Wind Power North Two Limited

# Balblair Wind Farm

## Environmental Impact Assessment Report (Volume 1)

## Non-Technical Summary

663896

JANUARY 2025

# RSK GENERAL NOTES

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# 1 INTRODUCTION

## 1.1 Background to the Non-Technical Summary

1.1.1 This is the non-technical summary (NTS) of the Environmental Impact Assessment Report (EIA Report) for the proposed Balblair Wind Farm (hereafter referred to as "the proposed Development"). The EIA Report is the main document accompanying the application for consent and the NTS summarises its key findings.

1.1.2 The NTS describes the proposed Development in non-technical language, identifying the likely effects it may have on the environment. It also describes the mitigation measures proposed by Wind Power North Two Limited (hereafter referred to as "the Applicant") to avoid or reduce significant adverse effects that have been identified. It will also describes how environmental issues will be managed during construction and operation of the proposed Development.

## 1.2 Introduction to the Proposal

1.2.1 The proposed Development is located on Balblair Estate, lying 2 km north-west of Bonar Bridge within the jurisdiction of The Highland Council (THC). **Figure 1: Site Location** shows the location of the proposed Development, and **Figure 2: Site Boundaries** shows the Site Boundary of the proposed Development (application red line boundary).

1.2.2 The proposed Development would involve the construction and operation of up to eight wind turbines with six having a maximum blade tip height of 180 m and two having a maximum blade tip height of 200 m, a battery energy storage system (BESS) and associated infrastructure. The proposed Site layout is shown in **Figure 3: Proposed Development Layout**.

1.2.3 The Applicant is seeking to secure approval for the proposed Development by way of a consent application under Section 36 of the Electricity Act 1989 and the Electricity Works (Environmental Impact Assessment) (Scotland) (EIA) Regulations 2017 from the Scottish Ministers.

1.2.4 The terminology adopted in the EIA Report is provided in **Table 1.1**

**Table 1.1: EIA Report Terminology**

| Terminology | Definition / Explanation |
|---|---|
| the proposed Development | Balblair Wind Farm<br>Refers to the proposed Development, comprising access point from the public road, access tracks, wind turbines, battery energy storage system, and other ancillary infrastructure including borrow pits, turbine crane pads and turbine foundations. |
| the Site | The area of land within the Application Boundary shown in **Figure 1.1: Site Location.** |
| the Application Boundary | The red line boundary shown in **Figure 1.1.** |

| Terminology | Definition / Explanation |
|---|---|
| the Applicant | Wind Power North Two Limited which is a company wholly owned by Vestas Development A/S. The proposed Development is brought forward under a joint development agreement between Force 9 Energy Ltd and Vestas Development A/S. |
| the Study Area | The Site plus any additional area over which desk based or field assessments have been extended. The Study Area varies depending on the nature of the potential effects for each environmental aspect as informed by professional guidance and best practice regarding EIA. |
| "Wind Farm" and "wind farm" | Wind Farm refers to a specific Wind Farm (e.g., Balblair Wind Farm) and wind farm is a general term. |
| "will" and "would" | Would is used when assessing environmental effects, as the proposed Development is not yet consented. |

## 1.3 EIA team

1.3.1 The Applicant appointed RSK Environment Limited (RSK), an experienced environmenal consultancy, as the lead consultant to prepare the EIA Report and related assessments which accompany the application for consent to the Scottish Government's Energy Consents Unit (ECU). RSK was supported by:

- Stephenson Halliday – provided the planning assessment;
- Pegasus – provided the Landscape and Visual Assessment;
- MacArthur Green – provided the ornithology and ecology assessments;
- Water Research Centre – provided the geology, hydrology, hydrogeology and peat assessments;
- Headland Archaeology - provided the archaeological and cultural heritage assessments;
- SCP Transport – provided the traffic and transport assessment;
- Hayes McKenzie – provided the noise assessment;
- RSK Environment – provided shadow flicker modelling and assessment, and prepared the socioeconomic assessment;
- Aviatica – provided the aviation and telecommunications assessments; and
- Kiloh Associates – provided engineering assessments and prepare the preliminary engineering deisgn. .

# 2 CONSENT PROCESS

## 2.1 Consents and Application

2.1.1 The Applicant is seeking to secure approval for the proposed Development by an application under made to Scottish Ministers under section 36 of the Electricity Act 1989, and is seeking a direction for deemed planning permission under section 57(2) of the Town and Country Planning (Scotland) Act 1997.

2.1.2 The Applicant is seeking a duration of consent of 30 years.

## 2.2 Environmental Impact Assessment

### The Electricity Works (Environmental Impact Assessment) (Scotland) Regulations 2017

2.2.1 The Electricity Works (Environmental Impact Assessment (EIA)) (Scotland) Regulations 2017 applies where consent is being sought for developments under section 36 of the Electricity Act 1989. The EIA Report has been prepared to identify the likely significant effects that the proposed Development could potentially have on the environment. The purpose of the EIA Report is to ensure that any effects on the environment are fully understood and are taken into account during the design, consenting and authorisation process. The methods and findings of the EIA Report are outlined within this NTS.

