

Preliminary Environmental Information Report

Calderdale Energy Park

7 April 2026

Volume 2, Chapter 19 : Aviation and Radar

PINS Reference: EN0110023

Infrastructure Planning (Applications: Prescribed Forms and Procedure) Regulations
2009 – Reg 5 (2) (a)



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19 Aviation and Radar¹

19.1 Introduction

- 19.1.1 This Chapter of the PEIR has been prepared by Gladhouse Planning Ltd on behalf of the Applicant and presents the likely significant effects of the Proposed Development upon Aviation and Radar. It is based on the information available to date (which is detailed in this Chapter), as well as the current description of the Proposed Development as set out in **Chapter 4: The Proposed Development**.
- 19.1.2 This Chapter concludes there are a mixture of not significant effects and likely significant effects of the Proposed Development on Aviation and Radar during the construction, operation including maintenance and decommissioning phases.
- 19.1.3 While, this Chapter concludes some likely significant effects on Aviation and Radar, the Applicant notes that discussions relating to appropriate mitigation measures to reduce the significance of effects are ongoing with all relevant stakeholders including airport authorities, NATS, DIO and the Met Office and the outcome of these discussions will be reflected in the assessment presented in the ES.

19.2 Legislation Policy and Guidance

- 19.2.1 Key Policy, Legislation and Guidance relating to Aviation and Radar and of relevance to this preliminary assessment comprises the following, as shown in **Table 19-1** and **Table 19-2**.

Table 19-1: Legislation Policy and Guidance

Type	Name	Relevance to Assessment
Legislation	The Town and Country Planning (Safeguarded Aerodromes, Technical Sites and Military Explosives Storage Areas) Direction 2002 ²	Requires local planning authorities to consult aviation or defence consultees on developments within areas specified on official safeguarding maps

¹ Note that the title of this Chapter has been updated following EIA Scoping to provide clarity that both aviation and radar matters are considered.

² Department of Transport, The Town and Country Planning (Safeguarded Aerodromes, Technical Sites and Military Explosives Storage Areas) Direction 2002, available at <https://www.gov.uk/government/publications/safeguarding-aerodromes-technical-sites-and-military-explosives-storage-areas/the-town-and-country-planning-safeguarded-aerodromes-technical-sites-and-military-explosives-storage-areas-direction-2002>.

Type	Name	Relevance to Assessment
National Planning Policy	NPS EN-1 ³	Advises that an assessment of potential effects on civil or military aviation, metrological radars and/or other defence assets should be set out in the ES and relevant stakeholders consulted.
	NPS EN-3 ⁴	Advises that there is a need to consider impacts on civil and military radar and other aviation and defence interests and lighting should be minimised to reduce impacts on ecological species.
	NPPF ⁵	Recognises the importance of maintaining a national network of general aviation airfields, and their need to adapt and change over time – taking into account their economic value in serving business, leisure, training and emergency service needs and the General Aviation Strategy.
	Draft NPPF ⁶	Development proposals involving the provision, expansion or alteration of port, airport, advanced air mobility and aviation facilities (and

³ Department for Energy Security & Net Zero, Overarching National Policy Statement for Energy (EN-1), December 2025, available at <https://assets.publishing.service.gov.uk/media/6915ba42bc34c86ce4e6e726/overarching-national-policy-statement-for-energy-en-1-web-accessible.pdf>.

⁴ Department for Energy Security & Net Zero, National Policy Statement for Renewable Energy Infrastructure (EN-3), December 2025, available at <https://assets.publishing.service.gov.uk/media/6915b78bbc34c86ce4e6e71f/national-policy-statement-for-renewable-energy-infrastructure-en-3-web-accessible.pdf>

⁵ Ministry of Housing, Communities & Local Government and Department of Levelling Up, Housing and Communities, National Planning Policy Framework, December 2024, paragraph 111(f).

⁶ Ministry of Housing, Communities & Local Government and Department of Levelling Up, Housing and Communities National Planning Policy Framework: draft text for consultation, December 2025, Policy TR7, paragraph 1c.

Type	Name	Relevance to Assessment
		development ancillary to them) should help to maintain a national network of aviation airfields, and support an airfield’s economic or public service role (for example in serving business, leisure, training and emergency service needs)
Local Planning Policy ⁷	Calderdale Local Plan 2018/19 to 2032/33	Policy CC6 Part 1 provides that renewable energy generation proposals will be assessed for any adverse effects on aviation navigation and radar systems and/or meteorological radar systems (based on the most recent evidence). Policy IM9 sets out that certain applications for development will be the subject of consultation with the operator of the aerodrome or technical site

Table 19-2: Aviation Specific Legislation, Policy and Guidance Context

Type	Name	Relevance to Assessment
Legislation	The Air Navigation Order 2016 ⁸	The basic regulatory provision governing UK civil aviation.
	The Town and Country Planning (Safeguarded Aerodromes, Technical Sites and Military Explosives Storage	Provides a statutory basis for safeguarding certain aerodromes.

⁷ Note the focus of the discussion of local planning policy is on the ‘host’ local authority of Calderdale given the geographic spread of receptors considered within the assessment.

⁸ The Air Navigation Order 2016, UK Statutory Instruments 2016 No. 765, available at <https://www.legislation.gov.uk/uksi/2016/765/data.pdf> [accessed 4 August 2025].

