

Watten Wind Farm

Caithness, Scottish Highlands

Environmental Impact Assessment Volume 4 of 4: Non-Technical Summary

August 2023



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PREFACE

An Environmental Impact Assessment Report (EIAR) has been prepared in support of an application submitted by Natural Power Consultants Limited (Natural Power) on behalf of the Applicant, EDF Energy Renewables Limited. The application seeks consent under Section 36 of the Electricity Act 1989 and the EIAR has been prepared in accordance with the Electricity Works (Environmental Impact Assessment) (Scotland) Regulations 2017. The application also seeks a direction under Section 57(2) of the Town and Country Planning (Scotland) Act 1997 as amended, that planning permission for the development be deemed to be granted. This EIAR contains the information relating to the Environmental Impact Assessment to develop a wind farm comprising of seven turbines and associated infrastructure (the Proposed Development). The Proposed Development is located in Caithness in the Scottish Highlands, on land to the east of Halsary Windfarm, and approximately 3 km to the south-west of Watten.

Volume 1 of the EIAR contains the Written Statement of the Environmental Impact Assessment;

Volume 2 of the EIAR contains all Supporting Figures and Visualisations;

Volume 3 of the EIAR presents the Technical Appendices of the EIAR chapters, (3A - A3 page size documents, 3B - A4 page size documents); and

This is Volume 4 of 4, of the EIAR. This volume presents a Non-Technical Summary (NTS) of the Proposed Development.

The EIAR is also supplemented by accompanying documents including a Planning Statement and Pre-Application Consultation (PAC) Report.

The EIAR is also supplemented by accompanying documents including a Planning and Renewable Energy Statement (PRES), a Design and Access Statement (DAS) and a Pre-Application Consultation (PAC) Report.

Copies of the full EIAR and NTS can be obtained from the Applicant via <https://www.edf-re.uk/get-in-touch/>

| | |
|---|------|
| Non-Technical Summary in printed form | FREE |
| Environmental Impact Assessment Report in printed form | £500 |
| Environmental Impact Assessment Report in PDF file format on a Memory Stick | FREE |

An electronic copy (accessible free of charge) of the EIAR can also be found on the EDF Renewables website: <https://www.edf-re.uk/our-sites/watten/>

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Glossary

| Term | Definition |
|---|--|
| Baseline | The existing conditions that prevail against which the effects of the wind farm are compared. |
| Construction Environmental Management Plan (CEMP) | A plan prepared by a contractor before the start of construction work, detailing 'environmental aspects' that may be affected by the construction work and management methods to prevent any such effects. The CEMP would include methods and site management practices to be applied to prevent generation of nuisance dust, accidental pollution events and a range of other potential sources of accidental damage to the environment, and response and reporting procedures to minimise the damage in the event of a pollution incident. |
| Environmental Impact Assessment | EIA is a means of carrying out, in a systematic way, an assessment of the likely significant environmental effects from a development. |
| Environmental Impact Assessment Report | A document reporting the findings of the Environmental Impact Assessment (EIA) and produced in accordance with the Electricity Works (Environmental Impact Assessment) (Scotland) Regulations 2017 Regulation 5 |
| Habitat | The area or environment where a species naturally occurs. |
| Ice-throw | Under certain conditions, ice may form on turbine blades. If the turbine is operational and the ice becomes detached while the blades are rotating, it may be projected away from the turbine. |
| Infrastructure | This is used to describe all parts of Watten Wind Farm that require construction activities, both temporary and permanent, including turbines, hard standings, borrow pits and tracks (where new or widened). |
| Landscape | An area, as perceived by people, the character of which is the result of the action and interaction of natural and/or human factors. |
| Landscape Character | A distinct, recognisable and consistent pattern of elements in the landscape that makes the landscape different from another, rather than better or worse. |
| Mitigation | Measures, including any process, activity or design to avoid, reduce, remedy or compensate for potential negative effects of a development. |
| Peat | A largely organic substrate formed of partially decomposed plant material. |
| Planning and Renewable Energy Statement | A document outlining the policy and legislation relevant to the Proposed Development and demonstrating the accordance or otherwise of the development with this policy and legislation. |
| Private Water Supply | Any water supply which is not provided by a water company and is not connected to mains supply. Most private water supplies are situated in more remote, rural parts of the country and may just serve one property or several properties through a network of pipes. |
| Proposed Development | The proposed Watten Wind Farm development. |
| Proposed Development Area | The area within which the Proposed Development will be located (application area). |
| Protected species | Animals or plants protected by legislation. |

| Term | Definition |
|--------------------------------|--|
| Scoping | The process of identifying the issues to be addressed by an Environmental Impact Assessment. |
| Sensitivity | A term applied to specific receptors, combining judgements of the susceptibility of the receptor to the specific type of change or development proposed and the value related to that response. |
| Setting | The setting of an asset includes the surroundings in which it is understood, experienced, and appreciated, embracing present and past relationships to the surrounding landscape. Its extent is not fixed and may change as the asset and its surroundings evolve. Elements of a setting may make a positive, negative, or neutral contribution to the significance of an asset. |
| Significance | A measure of the importance or gravity of the environmental effect defined by significance criteria specific to the environmental topic. |
| Visual amenity | The overall pleasantness of the views people enjoy of their surroundings, which provides a visual setting or backdrop for the enjoyment of activities of people living, working, recreating, visiting, or travelling through an area. |
| Visual effects | Effects on specific views and on the general visual amenity enjoyed by people. |
| Visual receptors | Individuals and/or defined groups of people who have the potential to be affected by a proposal. |
| Visualisation | A computer simulation, photomontage or other technique illustrating the predicted appearance of a development. |
| Zone of Theoretical Visibility | A map, usually digitally produced, showing areas of land within which a development is theoretically visible. |

