



Chatteris Wind Farm

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Methodologies

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ACRONYMS AND ABBREVIATIONS

Acronym	Definition
ADLS	Aircraft Detection Lighting System
AIL	Abnormal Indivisible Load
ALC	Agricultural Land Classification
ALRA	Abnormal Load Route Assessment
ANSP	Air Navigation Service Provider
AQMA	Air Quality Management Area
ARWTN	Assessment and Rating of Wind Turbine Noise
ATC	Air Traffic Control
ATS	Air Traffic Service
AWI	Ancient Woodland Inventory
BCT	Bat Conservation Trust
BESS	Battery Energy Storage System
BMV	Best and Most Versatile
BNG	Biodiversity Net Gain
BPP	Bird Protection Plan
BS	British Standard
BSI	British Standards Institution
CAA	Civil Aviation Authority
CAP	Civil Aviation Publication

Acronym	Definition
CAPEX	Capital Expenditure
CCRA	Climate Change Risk Assessment
CEA	Cumulative Effects Assessment
CEMP	Construction Environmental Management Plan
CIEEM	Chartered Institute of Ecology and Environmental Management
CIfA	Chartered Institute for Archaeologists
CO ₂	Carbon Dioxide
CPERC	Cambridgeshire and Peterborough Environmental Records Centre
CRM	Collision Risk Modelling
CRTN	Calculation of Road Traffic Noise
cSAC	Candidate Special Area of Conservation
CTMP	Construction Traffic Management Plan
CZTV	Cumulative Zone of Theoretical Visibility
DESNZ	Department for Energy Security and Net Zero
DLL	District Level Licence
DMRB	Design Manual for Roads and Bridges
ECow	Ecological Clerk of Works
EcIA	Ecological Impact Assessment
eDNA	Environmental DNA
EDP	Environmental Delivery Plan
EIA	Environmental Impact Assessment
EN-1	Overarching National Policy Statement for Energy
EPUK	Environmental Protection UK
ES	Environmental Statement
FAS	Flight Activity Survey
FTE	Full-Time Equivalent

Acronym	Definition
GCN	Great Crested Newt
GHG	Greenhouse Gas
GIS	Geographic Information System
GLVIA3	Guidelines for Landscape and Visual Impact Assessment, Third Edition
GPA2	Historic Environment Good Practice Advice in Planning Note 2: Managing Significance in Decision-Taking in the Historic Environment
GPA3	Historic Environment Good Practice Advice in Planning Note 3: The Setting of Heritage Assets
GPG	Good Practice Guide
GVA	Gross Value Added
HCA	Habitat Condition Assessment
HDV	Heavy Duty Vehicle
HER	Historic Environment Record
HGV	Heavy Goods Vehicle
HMMP	Habitat Management and Monitoring Plan
HRA	Habitats Regulations Assessment
HSI	Habitat Suitability Index
IAIP	Integrated Aeronautical Information Package
IAQM	Institute of Air Quality Management
ICCI	In-Combination Climate Change Impact
IEC	International Electrotechnical Commission
IEF	Important Ecological Feature
IFP	Instrument Flight Procedure
IOA	Institute of Acoustics
IOF	Important Ornithological Feature
ISEP	Institute of Sustainability and Environmental Professionals

Acronym	Definition
LAeq,T	Equivalent Continuous A-Weighted Sound Pressure Level over a Specified Time Period
LA90	A-Weighted Sound Level Exceeded for 90% of the Measurement Period
LBAP	Local Biodiversity Action Plan
LDV	Light Duty Vehicle
LI	Landscape Institute
LLV	Lower Limiting Value
LNRS	Local Nature Recovery Strategy
LVIA	Landscape and Visual Impact Assessment
MHCLG	Ministry of Housing, Communities and Local Government
MoD	Ministry of Defence
MoRPh	Modular River Physical Survey
MRT	Multi-Radar Tracker
NATS	National Air Traffic Services
NERL	NATS En Route Limited
NOTAM	Notice to Aviation
NPPF	National Planning Policy Framework
NPSE	Noise Policy Statement for England
NRF	Nature Restoration Fund
NSIP	Nationally Significant Infrastructure Project
NSN	National Site Network
OEMP	Operational Environmental Management Plan
OPEX	Operational Expenditure
OS	Ordnance Survey
PPG	Planning Practice Guidance
PRoW	Public Right of Way

Acronym	Definition
pSPA	Potential Special Protection Area
PSR	Primary Surveillance Radar
RCA	River Condition Assessment
RTC	Road Traffic Collision
RRH	Rotor Risk Height
RVAA	Residential Visual Amenity Assessment
SAC	Special Area of Conservation
SCI	Site of Community Importance
SNH	Scottish Natural Heritage
SPA	Special Protection Area
SSNL	Site-Specific Noise Limit
SSSI	Site of Special Scientific Interest
SSR	Secondary Surveillance Radar
TA	Transport Assessment
TN	Target Note
TNAC	Turbine Noise Assessment Criteria
UKFS	UK Forestry Standard
WFD	Water Framework Directive
WSI	Written Scheme of Investigation
ZTV	Zone of Theoretical Visibility

1. INTRODUCTION

1.1 OVERVIEW

- 1.1.1 This appendix sets out the proposed methodologies that will be applied to assess environmental topics included within the Environmental Impact Assessment (EIA), together with proportionate assessment approaches for other topics considered in the Environmental Statement (ES).
- 1.1.2 This appendix should be read alongside the Scoping Report, which describes the Proposed Development, the environmental topics proposed to be scoped into and out of the EIA, and the rationale for those decisions, and **Appendix B**, which sets out the legislative and policy framework, together with the guidance documents that will inform the EIA process and topic-specific assessments.
- 1.1.3 The methodologies presented within this appendix are preliminary and are intended to support the EIA Scoping process. They may be refined as the design of the Proposed Development evolves, baseline information becomes available, and responses are received from consultees and other stakeholders.
- 1.1.4 Where appropriate, the methodologies have been developed with reference to relevant legislation, national policy, planning guidance and recognised industry best practice. The final assessment methodologies to be applied within the ES will be informed by the Scoping Opinion, ongoing engagement and the results of baseline surveys and studies.
- 1.1.5 **Chapter 18** of the Scoping Report sets out the overarching approach to the cumulative effects assessment (CEA), including the identification of cumulative developments and the methodology to be applied across all technical topics. This appendix provides additional topic-specific detail where required. Sections 5 (Landscape and Visual), 10 (Noise and Vibration) and 13 (Waste) set out supplementary approaches to cumulative effects assessment for those topics. In all other cases, the CEA will be undertaken in accordance with the

methodology presented in **Chapter 18**. Where cumulative effects are not proposed to be assessed, this is identified and justified within the relevant technical chapter.

1.1.6 This appendix is structured by environmental topic and presents the proposed assessment methodologies for:

- Biodiversity and Nature Conservation;
- Ornithology;
- Cultural Heritage and Archaeology;
- Landscape and Visual;
- Shadow Flicker;
- Hydrology, Hydrogeology and Geology;
- Climate Change and Greenhouse Gases;
- Traffic and Transport;
- Noise and Vibration;
- Socio-Economics, Tourism, Recreation and Land Use;
- Aviation, Radar and Telecommunications; and
- Other Environmental Topics.

2. BIODIVERSITY AND NATURE CONSERVATION

2.1 INTRODUCTION

- 2.1.1 The ecological impact assessment (EcIA) will be undertaken with reference to the CIEEM Guidelines for Ecological Impact Assessment¹. The assessment will identify important ecological features (IEFs) requiring detailed assessment and evaluate the likely significant effects of the Proposed Development during construction, operation and maintenance and decommissioning.
- 2.1.2 The significance of effects on each IEF will be determined through professional judgement, taking account of the feature's nature conservation importance and the character and magnitude of the potential effect. In accordance with the CIEEM Guidelines, effects will be categorised as either '**significant**' or '**not significant**', rather than through the use of a significance matrix. Where significant effects are identified, they will be described with reference to the appropriate geographical scale. Further information on this methodology is provided in the section below.

2.2 ASSESSMENT OF LIKELY SIGNIFICANT EFFECTS IMPORTANT ECOLOGICAL FEATURES

- 2.2.1 Ecological features (i.e. species, habitats, ecosystems and their functions /processes) which were deemed to be both important and likely to be affected by the Proposed Development were defined as IEFs and scoped into the assessment. As per CIEEMs guidance¹, *"it is not necessary to assess features that are sufficiently widespread, unthreatened and resilient to project impacts and will remain viable and sustainable"*.
- 2.2.2 Ecological features can be important for a variety of reasons, and may relate, for example, to rarity, the extent to which they are threatened throughout their range, or to their rate of decline. The level of importance of features identified during the desk study and baseline surveys was determined by reference

¹ CIEEM (2024) Guidelines for Ecological Impact Assessment in the UK and Ireland: Terrestrial, Freshwater, Coastal and Marine. Chartered Institute of Ecology and Environmental Management. Available at: <https://cieem.net/resource/guidelines-for-ecological-impact-assessment-ecia/> (Accessed: August 2026).

to CIEEM guidance¹, which included consideration of relevant legislation, conservation status, population size and distribution, and the level of Proposed Development use with potential to impact habitats and protected species. The CIEEM recommended geographical frame of reference¹ was used, which is:

- International;
- National;
- Regional;
- County;
- Local; and
- Less than Local.

2.2.3 In accordance with CIEEM guidance, the assessment of impacts of the Proposed Development will only focus on ecological features with importance of Local or higher, or where mitigation is necessary to ensure legal compliance.

CHARACTERISING POTENTIAL EFFECTS

2.2.4 In line with the CIEEM guidelines¹, consideration is given to the following characteristics when identifying potential effects of the Proposed Development on IEFs:

- **Nature of effect:** whether it is positive (beneficial) to IEFs, e.g. by increasing species diversity or extending habitat; or negative (detrimental), e.g. by loss of, or displacement from, suitable habitat;
- **Extent:** the spatial or geographical area over which the impact may occur;
- **Duration:** defined in relation to ecological characteristics in addition to human timeframes. Impacts may be described as short, medium, long-term, permanent or temporary;
- **Frequency and timing:** this will take into account the number of times an activity will occur in a defined time period that may influence the resulting impact. The timing and frequency of an activity or change may result in an impact if it coincides with seasonal sensitivities (such as a protected species' breeding season); and

- **Reversibility:** an irreversible impact is one from which recovery is not possible within a reasonable timescale, or there is no reasonable chance of action being taken to reverse it. A reversible impact is one from which spontaneous recovery is possible, or which may be counteracted by mitigation.

MAGNITUDE OF CHANGE

2.2.5 The magnitude of change is identified through consideration of the effect characteristics, to determine the degree of change to baseline conditions predicted as a result of the Proposed Development. The criteria for assessing the magnitude of a potential effect is defined as follows:

- **High:** A fundamental change to the baseline condition of the IEF, leading to total loss or major alteration of character/population;
- **Medium:** A material change to the baseline condition of the IEF, leading to partial loss or alteration of character/population;
- **Low:** A slight, detectable, alteration of the baseline condition of the IEF; and
- **Negligible:** A barely distinguishable change from baseline conditions.

2.2.6 Consideration is also given to the duration of likely significant effects with the following timeframes referred to:

- **Short term:** less than 2 years;
- **Medium term:** 2 to 5 years;
- **Long term:** more than 5 years; or
- **Permanent:** for the foreseeable future.

DEFINING THE SIGNIFICANCE OF EFFECTS

2.2.7 CIEEM guidelines¹ avoid and discourage use of the matrix approach to determine significance and describe only two categories: 'significant' or 'not significant'. A 'significant effect' is an effect that either supports or undermines biodiversity conservation objectives for IEFs, or for biodiversity in general.

2.2.8 Where identified, significant effects are qualified with reference to an appropriate geographic scale.

- 2.2.9 The significance of the likely significant effects on each IEF is determined through professional judgement, by considering both the nature conservation value (i.e., importance) of the feature and the degree to which it may be affected (the effect magnitude) by the Proposed Development.

2.3 DESK STUDY AND CONSULTATION

- 2.3.1 Desk study records were received from Cambridgeshire & Peterborough Environmental Records Centre (CPERC). The identified protected and notable species within the desk-study search zone within the last 10 years are identified in **Chapter 6**, Section 6.3.1 of the Scoping Report.
- 2.3.2 Searches of local sites of nature conservation interest including woodland listed on the Ancient Woodland Inventory (AWI) will be carried out within 2 km of the Indicative Order limits. 2 km is considered a suitable buffer, as it allows an understanding of protected or priority species in the locale, and which are likely to be present within the Indicative Order Limits.
- 2.3.3 Engagement will be conducted with relevant statutory and non-statutory nature organisations, where relevant. For example, to discuss opportunities for enhancement in line with the draft LNRS and approach to Biodiversity Net Gain (BNG).

2.4 PLANNED SURVEYS

- 2.4.1 The following surveys would be undertaken within the Indicative Order Limits:

UK HABITAT SURVEY

- 2.4.2 In accordance with the latest version of the UK Habitat Survey methodology², a UK Hab survey would be undertaken. This survey would map habitats according to alpha numeric UK Hab classification codes and involve the completion of a habitat condition assessment (HCA) based on latest guidance³. The survey would record vascular plants and identify the presence or

² Rodwell, J.S. (2006) National Vegetation Classification: User's Handbook. Peterborough: Joint Nature Conservation Committee. Available at: <https://hub.jncc.gov.uk/assets/2e6b7fce-5f23-4f0c-8d58-7b4f8d0b8df0> (Accessed: August 2026).

³ UK Government (2024) Statutory biodiversity metric tools and guides. Available at: <https://www.gov.uk/guidance/statutory-biodiversity-metric-tools-and-guides> (Accessed: August 2026)

absence of invasive botanical species. Target Notes (TN) will detail notable features and evidence of protected species.

- 2.4.3 The UK Habitat Survey would be undertaken between April and September.

RIVER CONDITION ASSESSMENT (RCA)

- 2.4.4 Targeted surveys of watercourses would be undertaken by accredited RCA ecologists. Both field and desk-based components of the RCA survey would follow the latest guidelines^{4,5} and be collated in Cartographer, the MoRPh survey software.

GREAT CRESTED NEWT (GCN)

- 2.4.5 GCN surveys comprising Habitat Suitability Index (HSI), environmental DNA (eDNA) survey and population surveys would be undertaken on the following waterbodies:
- Any pond which lies within 250 m of the Site, where accessible. A 250 m buffer for GCN surveys is usually sufficient, though this may be increased to 500 m if there are no obvious barriers to GCN dispersing into the wider environment⁶. Terrestrial habitats such as rough (tussocky) grasslands, scrub, hedgerows and woodland provide suitable foraging and refugia habitat for GCN⁷. The Site lies within an agricultural landscape. Farmland is open and generally unsuitable for GCN, as it lacks the floral diversity to support a wide variety of invertebrates and lacks features for refuge for GCN leaving them open to predation and desiccation. Therefore, as terrestrial habitat was limited within the Site and its surrounds, it is unlikely that GCN will disperse into the wider

⁴ Gurnell, A.M. and Shuker, L.J. (2022) The MoRPh Survey Technical Reference Manual: 2022 Version. London: Modular River Survey, Queen Mary University of London, Environment Agency and Cartographer Studios. Available at: https://modularriversurvey.org/wp-content/uploads/MoRPh-Manual-ver-14_Oct22.pdf (Accessed: August 2026).

⁵ Gurnell, A.M., England, J., Scott, S.J. and Shuker, L.J. (2024) A Guide to Assessing River Condition: Part of the River and Streams Component of the Biodiversity Metric Watercourse Module for Calculating Biodiversity Net Gain. London: Queen Mary University of London, Cartographer Studios, Environment Agency and Thames Water. Available at: <https://docs.modularriversurvey.org/> (Accessed: August 2026).

⁶ Natural England (2022) Great crested newts: advice for making planning decisions. Available at: <https://www.gov.uk/guidance/great-crested-newts-advice-for-making-planning-decisions> (Accessed: August 2026).

⁷ Langton, T.E.S., Beckett, C.I., and Foster J.P. (2001) Great Crested Newt Conservation Handbook, Froglife, Halesworth. (Accessed: August 2026)

environment, consequently a 250 m survey area was considered sufficient for the GCN surveys.

- 2.4.6 All surveys would be completed in accordance with the latest guidelines⁸.
- 2.4.7 eDNA Surveys for GCN are required to be undertaken between the 15 April and 30 June. Population surveys, if required, would need to be completed between mid-March to mid-June. Therefore, it is likely that population surveys will commence prior to the eDNA Surveys, and should a waterbody yield a negative eDNA Result, population surveys will then cease on that waterbody.

BATS

- 2.4.8 In accordance with BCT guidelines⁹ daytime bat walkover surveys would be undertaken to observe, assess and record habitats suitable for roosting, commuting and foraging bat species.
- 2.4.9 Ground-level tree assessments would be carried out within the Survey Area which will classify potential roosting features in accordance with BCT guidelines.
- 2.4.10 Ground-level static surveys would be undertaken in accordance with NatureScot guidelines¹⁰. Static detectors will be deployed for 10 nights in each of spring, summer and autumn with the survey effort focused in areas where turbines would most likely be located.

OTTER

- 2.4.11 Otter surveys would be undertaken on suitable watercourses 250 m upstream and downstream of any proposed watercourse

⁸ Oldham, R.S., Keeble, J., Swan, M.J.S. and Jeffcote, M. (2000) Evaluating the suitability of habitat for the great crested newt (*Triturus cristatus*). *Herpetological Journal* 10(4), 143 – 155. (Accessed: August 2026)

⁹ Bat Conservation Trust (2023) Bat Surveys for Professional Ecologists: Good Practice Guidelines. 4th Edition. London: Bat Conservation Trust. (Accessed: August 2026)

¹⁰ NatureScot (2021) Bats and Onshore Wind Turbines: Survey, Assessment and Mitigation. Available at: <https://www.nature.scot/doc/bats-and-onshore-wind-turbines-survey-assessment-and-mitigation> (Accessed: August 2026).

crossing point within the Site. Surveys would be completed in accordance with best practice guidelines.

2.4.12 In addition to the above, where the walkover surveys identify potential for otter, camera traps would be left in situ for a minimum of 28 days, as per guidelines from Findley et al (2017)¹¹.

2.4.13 These surveys can be completed at any time of year.

WATER VOLE

2.4.14 Two water vole surveys would be undertaken, one in mid-April to May and one in July to September in accordance with guidelines¹². Surveys will be undertaken of all suitable habitat within 100 m of proposed watercourse crossings within the Site.

BADGER

2.4.15 Badger surveys would be undertaken in accordance with the best practice guidelines^{13,14}. Surveys would be undertaken within all suitable habitats within the Site and areas within 100 m of the Site. 100 m is considered a suitable buffer, as construction methodologies are not known at this stage, and should methods such as piling be used, there is potential for disturbance or destruction of badger setts within 100 m of any of these works. These surveys can be completed at any time of year but will ideally be completed between spring (February to April) or autumn (late September to November) when badger territorial activity is at its highest and vegetation growth is lower.

¹¹ Findlay, E., Barlow, J., Bennison, A., Crawford, A. and Birchley, G. (2017) 'An evidence-based approach to identifying resting sites of Eurasian otter *Lutra lutra* from camera-trap and field sign data', IUCN Otter Specialist Group Bulletin, 34(2), pp. 93-104. (Accessed: August 2026).

¹² Strachan, R., Moorhouse, T. and Gelling, M. (2011) Water Vole Conservation Handbook. Wildlife conservation Research Unit, University of Oxford, Oxford. (Accessed: August 2026).

¹³ Harris S., Cresswell P and Jefferies D (1989) Surveying Badgers. The Mammal Society, London. ISBN 10: 0906282063. (Accessed: August 2026).

¹⁴ Neal, E & Cheesman, C. (1996) Badgers. T & A D Poyser, London. ISBN: 0856610828, 9780856610820. (Accessed: August 2026).

2.5 BIODIVERSITY NET GAIN

- 2.5.1 The Environment Act (2021) Section 99 indicates that “*Schedule 15¹⁵ makes provision about biodiversity gain in relation to development consent for nationally significant infrastructure.*” This is expected to be mandatory for NSIP projects from 02 November 2026¹⁶ and will mean applications will be required to achieve 10 % Biodiversity Net Gain (BNG).
- 2.5.2 As per the overarching NPS (EN-1), paragraph 4.6.6 “*Energy NSIP proposals, whether onshore or offshore, should seek opportunities to contribute to and enhance the natural environment by providing net gains for biodiversity, and the wider environment where possible.*”
- 2.5.3 The Proposed Development is committed to achieving over 10% BNG through habitat retention, enhancement and creation with consideration of local priority habitats. Opportunities will be sought to link delivery of BNG relevant to the Local Nature Recovery Strategies (LNRS). It should be noted that all BNG proposals will be developed in consultation with the relevant councils, though decisions as to how BNG is delivered will be made by the Applicant.
- 2.5.4 A BNG Assessment Report will be produced, detailing the approach to assessment and toolkit results (including baseline units, post development units, temporary impacts and irreplaceable habitat impacts).
- 2.5.5 Measures to achieve Biodiversity Net Gain will be developed as the design of the Proposed Development progresses. Where required, these measures may be set out in a Habitat Management and Monitoring Plan (HMMP) or other appropriate document submitted with the Application.