Type	Name	Relevance to Assessment
	Areas) Direction 2002 (UK 2002) ⁹	
	UK Reg (EU) 2018/1139 (the UK Basic Regulation) ¹⁰	The EU Basic Regulation for aviation transposed into UK law.
	UK Reg (EU) 3922/91 (the UK Technical and Administrative Harmonisation Regulation)	The EU administrative Regulation for aviation transposed into UK law.
	UK Reg (EU) 965/2012 (Air Operations)	The EU Regulation for air operations transposed into UK law.
	UK Reg (EU) No 139/2014 (the UK Aerodromes Regulation)	The EU Regulation for aerodromes transposed into UK law.
	UK Reg (EU) No 2017/373 (the UK ATM Provision of Services Regulation)	The EU Regulation for air traffic management transposed into UK law.
	UK Reg (EU) No 923/2012 (the UK Standardised Rules of the Air Regulation)	The EU Regulation for rules of the air transposed into UK law.
	UK Reg (EU) No 1332/2011 (Airborne Collision Avoidance)	The EU Regulation for airborne collision avoidance transposed into UK law.
	UK Reg (EU) No 2018/1048 (the UK PBN Regulation)	The EU Regulation for performance-based navigation transposed into UK law.

⁹ Available at <https://www.gov.uk/government/publications/safeguarding-aerodromes-technical-sites-and-military-explosives-storage-areas/the-town-and-country-planning-safeguarded-aerodromes-technical-sites-and-military-explosives-storage-areas-direction-2002> [accessed 4 August 2025].

¹⁰ UK aviation regulations transposed from EU law are available at https://regulatorylibrary.caa.co.uk/home/Content/ARL_Home_Page.htm [accessed 4 August 2025].

Type	Name	Relevance to Assessment
International Standards and Recommended Practices ¹¹	International Civil Aviation Organisation (ICAO) Annex 2 Rules of the Air	Provides international regulations to which the UK conforms.
	ICAO Annex 6 Operation of Aircraft	Provides international regulations to which the UK conforms.
	ICAO Annex 10 Aeronautical Telecommunications	Provides international regulations to which the UK conforms.
	ICAO Annex 11 Air Traffic Services	Provides international regulations to which the UK conforms.
	ICAO Annex 14 Aerodromes	Provides international regulations to which the UK conforms.
	ICAO Annex 19 Safety Management	Provides international regulations to which the UK conforms.
UK policy and guidance	Civil Aviation Authority (CAA), CAA Policy and Guidelines on Wind Turbines, CAP 764, Seventh Edition (2025) ¹²	Provides guidance to aviation stakeholders in the consideration of the potential impacts of proposed wind farms.
	CAA, Manual of Air Traffic Services Part 1, CAP 493, Edition 12 (2025) ¹³	Contains procedures, instructions and information which are intended to form the basis of air traffic services in the UK.
	CAA, UK Flight Information Services,	Details the suite of air traffic services in Class G airspace within the UK Flight Information Regions.

¹¹ ICAO publications are available at <https://www.icao.int/publications>

¹² CAA, CAA Policy and Guidelines on Wind Turbines, CAP 764, Seventh Edition (2025), available at <https://www.caa.co.uk/our-work/publications/documents/content/cap-764/> [accessed 5 January 2026].

¹³ CAA, Manual of Air Traffic Services Part 1, CAP 493, Edition 11 (2023), available at <https://www.caa.co.uk/our-work/publications/documents/content/cap-493/> [accessed 4 August 2025].

Type	Name	Relevance to Assessment
	CAP 774, Version 4 (2021) ¹⁴	
	CAA, Air Traffic Services Safety Requirements, CAP 670, Issue 3 (2019) ¹⁵	Covers safety requirements for air traffic services.
	CAA, CAP 785 Volume II: Implementation and Safeguarding of Instrument Flight Procedures (IFPs) in the UK, Second Edition (2022) ¹⁶	Set outs specific requirements for the development and approval of Instrument Flight Procedures (IFPs) designs and the delivery of safeguarding services.
	CAA, Policy Statement: Lighting of Onshore Wind Turbine Generators in the UK with a maximum blade tip height at or in excess of 150m Above Ground Level (2017) ¹⁷	Sets out lighting requirements for wind turbines over 150m in height above ground level.

19.3 Scoping and Stakeholder Engagement

2025 Scoping Opinion

- 19.3.1 In September 2025, a request for a Scoping Opinion was submitted alongside a Scoping Report. **Table 19-3** presents the details of the Planning Inspectorate (PINS) Scoping Opinion relevant to Aviation and Radar and confirms how the response is considered within the proposed scope of assessment (as set out

¹⁴ CAA, UK Flight Information Services, CAP 774, Version 4 (2021), available at <https://www.caa.co.uk/our-work/publications/documents/content/cap-774/> [accessed 4 August 2025]

¹⁵ CAA, Air Traffic Services Safety Requirements, CAP 670, Issue 3 (2019), available at <https://www.caa.co.uk/our-work/publications/documents/content/cap-670/> [accessed 4 August 2025].

¹⁶ CAA, CAP 785 Volume II: Implementation and Safeguarding of Instrument Flight Procedures (IFPs) in the UK, Second Edition (2022), available at <https://www.caa.co.uk/our-work/publications/documents/content/cap-785b/> [accessed 4 August 2025].

¹⁷ CAA, Policy Statement: Lighting of Onshore Wind Turbine Generators in the UK with a maximum blade tip height at or in excess of 150m Above Ground Level (2017), available at <https://www.caa.co.uk/publication/download/16178> [accessed 4 August 2025].

below). Other consultee and stakeholder responses are also summarised in **Table 19-3**.