List of Abbreviations

| Abbreviation | Description |
|------------------|--|
| AIL | Abnormal Indivisible Load |
| AMP | Access Management Plan |
| BEMP | Biodiversity Enhancement Management Plan |
| CaSPlan | Caithness and Sutherland Local Development Plan |
| CEMP | Construction Environmental Management Plan |
| CIEEM | Chartered Institute for Ecology and Environmental Management's |
| ClfA | Chartered Institute for Archaeologists |
| CLVIA | Cumulative Landscape and Visual Impact Assessment |
| CO ₂ | Carbon Dioxide |
| CTMP | Construction Traffic Management Plan |
| DAS | Design and Access Statement |
| DES&JTP | Draft Energy Strategy and Just Transition Plan |
| EnvCoW | Environmental Clerk of Works |
| EIA | Environmental Impact Assessment |
| EIAR Regulations | The Electricity Works (Environmental Impact Assessment) (Scotland) Regulations 2017 Regulation 5 |
| FSA | Forestry Study Area |
| HER | Historic Environment Record |
| HES | Historic Environment Scotland |
| HGV | Heavy Goods Vehicle |
| HRA | Habitats Regulations Appraisal |
| HwLDP | Highland wide Local Development Plan |
| GDHI | Gross Disposable Household Income |
| GHG | Greenhouse Gas |
| GPG | Good Practice Guidance |
| GVA | Gross Value Added |
| GW | Gigawatt |
| GWDTE | Ground Water Dependent Terrestrial Ecosystems |
| IEMA | Institute of Environmental Management & Assessment |
| JRC | Joint Radio Company |
| IOA | Institute of Acoustics |
| IOFs | Important Ornithological Features |
| ISA | Inner Search Area |
| LB | Listed Building |
| LCT | Landscape Character Type |
| LVIA | Landscape and Visual Impact Assessment |
| m | Metre |
| MW | Megawatt |

| Abbreviation | Description |
|---------------|--|
| Natural Power | Natural Power Consultants Limited |
| NHZ | National Heritage Zone |
| NPF | National Policy Framework |
| NTS | Non-Technical Summary |
| NVC | National Vegetation Classification |
| OSA | Outer Study Area |
| OWESG | Onshore Wind Energy Supplementary Guidance |
| PAC | Pre-Application Consultation |
| PWS | Private Water Supply |
| SEPA | Scottish Environmental Protection Agency |
| SLA | Special Landscape Area |
| SPA | Special Protection Area |
| SPP | Species Protection Plan |
| SSNL | Site Specific Noise Limits |
| SSSI | Sites of Special Scientific Interest |
| THC | The Highland Council |
| TMP | Traffic Management Plan |
| VP | Vantage Point |
| WLA | Wild Land Area |
| ZTV | Zone of Theoretical Visibility |

1. Introduction

This Non-Technical Summary (NTS) summarises the key findings of the Environmental Impact Assessment (EIA) presented in the EIA Report (EIAR) in relation to the proposal to construct and operate Watten Wind Farm (the Proposed Development).

As the Proposed Development's generating capacity is in excess of 50 MW the Applicant seeks consent under Section 36 of the Electricity Act 1989. The application also seeks a direction under Section 57(2) of the Town and Country Planning (Scotland) Act 1997 (as amended) that planning permission is deemed to be granted. The application will be submitted to Scottish Government's Energy Consents Unit (ECU).

This NTS has been produced in accordance with the Electricity Works (Environmental Impact Assessment) (Scotland) Regulations 2017 (the EIA Regulations).

1.1. The Applicant

EDF Energy Renewables Limited (the Applicant) is part of one of the world's largest electricity companies and is a joint venture between EDF Renewables Group (EDF's global renewable business) and EDF Energy (EDF's UK generation business).

The Applicant is one of the UK and Ireland's leading renewable energy companies, specialising in wind power, solar and battery storage technology. Through a dynamic team of more than 300 people, The Applicant develops, builds, operates and maintains renewable technologies throughout their lifetime and have over 25 years' experience in delivering renewable energy generation.

The Applicant has successfully completed approximately 1 GW of projects with a further 5 GW of projects in development. The Applicant have an operational portfolio of 37 wind farms, including two offshore wind farms, as well as two battery storage units.

The Applicant believes in the importance of working closely with the local communities and strive to benefit the local community by providing support, such as creating new jobs, boosting the local economy, and providing direct community investment through community funds.

1.2. Consultants

The EIA lead coordinator for the Proposed Development is The Natural Power Consultants Limited (Natural Power). Natural Power has been providing expertise to the renewable energy industry since the company was formed in 1995 and is one of the UK's leading renewable energy consultants. As well as development and EIA services, Natural Power also provide expert advice and due diligence consultancy, site construction management, and site operation and maintenance.

Natural Power currently employs over 400 people working full time providing renewable energy services nationally and internationally. Testimony to Natural Power's experience and ongoing commitment to competency and continual improvement, its Consents and Environment Department is accredited by the Institute of Environmental Management and Assessment. In addition, Natural Power also operates in formally accredited health and safety (ISO 45001), environmental (ISO 14001) and quality (ISO 9001) management systems. As well as development and EIA services, Natural Power is a competent and experienced consultant to co-ordinate and undertake EIA and prepare the EIAR. Natural Power's office in Stirling, where this project is largely managed, currently employs approximately 100 renewable energy experts.

Other consultants involved in the EIA have provided independent professional input for Ecology, Ornithology, Hydrology, Geology and Hydrogeology, Cultural Heritage, Forestry, Aviation and Existing Infrastructure and Noise. Those consultants are:

- Ecology (MacArthur Green);
- Ornithology (MacArthur Green);
- Hydrology, Geology and Hydrogeology (MacArthur Green);
- Cultural Heritage (Headland Archaeology);
- Forestry (DGA Forestry);
- Aviation and Existing Infrastructure (Pager Power); and
- Noise (TNEI).

