



# Chapter 14: Aviation, Military and Communications

Array EIA Report  
2024

Version	Comments	Authored by	Reviewed by	Approved by
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Approval for Issue		
For and on behalf of Ossian OWFL	Paul Darnbrough	28 June 2024

Prepared by:	RPS
Prepared for:	Ossian Offshore Wind Farm Limited (OWFL)
Checked by:	Caitlin Donald
Accepted by:	Fraser Malcolm
Approved by:	Paul Darnbrough

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# CONTENTS

- 14. Aviation, Military and Communications .....1
  - 14.1. Introduction .....1
  - 14.2. Purpose of the Chapter .....1
  - 14.3. Study Area .....1
  - 14.4. Policy and Legislative Context .....2
  - 14.5. Consultation .....3
  - 14.6. Methodology to Inform Baseline .....7
    - 14.6.1. Desktop Study .....7
    - 14.6.2. Identification of Designated Sites .....7
    - 14.6.3. Site-Specific Surveys .....7
  - 14.7. Baseline Environment .....7
    - 14.7.1. Overview of Baseline Environment .....7
    - 14.7.2. Existing Baseline Scenario .....7
    - 14.7.3. Future Baseline Scenario ..... 10
    - 14.7.4. Data Limitations and Assumptions ..... 10
  - 14.8. Key Parameters for Assessment ..... 10
    - 14.8.1. Maximum Design Scenario ..... 10
    - 14.8.2. Impacts Scoped Out of the Assessment ..... 12
  - 14.9. Methodology for Assessment of Effects ..... 12
    - 14.9.1. Overview ..... 12
    - 14.9.2. Criteria for Assessment of Effects ..... 12
  - 14.10. Measures Adopted as Part of the Array ..... 13
  - 14.11. Assessment of Significance ..... 14
  - 14.12. Cumulative Effects Assessment ..... 17
    - 14.12.1. Methodology ..... 17
    - 14.12.2. Maximum Design Scenario ..... 20
    - 14.12.3. Cumulative Effects Assessment ..... 21
  - 14.13. Proposed Monitoring ..... 23
  - 14.14. Transboundary Effects ..... 23
  - 14.15. Inter-Related Effects ..... 23
  - 14.16. Summary of Impacts, Mitigation, Likely Significant Effects and Monitoring ..... 25
  - 14.17. References ..... 27

**TABLES**

Table 14.1: Summary of UK Legislation Relevant to Aviation, Military and Communications .....2

Table 14.2: Summary of National Policy Provisions Relevant to Aviation, Military and Communications .....2

Table 14.3: Summary of National Guidance Relevant to Aviation, Military and Communications .....3

Table 14.4: Summary of Issues Raised During Consultation and Scoping Opinion Representations Relevant to Aviation, Military and Communications .....4

Table 14.5: Summary of Data Sets for Aviation, Military and Communications .....7

Table 14.6: Maximum Design Scenario Considered for Each Potential Impact as Part of the Assessment of LSE<sup>1</sup> on Aviation, Military and Communications .....11

Table 14.7: Impacts Scoped Out of the Assessment for Aviation, Military and Communications .....12

Table 14.8: Definition of Terms Relating to the Magnitude of an Impact.....12

Table 14.9: Definition of Terms Relating to the Sensitivity of the Receptor.....13

Table 14.10: Matrix Used for the Assessment of the Significance of the Effect .....13

Table 14.11: Designed In Measures Adopted as Part of the Array .....14

Table 14.12: List of Other Projects and Plans Considered within the CEA for Aviation .....18

Table 14.13: Maximum Design Scenario Considered for Each Impact as part of the Assessment of Likely Significant Cumulative Effects on Aviation, Military and Communications.....20

Table 14.14: Summary of Likely Significant Inter-Related Effects for Aviation, Military and Communications from Individual Effects Occurring Across the Construction, Operation and Maintenance and Decommissioning Phases of the Array (Array Lifetime Effects) and from Multiple Effects Interacting Across all Phases (Receptor-led Effects) .....24

Table 14.15: Summary of Likely Significant Environmental Effects, Secondary Mitigation and Monitoring .....26

Table 14.16: Summary of Likely Significant Cumulative Environment Effects, Mitigation and Monitoring .....26

**FIGURES**

Figure 14.1: Aviation, Military and Communications Study Area .....2

Figure 14.2: Aviation, Military and Communications Study Area Airspace Construct .....9

## 14. AVIATION, MILITARY AND COMMUNICATIONS

1. This Aviation, Military and Communications Array Environmental Impact Assessment (EIA) chapter provides a detailed description of aviation, military and communications activity within the area of the Array and the northern North Sea region.

### 14.1. INTRODUCTION

2. This chapter of the Array EIA Report presents the assessment of the likely significant effects (LSE<sup>1</sup>) (as per the EIA Regulations) on aviation, military and communications, as a result of the Ossian Array (hereafter referred to as the “Array”) which is the subject of this application. Specifically, this chapter considers the potential impacts of the Array on aviation, military and communications in the northern North Sea region during the construction, operation and maintenance, and decommissioning phases.
3. This chapter summarises information contained within the:
  - volume 3, appendix 14.1: Aviation, Military and Communications Technical Report; and
  - volume 3, appendix 14.1, annex A: Instrument Flight Procedures (IFP) Assessment.

### 14.2. PURPOSE OF THE CHAPTER

4. The Array EIA Report provides the Scottish Ministers, statutory and non-statutory stakeholders with adequate information to determine the LSE<sup>1</sup> of the Array on the receiving environment. This is further outlined in volume 1, chapter 1.
5. The purpose of this Aviation, Military and Communications Array EIA Report chapter is to:
  - present the existing environmental baseline established from desk studies, modelling studies, and engagement with stakeholders;
  - identify any assumptions and limitations encountered in compiling the environmental information;
  - present the impacts on aviation, military and communications arising from the Array and reach a conclusion on the LSE<sup>1</sup> on aviation, military and communications, based on the information gathered and the analysis and assessments undertaken; and
  - highlight any necessary monitoring and/or mitigation measures which are recommended to prevent, minimise, reduce or offset the likely significant adverse effects of the Array on aviation, military and communications.

### 14.3. STUDY AREA

6. The aviation, military and communications study area is driven by the Zone of Influence (Zoi), a defined term in the EIA. To identify and characterise aviation, military and communications receptors, a broad aviation, military and communications study area has been defined, based on recommendations provided by the Civil Aviation Authority (CAA) Civil Aviation Publication (CAP) 764 Policy and Guidelines on Wind Turbines (CAA, 2016a). Whilst not definitive, CAP 764 (CAA, 2016a) provides criteria for assessing whether any offshore wind development might have an impact on aerodrome and radar related operations. Consideration of the Array’s potential to impact on aviation, military and communications receptors has been undertaken in accordance with the recommended consultation distance of within 30 km of an aerodrome with a surveillance radar facility, as stated in CAP 764 (CAA, 2016a). However, CAP 764 (CAA, 2016a) states that the operational range of a radar system is dependent on the type of radar used and its operational requirement.
7. Although CAP 764 (CAA, 2016a) provides a guide of 30 km for assessment of radar impact, impact to aviation radar is dependent on radar detectability of operational wind turbines, the radar’s operational range and the use of airspace in which the development sits, therefore, in this chapter, the operational

range of individual radar, particularly Ministry of Defence (MOD) Air Defence Radar (ADR) with operational ranges in excess of 200 km, has been taken into account in defining the aviation, military and communications study area, rather than the CAP 764 30 km guideline only. The identification of the aviation, military and communications study area and assessment of potential operational impact has considered physical safeguarding of flight, airspace characteristics and procedures as published in the CAA CAP 032, United Kingdom (UK) Integrated Aeronautical Information Package (IAIP) (CAA, 2023a) and the Ministry of Defence (MOD) Military Aeronautical Information Publication (Mil AIP) (MOD, 2023a).

8. Figure 14.1 illustrates the aviation, military and communications study area encompassing:
  - the aviation radar systems that potentially detect the Array maximum (highest) wind turbine blade tip height of 399 m above Lowest Astronomical Tide (LAT); and
  - the Array and applicable airspace between the Array and the UK east coast from the location of the NATS En-route Limited (NERL) operated Allanshill Primary Surveillance Radar (PSR) to the north and the Brizlee Wood Remote Radar Head (RRH) ADR to the south.

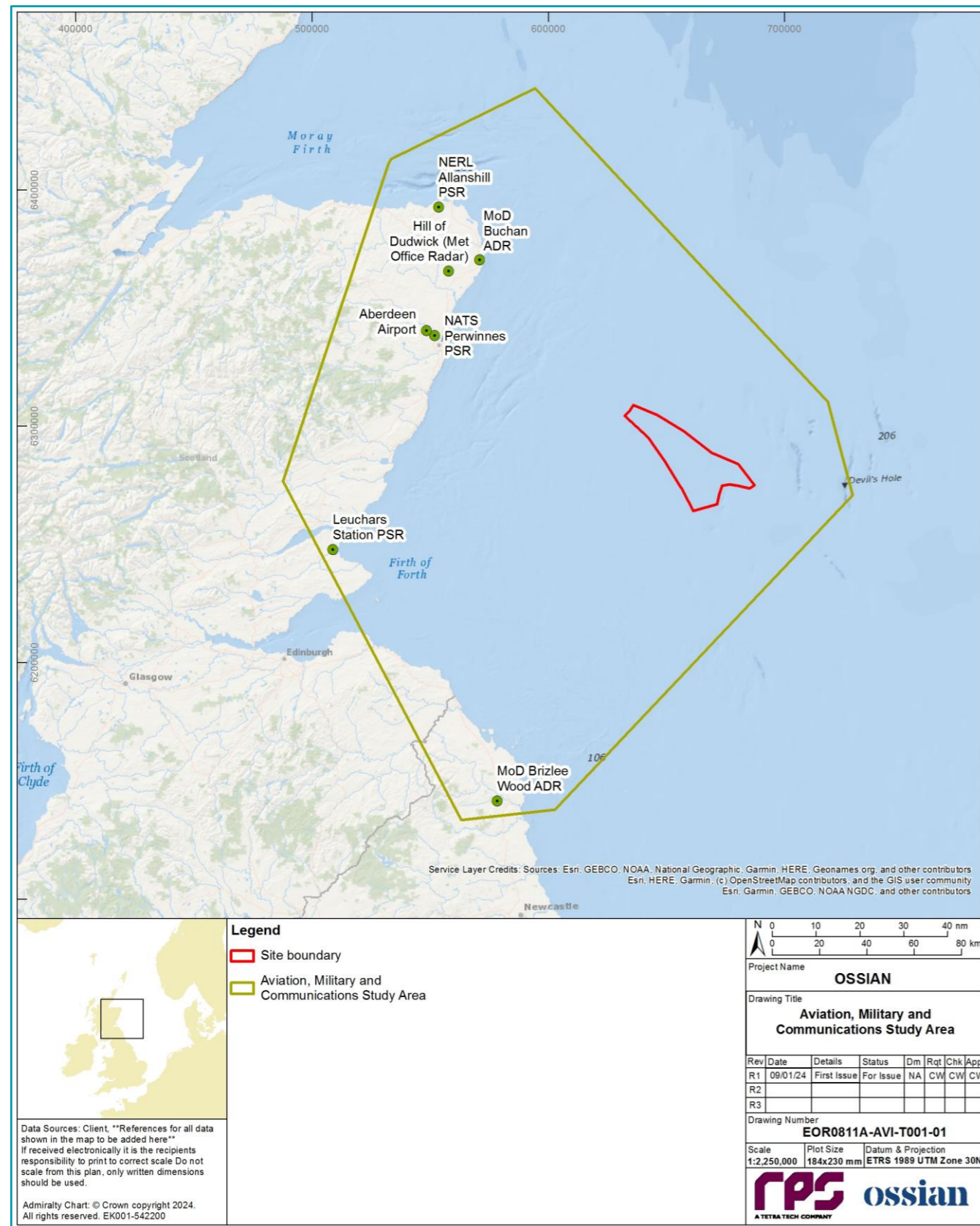


Figure 14.1: Aviation, Military and Communications Study Area

### 14.4. POLICY AND LEGISLATIVE CONTEXT

- Volume 1, chapter 2 of the Array EIA Report presents the policy and legislation of relevance to renewable energy infrastructure. Policy and guidance specifically in relation to aviation, military and communications is contained in CAP 393 The Air Navigation Order (ANO) (CAA, 2016b as amended 2022) which sets out the provisions of the ANO as amended together with the legislation made under the Order. Table 14.1 presents a summary of the legislation provisions relevant to aviation, military and communications, with the other relevant policy and guidance set out in Table 14.2 and Table 14.3.
- Further detail is presented in volume 1, chapter 2.