### Scoping and Consultation

2.2.2 The requirements of the EIA were informed by a Scoping process. A Scoping Report, which was submitted to the ECU in February 2024, considered the potential for environmental effects to occur as a result of the proposed Development.

2.2.3 The Scoping exercise involved a review of available documentation, consultation with statutory and non-statutory organisations, and desk-based and site-based surveys. The ECU issued its Scoping Opinion in June 2024, which included feedback from consultees.

2.2.4 The Scoping process concluded that the following aspects would require further assessment, in the form of an EIA, due to the potential to significant environmental effects:

- Landscape and visual amenity
- Ornithology
- Ecology
- Geology, hydrology, hydrogeology and peat
- Cultural heritage and archaeology
- Climate change mitigation
- Traffic and transport
- Noise
- Aviation
- Shadow flicker.

2.2.5 Following the Scoping exercise, the Applicant undertook further consultation with key stakeholders. This consultation has been integral to the design and development of the

proposed Development, identification of existing environmental constraints and sensitivities, and identification and assessment of the likely significant environmental effects of the proposed Development. This was undertaken by way of the following:

- Informal stakeholder liaison, including meetings and correspondence by letters, emails and by phone
- The Council's formal pre-application advice service, which involved a discussion of the consenting issues, and was attended by key consultees
- Two in-person public exhibition events which were hosted in Invershin and Bonar Bridge
- A dedicated project website https://balblairwindfarm.co.uk/.

2.2.6 The consultation activities that were undertaken throughout the EIA process and the outcomes of this engagement are detailed in a standalone Pre-Application Consultation Report (PAC Report), submitted as part of the consent application.

### Approach to EIA

2.2.7 EIA is a systematic process which is undertaken to identify, predict and evaluate the significant environmental effects of proposed developments. In the EIA Report, different technical assessments adopt the same broad approach, but vary in the detail of how they are applied, such as study areas, and refer to established guidance and assessment criteria.

*Existing Environment*

2.2.8 Baseline studies including desk-based research and field surveys have been completed to collect data relating to the characteristics of the existing environment. This enabled the identification of environmental sensitivities and features that could be affected by the proposed Development.

*Potential Impacts*

2.2.9 The characteristics of the proposed Development, including the project infrastructure, construction and operation activities have been considered to identify potential impacts on the existing environment.

2.2.10 The following types of impacts have been considered within the EIA:

- Direct impacts which may occur when some aspect of a development physically impinges upon a valued resource, for instance the proposed construction of a turbine may result in the loss of ecological habitat, or an archaeological site.
- Indirect impacts which could occur in either time, or location, from the source; for instance, construction works on a slope could result in heavy rainfall washing exposed soil into a nearby watercourse, which could affect aquatic life.
- Cumulative impacts are defined as:
    - impacts that result from changes caused by a proposed development, together with other past, present or future developments; and
    - impact interactions that may arise from a combination of separate impacts on one or a small number of receptors, due to the same proposed development.

*Residual Effects*

2.2.11 Following the assessment of identified potential impacts and the design process, additional mitigation measures were identified, where necessary, to eliminate, minimise or manage the potential environmental effects.

2.2.12 The significance of residual effects, the environmental effects that remain after mitigation measures have been considered, has been presented in the findings of the EIA Report.

2.2.13 Any significant residual effects that the EIA identifies are key to understanding the outcome of the EIA process, because these are given the greatest weight by decision makers and stakeholders when considering an application for consent.

## 2.3 Planning and Energy Policy

2.3.1 The EIA Report identified and reviewed national policy guidance and local development plans which are relevant to the location and design of the proposed Development, to establish overall compliance with policy objectives.

2.3.2 A separate Planning Statement assesses the conformity of the proposed Development with planning policy and other material planning considerations.

2.3.3 National policy identifies a requirement to encourage the use of renewable technologies to tackle the issue of climate change, strengthen the economy and improve energy security. In May 2019, the Scottish Government declared a climate emergency and passed the Climate Change (Emissions Reduction Targets) (Scotland) Act, which legally requires a 100% reduction in CO2 emissions by 2045.

2.3.4 The Onshore Wind Policy Statement 2022 sets out the Scottish Government's ambition to deploy 20 GW of onshore wind by 2030.

2.3.5 The proposed Development would contribute to national and local emission targets by replacing fossil fuel energy with renewable energy and thereby reducing greenhouse gas emissions.

# 3 PROJECT DESCRIPTION

## 3.1 Existing Environment

3.1.1 The proposed Development is located on the Balblair Estate, which lies approximately 2 km to the north-west of Bonar Bridge, within the jurisdiction of THC. The centre point of the Site is at National Grid Reference E 260883, N 896426. Forestry and Land Scotland (FLS) owns the forests which adjoin the Estate to the north-west and south.

3.1.2 The area surrounding the proposed Development features various crofts and scattered residential properties to the east, with the moorland north of Balblair Estate. The lands to the north are subject of a current consent application for development for the Garvary Wind Farm, while the Lairg Wind Farm and its extension is located further north. Access to the Site is expected to be shared with the proposed access for Garvary Wind Farm from the west via the A836 at Invershin. The land is crofted and used for rough grazing. It primarily consists of raised and blanket bogs, seasonally wet and wet grassland, temperate shrub heathland, dry grasslands, and mesic grassland. The Site also includes minor patches of mixed deciduous and coniferous woodland, as well as various wetlands and scrub types. Additionally, Scots pine woodland, broad-leaved deciduous woodland, and commercial coniferous plantations are found along the western border, with the area primarily used for rough grazing.