Table 19-3: Consideration of PINS Scoping Response

Consultee	PINS ID	Summary of Scoping Opinion Response	Consideration within Scope of Assessment
PINS	3.12.1	The Scoping Report sets out that this matter is to be scoped out as ‘CAA is no longer a consultee on wind energy proposals other than its role in approving proposals for reduced lighting schemes’. The scoping of matters should be based upon likely significant effects and therefore the Inspectorate does not agree to scope this matter out on this basis. The Inspectorate does however agree to scope this matter out if it can be demonstrated in the ES that the CAA does not have any infrastructure or operational assets within the study area.	The CAA does not have any infrastructure or operational assets within the study area, nor anywhere in the UK. It is the UK's aviation regulatory body, not an aviation operator or service provider. Therefore, it is proposed to scope out likely impacts on the radar, monitoring and other such infrastructure and operational assets of the CAA because the CAA has no such assets.
PINS	3.12.2	The Scoping Report sets out that the Proposed Development is beyond the operational range of Humberside Airport and therefore proposes to scope out impacts on Humberside Airport. The Inspectorate is content to scope this matter out.	Noted that likely impacts on the radar, monitoring and other such infrastructure and operational assets of Humberside Airport are agreed to be ‘scoped out’.
PINS	3.12.3	The Scoping Report seeks to scope this out noting that there are no aerodromes within the study area. The Scoping	Noted that effects on non-radar equipped, unlicensed aerodromes with a runway length of less than 800m are agreed to be ‘scoped out’.

Consultee	PINS ID	Summary of Scoping Opinion Response	Consideration within Scope of Assessment
		Report states that the study area is based upon CAA guidance CAP764. On this basis, the Inspectorate agrees to scope this matter out.	
PINS	3.12.4	The Scoping Report seeks to scope this out noting that there are no facilities within the study area. The Scoping Report states that the study area is based upon CAA guidance CAP764. On this basis, the Inspectorate agrees to scope this matter out.	Noted that effects on secondary surveillance radars are agreed to be 'scoped out'.
PINS	3.12.5	The Scoping Report has noted Leeds/Bradford Airport as the only licensed and certificated aerodrome within the study area and therefore proposed to scope out effects on licensed and certificated aerodromes outside the study area. The Scoping Report states that the study area is based upon CAA guidance CAP764. On this basis, the Inspectorate agrees to scope this matter out.	Noted that effects on licensed and certificated aerodromes outside of the 30km study area are agreed to be 'scoped out'.
PINS	3.12.6	The Scoping Report states that following line of sight modelling, no effects are predicted on RAF Leeming PSR (Primary Surveillance Radar). Providing the line-of-sight modelling	Line of sight modelling has been undertaken on a worst-case and demonstrated that there are no effects. Therefore, effects on the RAF Leeming PSR have been 'scoped out'.

Consultee	PINS ID	Summary of Scoping Opinion Response	Consideration within Scope of Assessment
		has been undertake on the worst-case scenario, the Inspectorate is content to scope this matter out.	
PINS	3.12.7	The Scoping Report states that following line of sight modelling, no effects are predicted on Ministry of Defence (MoD) Staxton Wold PSR. Providing the line-of-sight modelling has been undertake on the worst-case scenario, the Inspectorate is content to scope this matter out.	Line of sight modelling has been undertaken on a worst-case and demonstrated that there are no effects. Therefore, effects on the MoD Staxton Wold PSR have been 'scoped out'.
PINS	3.12.8	The Scoping Report sets out that the Proposed Development is beyond the operational range of Humberside Airport and therefore proposes to scope out impacts on Humberside Airport. The Inspectorate is content to scope this matter out.	Noted that effects on Humberside Airport PSR and other operational assets have been agreed to be 'scoped out'.
Worth Valley Against Walshaw Moor Wind Farm	-	The Scoping Report has not included Oxenhope Airfield GB-0151. To be found at OS grid SE 045 344 this airfield is 4.3km from the nearest turbine on Yeomans Hill, has a number of regular local users and should definitely be scoped in.	Oxenhope Airfield GB-0151 is a non-radar equipped unlicensed aerodrome as defined in CAP 764 with a runway of less than 800m. CAP764 Paragraph 3.4 states that any wind turbine development may have an impact upon civil aerodrome related operations where the wind farm is within 3km of a non-radar equipped unlicensed aerodrome with a runway of less than 800m. The runway length at

Consultee	PINS ID	Summary of Scoping Opinion Response	Consideration within Scope of Assessment
			Oxenhope Airfield is approximately 400m and the closest turbine (Turbine 30) is located approximately 4.85km from the runway at grid reference SE 043 353. As such, in accordance with CAP 764, the Proposed Development is unlikely to have an impact on Oxenhope Airfield and therefore effects on this airfield have not been considered further. This is agreed by PINS, as noted in Scoping Opinion response 3.12.3.
Calderdale Council	-	Scoping out of effects on non-radar equipped unlicensed aerodromes with a runway length of less than 800m " <i>not agreed</i> ".	Scoping out has been agreed by PINS (see Scoping Opinion 3.12.3).
Calderdale Council	-	Scoping out of secondary surveillance radars " <i>not agreed</i> ".	Scoping out has been agreed by PINS (see Scoping Opinion 3.12.4 above).
Calderdale Council	-	Scoping out of effects on licensed and certificated aerodromes " <i>not agreed</i> ".	Scoping out has been agreed by PINS (see Scoping Opinion 3.12.5 above).
Calderdale Council	-	Scoping out of effects on the RAF Leeming PSR " <i>not agreed</i> ".	Scoping out has been agreed by PINS (see Scoping Opinion 3.12.6 above).
Calderdale Council	-	Scoping out of effects on the MoD Staxton Wold PSR " <i>not agreed</i> ".	Scoping out has been agreed by PINS (see Scoping Opinion 3.12.7 above).
Calderdale Council	-	The Council support a reduced-lighting scheme subject to safety, consultation must include CAA, National Air Traffic Services (NATS) and	The CAA and MoD will be consulted on the reduced lighting scheme. The wind turbines in the Proposed Development will constitute "en route obstacles" as