Table 14.1: Summary of UK Legislation Relevant to Aviation, Military and Communications

Summary of Relevant Legislation	How and Where Considered in the Array EIA Report
<b>CAA</b>	
CAP 393: The ANO (CAA, 2022)	This is considered within section 14.7.2, section 14.9.1 and Table 14.11.
<ul style="list-style-type: none"> <li>Article 223</li> </ul>	

Table 14.2: Summary of National Policy Provisions Relevant to Aviation, Military and Communications

Summary of Relevant Policy	How and Where Considered in the Array EIA Report
<b>Scottish Government</b>	
Scottish National Marine Plan (NMP) (Scottish Government, 2015)	This is considered within the consultation section (Table 14.4), section 14.6, section 14.7, and within Table 14.7.
<ul style="list-style-type: none"> <li>Chapter 15:                             <ul style="list-style-type: none"> <li>Defence 1; To maintain operational effectiveness in Scottish waters used by the armed services, development and use will be managed in these areas: Naval areas including bases and ports, Firing Danger Areas, Exercise Areas and Communications.</li> <li>Defence 2; For the purposes of national defence, the MOD may establish by-laws for exclusions and closures of sea areas. In most areas this will mean temporary exclusive use of areas by the MOD. Where potential for conflict with other users is identified, appropriate mitigation will be identified and agreed with the MOD, prior to planning permission, a marine licence, or other consent being granted.</li> </ul> </li> </ul>	
Sectoral Marine Plan (SMP) for Offshore Wind Energy (Scottish Government, 2020)	This is considered within the consultation section (Table 14.4), section 14.6 and section 14.7.
<ul style="list-style-type: none"> <li>4.5, East Region                             <ul style="list-style-type: none"> <li>At a strategic level, the Scottish Government will undertake further and ongoing engagement with renewables,..... defence and aviation. Developers will also be expected to engage in these discussions.</li> <li>Consultation with aviation stakeholders including NATS, the MOD and Maritime and Coastguard Agency (MCA)</li> </ul> </li> </ul>	

**Table 14.3: Summary of National Guidance Relevant to Aviation, Military and Communications**

Summary of Relevant Policy	How and Where Considered in the Array EIA Report
<b>ICAO, MCA, MOD and CAA</b>	
International Civil Aviation Organisation (ICAO) Annex 14 Aerodromes Design and Operations contains Standards and Recommended Procedures (SARPs) (ICAO, 2022)	This is considered within section 14.6
CAA CAP 032: UK IAIP (CAA, 2023a)	This is considered within section 14.6 and section 14.7.
CAA CAP 168: Licensing of Aerodromes (CAA, 2022a)	This is considered within section 14.6.
MCA Marine Guidance Note (MGN) 654: Safety of Navigation Offshore Renewable Energy Installations (OREIs) (MCA, 2021)	This is considered within section 14.6, section 14.10, and section 14.11.
CAA CAP 670: Air Traffic Services Safety Requirements (CAA, 2019)	This is considered within section 14.6, section 14.10, and section 14.11.
CAA CAP 738: Safeguarding of Aerodromes (CAA, 2020)	This is considered within section 14.6.
CAA CAP 764: Policy and Guidelines on Wind Turbines (CAA, 2016a)	This is considered within section 14.6.
CAA CAP 774: The UK Flight Information Services (CAA, 2021)	This is considered within the consultation section (Table 14.4) and section 14.11.
CAA CAP 785B: Implementation and Safeguarding of Instrument Flight Procedures (IFP) in the UK (CAA, 2022b)	This is considered within volume 3, appendix 14.1, annex A.
CAA CAP 999: Helicopter Search and Rescue (SAR) in the UK National Approval Guidance (CAA, 2023b)	This is considered within section 14.6 and in the consultation section (Table 14.4).
ICAO Document 8168 Ops/611 Procedures for Air Navigation Services - Aircraft Operations (PANS-Ops) (ICAO, 2009)	This is considered within section 14.6.
MOD Obstruction Lighting Guidance (MOD, 2016)	This is considered within Table 14.11.

## 14.5. CONSULTATION

- Table 14.4 presents a summary of the key issues raised during consultation activities undertaken to date specific to aviation, military and communications for the Array and in the Ossian Array Scoping Opinion (Marine Directorate – Licensing and Operations Team (MD-LOT), 2023) along with how these have been considered in the development of this aviation, military and communications Array EIA Report chapter. Further detail is presented within volume 1, chapter 5.

**Table 14.4: Summary of Issues Raised During Consultation and Scoping Opinion Representations Relevant to Aviation, Military and Communications**

Date	Consultee and Type of Consultation	Issue(s) Raised	Response to Issue Raised and/or Where Considered in this Chapter
<b>Relevant Consultation to Date</b>			
05 September 2023	NATS Safeguarding - Letter	Consultation letter issued in response to NATS representation in the Ossian Array Scoping Opinion to discuss and provide feedback on potential impacts to the Allanshill and Perwinnes PSRs.  NATS responded via email on 27 October 2023 and advised the Array will impact the Perwinnes PSR. The Allanshill PSR does not have the range to provide infill, therefore the mitigation available would be a blank from Perwinnes and application to the CAA for an airspace change and the provision of a Transponder Mandatory Zone (TMZ). NATS requested an online meeting to discuss these items (see details below on 27 March 2024).	In response to the consultation letter issued, NATS confirmed adverse impact to Perwinnes PSR. This has been considered in section 14.11 paragraphs 89 to 94.
05 September 2023	Aberdeen International Airport - Letter	Consultation letter issued in response to Aberdeen International Airport representation in the Ossian Array Scoping Opinion to discuss the requirement of an IFP assessment and predicted impact to the Allanshill and Perwinnes PSRs.  Aberdeen International Airport responded with a request for an online meeting to discuss these items (see details below on 13 December 2023).	An IFP assessment has been completed; the conclusions of the analysis are provided in volume 3 appendix 14.1, annex A.  NATS provide ATC services at Aberdeen International Airport. Engagement with NATS will continue to reach a mutually agreeable technical mitigation of impacted radar.  Further response to issues raised are considered in section 14.11 paragraph 62 and paragraphs 89 to 94.
05 September 2023	MOD Infrastructure Organisation (DIO) - Letter	Consultation letter issued in response to the MOD representation in the Ossian Array Scoping Opinion to discuss predicted impact the RRHs Buchan and Brizlee Wood ADRs.  MOD-DIO responded with a request for an online meeting to discuss these items (see details below on 21 November 2023).	The MOD-DIO have confirmed an impact to RRH Brizlee Wood and Buchan ADRs by detection of the operational wind turbines. This has been considered in section 14.11 paragraphs 95 and 96. Engagement with the MOD-DIO will continue to reach a mutually suitable technical mitigation solution.
05 September 2023	MCA - Letter	Consultation letter issued to inform the MCA of the project development. The MCA representation in the Ossian Array Scoping Opinion provided no specific comment however the MCA did state that they would engage with regard to SAR specific requirements.	In response to the consultation letter, the MCA highlighted that engagement with helicopter operators engaged in support of the hydrocarbon industry should be completed. This is considered in Table 14.11, section 14.11 paragraphs 64 and 80.
06 September 2023	Aberdeen International Airport helicopter operators (Bristow, OHS, NHV and CHC Helicopters) – Letter	Consultation letter issued to inform the Aberdeen Airport based helicopter operators of the project development and request further feedback on whether the Array would impact their operations.	Bristow Helicopters were the only helicopter operator to respond - the Array is located outside of the Helicopter Main Route Indicators (HMRI) offshore route structure, so operations supporting offshore oil and gas recovery are unlikely to be affected on a day to day basis. This is considered in sections 14.7 (paragraph 33) and section 14.11 paragraph 73.
03 October 2023	Met Office - Letter	Consultation letter issued to inform the Met Office of the project development, in recognition of the Met Office statement (paragraph 5.5.32 of the National Policy Statement for Energy (NPS EN-1, March 2023)), that <i>'Some energy structures, such as wind turbines, have the potential to adversely impact weather radar signals, even beyond 100 km from the radar'</i> .	The north-western boundary for the Array is 96 km from the Met Office weather radar at Hill of Dudwick. The Met Office responded that the Hill of Dudwick weather radar system would not be impacted by the Array. No further engagement required.
21 November 2023	MOD-DIO – Online meeting	Meeting held with MOD-DIO via Teams to provide an update on the Array and wider Ossian project, present results of radar LoS for RRHs Buchan and Brizlee Wood ADR and discuss any additional concerns.	No additional concerns raised by MOD-DIO, the MOD stated that they had checked the operating parameters of PEXA D613 and had no concerns. The assessment of impacts on RRHs Buchan and Brizlee Wood is addressed in section 14.11.
13 December 2023	Aberdeen International Airport – Online meeting	Meeting held with Aberdeen International Airport via Teams to provide an update on the Array and wider Ossian project. Discussed the requirement of an IFP assessment and predicted impact to the Allanshill and Perwinnes PSRs.	No additional concerns were raised by Aberdeen International Airport. The assessment of impacts on Aberdeen International Airport operations are discussed in section 14.11 paragraphs 62 and 89. The IFP assessment for the Array is presented in volume 3, appendix 14.1, annex A. NATS have confirmed that the Allanshill PSR will not be affected (27 March 2024).
27 March 2024	NATS – Online Meeting	Meeting held with NATS via Teams to provide an update on the Array and wider Ossian project. Discussed NATS' representation within the Ossian Array Scoping Opinion. NATS confirmed that the preferred NATS mitigation will be as per their response to the consultation letter (see details above on 05 September 2023). NATS confirmed from the results of their technical assessment, that no impact will be created to the Allanshill PSR.	Impact to NATS infrastructure is considered in section 14.11 paragraphs 89 to 94. As confirmation was given by NATS during this meeting that no impact to the Allanshill PSR is expected, this has been scoped out of further assessment.
<b>Scoping Opinion</b>			
June 2023	Edinburgh International Airport Representation (March 2023)	Confirmed that <i>"the location of the development falls out with the Aerodrome Safeguarding Zone for Edinburgh International Airport; therefore, has no objection/comment"</i> .	Edinburgh Airport is scoped out from further analysis and is not considered further in the chapter.
June 2023	MCA Representation (April 2023)	<i>Any additional navigation safety and/or SAR requirements, as per MGN 654 Annex 5, will be agreed at the approval stage... Particular consideration will need to be given to the implications of the site size and location on SAR resources and Emergency Response Co-operation Plans (ERCoP).</i>	Engagement with the MCA will continue in development of the ERCoP.



Date	Consultee and Type of Consultation	Issue(s) Raised	Response to Issue Raised and/or Where Considered in this Chapter
June 2023	BT Group Representation (April 2023)	<i>The offshore Array area should not cause interference to BT's current and presently planned radio network.</i>	The BT current and presently planned radio network is scoped out from further analysis and is not considered further in the chapter.
June 2023	NATS Representation (April 2023)	<p><i>The proposed development has been examined by our technical safeguarding teams. In the timeframe given to us we have been unable to thoroughly investigate the effects of the proposed development on our operations, however, the relevant teams are being consulted.</i></p> <ul style="list-style-type: none"> <li><i>Based on our preliminary technical findings, the proposed development does conflict with our safeguarding criteria. Accordingly, NATS (En Route) plc objects to the proposal. We will notify you within 4-6 weeks of the results of our operational assessment. Only if this assessment shows the impact to be acceptable will we be able to withdraw our objection.</i></li> </ul> <p><i>Technical and Operational Assessment (TOPA) for Ossian Offshore Wind Farm Development NATS ref: SG35019</i></p> <ul style="list-style-type: none"> <li><i>En-route operational assessment of PSR impact:</i> <ul style="list-style-type: none"> <li><i>Prestwick Area Control Centre (ACC) – unacceptable</i></li> <li><i>Aberdeen International Airport – unacceptable</i></li> <li><i>Military Air Traffic Control (ATC) (Leuchars) – acceptable</i></li> </ul> </li> <li><i>En-route Radio Communication Assessment</i> <ul style="list-style-type: none"> <li><i>No impact is anticipated on NATS' radio communications infrastructure</i></li> </ul> </li> </ul>	NATS confirmed impact to Perwinnes PSR in its further response to the consultation letter (5 September 2023 above). In addition, this was confirmed at the online meeting with NATS held on 27 March 2024. This is considered within section 14.11.
June 2023	Aberdeen International Airport Representation (April 2023)	<p><i>The scoping report submitted has been examined from an aerodrome safeguarding perspective and we would make the following observations:</i></p> <ul style="list-style-type: none"> <li><i>The proposed site is located partially within the wind farm consultation zone for Aberdeen International Airport and as such aviation impacts should be considered as part of the EIA</i></li> <li><i>Some of the proposed wind turbines may be detected by Aberdeen International Airport's PSR and generate clutter on ATC displays and mitigation may be required.</i></li> </ul> <p><i>Our position with regard to this proposal will only be confirmed once the wind turbine details are finalized and we have been consulted on a full planning application.</i></p>	This is considered within section 14.11 paragraphs 62 and 89.  Additional consultation was undertaken with Aberdeen International Airport on 13 December 2023 via an online meeting, as described above, where their representation within the Ossian Array Scoping Opinion was discussed further. No additional concerns were raised in this meeting. An IFP assessment has been completed as part of the Array application and can be found in volume 3, appendix 14.1, annex A.
June 2023	MOD-DIO Representation (May 2023)	<p><i>The EIA scoping report relates only to the offshore array and recognises some of the principal defence issues relevant to MOD consideration of the proposed development</i></p> <p><i>The use of airspace in the vicinity of the proposed development for defence purposes has been appropriately identified. The Scoping Report highlights some of the aviation and radar systems that may be affected by the proposed wind farm and the MOD is identified as a relevant receptor in Chapter 7.3 Aviation, Military and Communications of the Scoping Report</i></p> <p><i>The report identifies that the proposed wind turbines have the potential to affect and be detectable to PSRs, both military and civilian systems, in the wider region. In paragraph 559 of the report it notes that the development has the potential to have an impact on the operation and capability of the ADR at Royal Air Force (RAF) Buchan and RAF Brizlee Wood. The impact on these radars should be considered in the preparation of any application for this scheme. The impact on radar systems may require technical mitigation(s) which would be provided by the applicant.</i></p> <p><i>Impact on military activity has been recognised in Table 7.9 of the scoping report. The designated site area sits below a military Practice and Exercise Areas (PEXA). Although the applicant has not identified this PEXA in the scoping report, the MOD do not anticipate that the development would have any substantial impact though further assessment will take place when additional information is available.</i></p> <p><i>In paragraph 560 of the scoping report the impact on military low flying has been scoped in, the applicant has identified that the array occupies Low Fly Area 14 (LFA 14). The applicant correctly identifies MOD as a consultee and identifies they are committed to lighting and charting the wind turbines. In the interests of air safety, the MOD would request that the development be fitted with MOD accredited aviation safety lighting in accordance with the CAA Air Navigation Order 2016.</i></p>	The operational floating wind turbines in the Array would be theoretically detectable by the RRH Buchan ADR; occasional detection cannot be ruled out in the southernmost part of the Array by the RRH Brizlee Wood ADR. This is considered within section 14.11 paragraphs 81 to 97.  Aeronautical PEXAs have been identified; the Array lies below D613 and has been scoped-out, in agreement with the MOD-DIO (see details of online meeting held on 21 November 2023). This is considered within section 14.7 (paragraph 32) and section 14.8.2 (Table 14.7).  Lighting and charting is considered within section 14.10 (Table 14.11).  Additional consultation was undertaken with the MOD-DIO on 21 November 2023 via an online meeting, as described above, where their representation within the Ossian Array Scoping Opinion was discussed further. No additional concerns were raised in this meeting.