¹⁵ UK Government (2025) Planning and Infrastructure Act 2025. Available at: <https://www.legislation.gov.uk/ukpga/2025> (Accessed: August 2026).

¹⁶ Department for Environment, Food and Rural Affairs (2025) Government Response and Summary of Responses: Improving the Implementation of Biodiversity Net Gain for Minor, Medium and Brownfield Development. Available at: <https://www.gov.uk/government/consultations/improving-the-implementation-of-biodiversity-net-gain-for-minor-medium-and-brownfield-development/outcome/government-response-and-summary-of-responses> (Accessed: August 2026).

- 2.5.6 The Planning and Infrastructure Act 2025¹⁷ introduced the creation of the Nature Restoration Fund (NRF) and Environmental Delivery Plans (EDPs). The implementation of the Act, and the NRF and EDPs are still at an early stage, though it is known that the first EDP will be for nutrient pollution, and District Level Licensing (DLL) for GCN will remain. Should any changes occur, the assessment will be cognisant of any changes.

2.6 HABITATS REGULATIONS ASSESSMENT (HRA)

- 2.6.1 HRA is discussed here for reference, but is legally distinct and separate from EcIA, and the EIA Regulations. The Habitats Regulations require an appropriate assessment of any adverse effects on qualifying features of internationally important nature conservation sites that are likely to be significantly affected by a proposed project. These internationally important sites include SACs, or candidate SACs (cSACs), SPAs or potential SPAs (pSPAs), Sites of Community Importance (SCIs) and Ramsar sites. These are often referred to as 'European Sites'. European sites form part of a network of protected sites across the UK known as the national site network (NSN)¹⁸. The HRA is the process that determines whether there are any 'likely significant effects' of a project either alone, or in combination with other projects and plans on a European site (screening stage). If a likely significant effect cannot be ruled out then an Appropriate Assessment must be undertaken to determine whether the integrity of the European site will be adversely affected by the project.
- 2.6.2 The European sites selected to be included within the HRA will be agreed in consultation with Natural England.

2.7 APPROACH TO MITIGATION

- 2.7.1 The Proposed Development will follow the mitigation hierarchy as per CIEEM guidelines¹ and relevant planning policy. Areas of

¹⁷ UK Government (2025) Planning and Infrastructure Act 2025. Available at: <https://www.legislation.gov.uk/ukpga/2025> (Accessed: August 2026).

¹⁸ UK Government (2021) Changes to the Habitats Regulations 2017. Available at: <https://www.gov.uk/government/publications/changes-to-the-habitats-regulations-2017/changes-to-the-habitats-regulations-2017#creating-a-national-site-network> (Accessed: August 2026).

important habitats are present, and the design of the Proposed Development will seek to avoid these areas where practicable.

- 2.7.2 During construction, operation and maintenance and decommissioning, procedures will be carried out in line with the best available techniques to reduce the risk of pollution to adjacent habitats.
- 2.7.3 Prior to construction, a programme of pre-construction ecological surveys will be undertaken, where required, to verify baseline conditions and identify any ecological constraints that may have changed since the completion of the main surveys. Survey findings will be used to refine mitigation measures and inform construction planning. An Ecological Clerk of Works (ECoW) may be appointed to provide ecological oversight during construction and to advise on the implementation of mitigation measures where appropriate.
- 2.7.4 The design of the Proposed Development will seek to avoid sensitive ecological receptors wherever reasonably practicable. This may include locating wind turbines, access tracks and other infrastructure away from known badger setts, important habitats and other ecological constraints. Where works have the potential to affect protected species, appropriate buffers, exclusion zones and timing restrictions may be implemented. For example, any works with the potential to disturb badger setts would be undertaken in accordance with relevant guidance and licensing requirements where necessary.
- 2.7.5 Specific measures may also be implemented to protect protected and notable species during construction. These may include locating watercourse crossing points to avoid areas supporting water vole activity, establishing exclusion zones around confirmed bat roosts, and minimising artificial lighting to reduce disturbance to bats and other nocturnal species. Where trees with bat roost potential are affected by the Proposed Development, additional surveys, including aerial inspection or tree-climbing surveys where necessary, may be undertaken to inform mitigation requirements.

- 2.7.6 Good practice measures will be incorporated into construction activities to reduce the risk of harm to wildlife. Such measures may include the provision of escape ramps within open excavations and trenches, routine checks of excavations prior to backfilling, implementation of Site speed limits to reduce the risk of vehicle collisions with fauna, and the establishment of construction buffer zones around areas of important habitat.
- 2.7.7 Prior to construction, a Construction Environmental Management Plan (CEMP) will be prepared incorporating specific measures based on the recommendations of the EcIA. In addition to general ecological protection measures, the CEMP is expected to include measures to control pollution risks, including spillages and leakages, manage construction dust and Air Quality impacts, minimise disturbance arising from noise and lighting, and protect sensitive ecological receptors during construction activities.
- 2.7.8 During the operation and maintenance phase, management measures may be implemented where necessary to minimise ecological effects. These could include controls relating to operational lighting and maintenance activities, together with habitat management and enhancement measures secured through the Proposed Development's Biodiversity Net Gain commitments and any potential Habitat Management and Monitoring Plan (HMMP).

3. ORNITHOLOGY

3.1 INTRODUCTION

3.1.1 The assessment of the likely significant effects from the Proposed Development on bird receptors (Important Ornithological Features (IOFs)) is a staged process, completed with reference to CIEEM (2024) guidelines¹, as follows:

- Identifying the ornithological receptors that could be significantly affected by the Proposed Development, based on baseline data;
- Evaluating the importance of each receptor to a relevant geographical scale. Informed by conservation status of the species and other contextual information;
- Identifying and characterising impacts and their likely significant effects;
- Incorporating measures to avoid and mitigate negative impacts and likely significant effects;
- Assessing the significance of any residual effects after the beneficial effects of any proposed mitigation is taken into account;
- Identifying appropriate compensation measures to offset likely significant residual effects; and
- Identifying opportunities for enhancement.

3.2 IMPORTANT ORNITHOLOGICAL FEATURES

3.2.1 In EcIA, 'importance' of an ornithological feature is comparable with 'sensitivity' within a geographical context and is determined with reference to factors such as conservation status. Therefore, IOFs are those that are considered to be of higher sensitivity and could be significantly affected by the Proposed Development, both negatively and positively.

3.2.2 CIEEM guidelines¹ state: *"One of the key challenges in EcIA is to decide which ecological features (habitats, species, ecosystem and their functions/processes) are important and should be subject to detailed assessment. Such ecological features will be those that are considered to be important and potentially affected by the project. It is not necessary to carry out detailed assessment of features that are sufficiently widespread,*

unthreatened and resilient to project impacts and will remain viable and sustainable.”

- 3.2.3 As such, IOFs are those features that are considered to be both important and potentially affected by the Proposed Development to a degree that may cause population-level effects. In this impact assessment statutory designated sites and species evaluated as being of “Regional” or higher importance are considered of sufficient importance to be assessed IOFs, while those of “Local” or lower importance are not considered to be IOFs. It is anticipated that features of “Local” or lower importance would still be safeguarded by embedded mitigation and would benefit from enhancements.
- 3.2.4 Where, by virtue of their ecology, absence, distance from the Proposed Development, small number, low level of activity, the nature and location of this activity as well as the mitigation measures embedded in the Proposed Development, effects on a particular species are predicted to be of no greater than local importance, then in these circumstances, the IOF will be scoped out of the assessment.
- 3.2.5 In this impact assessment, the importance of a feature is considered within a defined geographical context from International to Site level:
- **International:** Northwest Europe or wider;
 - **National:** England;
 - **Regional/County:** Cambridgeshire;
 - **Local:** local electoral ward and immediate surroundings; and
 - **Site:** The Indicative Order Limits and immediate surrounds.
- 3.2.6 Species of nature conservation importance are identified through policies and legislation. For example, Annex I of the Birds Directive¹⁹, Schedule 1 of the Wildlife and Countryside Act

¹⁹ European Parliament and Council of the European Union (2009) Directive 2009/147/EC of the European Parliament and of the Council of 30 November 2009 on the Conservation of Wild Birds (Codified Version). Available at: <https://eur-lex.europa.eu/legal-content/EN/TXT/PDF/?uri=CELEX:32009L0147&from=EN> (Accessed: August 2026).

1981²⁰, Species of Principal Importance²¹ and the UK's Birds of Conservation Concern list²². Other important features may be listed within Local Biodiversity Action Plans (LBAPs) or other policy. These elements are an important consideration for the identification of IOFs requiring consideration in the impact assessment; however, they do not solely determine the level of importance assigned (with the exception of designated sites, in alignment with CIEEM guidelines¹).

- 3.2.7 Expert judgement is applied to determine the level of importance and to identify IOFs. When determining the importance in the context of the impact assessment, contextual information regarding distribution and abundance of a given species is essential and includes population trends based on historical records. The scale within which importance is determined may also relate to a particular population and thus is considered when determining importance (where such information is available).

3.3 ASSESSMENT OF LIKELY SIGNIFICANT EFFECTS

CHARACTERISING POTENTIAL EFFECTS

- 3.3.1 In line with the CIEEM guidelines¹, consideration is given to the following characteristics when identifying potential effects of the Proposed Development on IOFs:
- **Nature of effect:** whether it is positive (beneficial) to IOFs, e.g. by increasing species diversity or extending habitat; or negative (detrimental), e.g. by loss of, or displacement from, suitable habitat;
 - **Extent:** the spatial or geographical area over which the impact may occur;

²⁰ UK Government (1981) Wildlife and Countryside Act 1981 (as amended). Available at: <https://www.legislation.gov.uk/ukpga/1981/69/contents> (Accessed: August 2026).

²¹ UK Government (2006) Natural Environment and Rural Communities Act 2006. Available at: Natural Environment and Rural Communities Act 2006 (Accessed: August 2026).

²² Stanbury, A., Eaton, M., Aebischer, N., Balmer, D., Brown, A., Douse, A., Lindley, P., McCulloch, N., Noble, D. and Winn, J. (2021) 'The status of our bird populations: the fifth Birds of Conservation Concern in the United Kingdom, Channel Islands and Isle of Man and second IUCN Red List assessment of extinction risk for Great Britain', *British Birds*, 114(12), pp. 723-747. Available at: <https://britishbirds.co.uk/content/status-our-bird-populations-fifth-birds-conservation-concern-united-kingdom-channel> (Accessed: August 2026).

- **Duration:** defined in relation to ecological characteristics in addition to human timeframes. Impacts may be described as short, medium, long-term, permanent or temporary;
- **Frequency and timing:** this will take into account the number of times an activity will occur in a defined time period that may influence the resulting impact. The timing and frequency of an activity or change may result in an impact if it coincides with seasonal sensitivities (such as a protected species' breeding season); and
- **Reversibility:** an irreversible impact is one from which recovery is not possible within a reasonable timescale, or there is no reasonable chance of action being taken to reverse it. A reversible impact is one from which spontaneous recovery is possible, or which may be counteracted by mitigation.

3.3.2 The magnitude of potential effects is identified through consideration of the effect characteristics, to determine the degree of change to baseline conditions predicted as a result of the Proposed Development. The criteria for assessing the magnitude of a potential effect is defined as follows:

- **High:** A fundamental change to the baseline condition of the IOF, leading to total loss or major alteration of character/population;
- **Medium:** A material change to the baseline condition of the IOF, leading to partial loss or alteration of character/population;
- **Low:** A slight, detectable, alteration of the baseline condition of the IOF; and
- **Negligible:** A barely distinguishable change from baseline conditions.

3.3.3 Consideration is also given to the duration of likely significant effects with the following timeframes referred to:

- **Short term:** less than 2 years;
- **Medium term:** 2 to 5 years;
- **Long term:** more than 5 years; or
- **Permanent:** for the foreseeable future.

DEFINING THE SIGNIFICANCE OF EFFECTS

- 3.3.4 CIEEM guidelines¹ similarly avoids and discourages use of the matrix approach to determine significance and describes only two categories: '**significant**' or '**not significant**'. A 'significant effect' is an effect that either supports or undermines biodiversity conservation objectives for IOFs, or for biodiversity in general.
- 3.3.5 Where identified, significant effects are qualified with reference to an appropriate geographic scale, as defined in Section 3.2.
- 3.3.6 The significance of the likely significant effects on each IOF is determined through professional judgement, by considering both the nature conservation value (i.e., importance) of the feature and the degree to which it may be affected (the effect magnitude) by the Proposed Development.

3.4 PLANNED SURVEYS

FLIGHT ACTIVITY SURVEYS

- 3.4.1 Flight Activity Surveys (FAS) are being undertaken in accordance with NatureScot (2024) Recommended Bird Survey Methods to Inform Impact Assessment of Onshore Wind Farms²³. Surveys are designed to quantify the flight activity of target species within and around the Indicative Order Limits and to collect data on flight height, behaviour, direction of travel and use of the survey area. The survey effort would be sufficient to inform collision risk modelling and assessment of potential displacement and barrier effects where relevant.

BREEDING BIRD SEASON SURVEYS

Breeding Raptor Surveys

- 3.4.2 Breeding raptor surveys are being undertaken following the species-specific survey methodologies set out in Hardey et al. (2013) Raptors: A Field Guide for Surveys and Monitoring²⁴.

²³ NatureScot (2024) Recommended Bird Survey Methods to Inform Impact Assessment of Onshore Wind Farms. Inverness: NatureScot. Available at: <https://www.nature.scot/doc/recommended-bird-survey-methods-inform-impact-assessment-onshore-wind-farms> (Accessed: August 2026).

²⁴ Hardey, J., Crick, H., Wernham, C., Riley, H., Etheridge, B. and Thompson, D. (2013). Raptors: A Field Guide for Surveys and Monitoring (3rd Edition) (Accessed: August 2026).

Surveys comprise a combination of vantage point observations, territory mapping, nest searches and behavioural observations, as appropriate to the target species. The surveys seek to identify breeding territories, nesting locations and patterns of Site use within the Study Area to inform the assessment of potential effects on breeding raptors.

Breeding Bird Surveys

- 3.4.3 Breeding bird surveys are being undertaken in accordance with guidance published by the Bird Survey and Assessment Steering Group, Gilbert et al. (1998) Bird Monitoring Methods, and NatureScot (2024)²³ Recommended Bird Survey Methods to Inform Impact Assessment of Onshore Wind Farms. Surveys are designed to identify the distribution, abundance and breeding status of bird species within the survey area through standardised field survey techniques. The surveys would establish the breeding bird assemblage and identify any notable or protected species that may be affected by the Proposed Development.

NON-BREEDING SEASON BIRD SURVEYS

Winter Bird Surveys

- 3.4.4 Winter bird surveys are being undertaken in accordance with Bird Survey and Assessment Steering Group guidance and NatureScot (2024) Recommended Bird Survey Methods to Inform Impact Assessment of Onshore Wind Farms²³. Surveys will record the presence, abundance and distribution of wintering bird species within the survey area, with particular focus on species of conservation importance. Survey findings will be used to characterise the wintering bird assemblage and inform the assessment of potential disturbance, displacement and habitat loss effects associated with the Proposed Development.

3.5 COLLISION RISK MODELLING

- 3.5.1 To help inform a robust assessment, Collision Risk Modelling (CRM) will be following NatureScot (2024) guidance²⁵, including use of the standardised spreadsheet²⁶.
- 3.5.2 Observed flights will be reviewed to identify and quantify flight activity at Rotor Risk Height (RRH) in proximity (blade length plus 500 m) to the turbines. Where observed flight activity for a species is at a level where significant effects from collision cannot be reasonably ruled out, CRM will be completed and results presented in a Technical Appendix to the ES. Where there is uncertainty in the available data (e.g. flapping or gliding flight, nocturnal activity levels), a precautionary approach will be taken with justification provided where necessary.

3.6 APPROACH TO MITIGATION

- 3.6.1 The assessment will follow the mitigation hierarchy, with a focus on avoiding effects through design wherever reasonably practicable. Potential mitigation measures may include:
- Embedded design mitigation through the iterative wind farm design process, taking account of ornithological constraints identified through baseline surveys and consultation, including sensitive habitats, breeding territories, flight activity and key bird use areas;
 - Preparation of a Bird Protection Plan (BPP) to avoid harm to breeding and wintering birds during construction, including measures to safeguard breeding Schedule 1 species where present;
 - Habitat management, enhancement and creation measures, where required, to reduce residual effects and deliver biodiversity benefits. These measures may be incorporated within a draft Habitat Management and Monitoring Plan (HMMP), if required;

²⁵ NatureScot (2014) Guidance on using an updated collision risk model to assess bird collision risk at onshore wind farms (updated 16/04/2025). Available at: <https://www.nature.scot/doc/guidance-using-updated-collision-risk-model-assess-bird-collision-risk-onshore-wind-farms>. (Accessed: August 2026).

²⁶ NatureScot (2024). Collision Risk Model for Onshore Wind Farms, (spreadsheet). Available from: <https://www.nature.scot/doc/collision-risk-model-onshore-wind-farms-spreadsheet-2024>. (Accessed: August 2026).

- Delivery of the Proposed Development's commitment to over 10% Biodiversity Net Gain, which may provide opportunities for ornithological enhancement;
- Post-consent monitoring, where justified by the assessment findings, to evaluate the effectiveness of mitigation measures and inform any adaptive management requirements; and
- Preparation of a decommissioning plan prior to the end of the operational life of the Proposed Development, including updated ornithological surveys and any mitigation measures required to address decommissioning effects.

3.6.2 The final mitigation package will be informed by the survey results, impact assessment findings and engagement with relevant stakeholders.

4. CULTURAL HERITAGE AND ARCHAEOLOGY

4.1 INTRODUCTION

4.1.1 The cultural heritage and archaeology assessment will be undertaken in accordance with relevant national planning policy and current best practice guidance, including:

- Historic England's Delivering Clean Power: Commercial Renewable Energy Development and the Historic Environment (Advice Note 15, 2026)²⁷;
- Managing Significance in Decision-Taking in the Historic Environment (GPA2, 2015)²⁸; and
- The Setting of Heritage Assets (GPA3, 2017)²⁹, and Statements of Heritage Significance: Analysing Significance in Heritage Assets (Advice Note 12, 2019)³⁰.

4.1.2 Archaeological consultancy, assessment and reporting will also be undertaken in accordance with the relevant Chartered Institute for Archaeologists (CIfA) Standards and Guidance (2020)³¹, including those relating to archaeological advice³², consultancy services and historic environment desk-based assessment.

²⁷ Historic England (2026) Delivering Clean Power: Commercial Renewable Energy Development and the Historic Environment. Historic England Advice Note 15. Swindon: Historic England. Available at: <https://historicengland.org.uk/advice/planning/energy-and-climate-change/renewable-energy/> (Accessed: August 2026).

²⁸ Historic England (2015) Managing Significance in Decision-Taking in the Historic Environment. Historic Environment Good Practice Advice in Planning Note 2 (GPA2). Swindon: Historic England. Available at: <https://historicengland.org.uk/images-books/publications/gpa2-managing-significance-in-decision-taking/gpa2/> (Accessed: August 2026).

²⁹ Historic England (2017) The Setting of Heritage Assets. Historic Environment Good Practice Advice in Planning Note 3 (2nd edn). Swindon: Historic England. Available at: <https://historicengland.org.uk/images-books/publications/gpa3-setting-of-heritage-assets/heag180-gpa3-setting-heritage-assets/> (Accessed: August 2026).

³⁰ Historic England (2019) Statements of Heritage Significance: Analysing Significance in Heritage Assets. Historic England Advice Note 12. Swindon: Historic England. Available at: <https://historicengland.org.uk/images-books/publications/statements-heritage-significance-advice-note-12/heag279-statements-heritage-significance/> (Accessed: August 2026).

³¹ Chartered Institute for Archaeologists (CIfA) (2020) Standard and Guidance for Historic Environment Desk-Based Assessment. Reading: Chartered Institute for Archaeologists. Available at: https://www.archaeologists.net/sites/default/files/CIfAS%26GDBA_4.pdf (Accessed: August 2026).

³² Chartered Institute for Archaeologists (CIfA) (2020) Standard and Guidance for Archaeological Advice by Historic Environment Services. Reading: Chartered Institute for Archaeologists. Available at: https://www.archaeologists.net/sites/default/files/CIfAS%26GArchAdvice_4.pdf (Accessed: August 2026).