2. Approach to EIA

The EIAR has been prepared in line with the EIA Regulations. The purpose of an EIA is to assess the potential significant effects of a project or development proposal on the environment. The EIAR reports the findings made in the EIA of the Proposed Development. The scope of the EIA was the subject of a formal scoping opinion from The Scottish Government ECU on behalf of the Scottish Ministers under the EIA Regulations 2017. This included formal consultation with The Highland Council (THC), and with other consultees including the Scottish Environment Protection Agency (SEPA), NatureScot, Historic Environment Scotland (HES), Scottish Forestry, Transport Scotland, RSPB Scotland and the Defence Infrastructure Organisation. A Scoping Direction was issued by the ECU in September 2022.

During the EIA process, site visits, surveys and desktop assessments, in line with relevant guidance, were carried out to ascertain the potential impacts of the Proposed Development on the environment and mitigation measures to be applied. A review of planning and other relevant policies was also undertaken to inform the assessment process and ensure the Proposed Development adequately considered local and national policy. The EIAR has been prepared in accordance with the EIA Regulations and follows the structure presented in Table 2.1. Where relevant each EIAR chapter considers the baseline environment, the likely significant effects for each phase of the development, any required mitigation and cumulative impacts.

Table 2.1: EIAR Structure

| Volume | Heading | Description |
|--------|--|--|
| 1 | EIAR Chapter 1: Introduction | Presents the Proposed Development and provides a brief overview of the Applicant and the EIAR. |
| 1 | EIAR Chapter 2: Legal and Policy Context | Identifies energy and land use policies and outlines the need for the Proposed Development and its benefits within the context of international climate change agreements and European, UK and Scottish renewable energy policy. |
| 1 | EIAR Chapter 3: Approach to EIA | Describes the approach taken to assess effects relating to the topics investigated as part of the EIA. |
| 1 | EIAR Chapter 4: Site Selection and Design Evolution | Explains the site selection and the design evolution process that has resulted in the Proposed Development. |
| 1 | EIAR Chapter 5: Project Description | Provides a detailed description of the infrastructure associated with the Proposed Development. |
| 1 | ES Chapter 6: Landscape and Visual Impact Assessment | Provides an assessment of the landscape and visual impacts of the Proposed Development including residential visual amenity and night-time lighting effects. |

| Volume | Heading | Description |
|--------|---|--|
| 1 | EIAR Chapter 7: Ecology Assessment | Provides an assessment of the habitats and (non-avian) fauna present within the Proposed Development Area and immediate surrounding environment. |
| 1 | EIAR Chapter 8: Ornithology Assessment | Provides an assessment of the potential effects upon avian species. |
| 1 | EIAR Chapter 9: Hydrology, Geology and Hydrogeological Assessment | Assesses the effects on the hydrological, geological and hydrogeological environment by the Proposed Development, including private water supplies and peat. |
| 1 | ES Chapter 10: Cultural Heritage Assessment | Provides an assessment of the potential effects of the Proposed Development upon cultural heritage assets. |
| 1 | ES Chapter 11: Forestry Assessment | Assesses how the Proposed Development will affect the existing plans for felling, restocking, and proposes suitable amendments to forestry design plan(s) to accommodate the Proposed Development. |
| 1 | ES Chapter 12: Traffic and Transport Assessment | Identifies the transport route and assesses the potential effects upon the transport network resulting from the Proposed Development. |
| 1 | ES Chapter 13: Aviation and Existing Infrastructure | Provides an assessment of the potential effects upon aviation interests, communication operations and existing site infrastructure such as public rights of way. |
| 1 | ES Chapter 14: Noise Assessment | Provides an assessment of the potential noise effects of the Proposed Development. |
| 1 | ES Chapter 15: Socioeconomics, Recreation and Tourism | Provides an assessment of the potential socioeconomic, recreation and tourism effects of the Proposed Development. |
| 1 | ES Chapter 16: Other Issues | Assesses effects of other issues resulting from the Proposed Development including shadow flicker, ice-throw, and health and safety of construction workers and public relating to the Proposed Development. |
| 1 | ES Chapter 17: Residual, Synergistic Effects & Mitigation and Conclusions | Summarises the proposed mitigation and residual effects of the Proposed Development, as well as proposed mitigation measures. |
| 2 | Figures | EIAR Figures to accompany all chapters. |
| 3 | Technical Appendices | Provides additional supporting documents and data which inform the EIAR. |
| 4 | Non-Technical Summary | Provides a high-level summary of the EIAR in terms that can be understood by a layperson. |

Source: Natural Power

The application is also supplemented by an accompanying Planning and Renewable Energy Statement, Design and Access Statement (DAS) and a Pre-Application Consultation (PAC) Report.

3. Overview of the Proposed Development

3.1. Site Location

The Proposed Development is located in Caithness in the Scottish Highlands. The land available for development is located on land to the east of the operational Halsary Windfarm and approximately 3 km to the south-west of Watten. Figure 1.1 of the EIAR illustrates the Proposed Development's location.

3.2. Project Description

The Proposed Development is expected to generate up to 67.6 megawatts (MW) and comprises the following main elements:

- Up to 7 turbines with a maximum blade tip height of 220 m each with:
 - turbine foundations;
 - external transformer housing; and
 - crane hardstandings and erection areas;
- Onsite substation, control building and compound;
- Battery energy storage system (BESS);
- New and floating access tracks; including watercourse crossings;
- Underground electricity cables connecting infrastructure within the proposed development area;
- Temporary construction and storage compounds, laydown areas and ancillary infrastructure including cable crossing points;
- Site signage;
- Temporary construction gatehouse;
- Biodiversity enhancement and management (see Chapter 7: Ecology and associated Technical Appendices for details);
- Waste water and surface drainage; and
- Forest felling and replanting.

Connection of the Proposed Development to the national grid will be subject to a separate application.

The Proposed Development Area lies within a generally flat, gently undulating and generally smooth landform. This is currently a very sparsely settled landscape and settlement today takes the form of dispersed crofts, farms and estate buildings. Vehicular tracks within the wider area are used mainly to provide access for deer stalking and to fishing lochs and peat cuttings.

