Project is a floating offshore windfarm located in the North Sea, with a generating capacity of up to 1,350 Megawatts (MW). The Project which defines the Red Line Boundary (RLB) for the Section 36 Consent and Marine Licence Applications (MLA), includes all offshore components seaward of Mean High Water Springs (MHWS) (WTGs, OSCP, cables, floating substructures moorings and anchors and all other associated infrastructure). The Project is the focus of this Environmental Impact Assessment Report (EIAR).
Cenos Offshore Windfarm Ltd. (The Applicant)	The Applicant for the Section 36 Consent and associated Marine Licences.

TERM	DEFINITION
Cumulative Assessment	The consideration of potential impacts that could occur cumulatively with other relevant projects, plans, and activities that could result in a cumulative effect on receptors.
Developer	Cenos Offshore Windfarm Ltd., a Joint Venture between Flotation Energy and Vårgrønn As (Vårgrønn).
Environmental Impact Assessment (EIA)	The statutory process of evaluating the likely significant environmental effects of a proposed project or development. Assessment of the potential impact of the proposed Project on the physical, biological and human environment during construction, operation and maintenance and decommissioning.
Environmental Impact Assessment Regulations	This term is used to refer to the Environmental Impact Assessment Regulations which are of relevance to the Project. This includes the Electricity Works (Environmental Impact Assessment) (Scotland) Regulations 2017, the Marine Works (Environmental Impact Assessment) (Scotland) Regulations 2017 (as amended); and the Marine Works (Environmental Impact Assessment) Regulations 2007.
Environmental Impact Assessment Report	A report documenting the findings of the EIA for the Project in accordance with relevant EIA Regulations.
Export/Import Cable	High voltage cable used to export/import power between the OSCP and Landfall.
Export/Import Cable Bundle (EICB)	Comprising two Export/Import Cables and one fibre-optic cable bundled in a single trench.
Export/Import Cable Corridor (EICC)	The area within which the Export/Import Cable Route will be planned and the Export/Import Cable will be laid, from the perimeter of the Array Area to MHWS.
Export/Import Cable Route	The area within the Export/Import Export Corridor (EICC) within which the Export/Import Cable Bundle (EICB) is laid, from the perimeter of the Array Area to MHWS.

TERM	DEFINITION
Floating Turbine Unit (FTU)	The equipment associated with electricity generation comprising the WTG, the floating substructure which supports the WTG, mooring system and the dynamic section of the IAC.
Flotation Energy	Joint venture partner in Cenos Offshore Windfarm Ltd.
Habitats Regulations	The Habitats Directive (Directive 92/43/ECC) and the Wild Birds Directive (Directive 2009/147/EC) were transposed into Scottish Law by the Conservation (Natural Habitats &c) Regulations 1994 ('Habitats Regulations') (up to 12 NM); by the Conservation of Offshore Marine Habitats and Species Regulations 2017 ('Offshore Marine Regulations') (beyond 12 NM); the Conservation of Habitats and Species Regulations 2017 (of relevance to consents under Section 36 of the Electricity Act 1989); the Offshore Petroleum Activities (Conservation of Habitats) Regulations 2001; and the Wildlife and Countryside Act 1981. The Habitats Regulations set out the stages of the Habitats Regulations Appraisal (HRA) process required to assess the potential impacts of a proposed project on European Sites (Special Areas of Conservation, Special Protection Areas, candidate SACs and SPAs and Ramsar Sites).
Habitats Regulations Appraisal	The assessment of the impacts of implementing a plan or policy on a European Site, the purpose being to consider the impacts of a project against conservation objectives of the site and to ascertain whether it would adversely affect the integrity of the site.
High Voltage Alternating Current (HVAC)	Refers to high voltage electricity in Alternating Current (AC) form which is produced by the WTGs and flows through the IAC system to the OSCPs. HVAC may also be used for onward power transmission from the OSCPs to assets or to shore over shorter distances.
High Voltage Direct Current (HVDC)	Refers to high voltage electricity in Direct Current (DC) form which is converted from HVAC to HVDC at the OSCPs and transmitted to shore over longer distances.
Horizontal Directional Drilling (HDD)	An engineering technique for laying cables that avoids open trenches by drilling between two locations beneath the ground's surface.

TERM	DEFINITION
Innovation and Targeted Oil & Gas (INTOG)	In November 2022, the Crown Estate Scotland (CES) announced the Innovation and Targeted Oil & Gas (INTOG) Leasing Round, to help enable this sector-wide commitment to decarbonisation. INTOG allowed developers to apply for seabed rights to develop offshore windfarms for the purpose of providing low carbon electricity to power oil and gas installations and help to decarbonise the sector. Cenos is an INTOG project and in November 2023 secured an Exclusivity Agreement as part of the INTOG leasing round.
Inter-Array Cable (IAC)	The cables which connect the WTGs to the OSCP. WTGs may be connected with IACs into a hub or in series as a 'string' or a 'loop' such that power from the connected WTGs is gathered to the OSCP via a single cable.
Joint Venture	The commercial partnership between Flotation Energy and Vårgrønn, the shareholders which hold the Exclusivity Agreement with CES to develop the Cenos site as an INTOG project.
Landfall	The area where the Export/Import Cable from the Array Area will be brought ashore. The interface between the offshore and onshore environments.
Marine Licence	Licence required for certain activities in the marine environment and granted under the Marine and Coastal Access Act 2009 and/or the Marine (Scotland) Act 2010.
Marine Protected Area (MPA)	Marine sites protected at the national level under the Marine (Scotland) Act 2010 out to 12 NM, and the Marine and Coastal Access Act 2009 between 12-200 NM. In Scotland MPAs are areas of sea and seabed defined so as to protect habitats, wildlife, geology, underseas landforms, historic shipwrecks and to demonstrate sustainable management of the sea.
Marine Protected Area (MPA) Assessment	A three-step process for determining whether there is a significant risk that a proposed development could hinder the achievement of the conservation objectives of an MPA.
Mean High Water Springs (MHWS)	The height of Mean High Water Springs is the average throughout the year, of two successive high waters, during a 24-hour period in each month when the range of the tide is at its greatest.

TERM	DEFINITION
Mean Low Water Springs (MLWS)	The height of Mean Low Water Springs is the average throughout a year of the heights of two successive low waters during periods of 24 hours (approximately once a fortnight).
Mitigation Measures	<p>Measures considered within the topic-specific chapters in order to avoid impacts or reduce them to acceptable levels.</p> <ul style="list-style-type: none"> • Primary mitigation - measures that are an inherent part of the design of the Project which reduce or avoid the likelihood or magnitude of an adverse environmental effect, including location or design; • Secondary mitigation – additional measures implemented to further reduce environmental effects to ‘not significant’ levels (where appropriate) and do not form part of the fundamental design of the Project; and • Tertiary mitigation – measures that are implemented in accordance with industry standard practice or to meet legislative requirements and are independent of the EIA (i.e. they would be implemented regardless of the findings of the EIA). <p>Primary and tertiary mitigation are referred to as embedded mitigation. Secondary mitigation is referred to as additional mitigation.</p>
Mooring System	Comprising the mooring lines and anchors, the mooring system connects the floating substructure to the seabed, provides station-keeping capability for the floating substructure and contributes to the stability of the floating substructure and WTG.
Nature Conservation Marine Protected Area (NCMPA)	MPA designated by Scottish Ministers in the interests of nature conservation under the Marine (Scotland) Act 2010.
Offshore Substation Converter Platforms (OSCPs)	An offshore platform on a fixed jacket substructure, containing electrical equipment to aggregate the power from the WTGs and convert power between HVAC and HVDC for export/import via the Export/Import Cable to/from the shore. The OSCP will also act as power distribution stations for the Oil & Gas platforms.
Onward Development	Transmission projects which are anticipated to be brought forward for development by 3 rd party oil and gas operators to enable electrification of assets via electricity generated by the Project. All Onward Development will subject to separate marine licensing and permitting requirements.
Onward Development Area	The area within which oil and gas assets would have the potential to be electrified by the Project.

TERM	DEFINITION
Onward Development Connections	Oil and gas assets located in the waters surrounding the Array Area will be electrified via transmission infrastructure which will connect to the Project's OSCPs. These transmission cables are referred to as Onward Development Connections.
Project Area	The area that encompasses both the Array Area and EICC.
Project Design Envelope	A description of the range of possible elements that make up the Project design options under consideration and that are assessed as part of the EIA for the Project.
Study Area	Receptor specific area where potential impacts from the Project could occur.
Transboundary Assessment	The consideration of impacts from the Project which have the potential to have a significant effect on another European Economic Area (EEA) state's environment. Where there is a potential for a transboundary effect, as a result of the Project, these are assessed within the relevant EIA chapter.
Transmission Infrastructure	The infrastructure responsible for moving electricity from generating stations to substations, load areas, assets and the electrical grid, comprising the OSCPs, and associated substructure, and the Export/Import Cable.
Vårgrønn As (Vårgrønn)	Joint venture partner in Cenoss Offshore Windfarm Ltd.
Wind Turbine Generator (WTG)	The equipment associated with electricity generation from available wind resource, comprising the surface components located above the supporting substructure (e.g., tower, nacelle, hub, blades, and any necessary power transformation equipment, generators, and switchgears).
Worst-Case Scenario	The worst-case scenario based on the Project Design Envelope which varies by receptor and/or impact pathway identified.

18 MILITARY AND CIVIL AVIATION

18.1 Introduction

This chapter of the Environmental Impact Assessment Report (EIAR) presents the Military and Civil Aviation receptors of relevance to the Project and assesses the potential effects from the construction, operation and maintenance and decommissioning of the Project on these receptors. Where required, mitigation is proposed, and the residual effects and their significance are assessed. Potential cumulative and transboundary effects are also considered.

Only an assessment of effects as a result of the Array Area are considered within this chapter. No impact pathways pertaining to the Export/Import Cable Corridor (EICC) are identified and thus have been scoped out of this chapter of the EIAR.

The potential effects of Wind Turbine Generators (WTGs) on aviation are widely publicised, but the primary concern is one of safety. Despite innumerable subtleties in the actual effects, there are three dominant scenarios that lead to potential effects:

- Physical obstruction: WTGs can present a physical obstruction to aircraft;
- Impacts on aviation radar systems and the provision of radar-based Air Traffic Services (ATS): WTGs can create unwanted radar clutter which appears on radar displays and can affect the provision of ATS to pilots. Radar clutter (or false radar returns) can confuse air traffic controllers making it difficult to differentiate between aircraft and those radar returns resulting from the detection of WTGs. Furthermore, the appearance of multiple false targets in close proximity can generate false aircraft tracks and seduce those returns from 'real' aircraft away from the true aircraft position; and
- Communication, Navigation and Surveillance (CNS) equipment: A wide range of systems, together with air-ground communications facilities, can be adversely affected by development of infrastructure projects; specifically, when located within the physical safeguarding zones of CNS equipment.