Date	Consultee and Type of Consultation	Issue(s) Raised	Response to Issue Raised and/or Where Considered in this Chapter
June 2023	MD-LOT	<p><i>The Scottish Ministers largely agree with the impacts scoped in to and out of the EIA Report; however, highlight the MOD representation in relation to the military PEXAs.</i></p> <p><i>The Scottish Ministers also highlight the representation from NATS which predicts that the Array area is likely to generate false primary plots and also a reduction in the probability of Perwinnes PSR to detect real aircraft. NATS has also advised that the Array area will likely have unacceptable impacts to Prestwick ATC” and Aberdeen ATC. This view is supported in the representation from Aberdeen International Airport. The Scottish Ministers therefore recommend the Developer engage further with NATS on these points and advise that these impacts must be assessed, and appropriate mitigation proposed, in the EIA Report.</i></p> <p><i>The Scottish Ministers highlight the representation from MOD DIO, which acknowledges the potential for the proposed development to impact the operation and capability of the ADR at RAF Buchan and RAF Brizlee Wood. The Scottish Minsters, in line with MOD DIO advice, therefore, advise that these impacts must be assessed, and appropriate mitigation proposed, in the EIA Report. The Scottish Ministers, in line with MOD DIO representation, notes that the proposed development occupies Low Fly Area 14. In regard to air safety, the Scottish Ministers advise that the MOD accredited aviation safety lighting in accordance with Civil Aviation Authority Air Navigation Order 2016 is considered in the EIA Report.</i></p>	<p>Impact to PEXA is considered in paragraph 32 and Table 14.7</p> <p>Impact to Aberdeen International Airport and NATS is considered in Table 14.4 (above) and section 14.11.</p> <p>Impact to MOD is considered in Table 14.4 (above) and section 14.11.</p>

## 14.6. METHODOLOGY TO INFORM BASELINE

12. Aviation, military and communications guidance and airspace publications have been reviewed and analysed to inform this aviation, military and communications baseline. In addition, engagement with aviation, military and communications stakeholders has been carried out to aid the collection of baseline information. Data have also been provided through engagement with the stakeholders as detailed in Table 14.4.

### 14.6.1. DESKTOP STUDY

13. Information on airspace within the aviation, military and communications study area was collected through a detailed desktop review of existing datasets which are summarised in Table 14.5.

14. The literature review of the datasets was used to characterise the aviation, military and communications baseline. Volume 3, appendix 14.1 and volume 3, appendix 14.1, annex A include full details of the radar Line of Sight (LoS) and IFP analyses undertaken to develop the aviation, military and communications baseline.

**Table 14.5: Summary of Data Sets for Aviation, Military and Communications**

Title	Source	Extent	Year	Author
Military Aeronautical Information Publication (Mil AIP)	MOD	2023	2023	The Mil AIP (MOD, 2023a) is defined by the ICAO as a publication "intended primarily to satisfy international requirements for the exchange of aeronautical information of a lasting character essential to air navigation".
CAA 1:500,000 Visual Flight Rules (VFR) Aviation Chart Ed35 (CAA, 2023c)	NATS	2023	2023	The NATS Aeronautical Information System (AIS) team manages changes to aeronautical features on the UK VFR charts (CAA, 2023c) from numerous data sources, many of which operate within a regulated framework and many of which do not.
UK En Route Low Altitude North Sea West Offshore Installations (UK (L)) 5 OIL (MOD, 2023b)	MOD	2023	2023	MOD Aeronautical Information Distribution Unit (AIDU); Military low altitude aviation chart (MOD, 2023b) showing civil and military airspace constructs, routes, exercise areas and offshore surface entities

### 14.6.2. IDENTIFICATION OF DESIGNATED SITES

15. A three-step process was used to identify all designated sites within the aviation, military and communications study area and qualifying interest features that could be affected by the construction, operation and maintenance, and decommissioning phases of the Array. This process is described below:

- Step 1: All airspace constructs of national and local importance within the aviation, military and communications study area were identified using the sources listed in Table 14.5.
- Step 2: Information was compiled on the relevant use and features for each of these construct as follows:
  - stakeholder controlling authority;
  - stakeholder Air Traffic Service (ATS) provider;
  - stakeholder (operator) user; and
  - volume of airspace within the aviation, military and communications study area.
- Step 3: Using the above information and expert judgement, constructs were included for further consideration if:
  - a construct directly overlaps with the Array and therefore has the potential to be directly affected by the Array; or
  - construct and associated features were located within the aviation, military and communications study area for impacts associated with the Array.

16. Identified designated sites within the aviation, military and communications study area are shown in Figure 14.2. These include PSR locations, PEXAs, controlled airspace, PEXA Temporary Reserved Areas, and HMRI, and are further discussed in section 14.7.

### 14.6.3. SITE-SPECIFIC SURVEYS

17. No site-specific surveys have been undertaken to inform the EIA for aviation, military and communications receptors; as agreed via the Array EIA Scoping Report. The assessment within this chapter is desk-based. This is because sufficient information is available from CAA and Military Aviation Authority (MAA) guidance, regulation and publications and direct aviation stakeholder engagement.

## 14.7. BASELINE ENVIRONMENT

### 14.7.1. OVERVIEW OF BASELINE ENVIRONMENT

18. The following sections provide a summary of the aviation, military and communications baseline environment. Volume 3, appendix 14.1 and volume 3, appendix 14.1, annex A include full details of the analysis undertaken to develop the aviation, military and communications baseline and information on civil and military radar in the aviation, military and communications study area.

### 14.7.2. EXISTING BASELINE SCENARIO

19. In aviation and airspace terms, the world is divided into Flight Information Regions (FIR<sup>2</sup>) for the allocation of responsibility for the provision of an ATS to aircraft. The airspace above and around the Array is used by both civil and military aircraft, which are tracked by radar systems operated by both NATS and the MOD. The Array will be located within the Scottish FIR<sup>2</sup> in an area of Class G<sup>1</sup> uncontrolled airspace, which is established from surface up to FL 195 (approximately 19,500 ft). Above this Class G Airspace is Class C<sup>2</sup> Controlled Airspace (CAS).

<sup>1</sup> Class G airspace is uncontrolled, pilots may enter the airspace subject to a set of simple rules. Pilots are not obliged to contact air traffic control agencies, but many do for other traffic information, pilots remain responsible for their own safety.

<sup>2</sup> Class C airspace is controlled airspace in which instructions provided to pilots are mandatory. Subject to the flight conditions and type of flight, aircrafts are separated from each other within this class of airspace.

20. Aircraft operating within CAS must be in receipt of an ATS from NATS, military air traffic controllers located at a NATS ACC or under the control of military air defence controllers.

Civil aviation

21. The UK civil airport nearest to the Array is Aberdeen International Airport, which is located approximately 50 nm north-west of the site on a bearing of 292°.
22. Airports with published IFPs have associated Minimum Sector Altitudes (MSA). A MSA defines the minimum safe altitude an aircraft can descend to within a sector of radius 25 nm (approximately 46 km). These sectors provide obstacle clearance protection of at least 1,000 ft to aircraft within that area. This allows pilots of aircraft flying under Instrument Flight Rules (IFR)<sup>3</sup> the reassurance of properly designated obstacle and terrain clearance protection whilst making an approach and landing at an airport in poor weather.
23. Volume 3, appendix 14.1, annex A, includes full details of the IFP analysis undertaken to develop the aviation baseline. This concluded that the Array will not have an effect on the Obstacle Limitation Surfaces (OLS) and IFP that serve Aberdeen International Airport.
24. Volume 3, appendix 14.1, includes full details of the radar LoS analysis undertaken to develop the aviation baseline.
25. The radar LoS analysis indicates that the Perwinnes PSR will theoretically detect operational wind turbines at a maximum height of 399 m, which is likely to create a detrimental effect to the operation of the PSR. The Allanshill PSR will theoretically detect, intermittently, operational wind turbines located within the northern quarter of the Array (the closest to the radar location) (see volume 3, appendix 14.1, Figure 3.2). However, NATS have confirmed that the Allanshill PSR will not be effected. The potential impacts wind turbines may have on radar systems through radar detection of operational wind turbines may include the following:

- Twinkling appearance/blade flash effect can distract the air traffic controller from their primary task.
- Masking of real aircraft targets caused by increased clutter being displayed on the radar data display screen.
- Increase in unwanted targets or false aircraft tracks.
- Receiver saturation.
- Target desensitisation causing loss of valid aircraft targets that are of a small Radar Cross Section (RCS).
- Shadowing behind the wind turbines caused by physical obstruction (blocking of radar transmitted signal).
- Degradation of target processing capability and processing overload.
- Degradation of tracking capabilities including track seduction.

26. The CAA advises that effects on Secondary Surveillance Radar (SSR) are only relevant for consideration when wind turbines are located less than 10 km from the SSR CAP 764 (CAA, 2016a). The Array lies outside the area of interaction with any aviation related SSR systems therefore, as agreed in via consultation on the Array EIA Scoping Report, aviation SSR systems are scoped-out and not considered further in the Array EIA Report.

Military aviation

27. The MOD through the Air Surveillance and Control System (ASACS) is responsible for compiling a Recognised Air Picture (RAP) to monitor the airspace in and around the UK to launch a response to any potential airborne threat. This is achieved through the utilisation of a network of long-range ADR systems,

some of which are located along the east coast of the UK. ADR systems are similarly impacted by the detection of operational wind turbines as listed in paragraph 25. Due to their role in the defence of UK airspace; any identified impact of wind turbines on the ASACS Radar Systems that serve the airspace above the Array may potentially reduce the capability of the ASACS Force.

28. The nearest ADR to the Array is the TPS-77 (Type 92) ADR located at RRH Buchan, Aberdeenshire, which is located approximately 48 nm north-west of the site on a bearing of 316° from the closest Array boundary. RRH Brizlee Wood in Northumberland operates a TPS 77 type ADR and is located approximately 80 nm south-west of the site on a bearing of 215° from the closest Array boundary.
29. Radar LoS analysis predicts that the operation of the Buchan ADR may be affected by the detection of operational wind turbines placed within the Array (see volume 3, appendix 14.1, Figure 3.3). The Brizlee Wood ADR will theoretically not detect operational wind turbines placed within the Array at a blade tip height of 399 m; however, occasional detection cannot be ruled out in the southernmost part of the Array (the closest to the radar location) (see volume 3, appendix 14.1, Figure 3.5).
30. Leuchars Station PSR is located approximately 73 nm south-west of the site on a bearing of 245° from the closest Array boundary. Although there is potential for this PSR to detect the operational wind turbines of the Array, it is not envisaged that Leuchars air traffic controllers will be providing a radar ATS in the close (less than 10 nm) vicinity of the Array as this will be located outside of Leuchars Area of Responsibility (AoR), which is expected to extend around a 40 nm radius from the Leuchars Station PSR position. Within Class G airspace an ATS may be provided by NATS, or military controllers located at an ACC or air defence controllers subject to suitable radar and radio coverage being available to them.
31. Military low flying activities take place in uncontrolled airspace below 2,000 ft Above Mean Sea Level (AMSL) within defined LFA. The Array is adjacent to LFA 14; however, low flying activity also extends offshore therefore, military low flying is likely to take place above and around the Array. The MOD DIO (who safeguard MOD infrastructure) commonly request aviation obstruction lighting to be fitted to wind turbines in accordance with CAP 393 (CAA 2016, as amended 2022a). The fitment of aviation obstruction lighting will be detailed within a Lighting and Marking Plan (LMP), in line with CAP 764 (CAA, 2016a), which will be produced and consulted on post-consent. The outline LMP for the Array can be found in volume 4, appendix 26.
32. UK En Route Low Altitude North Sea West Offshore Installations (UK (L) 5 OIL) (MOD, 2023b) chart provides the location of military PEXA. The Array does not lie within any military aeronautical PEXA, however, it does lie beneath D613, a managed high intensity manoeuvring area (Figure 14.2). The MOD have confirmed through engagement (21 November 2023) that no effect will be created to D613; therefore, D613 has been scoped out from further assessment.

Helicopter operations

33. Commercial offshore helicopter operations in the North Sea encompass support to offshore oil and gas exploitation and SAR operations. Bristow Helicopters Ltd hold the UK Government national contract to deliver SAR operations on behalf of the MCA.
34. SAR are not constrained by Commercial Air Transport (CAT) Regulations as these flights are generally flown by His Majesty's Coastguard (HMCG) SAR aircraft operating under CAP 999 (CAA, 2023b). The Coastguard helicopters are operated as State Aircraft under National Regulations and are not constrained by the higher weather limits in CAT Regulations (CAA, 2023b)<sup>4</sup>. The closest MCA SAR helicopter base<sup>5</sup> to

<sup>3</sup> Instrument Flight Rules (IFR) are rules which allow properly equipped aircraft to be flown under Instrument Meteorological Conditions (IMC).

<sup>4</sup> CAP 999 defines the SAR operating minima as: "Operating minima for the dispatch and continuation of a SAR operational flight are at the discretion of the aircraft commander. However, he is to consider the urgency of the task, crew and aircraft capability and the requirement to recover the aircraft safely" (CAA, 2023b).

<sup>5</sup> Babcock Group Int also operates two specialist SAR aircraft to support the Oil and Gas industry from Aberdeen International Airport: the Integrated Search and Rescue (ISAR) Consortium (formerly Jigsaw Aviation).

the Array is Inverness Airport, approximately 114 nm north-west of the Array. SAR operations often involve flying at low level.