## 3.2 The proposed Development

3.2.1 During the EIA process, the proposed Development went through a number of design iterations to reduce potential environmental impacts. The alternative design and infrastructure layouts included a variety of potential turbine locations and a number of access route options to and between development infrastructure. **Chapter 3** of **Volume 2** (Main Text) of the EIA Report includes a detailed description of the design evolution.

3.2.2 The main components of the proposed Development, as shown in **Figure 3**, would comprise the following:

- Eight wind turbines, with six having a maximum tip height of 180 m and two having a maximum tip height of 200 m, with a combined installed capacity of up to 66 MW.
- Foundations supporting each wind turbine.
- A network of approximately 5064 km of on-site access tracks, including upgrades to existing tracks, new tracks, and associated watercourse crossings and drainage.
- A network of underground cables to connect the turbines to a distribution substation.
- Transformer/switchgear housings located adjacent to turbines.
- Temporary wind farm construction compound areas, laydown areas and car parking.
- Substation compound with a control building with closed-circuit television mast(s) and communication mast(s).
- Battery Energy Storage System (BESS) facility of up to 30 MW capacity.
- Borrow pit search areas.
- Habitat and biodiversity enhancement measures.

# 4 ENVIRONMENTAL IMPACT ASSESSMENT SUMMARY

## 4.1 Introduction

4.1.1 This section outlines the predicted environmental effects of the proposed Development. Detailed assessments are included in **Chapters 6 – 15** of **Volume 2** of the EIA Report.

## 4.2 Landscape and Visual Assessment

4.2.1 The proposed Development is located on the Balblair Estate and lies approximately 2 km to the north-west of Bonar Bridge, within The Highland Council (THC) local authority area. The proposed Development would comprise eight wind turbines, six with a maximum blade tip height of 180 m and two with a maximum blade tip height of 200 m. Six of the turbines would be fitted with visible aviation lights at hub height. The proposed Development would also incorporate a substation, battery energy storage, site access tracks, hardstandings, substation, on-site underground cabling, borrow pits and a temporary construction compound.

4.2.2 There are no international, national or local landscape designations or Wild Land Areas (WLA) covering the Site. The Dornoch Firth National Scenic Area (NSA) is located approximately 4.8 km to the south of the proposed Development. The proposed Development is located within rounded moorland hills that provide the backdrop and frame the Dornoch Firth within the Rounded Hills – Caithness & Sutherland landscape character type (LCT 135). Wind energy and electricity transmission infrastructure is an established component of the baseline landscape character.

4.2.3 The design of the proposed Development is the result of a considered iterative process which has sought to minimise landscape and visual effects whilst achieving the technical and commercial requirements to ensure project viability without public subsidy. Appropriate offsets from all properties and settlements have been maintained to ensure that no property would experience an overbearing visual impact. Mitigation has been designed into the proposed aviation lighting to reduce the intensity that the lights would be perceived at.

4.2.4 This Landscape and Visual Impact Assessment (LVIA) identifies the likely significant effects arising from the proposed wind farm on landscape character and visual amenity. During operation it would result in direct and significant effects on the Landscape Character Type (LCT) within which it is located (LCT 135 – South of Strath Fleet unit) within approximately 5 km, and indirect significant effects on other LCTs extending to approximately 5 km north east, 2.3 km east and 5 km south east. During construction and decommissioning, significant temporary additional direct effects would be confined to approximately 1 km within the host LCT and within the adjacent LCT (LCT 142 - Kyle of Sutherland unit) near to the Site access.

4.2.5 In relation to visual effects, it is accepted that the proposed Development would be visible from nearby residential properties, some settlements as well as parts of the surrounding road network and footpath network. It has been assessed that there would be a significant visual effect at seven of the 16 representative viewpoints during daylight hours only.

4.2.6 The assessment of effects on residential properties found that of the properties assessed in detail as part of the Residential Visual Amenity Assessment (see **Technical Appendix 6.6**) all would experience some significant visual effects, with most properties only experiencing significant visual effects from their access tracks, with the exception of Property 1 - Coirshellach (financially involved) and Property 5 – Reidbreac where significant visual effects would also be experienced from the property. Although it is acknowledged that all financially uninvolved properties would experience some visual effects, it is not the case that any of the effects would be of such a scale so as to become dominant or overbearing. The assessment of effects on settlements found that Ardgay would experience a significant visual effect during daylight hours only.

4.2.7 The assessment found that eight core paths (namely SU08.03 Lochcoire, Lower Track & SU03.01 Cornhill – Culrain, via Invercharron Hill/Carbisdale, SU03.10 Ardgayhill, SU03.12 Oakwood Chalet – Oldtown, SU03.08 Oldtown – Badvoon, SU03.04 Badvoon Forest, Link Path, SU03.05 Badvoon Forest, Allt Eiteachan Path, SU03.03 Badvoon Forest, Forest Road) would experience a significant effect during daylight hours only.