Consultee	PINS ID	Summary of Scoping Opinion Response	Consideration within Scope of Assessment
		MoD/Defence Infrastructure Organisation (DIO) (and relevant aerodromes).	defined in Article 222 of the Air Navigation Order. They are beyond the obstacle limitation surfaces of all licensed and certificated aerodromes and are not therefore "aerodrome obstacles". It is therefore not envisaged that consultation with any aerodromes on the lighting scheme is necessary or warranted. NATS has no role in considering lighting schemes. They are an en route air traffic service provider.
Calderdale Council	-	The aviation study area should be justified with CAP764 (asset-led) and include all relevant radar/aerodromes/low-flying stakeholders.	The Scoping Report set out all the aviation study area radii and advised: "These distances are derived from recommended consultation distances in CAA guidance CAP 764, amended to ensure that all aviation facilities with the potential to be affected are included."
Calderdale Council	-	The Council notes the DIO are a consultee on matters scoped into the detailed assessment. Formal consultation with DIO/RAF/MoD must be evidenced. Line-of-sight (LOS) modelling alone is insufficient to scope out RAF Leeming PSR and MoD Staxton Wold PSR. The ES should present operator-endorsed	Consultation with all aviation stakeholders, including the DIO, is laid out in the Scoping Report. DIO does not "endorse modelling", nor does DIO in its responses list all the MoD assets that are <i>not</i> affected. The fact that neither the RAF Leeming nor the Staxton Wold PSRs are mentioned in MoD's response to the EIA Scoping Report prepared in 2023 ¹⁸ is

¹⁸ As referenced elsewhere within this PEIR, in July 2023 as part of an original TCPA application approach for the proposed development, an EIA Scoping Report was submitted to Calderdale Council.

Consultee	PINS ID	Summary of Scoping Opinion Response	Consideration within Scope of Assessment
		<p>modelling and/or a written position from DIO/RAF.</p>	<p>evidence that the MoD has concluded that these assets are not affected. PINS has accepted that RAF Leeming and Staxton Wold do not need to be scoped into the assessment.</p>
Calderdale Council	-	<p>The Council consider it unjustified to scope out potential effects on defence assets or organisations without formal consultation and evidence from the relevant operators, this approach accords with NPS EN-1, which expects early engagement with statutory consultees and an evidence-led assessment.</p>	<p>See above. The assessment has been, and will continue to be, evidence based. The Scoping Report set out the consultations that have been completed to date. Engagement with statutory and non-statutory consultees has been fully in accordance with the provisions of paragraph 5.5.40 of NPS EN-1 which advises that “<i>The applicant should consult the MOD, Met Office, Civil Aviation Authority (CAA), NATS and any aerodrome – licensed or otherwise – likely to be affected by the proposed development in preparing an assessment of the proposal on aviation, meteorological or other defence interests.</i>”</p>
Calderdale Council	-	<p>The Met Office has confirmed as with the previous Scoping Opinion that they require a suitable assessment within an ES to fully consider the potential effects from the Proposed Development on the Met Office weather radar at Hameldon Hill. The assessment should confirm which turbines</p>	<p>As set out in the Scoping Report, effects on the Met Office radar will be fully assessed as part of the DCO Application. The Applicant has been in consultation with the Met Office on the potential effects of the Proposed Development and the potential mitigation measures throughout the pre-application stages.</p>

Consultee	PINS ID	Summary of Scoping Opinion Response	Consideration within Scope of Assessment
		are in the line of sight of the radar antenna, including the provision of ground heights and tip height (AOD) of the turbines. It should also indicate which turbines are in the beam of the radar at the 2 lowest scan elevations (0.5 deg and 1.0 deg), noting the beam width of 1 deg. The radar antenna is located at NGR: 381030,428750 and at height: 402.5m AOD.	

Further Engagement Undertaken

19.3.2 An overview of engagement (beyond the PINS Scoping Opinion) undertaken to date for Aviation and Radar, and how this has informed the scope of the assessment is provided in **Table 19-4** (as set out below).

Table 19-4: Further Engagement Undertaken

Consultee	Type and Date	Summary of Discussion	Discussion Response
NATS En Route plc (NERL)	Multiple emails 29/08/24 to 25/08/25	Identification of mitigation solutions for PSR; identification of turbines generating unacceptable impacts on Pole Hill Doppler Very High Frequency Omnidirectional Range (DVOR).	PSR mitigation solution identified. Turbines affecting Pole Hill DVOR removed from layout.
Manchester Airport	Multiple emails 9/10/24 to 28/11/25	Identification of mitigation solutions for PSR; discussion of requirement for Instrument Flight	Confirmation of no impact on IFPs. Discussions on PSR mitigation ongoing.

Consultee	Type and Date	Summary of Discussion	Discussion Response
		Procedures (IFP) assessment.	
Blackpool Airport	26/05/2025 and meeting on 06/06/2025	Discussion of IFP assessment.	IFP assessment commissioned.
Leeds Bradford International Airport	Virtual meetings 9/11/2023, 06/02/2025 and 10/06/2025. Multiple emails November 2023 to June 2025.	Discussion of requirements for radar mitigation and IFP assessment.	IFP assessment commissioned. PSR mitigation discussions ongoing.
Meteorological Office	Multiple emails 30/9/24 to 16/10/25. Meeting with Met Office staff 5/11/25	Identification of mitigation solutions for Hameldon Hill radar.	Discussions ongoing.
BAE Systems	Emails 22/01/25, 24/02/25, 12/06/25 and 23/06/25. Telephone calls in same period.	Responsibility of BAE Systems and MoD for safeguarding.	Further contact to be made through MoD.
MoD	Emails 15/07/25 to 28/11/25	Effects on BAE Systems Warton	Intention to object confirmed. Discussions on mitigation ongoing.