It should be noted that adverse effects on radar systems are only possible if the WTG blades are moving, therefore this impact pathway is applicable from time of blade tip installation and throughout the operation and maintenance phase only.

Table 18-1 below provides a list of all the supporting studies which relate to, and should be read in conjunction with, the Military and Civil Aviation Environmental Impact Assessment (EIA). All supporting studies are appended to this EIAR.

Table 18-1 Supporting studies

DETAILS OF STUDY	SUPPORTING STUDIES AND LOCATION (WHERE RELEVANT)
Helicopter Access Report	EIAR Vol. 4, Appendix 29

The impact assessment presented herein draws upon information presented within other impact assessments within this EIA, including:

- **EIAR Vol. 3, Chapter 15: Shipping and Navigation** – which pertains to WTG lighting and potential use of flashing lights on WTGs to avoid confusion to mariners from aviation lighting; and
- **EIAR Vol. 3, Chapter 17: Marine Infrastructure and Other Sea Users** – which considers impact on other military and defence activities.

Where information is used to inform the Military and Civil Aviation impact assessment, reference to the relevant EIAR Chapter is given. The following specialists have contributed to the assessment:

- Wing Commander Mike Coleman RAF (Retd), Coleman Aviation Limited.

18.2 Legislation, policy, and guidance

The wider marine planning, legislation, policy and guidance is discussed in **EIAR Vol. 2, Chapter 3: Policy and Legislative Context**. The following legislation, policy, and guidance are relevant to the assessment of effects from the Project on Military and Civil Aviation receptors:

- Legislation:
 - Civil Aviation Publication (CAP) 393 – Air Navigation, The Order and the Regulations, (2016a) (Version 6, 12th February 2021): Contains the Air Navigation Order (ANO) 2016 and Regulations made under the order; and defines the Rules of the Air regarding civil aviation in the United Kingdom (UK).
- Policy:
 - CAP 437 – Standards for Offshore Helicopter Landing Areas (Version 9, 10th February 2023): Provides the criteria applied by the Civil Aviation Authority (CAA) (2023) in assessing the standards of offshore helicopter landing areas for worldwide use by helicopters registered in the UK;
 - CAP 670 – ATS Safety Requirements (CAA, 2019): Sets out the safety regulatory framework and requirements associated with the provision of ATS;
 - CAP 764 – CAA Policy and Guidelines on Wind Turbines (CAA, 2016b): Provides CAA policy and guidance on a range of issues associated with WTGs and their effect on aviation that need to be considered by aviation stakeholders, wind energy developers and Local Planning Authorities when assessing the viability of WTG developments;
 - CAP 774 – The UK Flight Information Services (Version 4, 15th December 2021; CAA, 2017): Details the suite of ATS which (excluding aerodrome services) are the only services provided in Class G airspace within the UK Flight Information Region (FIR). This document is equally applicable to civilian and military pilots and air traffic controllers;
 - Military Aviation Authority (MAA) (2021) Regulatory Publication 3000 Series: Air Traffic Management Regulations (last updated 20th April 2021): Provides the regulatory framework and instructions to military personnel for provision of military Air Traffic Control (ATC); and
 - MAA Manual of Military Air Traffic Management (MAA, 2019): Provides regulations for military ATC and emergency procedures and utilisation of military designated airspace.

- Guidance:
 - Ministry of Defence (MoD) Obstruction Lighting Guidance (1st January 2020; MoD, 2020): Sets out the MoD’s minimum requirements and standards for installation of aviation lighting of onshore and offshore WTG developments;
 - CAA 1:500,000 Visual Flight Rules (VFR) Aviation Chart (CAA, 2022a): Designed to assist in the navigation of aircraft. Enables pilots to determine their position, safe altitude and route to a destination, highlighting navigation aids along the way, alternative landing areas in case of an in-flight emergency, and other useful information such as radio frequencies and airspace boundaries.;
 - CAP 168 – Licensing of Aerodromes (Version 12, 14th January 2022b): Sets out the standards required at UK licenced aerodromes in terms of operational procedures, physical characteristics, assessment and treatment of obstacles, visual aids, rescue and fire-fighting services and medical services (CAA, 2022b);
 - United Kingdom Integrated Aeronautical Information Package (UK IAIP) (CAA, 2022c): Provides comprehensive information on UK civilian aerodromes and aviation procedures within UK airspace;
 - UK Military Aeronautical Information Publication (Mil AIP) (MoD, 2024): Provides comprehensive information on UK military aerodromes and guidance to military aircrew on in-flight navigation procedures; and
 - Marine Guidance Note (MGN) 654 – Safety of Navigation: Offshore Renewable Energy Installations (OREIs), Guidance on UK Navigational Practice, Safety and Emergency Response (28th April 2021): Highlights issues with assessing the impact on navigational safety and emergency response caused by OREIs in UK internal waters (UK Government, 2021).

18.3 Scoping and consultation

Stakeholder consultation has been ongoing throughout the EIA and has played an important part in ensuring the scope of the baseline characterisation and impact assessment are appropriate with respect to the Project and the requirements of the regulators and their advisors.

The 2024 Scoping Report was submitted to Marine Directorate – Licensing Operations Team (MD-LOT) in April 2024, relevant stakeholders were consulted. The Scoping Opinion was received in September 2024. The 2024 Scoping Report and Scoping Opinion supersedes the 2023 Scoping Report and Scoping Opinion for the Project. Relevant comments from the Scoping Opinion specific to Military and Civil Aviation are provided in Table 18-2 below, which provides a high-level response on how these comments have been addressed within the EIAR.

Further consultation has been undertaken throughout the pre-application phase. The list below summarises the consultation activities carried out relevant to Military and Civil Aviation:

In 2023 Aberdeen Airport responded to the 2023 Scoping Opinion however they did not provide an updated response for the 2024 Scoping Opinion:

- **Aberdeen Airport** - stated that the proposed development is outwith the airport’s consultation zone and that there is no further need for consultation.

The list below summarises the consultation activities carried out following submission of the 2024 Scoping Report of relevance to Military and Civil Aviation:

- **Repsol Resources UK** - The Applicant held a meeting with Repsol Resources UK on 30th September 2024 to discuss the potential effects from the Project on helicopter access to relevant oil and gas offshore platforms. Helicopter access to offshore platforms is assessed in Section 18.6;
- **TotalEnergies** - The Applicant held a meeting with TotalEnergies on 30th September 2024 to discuss the potential effects of the Project on helicopter access to relevant oil and gas offshore platforms. Helicopter access to offshore platforms is assessed in Section 18.6; and
- **British Petroleum (BP)** - The Applicant held a meeting with BP on 17th October 2024 to discuss the potential effects of the Project on helicopter access to relevant oil and gas offshore platforms. Helicopter access to offshore platforms is assessed in Section 18.6.

Table 18-2 Comments from the Scoping Opinion relevant to Military and Civil Aviation

REGULATOR/CONSULTEE	COMMENT	RESPONSE
Scottish Ministers	The Developer considers potential impacts on military and civil aviation in chapter 18 of the Scoping Report. The Scottish Ministers are content with the study area identified by the Developer which excludes the ECC but includes the area within the maximum operating ranges of civil and military air traffic services and air defence overlapping the array area, and helidecks located within 9nm of the array area. The Scottish Ministers are content with the impacts proposed to be scoped in and out of the EIA Report.	The Applicant notes the comments of the Scottish Ministers. The Study Area is detailed in Section 18.4.1 and impacts scoped in and out are covered in Sections 18.5 and 18.6.
Scottish Ministers	The Scottish Ministers highlight that the consultation responses from NATS and JRC agree with the Developers approach to these receptors and with the possible impacts to be scoped in or out of the EIA, on the basis that the Proposed Development is as detailed in the Scoping Report. Should any of the parameters change or extend outwith the current PDE, the Scottish Ministers advise the Developer must engage further with NATS, JRC and MOD to understand if the changes alter the advice provided. The Scottish Ministers are content with the Developer's approach to scope in cumulative effects and scope out transboundary effects from the EIA Report.	Noted.
Edinburgh Airport	In respect of the above, I can confirm the location of this development falls out with our Aerodrome Safeguarding zone for Edinburgh Airport therefore we have no objection/comment.	The Project will have no impact on aviation operations at Edinburgh Airport; consequently, this impact has been scoped out of the EIAR.
Maritime and Coastguard Agency (MCA)	The turbine layout design will require MCA approval prior to construction to minimise the risks to surface vessels, including rescue boats, and Search and Rescue aircraft operating within the site. Any additional navigation safety and/or Search and Rescue requirements, as per MGN 654 Annex 5, will be agreed at the approval stage.	The Applicant accepts that the WTGs will need to be lit and marked appropriately and will need to be compliant with Search and Rescue (SAR) activity. Embedded mitigation of aviation lighting and marking is addressed in Section 18.5.4 and assessed in Section 18.6.

REGULATOR/CONSULTEE	COMMENT	RESPONSE
MoD	<p>In order for MoD to complete an assessment could you please provide/confirm the following information:</p> <ol style="list-style-type: none"> 1. Array coordinates (corner points only) in both BNG 6 Digit Easting/Northing and Decimal Lat and Long. 2. Any export corridor coordinates in Decimal Lat/long 3. Landfall coordinates in BNG Easting/Northing (if applicable). 4. Onshore boundary coordinates (corner points only) in BNG Easting/Northing (if applicable). 5. Maximum Hub Height. 6. Maximum Rotor Diameter 7. Maximum Blade Tip Height. <p>I appreciate that the applicant has stated that there are different scenarios for the development, the MoD will assess the worst-case scenario and once I have the relevant information, I will start the assessment process.</p>	<p>The Applicant notes that this was MoD's initial holding response to the 2024 Scoping Report. Information requested by MoD was subsequently provided by the Applicant and MoD's detailed response to the 2024 Scoping Report is provided below in this table.</p>
MoD	<p>The use of airspace for defence purposes in the vicinity of the proposed development have been appropriately identified and considered. The Scoping Report considers some of the aviation and radar systems that may be affected by the proposed wind farm. No MoD radars are identified within the Scoping Report as being affected by the proposed wind farm, an initial assessment indicates no reason for the MoD to dispute this position.</p> <p>The physical effect on military low flying has been scoped in and the Applicant states in the Scoping Report that they are committed to lighting and charting the turbines. In the interests of air safety, the MoD would request that the development be fitted with MoD accredited aviation safety lighting.</p> <p>The potential presence of unexploded ordnance (UXO) has been identified as a relevant consideration in EIA Vol 3, Chapter 17: Marine Infrastructure and Other</p>	<p>The Applicant agrees that no military radar systems will be affected by the Array Area and this issue is scoped out of the EIAR. The Applicant accepts that MoD accredited aviation lighting will be required and that full details of the Array Area should be included in aviation publication and charts. Potential impact on military low flying has been scoped in to the EIAR and is covered in Sections 18.4.4.5 and assessed in Section 18.6.</p> <p>Potential presence of UXO is addressed in EIAR Vol. 3, Chapter 17: Marine Infrastructure and Other Users.</p> <p>Potential relevant surveyed routes which may be relevant to the installation of the Export/Import Cable</p>

REGULATOR/CONSULTEE	COMMENT	RESPONSE
	<p>Users, Paragraph 17.5.2.28. The potential presence of UXO and disposal sites is a relevant consideration to the installation of cables and other intrusive works that may be undertaken in the maritime environment.</p> <p>The MoD has highly surveyed routes which may be relevant to the installation of the export cables and associated infrastructure. MoD should be consulted at the next stage of any application to determine any impact on these routes.</p>	<p>and associated infrastructure is provided in EIAR Vol. 3, Chapter 15: Shipping and Navigation.</p>
<p>National Air Traffic Services (NATS)</p>	<p>The proposed development has been examined from a technical safeguarding aspect and does not conflict with our safeguarding criteria. Accordingly, NATS (En Route) Public Limited Company (NERL) has no safeguarding objection to the proposal.</p>	<p>The Project will have no effect on NATS aviation operations; consequently, this impact pathway has been scoped out of the EIAR.</p>

18.4 Baseline characterisation

This Section outlines the current baseline for Military and Civil Aviation within the Military and Civil Aviation Study Area. Information on Military and Civil Aviation was collected through a detailed desktop review of existing studies and datasets. These are summarised in Table 18-3 below.