4.2 ASSESSMENT OF HERITAGE SIGNIFICANCE

4.2.1 Heritage assets will be assessed in terms of their significance, following the requirement in EN-1 section 5.9³³, and taking account of Historic England's guidance on 'Managing Significance in Decision-Taking in the Historic Environment' (GPA2)³⁴.

4.2.2 Significance, in relation to heritage policy, is defined in the National Planning Policy Framework (NPPF)³⁵ as:

"the value of a heritage asset to this and future generations because of its heritage interest. That interest may be archaeological, architectural, artistic or historic. Significance derives not only from a heritage asset's physical presence, but also from its setting."

4.2.3 The NPPF glossary and the PPG³⁶ provide that an asset's significance derives from its heritage 'interests', which the latter defines as follows:

- **Archaeological interest:** *"As defined in the Glossary to the National Planning Policy Framework, there will be archaeological interest in a heritage asset if it holds, or potentially holds, evidence of past human activity worthy of expert investigation at some point".*
- **Architectural and artistic interest:** *"These are interests in the design and general aesthetics of a place. They can arise from conscious design or fortuitously from the way the heritage asset has evolved. More specifically, architectural interest is an interest in the art or science of the design, construction, craftsmanship and decoration of buildings*

³³ HM Government (2025) Overarching National Policy Statement for Energy (EN-1). London: HMSO. Available at: <https://www.gov.uk/government/publications/overarching-national-policy-statement-for-energy-en-1> (Accessed: August 2026).

³⁴ Historic England (2015) Managing Significance in Decision-Taking in the Historic Environment. Historic Environment Good Practice Advice in Planning Note 2 (GPA2). Swindon: Historic England. Available at: <https://historicengland.org.uk/images-books/publications/gpa2-managing-significance-in-decision-taking/gpa2/> (Accessed: August 2026).

³⁵ Ministry of Housing, Communities and Local Government (2026) National Planning Policy Framework. Available at: <https://www.gov.uk/guidance/national-planning-policy-framework>. (Accessed: September 2026).

³⁶ Ministry of Housing, Communities and Local Government (2025) Planning Practice Guidance: Conserving and Enhancing the Historic Environment. Available at: <https://www.gov.uk/guidance/conserving-and-enhancing-the-historic-environment> (Accessed: August 2026).

and structures of all types. Artistic interest is an interest in other human creative skills, like sculpture."

- **Historic interest:** *"An interest in past lives and events (including pre-historic). Heritage assets can illustrate or be associated with them. Heritage assets with historic interest not only provide a material record of our nation's history but can also provide meaning for communities derived from their collective experience of a place and can symbolise wider values such as faith and cultural identity."*

4.2.4 Historic England's 'Statements of Heritage Significance: Analysing Significance in Heritage Assets', Historic England Advice Note 12 (2019)³⁷, also promotes the use of this terminology and methodology. This approach allows for a detailed and justifiable determination of heritage significance and the interests from which that significance derives.

4.2.5 In accordance with EN-1, the level of significance attributed to heritage assets will be articulated as follows:

- Designated heritage assets of the highest significance, as identified in section 5.9.30 of EN-1, comprising Grade I and II* Listed buildings, Grade I and II* Registered Parks and Gardens, Scheduled Monuments, Protected Wreck Sites, World Heritage Sites and Registered Battlefields (and also including some Conservation Areas) and non-designated heritage assets of archaeological interest which are demonstrably of equivalent significance to Scheduled Monuments, as identified in section 5.9.6 of EN-1 (2025);
- Designated heritage assets of less than the highest significance, as identified in section 5.9.30 of EN-1, comprising Grade II Listed buildings and Grade II Registered Parks and Gardens (and also some Conservation Areas); and
- Non-designated heritage assets, as defined within the PPG as *"buildings, monuments, sites, places, areas or landscapes identified by plan-making bodies as having a degree of*

³⁷ Historic England (2019) Statements of Heritage Significance: Analysing Significance in Heritage Assets. Available at: <https://historicengland.org.uk/images-books/publications/statements-heritage-significance-advice-note-12/heag279-statements-heritage-significance/> (Accessed: August 2026).

significance meriting consideration in planning decisions, but which do not meet the criteria for designated heritage assets”.

4.3 MAGNITUDE OF IMPACT

- 4.3.1 Magnitude of impact is the predicted degree of change to the existing baseline environment during and / or following the construction of the Proposed Development. The methodology for predicting the degree of change that will be employed in this assessment moves away from the more traditional ‘scalar’, matrix-led approach. It instead adopts a descriptive, qualitative presentation of the changes to heritage significance that are predicted as a result of the Proposed Development, which directly reflects key concepts in current planning policy and heritage guidance and allows for a less constrained assessment of effects.

4.4 SETTING ASSESSMENT

- 4.4.1 Harm to the significance of any heritage assets as a result of change to setting will be undertaken in accordance with HE’s ‘The Setting of Heritage Assets’ (2017)³⁸, which comprises the key industry guidance on heritage setting assessment.
- 4.4.2 To aid in the assessment of any setting impacts, reference will be made to the extent of the potential visual changes in setting as determined through the use of a bare earth ZTV and Landscape and Visual Impact Assessment (LVIA) viewpoints.
- 4.4.3 A sieving exercise will also be used to determine which heritage assets are to be referred to within the final setting assessment. For inclusion, assets will need to meet the following criteria:
- They must share intervisibility or a material non-visual association with the Proposed Development;
 - They must derive part of their significance from their setting, as per the relevant policy and guidance; and
 - Their location within the ZTV will be used to determine inclusion within assessment.

³⁸ Historic England (2017) The Setting of Heritage Assets. Available at: <https://historicengland.org.uk/images-books/publications/gpa3-setting-of-heritage-assets/heag180-gpa3-setting-heritage-assets/> (Accessed: August 2026).

4.5 SIGNIFICANCE OF EFFECTS

- 4.5.1 The process of carefully describing the level of heritage significance of each asset that may be affected by the Proposed Development and the interests from which that significance derives, combined with a prediction of the degree of change (magnitude) to this significance following the Proposed Development, will allow for an assessment of the overall effect of the Proposed Development upon the asset in question. In each case professional judgement will be employed to determine the likely significance of the effect. In reference to the EIA regulations, where the Proposed Development is predicted to result in a substantial erosion of the significance of a heritage asset, this may be described as a significant effect.

4.6 APPROACH TO MITIGATION

- 4.6.1 The primary means of mitigating effects on cultural heritage and archaeology will be through iterative design development and the application of proportionate archaeological investigation where required.
- 4.6.2 For archaeological remains and non-designated heritage assets within the Site, mitigation may include:
- Review of Historic Environment Record (HER) data to inform the baseline and identify known heritage assets;
 - Targeted archaeological evaluation undertaken in accordance with an agreed Written Scheme of Investigation (WSI); and
 - Where necessary, preservation in situ, design amendments, archaeological excavation, or strip, map and sample recording.
- 4.6.3 Potential effects on the setting of heritage assets will be addressed primarily through the design evolution process. The assessment will be informed by desk-based research, ZTV analysis, Site inspections and setting assessments to understand the contribution that setting makes to the significance of heritage assets and the extent to which this may be altered by the Proposed Development.
- 4.6.4 For wind farm developments, opportunities to mitigate setting effects are often limited due to the scale and visibility of the

infrastructure. Where potential setting effects are identified, mitigation is therefore most likely to comprise design-led measures, which may include:

- Refinement of turbine locations and layout;
- Micro-siting of turbines and associated infrastructure;
- Adjustment of turbine dimensions; and
- Removal of individual turbines where necessary.

4.6.5 Overall, the approach to mitigation will seek to avoid impacts through design refinement wherever practicable and, where this is not possible, identify appropriate measures to minimise and manage effects.

5. LANDSCAPE AND VISUAL

5.1 DESK STUDY AND FIELD STUDIES

- 5.1.1 Baseline studies will be undertaken, supported by GIS mapping and 3D visualisation tools including Google Earth Pro and Resoft Windfarm.
- 5.1.2 Field survey work will be undertaken to gather information about existing character of the landscape, to visit receptors and to record views from representative viewpoints, as detailed in **Chapter 9, Table 9.1** and **Table 9.2** of the Scoping Report.

5.2 LVIA ASSESSMENT METHODOLOGY

Landscape Sensitivity

- 5.2.1 The sensitivity of a landscape receptor to change will combine professional judgements on susceptibility and value, using the principles set out in **Table 5.1**.

TABLE 5.1 THE PRINCIPLE OF JUDGING LANDSCAPE SENSITIVITY

	Higher	↔	Lower
Susceptibility	The landscape is less able to accommodate wind energy development without undue negative consequences to the baseline situation. Attributes that make up the character of the landscape offer very limited opportunities for the accommodation of change without key characteristics being fundamentally altered by wind energy development, leading to a different landscape character.	↔	The landscape is more able to accommodate wind energy development without undue negative consequences to the baseline situation. Attributes that make up the character of the landscape are more resilient to being changed by wind energy development.
Value	Landscapes with higher scenic quality,	↔	Landscapes of limited aesthetic qualities, low

	Higher	↔	Lower
	conservation interests, recreational value, cultural associations or rarity or uniqueness. Areas designated at a national level e.g. National Parks or AONBs with national policy level protection. LANDMAP aspect areas with higher overall evaluation scores.		conservation interest, little recreational value, few cultural associations or of character that is frequent/widespread. Areas or features that are not formally designated. LANDMAP aspect areas with lower overall evaluation scores.

Landscape Susceptibility

- 5.2.2 Susceptibility means “*the ability of the landscape receptor (whether it be the overall character or quality/condition of a particular type or area, or an individual element and/or feature, or a particular aesthetic and perceptual aspect) to accommodate the proposed development without undue consequences for the maintenance of the baseline situation and/or the achievement of landscape planning policies and strategies*” (GLVIA3 paragraph 5.40)³⁹.
- 5.2.3 For wind energy development, a series of criteria are used to evaluate susceptibility of landscape character types or areas to wind energy development as set out in **Table 5.2**. These criteria are drawn from a range of published sources relating to wind farm development, including Siting and Designing Windfarms in the Landscape⁴⁰ (SNH, 2017) and GLVIA3³⁹.

³⁹ Guidelines for Landscape and Visual Impact Assessment 3rd Edition, (Landscape Institute and the Institute of Environmental Assessment), 2013. (Accessed: August 2026).

⁴⁰ NatureScot (2017) Siting and Designing Wind Farms in the Landscape. Version 3a. Inverness: NatureScot. Available at: <https://www.nature.scot/sites/default/files/2017-11/Siting%20and%20designing%20windfarms%20in%20the%20landscape%20-%20version%203a.pdf> (Accessed: August 2026)

TABLE 5.2 CRITERIA TO DETERMINE SUSCEPTIBILITY TO WIND ENERGY DEVELOPMENT

Characteristic / Attribute	Aspects Indicating Higher Susceptibility to Wind Energy Development	↔	Aspects Indicating Lower Susceptibility to Wind Energy Development
Scale	Small scale.	↔	Large scale.
Landform	Presence of strong topographical variety or distinctive landform features.	↔	Absence of strong topographical variety, featureless, convex or flat.
Land Cover and Landscape Pattern / Complexity	Complex. Rugged and irregular.	↔	Simple. Regular or uniform.
Historic Landscape / Time Depth	Presence of historic landscapes with great time depth with a high density of historic landscape features.	↔	Absence of time depth and historic features.
Settlement and Manmade Influences	Absence of modern development. Presence of small scale, historic or vernacular settlement.	↔	Presence of contemporary structures e.g. utility, infrastructure or industrial elements.
Skylines	Distinctive, undeveloped skylines. Skylines that are highly visible over large areas or exert a large influence on landscape character. Skylines with important historic landmarks.	↔	Non-prominent/screened skylines or skylines that are less important in views. Presence of existing modern man-made features.
Visibility from Adjacent Landscapes	Visible from nationally designated landscapes. Forms an important part of a view from promoted viewpoints.	↔	Little visibility from adjacent designated landscape or promoted viewpoints.
Perceptual Aspects	Remote from visible or audible signs of human activity and development. High	↔	Presence of visible or audible signs of human activity and

Characteristic / Attribute	Aspects Indicating Higher Susceptibility to Wind Energy Development	↔	Aspects Indicating Lower Susceptibility to Wind Energy Development
	levels of naturalness evident. Particularly tranquil; wild; spiritual; attractive; peaceful. Low levels of light pollution/experiences dark skies.		development. Lacking in naturalness. Threatening; unattractive; noisy. High levels of light pollution/doesn't experience dark skies.

5.2.4 Information contained within relevant landscape character assessments and other baseline documents will be used, alongside field survey, to inform susceptibility. Landscape susceptibility will be defined as **high**, **medium** or **low**, as set out in **Table 5.3**.

TABLE 5.3 DEFINITION OF LANDSCAPE SUSCEPTIBILITY

Landscape Susceptibility	Description
High	The landscape is less able to accommodate the type of development proposed without undue negative consequences to the baseline situation, e.g. this may include: • Landscapes that are smaller in scale or exhibiting some complexity, perhaps with some distinctive topographical features; • General absence of modern development and/ or presence of historic landscape with a degree of time depth; • Relatively undeveloped skylines and/or skylines that are visible and exert an influence on landscape character (which may include some historic landmarks); • May be inter-visible with sensitive landscapes or forms an important part of a view; and • Has a sense of remoteness/tranquillity with few visible or audible signs of human activity and development, and experiences dark skies.
Medium	The landscape is able to accommodate the type of development proposed to some extent without undue

Landscape Susceptibility	Description
	negative consequences to the baseline situation, e.g. this may include: • Medium scale landscapes which may have some topographical variety or features present; • May be some man-made features and/or contemporary structures present; • Skylines may be present but not likely to be the most important skylines in a region – there could be some visibility of the skyline from sensitive landscapes or views; • Some visible or audible signs of human activity and development, but may also be some sense of tranquillity and experiences some dark skies; and • Medium can also be a balance of indicators associated with high and low susceptibility.
Low	The landscape is more able to accommodate the type of development proposed without undue negative consequences to the baseline situation, e.g. this may include: • Large scale landscapes with absence of strong topographical variety and a simple form; • Regular or uniform landcover patterns; • Presence of man-made features and/ or contemporary structures e.g. utility, infrastructure or industrial elements; • Skylines that are not prominent or less important in views; • Less visible from sensitive landscapes or views; • Presence of visible or audible signs of human activity and development, and doesn't experience dark skies; and • Lack of tranquillity.

Value of the Landscape Receptor

5.2.5 Landscape value, for the purposes of the LVIA, will be determined with reference to:

- A review of any designations and the level of policy importance that they signify (such as landscapes designated at international, national, or local level);
- A review of the relevant landscape character assessments, including any identified values and sensitivities; and

- The application of criteria that indicate value (such as condition/intactness, scenic quality, rarity, recreational value, representativeness, conservation interests, perceptual aspects and artistic associations) as described in GLVIA3, paragraphs 5.44 – 5.47³⁹.

5.2.6 Landscape value will be recorded as **high**, **medium** or **low** as per the principles in **Table 5.4**.

TABLE 5.4 DEFINITION OF LANDSCAPE VALUE

Landscape Value	Description
High (National / Regional)	This may include: • Landscapes designated at national level (e.g. National Parks, AONBs); and • Landscapes that are in good condition, have high scenic quality, are rare, have high recreational value, high conservation interest, are remote/tranquil and/or have high/nationally recognised associations with artists, writers or events in history that contribute to perceptions of the natural beauty of the area.
Medium (Local)	This may include: • Landscapes that are designated at a regional or local level; and • Landscapes that are in a moderate condition, that have a moderate scenic quality, may have some rarity value at a local level, have some recreational value, some conservation interest, have a degree of rurality (but not a great sense of tranquillity/remoteness) and/or have locally recognised associations with artists, writers or events in history that contribute to perceptions of the natural beauty of the area.
Low (Community)	This may include: • Landscapes that are not designated; and • Landscapes that are in less good condition, have a low scenic quality, are not rare, lacking recreational value or conservation interest, unlikely to exhibit a sense of tranquillity/remoteness and have no notable associations with artists, writers or events in history that contribute to perceptions of the natural beauty of the area.

Combining Landscape Susceptibility and Value Judgements

- 5.2.7 An overall judgement of landscape sensitivity will be derived by combining the separate judgements on landscape susceptibility and landscape value, as per the 'sequential combination' approach referred to in GLVIA 3 (para 5.55)³⁹. The process of combining the judgements of susceptibility and value is one of professional judgement. The starting point is an even weighting given to susceptibility and value, but each situation is different and there may be instances where susceptibility or value has more influence. In each case the judgement will be clearly explained.
- 5.2.8 Landscape sensitivity of a landscape receptor to change will be expressed as **high**, **medium** or **low** (or the intermediate levels of **low-medium** and **medium-high**).

Visual Sensitivity

- 5.2.9 Visual sensitivity will combine professional judgements on susceptibility and value using the principles set out in **Table 5.5**.

TABLE 5.5 THE PRINCIPLE OF JUDGING VISUAL SENSITIVITY

	Higher	↔	Lower
Susceptibility	Viewers whose attention or interest is focused on their surroundings including communities/ individual residential receptors/ people engaged in outdoor recreation/ visitors to heritage assets or other attractions where views of the surrounding area are an important contributor to experience.	↔	People whose attention is not on their surroundings (and where setting is not important to the quality of working life) such as commuters/ people engaged in outdoor sports/ people at their place of work.
Value	Views recorded in management plans or guidebooks.	↔	Views which are not documented or protected.

	Higher	↔	Lower
	Views associated with nationally designated landscapes; notable views from a National Trail or promoted route; or designed views (vistas) recorded in citations for historic parks, gardens/scheduled monuments etc.		Views which are more incidental, and less likely to be associated with somewhere people travel to or stop.

Susceptibility of the Visual Receptor

- 5.2.10 The susceptibility of visual receptors to changes in views/visual amenity is a function of the occupation or activity of people experiencing the view and the extent to which their attention is focused on views (GLVIA3, paragraph 6.32)³⁹.
- 5.2.11 The susceptibility of visual receptors will be defined as **high**, **medium** or **low**, as set out in **Table 5.6**.

TABLE 5.6 DEFINITION OF VISUAL SUSCEPTIBILITY

Susceptibility	Receptor Group
High	Viewers whose attention or interest is focused on their surroundings, including: - Communities where views contribute to the landscape setting enjoyed by residents; - People engaged in outdoor recreation (for example users of rights of way including national trails and promoted routes, whose interest is likely to be focused on the landscape, views from promoted viewpoints, or views from nationally/locally designated landscapes); - Visitors to heritage assets or other attractions where views of surrounding are an important contributor to experience; and - People travelling on scenic routes and tourist routes, where attention is focused on the surrounding landscape.
Medium	Viewers whose attention or interest is focused on their surroundings to some extent, including:

Susceptibility	Receptor Group
	• People travelling on local road routes, where attention may be focused on the surrounding landscape, but is transitory; and • People at their place of work whose attention is focused on the surroundings and where setting is important to the quality of working life.
Low	Viewers whose attention or interest is less focused on their surroundings, including: • People travelling more rapidly on major road, rail or transport routes (not recognised as scenic routes); • People engaged in outdoor sport or recreation which does not involve or depend upon appreciation of views of the landscape; and • People at their place of work whose attention is not on their surroundings (and where setting is not important to the quality of working life).

Value of the Views Experienced by the Visual Receptor

5.2.12 Recognition of the value of views experienced from the visual receptor will be determined with reference to:

- Planning designations specific to views;
- Whether views are recorded as an important part of designated landscapes, for example views being specifically mentioned within the special qualities of a National Park or a National Landscape;
- Whether they are notable views from a National Trail or Long Distance Path;
- Whether views are recognised as important within citations, for example designed views within Registered Parks and Gardens, or views recorded as important within Conservation Area appraisals;
- The value attached to views by visitors, for example as indicated by designated viewpoints advertised on OS maps and in tourist information, or significant destinations such as popular hill summits, or viewpoints which have facilities for enjoyment of the view, or views made famous by photographs or paintings; and
- Whether views are referenced in existing evidence base documents, such as landscape character assessments.

5.2.13 The value of views experienced from the visual receptor will be recorded as **high**, **medium** or **low** in accordance with **Table 5.7** below.

TABLE 5.7 DEFINITIONS OF VALUE ATTACHED TO VIEWS

Value of Views Experienced from the Visual Receptor	Description
High (National / Regional)	This may include: • High-quality views associated with nationally/locally designated landscapes (perhaps identified in management plans), or high-quality views from National Trails; • Designed views recorded in citations for historic parks and gardens; • Valued views to and from heritage assets (conservation areas, scheduled monuments or listed buildings) that are highlighted in the citation for the designation or, in the case of conservation area, in the conservation area appraisal or in protected views in local plan documents; and • High-quality views that have facilities provided for the enjoyment of the view by visitors (such as parking places, sign boards and interpretative material for the views).
Medium (Local)	This may include: • Non-designated views, which may be noted as attractive in landscape character assessments or other evidence base documents; and • Views that are 'attractive'/scenic (as judged on Site).
Low (Community)	This may include: • Other non-designated views that are not noted as attractive in landscape character assessments or other evidence base documents, and are not notably scenic (they may nevertheless be valued by the local community who experience them).