19.4 Assessment Methodology

Study Area

19.4.1 The study areas for Aviation and Radar are as follows:

- A 3 km radius from all turbines for non-radar equipped unlicensed aerodromes with a runway length of less than 800m;

- A 10 km radius from all turbines for military low flying areas and other aviation facilities;
- A 25 km radius from all turbines for secondary surveillance radars (SSRs) and Meteorological Office radars;
- A 30 km radius from all turbines for licensed and certificated aerodromes;
- A 65 km radius from all turbines for airport primary surveillance radars (PSRs) and Instrument Flight Procedures (IFPs); and
- A 200 km radius from all turbines for en route and air defence PSRs.

19.4.2 These distances are derived from recommended consultation distances in CAA guidance CAP764, with amendments to ensure that all aviation and radar facilities with the potential to be affected are included (i.e. study areas for PSRs have been increased from the radii set out in CAP764 to ensure that all such radars with the operational range to cover the Proposed Development have been included).

Sources

19.4.3 Baseline data has been gathered from the following sources:

- The United Kingdom Aeronautical Information Publication (UK AIP);¹⁹
- The UK Military AIP;²⁰
- Published civil and military aeronautical charts;²¹ and
- Aviatica in-house databases.

Methodology

19.4.4 The Aviation and Radar assessment has been conducted in accordance with the guidance in CAP764: CAA Policy and Guidelines on Wind Turbines,²² adapted to ensure that all Aviation and Radar assets with the potential to be affected by the Proposed Development are assessed.

19.4.5 The assessment has comprised a desk-based review of the location, technical characteristics and operational activities of Aviation and Radar interests and

¹⁹ Available at <https://www.aurora.nats.co.uk/htmlAIP/Publications/2026-01-22-AIRAC/html/index-en-GB.html>.

²⁰ Available at <https://www.aidu.mod.uk/aip/>.

²¹ Available at <https://nats-uk.ead-it.com/cms-nats/opencms/en/Charts/vfr-charts/> and <https://www.aidu.mod.uk/aip/>

²² CAA, CAA Policy and Guidelines on Wind Turbines, 2025, available at <https://www.caa.co.uk/publication/download/14561>.

operations in the vicinity of the PEIR Boundary using relevant data sources. The effects of the Proposed Development on aviation and meteorological radars have been assessed using radar line of sight modelling, undertaken using specialist software and digital terrain data with an appropriate resolution.

- 19.4.6 The CAA requires formal assessment of the effects of proposed developments on civil airport IFPs to be conducted by an Approved Procedure Design Organisation (APDO). The Applicant has commissioned IFP assessments from the APDO responsible for Leeds Bradford and Blackpool Airports. IFP assessment for BAE Systems Warton will be conducted through the DIO, which is the safeguarding authority for that aerodrome.

Determining Significance of Effect

- 19.4.7 The assessment presented in this Chapter has followed the CAA guidance in CAP 764. Radar line of sight has been modelled using Global Mapper software supplemented with digital terrain data at an appropriate resolution. Effects on civil airport IFPs have been assessed by commissioning IFP Assessments from the contracted APDO for Blackpool and Leeds Bradford Airports. Effects on military low flying have been assessed by reviewing the Proposed Development against airspace boundaries, existing terrain and obstacle constraints.
- 19.4.8 Significance criteria for assessment of impacts on aviation, unlike those for other technical aspects/environmental effects, are not based on the sensitivity of the receptor. Further, while the magnitude of impact can be determined in some circumstances, it typically does not provide a standardised metric on which to measure/inform the significance of any effects. In this context, the significance of effects on aviation has been determined in this Chapter by application of professional judgement, underpinned by consideration of the magnitude of impact (where measurable); the regulations and procedures in place for ensuring that aviation infrastructure meets required performance standards; the safeguarding policies and practices in use by specific aviation stakeholders; and the consultation responses from those stakeholders. Given the above, effects have been described as significant or not significant.

Limitations and Assumptions

- 19.4.9 The assessment of the effects of the Proposed Development on Aviation and Radar is limited to preliminary analysis and consultations to date with Aviation and Radar stakeholders.

19.5 Baseline Conditions

Existing Baseline

- 19.5.1 The PEIR Boundary is located on high ground up to approximately 1500 feet above mean sea level (ft amsl) between Bradford and Burnley. Almost all of the PEIR Boundary is located in uncontrolled airspace extending from ground level up to 3500 ft amsl, with the Class A controlled airspace of the Manchester Terminal Control Area (TMA) above that level. Aircraft may fly without contact with, or clearance from, any air traffic control agency in the airspace below 3,500ft but must have a clearance from Manchester Airport or NERL air traffic control (ATC) to enter and fly within the Manchester TMA airspace above 3,500ft.
- 19.5.2 To the east and north of the PEIR Boundary the airspace is uncontrolled up to 3,000ft amsl, with Class D controlled airspace under the control of Leeds Bradford Airport ATC above that level.
- 19.5.3 The PEIR Boundary is located in a north-south corridor in daytime Low Flying Area (LFA) 8 in the UK Military Low Flying System where uni-directional flow is mandated, with northbound aircraft required to fly in the western half of the corridor and southbound aircraft required to fly in the eastern half. The PEIR Boundary is within a part of the military night low flying system, given the title Allocated Region 3A by the MoD.
- 19.5.4 The Proposed Development is within radar line of sight of the following PSRs:
- Leeds Bradford Airport;
 - Manchester Airport;
 - BAE Systems Warton;
 - Meteorological Office Hameldon Hill;
 - NERL Clee Hill;
 - NERL Claxby; and
 - NERL St Anne's.
- 19.5.5 The Proposed Development is within the safeguarded area of the NERL Pole Hill DVOR radio navigation beacon.
- 19.5.6 The Proposed Development is within the IFP obstacle assessment areas of Leeds Bradford, Manchester and Blackpool Airports and BAE Systems Warton aerodrome.

Further Data Collection

19.5.7 Further data collection will be conducted through consultation with Aviation and Radar stakeholders and the results of IFP Assessments undertaken.