35. Helicopters supporting offshore oil and gas, in the northern North Sea, use Helicopter Main Route Indicators (HMRI), radiating from Aberdeen International Airport (the main support base) on a hub/spoke radial pattern (see Figure 14.2). These HMRI lie to the north of the Array; the closest being 4 nm to the north of the north-eastern boundary of the Array on a bearing of 21°. The CAA recommend within CAP 764 (CAA, 2016a) that there should be no obstacles within 2 nm either side of the centreline of a HMRI; the Array is located outside of the CAA recommended obstacle free distance. Moreover, the CAA also recommend that dependent on radar low level coverage required and the type of radar service required, it may be necessary to maintain a greater buffer than 2 nm.

Other radar and communications

36. The Met Office safeguards its weather radar and provides site-specific (radar) pre-planning advice for proposals sited in Met Office consultation zones; these zones extend to a 20 km (11 nm) radius of Met Office radar sites (OPERA, 2009). The Array is located outside of the consultation zone, at approximately 96 km from the nearest Met Office radar at Hill of Dudwick, Aberdeenshire. The Met Office have confirmed in response to engagement that the Array will not impact Met Office radar operations; therefore, Met Office radar is not considered further in the Array EIA Report.

Summary of baseline environment

37. A description of the aviation baseline environment is provided within the Aviation, Military and Communications Technical Report volume 3, appendix 14.1. The key sensitivities identified as part of the baseline assessment are as follows:
  - aviation and radar systems; civil and military; and
  - civil and military low flying including HMRI and SAR.

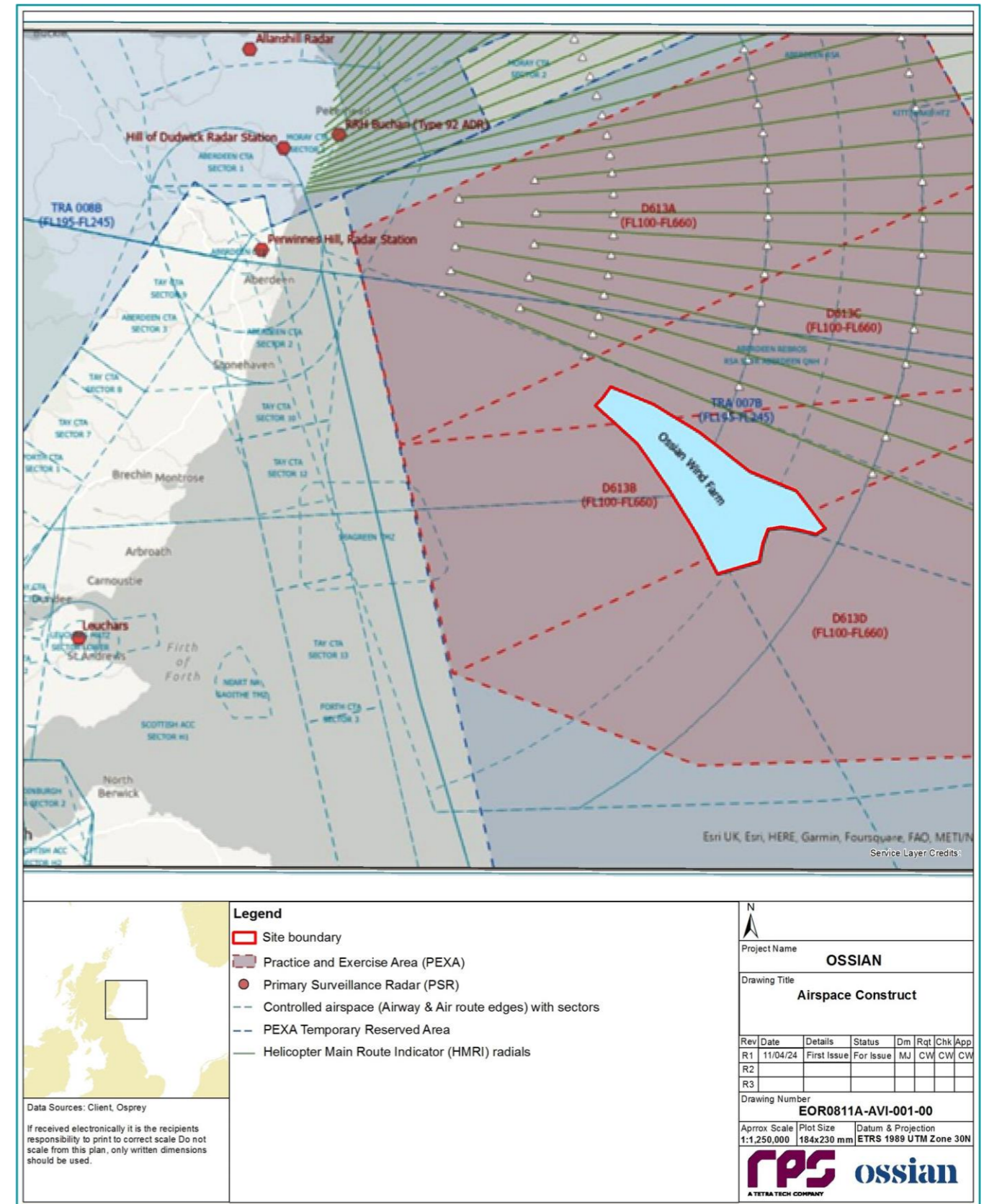


Figure 14.2: Aviation, Military and Communications Study Area Airspace Construct

### 14.7.3. FUTURE BASELINE SCENARIO

38. The EIA Regulations require that “a description of the relevant aspects of the current state of the environment (baseline scenario) and an outline of the likely evolution thereof without implementation of the project as far as natural changes from the baseline scenario can be assessed with reasonable effort, on the basis of the availability of environmental information and scientific knowledge” is included within the Array EIA Report.
39. If the Array does not come forward, an assessment of the ‘without development’ future baseline conditions has also been carried out and is described within this section.
40. The North Sea Transition Authority (NSTA) Oil and Gas Authority (OGA) Annual Report and Accounts 2022-2023 (NSTA, 2023) reported a predicted decline in gas production and usage in following years. Oil and gas operators continue to find it difficult to predict production accurately as older fields mature and their reliability reduces. The Prime Minister’s Office (PMO) and the Department for Energy Security and Net Zero (DESNZ) reported during July 2023 that the Prime Minister has committed to future oil and gas licensing rounds with two areas in the North Sea chosen as locations for carbon capture usage and storage clusters. The independent Climate Change Committee predicted around a quarter of the UK’s energy demand will still be met by oil and gas when the UK reaches net zero in 2050, the UK Government states that it is taking steps to slow the rapid decline in domestic production of oil and gas, which will secure UK domestic energy supply and reduce reliance on hostile states.
41. North Sea Natural Resources Ltd undertook previous works to drill an appraisal well in hydrocarbon licence Block 27/5 which is located 19 km north-east of the Array. This work was completed in November 2023 and the permit for drilling works expired at the end of January 2024. However, as old oil and gas fields are decommissioned it is considered that helicopter use to oil and gas platforms associated with these fields will eventually decline; however, as helicopter support to offshore wind increases it is expected that there may be increased aviation activity as new offshore areas are developed to support net zero targets.
42. Based on the timings of the development of the Array, the baseline environment for the aviation, military and communications assessment is not expected to change. The present airspace construct or usage, civil and military aviation, above and around the Array is not expected to change significantly.

### 14.7.4. DATA LIMITATIONS AND ASSUMPTIONS

43. The data used in this chapter is the most up to date publicly available information which can be obtained from the data sources as cited. Data have also been provided through engagement with the stakeholders detailed in Table 14.4. For the purposes of the aviation, military and communications assessment, it should be noted that the results of the radar LoS analysis (volume 3, appendix 14.1) are theoretical, and considered to be conservative. These results are provided in order to establish the reasonable worst-case possibility of impact to aviation, military and communications stakeholders.

## 14.8. KEY PARAMETERS FOR ASSESSMENT

### 14.8.1. MAXIMUM DESIGN SCENARIO

44. The maximum design scenarios identified in Table 14.6 are those expected to have the potential to result in the greatest effect on an identified receptor or receptor group. These scenarios have been selected from the details provided in volume 1, chapter 3 of the Array EIA Report. Effects of greater adverse significance are not predicted to arise should any other development scenario, based on details within the Project Description (volume 1, chapter 3) (e.g. different infrastructure layout), to that assessed here, be taken forward in the final design scheme.

**Table 14.6: Maximum Design Scenario Considered for Each Potential Impact as Part of the Assessment of LSE<sup>1</sup> on Aviation, Military and Communications**

Potential Impact	Phase <sup>6</sup>			Maximum Design Scenario	Justification
	C	O	D		
Creation of a physical obstacle to aircraft operations (including Airborne Search and Rescue (SAR) operations and Low Flying aircraft).	✓	✓	✓	<p><b>Construction Phase</b></p> <ul style="list-style-type: none"> <li>up to 8 years construction duration.</li> <li>during the construction phase the potential creation of physical obstacles to aircraft operations will be gradual as the presence of infrastructure increases. reaching the MDS outlined below in the operations and maintenance phase. The MDS in terms of the presence of infrastructure would be on the completion of construction, during the operations and maintenance phase.</li> </ul> <p><b>Operation and Maintenance Phase</b></p> <ul style="list-style-type: none"> <li>operational lifetime of up to 35 years;</li> <li>wind turbines: construction of 130 wind turbines with a maximum blade tip height of 399 m above LAT; and</li> <li>Offshore Substation Platforms (OSPs): construction of up to 6 large OSPs with a maximum height, inclusive of antenna structure of 109 m above LAT.</li> </ul> <p><b>Decommissioning Phase</b></p> <ul style="list-style-type: none"> <li>during the decommissioning phase creation of physical obstacles to aircraft operations would gradually decrease from the operational MDS as wind turbines and OSPs topsides are removed from above the level of the sea surface.</li> </ul>	Maximum physical obstruction from the largest wind turbine to aviation operations due to size and number of infrastructures above LAT within the Array.
Wind turbines causing interference to aviation Radar systems (including Primary Surveillance Radar (PSR) and Air Defence Radar (ADR)).	✗	✓	✗	<p><b>Operational and Maintenance Phase</b></p> <ul style="list-style-type: none"> <li>presence of up to 130 wind turbines with a maximum blade tip height of 399 m above LAT; and</li> <li>operational lifetime of up to 35 years.</li> </ul>	<p>ATC may be unable to provide an effective surveillance service due to interference on radar displays.</p> <p>The MOD operates ADR for the provision of State security and air traffic control services. Impacts on RRH Buchan ADR and RRH Brizlee Wood ADR are considered in section 14.11.</p> <p>NATS Perwinnes PSR (also used by air traffic controllers at Aberdeen International Airport to provide an ATS) is also considered in section 14.11.</p>

<sup>6</sup> C = Construction, O = Operation and maintenance, D = Decommissioning

14.8.2. IMPACTS SCOPED OUT OF THE ASSESSMENT

- 45. On the basis of the baseline environment and the Project Description outlined in volume 1, chapter 3 of the Array EIA Report, a number of impacts are proposed to be scoped out of the assessment for aviation, military and communications. This was either agreed with key stakeholders through consultation as discussed in volume 1, chapter 5, or otherwise, the impact was proposed to be scoped out in the Ossian Array EIA Scoping Report (Ossian OWFL, 2023) and no concerns were raised by key consultees within the Scoping Opinion (MD-LOT, 2023).
- 46. These impacts are outlined, together with a justification for scoping out, in Table 14.7.

**Table 14.7: Impacts Scoped Out of the Assessment for Aviation, Military and Communications**

Potential Impact	Phase <sup>7</sup>			Justification
	C	O	D	
Impact on military aviation radar systems: Buchan and Brizlee Wood (RRH) ADRs	✓	✗	✓	Wind turbine derived radar clutter will only be apparent when the wind turbines are operational.
Impact on civil aviation radar systems: (NATS) Perwinnes PSR	✓	✗	✓	Wind turbine derived radar clutter will only be apparent when the wind turbines are operational.
Impact on civil aviation radar systems: (NATS) Allanshill PSR	✓	✓	✓	NATS advised during the online meeting on 27 March 2024 (see Table 14.4) that there will be no impact on the Allanshill PSR from the Array, therefore it was agreed this could be scoped out of further assessment.
Impact on aviation radar systems: Leuchars Station	✓	✓	✓	Outside Leuchars Station AoR. The MOD (DIO) representation within the Ossian Array Scoping Opinion noted that the use of airspace in the vicinity of the Array for defence purposes has been appropriately identified.
Creation of an obstruction: PEXA	✓	✓	✓	There are no PEXAs within or surrounding the airspace of the Array. The designated site area sits below a military aeronautical PEXA (D613). Through engagement with the MOD-DIO, it was established that the MOD-DIO do not anticipate that the development would have any significant effect, therefore, it was agreed that this impact could be scoped out of the EIA.
Impact on aviation radar systems: SSR systems	✓	✓	✓	The Array lies outside the area of interaction with any aviation related SSR systems. The CAA advises that effects on Secondary Surveillance Radar (SSR) are only relevant for consideration when wind turbines are located less than 10 km from the SSR radar location (CAA, 2016a). The Array lies outside the area of interaction with any aviation related SSR systems therefore aviation SSR systems are scoped out of further assessment.
Impact to Met Office radar	✓	✓	✓	The Array lies outside any Met Office weather radar consultation zones. The Met Office representation within the Ossian Array Scoping Opinion and post-Scoping consultation (Table 14.4) noted that the Array will not impact Met Office radar operations, therefore, it was agreed that this impact could be scoped out of the EIA.
Creation of an obstruction impacting offshore helicopter operations supporting oil and gas recovery	✓	✓	✓	Helicopters supporting offshore oil and gas, in the northern North Sea, use HMRI radiating from Aberdeen International Airport (the main support base) on a hub/spoke radial pattern flying to offshore installations/platforms and the Array area lies 4 nm outside the HMRI. The CAA recommend within CAP 764 (CAA, 2016a) that there should be no obstacles within 2 nm either side of the centreline of a HMRI, The Array is located outside of the CAA recommended obstacle free distance. This impact has been scoped out of further assessment.