4.2.8 The assessment found that people travelling north westwards along the A836 would experience significant visual effects during daylight hours only over an approximate 5.2 km section of the road between Wester Fearn and Bonar Bridge.

4.2.9 People travelling along the Far North railway line would experience some significant effects over an approximate 4.6 km section of the route adjacent to the Dornoch Firth between Fearn Lodge and Ardgay during daylight hours only.

4.2.10 Cyclists travelling along the John O'Groats Cycle Route would experience some significant effects during daylight hours only as the route follows the A836 between Wester Fearn and Bonar Bridge and between Ardgay and Cornhill.

4.2.11 In relation to cumulative effects, the assessment found that when the consented wind farms are considered to already form part of the baseline landscape there would be a reduction in the extent of significant landscape character effects to the host LCT (LCT 135 Rounded Hills – Caithness & Sutherland, South of Strath Fleet unit).

4.2.12 When each of the other consented, in-planning and scoping wind farms were considered to already form part of the baseline landscape, the proposed Development would not introduce a cumulative significant visual effect. In many cases there would be either no change or a reduction in the effects identified in the main assessment. Nor would they introduce any additional significant sequential effects to any of the routes assessed in detail.

4.2.13 In relation to effects on the special landscape qualities of the Dornoch Firth NSA, it is considered that there would not be any significant effects on its SLQs. There would be some limited non-significant effects on '*The contrast between the enclosed west and the expansive east*', '*Inhabited surrounds within a wilder backdrop of hills and moors*' and '*The tranquillity of an undeveloped coastline*' SLQs, but these would not be of such a degree as to undermine the overall integrity of the NSA.

4.2.14 It is noted that localised significant effects on landscape character and visual amenity are inevitable as a result of commercial wind energy development anywhere in the UK. Whilst the LVIA identified some significant landscape and visual effects it is considered that the landscape has the capacity to accommodate the effects identified, particularly when the

consented but as yet unbuilt wind farms in the surrounding landscape are taken into account in the baseline.

4.2.15 There are no definitive quantifiable thresholds of acceptability in landscape and visual impact assessment. The identified effects on landscape character and visual amenity therefore need to be balanced against the benefits of the proposed Development and the planning context.

## 4.3 Ornithology

4.3.1 The Ornithology chapter considers the potential for significant effects upon important ornithological features (IOFs) associated with the construction, operation and decommissioning of the proposed Development.

4.3.2 Baseline conditions to inform the design and assessment of the proposed Development have been established through a desk study and ornithological field surveys in accordance with industry standard guidance and in consultation with nature conservation bodies and specialist species recording groups.

4.3.3 Baseline studies have established that the Application Boundary and adjacent habitats are used by foraging and breeding raptors (notably hen harrier and red kite), black grouse and upland breeding waders. Red-throated and black-throated diver are also known to breed in the surrounding local area.

4.3.4 The Application Boundary and immediate surrounding area are not identified as being important for migratory waterfowl and the upland open moorland habitats are unsuitable for such species.

4.3.5 Collision mortality risks for the proposed Development, are predicted as being very small for all species. The potential for significant direct and/or indirect habitat loss effects from the proposed Development is also assessed and concluded to be Not Significant for any species, in the context of the EIA Regulations.

4.3.6 The Application Boundary does not form part of any statutory designated site for nature conservation but the proposed Development is located within potential connectivity distance to the Carnaig & Strath Fleet Moors and Dornoch Firth & Loch Fleet Special Protection Area (SPAs). No adverse effects on the integrity of these SPAs are however predicted to occur.

4.3.7 Industry standard good practice mitigation, including the appointment of a suitably qualified Ecological Clerk of Works (ECoW) during construction works and the implementation of a Bird Disturbance Management Plan (BDMP) during the construction and where relevant during the operation of the proposed Development, will enable the protection of and avoidance of disturbance to sensitive breeding birds, including hen harrier and lekking black grouse.

4.3.8 The proposed Development will also provide for the delivery of long-term positive habitat management measures within the Application Boundary for bird species and wider biodiversity. This will include in areas away from operational infrastructure where habitat enhancement to the benefit of black grouse, breeding waders and raptors will be undertaken.

4.3.9 Residual effects upon all IOFs are predicted to be Not Significant, in the context of the EIA Regulations, as a result of the proposed Development alone, or in combination, with other relevant developments.

## 4.4 Ecology

4.4.1 This chapter considers the potential for significant effects of the proposed Development on ecology and upon important ecological features (IEFs). It details the methods used to establish the habitats, non-avian species and populations present, together with the process used to determine their nature conservation value and conservation status. The ways in which IEFs might be affected (directly or indirectly) by the construction, operation and decommissioning (including cumulatively) of the proposed Development are explained and an assessment is made with regards the significance of these effects.

4.4.2 Baseline conditions to inform the design and assessment of the proposed Development have been established through desk study, ecological field surveys in accordance with industry standard guidance, and consultation with nature conservation bodies.

4.4.3 The Site does not form part of any statutory designated site for nature conservation with ecological qualifying interests. There is a small area of ancient woodland within the Site, present towards the south of the Site, however this is distant to proposed infrastructure and no ancient woodland loss is predicted as a result of the proposed Development.