Combining Visual Susceptibility and Value Judgements

5.2.14 An overall judgement of visual sensitivity will be derived by combining the separate judgements on visual susceptibility and

the value of views experienced from the visual receptor, as per the 'sequential combination' approach referred to in GLVIA 3 (para 6.43)³⁹.

- 5.2.15 Visual sensitivity of a visual receptor to change will be expressed as **high**, **medium** and **low** (or the intermediate levels of **low-medium** and **medium-high**).

5.3 MAGNITUDE

- 5.3.1 The nature of the effect is commonly referred to as magnitude and is driven by the size and scale of change with, duration, reversibility and geographical extent also reported.
- 5.3.2 In GLVIA3, geographical extent is considered as forming part of the magnitude (when combined with the size/scale of effect, duration and reversibility). However, the inclusion of geographical extent can distort the aim of identifying significant effects. For example, a high magnitude of change based on size or scale may be reduced to a lower rating if it occurs in a localised geographical area. This might mean that a potentially significant effect would be overlooked if effects are diluted down due to their limited geographical extents. Therefore, the geographic extent of effects will be reported alongside the effect. The key objective is to communicate the location of effects.

Size and Scale of Landscape Effect

- 5.3.3 For landscape elements/features this depends on the extent of existing landscape elements that will be lost or changed, the proportion of the total extent that this represents and the contribution of that element to the character of the landscape.
- 5.3.4 In terms of landscape character, this reflects the degree to which the character of the landscape will change by removal or addition of landscape components, and how the changes will affect key characteristics.
- 5.3.5 The assessment of size/scale will be described as being **large**, **medium**, **small** or **barely perceptible** according to **Table 5.8**.

TABLE 5.8 SIZE/SCALE OF LANDSCAPE CHANGE

Size / Scale	Definition
Large	Loss or modification of landscape elements and features, or addition of new elements and features, which result in a large change to the key characteristics and character of the landscape (including perceptual character).
Medium	Loss of landscape elements and features, or addition of new ones, which result in discernible changes to landscape characteristics and character (including perceptual character).
Small	A perceptible but small change to landscape characteristics and character (including perceptual character) as a result of the loss of landscape elements and features or addition of new ones.
Barely Perceptible	A barely perceptible change to landscape characteristics and character.

Duration of Landscape Effect

5.3.6 GLVIA3 (paragraph 5.51)³⁹ states that duration of effect "*can usually be simply judged on a scale such as short term, medium term or long term*". For the purposes of the LVIA, duration will be determined in relation to the length of phases of the development, as follows:

- **Short-term** with effects generally lasting 0-5 years e.g. resulting from construction activities or presence of temporary structures;
- **Medium-term** with effects generally lasting 5-10 years e.g. resulting from longer construction periods or operational effects that may cease on growth of planting mitigation; and
- **Long-term** with effects generally lasting over 10 years e.g. resulting from the presence of turbines or other operational structures lasting more than 10 years.

Reversibility of Landscape Effect

5.3.7 In accordance with the principles contained within GLVIA3, reversibility will be reported as **reversible, partially reversible** or **not reversible**, and is related to whether the

change can be reversed at the end of the phase of development under consideration (i.e. at the end of the construction or at the end of the operational lifespan of the development).

Combining the Magnitude of Landscape Change Judgements

- 5.3.8 An overall judgement for the magnitude of landscape change will be derived by combining the judgements on size/scale and duration. In most cases, size/scale of change tends to have the largest influence on overall magnitude. Reversibility does not tend to influence the magnitude, but is recorded for clarity. Geographical extent is also recorded separately i.e. the area over which the effect on landscape character will be felt is recorded for each assessment unit.
- 5.3.9 The magnitude of landscape change will be expressed as **high**, **medium**, **low** or **barely perceptible** as indicated by the definitions within **Table 5.9**.

TABLE 5.9 DEFINITIONS OF MAGNITUDE OF LANDSCAPE CHANGE

Magnitude of Landscape Change	Definition
High	This may include: • An obvious (large scale) change in landscape features, characteristics and character potentially resulting in the creation of a new landscape character type; and • Likely to apply to obvious changes over the long or medium term, but could apply to very large changes over a short term.
Medium	This may include: • Discernible (medium scale) changes to landscape features, characteristics and character; and • Likely to apply to discernible changes over a long or medium term, but could include obvious changes for a short term.
Low	This may include: • A perceptible but small change to landscape features, characteristics and character; and • Likely to apply to small changes over the long or medium term, but could apply to discernible (medium scale) changes over a short term.

Magnitude of Landscape Change	Definition
Barely Perceptible	This may include: An imperceptible/barely perceptible change to landscape features, characteristics and character for any duration.

Size and Scale of Visual Effect

5.3.10 The size/scale of visual effect depends on:

- The scale of the change in the view with respect to the loss or addition of features in the view and changes in its composition, including the proportion of the view occupied by the development;
- The degree of contrast or integration of any new features or changes in the landscape with the existing or remaining landscape elements and characteristics in terms of form, scale and mass, line, height, colour and texture; and
- The nature of the view of the development, in terms of whether views will be fully open, partially open, glimpsed or oblique.

5.3.11 The assessment of size and scale will be described as being **large, medium, small** or **barely perceptible**, as set out in **Table 5.10** below.

TABLE 5.10 SIZE/SCALE OF VISUAL CHANGE

Size / Scale	Description
Large	Large change in the available view, perhaps where the development is in relatively close proximity in a direct line of vision, or affecting a substantial part of the view, or providing contrast with the existing view.
Medium	Clearly perceptible change in the available view, perhaps where the development is relatively close but at an oblique angle or further away in the direct line of vision, creating a distinct new element in the view.
Small	Small change in the available view, perhaps where the development is at a distance or oblique angle, or where the scale of the landscape absorbs the development well.

Size / Scale	Description
Barely Perceptible	Change in the available view which is barely perceptible, or the change may go unnoticed.

- 5.3.12 Effects will be judged to be during winter when a 'worst case' situation is present due to minimal screening by vegetation.

Duration of Visual Effect

- 5.3.13 Duration will be reported as **short term**, **medium term** or **long term**, as defined for landscape.

Reversibility of Visual Effect

- 5.3.14 Reversibility will be reported as **reversible**, **partially reversible** or **not reversible** (i.e. permanent) and is related to whether the change can be reversed at the end of the phase of development under consideration (i.e. at the end of the construction or at the end of the operational lifespan of the development).

Combining Magnitude of Visual Change Judgements

- 5.3.15 An overall judgement for the magnitude of visual change will be derived by combining the judgements on size/scale and duration. In most cases, size/scale of change tends to have the largest influence on overall magnitude. Reversibility does not tend to influence the magnitude but will be recorded for clarity. The geographical extent over which the visual effect will occur will be recorded for each visual receptor, focussing on the largest scale of visual change experienced by the receptor. The magnitude of visual change will be expressed as **high**, **medium**, **low** or **barely perceptible** as indicated by the definitions in **Table 5.11**.

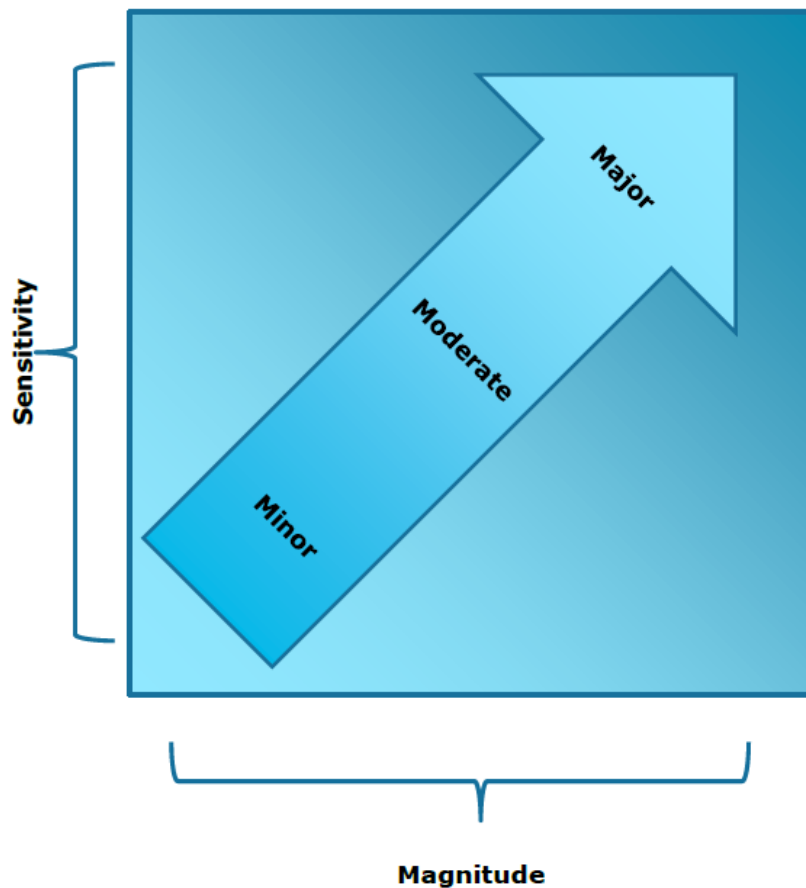
TABLE 5.11 DEFINITIONS OF MAGNITUDE OF VISUAL CHANGE

Magnitude of Change	Definition
High	This may include: • A large change in available views, perhaps where the development is in close proximity in a direct line of vision, or affecting a substantial part of the view, or providing contrast with the existing view; and • Likely to apply to large changes over the long or medium term but could apply to very large changes over a short term.
Medium	This may include: • A clearly perceptible change in view, perhaps where the development is relatively close but at an oblique angle or further away in the direct line of vision, creating a distinct new element in the view; and • Likely to apply to clearly perceptible changes over a long or medium term but could include large changes for a short term.
Low	This may include: • A small change in view, perhaps where the development is at a distance or oblique angle, or where the scale of the landscape absorbs the development well; and • Likely to apply to small changes over the long or medium term but could apply to clearly perceptible changes over a short term.
Barely Perceptible	A change in view which is barely perceptible or may go unnoticed.

5.4 SIGNIFICANCE

- 5.4.1 Sensitivity and magnitude will be considered together, to form a judgement regarding the overall significance of effects, guided by the principles set out in **Plate 5.1** below:

PLATE 5.1 PRINCIPLE OF JUDGING LEVELS OF EFFECT USING SENSITIVITY AND MAGNITUDE



- 5.4.2 Sensitivity and magnitude are typically weighted evenly so that a medium sensitivity and medium magnitude will result in a moderate overall effect, while a high sensitivity combined with a high magnitude will result in a major effect and a low sensitivity combined with a low magnitude will result in a minor effect. However, there are many possible combinations and in some cases a weighting to either sensitivity or magnitude may be required to come to an overall level of effect e.g. a medium-high sensitivity combined with a medium magnitude could result in either a moderate or a moderate-major effect.
- 5.4.3 Levels of effect will be identified as **negligible**, **minor**, **moderate** or **major** (or the intermediate levels of **minor-moderate** and **moderate-major**) where effects of 'moderate' and above are considered significant in the context of the EIA Regulations.

5.5 APPROACH TO CUMULATIVE LVIA

- 5.5.1 Existing wind energy developments and those under construction will form part of the LVIA as they already form part of the baseline landscape. Further information on the Cumulative Assessment approach can be found in **Chapter 18**.
- 5.5.2 The cumulative LVIA will assess the additional cumulative effects that would arise when adding the Proposed Development to a baseline containing consented but unbuilt wind farms, and those that are the subject of a valid planning application within the 30 km Study Area.
- 5.5.3 The criteria for which wind turbines and wind farms will be included in the cumulative LVIA are as follows:
- Start with all operational, under construction, consented schemes and schemes for which planning applications have been submitted within 30 km (these are those on the 'long list');
- 5.5.4 The 'short list' will then be refined from the long list as follows:
- Scope out all solar and Battery Energy Storage System (BESS) schemes that are beyond 10 km;
 - Scope out any residential schemes beyond 5 km;
 - Scope out any wind energy developments where turbines are less than 50 m to blade tip height beyond 10 km unless they are in groups of 10 or more.

ASSESSING ADDITIONAL CUMULATIVE EFFECT ACROSS TWO SCENARIOS

- 5.5.5 In accordance with NatureScot guidance⁴¹ the LVIA cumulative assessment will consider two scenarios:
- Scenario A is a more certain scenario (which also adds consented schemes to those included in the LVIA baseline); and
 - Scenario B is a less certain scenario (which also adds undetermined planning applications and consented schemes to those included in the LVIA baseline).

⁴¹ Guidance – Assessing the Cumulative Landscape and Visual Impact of Onshore Wind Energy Developments (NatureScot), 2021 <https://www.nature.scot/doc/guidance-assessing-cumulative-landscape-and-visual-impact-onshore-wind-energy-developments>

- 5.5.6 The susceptibility and value of the landscape and visual receptors in the cumulative assessment will remain the same as for the LVIA. The magnitude of change will be judged using the same criteria as for the LVIA. The cumulative landscape assessment will consider the following for the proposed wind farms cumulatively with the Proposed Development:
- The position of the wind farms within the landscape, e.g. In similar landscape or topographical context;
 - The relationship between the scale and layout of the wind farms, including turbine size/proportion/number of turbines;
 - The distances between wind farms, and their distance and direction from the receptor; and
 - The cumulative effect of ancillary development, e.g. Access tracks.
- 5.5.7 The cumulative visual assessment will consider the following for the proposed wind farms cumulatively with the Proposed Development:
- The arrangement of wind farms in the landscape or view e.g. Developments seen in one direction or part of the view (combined views), or seen in different directions (successive views in which the viewer must turn) or developments seen sequentially along a route;
 - The relationship between the scale and layout of the wind farms, including turbine size/proportion/number of turbines;
 - The position of the wind farms within the landscape, e.g. In similar landscape or topographical context; or within the view, e.g. On the skyline, against the backdrop of land;
 - The distances between wind farms, and their distance and direction from the viewer; and
 - In the case of routes, the relative duration of views of wind farms from routes.
- 5.5.8 Intervisibility of the Proposed Development and other existing and future wind farms, as well as other types of development (if relevant), within the 30 km Study Area will be illustrated through combined ZTV (CZTV) maps demonstrating the key relationships with existing or proposed wind farms close to the

Site. The CZTVs will then be used to assess the cumulative visual effects, alongside computer-generated wirelines.

- 5.5.9 Judging the significance of cumulative landscape and visual effects requires consideration of the sensitivity (nature of the receptor) and the magnitude of effect on those receptors (nature of the effect), guided by the same principles as set out in the LVIA methodology.
- 5.5.10 Cumulative landscape and visual effects will be described as negligible, minor, moderate or major (or the intermediate levels of minor-moderate and moderate-major) where cumulative landscape or visual effects of 'moderate' and above are typically considered significant in the context of the EIA Regulations.

TOTAL (COMBINED) CUMULATIVE EFFECT

- 5.5.11 The assessment of total (also referred to as combined) cumulative effect (i.e. the effect on landscape and views if all current, and future proposals, including the Proposed Development, are implemented when compared to the existing baseline) will be addressed through a commentary. It is not up to one developer to assess all other developers' projects (this is recognised in paragraph 7.13 of GLVIA3: *'the assessor will not have assessed the other schemes and cannot therefore make a fully informed judgement'*), but the total effect will be judged in broad terms for both landscape and visual amenity.
- 5.6 PROPOSED APPROACH TO THE VISUALISATIONS TO ACCOMPANY THE LVIA AND CUMULATIVE LVIA
- 5.6.1 Wirelines and photomontages (collectively known as 'visualisations') will illustrate the predicted change to views.
- 5.6.2 Photomontages from 20 representative viewpoints will be produced by overlaying computer-generated perspectives of the Proposed Development on photographs of the existing baseline. Viewpoint photography will be undertaken in accordance with Landscape Institute (2019) guidance⁴². All visualisations will also be prepared in accordance with the 2019 LI guidance as well as

⁴² Landscape Institute (2019) Visual Representation of Development Proposals. Technical Guidance Note 06/19. London: Landscape Institute. Available at: <https://www.landscapeinstitute.org/publication/visual-representation-of-development-proposals/> (Accessed: August 2026).

SNH (2017) visualisation guidance⁴³. Wirelines will include existing and proposed wind farms identified within the cumulative LVIA to provide a representation of the cumulative effects of wind energy development within the 30 km Study Area.

5.7 PROPOSED APPROACH TO RESIDENTIAL VISUAL AMENITY ASSESSMENT (RVAA)

- 5.7.1 Views from houses and individual properties are a matter of private amenity. However, the effects on residential visual amenity become a public rather than a private matter when properties become regarded as unattractive places to live because of a development.
- 5.7.2 A RVAA will be undertaken for all properties within a 2 km radius from the proposed wind turbine locations (grouping properties where views are similar) in accordance with the Landscape Institute's Technical Guidance Note⁴⁴ to determine whether visual effects on the property are considered to breach the 'residential visual amenity threshold'.
- 5.7.3 For each property or group of properties, the RVAA will be informed by ZTVs, aerial photography, wirelines and field work undertaken from publicly accessible locations within the vicinity to determine the scale of visual effects.
- 5.7.4 The methodology can be summarised as follows:
- **Step 1:** Identification of properties to be considered (defining the Study Area and scope);
 - **Step 2:** Evaluation of baseline visual amenity from each property/ property group;
 - **Step 3:** Assessment of likely change to visual amenity of properties; and

⁴³ Scottish Natural Heritage (2017) Visual Representation of Wind Farms: Version 2.2. Inverness: Scottish Natural Heritage. Available at: <https://www.nature.scot/doc/visual-representation-wind-farms-guidance> (Accessed: August 2026).

⁴⁴ Landscape Institute (2019) Residential Visual Amenity Assessment (RVAA). Technical Guidance Note 2/19. London: Landscape Institute. Available at: <https://www.landscapeinstitute.org/publication/residential-visual-amenity-assessment-rvaa/> (Accessed: August 2026)

- **Step 4:** Forming the RVAA judgement (the Residential Visual Amenity Threshold).

5.8 PROPOSED APPROACH TO THE AVIATION LIGHTING ASSESSMENT

- 5.8.1 Structures, including wind turbines, that are greater than 150 m require visible aviation lighting⁴⁵. This typically consists of 2000 candela red lights mounted onto the wind turbine's nacelle and intermediate 32 candela lights mounted on the wind turbine tower. As the proposed wind turbine model for the Proposed Development is a 220 m to tip height model, a night-time visual assessment of visible turbine lighting will be undertaken. This will be carried out in accordance with the approach advocated by NatureScot⁴⁶. It will include preparation of a lighting ZTV and three dusk visualisations. For these, photographs will be taken in low light conditions from two viewpoints. The location of the viewpoints will be subject to the final lighting design and will be informed by the lighting ZTV.
- 5.8.2 Night-time photomontages including wind turbine lighting from the three viewpoints will be presented in the ES in accordance with the industry standard guidance prescribed in SNH (now NatureScot)⁴⁷ and Landscape Institute guidance.

ASSESSMENT OF EFFECTS

- 5.8.3 Effects of the wind turbines' lighting on landscape character and visual amenity will be assessed using professional judgement of what the naked human eye can reasonably perceive in the context of the baseline situation with regard to existing sources of artificial lighting, supported by the lighting ZTV and visualisations, drawing on the lighting Technical Appendix that will be produced by as part of the assessment of ES Aviation Assessment.

⁴⁵ Civil Aviation Authority (2016) CAA Policy and Guidelines on Wind Turbines – CAP 764. (Accessed: August 2026).

⁴⁶ NatureScot (2020) General Pre-Application and Scoping Advice for Onshore Wind Farms: Guidance. Annex 2. Inverness: NatureScot. Available at: <https://www.nature.scot/doc/general-pre-application-and-scoping-advice-onshore-wind-farms> (Accessed: August 2026).

⁴⁷ Scottish Natural Heritage (2017) Siting and Designing Wind Farms in the Landscape. Version 3a. Inverness: Scottish Natural Heritage. Available at: <https://www.nature.scot/sites/default/files/2017-11/Siting%20and%20designing%20windfarms%20in%20the%20landscape%20-%20version%203a.pdf> (Accessed: August 2026).

5.9 PROPOSED APPROACH TO ASSESSING IMPLICATIONS FOR LANDSCAPE DESIGNATIONS

- 5.9.1 The nearest national landscape designation – the Norfolk Coast National Landscape – is located at a distance of approximately 46 km north of the nearest proposed turbine and so significant effects on its natural beauty and special qualities are not considered likely.
- 5.9.2 Any implications for the published special qualities of local landscape designations will be considered and presented in the ES.