<sup>7</sup> C = Construction, O = Operation and maintenance, D = Decommissioning

Potential Impact	Phase <sup>7</sup>			Justification
	C	O	D	
Transboundary impacts	✓	✓	✓	The Array is located within UK airspace therefore this impact has been scoped out from further assessment.

14.9. METHODOLOGY FOR ASSESSMENT OF EFFECTS

14.9.1. OVERVIEW

- 47. The aviation, military and communications assessment of effects has followed the methodology set out in volume 1, chapter 6 of the Array EIA Report. Specific to the aviation, military and communications Array EIA chapter, the guidance documents in Table 14.3 have been considered.
- 48. In addition to the overarching policy and legislation as described in volume 1, chapter 2 of this Array EIA Report, the legislative framework relevant to this aviation, military and communications impact assessment within CAP 393 (CAA, 2016b, as amended 2022) has been considered.

14.9.2. CRITERIA FOR ASSESSMENT OF EFFECTS

- 49. When determining the significance of effects, a two-stage process is used which involves defining the magnitude of the potential impacts and the sensitivity of the receptors. This section describes the criteria applied in this chapter to assign values to the magnitude of potential impacts and the sensitivity of the receptors. The terms used to define magnitude and sensitivity are based on those which are described in further detail in volume 1, chapter 6 of the Array EIA Report.
- 50. The criteria for defining magnitude in this chapter are outlined in Table 14.8 and are based upon the technical expert's experience and judgement. Each assessment considered the spatial extent, duration, frequency and reversibility of impact when determining magnitude which are outlined within the magnitude section of each impact assessment (e.g. a duration of hours or days would be considered for most receptors to be of short-term duration, which is likely to result in a low magnitude of impact).

**Table 14.8: Definition of Terms Relating to the Magnitude of an Impact**

Magnitude of Impact	Definition
High	Loss of resource and/or quality and integrity of resource; severe damage to key characteristics, features or elements and/or long-term duration (i.e. total life of project) and/or frequency of repetition is continuous and/or effect is not reversible for project phase (Adverse) Large scale or major improvement or resource quality; extensive restoration or enhancement; major improvement of attribute quality (Beneficial)
Medium	Loss of resource, but not adversely affecting integrity of resource; partial loss of/damage to key characteristics, features or elements and/or medium-term duration (i.e. operational period) and/or frequency of repetition is medium to continuous and/or effect is not reversible for project phase (Adverse) Benefit to, or addition of, key characteristics, features or elements; improvement of attribute quality (Beneficial)



Magnitude of Impact	Definition
Low	Some measurable change in attributes, quality or vulnerability, minor loss or, or alteration to, one (maybe more) key characteristics, features or elements and/or short to medium term duration (i.e. construction phase) and/or frequency of repetition is low to continuous and/or effect is not reversible for project phase (Adverse) Minor benefit to, or addition of, one (maybe more) key characteristics, features or elements; some beneficial impact on attribute or a reduced risk of negative impact occurring (Beneficial)
Negligible	Very minor loss or detrimental alteration to one or more characteristics, features or elements and/or short- term duration (i.e. less than two years) and/or frequency of repetition is negligible to continuous and/or effect is reversible (Adverse) Very minor benefit to, or positive addition of one or more characteristics, features or elements (Beneficial)

51. The criteria for defining sensitivity in this chapter are outlined in Table 14.9 and are based upon the technical expert's experience and judgement.

**Table 14.9: Definition of Terms Relating to the Sensitivity of the Receptor**

Value (Sensitivity of the Receptor)	Description
Very High	Very high importance and rarity <sup>8</sup> , international receptor and/or the receptor or the activities of the receptor, is highly vulnerable to impacts that may arise from the project with no potential or very limited potential for recovery
High	High importance and rarity, international and/or national receptor and/or the receptor or the activities of the receptor, is generally vulnerable to impacts that may arise from the project and/or costly and limited potential for recovery
Medium	High or medium importance and rarity, regional receptor, is somewhat vulnerable to impacts that may arise from the project and moderate potential for recovery
Low	Low or medium importance and rarity, local receptor is not generally vulnerable to impacts that may arise from the project and high potential for recovery
Negligible	Very low importance and rarity, local receptor and/ or the receptor is not vulnerable to impacts that may arise from the project, and very high potential for recovery

52. The magnitude of the impact and the sensitivity of the receptor are combined when determining the significance of the effect upon aviation, military and communications stakeholders (operators). The particular method employed for this assessment is presented in Table 14.10.

53. Where a range is suggested for the significance of effect, for example, minor to moderate, it is possible that this may span the significance threshold. The technical specialist's professional judgement was applied to determine which outcome defines the most likely effect, which takes into account the sensitivity of the receptor and the magnitude of impact. Where professional judgement was applied to quantify final significance from a range, the assessment has set out the factors that result in the final assessment of significance. These factors may include the likelihood that an effect will occur, data certainty and relevant information about the wider environmental context.

54. For the purposes of this assessment:

- a level of residual effect of moderate or more will be considered a 'significant' effect in terms of the EIA Regulations; and
- a level of residual effect of minor or less will be considered 'not significant' in terms of the EIA Regulations.

<sup>8</sup> In aviation terms, "rarity" refers to the state or quality of being rare to the aviation user or service provider, e.g. resilience of radar, availability of a hub/node of operation, or the overall airspace.

55. 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 the decision-making process.

**Table 14.10: Matrix Used for the Assessment of the Significance of the Effect**

		Magnitude of Impact			
		Negligible	Low	Medium	High
Sensitivity of Receptor	Negligible	Negligible	Negligible to Minor	Negligible to Minor	Minor
	Low	Negligible to Minor	Negligible to Minor	Minor	Minor to Moderate
	Medium	Negligible to Minor	Minor	Moderate	Moderate to Major
	High	Minor	Minor to Moderate	Moderate to Major	Major
	Very High	Minor	Moderate to Major	Major	Major

## 14.10. MEASURES ADOPTED AS PART OF THE ARRAY

56. As part of the Array design process, a number of designed in measures have been proposed to reduce the potential for impacts on aviation, military and communications (see Table 14.11). They are considered inherently part of the design of the Array and, as there is a commitment to implementing these measures, these have been considered in the assessment presented in section 14.11 (i.e. the determination of magnitude and therefore significance assumes implementation of these measures). These designed in measures are considered standard industry practice for this type of development.

**Table 14.11: Designed In Measures Adopted as Part of the Array**

Designed In Measures Adopted as Part of the Array Justification	
<b>Primary Measures: Measures Included as Part of the Project Design</b>	
Development of, and adherence to, a Development Specification and Layout Plan (DSLPL) to confirm the final layout and design in consultation with the MCA and Northern Lighthouse Board (NLB).	Ossian Offshore Wind Farm Limited (OWFL) (hereafter referred to as "the Applicant") will consider MGN 654 (MCA, 2021), in addition to CAP 393 (CAA, 2016b as amended 2022), and CAP 764 (CAA, 2016a) where applicable. The Applicant has committed to a layout that will be compliant with MGN 654 which will incorporate at least one line of orientation.
<b>Tertiary Measures: Measures Required to Meet Legislative Requirements, or Adopted Standard Industry Practice</b>	
Development of, and adherence to an LMP (appendix 26).	<p>The LMP will confirm compliance with legal requirements with regards to shipping, navigation and aviation marking and lighting. Array aviation lighting will conform to the following:</p> <ul style="list-style-type: none"> <li>Red medium intensity aviation warning lights (of variable brightness between a maximum of 2,000 candela (cd)) to a minimum of 10% of the maximum which would be 200 cd) will be located on either side of the nacelle of significant peripheral wind turbines. These lights will flash simultaneously with a Morse W flash pattern and will also include an infra-red (IR) component.</li> <li>All aviation warning lights will flash synchronously throughout the Array and be able to be switched on and off by means of twilight switches (which activate when ambient light falls below a pre-set level).</li> <li>Aviation warning lights will allow for reduction in lighting intensity at and below the horizon when visibility from every wind turbine is more than 5 km (to a minimum of 10% of the maximum (i.e. 200 cd)).</li> <li>SAR lighting of each of the non-periphery wind turbines will be combi IR/200 cd steady red aviation hazard lights, individually switchable from the control centre at the request of the MCA (i.e. when conducting SAR operations in or around the Array).</li> <li>All wind turbines will be fitted with a low intensity light for the purpose of helicopter winching (green hoist lamp). All wind turbines will also be fitted with suitable illumination (minimum one 5 cd light) for identification signs.</li> </ul>
Notification to the Defence Geographic Centre (DGC) and National Air Traffic Surveys (NATS).	<p>Information regarding construction will be passed to the DGC (at <a href="mailto:dvof@mod.gov.uk">dvof@mod.gov.uk</a>) at least 10 weeks in advance of the obstacle type(s) erection detailing position, height (tip of arc) and type of aviation lighting. Once reported, all will be included in the Digital Vertical Obstruction File (DVOF) database and all that meet aviation chart inclusion criteria will be published for broader awareness.</p> <p>Appropriate information about the site construction and any associated lighting (where applicable), for example the height and temporary location of construction cranes, should be provided to the NATS AIS (for promulgation in applicable aviation publications including the UK Integrated Aeronautical Information Package (IAIP)) (CAA, 2023a).</p>
Development and implementation of an Emergency Response Co-operation Plans (ERCOP).	In line with MGN 654 (MCA, 2021) Annex 5 SAR requirements.

57. As provided in the Institute of Environmental Management and Assessment (IEMA) Guide to Delivering Quality Development (IEMA, 2016), where significant effects have been identified, further mitigation measures adopted (referred to as secondary mitigation, that are not "designed in") have been identified to reduce the significance of effect to acceptable levels following the initial assessment. These are measures

that could further prevent, reduce and, where possible, offset any adverse effects on the environment. These measures are set out in section 14.11 below in the sections on "Secondary Mitigation and Residual effect" and "Future Monitoring".

### 14.11. ASSESSMENT OF SIGNIFICANCE

58. Table 14.6 summarises the potential impacts arising from the construction, operation and maintenance and decommissioning phases of the Array, as well as the MDS against which each impact has been assessed. An assessment of the likely significance of the effects of the Array on the aviation, military and communications receptors caused by each identified impact is given below.

#### CREATION OF PHYSICAL OBSTACLE TO AIRCRAFT OPERATIONS (INCLUDING AIRBORNE SEARCH AND RESCUE (SAR) OPERATIONS AND LOW FLYING AIRCRAFT)

59. The construction, operation and maintenance, and decommissioning phases of the Array will lead to the creation of a physical obstacle to aircraft operations. The MDS in regard to aviation, is represented by the 130 floating wind turbines with a maximum blade tip height of 399 m above LAT and is summarised in Table 14.6.

Construction phase

#### Magnitude of impact

60. Wind turbine construction infrastructure above LAT could pose a physical obstruction to flight operations in the vicinity of the Array and specifically to military and other low flying operations including fisheries protection, pollution control and helicopters operating in the support of the renewable and hydrocarbon industries. Helicopter operators, the MOD and ATC service providers have been consulted with regard to the potential for the Array to create an obstruction to aviation, military and communications activities conducted in the vicinity of the floating wind turbines and OSPs. Construction infrastructure, OSPs and erected wind turbines can be difficult to see from the air, particularly in poor meteorological conditions leading to potential increased obstacle collision risk. Furthermore, during the construction phase, the presence and movement of associated infrastructure may present a potential obstacle collision risk to aircraft flight operations.

61. A range of designed in measures, in the form of appropriate notification to aviation, military and communications stakeholders, regularity of layout, and lighting and marking to minimise effects to aviation flight operations would apply to the development of the Array. These will comply with current guidelines where appropriate and be agreed with the appropriate stakeholders as outlined in Table 14.11. Pilots are obliged to plan their flying activities in advance and to be familiar with any enroute obstacles they may encounter; however, during flight, weather conditions or operational requirements may necessitate route adjustments. In Visual Meteorological Conditions (VMC), pilots are ultimately responsible for seeing and avoiding obstructions such as wind turbines and will be aware through notification procedures of the Array. Furthermore, when flying in Instrument Meteorological Conditions (IMC), pilots may be under the control of ATC with an appropriate level of radar service and flying at an altitude which provides the required separation from obstacles below them.

62. Volume 3, appendix 14.1, annex A includes full details of the IFP analysis undertaken to develop the aviation, military and communications baseline and assesses those Aberdeen International Airport IFPs which are within 50 nm of the Array. The IFP assessment was completed at a maximum blade tip height of 399 m LAT and has concluded that the Array will not breach the MSA or IFPs of Aberdeen International Airport. These areas provide an altitude at which a minimum of 1,000 ft above the highest obstacle is required for IFR flights.

63. The impact is predicted to be of regional spatial extent, short term (construction phase) duration, continuous with low reversibility (once construction has started). It is predicted that the impact will affect the receptor (low flying operations) directly. The magnitude is therefore considered to be low.

Sensitivity of the receptor

64. Low flying operations are deemed to be of high vulnerability, high recoverability, and high value. The sensitivity of the receptor is therefore, considered to be medium.

Significance of the effect

65. Overall, the magnitude of the impact is deemed to be low, and the sensitivity of the receptor is considered to be medium. The effect will, therefore, be of **minor** adverse significance, which is not significant in EIA terms.

Secondary mitigation and residual effect

66. No aviation, military and communications focussed secondary mitigation is considered necessary because the likely effect in the absence of further mitigation (beyond the designed in measures outlined in section 14.10) is not significant in EIA terms.

Operation and maintenance phase

Magnitude of impact

67. During the operations and maintenance phase of the Array, floating wind turbines and OSPs could pose a physical obstruction to the flight of aircraft operating in the vicinity of the Array, specifically to aircraft operating at low level. Helicopter operators, the MOD and ATC service providers have been consulted with regard to the potential for the Array to create an obstruction to aviation, military and communications activities conducted in the vicinity of the floating wind turbines and OSPs.

68. A range of designed in measures, in the form of appropriate notification to aviation, military and communications stakeholders, lighting and marking to minimise effects to aviation flight operations would apply to the development of the Array, as included in the commitments set out in Table 14.11. These commitments will comply with current guidelines and be agreed with the appropriate receptor aviation stakeholders.