Forestry felling and replanting will be undertaken to facilitate erection of turbines, and creation of new access tracks and/or upgrades to existing access tracks. Site restoration and landscaping will aim to integrate new infrastructure elements as sympathetically as possible. Biodiversity management and enhancement will be undertaken within the Proposed Development Area.

The Proposed Development is expected to have an operational life of up to 35 years. For the purpose of assessment, the Applicant has considered turbines with a maximum height base to tip height not exceeding 220 m.

Figure 1.2 of the EIAR illustrates the Proposed Development's site layout.

Locations (subject to micro siting) of the proposed turbines are shown in Table 3.1.

Table 3.1: Turbine co-ordinates

| Turbine | Easting | Northing |
|---------|---------|----------|
| 1 | 321106 | 952238 |
| 2 | 321504 | 951907 |
| 3 | 320867 | 950938 |
| 4 | 320510 | 951280 |
| 5 | 320401 | 951839 |
| 6 | 319828 | 951255 |
| 7 | 319938 | 950772 |

Source: Natural Power

4. Site Selection and Design Evolution

4.1. Site Design

A key aim of the design process was to limit the overall footprint of the development, whilst maximising the positive renewable energy generation and other benefits and minimising the environmental impacts wherever possible.

Environmental survey of the Proposed Development, for example for birds and other species, peat depth, archaeology and other matters of interest, ran over a period from 2019-2022. The data gathered enabled the team to investigate 3 different design iterations before settling on the final design which maximises the efficiency of the Proposed Development whilst limiting the potential environmental impacts. The Proposed Development and surrounding area have also been assessed by considering it against a number of strategic constraints. Figure 1.1 of the EIAR, illustrates the site location and Figure 1.2 the site layout of the Proposed Development and surrounding area, presented at the end of this document.

The layout for the Proposed Development has evolved iteratively, including responding to issues raised during and after Scoping, having considered a different number and size of turbines; see Chapter 4 of the EIAR and the DAS for full details. Such changes have been influenced by several factors including economics, stakeholder and public feedback, planning policy and potential environmental effects.

EIAR Figure 4.2 illustrates the design evolution of the Proposed Development found at the end of this document.

The EIAR outlines in extensive detail how environmental matters and stakeholder and public feedback have influenced the process, however particularly prominent issues which affected the design include:

- reducing potential landscape and visual effects by removing a turbine;
- minimising impacts on watercourses and the aquatic environment;
- avoiding the areas of deepest peat;
- minimising impacts on forestry;
- reducing impacts on plants and animal species;
- protecting archaeological and cultural heritage features; and
- adapting the design to bring the wind farm within cumulative noise limits.

4.2. Planning Policy

4.2.1. Design Consideration

A review of planning policies at a national and local level is included in Chapter 2 of the EIAR, and an evaluation of the Proposed Development with regards to policies is included in the Planning and Renewable Energy Statement which is a standalone document. The policies are supportive of renewable energy developments in appropriate locations.

4.2.2. Policy Context

The Legislative Framework

The Electricity Act 1989

In the case of this application which is made under Section 36 of the Electricity Act 1989 (the Electricity Act) the Development Plan does not have primacy in the decision-making process.

The Applicant is a licensed electricity generator in terms of the Electricity Act. As a consequence of this, the Applicant is obliged when formulating proposals of 10 megawatts (MW) or more to have regard to the duties imposed upon it by Schedule 9 paragraphs (3)(1) and (3)(3). In formulating proposals it shall have “*specific regard to the desirability of preserving natural beauty, of conserving flora, fauna and geological or physiographical features or special interest in protecting sites, buildings and objects of architectural, historic or archaeological interest.*” pursuant to paragraph (3)(1)(a) of Schedule 9 of the Electricity Act. Furthermore, in terms of paragraph (3)(1)(b), the Applicant is under a duty to do what it reasonably can to mitigate any effect which the proposals would have on the natural beauty of the countryside or on any such flora, fauna, features, sites, buildings or objects. Paragraph (3)(3) imposes a duty to avoid, so far as is possible, causing injury to fisheries or to the stock of fish.

Schedule 9 also imposes duties upon the Scottish Ministers when determining Section 36 applications. They are obliged to have regard to desirability of the matters mentioned in paragraph (a) of sub-paragraph (1) and must also have regard to the extent to which the Applicant has complied with their duties to mitigate any effects on those resources, pursuant to paragraph (3)(2) of Schedule 9 of the Electricity Act. The duty under paragraph (3)(3) to avoid causing injury to fisheries or to the stock of fish, so far as is possible, is also applicable to the Scottish Ministers.

In terms of determinations under Section 36, there are no specific statutory presumptions that apply. As identified above, there are considerations which have to be taken into account and dealt with both in terms of Schedule 9 and under the Environmental Impact Assessment (EIA) Regulations. In that context, Section 36 decision making incorporates consideration of a wide policy framework which will include elements of National Energy Policy, National Planning Policy and Guidance and also the relevant Development Plan. These features to which regard must be had by the Scottish Ministers have been addressed in the EIA process which is reported in the EIAR.

The Town and Country Planning (Scotland) Act 1997

The principal planning statute in Scotland is the Town and Country Planning Act (Scotland) 1997 (the Planning Act) as amended. Section 57(2) of the Planning Act provides:

“On granting a consent under section 36 or 37 of the Electricity Act 1989 in respect of any operation or change of use that constitutes development, the Scottish Ministers may direct that planning permission for that development and any ancillary development shall be deemed to be granted, subject to any conditions (if any) as may be specified in the direction.”

While the Development Plan is not engaged in the case of a Section 36 application it is a relevant consideration in determination of the application.

Renewable Energy Policy Summary

The UK Government has published a series of policy documents setting out how targets can be achieved. Onshore wind generation, located in Scotland, is identified as an important component to achieve these various goals. These documents include:

- The Climate Change Act 2008 as amended by the Climate Change Act 2008 (2050 Target Amendment) Order 2019;
- The UK Energy White Paper (December 2020);
- The UK Net Zero Strategy (October 2021); and
- The British Energy Security Strategy (April 2022).