5.10 APPROACH TO MITIGATION

- 5.10.1 The key principle for the mitigation of landscape and visual effects of the Proposed Development will be the iterative design of the wind turbine layout and associated infrastructure. As noted, in the absence of specific guidance for wind farms in England, the Proposed Development's design will draw on guidance provided in:
- Scottish Natural Heritage (2017) Siting and Designing Windfarms in the Landscape. Version 3a⁴⁸; and
 - The Design Commission for Wales (2014) Designing Wind Farms in Wales⁴⁹ and the Design Commission for Wales (2023) Designing for Renewable Energy in Wales⁵⁰.
- 5.10.2 The aim of the mitigation, from a landscape and visual perspective, will be to consider the following:
- Achieve consistent height and spacing of turbines where feasible (in light of other constraints), to achieve a well-balanced composition overall;
 - Ensure no wind turbine is too dominant or overwhelming in the main view from a property such that it could result in

⁴⁸ Siting and Designing Wind Farms in the Landscape – Version 3a (SNH), 2017. Available at: <https://www.nature.scot/sites/default/files/2017-11/Siting%20and%20designing%20windfarms%20in%20the%20landscape%20-%20version%203a.pdf> (Accessed: August 2026).

⁴⁹ Design Commission for Wales (2014) Designing Wind Farms in Wales. Cardiff: Design Commission for Wales. Available at: <https://dcfw.org/wp-content/uploads/2007/10/Designing-Windfarms-in-Wales-2014.pdf> (Accessed: August 2026).

⁵⁰ Design Commission for Wales (2023) Designing for Renewable Energy in Wales. Cardiff: Design Commission for Wales. Available at: <https://www.gov.wales/sites/default/files/publications/2023-12/designing-for-renewable-energy-in-wales.pdf> (Accessed: August 2026).

unacceptable living conditions. This would be achieved through the application of minimum separation distances between turbines and properties, micro-siting considerations to ensure that the turbines avoid the principal view from habitable rooms and the use of a simple turbine form and a recessive finish;

- Utilise existing tracks where possible, minimising the necessity for new excavation, and keeping tracks and other ancillary features (including borrow pits and the substation) away from the most visible parts of the Site, as far as reasonably possible (including the need for cut and fill operations);
- Minimise the visibility of ancillary features, such as buildings, walls and fences, and use materials characteristic of the locality where possible;
- Seek to utilise a 'smart' transponder-based demand-controlled aviation lighting system that only switches on when aircraft are detected within a particular airspace around the wind farm (known as an Aircraft Detection Lighting System, or ADLS), to minimise the occurrence of impacts from lighting. If this is not possible, seek to control nacelle lights by visibility sensors to reduce the intensity of the lights to approximately 10% of the minimum peak intensity in times of clear meteorological conditions (where visibility exceeds 5 km), which will substantially reduce the perceptibility of the proposed nacelle lights; and
- Follow an agreed CEMP which will include arrangements for implementation of various aspects of the works such as turf and soil removal, storage and replacement. The statement will also set out restoration of landscape earthworks, soils and surface vegetation e.g. alongside tracks, around turbine bases, around borrow pits, and along cable routes once the construction phase is complete.

6. SHADOW FLICKER

6.1 SHADOW FLICKER MODELLING

- 6.1.1 Should any properties be located within the Shadow Flicker Study Area, Resoft Windfarm Release 5, a computer modelling programme, will be used to model the potential shadow flicker effects at surrounding properties to quantify the potential effects.
- 6.1.2 This software creates a mathematical model of the Proposed Development and its surroundings, based on:
- The turbine locations themselves, and the turbine dimensions (hub height and rotor diameter);
 - An assessment cut off distance equal to the Shadow Flicker Study Area;
 - Locations of receptors within the Shadow Flicker Study Area;
 - Topography (obtained from Ordnance Survey Terrain 50 elevation data on a 50 m horizontal grid); and
 - Latitude and longitude of the Site (used in calculating the position of the sun in relation to time of day and year).

6.2 REALISTIC SCENARIO

- 6.2.1 For much of a given year, weather conditions will be such that shadows would not be cast or would be weak and thus would not give rise to shadow flicker effects.
- 6.2.2 The closest Met Office Station to the Site will be identified, and the average annual sunshine hours recorded at that station will be used to determine the approximate percentage of bright sunshine hours experienced on the Site. This will be used to suggest the 'likely' hours of potential shadow flicker effects experienced by the assessed receptors, when taking weather conditions into account.
- 6.2.3 Of this time, some would be in non-windy conditions when the turbine blades would not be rotating. In windy conditions, the wind direction may not be aligned with the direction of the sun, such that shadows are not being cast as widely as in the worst-case. In practice, other factors, such as the potential for

screening by vegetation or intervening structures, will also reduce or prevent flicker incidence even further, as compared to the theoretical maximum period or the likely period of effect suggested by the calculations.

6.3 SIGNIFICANCE CRITERIA

- 6.3.1 There are no set significance criteria within legislation with regards to the amount or duration of shadow flicker effects experienced at a receptor. It is proposed that the industry recognised limits are therefore applied for the purpose of the significance levels for the assessment. Northern Ireland Wind Energy Development Guidelines⁵¹ state that significant shadow flicker impacts would be defined as exceeding the following limits:
- Worst-case scenario – 30 hours per year or 30 minutes per day; and
 - Realistic scenario – 8 hours per year based on the 'likely' duration of effects, which would be the worst-case scenario model outputs amended to reflect the realistic possible sunshine hours (and therefore conditions suitable for shadow flicker effects) at the Site.
- 6.3.2 This assessment would predict the potential maximum effects that could occur, and a likely realistic duration for effects once prevailing weather conditions are taken into account. If these thresholds are exceeded at an assessed receptor, the potential shadow flicker effect would be assessed as being significant.

6.4 APPROACH TO MITIGATION

- 6.4.1 The primary means of reducing the potential for shadow flicker effects will be through the iterative design of the Proposed Development. As the design evolves, consideration will be given to the location of wind turbines in relation to nearby residential and other sensitive receptors. Where reasonably practicable, turbine siting will seek to maximise separation distances from receptors that have the potential to experience shadow flicker,

⁵¹ Department for Infrastructure (2009) Best Practice Guidance to Planning Policy Statement 18: Renewable Energy. Belfast: Department for Infrastructure. Available at: <https://www.infrastructure-ni.gov.uk/publications/best-practice-guidance-pps-18-renewable-energy> (Accessed: August 2026).

thereby avoiding effects or reducing their potential duration and magnitude.

6.4.2 In the event that the shadow flicker assessment identifies the potential for significant effects at individual receptors, a range of mitigation measures may be considered. The precise mitigation requirements will be informed by the findings of the assessment and the final design of the Proposed Development.

6.4.3 Potential mitigation measures may include:

- The provision of internal screening measures, such as blinds or curtains, at affected properties where shadow flicker effects are predicted to occur;
- The use of external screening, including vegetation planting or other forms of screening between turbines and receptors, where this is considered an effective and practicable means of reducing effects;
- Operational controls on individual turbines, including programmed turbine shutdown during periods when shadow flicker effects are predicted to occur at specific receptors; and
- A combination of the above measures where required to reduce effects to an acceptable level.

6.4.4 To provide a clear framework for the management of any shadow flicker effects during the operation and maintenance phase, a Shadow Flicker Protocol may be prepared in consultation with the relevant local planning authorities. The Protocol would set out the process for receiving, investigating and responding to shadow flicker complaints from receptors within the Study Area. It is anticipated that the Protocol would identify an appropriate range of mitigation measures that could be implemented where justified, which may include property-level screening measures, external screening, operational turbine controls or other proportionate mitigation measures.

6.4.5 Should operational mitigation be required, the specific measures would be determined following detailed assessment and agreement with the relevant stakeholders. Any turbine control measures would be informed by site-specific modelling and operational considerations, and could include the preparation of

a turbine shutdown schedule identifying the circumstances under which individual turbines may be curtailed to avoid or reduce shadow flicker effects.

- 6.4.6 Overall, the design process, assessment methodology and potential mitigation measures provide a framework through which shadow flicker effects can be avoided, minimised or appropriately managed where necessary.

7. HYDROLOGY, HYDROGEOLOGY, GEOLOGY AND PEAT

7.1 ASSESSMENT METHODOLOGY

7.1.1 The assessment of likely significant environmental effects arising from the Proposed Development will consider the construction, operation and maintenance, and decommissioning stages. The following sections define the approach that will be used for the desk-based baseline assessment and for determining receptor sensitivity, magnitude of impact, level of effect and significance.

DESK BASED STUDY

7.1.2 Further desk-based studies will be undertaken to confirm the baseline characteristic by reviewing available information relating to soils, peat, geology, hydrology and hydrogeology.

7.1.3 The desk study will review the data sources identified in **Chapter 11**, Section 11.3, together with assessments undertaken for nearby sites, as these are likely to contain valuable and relevant information that can be used to initially characterise the following:

- The depth and distribution of peat and carbon rich soils;
- The nature of the underlying geology;
- Groundwater resources;
- Licensed and unlicensed groundwater and surface water abstractions;
- Public and private water supplies;
- Surface water flows;
- Flood extents;
- Rainfall data; and
- Water quality data.

7.1.4 The desk study will be used to develop a conceptual site model which would then be used to identify sensitive features or receptors which may potentially be affected by the Proposed Development and which might warrant further investigation as part of the proposed field surveys.

DETERMINING SENSITIVITY OF RECEPTOR

- 7.1.5 The sensitivity of affected receptors will be considered on a scale of **high, medium, low** or **negligible**.
- 7.1.6 Sensitivity criteria are based on both the ability of a receptor to accommodate the anticipated impact of the likely changes as well as the importance of the resource under consideration or designated value of the receptor (e.g. a designated area of international or national importance has a higher value and therefore higher sensitivity than other areas of lower status). Evaluation of sensitivity of, hydrology, hydrogeology, geology and peat requires a considerable degree of judgement, based on defined characteristics and values and professional experience. The ES will apply the sensitivity criteria as presented in **Table 7.1**.

TABLE 7.1 SENSITIVITY CRITERIA

Sensitivity of environment	Definition
High	Private water supply abstraction for human or stock consumption (surface water or groundwater). Public drinking water supply abstraction (surface water or groundwater). Surface water classified under the WFD as 'high' (or equivalent older chemical or biological monitoring designation). Groundwater classified under the WFD as 'good'. Watercourse designated under the Freshwater Fish Directive or known to have fish spawning grounds. Groundwater vulnerability to pollution Class 5. Internationally or nationally designated sites (e.g. Ramsar sites, SPA, SAC, SSSI, National Nature Reserves). Habitats listed in Regional Biodiversity Action Plans or Annex I habitats that are groundwater dependent. Internationally important species sensitive to hydrological change. Peat >2m in open terrain or >3m in forestry, densely drained, eroded or gullied open terrain.
Medium	Private water supply abstraction not for human or stock consumption (surface water or groundwater). Public non-drinking water supply abstraction (surface water or groundwater).

Sensitivity of environment	Definition
	Surface water classified under the WFD as 'good' (or equivalent older chemical or biological monitoring designation). Watercourse known to supply Public Water Supply Reservoir. Watercourse known to support important fishery population. Groundwater vulnerability to pollution Class 4. Ecological or hydrological sites designated at a regional level. Peat with depth between 1 m – 2 m in open and undegraded terrain or >2 m in forestry, densely drained, eroded or gullied open terrain. Other water dependent habitats.
Low	Surface water classified under the WFD as 'moderate' (or equivalent older chemical or biological monitoring designation). Ecological or hydrological sites designated at a local level. Peat with depth between 0.3m – 1m in open and undegraded terrain or with depth between 1m – 2m in forestry, densely drained, eroded or gullied open terrain. Groundwater vulnerability to pollution Class 3 or 2.
Negligible	Surface water classified under the WFD as 'poor or bad' (or equivalent older chemical or biological monitoring designation). Groundwater classified under the WFD as 'poor'. Groundwater vulnerability to pollution Class 1. Non-peat or peaty / organic rich soils less than <0.3m in depth, or peat <1m in depth that is in forestry, densely drained, eroded or gullied open terrain.

7.1.7 In addition to the criteria set out in **Table 7.1**, assessment of sensitivity of peat is based on the degree by which the peatland in its baseline condition has been degraded by natural or man-made activities. Uneroded, open peatland without evidence of drainage is considered to be of highest sensitivity, while peatlands degraded by forestry, drainage or erosion are considered to have a poorer baseline condition. A depth criterion is also applied, in which deeper peats are considered to hold more carbon (for which peat volume is a proxy) and more likely to exhibit a functional hydrological system, with associated flood

regulation benefits. **Plate 7.1** illustrates this approach with the sensitivity classification for each degradation and depth combination provided below the associated image, coloured using RAG (Red-Amber-Green) styling.

7.1.8 The sensitivity of any proposed development related to peat is therefore based on the proportion of infrastructure located within peat resources of differing depth and condition. The percentage thresholds presented below are not derived from a single published guidance source but have been developed through professional judgement, informed by industry experience and established peatland assessment guidance. The thresholds provide a proportionate means of distinguishing between developments with limited interaction with peat resources and those where a substantial proportion of infrastructure is located on peat of greater environmental sensitivity, carbon storage value and hydrological importance. Sensitivity is therefore categorised as follows:

- **High** – >25% of the infrastructure is located on peat >2 m in open terrain or >3 m in forestry, densely drained, eroded or gullied open terrain;
- **Medium** – >25% of infrastructure is located on peat with depth between 1 m – 2 m in open and undegraded terrain or >2 m in forestry, densely drained, eroded or gullied open terrain;
- **Low** – >25% of infrastructure located on peat with depth between 0.3 m – 1 m in open and undegraded terrain or with depth between 1 m – 2 m in forestry, densely drained, eroded or gullied open terrain; and
- **Negligible** - >75% of the infrastructure is located on non-peat or peaty / organic rich soils less than <0.3 m in depth, or peat <1 m in depth that is in forestry, densely drained, eroded or gullied open terrain.

Magnitude of impact	Definition
	Substantial but non-fundamental and short to medium-term changes to the surface water, groundwater and geology (in terms of quantity, quality and morphology). Excavated peat volume associated with the infrastructure footprint and associated earthworks is >5% and <10% of the peat volume across the peat survey area within a site.
Low	Impact on feature or use. Detectable but non-fundamental and temporary changes to the surface water, groundwater and geology (in terms of quantity, quality and morphology). Excavated peat volume associated with the infrastructure footprint and associated earthworks is >2% and <5% of the peat volume across the peat survey area within a site.
Negligible	Impact but of insufficient magnitude to affect feature or use. No perceptible changes to the surface water, groundwater and geology (in terms of quantity, quality and morphology). Excavated peat volume associated with the infrastructure footprint and associated earthworks is <2% of the peat volume across the peat survey area within a site.

- 7.1.10 The magnitude of impact will be assessed based on the location of the receptor and the proximity of operational infrastructure, or construction activity taking place. Where magnitude of impact is attributed, this will consider embedded mitigation measures.
- 7.1.11 The assessment of magnitude in relation to peat disturbance is based on the absolute volume of peat calculated to be disturbed by the Proposed Development as a proportion of the total land take, this latter value is based on the full volume of peat calculated across the surveyed peat area. The threshold values (2%, 5% and 10%) reflect increasing levels of magnitude. Importantly, the assumption is that any excavated peat has an appropriate reuse specified within the Outline Peat Management Plan, HMMP or these documents in-combination.

DETERMINING LEVEL OF EFFECT

- 7.1.12 The predicted level of the effect will be determined through a standard method of assessment based on professional judgement while considering sensitivity and magnitude of change as detailed in **Table 7.3**.
- 7.1.13 The combination of the sensitivity and magnitude of potential effect combine to provide a matrix categorisation of level of effect (major, moderate and minor), subject to professional judgement.

TABLE 7.3 MATRIX TO DETERMINE LEVEL OF EFFECT

Magnitude of impact	Sensitivity of environment			
	High	Medium	Low	Negligible
High	Major	Major	Moderate	Moderate
Medium	Major	Moderate	Moderate	Minor
Low	Moderate	Moderate	Minor	Minor
Negligible	Minor	Minor	Minor	Minor

- 7.1.14 The following terms will be used to define the level of the effects identified:
- **Major effect:** Where the Proposed Development is likely to cause a considerable change from the baseline conditions and the receptor has limited adaptability, tolerance or recoverability or is of the highest sensitivity;
 - **Moderate effect:** Where the Proposed Development is likely to cause either a considerable change from the baseline conditions at a receptor which has a degree of adaptability, tolerance or recoverability or a less than considerable change at a receptor that has limited adaptability, tolerance or recoverability;
 - **Minor effect:** Where the Proposed Development is likely to cause a small, but noticeable change from the baseline conditions on a receptor which has limited adaptability, tolerance or recoverability or is of the highest sensitivity; or where the Proposed Development is likely to cause a considerable change

from the baseline conditions at a receptor which can adapt, is tolerant of the change and / or can recover from the change; and

- **Negligible:** Where the Proposed Development is unlikely to cause a noticeable change at a receptor, despite its level of sensitivity or there is a considerable change at a receptor which is not considered sensitive to a change.

7.1.15 In addition to determining the level of the effect, the assessment process also includes a qualitative description regarding the nature of the effect, as set out in **Table 7.4**. These terms add information about how the effect would affect receptors.

TABLE 7.4 NATURE OF EFFECT DESCRIPTORS

Term	Nature of effect descriptors
Adverse	An effect which has the potential to decrease receptor value or status relative to baseline conditions.
Beneficial	An effect which has the potential to increase receptor value or status relative to baseline conditions.
Short-term	Effects that persist only for a short time (defined as up to 2 years), e.g. during the construction (or decommissioning) stage only; includes reversible effects.
Medium-term	Effects that may persist until additional mitigation measures have been implemented and become effective (defined as 2 – 10 years).
Long-term	Effects that persist for a much longer time (defined as greater than 10 years), e.g. for the duration of the operation and maintenance phase (essentially until the development ceases or is decommissioned); includes effects which are permanent (irreversible) or which may decline over longer timescales.
Temporary	A reversible effect where recovery is possible and for which effects would persist only for a short or medium-term.
Permanent	An irreversible effect that is not expected to diminish over time or be rectified by mitigation; typically remains beyond the life of the development.
Frequent	Refers to a recurring effect that occurs repeatedly; in some cases a lower level of impact may occur with sufficient frequency to reduce the ability of a receptor to recover effectively.

DETERMINING SIGNIFICANCE

- 7.1.16 For each effect, a statement will be made as to whether the level of residual effect is '**Significant**' or '**Not Significant**'. **Major** and **Moderate** effects are considered to be **Significant** in the context of the EIA Regulations. Where the significance of effect is assessed as being moderate or above, additional Site-specific mitigation is required.

7.2 APPROACH TO MITIGATION

- 7.2.1 The mitigation of potential effects on hydrology, hydrogeology, geology and peat will be addressed through the mitigation hierarchy, with an emphasis on avoidance through design where reasonably practicable. The findings of further baseline studies and survey work will inform environmental constraints mapping and will provide input to the iterative design process and subsequent environmental assessment.
- 7.2.2 Embedded mitigation will include industry-established good practice measures that will be incorporated into the design of the Proposed Development and the methodologies used for construction, operation and maintenance, and decommissioning. These measures will seek to avoid, minimise or manage potential effects on surface water, groundwater, peat, soils and the geological environment.
- 7.2.3 Key design considerations that will be taken forward, where feasible, will include minimising disturbance to identified areas of peat, including peat greater than 0.3 m depth and deep peat greater than 1 m depth; avoiding unmodified peat and confirmed groundwater dependent terrestrial ecosystems where reasonably practicable; minimising the number of new watercourse crossings; maintaining appropriate buffers from watercourses; and avoiding areas of fluvial flood risk so far as possible.
- 7.2.4 Where peat cannot be avoided, appropriate engineering solutions, such as floating track construction or other suitable methods, will be considered where feasible and subject to gradients and ground conditions. Borrow pits, where required, will be located and worked to avoid or minimise effects on the

water environment by siting them away from sensitive water, soil and peat features, and by selecting locations that minimise transportation distances and overburden removal.

- 7.2.5 Any new or upgraded watercourse crossings will be designed to maintain conveyance and avoid increasing flood risk. Crossing design will make allowance for appropriate freeboard and climate change, and infrastructure will avoid being located within watercourse channels or floodplains where reasonably practicable. Where floodplain encroachment cannot be avoided, the requirement for compensatory storage or other flood risk mitigation will be considered through the assessment and design process.
- 7.2.6 Construction-phase mitigation will be secured through the implementation of a CEMP, which will set out measures to manage drainage, runoff, sediment control, pollution prevention, fuel and chemical storage, spill response, watercourse crossings, peat handling and soil management. Where required, further topic-specific management plans, such as an Outline Peat Management Plan, will set out how excavated peat and soil resources will be managed and reused appropriately.
- 7.2.7 During the operation and maintenance phase, mitigation will focus on the long-term management of drainage infrastructure, access tracks, watercourse crossings and pollution prevention measures. Where required, operational environmental management measures will be secured through an Operational Environmental Management Plan (OEMP) to ensure that hydrological, hydrogeological, geological and peat-related receptors continue to be protected.
- 7.2.8 The final mitigation package will be informed by the results of baseline studies, field surveys, design development, the impact assessment findings and engagement with relevant stakeholders. The ES will describe the embedded and additional mitigation measures relied upon in the assessment and will identify any residual significant effects following the application of mitigation.