Future Baseline

19.5.8 The aviation baseline is likely to change in the future in accordance with technological change and the implementation of the CAA Airspace Modernisation Strategy.²³ The details of these possible changes were not available at the time of writing this Chapter because the relevant Airspace Change Proposals have not yet been submitted to the CAA.

19.6 Environmental Measures

19.6.1 This section describes details of the environmental measures which have been included within the design of the Proposed Development (as presented in **Chapter 4: The Proposed Development**). These measures are an inherent part of the design of the Proposed Development and have been included to benefit Aviation and Radar as well as avoid, reduce or compensate for the adverse environmental effects of the Proposed Development.

Construction

19.6.2 The environmental measures included within the design of the Proposed Development, which will have benefits during the construction phase, include:

- Removal of four turbines assessed as generating unacceptable effects on the NERL Pole Hill DVOR radio navigation beacon;
- Removal of four turbines assessed as generating a requirement for changes to Blackpool Airport IFPs; and
- Installation of aviation +-on the turbines in accordance with a CAA-approved lighting scheme.

Operation and Maintenance

19.6.3 The environmental measures included within the design of the Proposed Development, which will have benefits during the operation and maintenance phase, include those identified for the construction phase above.

²³ See <https://www.caa.co.uk/commercial-industry/airspace/airspace-modernisation/airspace-modernisation-strategy/about-the-strategy/>.

Decommissioning

- 19.6.4 The environmental measures included within the design of the Proposed Development, which will have benefits during the decommissioning phase, include those identified for the construction phase above.

Assumptions

- 19.6.5 None identified.

19.7 Potential Effects Scoped Out

- 19.7.1 This section lists the effects which are scoped out of the Aviation and Radar assessment as they are not considered likely to be significant. This includes the evidence that justifies this approach, as shown in Table 19-5 below.

Table 19-5: Potential Effects Scoped Out

Effects Scoped Out	Justification	Phase
CAA infrastructure or operational assets	None within study area	All
Humberside Airport	Not within the study area	All
Licensed and certificated aerodromes other than Leeds Bradford Airport	None within the study area	All
Non-radar equipped unlicensed aerodromes with a runway length of less than 800m	None within the study area	All
Secondary surveillance radars	None within study area	All
RAF Leeming PSR	No radar line of sight	Operational
MoD Staxton Wold PSR	No radar line of sight	Operational
NERL Great Dun Fell PSR	NERL has confirmed that the radar has no line of sight to the Proposed Development	Operational

- 19.7.2 Where impacts have likely significant effects and are therefore scoped in, please refer to the scoped in effects section in the Preliminary Environmental Assessment below.

19.8 Preliminary Environmental Assessment

- 19.8.1 The Preliminary Environmental Assessment details the effects that are considered likely to be significant including providing details of how and why such a conclusion has been reached.
- 19.8.2 This is a preliminary assessment of Likely Significant Effects with the environmental measures in place, but without additional mitigation.

Construction Phase

Effects on PSRs

- 19.8.3 During the construction phase, the wind turbine rotors will not be turning. Wind turbine effects on PSRs occur only when the turbine rotors are turning. Consequently, the Proposed Development will have no effects on PSRs during the construction phase.

Effects on IFPs

- 19.8.4 During the construction phase, the erection of the wind turbines has the potential to infringe the obstacle assessment surfaces of the IFPs. Infringement of the obstacle assessment surfaces would require mitigation in the form of re-design of the affected element of the IFPs.
- 19.8.5 The Applicant's preliminary assessment is that the Proposed Development will have no effects on Manchester Airport IFPs. This has been confirmed by Manchester Airport. Therefore, effects on Manchester IFPs are assessed as not significant.
- 19.8.6 The Applicant has commissioned an assessment of potential effects on Blackpool Airport IFPs from that airport's APDO. The assessment report has confirmed that the Proposed Development will have no impact on Blackpool Airport's IFPs and therefore the effects are assessed as not significant.
- 19.8.7 The Applicant's preliminary assessment is that the Proposed Development may have effects on Leeds Bradford Airport IFPs but these are not expected to have concomitant effects on the airport's instrument approach procedures. Therefore, at this stage, the effect, prior to the implementation of additional mitigation, is anticipated to be significant.
- 19.8.8 The Applicant's preliminary assessment is that the Proposed Development may have effects on BAE Systems Warton IFPs. Confirmation of this is awaited from the MoD. Therefore, at this stage, the effect, prior to the implementation of additional mitigation, is anticipated to be significant.

Additional Mitigation

- 19.8.9 Mitigation of any confirmed effects on IFPs will be achieved by upward revision of the affected procedure minimum altitude. This will be implemented by re-design of the relevant procedure charts, approval of the re-design by the CAA and the promulgation of the amended procedures in the UK AIP. These actions will be secured through agreement with the relevant aerodrome operator and then approved by the CAA. Also, the DCO will contain provisions preventing construction until the specified mitigations are implemented.

Residual Effects

- 19.8.10 Residual effects on all IFPs following the implementation of mitigation will not be significant because international and UK aviation safety regulation requires all obstacles to be avoided vertically by specified distances.

Effects on military low flying

- 19.8.11 Preliminary assessment indicates that the Proposed Development may present an obstacle hazard to low flying military aircraft. Therefore, the effect, prior to the implementation of additional mitigation, is anticipated to be significant.

Additional Mitigation

- 19.8.12 The MoD has stated that any effects on military low flying would be mitigated by the installation of lighting on the Proposed Development and the pre-construction submission of details of the lighting of the Proposed Development to the MoD for their review and approval. These mitigations are a legal requirement under Articles 222 and 225A of the ANO.