4.4.4 Baseline studies have established the Site is used by badger, bat, otter, pine marten, Atlantic salmon and trout. The risk to all species, including high collision risk bat species, is considered to be low based on the levels and distribution of species activity recorded. The main and most extensive habitats present within the Site are blanket bog, wet heath, and dry heath, with much lesser extents of acid grassland, marshy grassland and acid/neutral flushes. Several other habitat types are of small extent and make up the remainder of the Site. The blanket bog within the Site is considered modified/degraded due to the extent and high density of self-seeded non-native conifer trees and a history of grazing.

4.4.5 The proposed Development has been designed to minimise impacts on important habitats or protected species as far as practicable. Embedded mitigation, good practice measures, and pre-construction checks (as directed by an appointed suitably qualified Ecological Clerk of Works (ECoW)) will ensure the protection of protected species during construction works associated with the proposed Development.

4.4.6 The main effect during the construction phase of the proposed Development will be direct habitat loss due to the construction of new infrastructure. Effects upon blanket bog/wet modified bog and wet dwarf shrub heath are assessed. No significant effects are predicted.

4.4.7 No significant effects are predicted with respect to protected species during the construction or operation phase of the proposed Development.

4.4.8 In addition to habitat reinstatement following the completion of construction works, the proposed Development also provides an opportunity to deliver long-term beneficial habitat enhancement measures for habitats and species, including specific management for upland habitat restoration and enhancement (including priority peatlands) and creation/enhancement of a riparian corridor. These proposals form the basis of the

Outline Biodiversity Enhancement Management Plan (OBEMP) (**Technical Appendix 8.6**) which will deliver significant biodiversity enhancement at the Site.

4.4.9 Adverse residual effects during construction upon any IEFs are predicted to be not significant as a result of the proposed Development alone, or cumulatively, with any other wind farm development.

4.4.10 No adverse effects are predicted on IEFs during operation of the proposed Development; however, beneficial residual effects upon IEFs during operation are predicted to be significant as a result of the implementation of the OBEMP for the proposed Development.

## 4.5 Geology, Hydrology, Hydrogeology and Peat

4.5.1 The proposed Development has been assessed in relation to the potential impacts on geology, hydrogeology, hydrology and peat during the construction and operational phases.

4.5.2 Information on the study area was compiled using data gathered within a desk study and verified by an extensive programme of fieldwork. The impact assessment has considered the sensitivity of receptors identified during the baseline study, the potential magnitude of effect and the likelihood of that effect occurring, and has taken into consideration any mitigation measures incorporated as part of the proposed Development design.

4.5.3 A detailed programme of peat depth and condition surveying has been completed and the results used to inform the Site design. A Peat Slide Risk Assessment (PSRA) and Peat Management Plan (PMP) have been produced for the proposed Development, which show that areas of deep peat can be avoided and peat resources can be safeguarded.

4.5.4 One private water supply (PWS) has been identified within the Site which has the potential for interaction with the proposed works. This has been assessed in detail and appropriate mitigation recommended to reduce potential impacts to an acceptable level. A further twelve PWS have been identified within 2 km of the application boundary but have no hydrological linkage with the proposed Development.

4.5.5 Four sites designated for reasons associated with geology, hydrology and peat have been identified that have the potential to be affected by the proposed Development. As with PWS, these have been assessed in detail and mitigation measures proposed such that impacts to these sites as a result of the proposed Development would not be significant.

4.5.6 Flood risk at the Site is minimal. Sustainable Drainage Systems (SuDS) have been proposed to ensure that the rate of runoff from the Site post-development is no greater than that prior to development and would not therefore increase any downstream flood risk. The proposed SuDS allow the quality of water to be managed at source, prior to any discharge, thereby helping to prevent any reduction in water quality downstream.

4.5.7 Potentially groundwater-dependent terrestrial ecosystems (GWDTE) have been identified within the Site and assessed on a case-by-case basis to determine their level of groundwater-dependency and potential impacts from development. Location-specific mitigation measures are provided to manage potential impacts arising from construction activities where it has not been possible to avoid these areas.

4.5.8 Mitigation measures have been identified for all potential impacts, either through the design process or in accordance with good practice guidance. It has been shown, as a consequence of the proposed Development design and embedded mitigation, that **No Significant** impacts on geology, hydrogeology, hydrology and peat would arise as a result of the proposed Development.

## 4.6 Archaeology and Cultural Heritage

4.6.1 The cultural heritage assessment considers potential direct/indirect physical impacts related to construction of the proposed Development on the fabric of heritage assets, and operational impacts on their setting that could affect cultural significance. A desk-based baseline assessment including a 'Stage 1' setting assessment was therefore undertaken to identify known heritage assets and the potential for currently unrecorded heritage assets to be present within the application boundary, as well as assets in the wider landscape which may be impacted by the proposed Development through changes to their setting. A final list of assets was agreed with Historic Environment Scotland (HES) and taken forward for assessment as part of this EIA.