The desktop review was conducted using comprehensive aviation documentation and charts to identify potential aviation receptors during the construction, operation and maintenance and decommissioning phases of the Project. Supporting information was also drawn from a review of data sources, in particular the UK Integrated Aeronautical Information Package (UK IAIP), consultee responses, as outlined in Table 18-2 and the **EIAR, Vol. 4, Appendix 29: Helicopter Access Report**.

18.4.1 Study Area

The Military and Civil Aviation Study Area is defined as a 9 Nautical Mile (NM) (17 kilometre (km)) buffer around the Array Area which will enable the impact on aviation in the immediate vicinity of the site to be determined; in particular in respect of low-visibility helicopter operations into offshore installations (oil and gas platforms).

A secondary Military and Civil Aviation Study Area is defined by the range of the affected aviation receptors; in particular, ATC and Air Defence (AD) Primary Surveillance Radars (PSRs). The Military and Civil Aviation Study Area covers radars in the north of Scotland that could potentially detect WTGs within the Array Area; with the extent of the Military and Civil Aviation Study Area defined by the furthest potential aviation receptor. The operating range of aviation radars can be up to 200 NM (370 km); however, it is only the likely radar coverage over the Array Area that needs to be considered, as the question of whether WTGs are visible to radar is the determining factor relating to aircraft safety. This has assisted in identifying whether any relevant PSRs, and stakeholders, may be affected. The Military and Civil Aviation Study Area is set out in Figure 18-1 to Figure 18-4.

The Military and Civil Aviation Study Area temporal scope is defined as the entire lifetime of the Project including construction, operation and maintenance and decommissioning.