69. 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 conditions, pilots are ultimately responsible for seeing and avoiding obstructions such as wind turbines and will be aware through notification procedures of the Array. When operating IMC pilots should be under the control of ATC with an appropriate level of radar service and flying at an altitude which provides the required separation from obstacles below them.

70. The impact is predicted to be of regional spatial extent, long-term duration, continuous and not reversible. It is predicted that the impact will affect the receptor (low flying operations) directly. However, with the designed in measures outlined in section 14.10, the magnitude is therefore considered to be low.

Sensitivity of the receptor

71. Low flying operations are deemed to be of high vulnerability, high recoverability, and high value. The sensitivity of the receptor is therefore, considered to be medium.

Significance of the effect

72. Overall, the magnitude of the impact is deemed to be low, and the sensitivity of the receptor is considered to be medium. The effect will, therefore, be of **minor** adverse significance, which is not significant in EIA terms.

Secondary mitigation and residual effect

73. No aviation, military and communications focussed secondary mitigation is considered necessary because the likely effect in the absence of further mitigation (beyond the designed in measures outlined in section 14.10) is not significant in EIA terms.

Decommissioning phase

Magnitude of impact

74. During the decommissioning phase, the presence and movement of decommissioning infrastructure may present a potential collision risk to aircraft in the vicinity of the Array and specifically to low flying aircraft. Helicopter operators, the MOD and ATC service providers have been consulted with regard to the potential for the Array to create an obstruction to aviation, military and communications activities conducted in the vicinity of the wind turbines and OSPs.

75. A range of designed in measures, in the form of appropriate notification to aviation, military and communications stakeholders, lighting and marking to minimise effects to aviation flight operations would apply to the development of the Array, as included in the commitments set out under Table 14.11. These commitments will comply with current guidelines and be agreed with the appropriate aviation, military and communications stakeholders.

76. 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 conditions, pilots are ultimately responsible for seeing and avoiding obstructions such as wind turbines and will be aware through notification procedures of the Array. When operating IMC pilots should be under the control of ATC with an appropriate level of radar service and flying at an altitude which provides the required separation from obstacles below them. It is expected that any mitigation implemented will remain in place until the last wind turbine has been removed.

77. The impact is predicted to be of regional spatial extent, short term duration, continuous and reversible. It is predicted that the impact will affect the receptor (low flying operations) directly. The magnitude is therefore considered to be low.

Sensitivity of the receptor

78. Low flying operations are deemed to be of high vulnerability, high recoverability, and high value. The sensitivity of the receptor is therefore, considered to be medium.

Significance of the effect

79. Overall, the magnitude of the impact is deemed to be low, and the sensitivity of the receptor is considered to be medium. The effect will, therefore, be of **minor** adverse significance, which is not significant in EIA terms.

#### Secondary mitigation and residual effect

80. No aviation, military and communications focussed secondary mitigation is considered necessary because the likely effect in the absence of further mitigation (beyond the designed in measures outlined in section 14.10) is not significant in EIA terms.

#### **WIND TURBINES CAUSING INTERFERENCE TO AVIATION RADAR SYSTEMS**

81. The operational floating wind turbines in the Array would be theoretically detectable by the NATS Perwinnes PSR systems (also used by air traffic controllers at Aberdeen International Airport to provide an ATS).
82. The operational floating wind turbines in the Array would also be theoretically detectable by the RRH Buchan ADR, and occasional detection cannot be ruled out in the southernmost part of the Array by the RRH Brizlee Wood ADR.
83. Wind turbines detectable by a PSR system might degrade the system by creating false targets, reduce system sensitivity, create radar shadowing behind the wind turbines and saturate the radar receiver leading to clutter potentially concealing real aircraft targets (paragraph 25).

#### Operation and maintenance phase

#### Magnitude of impact

84. Radar LoS modelling results indicate that, due to the location of the Array and the maximum blade tip height of the floating wind turbines, theoretical radar detectability is likely to affect the operations associated of the MOD and NATS. The impact is predicted to be of regional spatial extent, long term duration, continuous and low reversibility. It is predicted that the impact will affect the receptors (NATS, MOD and Aberdeen International Airport) directly. The magnitude is therefore considered to be high.

#### Sensitivity of the receptor

85. The ability of NATS, airport authorities and MOD operators of aviation PSR systems to accurately use their respective radar systems for the provision of an ATS, could be impacted by the presence of wind turbine interference and the production of radar clutter on radar displays. All aviation PSR receptors aim to ensure 'clutter free' radar to continue to deliver a safe and effective ATS and to securely monitor UK airspace. NATS operations (including those at Aberdeen International Airport) are deemed to be of high vulnerability, medium recoverability, and high value. The sensitivity of the receptor is therefore, considered to be very high.
86. MOD ADR operations are deemed to be of high vulnerability, low recoverability, and high value. The sensitivity of the receptor is therefore, considered to be very high.

#### Significance of the effect

87. For NATS operations, the magnitude of the impact is deemed to be high, and the sensitivity of the receptor is considered to be very high. The effect will, therefore, be of major adverse significance, which is significant in EIA terms.
88. For the MOD ADR operations, the magnitude of the impact is deemed to be high, and the sensitivity of the receptor is considered to be very high. The effect will, therefore, be of major adverse significance, which is significant in EIA terms.

#### Secondary mitigation and residual effect

#### **NATS**

89. In the airspace in which the Array is located, operational acceptance of the effect created is unlikely to be acceptable to all ATC providers without technical PSR mitigation, as portions of airspace may be more important to some ATC establishments than others, due to the role and responsibility of ATC provision allocated to them.
90. In the case of the NATS PSR system impacted (Perwinnes), previous acceptable mitigation of wind turbine impact to this system has been achieved through agreement by NATS of radar blanking and infill. However, there are no other suitable radar systems that do not theoretically detect the Array and would provide suitable infill data to be operationally effective.
91. Any technical ATS PSR mitigation decided upon will be subject to commercial agreement between the Applicant and NATS and will be implemented by radar blanking of the affected areas of the Perwinnes PSR which will selectively remove all wind turbine radar returns. However, all other radar returns in the blanked area will also be removed.
92. To resolve the removal of radar returns through radar blanking, an application to the CAA for an airspace change and the provision of a Transponder Mandatory Zone (TMZ) will remove impact created by the Array to the effected NATS PSR. A TMZ is a defined piece of airspace in which the carriage and operation of a pressure-altitude transponder is mandatory within an aircraft. The creation of a TMZ allows the airspace within and above the development to retain its original classification, yet also allows for enhanced situational awareness for all users and for air traffic controllers. Provision can be made for non-compliant aircraft to gain access to the TMZ; the creation of the TMZ will require regulatory approval by the CAA through an airspace change proposal.
93. This impact is one that industry has substantial experience of resolving and there is no known reason why suitable mitigation will not be agreed for the Array.
94. The MOD, DESNZ, The Crown Estate (TCE) and the Offshore Wind Industry Council (OWIC) workstream 'Programme B' has been established working with the Department for Transport (DfT), DESNZ the CAA, and NATS, looking to establish a strategic solution around offshore TMZ and future requirements for offshore aviation Communication, Navigation and Surveillance (CNS). Overall, following application of the proposed secondary mitigation, the magnitude of the impact is deemed to be negligible, and the sensitivity of the receptor is considered to be high. The effect will, therefore, be of **minor** adverse significance, which is not significant in EIA terms.

#### **MOD**

95. In the case of RRH Buchan ADR, previous acceptable secondary mitigation of wind turbine impact to the MOD ADR systems has been achieved through agreement by MOD of the use of a Non-Auto Initiation Zones (NAIZ). Employment of this mitigation solution will require agreement from the MOD that the air defence task can be maintained with this mitigation in place. Commercial agreement between the Applicant and MOD will be required and once implemented the NAIZ mitigation solutions will be implemented over the Array. If a NAIZ is not suitable to mitigate effect, it is the intention of the Applicant to follow the direction provided in the jointly signed Strategy and Implementation Plan Issue 1 dated September 2021, the output of the MOD's air defence radar mitigation procurement programme (Programme NJORD) and the opportunity to employ the acceptable mitigation(s). The aim of this Programme is to deliver an enduring technical mitigation(s) across the UK in which the Applicant would seek to potentially use in due course, removing the need for interim mitigations such as NAIZ.
96. The UK Defence and Security Accelerator (DASA) has launched a competition seeking proposals that can provide future offshore wind farm mitigation for UK ADR. The MOD, DESNZ, TCE and the OWIC have formed a Joint Task Force (JTF) whose aim is to enable co-existence of air defence and offshore wind. In

September 2021, the task force published a strategy document entitled Air Defence and Offshore Wind, Working Together Towards Net Zero (JTF, 2021)<sup>9</sup> which sets out the process of the development of future technical radar mitigation schemes to mitigate ADR from the impact created by the radar detectability of operational wind turbines. Potential technical radar mitigation solutions have been identified and these systems have demonstrated that they could potentially support wind farm development, the JTF are working towards the procurement of an ADR technical mitigation solution which once deployed will provide an enduring solution.

Engagement with MOD continues with the expectation that, if required, an enduring technical mitigation solution will be agreed, which will reduce the magnitude of the impact; therefore, and when secondary mitigation is in place the residual effect to the impacted MOD ADR systems will be of **minor** adverse significance, which is not significant in EIA terms.

#### Future monitoring

97. No aviation, military and communications monitoring to test the predictions made within the impact assessment is considered necessary.

## 14.12. CUMULATIVE EFFECTS ASSESSMENT

### 14.12.1. METHODOLOGY

98. The Cumulative Effects Assessment (CEA) assesses the impact associated with the Array together with other relevant plans, projects and activities. Cumulative effects are defined as the combined effect of the Array in combination with the effects from a number of different projects, on the same receptor or resource. Further details on CEA methodology are provided in volume 1, chapter 6.
99. The projects and plans selected as relevant to the CEA presented within this chapter are based upon the results of a screening exercise (see volume 3, appendix 6.4 of the Array EIA Report). Volume 3, appendix 6.4 further provides information regarding how information pertaining to other plans and projects is gained and applied to the assessment. Each project or plan has been considered on a case-by-case basis for screening in or out of this chapter's assessment based upon data confidence, impact-receptor pathways and the spatial/temporal scales involved.
100. In undertaking the CEA for the Array, it should be noted that other projects and plans under consideration will have differing potential for proceeding to an operational stage and hence a differing potential to ultimately contribute to a cumulative impact alongside the Array. Therefore, a tiered approach has been adopted which provides a framework for placing relative weight upon the potential for each project/plan to be included in the CEA to ultimately be realised, based upon the project/plan's current stage of maturity and certainty in the projects' parameters. The tiered approach which will be utilised within the Array CEA employs the following tiers:
- Tier 1 assessment – Array with Proposed offshore export cable corridor(s) and Proposed onshore transmission infrastructure, and projects which became operational since baseline characterisation, those under construction and those with consent application(s) submitted but not yet determined;
  - Tier 2 assessment – All plans/projects assessed under Tier 1, plus those projects with a Scoping Report;
  - Tier 3 assessment – All plans/projects assessed under Tier 2, which are reasonably foreseeable, plus those projects likely to come forward where an Agreement for Lease (AFL) has been granted.
101. For the purposes of the EIA process in the assessment of the creation of a physical obstacle to aircraft operations, the cumulative effect to aviation, military and communications has been assessed within 40 km from the Array, which is considered to be the maximum range where the creation of an aviation obstacle

to fixed wing and rotary aircraft operating offshore may occur although some impacts are likely to be localised to the Array.

102. For the purposes of this chapter, the assessment of wind turbines causing interference on aviation radar systems (including PSR and ADR), the cumulative effect to aviation, military and communications has been assessed within 100 km from the Array, which is considered to be the maximum range where aviation, military and communications cumulative effects may occur although some impacts are likely to be localised to the Array due to the unmitigated effect created by the detection of operational wind turbines.
103. It should be noted that the Proposed offshore export cable corridor(s) and Proposed onshore transmission infrastructure have been scoped out of the CEA for aviation, military and communications as there is no pathway for cumulative effect.
104. The specific projects scoped into the CEA for aviation, military and communications are outlined in Table 14.12.