4.6.2 There are 40 known heritage assets located within the Site as shown in **Table 10.7** and on **Figure 10.1**. There is potential for a direct/indirect physical construction impact on four known heritage assets which without mitigation would be of up to **'Minor'** significance which is **'Not Significant'**:

- MHG9290 Cnoc na Moine, field system.
- MHG10054 Leathad Breac, hut circle and field system.
- MHG18357 Leathad Breac, farmstead.
- MHG10058 Coirshellach, township and head dyke.

4.6.3 There is also potential for a direct physical construction impact on two additional known heritage assets as a result of micrositing (should this occur) which without mitigation would be of up to **'Minor'** significance which is **'Not Significant'**:

- MHG12881 Altnagar Lodge Hotel, cairnfield.
- MHG10335 Craigton, hut circle.

4.6.4 There is also potential for accidental damage to these heritage assets during construction.

4.6.5 No direct physical impacts upon known heritage assets are anticipated as a result of Outline Biodiversity Enhancement and Management Plan (OBEMP) proposals (see **Chapter 8: Ecology** and **Appendix 8.6**), however it is considered that OBEMP proposals for the removal of self-seeding non-native conifers would have a **'Negligible'** beneficial direct physical impact on all heritage assets within the Site through reducing the potential for root damage, resulting in a beneficial effect of **'Negligible'** significance, which is **'Not Significant'**.

4.6.6 Assessment of the Site's archaeological potential (the potential for hitherto unknown archaeological remains) has identified a low potential for Medieval period remains that may be of up to **'Medium'** importance. If such unexpected remains are present and discovered during construction phase groundworks, this may result in a construction-phase physical impact of up to **'High'** adverse magnitude. As such, without mitigation, any adverse effect resulting from a physical impact upon unexpected archaeological

remains discovered during the construction-phase may be of up to **'Moderate'** adverse significance, which is **'Significant'**. Mitigation to minimise the effect significance is therefore proposed.

4.6.7 Where construction impacts are unavoidable, these will be offset by excavation and recording of the remains in accordance with NPF4 Policy 7(o) and PAN2/2011, sections 25-27, and THC HwLDP Policy 57. Protection through the fencing off of certain heritage assets, and a programme of archaeological monitoring, fieldwork, recording, and reporting is likely to be required, to be agreed through a Written Scheme of Investigation (WSI). The scope and nature of additional mitigation will be agreed with THC in advance of construction, a matter which the Applicant agrees can be secured as a condition of consent.

4.6.8 Implementation of the proposed programme of mitigation (summarised below), comprising protection with fencing and implementation of additional mitigation for construction impacts upon known heritage assets and any areas of archaeological potential in the Site, would result in adverse residual physical construction effects of **'Negligible'** significance which are **'Not Significant'**.

- Preservation by record for known heritage assets that would be directly and/or indirectly physically impacted during construction of the proposed Development (MHG9290 Cnoc na Moine, field system, MHG10054 Leathad Breac, hut circle and field system, MHG18357 Leathad Breac, farmstead, and MHG10058 Coirshellach, township and head dyke, as well as any modern field boundaries or buildings).
- Preservation by record for known heritage assets potentially physically impacted through micrositing (MHG12881 Altnagar Lodge Hotel, cairnfield, and MHG10335 Craigton, hut circle).
- Preservation by record for hitherto unknown heritage assets (archaeological potential) within the Site.
- Protection by fencing to avoid accidental physical impacts MHG9290 Cnoc na Moine, field system, the hut circles of MHG10054 Leathad Breac, hut circle and field system, MHG12881 Altnagar Lodge Hotel, cairnfield, and MHG10335 Craigton, hut circle.

4.6.9 A 'Stage 1' Setting Assessment (**Technical Appendix 10.1: Cultural Heritage Baseline and Stage 1 Setting Assessment**) found the potential for effects through changes within their setting on the cultural significance of three Scheduled Monuments, two Category B Listed Buildings, and five non-designated heritage assets (**Figure 10.2**). These ten heritage assets are assessed in detail in this chapter. Designated asset assessments are supported with photomontage and wireline visualisations (**Figures 10.3** to **10.8** in EIA Report **Volume 3d**).

4.6.10 Of these assets agreed for detailed assessment in this chapter, **'No Impact'** has been identified upon:

- Category B Listed Building LB52528 Lydsurach Crofthouse, Balblair Estate, near Bonar Bridge **(CHVP01 Figure 10.3)**.
- Scheduled Monument SM1785 Drumliah, chambered cairn, hut circles & clearance cairns, Tulloch **(CHVP03 Figure 10.5)**.
- Scheduled Monument SM1784 Druim Baile Fuir, stone circle, cairns, hut circles and enclosure. Wireline from stone circle **(CHVP04 Figure 10.6 & CHVP05 Figure 10.7)**.

- Scheduled Monument SM1758 Achany, cairn 890m NW of **(CHVP04 Figure 10.6 & CHVP06 Figure 10.8)**.
- Non-designated MHG18358 Coirshellach Farmstead.

4.6.11 In respect of the setting of heritage assets, no additional mitigation beyond that embedded in the design is proposed.