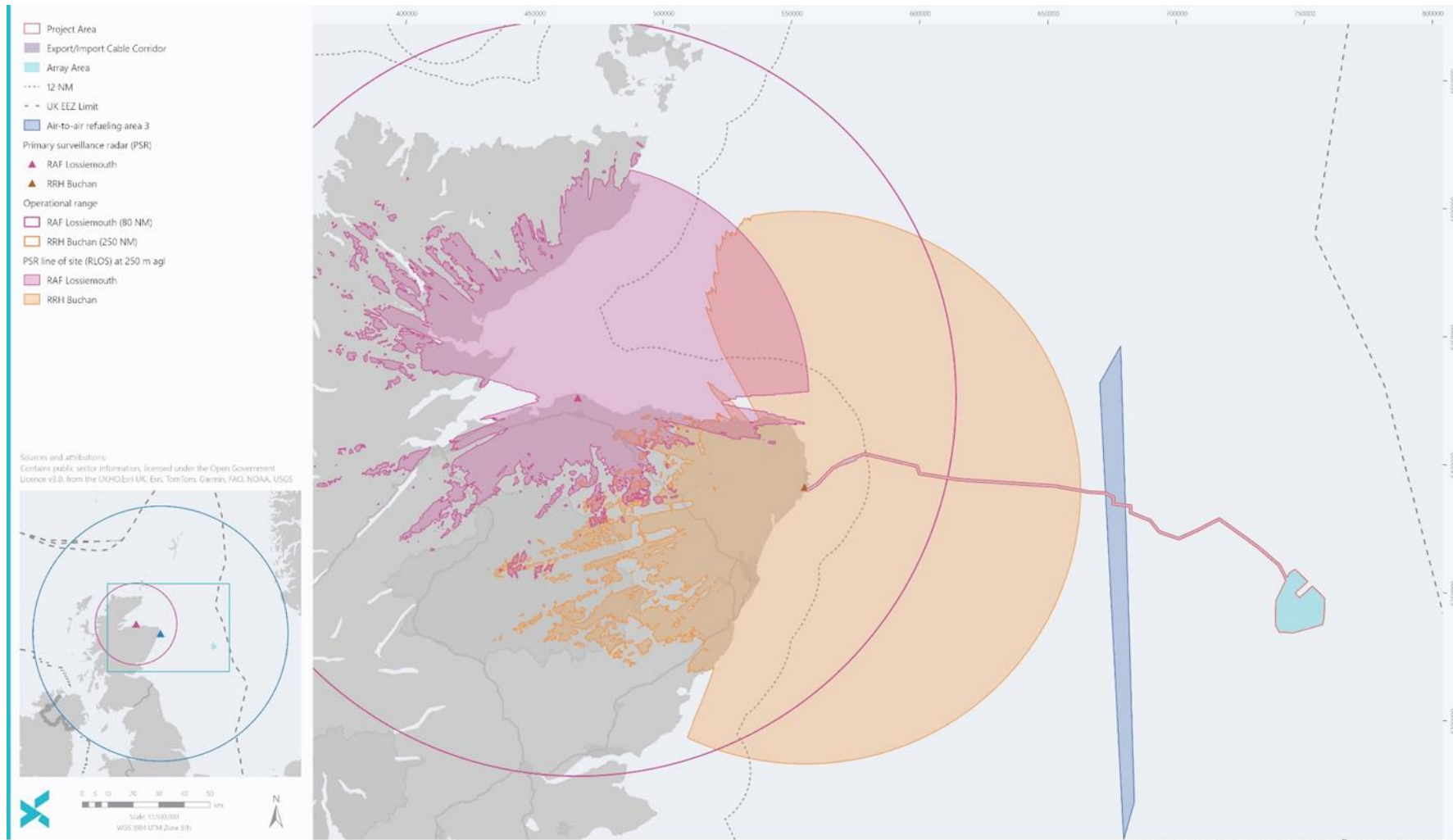


Figure 18-1 Military and Civil Aviation Study Area



Figure 18-2 Civil aviation considerations

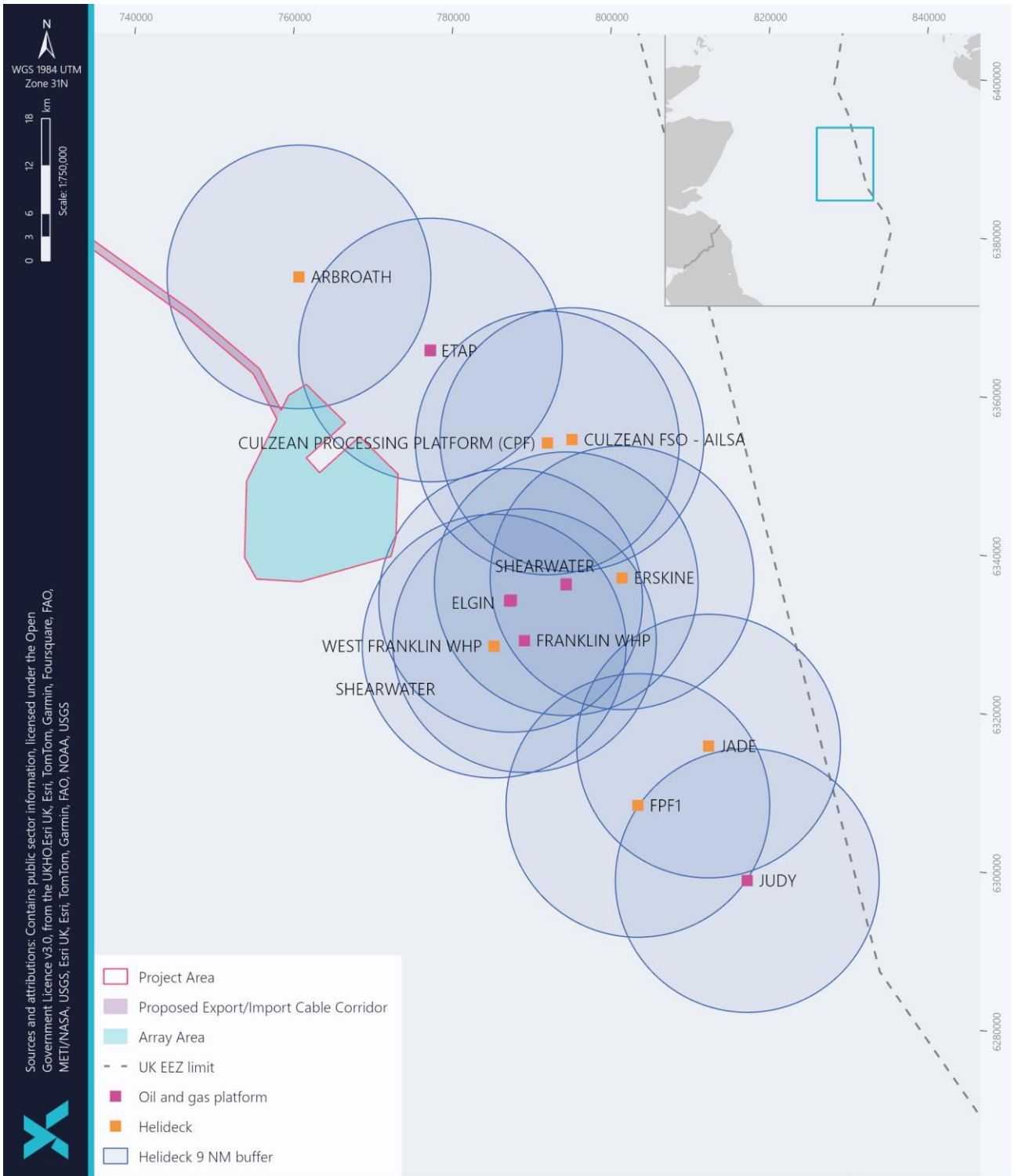


Figure 18-3 Oil and gas assets with helicopter access

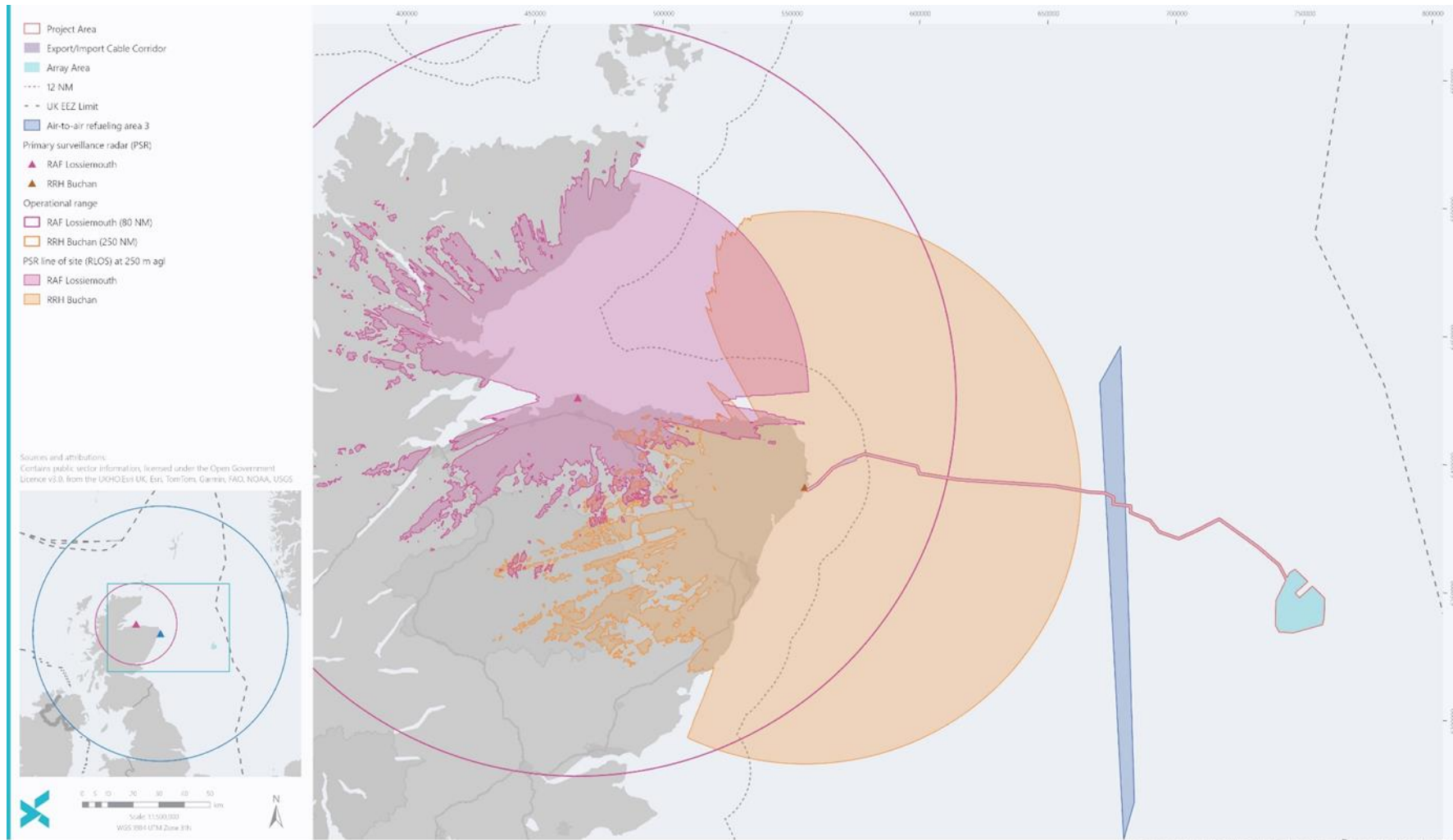


Figure 18-4 Military aviation considerations

18.4.2 Data sources

The existing data sets and literature with relevant coverage to the Project, which have been used to inform the baseline characterisation for Military and Civil Aviation are outlined in Table 18-3. Project specific data obtained and used to inform this topic assessment are presented in Section 18.1.

Table 18-3 Summary of key datasets and reports

TITLE	SOURCE	YEAR	AUTHOR
CAA 1:500,000 VFR Aviation Chart	NATS UK 1500K Chart Amendments (ead-it.com)	2024	CAA
UK IAIP	eAIS Package United Kingdom (nats.co.uk)	2024	CAA
UK Mil AIP	UK Mil AIP AIP (mod.uk)	2024	MoD
National Air Traffic Services (NATS) Self-Assessment Maps	https://www.nats.aero/services-products/services/n/wind-farms-self-assessment-maps/	2024	NATS
Scottish Government Sectoral Marine Plan for Offshore Wind Energy	https://www.gov.scot/binaries/content/documents/govscot/publications/strategy-plan/2020/10/sectoral-marine-plan-offshore-wind-energy/documents/sectoral-marine-plan-offshore-wind-energy/sectoral-marine-plan-offshore-wind-energy/govscot%3Adocument/sectoral-marine-plan-offshore-wind-energy.pdf	2020	SG
European Offshore Wind Deployment Centre (EOWDC) Aberdeen Bay Environmental Statement (ES)	Environmental Statement - Construction & Operation of Generating Station and Transmission Works - European Offshore Wind Deployment Centre, Aberdeen Bay marine.gov.scot	2011	EOWDC
Hywind Scotland Pilot Park (Hywind)	Report (marine.gov.scot)	2015	Statoil
Kincardine Offshore Windfarm ES	00528219.pdf (marine.gov.scot)	2017	Kincardine Offshore Windfarm Limited
Moray West Offshore Wind Farm EIAR	https://marine.gov.scot/data/moray-west-offshore-windfarm-environmental-impact-assessment-report	2018	Moray West

TITLE	SOURCE	YEAR	AUTHOR
Pentland Floating Offshore Wind Farm (PFOWF)	Environmental Impact Assessment Report - Pentland Floating Offshore Wind Farm - Dounreay, Caithness marine.gov.scot	2022	PFOWF
Culzean Floating Wind Turbine Pilot Project Scoping Report	Scoping Report - TotalEnergies - Culzean Floating Offshore Wind Turbine Pilot Project marine.gov.scot	2023	TotalEnergies E&P UK
Green Volt Offshore Wind Farm	Offshore Environmental Impact Assessment Report - Volume 1 - Technical Chapters - Green Volt Offshore Wind Farm - East of Aberdeenshire Coast marine.gov.scot	2023	Green Volt

18.4.3 Project site-specific surveys

In order to ascertain the potential effects of the Array Area WTGs on offshore helicopter installations, the Applicant commissioned a Helicopter Access Report from Anatec Limited (**EIAR Vol. 4, Appendix 29: Helicopter Access Report**). Further details are provided in Section 18.4.4.6.

No other site-specific surveys have been undertaken to inform the EIA for Military and Civil Aviation. The baseline characterisation developed through existing data sources, coupled with ongoing consultation with relevant stakeholders, is considered sufficient to inform the Military and Civil Aviation EIA.

18.4.4 Existing baseline

A review of literature and available data sources (Table 18-3), augmented by consultation with relevant stakeholders and the Helicopter Access Report (**EIAR Vol. 4, Appendix 29: Helicopter Access Report**), has been undertaken to describe the current baseline environment for Military and Civil Aviation. The key aviation receptors potentially impacted by Offshore Wind Farm (OWF) developments are:

- Civil airport Instrument Flight Procedures (IFPs);
- Military aerodrome IFPs;
- Civil ATC radar;
- Military ATC radar;
- Military AD radar;
- Low flying Areas (including SAR);
- Helicopter Main Route Indicators (HMRIs);
- Offshore helicopter installations (oil and gas platforms);
- Local Airspace Restrictions (Prohibited/Restricted/Danger Areas and Military Practice and Exercise Areas (PEXAs); and
- Meteorological (Met) Office radar.

The aviation environment within the vicinity of the Project can be described as follows:

18.4.4.1 Airspace

The nearest WTG of the Array Area is located approximately 110 NM (204 km) off the northeast coast of Scotland. In aviation terms, the Array Area is situated in a relatively uncomplicated piece of airspace but with active HMRI's routing west to east through the Array Area.

18.4.4.2 Civil Airports

The nearest major civil airport to the Array Area is Aberdeen Airport, located approximately 123 NM (228 km) to the west. The published obstacle safeguarding area for airports of this nature is 30 NM (56 km), therefore the proposed WTGs will not impact any airport IFPs.

18.4.4.3 Civil ATC Radars

The nearest civil ATC radars to the Array Area are the NATS Allanshill and Perwinnes radars both of which are located more than 110 NM (204 km) from the Array Area. There is no possibility that the proposed WTGs will be in Radar Line of Sight (RLOS) of either radar. Consequently, no civil ATC radar systems are expected to be affected by the Array Area.

18.4.4.4 Military ATC and AD Radars

The nearest military ATC and AD radars to the Array Area are the Royal Air Force (RAF) Lossiemouth ATC radar and the Buchan AD radar both of which are located more than 110 NM (204 km) from the Array Area. There is no possibility that the proposed WTGs will be in RLOS of either radar. Consequently, no military ATC and AD radar systems will be affected by the Array Area.

18.4.4.5 Low flying (including UK SAR)

The Array Area is located more than 12 NM (22 km) from the UK coastline and, therefore, is technically outside the UK Military Low Flying System; however, it is recognised that military aircraft may still be required to operate at low-level in the vicinity of the Array Area. Installation and presence of WTGs can pose a physical obstruction to aviation operations and WTGs can be difficult to see from the air, particularly in poor meteorological conditions, leading to a potential increase in obstacle collision risk. Furthermore, during the construction phase, the presence and movement of installation vessels (with onboard cranes) may also present a potential obstacle collision risk to aircraft operations. Military aircraft can operate down to 100 feet (ft) above surface level over the sea.

UK SAR helicopters conducting operational missions are not constrained by the normal rules of the air and operate in accordance with their Aircraft Operator Certificate (AOC), which allows them flexibility to manoeuvre, as required, for the particular mission being carried out. An Emergency Response Cooperation Plan (ERCoP) will be compiled in conjunction with the MCA and is a likely consent condition requirement for any offshore wind farm development. Additionally, a Lighting and Marking Plan (LMP) will need to be developed in conjunction with the relevant aviation stakeholders and agreed prior to the construction of the Project.