The Scottish Government has published a number of policy documents which include their own targets. The most relevant policy, legislative documents and more recent statements published by the Scottish Government include:

- Scottish Energy Strategy (December 2017);
- The Scottish Government's declaration of a Climate Emergency (April 2019);
- The Climate Change (Emissions Reduction Targets) (Scotland) Act 2019 which includes the legally binding net zero target for 2045 and interim targets for 2030 and 2040;
- The Scottish Climate Change Plan Update (2020);
- Scottish Energy Strategy Position Statement (March 2021);
- The Scottish Onshore Wind Energy Policy Statement 2022; and
- The Draft Energy Strategy and Just Transition Plan 2023 (DES&JTP).

National Planning Policy

The final version of NPF4 was laid before the Scottish Parliament in November 2022 and was approved in January 2023. The document was adopted by the Scottish Government in February 2023. NPF4 is a long-term plan for Scotland setting out where development and infrastructure is needed.

The proposals in NPF4 are intended, amongst other things, to:

- Enable more renewable energy generation – outside National Parks and National Scenic Areas, to support the transition away from reliance on fossil fuels and
- Support emerging low-carbon and zero-emissions technologies, including hydrogen and carbon capture, and developments on land that unlock offshore renewable energy, such as the expansion of the electricity grid.

The Development Plan

The Development Plan for the Proposed Development comprises:

- NPF 4 2023
- The Highland wide Local Development Plan 2012 (HwLDP);
- Caithness and Sutherland Local Development Plan 2018 (CaSPlan); and
- The Onshore Wind Energy Supplementary Guidance (2016) and addendum (2017) (OWESG).

4.2.3. Wind Resource

Initial long-term wind resource estimates were derived from multiple sources including measurements collected near the Proposed Development Area.

Detailed assessments have been undertaken using WAsP modelling software by the Applicant in order to better understand the local wind regime. Natural Power Analytics and Advisory team supported with some of the wind resource assessment. This has led to an improved understanding of the specific complex flow regime that results

from the terrain and forestry surrounding the Proposed Development. The turbulence intensity, wind shear, inflow angle and veer across the Proposed Development Area were assessed in order to inform the design process (along with all relevant physical, environmental and technical constraints). The process was undertaken iteratively in order to arrive at the appropriate number, size and location of turbines for the Proposed Development to minimise project risks (turbine performance / operational issues) and maximise project efficiency and energy yield output. A full anemometry monitoring campaign may be appropriate, using industry best practice monitoring techniques (combination of anemometer mast and LiDAR remote sensing) in order to capture detailed wind profiles and further refine the wind resource on site.

Wind energy assessments indicate that the Proposed Development Area has excellent wind resource allowing for more efficient energy generation with less infrastructure.

4.2.4. Grid Connection

Capacity in the network was acquired and a grid connection agreed with the network operator for the Proposed Development which led to the Applicant being in a position to progress with scoping of the Proposed Development in 2022.

The grid connection offer is, currently, connecting the project at Mybster substation, approximately 3 km from the Proposed Development. The connection date is 2027. Due to the changing nature of grid connections during planning, the method and exact route would be subject to a separate assessment. It is anticipated that the connection would be subject to a separate application for consent under Section 37 of the Electricity Act 1989.

4.2.5. Access

An access study was carried out in June 2020 to determine the feasibility of the proposed public access route from Wick Harbour to the entrance of the Proposed Development Area for wind turbine Abnormal Indivisible Loads, using a candidate turbine with a c.57 m blade length as a candidate model at that time. The study assessed the delivery of wind turbine components and carried out a detailed swept path assessment. The access study was used within the initial feasibility study of the Proposed Development and as a result deemed that there was viable access from the A99, onto the A9 and then along on the B870 before reaching the entrance of the Proposed Development on the B870. As an alternative, the loads would exit Wick Harbour onto the A882 and then onto the entrance of the Proposed Development on the B870.

Since 2020 the candidate model of turbine has changed and therefore an updated Abnormal Indivisible Load (AIL) Route Survey report was produced in November 2022 by Pell Frischmann based on 81.1 m blades. This document confirms that the proposed wind turbines can be delivered to the Proposed Development.

In the November 2022 AIL Route Survey report an accessibility of ports review was completed. The nearest ports to site are Scrabster and Wick Harbours. Wick Harbour has been discounted due to the limit of vessel length being 90 m. Scrabster harbour is limited by the requirement for loads to transit through the constrained town of Thurso route to site.

In light of these considerations, the assessment is being based on two separate access routes; one for tower loads only and one for blade loads only. Blade loads arriving at Scrabster and then using a blade lifting trailer to negotiate roads in Thurso, whilst tower loads would arrive at the port of Nigg and be transported north to entrance of the Proposed Development.

4.2.6. Summary

The Proposed Development has been located in a suitable area for wind farm development following a site selection process. The rigorous design evolution has taken place over several years through many changes which have reacted to environmental data gathered on the site, new policies, market dynamics and consultee responses.

Through balancing the various site constraints with the scale of development required to be economically viable, the applicant believes that the Proposed Development provides optimum use of the Proposed Development Area and surrounding area with respect to the potential renewable electricity generating capacity balanced against the potential environmental and other effects.

5. Potential Effects and Mitigation

This section of the NTS presents the potential significant effects of the Proposed Development and the measures taken or put forward to reduce the potential significant effects identified (mitigation).

5.1. Landscape and Visual Impact

An assessment of the relevant potential effects upon landscape and visual amenity are presented in Chapter 6 of the EIAR.

The LVIA is based on a 45 km study area, extending from the outermost turbine of the Proposed Development. The LVIA included a desk study, site visits, Zone of Theoretical Visibility (ZTV) analysis, viewpoint photographs, wirelines and photomontages to illustrate the Proposed Development from the viewpoints included. Relevant guidance has been followed.