Residual Effects

- 19.8.13 Residual effects on military low flying following the implementation of mitigation will not be significant because the MoD has stated that these effects would be mitigated by provision of lighting and pre-construction notification of the details of the Proposed Development.

Effects on the NERL Pole Hill DVOR

- 19.8.14 All turbines with the potential to generate unacceptable effects on the NERL Pole Hill DVOR have been removed from the layout. Therefore, the effect, prior to the implementation of additional mitigation, is anticipated to be not significant.

Additional Mitigation

- 19.8.15 It is expected that no further mitigation will be required.

Residual Effects

- 19.8.16 Residual effects on the Pole Hill DVOR are anticipated to be not significant at this stage.

Operational Phase

Effects on PSRs

- 19.8.17 Rotating wind turbine blades that are within line of sight of a PSR may generate unwanted radar returns (“clutter”) on the radar display and may reduce the probability of the radar detecting and/or tracking wanted targets in the airspace above the turbines.
- 19.8.18 Significant effects are, at this stage, considered likely to occur on the Leeds Bradford Airport, Manchester Airport, BAE Systems Warton, NERL Clee Hill, NERL Claxby, NERL St Anne’s and Met Office Hameldon Hill PSRs.

Additional Mitigation

- 19.8.19 Discussions are ongoing with stakeholders on the appropriate means of mitigating effects on PSRs. Potential mitigation measures include modification of radar data processing parameters; use of an existing radar to act as ‘in-fill’; deployment of an additional radar that has no line of sight to the turbines; and deployment of an additional radar with wind farm filtering techniques. Mitigation measures will be secured by agreement with the radar operators. Also, the DCO will contain provisions preventing construction/operation until the specified mitigations are implemented.
- 19.8.20 Agreement on means of mitigation of effects on PSRs will be based on a requirement to meet all aviation safety regulatory requirements and confirmation of acceptability to the relevant stakeholders.

Residual Effects

- 19.8.21 The residual effects after implementation of agreed mitigation are anticipated to not be significant.

Effects on IFPs

- 19.8.22 During the operational phase, the wind turbines have the potential to infringe the obstacle assessment surfaces of the IFPs. Infringement of the obstacle assessment surfaces would require mitigation in the form of re-design of the affected element of the IFPs.

- 19.8.23 The Applicant's preliminary assessment is that the Proposed Development will have no effects on Manchester Airport IFPs. This has been confirmed by Manchester Airport. Therefore, effects on Manchester IFPs are assessed as not significant.
- 19.8.24 An IFP assessment has confirmed that the Proposed Development will have no effects on Blackpool Airport IFPs. Therefore, effects on Blackpool IFPs are assessed as not significant.
- 19.8.25 The Applicant's preliminary assessment is that the Proposed Development may have effects on Leeds Bradford Airport IFPs but these are not expected to have concomitant effects on the airport's instrument approach procedures. Therefore, at this stage, the effect, prior to the implementation of additional mitigation, is anticipated to be significant.
- 19.8.26 The Applicant's preliminary assessment is that the Proposed Development may have effects on BAE Systems Warton IFPs. Confirmation of this is awaited from the MoD. Therefore, at this stage, the effect, prior to the implementation of additional mitigation, is anticipated to be significant.

Additional Mitigation

- 19.8.27 Mitigation of any confirmed effects on IFPs will be achieved by upward revision of the affected procedure minimum altitude. This will be implemented by re-design of the relevant procedure charts, approval of the re-design by the CAA and the promulgation of the amended procedures in the UK AIP. Mitigation measures will be secured through agreement with the aerodrome operators and then approved by the CAA. Also, the DCO which will contain provisions preventing construction until the specified mitigations are implemented.

Residual Effects

- 19.8.28 Residual effects on all IFPs following the implementation of mitigation will not be significant because international and UK aviation safety regulation requires all obstacles to be avoided vertically by specified distances.

Effects on military low flying

- 19.8.29 Preliminary assessment indicates that the Proposed Development may present an obstacle hazard to low flying military aircraft. Therefore, the effect, prior to the implementation of additional mitigation, is anticipated to be significant.

Additional Mitigation

- 19.8.30 The MoD has stated that any effects on military low flying would be mitigated by the installation of lighting on the Proposed Development and the pre-construction submission of details of the lighting of the Proposed Development to the MoD for

review and approval. These mitigations are a legal requirement under Articles 222 and 225A of the ANO.

Residual Effects

19.8.31 Residual effects on military low flying following implementation of mitigation will not be significant.

Effects on the NERL Pole Hill DVOR

19.8.32 All turbines with the potential to generate unacceptable effects on the NERL Pole Hill DVOR have been removed from the layout. Therefore, the effect is anticipated to be not significant.

Additional Mitigation

19.8.33 It is expected that no further mitigation will be required.

Residual Effects

19.8.34 Residual effects on the Pole Hill DVOR are anticipated to not be significant at this stage.

Decommissioning phase

Effects on PSRs

19.8.35 During the decommissioning phase, the wind turbine rotors will not be turning. Wind turbine effects on PSRs occur only when the turbine rotors are turning. Consequently, the Proposed Development will have no effects on PSRs during the decommissioning phase.

Effects on IFPs

19.8.36 Any effects on IFPs will have been mitigated prior to construction of the Proposed Development. Therefore, during the decommissioning phase, the Proposed Development can have no impact on IFPs.

Additional Mitigation

19.8.37 No additional mitigation is required.

Residual Effects

19.8.38 Residual effects on all IFPs following implementation of mitigation are anticipated to be not significant at this stage.

Effects on military low flying

19.8.39 The Applicant's preliminary assessment indicates that the Proposed Development, including wind turbines (while still standing) and any cranes used in the decommissioning phase, may present an obstacle hazard to low flying military aircraft.