18.4.4.6 Helicopter Main Route Indicators (HMRI's)

HMRI's are established to support the transport of personnel and logistics to offshore oil and gas installations. HMRI's provide a network of offshore routes used by civilian helicopters to facilitate an obstacle free zone for safe flight when in-flight Visual Meteorological Conditions (VMC) cannot be met. The HMRI structure therefore provides both an identification of common flight paths and a safe means of traffic flow. HMRI's 095, 098 and 101 either route through,

or are adjacent to, the Array Area boundary. These HMRI are primarily used for helicopter flights from Aberdeen Airport to offshore oil and gas installations in the North Sea.

Construction of turbines within 2 NM (3.8 km) either side of an HMRI would have the potential to restrict operations below the routine operational altitudes when icing conditions exist. The ability of a helicopter to operate at the expected altitudes would be dependent upon the icing level (the 0° isotherm). In this situation, helicopters operating on HMRI need an 'escape-route' if icing conditions are encountered unexpectedly; this would inevitably involve a descent. However, as outlined in CAP 764, CAA guidance is that, provided there are no WTGs within 2 NM (3.8 km) on one side of an HMRI, then helicopter operations should not be affected.

18.4.4.7 Offshore helicopter installations (other oil and gas platforms)

The CAA recommend that wind farm developers consult with the owners/operators of offshore helicopter installations when a development is within 9 NM (17 km) of any proposed WTGs. The relevant oil and gas helicopter installations in the vicinity of the Array Area are shown at Figure 18-3.

As described in Section 18.4.3, in order to ascertain the potential effects on offshore helicopter installations, the Applicant commissioned a Helicopter Access Report from Anatec Limited (EIAR Vol. 4, Appendix 29: Helicopter Access Report). The report identified the baseline helicopter access into oil and gas infrastructure within 9 NM (17 km) of the Array Area and whether any potential changes to helicopter access procedures would be required due to the construction of the Array Area's WTGs. The Applicant has since consulted with the relevant offshore installation owners and helicopter operators; details of which are contained in Section 18.3.

18.4.4.8 Local Airspace Restrictions (Prohibited/Restricted/Danger Areas and Military PEXAs)

The Array Area lies underneath Air-to-Air Refuelling Area (AARA) 3 which is established from Flight Level (FL) 100 (10,000 ft) up to FL 290 (29,000 ft). An AARA is utilised by military aircraft to practice transferring aviation fuel from one aircraft (the tanker) to another (the receiver) while both aircraft are in flight. This is the only restricted airspace in the vicinity of the Array Area but, as operations with the AARA are carried out no lower than 10,000 ft, the Array Area will not affect military operations within this airspace.

18.4.4.9 Met Office Radar

The nearest Met Office radar system to the Array Area is located at Hill of Dudwick near Ellon, Aberdeenshire. It is located more than 110 NM (204 km) from the Array Area which is outside the 20 km safeguarding area for radars of this nature.

18.4.5 Future baseline

Currently, there are no planned changes to the airspace environment that are expected to affect any future baseline for Military and Civil Aviation. Therefore, the future baseline for Military and Civil Aviation is not expected to differ from the current baseline as presented in Section 18.4.

18.4.6 Summary and key issues

The key sensitive Military and Civil Aviation receptors identified from the baseline characterisation study, that are the focus of this EIA is:

- Potential impact on military low flying and UK SAR helicopter operations;
- Helicopter operations on HMRI; and
- Helicopter operations at offshore oil and gas installations.

Potential receptors and impacts scoped into the assessment are provided in Table 18-4.

Table 18-4 Summary and key issues for Military and Civil Aviation

ARRAY AREA

SUMMARY AND KEY ISSUES

- The Array Area is situated in relatively uncomplicated airspace but with active HMRI routing west to east through the Array Area;
- The nearest major civil airport to the Array Area is Aberdeen Airport, located approximately 123 NM (228 km) to the west. The published obstacle safeguarding area for airports of this nature is 30 NM (56 km), therefore the proposed WTGs will not impact any airport Initial Flight Plan Processing System;
- The nearest civil ATC radars to the Array Area are the NATS Allanshill and Perwinnes radars both of which are located more than 110 NM (204 km) from the Array Area;
- The nearest military ATC and Automatic Dependent radars are the RAF Lossiemouth ATC radar and the Buchan Automatic Dependent radar both of which are located more than 110 NM (204 km) from the Array Area;
- The Array Area is located more than 12 NM (22 km) from the UK coastline, therefore is technically outside the UK Military Low Flying System. However, military aircraft may still be required to operate at low-level in the vicinity of the Array Area;
- HMRI 098 and 108 route through the Array Area and HMRI 095 routes approximately 1 NM (1.8 km) to the north of the Array Area. These HMRI are primarily used for helicopter flights from Aberdeen Airport to oil and gas installations;
- The Array Area lies underneath AARA 3 which is established from Flight Level 100 (10,000 ft) up to Flight Level 290 (29,000 ft), meaning operations with the AARA are carried out no lower than 10,000 ft; and
- The nearest Met Office radar system to the Array Area is located at Hill of Dudwick near Ellon, Aberdeenshire.

18.4.7 Data gaps and uncertainties

The data used in this chapter are detailed in Section 18.4.2. The data used are the most up to date publicly available information which can be obtained from the applicable data sources as cited. Data has also been provided through consultation as detailed in Section 18.3 and the Helicopter Access Report in **EIAR Vol. 4, Appendix 29: Helicopter Access Report**. It is considered that the data employed in the assessment are robust and sufficient for the purposes of the EIA presented.

18.5 Impact assessment methodology

18.5.1 Impacts requiring assessment

The impacts identified as requiring consideration for Military and Civil Aviation are listed in Table 18-5. Information on the nature of impact (i.e. direct or indirect) is also described.

Table 18-5 Impacts requiring assessment for Military and Civil Aviation

POTENTIAL IMPACT	NATURE OF IMPACT
Construction and decommissioning	
Impact on military low flying and UK SAR helicopter operations due to the presence of obstacles (WTGs in construction)	Direct
Impact on helicopter operations on HMRI's due to the presence of obstacles (WTGs in construction)	Direct
Impact on helicopter operations in the vicinity of oil and gas installations due to the presence of obstacles (WTGs in construction)	Direct
Operation and maintenance	
Impact on military low flying and UK SAR helicopter operations due to the presence of obstacles (WTGs in operation)	Direct
Impact on helicopter operations on HMRI's due to the presence of obstacles (WTGs in operation)	Direct
Impact on helicopter operations in the vicinity of oil and gas installations due to the presence of obstacles (WTGs in operation)	Direct
Decommissioning*	

* In the absence of detailed information regarding decommissioning works, and unless otherwise stated, the impacts during the decommissioning are considered analogous with, or likely less than, those of the construction phase.

18.5.2 Impacts scoped out of the assessment

The impacts scoped out of the assessment during EIA Scoping (Table 18-2) are listed, with justifications, in Table 18-6.

Table 18-6 Impacts scoped out for Military and Civil Aviation

IMPACT SCOPED OUT	JUSTIFICATION
Construction/Operation and maintenance	
Civil airport IFPs	The Array Area is outside the 30 NM (56 km) safeguarding zone for aerodromes of this nature. No impact was confirmed in the scoping response from Edinburgh Airport (Table 18-2); consequently, there will be no effect on civil airport IFPs and this receptor is scoped out of the EIAR.
Military aerodrome IFPs	The Array Area is outside the 30 NM (56 km) safeguarding zone for aerodromes of this nature. Impact on military aerodrome IFPs not mentioned in the MoD scoping response (Table 18-2); consequently, there will be no effect on military aerodrome IFPs and this receptor is scoped out of the EIAR.
Civil ATC radar	The Array Area is not within radar coverage of any civil ATC radar systems as confirmed in the NATS scoping response (Table 18-2); consequently, there will be no effect on civil ATC radar systems and this receptor is scoped out of the EIAR.
Military ATC radar	The Array Area is not within radar coverage of any military ATC radar systems and the potential effect on this receptor is not mentioned in the MoD's scoping response (Table 18-2); consequently, there will be no effect on military ATC radar systems and this receptor is scoped out of the EIAR.
Military AD radar	The Array Area is not within radar coverage of any military AD radar systems and potential effects on this receptor are not mentioned in the MoD's scoping response (Table 18-2); consequently, there will be no effect on military AD radar systems and this receptor is scoped out of the EIAR.
Local Airspace Restrictions (Prohibited/Restricted/Danger Areas and Military PEXAs)	The Array Area is situated outside the boundaries of any active Prohibited/Restricted/Danger Areas and Military PEXAs (including AARA 3); consequently, there will be no effect on MoD operations within restricted airspace and this receptor is scoped out of the EIAR.
Meteorological (Met) Office radar	The nearest Met Office radar system is located at Hill of Dudwick, Aberdeenshire more than 110 NM (204 km) to the west. The Array Area is therefore outside the 20 km safeguarding area for radars of this nature; consequently, there will be no effect on Met Office radar systems and this receptor is scoped out of the EIAR.

IMPACT SCOPED OUT**JUSTIFICATION****Decommissioning**

Impacts during the decommissioning of the Project are considered to be the same or less than those of the construction phase.

18.5.3 Assessment methodology

An assessment of potential effects is provided separately for the construction, operation and maintenance and decommissioning phases of the Project.

The criteria for the assessment for Military and Civil Aviation differ from those set out in **EIAR Vol. 2, Chapter 7: EIA Methodology**. For Military and Civil Aviation, defining set categories of receptor sensitivity and magnitude of effect is not appropriate as baseline aviation activities and equipment are typically highly sensitive to impacts and any magnitude of restriction on, or compromise to, activities or equipment (without embedded mitigation) is considered to be high; however, embedded mitigation measures can reduce the sensitivity of a receptor and the magnitude of effect. Therefore, the sensitivity of receptor and magnitude of any effects have been explained in the assessment (Section 18.6) via professional reasoning and judgement rather than via set definitions of different categories. These judgements have fed into the determination of significance and represent a deviation from the standard methodology presented within **EIAR Vol. 2, Chapter 7: EIA Methodology**.

Each level of significance can be described as follows:

- Major - Regular, frequent or permanent effects which require changes to existing operational and/or technical practice in order to mitigate adequately, or which are not capable of being mitigated adequately;
- Moderate - Periodic effects experienced which may require alterations to existing operational practice;
- Minor - Occasional effects experienced which do not require any alteration of existing operational and technical practice; and
- Negligible - Normally no measurable change from baseline conditions which therefore do not require any alteration of existing operational and technical practice.

For the purposes of this assessment:

- A level of effect of moderate or more will be considered a 'significant' effect; and
- A level of effect of minor or less will be considered 'not significant'.

Effects of moderate significance or above are therefore considered important in the decision-making process, whilst effects of minor significance or less warrant little, if any, weight in decision-making processes.

18.5.4 Embedded mitigation

As described in **EIAR Vol. 2, Chapter 7: EIA Methodology**, certain measures (primary and tertiary mitigation) have been adopted as part of the Project development process in order to reduce the potential for impacts to the environment, as presented in Table 18-7. These have been accounted for in the assessment presented below. The requirement for additional mitigation measures (secondary mitigation) will be dependent on the significance of the effects on Military and Civil Aviation receptors.