<sup>9</sup> Policy paper: Air defence and offshore wind - working together towards Net Zero (29 September 2021)

**Table 14.12: List of Other Projects and Plans Considered within the CEA for Aviation**

Project/Plan	Status [i.e. Application, Consented, Under Construction, Operational]	Distance from Array Area (km)	Description of Project/Plan	Dates of Construction (If Applicable)	Dates of Operation (If Applicable)	Overlap with the Array [e.g. Project Construction Phase Overlaps with Array Construction Phase]
<b>Tier 1</b>						
<b>Offshore Wind Projects and Associated Cables</b>						
Aberdeen Offshore Wind Farm	Active/In Operation	79.32	Up to 96.8 MW (up to 11 wind turbines)	N/A	2018 to 2045	The operational phase of the Aberdeen Offshore Wind Farm overlaps with the construction and operation and maintenance phases of the Array.
Berwick Bank Offshore Wind Farm	Planning	56.84	Up to 4.1 GW (up to 307 wind turbines)	2025 to 2032	2033 onwards	The construction and operational phases of the Berwick Bank Offshore Wind Farm overlap with the construction and operation and maintenance phases of the Array.
Green Volt Offshore Wind Farm	Planning	100.84	Up to 560 MW (up to 35 wind turbines)	2025 to 2029	2030 onwards	The operational phase of the Green Volt Offshore Wind Farm overlap with the construction and operation and maintenance phases of the Array.
Hywind (Buchan Deep Demonstration)	Active/In Operation	72.1	Up to 30 MW (up to 5 wind turbines)	N/A	2017 to 2042	The operational phase of the Hywind Offshore Wind Farm overlaps with the construction and operation and maintenance phases of the Array.
Inch Cape Offshore Wind Farm	Consented	86.92	Up to 784 MW (up to 72 wind turbines)	2025 to 2026	2027 onwards	The operational phase of the Inch Cape Offshore Wind Farm overlap with the construction and operation and maintenance phases of the Array.
Kincardine Offshore Wind Farm	Active/In Operation	61.65	Up to 50 MW (up to 6 wind turbines)	N/A	2021 to 2046	The operational phase of the Kincardine Offshore Wind Farm overlaps with the construction and operation and maintenance phases of the Array.
Seagreen 1 Offshore Wind Farm	Active/In Operation	50.72	Up to 1,075 MW (up to 114 turbines)	N/A	Up to 2038	The operational phase of the Seagreen 1 Offshore Wind Farm overlaps with the construction and operation and maintenance phases of the Array.
Seagreen 1A Project	Consented	66.28	Up to 36 turbines	2024 to 2025	2026 to 2046	The operational phase of the Seagreen 1A Project overlaps with the construction and operation and maintenance phases of the Array.
No Oil and Gas projects, plans and activities, identified within the aviation, military and communications cumulative study area, with conceptual pathway or physical effect-receptor overlap with the Array.						
No Aggregate Extraction projects, plans and activities, identified within the aviation, military and communications cumulative study area, with conceptual pathway or physical effect-receptor overlap with the Array.						
No Disposal Site projects, plans and activities, identified within the aviation, military and communications cumulative study area, with conceptual pathway or physical effect-receptor overlap with the Array.						
No Coastal Protection/Infrastructure projects, plans and activities, identified within the aviation, military and communications cumulative study area, with conceptual pathway or physical effect-receptor overlap with the Array.						
No Subsea Cable (Telecommunications and Interlinks) and Pipeline projects, plans and activities, identified within the aviation, military and communications cumulative study area, with conceptual pathway or physical effect-receptor overlap with the Array.						
No MOD sites, projects, plans and activities, identified within the aviation, military and communications cumulative study area, with conceptual pathway or physical effect-receptor overlap with the Array.						
<b>Tier 2</b>						
<b>Offshore Wind Projects and Associated Cables</b>						

Project/Plan	Status [i.e. Application, Consented, Under Construction, Operational]	Distance from Array Area (km)	Description of Project/Plan	Dates of Construction (If Applicable)	Dates of Operation (If Applicable)	Overlap with the Array [e.g. Project Construction Phase Overlaps with Array Construction Phase]
Cenos Offshore Wind Farm	Scoping	91.7 km	Up to 3 MW	Unknown	Unknown	The construction phase of Cenos Offshore Wind Farm might overlap with the construction and operation and maintenance phases of the Array.
Morven Offshore Wind Farm	Scoping	5.5	Up to 2300MW (up to 191 wind turbines)	2031 to 2037	2038 onwards	The construction and operational phases of the Morven Offshore Wind Farm overlap with the construction and operation and maintenance phases of the Array.
Muir Mhor Offshore Wind Farm	Scoping	51.38	Up to 798 MW	2027 to 2029	2030 onwards	The operational phases of the Muir Mhor Offshore Wind Farm overlap with the construction and operation and maintenance phases of the Array.
Salamander Offshore Wind Farm	Scoping	79.49 km	Up to 100 MW	Unknown	Unknown	The construction phase of Salamander Offshore Wind Farm might overlap with the construction and operation and maintenance phases of the Array.
No Oil and Gas projects, plans and activities, identified within the aviation, military and communications cumulative study area, with conceptual pathway or physical effect-receptor overlap with the Array.						
No Aggregate Extraction projects, plans and activities, identified within the aviation, military and communications cumulative study area, with conceptual pathway or physical effect-receptor overlap with the Array.						
No Disposal Site projects, plans and activities, identified within the aviation, military and communications cumulative study area, with conceptual pathway or physical effect-receptor overlap with the Array.						
No Coastal Protection/Infrastructure projects, plans and activities, identified within the aviation, military and communications cumulative study area, with conceptual pathway or physical effect-receptor overlap with the Array.						
No Subsea Cable (Telecommunications and Interlinks) and Pipeline projects, plans and activities, identified within the aviation, military and communications cumulative study area, with conceptual pathway or physical effect-receptor overlap with the Array.						
No MOD sites, projects, plans and activities, identified within the aviation, military and communications cumulative study area, with conceptual pathway or physical effect-receptor overlap with the Array.						
<b>Tier 3</b>						
<b>Offshore Wind Projects and Associated Cables</b>						
Bellrock Offshore Wind Farm	Pre-Planning	8.67 km	Up to 1,200 MW	Unknown	Unknown	The operational phases of the Bellrock Offshore Wind Farm might overlap with the construction and operation and maintenance phases of the Array.
Bowdun Offshore Wind Farm	Planning	25.36	Bowdun Offshore Wind Farm is proposed for up to 60 turbines at a capacity of 1,000 MW.	Unknown	Unknown	The construction and operational phases of the Bowdun Offshore Wind Farm might overlap with the construction and operation and maintenance phases of the Array.
Campion Offshore Wind Farm	Pre-Planning	44.15 km	Up to 2,000 MW (up to 100 wind turbines)	Unknown	Unknown	The operational phase of the Campion Offshore Wind Farm might overlap with the construction and operation and maintenance phases of the Array.
Flora Floating Wind Farm	Pre-Planning	68.41 km	Up to 50 MW	Unknown	Unknown	The construction phase of Flora Floating Wind Farm might overlap with the construction and operation and maintenance phases of the Array.
Aspen	Pre-Planning	85.61 km	Up to 1,350 MW	Unknown	Unknown	The construction phase of Aspen might overlap with the construction and operation and maintenance phases of the Array.

Project/Plan	Status [i.e. Application, Consented, Under Construction, Operational]	Distance from Array Area (km)	Description of Project/Plan	Dates of Construction (If Applicable)	Dates of Operation (If Applicable)	Overlap with the Array [e.g. Project Construction Phase Overlaps with Array Construction Phase]
Cedar	Pre-Planning	51.65 km	Up to 1,008 MW	Unknown	Unknown	The construction phase of Cedar might overlap with the construction and operation and maintenance phases of the Array.
No Oil and Gas projects, plans and activities, identified within the aviation, military and communications cumulative study area, with conceptual pathway or physical effect-receptor overlap with the Array.						
No Aggregate Extraction projects, plans and activities, identified within the aviation, military and communications cumulative study area, with conceptual pathway or physical effect-receptor overlap with the Array.						
No Disposal Site projects, plans and activities, identified within the aviation, military and communications cumulative study area, with conceptual pathway or physical effect-receptor overlap with the Array.						
No Coastal Protection/Infrastructure projects, plans and activities, identified within the aviation, military and communications cumulative study area, with conceptual pathway or physical effect-receptor overlap with the Array.						
No Subsea Cable (Telecommunications and Interlinks) and Pipeline projects, plans and activities, identified within the aviation, military and communications cumulative study area, with conceptual pathway or physical effect-receptor overlap with the Array.						
No MOD sites, projects, plans and activities, identified within the aviation, military and communications cumulative study area, with conceptual pathway or physical effect-receptor overlap with the Array.						

14.12.2. MAXIMUM DESIGN SCENARIO

Table 14.13: Maximum Design Scenario Considered for Each Impact as part of the Assessment of Likely Significant Cumulative Effects on Aviation, Military and Communications

Potential Cumulative Effect	Phase <sup>10</sup>			Tier	Maximum Design Scenario
	C	O	D		
Creation of a physical obstacle to aircraft operations (including Airborne Search and Rescue (SAR) operations and Low Flying aircraft)	✓	✓	✓	Tier 1, 2 and 3	MDS as described for the Array (Table 14.6) assessed cumulatively with the following other projects/plan within 40 km of the Array; this includes the presence of other developments (projects, plans/activities) which will have the potential to create a cumulative aviation obstacle and affect the available airspace for other users in the same region within a representative 40 km buffer of the Array.
Wind turbines causing interference on aviation radar systems (including PSR and ADR)	✗	✓	✗	Tier 1, 2 and 3	MDS as described for the Array (Table 14.6) assessed cumulatively with the following other projects/plan within 100 km of the Array; this includes the presence of other developments (projects, plans/activities) which will have the potential to create a cumulative aviation radar affect within a representative 100 km buffer of the Array.

<sup>10</sup> C = Construction, O = Operation and maintenance, D = Decommissioning



14.12.3. CUMULATIVE EFFECTS ASSESSMENT

105. An assessment of the likely significance of the cumulative effects of the Array upon aviation, military and communications receptors arising from each identified impact is given below. Certain impacts assessed for the Array alone are not considered in the cumulative assessment due to:
- The highly localised nature of the impacts (i.e. they occur entirely within the Array).
  - Management measures in place for the Array will also be in place on other projects reducing their risk of occurring.
  - Where the potential significance of the impact from the Array alone has been assessed as negligible.
  - A lack of data or confidence in data preventing meaningful assessment (i.e. Tier 3).
106. The MDSs identified in Table 14.13 have been selected as those having the potential to result in the greatest effect on an identified receptor or receptor group. The cumulative effects presented and assessed in this section have been selected from the details provided in volume 1, chapter 3 of the Array EIA Report as well as the information available on other projects, plans and activities (see volume 3, appendix 6.4), to inform the MDS. Effects of greater adverse significance are not predicted to arise should any other development scenario, based on details within the PDE (e.g. different wind turbine layout), to that assessed here, be taken forward in the final design scheme.

**CREATION OF PHYSICAL OBSTACLE TO AIRCRAFT OPERATIONS (INCLUDING AIRBORNE SEARCH AND RESCUE (SAR) OPERATIONS AND LOW FLYING AIRCRAFT**

107. The construction, operation and maintenance, and decommissioning phases of the Array floating wind turbines, and Tier 1, 2 and 3 projects/plans in Table 14.12, will lead to the creation of a physical obstacle to aircraft operations. The MDS is represented by the 130 floating wind turbines with a maximum blade tip height of 399 m above LAT and is summarised in Table 14.13.
108. A range of designed in measures, in the form of appropriate notification to aviation, military and communications stakeholders, regularity of layout and lighting and marking to minimise effects to aviation flight operations would apply to the development of the Array. These will comply with current guidelines where appropriate and be agreed with the appropriate stakeholders and are outlined in paragraph 61 explains pilots' obligations for route planning and avoidance of enroute obstructions.
109. For the purposes of this Array EIA Report chapter, this cumulative impact has been assessed within 40 km from the Array, which is considered to be the maximum range where the creation of an aviation obstacle to fixed wing and rotary aircraft operating offshore may occur although some impacts are likely to be localised to the Array. Tier 1, 2 and 3 projects/plans are listed in Table 14.12.

Tiers 1/2/3

Construction phase

**Magnitude of impact**

110. There is potential for cumulative effect as a result of construction activities associated with the Array.
111. Aviation operations in the UK are highly regulated. The Array will be located in airspace where the provision of an ATS is routine. The same rules of the air which maintain a safe operating environment in the current baseline will apply in the northern North Sea off the coast of Angus, Kincardineshire and Aberdeenshire during all phases of the Array and other projects considered in the cumulative assessment; the provision of an ATS will not be affected.

112. The cumulative impact is predicted to be of regional spatial extent, short term duration, continuous (temporal overlapping developments) with low reversibility once construction has started. It is predicted that the impact will affect the receptor directly. The magnitude is therefore, considered to be low.

**Sensitivity of receptor**

113. At times of sufficient visibility VMC pilots are ultimately responsible for seeing and avoiding obstructions such as wind turbines and other infrastructure and will be aware through notification procedures of the projects. When flying in low visibility IMC pilots will be operating above the MSA and utilising on board systems which detects obstructions and be under the control of ATC with an appropriate level of radar service.
114. Helicopter operators, the MOD and ATC service providers have been consulted with regard to the potential for the Array to create an obstruction to aviation activities conducted in the vicinity of the floating wind turbines and OSPs.
115. Low level flight operators' ability to continue using the northern North Sea airspace is deemed to be of high vulnerability, high recoverability and high value. The sensitivity of the receptor is therefore, considered to be medium.

**Significance of effect**

116. Overall, the magnitude of the cumulative effect is deemed to be low, and the sensitivity of the receptor is considered to be medium. The cumulative effect will, therefore, be of **minor** adverse significance, which is not significant in EIA terms.

**Further mitigation and residual effect**

117. No further aviation, military and communications mitigation is considered necessary because the likely effect in the absence of further mitigation (beyond the designed in measures outlined in section 14.10) is not significant in EIA terms.

Operation and maintenance phase

**Magnitude of impact**

118. The cumulative impact is predicted to be of regional spatial extent, long term duration, continuous (temporal overlapping developments) and low reversibility. It is predicted that the impact will affect the receptor (low flying operations) directly and consented offshore wind farms considered in the CEA (Table 14.12) will incorporate/adopt similar warning/notification designed-in measures (Table 14.11). The magnitude is therefore, considered to be low.

**Sensitivity of receptor**

119. As discussed in paragraphs 114 and 115, low level flight operators' ability to continue using the northern North Sea airspace is deemed to be of high vulnerability, high recoverability and high value. The sensitivity of the receptor is therefore, considered to be medium.

**Significance of effect**

- 120. Overall, the magnitude of the cumulative impact is deemed to be low, and the sensitivity of the receptor is considered to be medium. The cumulative effect will, therefore, be of **minor** adverse significance, which is not significant in EIA terms.

**Further mitigation and residual effect**

- 121. No further aviation mitigation is considered necessary because the likely effect in the absence of further mitigation (beyond the designed in measures outlined in section 14.10) is not significant in EIA terms.

Decommissioning phase

**Magnitude of impact**

- 122. The cumulative impact is predicted to be of regional spatial extent, short term duration, continuous (temporal overlapping developments) and low reversibility once the decommissioning process has commenced. It is predicted that the impact will affect the receptor (low flying operations) directly. The magnitude is therefore, considered to be low.

**Sensitivity of receptor**

- 123. As discussed in paragraphs 114 and 115, low level flight operators' ability to continue using the northern North Sea airspace is deemed to be of high vulnerability, high recoverability and high value. The sensitivity of the receptor is therefore, considered to be medium.