4.6.12 Residual adverse operational effects which are **'Minor'** and **'Not Significant'** are predicted upon:

- Category B Listed Building LB7165 Carbisdale Castle and Entrance Gates **(CHVP02 Figure 10.4)**.
- Non-designated MHG10054 Leathad Breac Hut Circle; Field System.
- Non-designated MHG10335 Craigton Hut Circle.
- Non-designated MHG10058 Coirshellach Township.
- Non-designated MHG18357 Leathad Breac Farmstead.

4.6.13 It is considered that proposals in the OBEMP (Appendix 8.6) for the removal of self-seeding non-native conifers across the Site (see Chapter 8: Ecology) would have a 'Negligible' beneficial operational impact on all heritage assets within the Site through better revealing their significance, resulting in a beneficial effect of 'Negligible' significance, which is 'Not Significant'.

4.6.14 No cumulative effects have been identified.

4.6.15 No significant residual effects upon cultural heritage have been identified through EIA as presented in this chapter.

## 4.7 Climate Change (Carbon Balance)

4.7.1 A Greenhouse Gas (GHG) assessment was carried out utilising the Scottish Government's Carbon Assessment Tool in order to assess the GHG emissions and savings associated with the proposed development.

4.7.2 No adverse effects related to climate change are predicted as a result of the proposed development. Therefore, no additional mitigation measures are proposed.

4.7.3 Emissions associated with the construction, operation, and development of the proposed development are projected to be offset 0.6 years after the proposed development becomes operational against a fossil fuel mix of electricity, or 1.1 years against a grid-mix of electricity.

4.7.4 The proposed development is predicted to deliver total emissions savings of 1,485,168 $tCO_2e$ over its 30-year operational lifetime against a fossil fuel mix electricity generation, and 823,617 $tCO_2e$ against grid mix electricity generation.

## 4.8 Traffic and Movement

4.8.1 The proposed Development would lead to a temporary increase in traffic volumes on the A9, A836, A839 and A949 during the construction phase. Traffic volumes would decrease outside the peak period of construction.

4.8.2 The maximum traffic impact associated with construction is predicted to occur in month 3 of the construction programme. During this period, an average of 144 two-way HGV

movements is predicted per day and it is estimated that there would be a further 50 two-way car and light van movements per day to transport construction workers to and from the site.

4.8.3 An assessment of the potential effects using Institute of Environmental Management and Assessment ('IEMA') guidelines has been undertaken. This determined that, prior to the implementation of mitigation, a Moderate adverse effect could be expected on road safety for users of the A836 and severance for users of the A836 and A949. Moreover, a Moderate adverse effect could be expected on severance, driver delay, pedestrian delay and non-motorised user amenity for residents in Bonar Bridge, relating to the temporary increase in HGV traffic operating on the route. All other indicators indicated a Minor effect on receptors in the study area.

4.8.4 Operational and decommissioning effects have been scoped out of the assessment.

4.8.5 The assessment has identified several relevant developments which could lead to cumulative effects as a result of shared construction traffic routing, although the situation of construction of all cumulative developments occurring at the same time is highly unlikely.

4.8.6 A range of mitigation measures is proposed, including the implementation of a Construction Traffic Management Plan and Abnormal Load Transport Management Plan which would be agreed in advance with The Highland Council and Transport Scotland. The proposed mitigation would reduce the effects of abnormal loads and general construction traffic on the road network within the study area to Minor (Not Significant); the effects would be temporary and reversible.

## 4.9 Noise and Vibration

4.9.1 This Chapter presents an assessment of the potential noise effects associated with the construction, operation and decommissioning of the Proposed Development.

4.9.2 The assessment evaluates baseline noise conditions, noise from construction and operational phases, and cumulative effects, following relevant legislation, policy, and guidance.

4.9.3 The construction noise assessment considers activities such as turbine installation, track building, construction compounds, substation works, and construction traffic on both public roads and on access tracks. Noise will be controlled during the construction phase via the construction environmental management plan (CEMP) which will set out measures to minimise noise impacts. Predicted noise levels were compared against relevant noise criteria to assess impacts. At a small number of properties, noise levels are predicted to exceed the criteria by a small margin and for short periods only. The construction noise impact assessment therefore concluded that noise during the construction phase of the development is considered to be **'Not Significant'**, although there will be aspects of construction that will be audible at noise sensitive properties.

4.9.4 Noise from construction traffic is predicted to cause minor temporary increases in noise on local roads, which are also concluded to be **'Not Significant'**.

4.9.5 It is anticipated that noise levels during the decommissioning phase will be the same or lower than those arising during the construction phase. The anticipated noise effects are therefore also concluded to be **'Not Significant'**. Nevertheless, noise during the

decommissioning phase of the development will be assessed and addressed in line with the relevant requirements that prevail at the time.

4.9.6 The operational noise assessment analyses the potential for noise effects at noise-sensitive receptors (i.e., nearby homes) due to turbine operation. The assessment used measured background noise levels to set site-specific noise limits at relevant properties based on the industry standards and guidance endorsed in government policy. Operational noise levels are predicted to comply with these limits during both daytime and night-time periods. Noise effects, therefore, are **'Not Significant'**.

4.9.7 Cumulative noise effects from nearby operational and consented wind farms in addition to the proposed Development were assessed against the same noise limits as for the operational assessment. Predicted operational noise levels are below these limits during both daytime and night-time periods, and are therefore concluded to be **'Not Significant'**.