Within this section references are made to 'Group 1' and 'Group 2' which are groups of operational wind farms detailed below:

- Group 1 – Achlachan I, Causeymire, Bad a Cheo, Halsary; and
- Group 2 – Camster, and Bilbster, Burn of Whilk.

5.1.1.1. Effects on Landscape Character

The project components of the Proposed Development would be located entirely within the Sweeping Moorland and Flows Landscape Character Type (LCT). Overall sensitivity for the Proposed Development Area is considered Medium on account of the lack of any formal designation, combined with the quality of the proposed site.

The construction and decommissioning stages of the Proposed Development would result in ground disturbance operations, new access tracks, crane pad hardstandings, installation of seven turbines followed by their removal during decommissioning and general reinstatement works, together with associated vehicular and personnel movements on site. Such operations would result in direct impacts on the landscape fabric of the Proposed Development Area. This will include ground vegetation and soil removal and the introduction of new elements into the semi-improved pasture and moorland context.

It is considered the magnitude of change on the landscape fabric of the Proposed Development Area would be High, due to the size and scale of proposed changes occurring over a short geographical area and period of time. This results in a Major adverse and significant effect on the landscape fabric of the Proposed Development Area during the construction and decommissioning stages of the Proposed Development.

Following reinstatement post construction, the Proposed Development Area would enter the operational stage. The nature of the effects on the Proposed Development Area would be direct, long term during the operational life of the Proposed Development, and reversible beyond this period due to decommissioning. This would arise from the siting of seven operational turbines, substation/energy storage area and access tracks located within a large-scale plateau landscape.

Once remedial works have been completed, there would be a reduction in activity on site centred around maintenance activities associated with operational wind turbines.

The magnitude of change on the landscape fabric of the Proposed Development Area would remain High, resulting from the size and scale of proposed change including seven operational wind turbines and associated infrastructure that would be long term and reversible at the end of the operational stage. This would result in a Major adverse significant effect on the landscape fabric of the Proposed Development Area during the operational stage of the Proposed Development.

Wider Landscape Character

Within the wider study area, a total of 20 LCTs and 2 isolated islands were identified within 45 km from the Proposed Development and initially assessed (see Technical Appendix A6.3). This identified 2 LCTs for more detailed assessment as follows:

- Sweeping Moorland and Flows LCT; and
- Farmed Lowland Plain LCT.

Of these, both were assessed as potentially receiving significant effects.

Sweeping Moorland and Flows LCT

The Proposed Development Area would be located entirely within the Sweeping Moorland and Flows LCT. This unit comprises a large geographical area encompassing South Caithness and would also receive indirect effects beyond the Proposed Development Area.

This LCT is assessed as having a Medium sensitivity to change overall. The addition of the Proposed Development would result in a substantial change in terms of the perceptual experience during both construction and operational periods, mainly occurring within the immediate landscape surrounding the Proposed Development Area extending to approximately 15 km from the Proposed Development. Thereafter, becoming less widespread and limited to hill summits and the upper slopes facing the Proposed Development Area. In these locations, there would be an increase in activity as the supporting infrastructure is constructed followed by the installation of turbines. This would be viewed in the context of existing operational wind farms which would be situated to the side and in front of the Proposed Development depending on location.

Magnitude of change for the Sweeping Moorland and Flows LCT would be Medium, reducing with distance to the south and west to Low levels where the turbines would be less prominent. This would be experienced within an open large-scale landscape that includes operational wind farms located both within the unit as well as neighbouring LCTs.

This would result in a Major adverse and significant effect as a result of the extent of theoretical visibility predicted across the open plateau landscape, diminishing with distance to non-significant levels. During construction and decommissioning phases, effects would be short-term, and during operation long-term. Upon completion of decommissioning, effects would be completely reversible.

Farmed Lowland Plain LCT

Overall sensitivity is Medium due to the LCT due to not being covered by any formal landscape designation and agricultural nature of the landscape with few higher quality areas. It is considered that the characteristics of the LCT could accommodate the type of development proposed.

During construction and operational phases, effects on this LCT would arise from views of the siting of seven operational turbines, the supporting infrastructure mainly being screened by a combination of landform and trees. These would be long term during the operational life of the Proposed Development, and reversible beyond this period due to decommissioning.

Magnitude of change is predicted to be High on account of the close proximity to the Proposed Development, reducing with distance as the size and scale of the change reduces. Indirect nature of the change and distance involved where it is not considered to alter the key characteristics of this LCT during both construction and operation. This would be long term and reversible.

This would result in a Major-moderate adverse and significant effect within 15 km, reducing to Moderate and Minor and not significant levels as distance increases and the influence of scattered forests provides a degree of partial screening. During construction and decommissioning phases, effects would be short-term, and during operation long-term. Upon completion of decommissioning, effects would be completely reversible.

5.1.1.2. Protected & Designated Landscapes

The Proposed Development would not be located within any national or regional designations. Several designations have been included due to their proximity within the study area to the Proposed Development.

Causeymire – Knockfin Flows WLA

The Causeymire – Knockfin Flows WLA has a Very High sensitivity to change on account of its national level designation.

The Proposed Development would introduce tall man-made features in the panoramic views beyond the WLA boundary where 7 turbines are predicted to be theoretically visible at distances of 5.7 – 45.0 km. The areas affected comprise open hill sides and flat peatlands.

The construction and operational phases would be perceived from 31.7 % of the WLA² and include the installation of the proposed turbines. The supporting infrastructure would be screened by a combination of landform and forestry.

The Proposed Development (during construction/decommissioning, and operation and maintenance) would be visible from the WLA. Changes to the wild attributes of the designation would occur within the context of the existing operational wind farms and overhead lines. The size and scale of the change on the wild attributes of the WLA would be limited. The magnitude of change is considered to be **Medium** during construction/decommissioning, and operation and maintenance for the area of peatland located immediately to the south west of the Proposed Development to approximately 12.9 km, reducing as distance increases to Low.