**Significance of effect**

- 124. Overall, the magnitude of the cumulative impact is deemed to be low, and the sensitivity of the receptor is considered to be medium. The cumulative effect will, therefore, be of **minor** adverse significance, which is not significant in EIA terms.

**Further mitigation and residual effect**

- 125. No further aviation, military and communications mitigation is considered necessary because the likely effect in the absence of further mitigation (beyond the designed in measures outlined in section 14.10) is not significant in EIA terms.

**WIND TURBINES CAUSING INTERFERENCE TO AVIATION RADAR SYSTEMS**

- 126. The operational floating wind turbines in the Array and the majority of the Tier 1, 2 and 3 projects/plans in Table 14.12 would be theoretically detectable to some degree by the NATS Perwinnes PSR system (also used by air traffic controllers at Aberdeen International Airport to provide an ATS).
- 127. In addition, the operational floating wind turbines in the Array and the majority of the Tier 1, 2 and 3 projects/plans in Table 14.12 would be theoretically detectable to some degree by the RRH Buchan ADR; and occasional detection cannot be ruled out from the RRH Brizlee Wood ADR.
- 128. Wind turbines detectable by a PSR system might degrade the system by creating false targets, reduce system sensitivity, create radar shadowing behind the wind turbines and saturate the radar receiver leading to clutter potentially concealing real aircraft targets (paragraph 25).
- 129. The ability of NATS, airport authorities and MOD operators of aviation PSR and ADR systems to accurately use their respective radar systems for the provision of an ATS, could be impacted by the presence of wind

turbine interference and the production of radar clutter on radar displays. All aviation PSR receptors aim to ensure 'clutter free' radar to continue to deliver a safe and effective ATS and to securely monitor UK airspace.

- 130. For the purposes of this Array EIA Report chapter, this cumulative impact to aviation radar has been assessed within 100 km from the Array, which is considered to be the maximum range where radar cumulative effects may occur although some impacts are likely to be localised to the Array due to the unmitigated effect created by the detection of operational floating wind turbines. The Tier 1, 2 and 3 projects/plans are listed in Table 14.12.

Operation and maintenance phase

**Magnitude of impact**

*NATS*

- 131. The cumulative impact to NATS is predicted to be of limited regional spatial extent (due to maximum range coverage restriction of the NATS Perwinnes PSR), long-term duration, continuous (with extensive temporal overlapping developments) and low reversibility. It is predicted that the impact will affect the receptors (NATS and Aberdeen International Airport) directly. The magnitude is therefore considered to be high.

*MOD*

- 132. The cumulative impact to the MOD is predicted to be of regional spatial extent (due to wide-ranging maximum range coverage), long term duration, continuous (with extensive temporal overlapping developments) and low reversibility. It is predicted that the impact will affect the receptor (MOD) directly. The magnitude is therefore considered to be high.

**Sensitivity of receptor**

- 133. Theoretical radar LoS analysis for the NATS Perwinnes PSR together with theoretical detection of the operational floating wind turbines by the MOD ADR systems at Buchan and to a lesser extent Brizlee Wood indicates that the operational Array floating wind turbines with a tip height of 399 m above LAT would be considered to be detectable (by varying degrees) to the PSR and ADR systems. It is likely that those consented and operational wind farms included in the CEA are already mitigated against the effect to aviation radar through non-objection or agreements with NATS and/or the MOD leading to a withdrawal of objection. Unmitigated, the potential cumulative effect created by the detection of operational Array floating wind turbines will be to potentially add to radar screen clutter that presently may be operationally managed by the aviation stakeholder, potentially leading to an increase in the individual signal processing demands of the predicted affected aviation radar systems.

*NATS*

- 134. NATS operations are deemed to be of medium vulnerability, medium recoverability, and high value. The sensitivity of the receptor is therefore, considered to be very high.

*MOD*

- 135. MOD ADR operations are deemed to be of high vulnerability, low recoverability, and high value. The sensitivity of the receptor is therefore, considered to be very high.

### Significance of effect

#### NATS

136. Overall, the magnitude of the cumulative impact to NATS is deemed to be high, and the sensitivity of the receptor (NATS and Aberdeen International Airport) is considered to be very high. The cumulative effect will, therefore be of major adverse significance, which is significant in EIA terms.

#### MOD

137. Overall, for the MOD the magnitude of the cumulative impact is deemed to be high, and the sensitivity of the receptor is considered to be very high. The effect will, therefore, be of major adverse significance, which is significant in EIA terms.

### Further mitigation and residual effect

138. If a NAIZ is not suitable to mitigate effect, it is the intention of the Applicant to follow the direction provided in the jointly signed Strategy and Implementation Plan Issue 1 dated September 2021, the output of the MOD's air defence radar mitigation procurement programme (Programme NJORD) and the opportunity to employ the acceptable mitigation(s). The aim of this Programme, as part of OWIC Programme A, is to deliver an enduring technical mitigation(s) across the UK in which the Applicant would seek to potentially use in due course, removing the need for interim mitigations such as NAIZ.

#### NATS

139. The airspace in which the Array is located, operational acceptance of the effect created is unlikely to be acceptable to all ATC providers within the whole regional airspace environment, without technical PSR mitigation, as portions of airspace may be more important to some ATC establishments than others, due to the role and responsibility of ATC provision allocated to them.
140. In the case of NATS PSR systems impacted (Perwinnes) the secondary mitigation described in paragraphs 89 to 94 will be agreed with NATS to reach a mutually agreeable technical solution (reducing the magnitude of the impact), and it is expected that similar measures would be agreed in regard to other project/plans in Table 14.12 adversely affecting NATS PSR assets, along with modified process and procedures in the provision of the ATS in the region.
141. Overall, following application of secondary mitigation, the magnitude of the impact is deemed to be negligible, and the sensitivity of the receptor is considered to be very high. The effect will, therefore, be of **minor** adverse significance, which is not significant in EIA terms.

#### MOD

142. In the case of MOD ADR systems impacted (RRH Buchan and to a degree, in the south of the region, RRH Brizlee Wood) the mitigation described in paragraphs 95 to 96 will be agreed with relevant impacted aviation stakeholders (reducing the magnitude of the impact), and it is expected that similar measures would be agreed in regard to other project/plans in Table 14.12 adversely affecting MOD ADR assets, along with modified procedures in the provision of the ATS in the region.
143. Overall, following application of secondary mitigation, the magnitude of the impact is deemed to be negligible, and the sensitivity of the receptor is considered to be very high. The effect will, therefore, be of **minor** adverse significance, which is not significant in EIA terms.

## 14.13. PROPOSED MONITORING

144. No aviation monitoring to test the predictions made within the assessment of LSE<sup>1</sup> on aviation is considered necessary.
145. No monitoring as a result of the CEA is proposed as mitigation will have been required for those receptors which are affected by operational and planned projects, a much-reduced obstacle and radar (if any in some areas of the region) cumulative effect will be apparent and therefore with mitigation in place the residual effect will be minor which is not significant in EIA terms for all scenarios. No monitoring is therefore considered necessary.

## 14.14. TRANSBOUNDARY EFFECTS

146. Paragraph 19 to 20 explains that the Array is fully contained within the Scottish FIR<sup>2</sup>. Each FIR<sup>2</sup> is managed by a controlling authority that has responsibility for ensuring that air traffic services are provided to the aircraft flying within it. The UK CAA is the controlling authority for the UK. The Scottish FIR<sup>2</sup> covers Scotland and Northern Ireland. A screening of transboundary impacts has been carried out (volume 3, appendix 6.6) and has identified that there were no likely significant transboundary effects with regard to aviation from the Array upon the interests of European Economic Area (EEA) states.

## 14.15. INTER-RELATED EFFECTS

147. A description of the likely inter-related effects arising from the Array on aviation, military and communications is provided in volume 3, chapter 19 of the Array EIA Report.
148. For aviation, military and communications, the following potential impacts have been considered within the inter-related assessment:
- creation of a physical obstruction to aircraft operations (including airborne SAR and low flying aircraft); and
  - wind turbines causing interference on aviation radar systems (including PSR and ADR).
149. The individual project alone impacts were assigned residual significance of impact of no greater than minor adverse once mitigation is applied. It is therefore anticipated that the significance of combined effects on airspace and radar users will not be of any greater significance than the effects when assessed in isolation. Table 14.14 lists the inter-related effects (project lifetime effects) that are predicted to arise during the construction, operation and maintenance phase, and decommissioning of the Array and also the inter-related effects (receptor-led effects) that are predicted to arise for aviation, military and communications receptors.

**Table 14.14: Summary of Likely Significant Inter-Related Effects for Aviation, Military and Communications from Individual Effects Occurring Across the Construction, Operation and Maintenance and Decommissioning Phases of the Array (Array Lifetime Effects) and from Multiple Effects Interacting Across all Phases (Receptor-led Effects)**

Description of Impact	Phase <sup>11</sup>			Likely Significant Inter-Related Effects
	C	O	D	
<b>Array Lifetime Effects</b>				
Creation of physical obstacle to aircraft operations (including Airborne SAR operations and Low Flying Aircraft)	✓	✓	✓	There are no inter-related effects that are of greater significance than those assessed in isolation
Wind turbines causing interference to aviation radar systems (including PSR and ADR)	*	✓	*	There are no inter-related effects that are of greater significance than those assessed in isolation
<b>Receptor led effects</b>				
An inter-related receptor led effect may occur from the combination of the creation of a physical obstacle and wind turbines causing interference to aviation radar systems. However, it is considered that any inter-related effect will not be of any greater significance than those already assessed in isolation.				

<sup>11</sup> C = Construction, O = Operation and maintenance, D = Decommissioning

#### 14.16. SUMMARY OF IMPACTS, MITIGATION, LIKELY SIGNIFICANT EFFECTS AND MONITORING

150. Information on aviation, military and communications within the aviation, military and communications study area was collected through desktop review and stakeholder engagement. This information is summarised in Table 14.15 and Table 14.16.
151. Table 14.15 presents a summary of the potential impacts, designed in measures and the conclusion of LSE<sup>1</sup> in EIA terms in respect to aviation, military and communications. The impacts assessed include:
- creation of physical obstacle to aircraft operations (including airborne SAR operations and low flying aircraft); and
  - wind turbines causing interference on aviation radar systems (including PSR and ADR).
152. Overall, it is concluded that there will be the following LSE<sup>1</sup> arising from the Array during the construction, operation and maintenance or decommissioning phases prior to further mitigation:
- wind turbines causing interference to aviation radar systems (including PSR and ADR).
153. Table 14.16 presents a summary of the potential impacts, designed in measures and the conclusion of likely significant cumulative effects on aviation, military and communications in EIA terms. The cumulative effects assessed include:
- creation of physical obstacle to aircraft operations (including airborne SAR operations and low flying aircraft); and
  - wind turbines causing interference on aviation radar systems (including PSR and ADR).
154. Overall, it is concluded that there will be the following likely significant cumulative effects from the Array alongside other projects/plans:
- wind turbines causing interference to aviation radar systems (including PSR and ADR).
155. No likely significant transboundary effects have been identified in regard to effects of the Array.

**Table 14.15: Summary of Likely Significant Environmental Effects, Secondary Mitigation and Monitoring**

Description of Impact	Phase	Magnitude of Impact	Sensitivity of Receptor	Significance of Effect	Secondary Mitigation	Significance of Residual Effect	Proposed Monitoring
Creation of physical obstacle to aircraft operations (including airborne search and rescue operations and low flying aircraft)	Construction	Low	Medium	Minor adverse	N/A	N/A	None
	Operation and Maintenance	Low	Medium	Minor adverse	N/A	N/A	None
	Decommissioning	Low	Medium	Minor adverse	N/A	N/A	None
Wind turbines causing interference to aviation radar systems	NATS Operation and Maintenance	High	Very High	Major adverse	Radar blanking via commercial agreement between the Applicant and NATS, creation of a TMZ via application to the CAA by the Applicant, and industry led strategic solutions (Programme B).  Paragraphs 89 to 94	Minor adverse	None
	MOD Operation and Maintenance	High	Very High	Major adverse	Use of a NAIZ via commercial agreement between the Applicant and the MOD, or employment of mitigations provided via the MOD Programme NJORD, and industry led strategic solutions.  Paragraphs 95 to 96	Minor adverse	None

**Table 14.16: Summary of Likely Significant Cumulative Environment Effects, Mitigation and Monitoring**

Description of Impact	Phase	Cumulative Effects Assessment Tier	Magnitude of Impact	Sensitivity of Receptor	Significance of Effect	Secondary Mitigation	Significance of Residual Effect	Proposed Monitoring
Creation of physical obstacle to aircraft operations (including airborne search and rescue operations and low flying aircraft)	Construction	Tiers 1, 2 and 3	Low	Medium	Minor adverse	N/A	N/A	None
	Operation and Maintenance	Tiers 1, 2 and 3	Low	Medium	Minor adverse	N/A	N/A	None
	Decommissioning	Tiers 1, 2 and 3	Low	Medium	Minor adverse	N/A	N/A	None
Wind turbines causing interference to aviation radar systems	NATS Operation and Maintenance	Tiers 1, 2 and 3	High	Very High	Major adverse	Radar blanking via commercial agreement between the Applicant and NATS, creation of a TMZ via application to the CAA by the Applicant, and industry led strategic solutions (Programme B).  Paragraphs 139 to 141	Minor adverse	None
	MOD Operation and Maintenance	Tiers 1, 2 and 3	High	Very High	Major adverse	Use of a NAIZ via commercial agreement between the Applicant and the MOD, or employment of mitigations provided via the MOD Programme NJORD, and industry led strategic solutions.  Paragraphs 142 to 143	Minor adverse	None

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# Ossian



**Marubeni**



**Ossian Offshore Wind Farm Limited**

Inveralmond House  
200 Dunkeld Road  
Perth  
PH1 3AQ

**Project Office**

Fourth Floor  
10 Bothwell Street  
Glasgow  
G2 6NT

[ossianwindfarm.com](http://ossianwindfarm.com)