4.9.8 The study concludes that the development meets relevant noise limits set by policy, guidance and best practice, and therefore all noise effects from the proposed Development are concluded to be **'Not-Significant'**.

4.9.9 An additional potential future scenario has been evaluated, for reference, whereby there is the potential for multiple developments with submitted applications to be consented in the future, in addition to the proposed Development. Noise levels in this scenario were predicted to exceed the noise limits if all developments with submitted applications are consented. However, there is considered to be a strong justification for applying a higher cumulative noise limit where multiple developments are consented, due to the limited number of properties affected, the limited range of conditions under which the effect may occur, and the potentially disproportionate mitigation that would be required for the currently assumed noise limits to be met.

## 4.10 Shadow Flicker

4.10.1 Shadow flicker occurs when the sun passes behind a wind turbine's rotating blades which causes brightness levels to vary periodically at locations where they obstruct the sun. As the blades rotate, the shadow flickers on and off which causes the shadow flicker effect. This occurs under specific conditions, such as geographical positioning and the time of day. Inside buildings, the flickering shadows seen through windows can be a nuisance for residents, particularly if they occur for extended periods of the daily or annually.

4.10.2 In this assessment, a 'worst-case' scenario model was used to estimate potential shadow flicker effects. It found that the two residential properties (referred to in the EIA Report as "receptors") with the potential for shadow flicker would not experience shadow flicker effects above the threshold's limits of more than 30 minutes on any single day or 30 hours across the entire year.

4.10.3 Therefore, the proposed Development is not predicted to cause any significant shadow flicker effects.

## 4.11 Aviation

4.11.1 In terms of aviation, the requirement is for the proposed Development to have no significant residual impacts on aviation operations or infrastructure, ultimately expressed

through the approval of the aviation stakeholders. This is addressed both through consultation with all relevant stakeholders within the consenting process and by the Applicant in independently assessing the potential effects, identifying mitigation as appropriate.

4.11.2 In this case, the Site has very low aviation sensitivity. It is within the instrument flight procedure (IFP) assessment area for Inverness Airport, however, Highlands and Islands Airport Limited (HIAL) has advised that it has no objection to the proposed Development. Consequently, there is no requirement for an assessment of effects on the IFPs for Inverness Airport.

4.11.3 Radar line of sight assessment has established that the radars at Perwinnes Hill, Tiree, Buchan, Saxa Vord, North Uist and Inverness are not capable of detecting turbines up to 200 m in height at the proposed Development site due to intervening terrain. Radar line of sight assessment has determined that the RAF Lossiemouth PSR will have line of sight to the blade tips of all eight turbines. Assessment of the operational significance of the technical effects on the RAF Lossiemouth PSR found that the operational impact of the proposed Development's technical effects on the RAF Lossiemouth PSR will be of **minor** significance.

4.11.4 The MoD has advised that any adverse effects of the proposed Development on military low flying aircraft would be adequately mitigated by fitting with aviation safety lighting and that sufficient data is submitted to ensure that structures can be accurately charted to allow deconfliction. A proposal for a reduced aviation lighting scheme, to minimise night time visual impacts, in which six of the eight turbines will be fitted with visible spectrum lighting, has been approved by the Civil Aviation Authority (CAA).

4.11.5 Therefore, the proposed Development will have no significant effects on aviation.

## 4.12 Telecommunications

4.12.1 The Applicant commissioned studies to investigate the potential impact of the pre-scoping 14 turbine layout on wireless communications infrastructure in the surrounding areas. The initial analysis concluded that several of the turbines were predicted to cause unacceptable interference to a number of microwave and UHF links in the area.

4.12.2 Proposed mitigation strategies included micro siting and layout optimisation, re-networking of the link via existing telecommunication sites, and use of leased line.

4.12.3 Following a redesign of the development to take account of recommended buffers to telecommunications links, a further assessment was undertaken to understand the impact of the revised development on the links. The results showed two turbines were predicted to cause unacceptable interference upon one Joint Radio Company (JRC) communications link. Further layout optimisations were considered based on a more detailed analysis provided by JRC defining areas which would be unacceptable for development. The information provided by JRC was used in defining the final design for the proposed Development.

# 5 NEXT STEPS

5.1.1 The ECU will consider the findings of the EIA Report, of which this NTS forms a part, together with other documents submitted as part of the section 36 application for the proposed Development. Once the application has been submitted, comments can be made to the ECU – see details below.

## 5.2 Contact Details

5.2.1 Anyone wishing to submit a representation can do so by email to representations_mailbox@gov.scot; or by post to the Scottish Government, Energy Consents Unit, 4th Floor, 5 Atlantic Quay, 150 Broomielaw, Glasgow, G2 8LU, identifying the application and case reference number (ECU00005055), and specifying the grounds for representation.

## 5.3 Further information

5.3.1 Further information can be found on the Balblair Wind Farm project website at: https://balblairwindfarm.co.uk/.

5.3.2 Should you wish to request any further information, please contact the Applicant via email (info@balblairwindfarm.co.uk) or phone (0141 674 8680).