A Major-moderate adverse and significant effect is predicted due to proximity in terms of visibility from the WLA but is not considered to result in adverse effects to the wild qualities. During construction and decommissioning phases, effects would be short-term, and during operation long-term. Upon completion of decommissioning, effects would be completely reversible.

East Halladale Flows WLA

Sensitivity for the East Halladale Flows WLA is Very High on account of its national level designation.

The Proposed Development would introduce a new feature experienced beyond the designation that would partially break the skyline to the south east and be seen in the context of Group 1 developments. However, it is not considered that the introduction of the Proposed Development would alter the experience of wild attributes within the WLA due to a combination of woodland screening (in the intervening landscape) and the limited extent of the Proposed Development experienced.

During construction and operation, the size and scale of the change would be small covering 34.4 % of the WLA as a result of screening by landform. Changes to the wild attributes of the designation would occur within the context of the existing operational wind farms and overhead lines. The size and scale of the change on the special qualities of the WLA would be limited. The magnitude of change is considered to be Low during construction/decommissioning, and operation and maintenance for the area of peatland located immediately to the west of the Proposed Development as a result of distance and screening by foreground landform.

A Moderate-minor adverse not significant effect is assessed for the construction, operational and decommissioning phases. During construction and decommissioning phases, effects would be short-term, and during operation long-term. Upon completion of decommissioning, effects would be completely reversible.

Flow Country and Berriedale Coast SLA

All seven turbines would be perceived mainly from elevated areas within the SLA with the supporting infrastructure being less noticeable due to screening by landform. This has a limited effect on the special qualities noted in the baseline which tend to focus on features within the SLA. The Proposed Development would feature in views beyond the designation adjacent to Group 1 operational developments.

The Proposed Development (during construction/decommissioning, and operation and maintenance phases) would be visible from the SLA. Changes to the special qualities of the designation would occur within the context of the existing operational wind farms and overhead lines. The size and scale of the change on the special qualities of the SLA would be limited to the two identified and with regards to visibility of the Proposed Development within the designation. The magnitude of change is considered to be Medium during construction/decommissioning, and operation and maintenance for the area of peatland located immediately to the south west of the Proposed Development to approximately 15 km, reducing as distance increases to Low.

This would result in a Moderate-minor adverse and not significant effect during construction, operation and decommissioning phases. During construction and decommissioning phases, effects would be short-term, and during operation long-term. Upon completion of decommissioning, effects would be completely reversible.

5.1.2. Effects on Visual Amenity

Of the 20 selected viewpoints that were identified to represent the general visual amenity throughout the study area, a total of 9 viewpoints, located between 3.4 – 14.5 km from the Proposed Development would receive close views of the proposed turbines during construction, operation and decommissioning phases. These viewpoints have a High and Medium sensitivity due to the viewpoint locations being representative of the views from residential properties, roads, Core Paths, hill summits popular with walkers, and would result in a Major, Major-moderate or Moderate adverse and significant effect. Significant viewpoints include the following:

- Viewpoint 4: North Watten;
- Viewpoint 6: Ben Dorrey;
- Viewpoint 8: Watten;
- Viewpoint 9: A882 East of Watten;
- Viewpoint 10: Spittal;
- Viewpoint 12: Westerdale;
- Viewpoint 13: Minor road north of Grey cairns of Camster;
- Viewpoint 16: A9, North of Rangag; and
- Viewpoint 17: Coire na Beinne.

The remaining 11 viewpoints located between 7.4 and 27.4 km, were all assessed as receiving a Moderate, Moderate-minor, or Minor adverse and not significant effect. From these locations, the proposed turbines would occupy a small part of the overall view from each viewpoint due to a combination of factors including screening by landform and forestry, distance, and in some cases where the receptor is assessed as having a Low magnitude of change.

5.1.3. Sequential Routes

A total of 8 route receptors of the 19 assessed were identified as receiving a Moderate adverse and significant effect as follows:

- A9 road;
- A882 road;

- B870 road;
- Core Path 60 – Ben Dorrery;
- Core Path 64 – Achnarras Quarry;
- Core Path 65 – The Old Quarry;
- Core Path 105 – Achavanich and Munsary; and
- Core Path 158 – Watten Roadside Link to Loch Watten

This is due to each route being located in close proximity to the Proposed Development where the proposed turbines would extend turbines eastwards in views from the operational Group 2 developments.

The remaining eleven sequential routes have been assessed as receiving a Moderate adverse not significant effect. This is due to a combination of the extent of the route that would receive visibility of the Proposed Development, screening effects from landform and woodland, and distance.

Settlements

A total of 17 settlements were assessed within 15 km of the Proposed Development, 5 settlement groups are predicted to receive a Major-moderate adverse or Moderate adverse and significant effect as follows:

- North Watten / Catchory / Brabertdorran / Myrtledhorn;
- Watten;
- Bylbster Mains;
- Spittal; and
- Durran.

This is due to receiving elevated views to the south where the Proposed Development would form a prominent feature eastwards of the main Group 1 developments.

Settlements

A total of 17 settlements were assessed within 15 km of the Proposed Development, four settlement groups are predicted to receive a Major-moderate adverse or Moderate adverse and significant effect as follows:

- North Watten / Catchory / Brabertdorran / Myrtledhorn;
- Watten;
- Bylbster Mains; and
- Spittal;.

This is due to receiving close views, some of which would be elevated where the Proposed Development would form a prominent feature eastwards of the main Group 1 developments

Residential Receptors

Twenty-four property groups were identified within 3 km from the Proposed Development, one of the properties considered in the RVAA were identified as receiving an effect.