Table 18-7 Embedded mitigation measures relevant to Military and Civil Aviation

CODE	MITIGATION MEASURE	TYPE	DESCRIPTION	SECURED BY
MM-006	Environmental Management Plan (EMP)	Tertiary	The EMP will set out procedures to ensure all activities with the potential to affect the environment are appropriately managed and will include a description of planned activities and procedures, roles and responsibilities, pollution control and spillage response plans, incident reporting, chemical usage requirements, waste management plans, plant service procedures, communication and reporting structures, and programme of work. It will detail the final design selected and take into account Marine Licence conditions and commitments.	<p>The EMP, will be required under Section 36 Consent and/or Marine Licence conditions.</p> <p>An outline EMP is provided as part of the Application EIAR Vol. 4, Appendix 32: Outline EMP.</p>
MM-009	Decommissioning Programme	Tertiary	The development of, and adherence to, a Decommissioning Programme, approved by Scottish Ministers prior to construction and updated throughout the Project's operational life. This will be written in accordance with applicable guidance and will detail the required activities, programme and environmental management for decommissioning.	The Decommissioning Programme will be required under Section 105 of the Energy Act 2004 (as amended) and a condition of the Section 36 Consent.
MM-013	Operations and Maintenance Programme (OMP)	Tertiary	The OMP will set out the procedures and good practice measures for operation and maintenance of the Project Infrastructure. The OMP will include consideration for environmental sensitivities, to appropriately safeguard environmental receptors during the operation and maintenance phase of the Project.	Required under Section 36 Consent and/or Marine Licence conditions

CODE	MITIGATION MEASURE	TYPE	DESCRIPTION	SECURED BY
MM-016	Minimum spacing between FTUs	Primary	928 m spacing between FTU structures at the surface and a minimum of 50 m between anchors.	The final layout will be detailed within the Development Specification and Layout Plan (DSLPL), required under Section 36 and/or Marine Licence conditions.
MM-031	Lighting and Marking Plan (LMP)	Tertiary	The LMP will set out specific requirements in terms of aviation lighting to be installed on the WTGs, as required under CAA (2016)“ CAP 393, Air Navigation: The Order and the Regulations”. The LMP will be prepared in consultation with the CAA, MoD, MCA and Northern Lighthouse Board (NLB) and will consider requirements for aviation lighting as specified in Article 223 of the UK ANO (CAA, 2016) and changes to International Civil Aviation Organisation Annex 14 (2016).	Lighting and marking requirements will be detailed in the LMP, required under Section 36 Consent and/or Marine Licence conditions.
MM-032	Development Specification and Layout Plan (DSLPL)	Tertiary	The DSLPL will confirm the final specification and layout of the Project Area. The Plan will include location and coordinates of all OWF infrastructure including cables and the final design parameters of the OWF.	The DSLPL is required under Section 36 Consent and/or Marine Licence consent conditions.
MM-033	Charting of installed infrastructure	Tertiary	Notification to the UK Hydrographic Office (UKHO) and Kingfisher of the proposed location and programme of works will facilitate the promulgation of maritime safety information and updating of nautical/admiralty charts and publications. All Project infrastructure (including FTUs, substations, subsea cables and mooring lines) will be marked on appropriately scaled nautical charts.	Charting requirements will be secured under a Marine Licence condition. Details will also be included in the FMMS, LMP, and NSP also required under the Section 36 Consent and/or Marine Licence conditions.

CODE	MITIGATION MEASURE	TYPE	DESCRIPTION	SECURED BY
			All structures more than 91.4 m in height will be charted on aeronautical charts and reported to the Defence Geographic Centre (DGC) (Digital Vertical Obstruction File) at least ten weeks prior to construction in line with LMP.	An outline FMMS is provided as part of the Application EIAR Vol. 4 Appendix 34: Outline FMMS.
MM-037	Compliance with MGN 654	Tertiary	<p>The Project will comply with MGN 654 and its annexes to ensure that impacts on navigational safety and emergency response are considered, assessed and mitigated where necessary. This includes post-consent completion of the SAR Checklist, which includes the completion of an ERCoP. This will include, but is not limited to:</p> <ul style="list-style-type: none"> • Layout design; • Agreement of SAR checklist and ERCoP with MCA; • Hydrographic surveys; and • Maximum 5% reduction in surrounding charted depths referenced to Chart Datum unless otherwise agreed with the Scottish Ministers in consultation with MCA. 	Compliance with MGN 654 will be detailed within the NSP and ERCoP required under Section 36 Consent and/or Marine Licence conditions.
MM-041	Consultation with The Civil Aviation Authority (CAA)	Primary	The CAA will be informed of the locations, heights and lighting status of the WTGs, including estimated and actual dates of construction and the maximum heights of any construction equipment to be used, prior to the start of construction.	Required under Section 36 Consent and/or Marine Licence conditions.
MM-042	Notice to Aviation (NOTAM) system	Primary	Any temporary obstacles associated with WTGs which are more than 91.4 m in height (e.g. construction infrastructure such as cranes and/or meteorological masts) are to be alerted to aircrews by means of the NOTAM system, in line with consultation with the CAA.	Commitment to notification of temporary obstacles and will also be detailed in the NSP which will be required under the Section 36 Consent and/or Marine Licence conditions.

CODE	MITIGATION MEASURE	TYPE	DESCRIPTION	SECURED BY
MM-043	Marking of project infrastructure on aeronautical charts and reporting to the Defence Geographic Centre	Tertiary	CAA will be informed of the locations, heights and lighting status of the WTGs, including estimated and actual dates of construction and the maximum heights of any construction equipment to be used, prior to the start of construction. All structures more than 91.4 m in height will be charted on aeronautical charts and reported to the Defence Geographic Centre (Digital Vertical Obstruction File) at least ten weeks prior to construction in line with the LMP and DSLP. Consultation with the CAA, MCA, MoD and NLB prior to agreement of the LMP and the DSLP. The DSLP will confirm the final specification and layout of the Project Area. The Plan will include coordinates of OWF infrastructure and the final design parameters of the OWF.	Marking requirements will be a condition of the Marine Licence conditions. The LMP and DSLP is required under the Section 36 Consent and/or Marine Licence conditions.

18.5.5 Worst-case scenario

As detailed in **EIAR Vol. 2, Chapter 7: EIA Methodology**, this assessment considers the worst-case scenario for the Project parameters which are predicted to result in the greatest environmental impact, known as the 'realistic worst-case scenario'. The worst-case scenario represents, for any given receptor and potential effect on that receptor that would result in the greatest potential for change.

Given that the worst-case scenario is based on the design option (or combination of options) that represents the greatest potential for change, confidence can be held that development of any alternative options within the design parameters will give rise to no worse effects than assessed in this impact assessment. Table 18-8 presents the worst-case scenario for potential effects on Military and Civil Aviation during construction, operation and maintenance and decommissioning.

Table 18-8 Worst-Case scenario specific to Military and Civil Aviation impact assessment

POTENTIAL IMPACT	WORST-CASE SCENARIO	JUSTIFICATION
Construction		
Potential impact on military low flying and UK SAR helicopter operations due to presence of obstacles (WTG in construction).	<ul style="list-style-type: none"> • Installation of up to 68 WTGs with maximum upper blade tip height of 320 metres (m) above Lowest Astronomical Tide (LAT); and • 280 m maximum rotor diameter. 	These parameters represent the realistic worst-case design scenario for height of infrastructure and associated installation equipment within the Array Area, which has the greatest potential for obstruction to air traffic.
Impact on helicopter operations on HMRI due to the presence of obstacles (WTGs in construction)	<ul style="list-style-type: none"> • Installation of up to 68 WTGs with maximum upper blade tip height of 320 m above LAT; and • 280 m maximum rotor diameter. 	These parameters represent the realistic worst-case design scenario for height of infrastructure and associated installation equipment within the Array Area, which has the greatest potential for obstruction to helicopters operating on HMRI.
Impact on helicopter operations in the vicinity of oil and gas installations due to the presence of obstacles (WTGs in construction)	<ul style="list-style-type: none"> • Installation of up to 68 WTGs with maximum upper blade tip height of 320 m above LAT; and • 280 m maximum rotor diameter. 	These parameters represent the realistic worst-case design scenario for height of infrastructure and associated installation equipment within the Array Area, which has the greatest potential for obstruction to helicopters operating in the vicinity of oil and gas installations.
Operation and maintenance		

POTENTIAL IMPACT	WORST-CASE SCENARIO	JUSTIFICATION
Potential impact on military low flying and UK SAR helicopter operations due to presence of obstacles (WTG in operation).	<ul style="list-style-type: none"> • Installation of up to 68 WTGs with maximum upper blade tip height of 320 m above LAT; and • 280 m maximum rotor diameter. 	These parameters represent the realistic worst-case design scenario for height of infrastructure and associated installation equipment within the Array Area, which has the greatest potential for obstruction to air traffic.
Impact on helicopter operations on HMRI due to the presence of obstacles (WTGs in operation)	<ul style="list-style-type: none"> • Installation of up to 68 WTGs with maximum upper blade tip height of 320 m above LAT; and • 280 m maximum rotor diameter. 	These parameters represent the realistic worst-case design scenario for height of infrastructure and associated installation equipment within the Array Area, which has the greatest potential for obstruction to helicopters operating on HMRI.
Impact on helicopter operations in the vicinity of oil and gas installations due to the presence of obstacles (WTGs in operation)	<ul style="list-style-type: none"> • Installation of up to 68 WTGs with maximum upper blade tip height of 320 m above LAT; and • 280 m maximum rotor diameter. 	These parameters represent the realistic worst-case design scenario for height of infrastructure and associated installation equipment within the Array Area, which has the greatest potential for obstruction to helicopters operating in the vicinity of oil and gas installations.
Decommissioning		

In the absence of detailed information in relation to decommissioning activities, the implications for Military and Civil Aviation are similar, or likely less, than the worst-case scenarios for those outlined during the construction phase. Therefore, the worst-case parameters defined for the construction phase also apply to the decommissioning phase. More details are available on the decommissioning approach in **EIAR Vol. 2, Chapter 5: Project Description**.

18.6 Assessment of potential effects

18.6.1 Potential effects during construction

18.6.1.1 Impact on military low flying and UK SAR helicopter operations due to the presence of obstacles (WTGs in construction)

Pilots are obliged to plan their flying activities in advance and to be familiar with any en-route obstacles they may encounter; however, during flight, weather conditions or operational requirements may necessitate route adjustments. In VMC (i.e. good weather conditions), pilots are ultimately responsible for seeing and avoiding obstructions such as WTGs and will be aware of their presence through the notification procedures set out in the embedded mitigation in Table 18-7.