8. CLIMATE CHANGE AND GREENHOUSE GASES

8.1 INTRODUCTION

- 8.1.1 The approach to the assessment and proposed methodology has been developed through a combination of professional judgement, established EIA best practice, and relevant legislation, policy and guidance.

8.2 GHG ASSESSMENT

- 8.2.1 The Proposed Development aims to achieve a transition to clean energy through the use of renewable energy sources (in this case wind energy). The Proposed Development involves the construction, operation and maintenance and decommissioning of wind turbines in order to generate renewable energy. The GHG assessment will identify and calculate the GHG emissions arising from the Proposed Development during construction, operation and maintenance, and decommissioning. It will consider the increase or decrease in GHG emissions that arise from the Proposed Development.
- 8.2.2 Given that there is no available tool specifically designed for England to determine the greenhouse gas emissions savings and losses for English wind farm developments, it is proposed to use the Scottish Government's carbon calculator for wind farm developments to determine the carbon losses and savings for the Proposed Development. Carbon or GHG losses would occur through turbine manufacture, forestry felling, and peatland disturbance, for example, while carbon or GHG savings would occur through the replacement of conventional energy generation with renewable generation as well as any proposed peatland restoration. The carbon calculator would also provide the 'payback period' for the Proposed Development, which is the length of time (in years) it would take the carbon savings to offset the carbon losses (and therefore for the Proposed Development to become carbon neutral).
- 8.2.3 Data for input into the carbon calculator would be sourced from the other assessments within the EIA and the Project Description of the Proposed Development. Where information is not available, appropriate assumptions, technical estimations

and best practice guidance would be used to provide the required data. The input data and outputs of the carbon calculator will be provided as a Technical Appendix to accompany the ES.

- 8.2.4 For any additional proposed infrastructure, or any potential emissions that the calculator does not consider, a high-level quantitative assessment to determine the carbon losses associated with these aspects of the Proposed Development would be completed and incorporated into the results of the carbon calculator.
- 8.2.5 The assessment would consider the following greenhouse gas emissions from the Proposed Development:
- **During the construction phase** – turbine and infrastructure manufacture (upstream emissions), peatland and forestry disturbance (land use change), construction processes;
 - **During the operation and maintenance phase** – emissions savings due to renewable energy generation instead of conventional energy generation, fuel consumption for operational processes, peatland restoration; and
 - **During the decommissioning phase** – decommissioning of turbines and infrastructure, and fuel consumption for decommissioning activities.
- 8.2.6 The calculated GHG emissions will be assessed against the carbon budgets implemented by the Climate Change Act (2008)⁵², in order to determine their magnitude and significance.
- 8.2.7 Any GHG emissions released to the atmosphere will be classified as an impact to climate change due to the importance of limiting GHG emissions as set out by the Paris Agreement⁵³ and UK government policy⁵². To understand the significance, ISEP

⁵² UK Government (2008) Climate Change Act 2008. Available at: <https://www.legislation.gov.uk/ukpga/2008/27/contents> (Accessed: August 2026).

⁵³ United Nations (2015) Paris Agreement. [Online] Available at: https://unfccc.int/files/meetings/paris_nov_2015/application/pdf/paris_agreement_english_.pdf. (Accessed: August 2026)

guidance⁵⁴ will be used to evaluate the net GHG emissions impact of the Proposed Development (see **Table 8.1**).

TABLE 8.1 SIGNIFICANCE CRITERIA RELEVANT TO THE GHG ASSESSMENT

Significance	Significance Criteria
Major Adverse	The project's GHG impacts are not mitigated or are only compliant with do-minimum standards set through regulation, and do not provide further reductions required by existing local and national policy for projects of this type. A project with major adverse effects is locking in emissions and does not make a meaningful contribution to the UK's trajectory towards net zero.
Moderate Adverse	The project's GHG impacts are partially mitigated and may partially meet the applicable existing and emerging policy requirements but would not fully contribute to decarbonisation in line with local and national policy goals for projects of this type. A project with moderate adverse effects falls short of fully contributing to the UK's trajectory towards net zero.
Minor Adverse	The project's GHG impacts would be fully consistent with applicable existing and emerging policy requirements and good practice design standards for projects of this type. A project with minor adverse effects is fully in line with measures necessary to achieve the UK's trajectory towards net zero.
Negligible	The project's GHG impacts would be reduced through measures that go well beyond existing and emerging policy and design standards for projects of this type, such that radical decarbonisation or net zero is achieved well before 2050. A project with negligible effects provides GHG performance that is well 'ahead of the curve' for the trajectory towards net zero and has minimal residual emissions.
Beneficial	The project's net GHG impacts are below zero and it causes a reduction in atmospheric GHG concentration, whether directly or indirectly, compared to the without-project baseline. A project with beneficial effects substantially exceeds net zero requirements with a positive climate impact.

⁵⁴ Institute of Sustainability and Environmental Professionals. (2022) Assessing Greenhouse Gas Emissions and Evaluation their Significance. Available at: https://www.iema.net/media/xmgpooopk/2022_iema_greenhouse_gas_guidance_eia.pdf. (Accessed: August 2026)

8.2.8 Due to the nature of the Proposed Development (renewable energy generation), the assessment will scope out downstream GHG emissions. This is because downstream emissions are specifically focused on fossil fuels, and the future use of the electricity generated by the Proposed Development would not produce further GHG emissions.

8.3 CLIMATE CHANGE RISK ASSESSMENT (CCRA)

8.3.1 The CCRA will be undertaken in line with the Environmental Impact Assessment Guide to: Climate Change Resilience and Adaptation (2020)⁵⁵ developed by the Institute of Sustainability and Environmental Professionals (ISEP), as well as using professional judgement.

8.3.2 The CCRA evaluates climate risks to the Proposed Development by identifying relevant hazards, assessing the vulnerability of the receptors to the hazard and the likelihood of exposure of the receptors to the hazard to determine both initial and residual risk levels. It uses future climate projections and proposes mitigation actions to enhance climate resilience.

8.3.3 The CCRA involves the following steps:

- Gather baseline and future climate data for the Proposed Development's location;
- Identify potential climate change risks to the Proposed Development by assessing:
 - The hazard (i.e., the climate event itself such as flooding, extreme heat, water stress or wildfires);
 - Vulnerability of the receptors (including environment, workforce and infrastructure) to that hazard (i.e., the consequence of the hazard); and
 - Exposure (i.e., the level or likelihood to which the Proposed Development is exposed to the hazard).

⁵⁵ Institute of Sustainability and Environmental Professionals (2020) Environmental Impact Assessment Guide to: Climate Change Resilience and Adaptation. Available at: <https://www.iema.net/media/mabhqino/iema-eia-climate-change-resilience-june-2020.pdf>. (Accessed: August 2026)

- The CCRA determines the initial inherent risk where no mitigation measures are in place, and then assesses the risk when taking account of embedded mitigation measures; and

8.3.4 The final step is to determine the likely significant effect of the risk upon the Proposed Development.

8.3.5 **Table 8.2** and **Table 8.3** present the criteria to measure exposure (likelihood) and vulnerability (consequence) of the Proposed Development to the climate hazards.

TABLE 8.2 MEASURE OF EXPOSURE (LIKELIHOOD)

Likelihood of Impact	Description
Almost Certain	The climate hazard is expected to exceed a critical threshold under both scenarios, and across all future time horizons.
Likely	The climate hazard is expected to exceed a critical threshold under both scenarios, but only under a specific time horizon.
Possible	The climate hazard may exceed a critical threshold in future, but only under a specific climate scenario and time horizon.
Unlikely	The climate hazard may occur under current conditions but is not projected to exceed a critical threshold in future under all scenarios and time horizons.
Rare	The climate hazard is not currently observed and is not projected to exceed a critical threshold in future under all scenarios and time horizons.

TABLE 8.3 VULNERABILITY (CONSEQUENCE) CRITERIA TO ASSESS IMPACT OF SENSITIVE RECEPTORS

Consequence of Impact	Description
Very Large	Infrastructure; Significant permanent damage and/or complete loss of the infrastructure and infrastructure services. Extreme delays (months) to / cancellation of the construction. Human health; Event leading to 1 or more fatalities on Site.

Consequence of Impact	Description
	Environmental; Devastating environmental implications and regulatory non-compliance due to protected species/habitat change. Financial; Extreme financial loss and operation is unviable.
Large	Infrastructure; Extensive infrastructure damage and/or major loss of the infrastructure and infrastructure services. Major (weeks) delays to the construction. Human health; Event leading to long term health issues / disabilities (over 14 days lost work). Environmental; Severe environmental implications and potential new environmental compliance obligations. Financial; Major financial loss and additional operating costs.
Moderate	Infrastructure; Limited infrastructure damage and loss of service, damage recoverable by early maintenance and minor repair. Substantial construction interruption (5 days or more). Human health; Event leading to short term stress, medical treatment required (under 14 days lost work). Environmental; Moderate environmental implications and potential for additional mitigation and/or maintenance needs. Financial; Moderate financial loss and additional operating cost.
Minor	Infrastructure; Localised infrastructure service disruptions, no permanent damage, some minor repair work required. Minor construction interruption (5 days or less). Human health; Event leading to minor discomfort and/or first aid treatment Environmental; Minor environmental implications on landscaping or buffer vegetation and no impacts on protected species/habitats. Financial; Slight financial loss and additional operating costs.
Negligible	Infrastructure; No damage, construction delays or additional operational costs. Human health; No injuries or illness. Environmental; No disturbance or disturbance is already within degraded or non-sensitive area. Financial; No financial loss or costs.

- 8.3.6 The significance of the climate risk is assessed by considering the vulnerability (consequence) and exposure (likelihood), as shown in **Table 8.4**. Where the climate risk is assessed to be 'medium' or greater this would be considered as a significant effect and would require mitigation or adaptation measures to improve the resilience of the receptor where practicable.

TABLE 8.4 SIGNIFICANCE MATRIX

Consequence	Likelihood				
	Rare	Unlikely	Possible	Likely	Almost Certain
Negligible	Very Low	Very Low	Low	Medium	Medium
Minor	Very Low	Low	Low	Medium	High
Moderate	Low	Low	Medium	High	High
Large	Medium	Medium	High	High	Very High
Very Large	Medium	High	High	Very High	Very High

8.4 IN-COMBINATION CLIMATE CHANGE IMPACT (ICCI) ASSESSMENT

- 8.4.1 The ICCI Assessment assesses how projected climate conditions may amplify environmental effects identified in other technical chapters such as increased flooding risks. It evaluates the likelihood and consequence of climate impacts on receptors and recommends additional mitigation only where effects are deemed significant. The ICCI will be based upon the likely significant effects identified in the technical chapters of the EIA and will be summarised in the Climate Change and GHG chapter of the ES.

8.5 APPROACH TO MITIGATION

- 8.5.1 Mitigation measures relating to climate change and GHG emissions will be outlined in the ES. The GHG assessment and CCRA will take account of the embedded mitigation measures integrated into the design of the Proposed Development.

GHG ASSESSMENT

- 8.5.2 The Proposed Development will be inherently designed to reduce adverse climate change effects by offsetting the production of carbon dioxide (CO₂) through the use of a renewable source for generating electricity. This is in line with global and national policies and targets which are striving to reduce greenhouse gas emissions.
- 8.5.3 Embedded mitigation measures to reduce GHG emissions from the construction, operation and maintenance and decommissioning of the Proposed Development (for example through ensuring efficient and well-maintained construction plant and equipment is used to reduce fuel and energy consumption) will also be set out in the ES and considered within the assessment.

CLIMATE CHANGE RISK ASSESSMENT

- 8.5.4 Embedded mitigation measures to reduce the impact of climate change on the Proposed Development will be set out in the ES and considered within the assessment. It is likely that these will relate to ensuring work does not take place during extreme weather, and that the design incorporates consideration of future climatic changes (for example, considering the climate change allowances when considering flood risk).

ICCI ASSESSMENT

- 8.5.5 Mitigation for other technical topics of the EIA will be detailed within the relevant ES chapters and summarised in the Climate Change and GHG ES chapter.

9. TRAFFIC AND TRANSPORT

9.1 BASELINE SURVEY METHODOLOGY

- 9.1.1 The main data considered fundamental to the assessment of traffic and transport effects will be traffic flow data and Road Traffic Collision (RTC) accident data. RTC data will be obtained for the most recent five-year period which will provide information on each collision including severity as well as factors which contributed to the collision.
- 9.1.2 With respect to traffic flow data, baseline traffic data will be obtained through independent Automatic Traffic Counts surveys of the road network within the Study Area and augmented with data from publicly available data sources where possible.
- 9.1.3 The traffic flow data collected will be used to assess the predicted impact on traffic flows resulting from the proposed traffic associated with the Proposed Development. Further detail will be provided in the ES.

9.2 CRITERIA FOR THE ASSESSMENT OF EFFECTS

- 9.2.1 The assessment would be undertaken in accordance with the ISEP 2023 Guidelines⁵⁶. The guidance notes two rules to be used as a screening process to identify the appropriate extent of the assessment area and the likelihood of significant environmental effects occurring. These are:
- Rule 1 - Road links where traffic flows will increase by more than 30 % as a result of the Proposed Development (or where the number of heavy goods vehicles is predicted to increase by more than 30 %) must be assessed; and,
 - Rule 2 - Road links of high sensitivity where traffic flows have increased by 10 % or more.
- 9.2.2 Any change in traffic flow which is greater than the thresholds outlined above would be subject to further detailed assessment. It is acknowledged that in areas where traffic flow is lower than the ISEP Guidelines thresholds, the significance of the effects

⁵⁶ Institute of Environmental Management and Assessment (IEMA) (2023) Environmental Assessment of Traffic and Movement. (Accessed: August 2026).

can be considered low or not significant with no further detailed assessments warranted.

- 9.2.3 The ISEP (2023)⁵⁶ Guidelines note that the application of the Rule 1 and Rule 2 criteria is not appropriate for certain impact types. It is widely accepted by regulators and practitioners that these criteria should not be applied to the assessment of road user and pedestrian safety, nor to road vehicle driver and passenger delay. These effects may be potentially significant at lower levels of traffic change where baseline traffic flows are already high. Guideline criteria for assessing the significance of effects are provided in **Table 9.3**.
- 9.2.4 The process for determining significance where Rules 1 or 2 are triggered is undertaken on a Site-specific basis and the framework for determining the magnitude of change in traffic flow as well as the methodology for assessing the significance of an effect and the sensitivity of receptors is described in detail in the sections below.
- 9.2.5 Where existing traffic levels are generally low (e.g., rural roads and some unclassified roads), any increase in traffic flow may result in a predicted increase that would be higher than the ISEP (2023) guideline⁵⁶ thresholds. In these situations, it is important to consider any increase in terms of overall traffic flow in relation to the capacity of the road, before making a conclusion on whether the effect is significant.

9.3 SENSITIVITY RECEPTORS

- 9.3.1 The sensitivity of the baseline conditions, including the importance of environmental features on or near to the Site or the sensitivity of potentially affected receptors, will be assessed in line with good practice guidance, legislation, statutory designations and / or professional judgement. **Table 9.1** outlines the framework for determining the sensitivity of receptors.

TABLE 9.1 FRAMEWORK FOR DETERMINING SENSITIVITY OF RECEPTOR

Receptor Sensitivity	Description
Very High	The receptor has no ability to absorb change without profoundly altering its present character, is of high strategic value, or of national importance, would include receptors such as populated areas where existing traffic levels are high and there is no capacity to absorb additional traffic flow on adjacent routes; and strategic nationally important routes with no capacity to absorb additional traffic flow.
High	The receptor has little ability to absorb change without fundamentally altering its present character, is of high strategic value, or of national importance. These would include receptors such as populated areas where existing traffic levels are high and there is little capacity to absorb additional traffic flows on adjacent routes. Accident hotspots would also be considered, as well as locations where pedestrian crossing facilities are informal, where a significant change in traffic flow level might induce significant pedestrian crossing delay, and where children/elderly people might regularly cross an informal or priority crossing.
Medium	Areas where the transport network has moderate capacity to change, without significantly altering its state. These would include routes with existing moderate traffic levels which have some additional traffic flow capacity, receptors such as populated areas where existing traffic levels are moderate and there is some capacity to absorb additional traffic flow on adjacent routes, slight accident hotspots where an increase in traffic flow may increase the likelihood or severity of accidents, locations where pedestrian crossing facilities are informal or substandard, and where a significant change in traffic flow level might induce a moderate pedestrian crossing delay.
Low	Areas where the transport network is tolerant to change without detriment to its state. These would include routes with existing low traffic levels which have additional traffic flow capacity, areas such as trunk road or A class roads constructed to accommodate significant HGV volumes, receptors such as populated areas where existing traffic levels are low and there is capacity to absorb additional traffic flow on adjacent routes, routes with a low level of historical accident data where a change in traffic flow or composition would have a low effect on the likelihood or severity of accidents, and locations where pedestrian crossing facilities are formal but priority, or pedestrian flows

Receptor Sensitivity	Description
	are sufficiently low that changes to traffic flow or composition are unlikely to cause a significant pedestrian delay.
Negligible	Areas where the transport network is tolerant to change without detriment to its state. These would include routes with existing low traffic levels which have a lot of additional traffic flow capacity, areas such as trunk road or A class roads constructed to accommodate significant HGV volumes, receptors such as populated areas where existing traffic levels are very low and there is capacity to absorb additional traffic flow on adjacent routes, routes with a very low level of historical accident data where a change in traffic flow or composition would have a negligible effect on the likelihood or severity of accidents, and locations where pedestrian crossing facilities are formal and controlled, or pedestrian flows are negligible (i.e. where there are no footways) such that changes to traffic flow or composition would not result in a change to pedestrian delay. This would also refer to receptors that are sufficiently distant from the affected roads and junctions.

9.4 MAGNITUDE OF IMPACT

9.4.1 The magnitude of impact will be determined through a structured professional judgement process, informed by the ISEP (2023) Guidelines⁵⁶, which considers:

- Baseline traffic conditions (absolute flows and sensitivity of the receiving network);
- Scale of change (percentage and absolute change in traffic flows attributable to the Proposed Development);
- Duration of the effect (temporary or permanent);
- Reversibility of the effect; and
- Nature of the impact pathway (e.g. congestion, delay, safety exposure).

9.4.2 Consistent with ISEP (2023), magnitude is not derived from a single threshold but from a balanced consideration of these factors in combination, with particular weight given to baseline conditions where networks are already operating close to capacity. **Table 9.2** provides guideline criteria for categorising

the magnitude of each traffic and movement impact. These criteria will inform, rather than prescribe, the assessment, and will be applied alongside professional judgement and consideration of the Site-specific context. In accordance with the ISEP (2023) guidance, the assessment will not rely solely on percentage changes in traffic flow when determining the magnitude of severance effects. Particular care will be taken where baseline traffic flows are low, as relatively small absolute increases in traffic can result in large percentage changes that may not represent a material change in the experience of road users or communities. In these circumstances, professional judgement will be applied, taking account of both the absolute and percentage change in traffic flows, the function and character of the affected route, existing traffic conditions, and the nature of receptors affected.

- 9.4.3 For severance effects, the assessment will also have regard to the principles set out in DMRB LA 112 Population and Human Health⁵⁷, which recognises that severance can arise where changes in traffic conditions affect the ability of communities, pedestrians, cyclists and other non-motorised users to access community facilities, services and local amenities. The assessment will therefore consider the extent to which changes in traffic flow, composition and vehicle speeds may alter connectivity, accessibility and community cohesion, rather than relying solely on traffic flow thresholds.