Additional Mitigation

19.8.40 The MoD has stated that any effects on military low flying would be mitigated by the installation of lighting on the Proposed Development and the pre-construction submission of details of the lighting of the Proposed Development to the MoD for review and approval.

Residual Effects

19.8.41 Residual effects on military low flying following implementation of mitigation are anticipated to be not significant at this stage.

Effects on the NERL Pole Hill DVOR

19.8.42 All turbines with the potential to generate unacceptable effects on the NERL Pole Hill DVOR have been removed from the layout. Therefore, the effect is anticipated to be not significant.

Additional Mitigation

19.8.43 It is expected that no further mitigation will be required.

Residual Effects

19.8.44 Residual effects on the Pole Hill DVOR are anticipated to be not significant at this stage.

Next Steps

19.8.45 The next steps in the assessment of the effects on IFPs will be analysis and discussion of the conclusions of IFP assessment reports and agreement on the means of implementing any required changes. This will be secured through agreements with the relevant aerodrome operators which will then be approved by the CAA. The DCO will also contain provisions preventing construction until the specified mitigations are implemented.

19.8.46 The next steps in the assessment of the effects on PSRs will be discussion and agreement with stakeholders on the means of mitigating any significant effects and the process of implementing agreed mitigation (where required). This will be secured through agreements with the relevant radar operators. The DCO will also

contain provisions preventing construction until the specified mitigations are implemented.

19.8.47 An overview of the approach that will be taken to the detailed assessment of likely significance of these effects will be documented within the ES.

19.9 Conclusions

19.9.1 **Table 19-6** presents a summary of the preliminary assessment of likely significant effects and proposed mitigation. It also includes the next steps to be undertaken as part of the EIA.

Table 19-6: Summary of Preliminary Assessment of Likely Significant Effects

Element	Preliminary assessment of Likely Significant Effect	Additional Mitigation	Residual Effect	Next Steps
Construction phase				
Effects on PSRs	n/a	n/a	n/a	n/a
Manchester Airport IFPs	None	None required	Not Significant	None required
Blackport Airport IFPs	None	None required	Not Significant	Confirmation from IFP Assessment that there are no effects
Leeds Bradford Airport IFPs	Potential for significant effect associated with failure to comply with regulations on minimum vertical separation from obstacles	Re-design and approval of procedure charts, raising of minimum altitude of elements of the IFPs	Not Significant	Identification of effects on IFPs and required mitigations

Element	Preliminary assessment of Likely Significant Effect	Additional Mitigation	Residual Effect	Next Steps
BAE Systems Warton IFPs	Potential for significant effect associated with failure to comply with regulations on minimum vertical separation from obstacles	Re-design and approval of procedure charts, raising of minimum altitude of elements of the IFPs	Not Significant	Identification of effects on IFPs and required mitigations
Military low flying	Potential for significant effect as the Proposed Development may present an obstacle hazard	Pre-construction notification and provision of lighting	Not Significant	None required
NERL Pole Hill DVOR	None	None required	Not Significant	None required
Operational and Maintenance Phase				
Leeds Bradford Airport PSR	Radar clutter and reduced probability of detection	Technical mitigation measures to be agreed	Anticipated to be not significant	Agreement on means of mitigation
Manchester Airport PSR	Radar clutter and reduced probability of detection	Technical mitigation measures to be agreed	Anticipated to be not significant	Agreement on means of mitigation
BAE Systems Warton PSR	Radar clutter and reduced probability of detection	Technical mitigation measures to be agreed	Anticipated to be not significant	Agreement on means of mitigation

Element	Preliminary assessment of Likely Significant Effect	Additional Mitigation	Residual Effect	Next Steps
NERL Clee Hill, Claxby and St Anne's PSRs	Radar clutter and reduced probability of detection	Technical mitigation measures to be agreed	Anticipated to be not significant	Agreement on means of mitigation
Met Office Hameldon Hill PSR	Radar clutter and reduced probability of detection	Technical mitigation measures to be agreed	Anticipated to be not significant	Agreement on means of mitigation
Manchester Airport IFPs	None	None required	Not significant	None required
Blackpool Airport IFPs	None	None required	Not significant	None required
Leeds Bradford Airport IFPs	Potential for significant associated with failure to comply with regulations on minimum vertical separation from obstacles	Re-design and approval of procedure charts, raising of minimum altitude of elements of the IFPs	Anticipated to be not significant	Identification of effects on IFPs and required mitigations
BAE Systems Warton IFPs	Potential for significant effects associated with failure to comply with regulations on minimum vertical separation from obstacles	Re-design and approval of procedure charts, raising of minimum altitude of elements of the IFPs	Anticipated to be not significant	Identification of effects on IFPs and required mitigations

Element	Preliminary assessment of Likely Significant Effect	Additional Mitigation	Residual Effect	Next Steps
Military low flying	Potential for significant effect as the Proposed Development may present an obstacle hazard	Pre-construction notification and provision of lighting	Anticipated to be not significant	None required
NERL Pole Hill DVOR	None	None required	Not significant	None required
Decommissioning Phase ²⁴				
Effects on PSRs	n/a	n/a	n/a	n/a
Manchester Airport IFPs	None	n/a	Not significant	None required
Blackport Airport IFPs	None	n/a	Not significant	None required
Leeds Bradford Airport IFPs	None	n/a	Not significant	None required
BAE Systems Warton IFPs	None	n/a	Not significant	None required
Military low flying	Potential for significant effect as the Proposed Development may present an obstacle hazard	Pre-construction notification and provision of lighting	Not significant	None required

²⁴ Note the effects on IFPs during decommissioning are not significant as the required mitigation will have been implemented during an earlier stage of the Proposed Development.

Element	Preliminary assessment of Likely Significant Effect	Additional Mitigation	Residual Effect	Next Steps
NERL Pole Hill DVOR	None	None required	Not significant	None required