The installation and presence of WTGs pose physical obstructions to aviation operations carried out in the vicinity of windfarms. WTGs can be difficult to see from the air, particularly in poor meteorological conditions, leading to a potential increase in obstacle collision risk. Furthermore, during the construction phase, the presence and movement of installation vessels (with onboard cranes) could also present a potential obstacle collision risk to aircraft operations. However, in the case of the Array Area, the cranes used on site during the construction phase will not exceed the height of the WTGs (i.e. 320 m above LAT).

In terms of low flying operations, pilots are required to set a Minimum Safe Altitude (MSA) to identify the lowest altitude, set in areas, that ensures safe separation between their aircraft and known obstacles. MoD requested in their Scoping Response, and the Applicant has committed, to lighting and charting the WTGs and that, in the interests of air safety, the WTGs should be fitted with MoD accredited aviation safety lighting as set out in Table 18-2.

In terms of SAR operations, the MCA will be consulted on the lighting and marking arrangements and on the specific layout of the WTGs with the aim of seeking compatibility with SAR helicopter operations in the event of rescue missions in the vicinity of the Array Area. This consultation will continue as layout plans are refined prior to construction (Table 18-7). The final lighting and marking arrangements will be captured in the LMP and the DSLP.

Military low flying and SAR helicopter operations are high value receptors because all aviation impacts are high value. However, implementation of embedded mitigation measures (as described in Table 18-7) ensures that low flying and SAR helicopter operations will have low vulnerability, since any impacts are unlikely to affect long-term functioning of low flying and SAR helicopter operations.

Military low flying and SAR helicopter operations are deemed to be of **high sensitivity** to the potential risk of collision with obstacles however, following implementation of embedded mitigation measures, this effect is also considered to be of **low magnitude**.

Evaluation of significance

Taking the **high sensitivity** of low flying aviation operations and the **low magnitude** of effect, the overall effect on military low flying and SAR helicopter operations during construction is considered to be **minor** and **not significant** in EIA terms.

Sensitivity	Magnitude of effect	Consequence
High	Low	Minor

Impact significance - NOT SIGNIFICANT

18.6.1.2 Impact on helicopter operations on HMRI due to the presence of obstacles (WTGs in construction)

HMRI 095, 098 and 101 route through, or are adjacent to, the Array Area boundary. These HMRI are primarily used for helicopter flights from Aberdeen Airport to offshore oil and gas installations in the North Sea. CAP 764 (CAA, 2016b) states that HMRI have no defined lateral dimensions, and although 2 NM (3.7 km) either side of the route centreline should ideally be kept obstacle free, it may be considered that some WTG development within 2 NM (3.7 km) of the route centreline could be manageable.

Helicopters on HMRI are height-banded, so that those outbound from the coast would fly at 2,000 ft and 3,000 ft, whilst those inbound fly at 1,500 ft and 2,500 ft. This allows for 500 ft vertical separation between helicopters travelling in opposite directions. A large number of WTGs beneath an HMRI would result in helicopters flying higher in order to maintain a safe vertical separation from WTGs.

The physical presence of the proposed WTGs at 320 m (1,050 ft) would mean that outbound flights may remain at 2,000 ft while all inbound flights will be pushed up to 2,500 ft. However, this option is not available on days of low cloud base when the icing level is below 2,000 ft due to the risk of ice aggregation on the aircraft. In the instance where WTGs are located under an HMRI this would not be possible and flights would therefore be restricted within the HMRI. All flights transiting through the Array Area will be directly impacted by the WTGs and in certain weather conditions the use of HMRI will be restricted. However, when operating in Visual Flight Rules (VFR) conditions, helicopters will route direct to their destination point and require a minimum of 500 ft separation from obstacles.

Following consultation with the aviation stakeholders including helicopter operators, it is understood that HMRI routes would not require revision because in most cases, helicopters will continue to fly these routes in VFR over the WTGs at the specified altitude. In Instrument Meteorological Conditions (IMC) and when the isotherm level is at an altitude that requires the helicopter to fly at less than 2,000 ft, an obstacle free route is required which is available as a deviation around the Array Area.

Helicopter operations on HMRI are high value receptors because all aviation impacts are high value. However, implementation of embedded mitigation measures (as described in Table 18-7) ensures that helicopter operations

will have low vulnerability, since any effects are unlikely to affect long-term functioning of helicopter operations on HMRI.

Helicopter operations on HMRI are deemed to be of **high sensitivity** to the potential risk of collision with obstacles however, following implementation of embedded mitigation measures, this effect is also considered to be of **low magnitude**.

Evaluation of significance

Taking the **high sensitivity** of helicopter operations on HMRI and the **low magnitude** of effect, the overall effect on helicopter operations on HMRI during construction is considered to be **minor** and **not significant** in EIA terms.

Sensitivity	Magnitude of effect	Consequence
High	Low	Minor

Impact significance - NOT SIGNIFICANT

18.6.1.3 Impact on helicopter operations in the vicinity of oil and gas installations due to the presence of obstacles (WTGs in construction)

In order to help achieve a safe operating environment, a consultation zone of 9 NM (17 km) radius exists around offshore helicopter installations. This consultation zone is not considered a prohibition on OWF development within a 9 NM (17 km) radius of offshore operations but is a trigger for consultation between the platform operators, the offshore helicopter operators, the operators of existing installations and OWF developers to determine a solution that would maintain safe offshore helicopter operations.

The basic requirement of the 9 NM (17 km) consultation zone is to provide airspace for the safe operation of instrument approaches in poor weather conditions where a low visibility approach profile is needed. In addition, the zone provides a safe area for helicopters to carry out a Missed Approach Procedure (MAP).

WTGs are considered as physical obstructions and infringe the minimum obstacle clearance criteria of 1,000 ft; furthermore, during the approach to an installation, all physical obstructions (such as WTGs) have to be avoided laterally by at least 1 NM (1.8 km). These combined effects within a 9 NM (17 km) consultation zone of an offshore installation may impair the safety of air operations to that installation and affect the installation operators' regulatory requirements with regard to safety of operation.

Low-visibility approach procedures rely upon an on-board weather radar for obstacle detection and navigation. Helicopters which operate to and from offshore platforms are fitted with airborne weather radar which can be used to conduct an approach in poor visibility. The radar is designed to display weather phenomena, such as rain, as well as obstacles such as the oil or gas platforms, or WTGs. In IMC, and in certain wind conditions which dictate the area of approach to the platform, a standard instrument approach procedure might not be possible due to the proximity of WTG structures to the flight approach path.

Helicopter operations in the vicinity of oil and gas installations are high value receptors because all aviation impacts are high value.

In order to ascertain the potential effects of the WTGs on offshore helicopter installations, the Applicant commissioned a Helicopter Access Report from Anatec Limited. The report (**EIAR Vol. 4, Appendix 29: Helicopter Access Report**) identified the baseline helicopter access into oil and gas infrastructure within 9 NM (17 km) of the Array Area and any potential changes to access due to construction of the WTGs. The report, which has since been discussed with the relevant platform owners and helicopter operators (see Section 18.3), concluded that:

- Day and night VMC access to permanently manned installations within 9 NM (17 km) will remain unchanged;
- Impact on Instrument Meteorological Conditions (IMC) access to the manned installations will be minimal;
- Non-Productive Platforms (NPIs) working over subsea infrastructures within 3 NM (5.6 km) of the Array Area will be restricted to day VMC only operations.
- NPIs outside 3 NM (5.6 km) from the Array Area will have unobstructed day and night VMC access. IMC access for each subsea facility will depend on the distance from the Array Area and the angle of approach.

Consultation with the relevant platform owners and helicopter operators indicates that the proposed development will have minimal effect on helicopter operations in the vicinity of oil and gas installations. These operations have low vulnerability, since any effects are unlikely to affect long-term functioning of helicopter operations in the vicinity of oil and gas installations.

Helicopter operations in the vicinity of oil and gas installations are deemed to be of **high sensitivity** however, following implementation of embedded mitigation measures (as described in Table 18-7), this effect is considered to be of **low magnitude**.

Evaluation of significance

Taking the **high sensitivity** of helicopter operations in the vicinity of oil and gas installations and the **low magnitude** of effect, the overall effect on helicopter operations in the vicinity of oil and gas installations during construction is considered to be **minor** and **not significant** in EIA terms.

Sensitivity	Magnitude of effect	Consequence
High	Low	Minor

Impact significance - NOT SIGNIFICANT

18.6.2 Potential effects during operation and maintenance

18.6.2.1 Impact on military low flying and UK SAR helicopter operations due to the presence of obstacles (WTGs in operation)

The potential effects on military low flying and SAR helicopter operations due to presence of obstacles during the operation and maintenance phase is exactly as detailed in Section 18.6.1.1 for the construction phase.

In addition, during maintenance periods, it may be necessary to use surface vessels with crane capabilities for replacement of component parts e.g. blades or the WTGs themselves. These temporary obstacles will be addressed under the NOTAM system as set out in the embedded mitigation (Table 18-7).

Military low flying and SAR helicopter operations are high value receptors because all aviation impacts are high value. However, implementation of embedded mitigation measures (as described in Table 18-7) ensures that low flying and SAR helicopter operations will have low vulnerability, since any effects are unlikely to affect long-term functioning of low flying and SAR helicopter operations.

SAR helicopter operations are deemed to be of **high sensitivity** to the potential risk of collision with obstacles. The effect however is considered to be of **low magnitude**. Consequently, the overall effect is considered to be **minor** which is **not significant** in EIA terms.

Military low flying and SAR helicopter operations are therefore deemed to be of **high sensitivity** to the potential risk of collision with obstacles however, following implementation of embedded mitigation measures, this effect is also considered to be of **low magnitude**.

Evaluation of significance

Taking the **high sensitivity** of low flying aviation operations and the **low magnitude** of effect, the overall effect on military low flying and SAR helicopter operations during operation and maintenance is considered to be **minor** and **not significant** in EIA terms.

Sensitivity	Magnitude of effect	Consequence
High	Low	Minor

Impact significance - NOT SIGNIFICANT

18.6.2.2 Impact on helicopter operations on HMRI due to the presence of obstacles (WTGs in operation)

The potential effect on helicopter operations on HMRI due to presence of obstacles during the operation and maintenance phase is exactly as detailed in Section 18.6.1.2 for the construction phase.

In addition, during maintenance periods, it may be necessary to use surface vessels with crane capabilities for replacement of component parts e.g. blades or the WTGs themselves. These temporary obstacles will be addressed under the NOTAM system as set out in Table 18-7.

Helicopter operations on HMRI are high value receptors because all aviation receptors are high value. However, implementation of embedded mitigation measures (as described in Table 18-7) ensures that helicopter operations will have low vulnerability, since any effects are unlikely to affect long-term functioning of helicopter operations on HMRI.