TABLE 9.2 CATEGORISATION OF IMPACT MAGNITUDE BY TOPIC

Topic	Large	Medium	Small	Negligible
Severance	Change in road link traffic flow of 90% or over.	Change in road link traffic flow of 60% to less than 90%.	Change in road link traffic flow of 30% to less than 60%.	Change in road link traffic flow of less than 30%.
Road Vehicle Driver and Passenger Delay	Judgement based on the individual characteristics of sections of road.			Change in road link traffic flow of

⁵⁷ National Highways (2025) Design Manual for Roads and Bridges (DMRB) LA 112: Population and Human Health. Birmingham: National Highways. (Accessed: August 2026)

Topic	Large	Medium	Small	Negligible
				less than 10%.
Non-Motorised User Delay	Judgement based on the individual characteristics of sections of road.			Change in road link traffic flow of less than 10%.
Non-Motorised User Amenity	Judgement based on the individual characteristics of sections of road. Medium or Large likely if change in total traffic flows or HGV flows of more than 100%.			Change in total traffic flows or HGV flows of less than 10%.
Fear and Intimidation of and by Road Users	Two changes in 'level' of fear and intimidation.	One change in level of fear and intimidation with >400 vehicle increase in average 18-hour vehicle flow or >500 HV increase in total 18-hour HV flows.	One change in level of fear and intimidation with <400 vehicle increase in average 18-hour vehicle flow or <500 HV increase in total 18-hour HV flows.	No change in level of fear and intimidation.
Road User and Pedestrian Safety	Judgement based on accident data and individual characteristics of sections of road.			Change in road link traffic flow of less than 10%.
Hazardous / Large Loads	Judgement based on number of such movements and nature of affected road network.			

9.5 SIGNIFICANCE OF EFFECTS

9.5.1 **Table 9.3** presents guideline criteria for assessing the significance of effects. The sensitivity of the receptor and the magnitude of impact will be used as a guide, in addition to professional judgement, to predict the significance of the likely effects as shown in **Table 9.3**. Moderate and Major effects are considered to be Significant.

TABLE 9.3 SIGNIFICANCE OF EFFECT MATRIX FOR TRAFFIC AND TRANSPORT

Impact Magnitude	Sensitivity of Receptors				
	Very High	High	Medium	Low	Negligible
Large	Major	Major	Moderate	Moderate	Minor
Medium	Major	Moderate	Moderate	Minor	Negligible
Small	Moderate	Moderate	Minor	Negligible	Negligible
Negligible	Minor	Minor	Negligible	Negligible	Negligible

9.6 ABNORMAL LOAD ROUTE ASSESSMENT

- 9.6.1 An Abnormal Load Route Assessment (ALRA) will be undertaken to confirm that the proposed route(s) can accommodate the AILs and that their transportation will not have any detrimental effect on the proposed haulage route and will identify any additional off-Site improvement works which are required to make the route viable.

9.7 TRANSPORT ASSESSMENT

- 9.7.1 A Transport Assessment (TA) will be prepared to support the EIA process. The TA and the EIA would utilise the same baseline data, however, the TA will be prepared in accordance with its own relevant guidance and good practice and will be subject to a consultation exercise with the relevant councils and National Highways. It will focus on the ability of the surrounding highway network to accommodate traffic associated with the Proposed Development.

9.8 APPROACH TO MITIGATION

- 9.8.1 The Traffic and Transport ES chapter will provide details of embedded mitigation such as routing of construction vehicles, access arrangements to the Proposed Development, details of the vehicle holding area(s), measures to reduce, wherever practicable, the use of public roads during morning and evening peak hours, details for the use of any traffic lights on public roads for safety, details for any temporary traffic management

and warning signs where appropriate in the form of an Construction Traffic Management Plan (CTMP). Additional mitigation may be included should the assessment reveal criteria that there are likely significant effects following the application of embedded mitigation measures.

- 9.8.2 Any new access arrangements will be designed in accordance with the appropriate guidance with consideration given to the road safety of other road users.

10. NOISE AND VIBRATION

10.1 BASELINE NOISE MONITORING

- 10.1.1 Baseline noise monitoring will be undertaken using Class 1 sound level meters and acoustic calibrators compliant with the relevant requirements of IEC 61672⁵⁸ and IEC 60942:2003⁵⁹. Equipment details, calibration records, monitoring coordinates, survey periods and Site photographs will be documented within the assessment.
- 10.1.2 Noise monitoring equipment will be installed at suitable locations representative of noise sensitive receptors and will be free from the influence of localised noise sources that are not representative of the wider acoustic environment as presented in Assessment and Rating of Wind Turbine Noise (ARWTN) (DESNZ, June 2026)⁶⁰ and the Institute of Acoustics Good Practice Guide (GPG)⁶¹.
- 10.1.3 The GPG pre-dates the publication of ARWTN and therefore contain references to ETSU-R-97. The guide presents good practice in the application of the ETSU-R-97 assessment methodology at various stages of the assessment process. The IOA has subsequently advised that these documents should continue to be used alongside ARWTN pending publication of updated guidance. Where any differences in terminology or interpretation arise, ARWTN, as the current Government guidance, will take precedence.
- 10.1.4 Baseline noise monitoring will be undertaken for a duration sufficient to obtain a robust and representative dataset in accordance with the minimum stipulated requirements of ARWTN and the GPG. The monitoring period will therefore be informed by data completeness and coverage across the relevant wind

⁵⁸ IEC 61672-2:2013, *Electroacoustics – Sound level meters – Part 2: Pattern evaluation tests*, International Electrotechnical Commission (IEC), Geneva, Switzerland, 2013. (Accessed: September 2026).

⁵⁹ IEC 60942:2003, *Electroacoustics – Sound calibrators*, International Electrotechnical Commission (IEC), Geneva, Switzerland, 2003. (Accessed: September 2026).

⁶⁰ Department for Energy Security and Net Zero (2026) Assessment and rating of noise from wind turbines: guidance. Available at: <https://www.gov.uk/government/publications/assessment-and-rating-of-noise-from-wind-turbines-guidance>. (Accessed: August 2026)

⁶¹ Institute of Acoustics (IOA) (2025) A Good Practice Guide to the Application of Assessment and Rating of Wind Turbine Noise. Available at: <https://www.ioa.org.uk/news/wind-turbine-noise-assessment-guidance-arwn-replaces-etsu97>. (Accessed: August 2026)

speed range, rather than being constrained to a predefined survey duration.

- 10.1.5 ARWTN requires the baseline environment within the Study Area to be characterised by measuring background noise levels as a function of Site wind speed at the nearest neighbours (or, at a representative sample of the nearest neighbours). The number and distribution of monitoring positions will be proportionate to the scale of the Proposed Development, the surrounding receptor distribution, and the complexity of the receiving environment. The suitability of monitoring locations and the extent to which they are representative of surrounding receptors will be justified within the assessment.
- 10.1.6 ARWTN also requires that any such measurements are not significantly influenced by existing operational turbines, to prevent unreasonable cumulative increases. Where existing operational turbines exist within the area of interest, downwind contributions from these turbines will be directionally filtered and excluded from the baseline data.
- 10.1.7 Baseline noise measurements will be correlated with wind and rain data obtained from suitable on-Site meteorological instrumentation. Details of the meteorological monitoring equipment, measurement heights, and data processing methods will be presented in the assessment.
- 10.1.8 The potential implication of wind shear (a change in wind speed with height) effects of the Proposed Development will be taken into account in line with best practice set out in the GPG. This would consist of utilising at least one sufficiently high wind speed reference when correlating with the proposed background noise measurements. Hub height wind data will be re-expressed using the standardised 10 m wind reference in accordance with the GPG using the 'log law' equation and a ground roughness of 0.05 m.
- 10.1.9 Weather conditions that may adversely influence the reliability of acoustic measurements, including periods of rainfall or other atypical meteorological conditions, will be identified and excluded from the assessment dataset where appropriate. Data

affected by equipment malfunction, maintenance activities, atypical local noise sources, or other factors that may compromise representativeness will be identified and excluded, and justified in the assessment.

- 10.1.10 Post-processing of the monitoring data will be undertaken in accordance with the methodology set out in ARWTN and the GPG. This will include the establishment of background noise level relationships as a function of standardised wind speed through a regression analysis.
- 10.1.11 The survey methods and selection of noise sensitive receptors would be discussed in consultation with East Cambridgeshire, Fenland and Huntingdonshire District Councils. The assessment methodology, particularly the approach to cumulative impacts, will also be discussed with the Councils. The methodology employed for the baseline noise monitoring will be in accordance with current best practice in accordance with ARWTN and presented in the GPG.

10.2 ASSESSMENT OF CONSTRUCTION AND DECOMMISSIONING NOISE AND VIBRATION

- 10.2.1 The assessment of potential impacts due to noise emissions during construction and decommissioning will be undertaken in accordance with guidance in BS 5228-1⁶². Predictions of construction and decommissioning noise will be made referencing typical activity emission levels and likely variations in noise levels at surrounding noise sensitive receptor locations, using the methodology set out in BS 5228-1. This standard can be used to predict noise levels associated with the different construction and decommissioning activities used throughout the construction and decommissioning programmes. The candidate ABC method in BS 5228-1 stipulates that, for receptors with a low ambient noise environment, construction noise levels above 65 dB LAeq,T daytime, 55 dB LAeq,T evenings and weekends, or 45 dB LAeq,T night-time

⁶² British Standards Institution (BSI) (2014) BS 5228-1:2009+A1:2014 Code of practice for noise and vibration control on construction and open sites. Part 1: Noise. London: BSI. (Accessed: September 2026).

has the potential to constitute a likely significant effect depending on context.

- 10.2.2 The assessment of potential vibration during construction and decommissioning will be undertaken in accordance with BS 5228-2 and DMRB LA 111: Noise and Vibration. The predicted vibration levels will be calculated in terms of PPV (in mm/s). The predicted level and relevant contextual factors, such as the nature of vibration (continuous or transitory) and frequency of occurrence will indicate the potential to constitute a likely significant effect.
- 10.2.3 Consideration will also be given to the potential impact of construction and decommissioning traffic on sensitive receptors in the Study Area. Depending upon the outcome of the assessment of traffic (see Section 9), the impact of traffic associated with the Proposed Development along the Proposed Development's vehicle movements within the Indicative Order Limits will be assessed based on the methodology within BS 5228-1, Calculation of Road Traffic Noise (CRTN) and DMRB LA 111: Noise and Vibration⁶³, where appropriate.

10.3 ASSESSMENT OF OPERATIONAL WIND TURBINE NOISE

- 10.3.1 The methodology for the assessment of operational noise from wind farms recommended in planning guidance is that documented in ARWTN, which is proposed to be followed together with additional guidance set in the GPG. In summary, the assessment shall:
- Identify the nearest noise sensitive receptors;
 - Determine the quiet daytime and night-time noise limits from measured background noise levels at the representative noise sensitive receptors;
 - Specify the type and noise emission characteristics of the wind turbines for the Proposed Development;
 - Calculate noise emission levels due to the operation of the wind turbines as a function of Site wind speed, including the cumulative effect of all turbines; and

⁶³ National Highways (2025) Design Manual for Roads and Bridges (DMRB) LA 111: Noise and Vibration. Birmingham: National Highways. (Accessed: September 2026).

- Compare the calculated wind farm noise emission levels with the derived noise limits.

10.3.2 ARWTN and GPG propose limits which are set at a level of 5 dB above the background noise level, except where this falls below defined Lower Limiting Values (LLVs). Separate limits apply for daytime (between 35 dB and 40 dB L_{A90} depending on context) and night-time (43 dB L_{A90}) periods. The proposed limits are different for receptors which are financially involved (45 dB L_{A90} for both daytime and night-time).

10.3.3 Operational wind turbine noise levels below the ARWTN criteria will be considered Not Significant in the context of the EIA Regulations. If predicted noise levels are above the ARWTN criteria, effects will be considered Significant in the context of the EIA Regulations.

10.3.4 It is anticipated that a specific turbine model will not be confirmed at the time of the Application. The assessment will therefore adopt a representative worst-case candidate turbine model, selected in accordance with the project design envelope, to ensure that the likely operational noise effects are robustly assessed.

10.4 ASSESSMENT OF OPERATIONAL NOISE FROM BESS, ON-SITE SUBSTATION AND OTHER NOISE EMITTING INFRASTRUCTURE

10.4.1 The assessment of operational noise from the Proposed Development's BESS, on-Site substation and other noise emitting infrastructure will be undertaken according to the guidance outlined in BS 4142⁶⁴ by comparing the rating level of the sound source with the existing representative background sound level at noise sensitive receptor.

10.4.2 Representative background sound levels will be derived from baseline noise surveys undertaken at locations representative of the nearest noise sensitive receptors. The rating level is derived from the specific sound level at a noise sensitive receptor with appropriate character correction penalties applied including distinctive elements such as tonality, impulsivity and

⁶⁴ British Standards Institution (BSI) (2019) BS 4142:2014+A1:2019 Methods for Rating and Assessing Industrial and Commercial Sound. London: BSI. (Accessed: September 2026).

intermittency. This level is assessed against the existing background sound level at each noise sensitive receptor to inform the assessment of operational noise impacts.

- 10.4.3 The likely significance of effect is dictated by the initial comparison of representative background sound level and the calculated rating level before including a consideration of contextual factors (e.g. the absolute level of sound and whether the new source is likely distinguishable within the existing acoustic environment). In the terms of BS 4142, an adverse or significant adverse impact will be considered Significant in the context of the EIA regulations.

10.5 APPROACH TO MITIGATION

- 10.5.1 Consideration will be given to the opportunity to introduce environmental measures and mitigation that will help to avoid or reduce the potential for a likely significant effect to occur, in line with the first and second aims of the NPSE. Specific environmental measures relevant to Noise will be identified and will be considered as part of the assessment.
- 10.5.2 It is anticipated that a range of best practicable means will be detailed in a CEMP and employed to reduce adverse noise effects. Section 8 of BS 5228-1 recommends several simple control measures that may be employed on site to reduce adverse construction noise effects, summarised in the following:
- Keep local residents informed of the proposed working schedule, where appropriate, including the times and duration of any abnormally noisy activity that may cause concern;
 - Ensure that any extraordinary Site work continuing throughout 24 hours of a day (for example, crane operations lifting components onto the tower) will be programmed, when appropriate, so that haulage vehicles would not arrive at or leave the Site between 19:00 and 07:00, with the exception of abnormal loads that would be scheduled to avoid significant traffic flows;
 - Ensure all vehicles and mechanical plant are fitted with effective exhaust silencers and be subject to programmed maintenance;

- Select inherently quiet plant where appropriate - all major compressors will be 'sound reduced' models fitted with properly lined and sealed acoustic covers, which would be kept closed whenever the machines are in use;
- Ensure all ancillary pneumatic percussive tools are fitted with mufflers or silencers of the type recommended by the manufacturers;
- Instruct that machines will be shut down between work periods or throttled down to a minimum;
- Regularly maintain all equipment used on-Site, including maintenance related to noise emissions;
- Ensure that vehicles are loaded carefully to ensure minimal drop heights so as to reduce adverse noise during this operation;
- Ensure all ancillary plant such as generators and pumps will be positioned so as to cause minimum noise disturbance and if necessary, temporary acoustic screens or enclosures provided; and
- In addition to the above, all mobile plant will be fitted with directional white noise reversing alarms, which allows alarm noise produced by reversing vehicles, for example, to dissipate quicker and be focused within the danger zone, as opposed to tonal reversing alarms which cover a broader area and dissipate more slowly.

10.5.3 To ensure compliance with the noise limits during the operation and maintenance phase of the Proposed Development, appropriate noise controls within the OEMP will be considered where appropriate. Indicative mitigation measures may include the operation of some wind turbines in alternative 'low noise' operational modes under specific wind conditions.

10.5.4 Good Site practices, as described for the construction phase, will be applied to reduce adverse noise impacts during the decommissioning phase.

10.6 ASSESSMENT OF CUMULATIVE EFFECTS

10.6.1 The potential noise emissions from neighbouring wind farm sites will be included within a cumulative assessment by examining the potential level of noise emission allowed under the

respective consent for each of the sites, in line with current best practice (ARWTN and GPG).

- 10.6.2 The ARWTN Total Noise Assessment Criteria (TNAC) limits, for each noise sensitive receptor, apply to the total noise produced by all wind farms. Therefore, potential cumulative operational noise levels, including existing, consented, under construction and proposed wind turbines in the area, must be assessed relative to these limits. This is the case unless it is considered that these effects are likely to be negligible. The GPG suggests that cumulative noise effects need to be considered where differences between the noise level contribution of two wind farms are below 10 dB. In addition to situations where the predicted noise contribution from the Proposed Development is at least 10 dB below that of a neighbouring wind farm, ARWTN provides additional clarity that a cumulative assessment may also be screened out where the predicted noise level from the Proposed Development is below 25 dB LA90 or is 10 dB or more below both the daytime and night-time TNAC at a receptor. Where these criteria are met, the contribution from the Proposed Development is not expected to materially influence cumulative wind turbine noise levels.
- 10.6.3 ARWTN requires the establishment of Site-specific noise limits (SSNLs) for the Proposed Development. The SSNLs define the maximum noise contribution attributable to a proposed wind farm and are used to ensure that cumulative operational wind turbine noise remains within the applicable noise criteria at noise sensitive receptors. In areas where there is limited or no contribution from other wind farms, SSNLs would generally be expected to be below the relevant TNAC, unless this would impose unreasonable restrictions on the Proposed Development, in which case appropriate justification would be required. Where existing wind farms have already utilised a substantial proportion of the available noise budget (as defined by ARWTN), more restrictive SSNLs may be required to maintain compliance with the applicable cumulative noise limits.
- 10.6.4 Latest available information on cumulative wind farms in the area will be reviewed to inform this aspect of the assessment. A

review of operational, consented, under construction and proposed wind farm developments will be undertaken within 10 km of the Proposed Development. In accordance with ARWTN and GPG, the cumulative assessment will focus on wind farms with the potential to make a material contribution to cumulative operational noise levels at noise sensitive receptors.

- 10.6.5 In addition to cumulative wind turbine noise, the assessment will consider the potential for cumulative operational noise effects arising from other components of the Proposed Development, including the BESS, on-Site substation and other fixed plant, where these have the potential to make a material contribution to noise levels at noise sensitive receptors. Operational noise impacts from other cumulative schemes, such as solar farms, BESS facilities and substations, will also be reviewed where relevant; however, such effects are generally more localised in nature and significant cumulative impacts are considered unlikely.
- 10.6.6 If relevant, the implication of noise from cumulative construction traffic from different consented wind farms and other developments as considered appropriate, should the schemes construction phases overlap, will also be considered. Schemes without consent cannot be considered as being committed and would therefore be excluded. However, the status of cumulative schemes will be kept under review throughout the application process and, where the status of a scheme changes such that it becomes committed, it could be included, as appropriate.

11. SOCIO- ECONOMICS, TOURISM, RECREATION AND LAND USE

11.1 APPROACH TO THE ASSESSMENT

11.1.1 The assessment will follow the ISEP guidance on Social Impact Assessment for EIA in the UK and Ireland⁶⁵, as well as other guidance outlined in **Appendix B**, professional judgement, and established industry best practice. Sensitivity and magnitude criteria are set out below and will be applied to assess the significance of effects.

11.1.2 This Section describes the methodology that will be used to assess each category of effect.

SOCIO-ECONOMIC IMPACTS

11.1.3 An economic model will be built to estimate the full-time equivalent (FTE) jobs and GVA associated with the construction, operation and maintenance and decommissioning phases of the Proposed Development. The model will be based on the estimated capital expenditure (CAPEX) and operational expenditure (OPEX) associated with the Proposed Development and will apply industry standard best practice to estimate the direct, indirect, and induced effects of construction on the local (East Cambridgeshire, Fenland and Huntingdonshire local authority areas) economy. Should CAPEX and/or OPEX data not be made available by the Applicant, this will instead be estimated based on industry proxies.

WIDER SOCIO-ECONOMIC EFFECTS

11.1.4 The assessment of wider socio-economic effects such as structural economic change or disruption to established local industries is based on the estimated socio-economic effects, as above, and changes in land use or other environmental impacts that could affect businesses and commercial activities. The assessment is qualitative and will take into account baseline data in relation to the structure of the local economy, and its

⁶⁵ Institute of Sustainability and Environmental Professionals (ISEP) (2025) Social Impact Assessment in Environmental Impact Assessment in the UK. (Accessed: August 2026)

existing strengths and growth areas, including for example, manufacturing, construction, tourism, and agriculture.

SOCIO-CULTURAL EFFECTS

- 11.1.5 The assessment of socio-cultural effects considers the potential impact on the local population associated with an incoming workforce, the impact on local service provision and availability (including the availability of housing) from any increase in demand, and the impact on local identity and sense of place from the change in population and from changes in the local environment as identified in **Chapter 14, Chapter 13, and Chapter 9** of the Scoping Report. The assessment is qualitative, and will take into account the size of the estimated workforce and baseline data relating to the population profile and existing service provision.
- 11.1.6 The assessment will also consider impacts on access to social infrastructure and on amenity for users of social infrastructure, based on the design of the Proposed Development and the findings of other relevant assessments including Noise, Traffic and Transport, and Landscape and Visual. Combined effects on amenity will be assessed for users of sensitive social infrastructure within 5 km of the Site.