Helicopter operations on HMRI are deemed to be of **high sensitivity** to the potential risk of collision with obstacles however, following implementation of embedded mitigation measures, this effect is also considered to be of **low magnitude**.

Evaluation of significance

Taking the **high sensitivity** of helicopter operations on HMRI and the **low magnitude** of effect, the overall effect on helicopter operations on HMRI during construction is considered to be **minor** and **not significant** in EIA terms.

Sensitivity	Magnitude of effect	Consequence
High	Low	Minor

Impact significance - NOT SIGNIFICANT

18.6.2.3 Impact on helicopter operations in the vicinity of oil and gas installations due to the presence of obstacles (WTGs in operation)

The potential effect on helicopter operations in the vicinity of oil and gas installations due to presence of obstacles during the operation and maintenance phase is exactly as detailed in Section 18.6.1.3 for the construction phase.

In addition, during maintenance periods, it may be necessary to use surface vessels with crane capabilities for replacement of component parts e.g. blades or the WTGs themselves. These temporary obstacles will be addressed under the NOTAM system as set out in Table 18-7.

Consultation with the relevant platform owners and helicopter operators indicates that the Project will have minimal effect on helicopter operations in the vicinity of oil and gas installations. These operations have low vulnerability, since any effects are unlikely to affect long-term functioning of helicopter operations in the vicinity of oil and gas installations.

Helicopter operations in the vicinity of oil and gas installations are deemed to be of **high sensitivity** however, following implementation of mitigation measures outlined above, this effect is considered to be of **low magnitude**.

Evaluation of significance

Taking the **high sensitivity** of helicopter operations in the vicinity of oil and gas installations and the **low magnitude** of effect, the overall effect on helicopter operations in the vicinity of oil and gas installations during construction is considered to be **minor** and **not significant** in EIA terms.

Sensitivity	Magnitude of effect	Consequence
High	Low	Minor

Impact significance - NOT SIGNIFICANT

18.6.3 Potential effects during decommissioning

Effects on Military and Civil Aviation receptors associated with decommissioning are anticipated to result from the full removal of the Project components. Decommissioning activities will be subject to consultations and further assessments closer to the time of decommissioning to understand technical feasibility, safety and risk, and environmental considerations in detail. These details will be included in a Decommissioning Programme which will be developed post-consent and updated over the life of the Project.

The decommissioning of the Project intends to complete the full removal of offshore infrastructure to below the mudline (where safe/practicable to do so), in line with the OSPAR Convention and forthcoming guidance from OSPAR's North-East Atlantic Environmental Strategy 2030. The majority of decommissioning works are likely to be undertaken in reverse to the sequence of construction works and involve similar or lesser levels of effects to construction.

A Decommissioning Programme will be prepared prior to construction, in line with the requirements of Section 105 of the Energy Act 2004 (as amended) and any applicable guidance available at the time. Currently it is assumed that:

- FTU substructure and WTG components will be removed and towed to port;
- Mooring lines will be removed, and where possible piles will be removed or cut to a suitable distance below the mudline such that the upper portion is removed;
- Cables no longer required will be removed where safe to do so; where they cross live third-party assets, they may be cut and left in situ to prevent damage to third-party operations; and
- The OSCPs will be decommissioned and the jacket and topsides will be towed to shore. The piles will be cut a suitable distance below the mudline.

The sensitivities and effect magnitudes for decommissioning are considered to be comparable to those identified for the construction phase. Therefore, in the absence of detailed information regarding decommissioning works,

the effects during the decommissioning of the Project are considered analogous with, or likely less than, those of the construction phase.

18.6.4 Summary of potential effects

A summary of the outcomes of the assessment of potential effects from the construction, operation and maintenance and decommissioning of the Project is provided in Table 18-9 .

No significant effects on Military and Civil Aviation receptors were identified. Therefore, secondary mitigation measures in addition to the embedded mitigation measures listed in Section 18.5.4 are not considered necessary.

Table 18-9 Summary of potential effects

POTENTIAL EFFECT	RECEPTOR	SENSITIVITY OF RECEPTOR	MAGNITUDE OF EFFECT	CONSEQUENCE (SIGNIFICANCE OF EFFECT)	SECONDARY MITIGATION REQUIREMENTS	RESIDUAL CONSEQUENCE (SIGNIFICANT OF EFFECT)
Construction						
Installation of obstacles (WTGs in construction)	Military low flying and UK SAR helicopter operations	High	Low	Minor (not significant)	None required above existing embedded mitigation measures.	Not applicable
Installation of obstacles (WTGs in construction)	Helicopter operations on HMRIs	High	Low	Minor (not significant)	None required above existing embedded mitigation measures.	Not applicable
Installation of obstacles (WTGs in construction)	Helicopter operations in the vicinity of oil and gas installations	High	Low	Minor (not significant)	None required above existing embedded mitigation measures.	Not applicable

POTENTIAL EFFECT	RECEPTOR	SENSITIVITY OF RECEPTOR	MAGNITUDE OF EFFECT	CONSEQUENCE (SIGNIFICANCE OF EFFECT)	SECONDARY MITIGATION REQUIREMENTS	RESIDUAL CONSEQUENCE (SIGNIFICANT OF EFFECT)
Operation and maintenance						
Presence of obstacles (WTGs in operation)	Military low flying and UK SAR helicopter operations	High	Low	Minor (not significant)	<i>None required above existing embedded mitigation measures.</i>	Not applicable
Presence of obstacles (WTGs in operation)	Helicopter operations on HMRIs	High	Low	Minor (not significant)	<i>None required above existing embedded mitigation measures.</i>	Not applicable
Presence of obstacles (WTGs in operation)	Helicopter operations in the vicinity of oil and gas installations	High	Low	Minor (not significant)	<i>None required above existing embedded mitigation measures.</i>	Not applicable
Decommissioning						

The worst-case scenarios for the decommissioning phase are considered to be the same or less than those of the construction phase.

18.7 Assessment of cumulative effects

The general approach to the cumulative effects assessment is described in **EIAR Vol. 2, Chapter 7: EIA Methodology** and in **EIAR Vol. 4, Appendix 31: Cumulative Effects Assessment Methodology** and further detail is provided below.

In terms of assessing aviation and radar cumulative effects, the effect on any aviation receptor is generally treated as a standalone, Project specific impact pathway. Whilst other OWF developments may be located in close proximity, the effect on each receptor is considered on a case-by-case basis and any significant effect is sufficient to trigger an objection from the relevant aviation stakeholder. However, if one OWF has an unacceptable effect on an aviation receptor, it will not result in a cumulative effect to any other OWF. In terms of mitigation, an agreement for one development through consultation with a relevant stakeholder may be of relevance to a neighbouring development, however, it is still necessary for negotiations and discussions with aviation stakeholders on these mitigation measures to be carried out under separate arrangements.

The predicted effects from the Project on Military and Civil Aviation receptors are considered to be localised to within the footprint of the Project. Given that the WTGs are not considered detectable by any radar system, the Project will not present any cumulative effect on radar systems. Furthermore, given the distance of the Project from known offshore and onshore developments, the Project is also not considered to present any cumulative effect on military low flying or SAR / helicopter operations in the region.

There is no potential for the predicted effects to interact with effects from other projects and activities in the Military and Civil Aviation Study Area that can lead to a cumulative effect on receptors. Consequently, no further assessment with respect to cumulative effects is required.

18.8 Inter-related effects

Inter-related effects are the potential effects of multiple impacts, effecting one receptor or a group of receptors. Inter-related effects include interactions between the impacts of the different phases of the Project (i.e. interaction of impacts across construction, operation and maintenance and decommissioning), as well as the interaction between impacts on a receptor within a Project phase. The potential inter-related effects for Military and Civil Aviation receptors are described below.

18.8.1 Inter-related effects between Project phases

The scale of effects to Military and Civil Aviation receptors progressively increases during construction as the WTGs and ancillary structures are installed. Once installed, the infrastructure causing physical obstacles to air traffic will remain constant until the decommissioning phase. The effects of Military and Civil Aviation are not anticipated to interact in such a way as to result in combined effects of greater significance than the assessments presented for each individual phase. Therefore, across the Project lifetime, the effects on Military and Civil Aviation receptors are not anticipated to interact in such a way as to result in combined effects of greater significance than the assessments presented for each individual phase.

18.8.2 Inter-related effects within a Project phase

Potential exists for spatial and temporal interactions between direct impacts to Military and Civil Aviation. Based on current understanding and expert knowledge, the greatest scope for potential interactions between impacts is predicted to arise from creation of physical obstacles affecting air traffic during the construction and operation and maintenance phases. The individual impacts were assigned significance of negligible to minor. It is therefore not anticipated that any inter-related effects will be produced that are of greater significance than the assessments presented for each individual phase.

18.8.3 Inter-relationships

Inter-relationships are defined as the interaction between the impacts assessed within different topic assessment chapters on a receptor. The other chapters and impacts related to the assessment of potential effects on Military and Civil Aviation receptors are provided in Table 18-10.

Table 18-10 Military and Civil Aviation inter-relationships

CHAPTER	IMPACT	DESCRIPTION
EIAR Vol. 3, Chapter 15: Shipping and Navigation	Impact on military low flying and UK SAR helicopter operations due to the presence of obstacles.	WTG aviation lighting and potential use of flashing lights could create confusion to mariners.
EIAR Vol. 3, Chapter 17: Marine Infrastructure and Other Sea Users	Impact of Unexploded Ordnance (UXO) on development of the Project.	The impact pathway which considers military and defence activities, other than aviation, is characterised within the Infrastructure and Other Users chapter.

18.9 Whole Project assessment

Please refer to EIAR Vol. 2, Chapter 7: EIA Methodology for the full description of the Whole Project assessment. The onshore elements for ongoing grid connection (above MHWS), including the landward exit point and cable pull through, has previously been consented through the NorthConnect High Voltage Direct Current (HVDC) Cable Planning Consent (Planning Application Reference Number APP/2018/1831) (hereafter referred to as the 'onshore project').

Aspects of the onshore project which involve installation of underground cables, and the onshore substation located at or near Spittal as the only above surface infrastructure, have been considered in relation to the impacts assessed in Section 18.6. It is assessed that there is no potential interaction between the effects of the offshore Project on receptors described in Section 18.6 with any effects in relation to the onshore project.

18.10 Transboundary effects

There is no potential for transboundary effects upon Military and Civil Aviation receptors due to construction, operation, maintenance and decommissioning of the Project. The potential impacts are localised and are not expected to affect other European Economic Areas (EEA) states. Therefore, transboundary effects for Military and Civil Aviation receptors do not need to be considered further.

18.11 Summary of mitigation and monitoring

No secondary mitigation, over and above the embedded mitigation measures proposed in Section Table 18-7, is either required or proposed in relation to the potential effects of the Project on Military and Civil Aviation as no adverse significant impacts are predicted.

No monitoring is currently proposed for Military and Civil Aviation.

18.12 References

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