TOURISM AND RECREATION

- 11.1.7 An assessment of effects on the tourism sector will be provided, which will include direct and indirect impacts on tourism receptors, and changes in demand for tourism accommodation associated with an incoming construction workforce. Direct impacts on tourism receptors will be considered for receptors within the Site, and indirect impacts will be considered for receptors within a 5 km buffer of the Indicative Order Limits. The assessment will draw on the findings of other relevant assessments including Noise, Traffic and Transport, and Landscape and Visual, and will consider where there are likely significant effects identified by these topics to result in combined effects on amenity for users of tourism receptors

IMPACTS ON AGRICULTURAL LAND

11.1.8 The chapter will provide an assessment of the direct impacts of the Proposed Development on agricultural land within the Indicative Order Limits, including in relation to Best and Most Versatile (BMV) land. The area of BMV land that will be required temporarily and/or permanently for the construction and operation and maintenance of the Proposed Development will be measured by ALC grade, and the assessment will take into account the availability of BMV land elsewhere in the Local Study Area.

11.2 SOCIO-ECONOMIC RECEPTOR SENSITIVITY

11.2.1 The sensitivity of receptors is typically determined by the following factors, as set out in the ISEP guidance on social impact assessment⁶⁶:

- A receptor's social, economic, or environmental value, as recognised in relevant local, regional or national policy;
- Its resilience and capacity to absorb change without fundamentally altering its characteristics;
- Its scarcity value, or the availability of suitable alternative resources; and
- Community dependency on a resource, receptor, or receiving environment.

11.2.2 Sensitivity criteria for this assessment have been defined based on the ISEP guidance and on professional judgement. These are set out in **Table 11.1**:

TABLE 11.1 SOCIO-ECONOMIC RECEPTOR SENSITIVITY

Sensitivity	Description
High	The receptor is of international or national importance. The receptor has little or no ability to absorb change or recover/adapt.

⁶⁶ ISEP (2025) Social Impact Assessment in Environmental Impact Assessment in the UK. Available at: [Social impact assessment in environmental impact assessment in the UK – ISEP shop](#) (Accessed: August 2026).

Sensitivity	Description
	There is no or low availability of labour and skills in the local authority area workforce, for example as a result of very low unemployment rates. There are no suitable alternative resources available within the relevant Study Area. The receptor is solely used by sensitive groups such as older people, children, and people of poor health.
Medium	The receptor is of regional or local importance. The receptor has a moderate ability to absorb change or recover/adapt. There is a constrained supply of labour and skills and the Proposed Development may lead to temporary labour market pressure. There is limited availability of alternative resources. Receptor is principally, but not exclusively, used by sensitive groups such as older people, children and people of poor health.
Low	Receptor is of local importance. Receptor has ability to absorb change or recover/adapt. There is a readily available labour force with some skill deficits, Proposed Development is unlikely to lead to labour market pressure or distortion. There are alternative resources available. The receptor may be used by sensitive groups such as older people, children, and people of poor health.
Negligible	Any effect would not be discernible in the context of the number of jobs created or lost within the local authority area and the capacity of that area to accommodate the change. Receptor is of local importance and has a high capacity to absorb change and/or recover or adapt. Numerous suitable alternative resources available.

Sensitivity	Description
	Receptor is not specifically used by sensitive groups such as older people, children, and people of poor health.

11.3 MAGNITUDE OF IMPACTS

11.3.1 Magnitude of impact is typically determined by the following factors, as set out in the ISEP guidance on social impact assessment⁶⁷:

- The size of the impact based on anticipated change versus the baseline;
- The scale or extent of the impact;
- The duration of the impact;
- The frequency of the impact, if relevant; and
- The reversibility of the impact, and whether it would be temporary or permanent.

11.3.2 Magnitude criteria for this assessment have been defined based on the ISEP guidance and professional judgement and are set out in **Table 11.2** below.

TABLE 11.2 MAGNITUDE OF IMPACT (BENEFICIAL AND ADVERSE)

Impact Magnitude	Description
High	Total loss or major alteration (beneficial or adverse) of a socio-economic receptor. This could include permanent closure or severe effect upon the viability of a business, community facility or public service, or closure or restricted access to PRow.
Medium	Loss of, or alteration to (beneficial or adverse), one or more key elements of a socio-economic receptor's baseline value. This could include a moderate change to business revenues with potential job losses but no threat to the viability of the business, moderate change to the function or service of

⁶⁷ Institute of Sustainability and Environmental Professionals (ISEP) (2025) Social Impact Assessment in Environmental Impact Assessment in the UK. Available at: <https://www.iema.net/shop/product/social-impact-assessment-in-environmental-impact-assessment-in-the-uk/> (Accessed: August 2026).

Impact Magnitude	Description
	community facilities and public services, or a moderate reduction in access to recreational PRow.
Low	Slight alteration (beneficial or adverse) of the socio-economic receptor's baseline value. This could include a low change to business revenues with isolated job losses but no threat to the viability of the business, low change to the function or service of community facilities and public services, or low reduction in access to recreational PRow.
Negligible	Very little change from baseline conditions. Change barely distinguishable, equating to a 'no change' situation.

11.4 SIGNIFICANCE OF EFFECTS

- 11.4.1 The level of significance is determined by the sensitivity of the receptor and magnitude of the impacts upon them (see **Table 11.3**). For the purposes of the assessment and the EIA Regulations, 'significant effects' are those identified as being moderate or major (adverse or beneficial). Minor and negligible effects are not considered to be 'significant'.

TABLE 11.3 SIGNIFICANCE OF EFFECT

		Sensitivity of Receptors			
		High	Medium	Low	Negligible
Magnitude of Impact	High	Major	Major	Moderate	Minor
	Medium	Major	Moderate	Minor	Negligible
	Low	Moderate	Minor	Negligible	Negligible
	Negligible	Minor	Negligible	Negligible	Negligible

- 11.4.2 Effects can be defined as:

- **Beneficial** – advantageous or beneficial on an impact area/defined receptors;

- **Negligible** – imperceptible/no effect on an impact area/defined receptors; and
- **Adverse** – disadvantageous or negative effect on an impact area/defined receptors.

11.5 APPROACH TO MITIGATION

- 11.5.1 The assessment will consider the need for any additional measures to mitigate significant adverse effects and support the delivery of positive effects. Potential measures may include:
- The preparation of an accommodation strategy for the construction workforce;
 - A PRow Management Plan to maintain safe access to recreational routes;
 - Initiatives to support local employment and supply chain opportunities; and design measures to minimise the loss of, or disruption to, BMV agricultural land.

12. AVIATION, RADAR AND TELECOMMUNICATIONS

12.1 APPROACH TO ASSESSMENT

12.1.1 A detailed desktop review has been undertaken to characterise existing and future aviation baseline conditions in the Study Area. This has been undertaken by reviewing the relevant aviation legislation, policy and guidance documents outlined in **Appendix B** in particular the UK Integrated Aeronautical Information Package (IAIP)⁶⁸, and will be augmented by engagement with the relevant aviation stakeholders throughout the EIA process.

12.2 SENSITIVITY AND MAGNITUDE OF EFFECTS

12.2.1 Defining categories of receptor sensitivity and magnitude of impact is not appropriate for aviation as baseline aviation activities and equipment are highly sensitive to impacts and any magnitude of restriction on, or compromise to, activities or equipment (without embedded mitigation) is considered to be high. Therefore, the sensitivity of receptor and magnitude of impact will be explained via professional reasoning and judgement rather than via definitions of different categories. These judgements will then feed into the determination of significance:

- **Major:** a significant restriction on the ability of the Air Navigation Service Provider (ANSP) to continue to ensure safety and/or provide unrestricted ATS;
- **Moderate:** a possible restriction on the ability of the ANSP to continue to ensure safety and/or provide unrestricted ATS but which might be mitigated by changes to operating procedures or technical mitigation;
- **Minor:** a possible restriction on the ability of the ANSP to continue to provide unrestricted ATS but which is manageable with little change to existing operating procedures; and

⁶⁸ Civil Aviation Authority (2024) CAP 032: UK Integrated Aeronautical Information Package (IAIP). London: Civil Aviation Authority. Available at: <https://www.aurora.nats.co.uk/htmlAIP/Publications/2024-12-26-AIRAC/html/index-en-GB.html> (Accessed: August 2026).

- **Negligible:** any effect should be completely manageable within current operating practices and without any requirement for change to procedures.

12.2.2 Any anticipated impact upon aviation stakeholders which results in restricted operations will be considered to be significant, prior to implementation of suitable mitigation measures.

12.2.3 The ES Aviation chapter will conclude with a high-level summary of potential effects, an overview of any radar, technical or operational mitigation requirements, together with mitigation options.

12.3 APPROACH TO MITIGATION CONSTRUCTION

12.3.1 Embedded mitigation measures relevant to the construction phase would include:

- Preparation and implementation of a Lighting Plan, setting out the aviation lighting requirements for the wind turbines in accordance with applicable Civil Aviation Authority requirements (CAA (2016) CAP 393, Air Navigation: The Order and the Regulations 2016⁶⁹);
- Notification to the Defence Geographic Centre of structures exceeding 91.4 m in height, for inclusion in the Digital Vertical Obstruction File and relevant aeronautical charts, at least ten weeks before construction;
- Notification of temporary obstacles exceeding 91.4 m in height through the Notice to Aviation (NOTAM) system;
- Provision to the Civil Aviation Authority of the locations, heights and lighting status of the wind turbines, together with the anticipated and actual construction dates and the maximum heights of construction equipment; and
- Where required, amendment and republication of any affected civil airport or military aerodrome Instrument Flight Procedures (IFPs) before construction.

⁶⁹ Civil Aviation Authority (2021) CAP 393: Air Navigation, The Order and the Regulations. Version 6, 12 February 2021. London: Civil Aviation Authority. Available at: <https://publicapps.caa.co.uk/docs/33/CAP393Edition2021.pdf> (Accessed: August 2026).

OPERATION AND MAINTENANCE

12.3.2 Potential operational mitigation would be developed through engagement with the relevant aviation stakeholders and informed by the findings of the assessment. This may include:

- **Cambridge Airport:** engagement regarding potential effects on its Air Traffic Control Primary Surveillance Radar (ATC PSR) and, where required, development of an appropriate mitigation solution;
- **Military Air Traffic Control Primary Surveillance Radar / Secondary Surveillance Radar (ATC PSR/SSR):** The MoD has recently trialled a wind farm mitigation system for utilisation on offshore developments. The Applicant intends to carry out discussions with MoD regarding mitigation for the Proposed Development based on this new technology. It is anticipated that MoD will require the Applicant to submit a mitigation proposal for their consideration and that this will be completed ahead of submission of the Application. Acceptance of the mitigation proposal will permit MoD to withdraw any objection subject to agreement of a suitable suspensive condition. Full details will be provided in the ES.
- **National En Route Ltd (NERL) Air Traffic Control Primary Surveillance Radar (ATC PSR):** NATS has proven processes and techniques to mitigate the adverse impact of wind turbines on NERL PSRs. The Applicant will commence discussions with NATS regarding potential mitigation solutions and it is likely that the proposed solution will involve the use of infill radar or Multi-Radar Tracker (MRT) blanking, which are technical mitigation solutions routinely employed by NATS to remove wind turbine returns from the ATC radar display. It is expected that mitigation negotiations will take place ahead of submission of the application and full details will be provided in the ES.

12.3.3 Where mitigation is required, the proposed approach will be developed through engagement with the relevant stakeholder and reported in the ES.

DECOMMISSIONING

- 12.3.4 No specific aviation mitigation measures are currently anticipated for decommissioning beyond the relevant notification and obstacle-management measures identified for construction. Any requirements would be confirmed through engagement with the relevant aviation stakeholders before decommissioning.

13. OTHER ENVIRONMENTAL TOPICS

13.1 INTRODUCTION

- 13.1.1 The EIA Regulations require consideration of Human Health, Major Accidents and Disasters, and Transboundary Effects. A preliminary review of the Proposed Development and its characteristics has been undertaken to determine whether these topics have the potential to give rise to likely significant environmental effects.
- 13.1.2 Major Accidents and Disasters and Transboundary Effects are proposed to be scoped out of the EIA and, therefore, no specific assessment methodologies are presented within this Appendix. The justification for these scope-out conclusions is provided in **Chapter 17** of the Scoping Report.
- 13.1.3 Human Health will not be assessed as a standalone topic within the EIA. Instead, potential effects on human health will be considered, where relevant, through the assessment of other environmental topics, including:
- Hydrology, Hydrogeology, Geology and Peat;
 - Traffic and Transport;
 - Noise and Vibration;
 - Climate Change and Greenhouse Gases; and
 - Socio-Economics, Tourism, Recreation and Land Use.
- 13.1.4 This approach reflects current EIA practice and recognises that potential health effects are most appropriately assessed through the specialist topic assessments where the relevant receptors, pathways, impacts and mitigation measures can be considered in detail. Accordingly, no separate Human Health assessment methodology is presented within this chapter.
- 13.1.5 The proposed proportionate assessment methodologies for Air Quality, Forestry and Waste are presented below.

13.2 AIR QUALITY

ASSESSMENT METHODOLOGY

- 13.2.1 The Air Quality assessment will consider the potential for effects arising during the construction and decommissioning phases of the Proposed Development. The assessment will be undertaken in accordance with relevant guidance published by the Institute of Air Quality Management (IAQM), together with professional judgement and established industry best practice.

CONSTRUCTION AND DECOMMISSIONING DUST ASSESSMENT

- 13.2.2 Potential impacts associated with dust and particulate matter generated during construction and decommissioning will be assessed using the methodology contained within the IAQM guidance on the Assessment of Dust from Demolition and Construction⁷⁰.
- 13.2.3 The assessment will consider the potential for effects associated with:
- Dust soiling;
 - Human health impacts from particulate matter emissions;
 - Earthworks;
 - Construction activities;
 - Construction vehicle movements on unpaved surfaces; and
 - Trackout onto the public highway.
- 13.2.4 The assessment will identify appropriate mitigation measures in accordance with IAQM guidance. These measures will be incorporated within a CEMP.

CONSTRUCTION AND DECOMMISSIONING TRAFFIC SCREENING

- 13.2.5 The significance of traffic-related Air Quality impacts depends on the extent to which traffic flows increase on roads affected by the Proposed Development.
- 13.2.6 A staged screening exercise will be undertaken using the criteria contained within the IAQM Land-Use Planning & Development

⁷⁰ Institute of Air Quality Management (IAQM) (2024) Guidance on the Assessment of Dust from Demolition and Construction. Version 2.2. London: IAQM. (Accessed: August 2026).

Control: Planning for Air Quality guidance⁷¹ to determine whether a detailed assessment is required.

13.2.7 The screening criteria are:

- Outside an Air Quality Management Area (AQMA):
 - Change in Heavy Duty Vehicles (HDVs) greater than 100 HDVs per day; or
 - Change in Light Duty Vehicles (LDVs) greater than 500 LDVs per day.
- Within or adjacent to an AQMA:
 - Change in Heavy Duty Vehicles (HDVs) greater than 25 HDVs per day; or
 - Change in Light Duty Vehicles (LDVs) greater than 100 LDVs per day.

13.2.8 Where these criteria are exceeded, the requirement for a detailed Air Quality assessment will be considered. Based on the anticipated scale of construction and decommissioning traffic and the location of nearby AQMAs, it is anticipated that traffic-related Air Quality effects will be screened out and no detailed Air Quality modelling will be required. As there are no potentially significant combustion sources as part of regular maintenance and operations on-Site during the operation and maintenance phase, the operational phase Air Quality assessment is not expected to be required.

APPROACH TO MITIGATION

13.2.9 The Proposed Development will incorporate standard good practice mitigation measures to minimise dust and particulate matter emissions during construction and decommissioning in accordance with IAQM guidance. Such measures are expected to include:

- Dust suppression measures;
- Management of stockpiles and exposed surfaces;
- Haul road maintenance and vehicle speed controls;

⁷¹ Environmental Protection UK (EPUK) and Institute of Air Quality Management (IAQM) (2017) Land-Use Planning & Development Control: Planning for Air Quality. Version 1.2. London: IAQM. (Accessed: August 2026).

- Wheel washing facilities, where required;
- Appropriate handling and storage of materials; and
- Use of suitably maintained and emission-controlled non-road mobile machinery.

13.3 FORESTRY

ASSESSMENT METHODOLOGY

- 13.3.1 A Forestry assessment will be included within the 'Other Environmental Topics' Chapter of the ES for the Proposed Development. The assessment will consider potential effects on forestry within the Indicative Order Limits and will:
- Confirm the species and age structure of existing forestry crops affected;
 - Determine the significance of forestry effects based on receptor sensitivity and the magnitude of impact;
 - Analyse impacts of any necessary tree removal to facilitate the Proposed Development on existing Forestry plans;
 - Analyse impacts of the grid connection on any Ancient Woodland; and
 - Identify measures necessary to mitigate the impact of the Proposed Development on existing forestry crops.
- 13.3.2 The Forestry Commission will be consulted on the proposals relating to the restructuring of the forestry cover as a consequence of the Proposed Development, to ensure that the proposed changes to the existing forestry crops are appropriate and suitably address the requirements of the EIA (Forestry) (England and Wales) Regulations 1999, the Forestry Act 1967⁷² and the United Kingdom Forest Standard (UKFS)⁷³.
- 13.3.3 All landowners of forestry assets affected will be consulted on the development of the proposals relating to the restructuring of the forestry cover as a consequence of the Proposed Development. This aims to ensure that the proposed changes to

⁷² UK Government (1967). Forestry Act 1967 (as amended). Available at: <https://www.legislation.gov.uk/ukpga/1967/10/contents>. (Accessed: August 2026).

⁷³ Forestry Commission (2023) The UK Forestry Standard: The Government's Approach to Sustainable Forestry. Edinburgh: Forestry Commission. Available at: <https://www.gov.uk/government/publications/the-uk-forestry-standard> (Accessed: August 2026).

the existing forestry crops are appropriate and suitably address the structural integrity and quality standards of their bordering coupes.

- 13.3.4 The changes to the woodland structure will be analysed and described in relation to species composition, age class structure, commercial timber production and value etc with supporting text, tables, diagrams and maps as necessary.
- 13.3.5 Forestry proposals will be prepared in line with current industry best-practice guidance. They will set out the timing and extent of woodland felling over the life of the Proposed Development and provide an overview of forestry waste. Where required, restocking proposals will also be included, detailing all replanting obligations, either within the Site or through compensatory planting at alternative sites.

APPROACH TO MITIGATION

- 13.3.6 Mitigation by design measures will reduce the woodland loss required for the Proposed Development.
- 13.3.7 The Forestry Act 1967 and the UK Forestry Standard regulate tree removal and set out the requirements and principles which should be considered when removing woodland cover, including the provision of compensatory restocking measures. These requirements will be addressed within the ES.

13.4 WASTE

ASSESSMENT METHODOLOGY

- 13.4.1 The assessment of Waste will be undertaken on a proportionate basis and will consider waste generated during the construction, operation and maintenance, and decommissioning phases of the Proposed Development. The assessment will identify the principal waste streams likely to arise, provide an estimate of anticipated waste types and quantities where information is available, and consider the proposed management, recovery and disposal routes.
- 13.4.2 The assessment will be informed by the design of the Proposed Development, construction methodologies and available

information on operational and decommissioning activities. In accordance with the waste hierarchy, priority will be given to the prevention of waste generation, followed by the reuse, recycling and recovery of materials before disposal is considered. Opportunities to reuse suitable materials within the Site will be identified where practicable.

- 13.4.3 Waste will be assessed proportionately within the Other Environmental Topics chapter of the ES rather than in a standalone Waste chapter.

APPROACH TO MITIGATION

- 13.4.4 Waste will be managed in accordance with the waste hierarchy and applicable legislation. Suitable materials will be reused within the Site where practicable, with remaining waste directed towards reuse, recycling or recovery prior to disposal. Waste will be managed by appropriately authorised contractors and facilities and controlled through a Site Waste Management Plan and the relevant construction, operational and decommissioning environmental management arrangements.
- 13.4.5 The availability and capacity of suitable waste-management facilities and disposal routes will be reviewed as the design and assessment progress. The position will be monitored throughout the EIA process and the assessment updated where changes in anticipated waste quantities, waste-management routes or available facility capacity could influence the assessment conclusions.
- 13.4.6 Subject to confirmation of anticipated waste quantities, waste types and the availability of suitable management routes, waste is not expected to give rise to likely significant environmental effects. Accordingly, waste will be considered within the ES on a proportionate basis; however, a standalone Waste chapter is not proposed.

CUMULATIVE EFFECTS ASSESSMENT

- 13.4.7 The assessment will also consider, on a proportionate basis, the potential for cumulative effects arising from waste generated by the Proposed Development in combination with other relevant

developments. This will include consideration of whether cumulative waste arisings could place additional pressure on available waste-management, recovery or disposal facilities.

- 13.4.8 The assessment will be informed by the anticipated waste types and quantities associated with the Proposed Development, available information relating to other relevant developments, and the identified capacity and availability of suitable waste-management infrastructure. The status of cumulative developments, available facility capacity and management routes will be kept under review throughout the application process, and the assessment updated where new information indicates a material change in cumulative demand or facility availability.