Significant visual effects of Major, Major-moderate and Moderate adverse and significant have been predicted for all 24 property groups their proximity and open views from the building, gardens at the front of the houses as follows, those marked with an * are financially involved with the Proposed Development:

- Property 1: Shielton*;
- Property 2: 22 West Watten;
- Property 3: 19 West Watten*;

- Property 4: 18 West Watten*;
- Property 5: Scouthall;
- Property 6: Milton;
- Property 7: Achingale (includes Achingale Mill & Nether Banks);
- Property 8: Banks / Properties to the south (includes Banks and Baalvtyn House);
- Property 9: West Watten/Strathview Cottage;
- Property 10: Knockfarrie;
- Property 11: Ballacharn/Alliochsa;
- Property 12: 14 Watten;
- Property 13: 10 Watten;
- Property 14: Newton;
- Property 15: The Smiddy;
- Property 16: Backlass (New Build);
- Property 16a: Backlass;
- Property 17: Leanmore;
- Property 18: Houstry of Dunn;
- Property 19: Backlass Hill Cottage;
- Property 20: Backlass Cottage;
- Property 21: Balamurich/Markethill;
- Property 22: Lanergill; and
- Property 23: Knockglass.

With the exception of Shielton which is financially involved, none of the properties assessed have been identified to be affected to such a degree that they would become ‘widely regarded as an unattractive place where to live and/or the development is inescapably dominant or unpleasantly overwhelming’, the approach adopted by Reporters in previous planning inquiries and set out in the guidance.

Cumulative Effects

The Cumulative Landscape and Visual Impact Assessment (CLVIA) considers the following scenarios:

- **Scenario 1:** The existing scenario of operational wind farms and those under construction is assessed in the LVIA;
- **Scenario 2:** considers the addition of the Proposed Development in the context of operational wind farms, those under construction and additionally those developments currently consented. This represents the likely future scenario; and
- **Scenario 3:** the addition of the Proposed Development in the context of operational, under construction, consented and undetermined applications i.e., a less certain future scenario.

Cumulative Scenario 2 and 3 sites would result in further developments being located within Group 1 and 2 clusters and would result in a slight rise in the number of turbines visible. This would include Achlachan II and Tachur in Group 1, and Camster II increasing the size of Group 2 by infilling an area between Achairn and Camster I.

The addition of the Proposed Development to Scenario 2 and 3 would result in an increase in effects to North Watten, Catchory, Brabertdorran, and Myrtledhorn (see Viewpoint 4).

This is due to the addition of the Proposed Development extending turbines further eastwards from the Group 1 cluster and closer to the settlements and would be viewed successively with Cogle Moss to the west, increasing the

area where turbines currently occupy. This would result in an increase in effect from Major-moderate to **Major** effect and **significant** for the settlements of North Watten, Catchory, Brabertdorran, Myrtlehorn.

Overall, the Proposed Development would be viewed as part of the existing Group 1 cluster and would be difficult to perceive as a separate development, and depending on direction of view, would be partially screened by foreground turbines.

5.2. Ecology

An assessment of the potential effects on ecology are presented in Chapter 7 of the EIAR.

Chapter 7 considers the potential effects of the Proposed Development on non-avian ecology including designated sites, terrestrial and aquatic habitats, and protected species. The Chapter is supported by the following Technical Appendices:

- A7.1 National Vegetation Classification (NVC) and Habitats Survey Report;
- A7.2 Protected Species Survey Report;
- A7.3 Bat Survey Report;
- A7.4 Fisheries Survey Report;
- A7.5 Outline Species Protection Plan; and
- A7.6 Outline Biodiversity Enhancement Management Plan.

The assessment is based on best practice guidance including the Chartered Institute for Ecology and Environmental Management's (CIEEM) Guidelines for Ecological Impact Assessment in the UK and Ireland.

The scope of the ecological assessment and baseline conditions were determined through a combination of desk study, targeted surveys, and consultation with relevant nature conservation organisations.

This process established ecological features that could potentially be affected by the Proposed Development. No potential effects on statutory designated sites or ancient woodland were identified. In terms of habitats, the Proposed Development Area comprises upland and mire habitats, predominately including blanket bog, marshy grassland, acid grassland, as well as coniferous plantation. Specific surveys were also undertaken for a range of protected species. Evidence of bats, otter, pine marten, and water vole (potential) were recorded within and around the Proposed Development Area. Atlantic salmon, brown trout and European eel were recorded within watercourses surveyed in relation to the Proposed Development Area.

The Proposed Development has been designed to minimise impacts on important habitats, peatland and protected species as far as practicable. This has been achieved through embedded mitigation and the iterative design process. This process, combined with further commitments to certain mitigation measures pre-construction, during construction, and during operation allowed potential effects on several habitats and species present to be scoped-out of the assessment.

The following Important Ecological Features (IEFs) were taken forward to the assessment stage: blanket bog and, wet modified bog, and high collision risk bat species (common pipistrelle, soprano pipistrelle and Nathusius' pipistrelle).

Assessment of potential effects and their significance were determined through consideration of the sensitivity of the feature and the magnitude of change. The most tangible effect during construction of the Proposed Development on blanket bog and wet modified bog would be direct habitat loss due to the construction of infrastructure, in addition to some indirect drainage effects. The assessment concluded that there would be a Minor adverse and Not Significant effect on blanket bog and wet modified bog. The effect of collision risk on populations of bat species was assessed by reviewing activity level recorded, population vulnerability and Site risk level in line with relevant guidance; all three high collision risk species recorded were calculated to have an overall collision risk assessment

score of Low to Medium (based on median and maximum percentiles respectively) and concluded that effects would be Minor adverse and Not Significant.

No significant decommissioning or cumulative effects were identified.

A Biodiversity Enhancement Management Plan (BEMP) for the Proposed Development would be developed to further mitigate the effects on blanket bog and wet modified bog and to provide additional enhancement at the Proposed Development Area to meet 'significant biodiversity enhancements' that are a requirement of National Planning Framework 4. An outline BEMP is included. With the implementation of the BEMP, adverse effects on wet modified bog and blanket bog would be expected to reduce further through the restoration and enhancement of habitats.

5.3. Ornithology

An assessment of the potential effects on ornithology are presented in Chapter 8 of the EIAR.

In order to determine baseline conditions to inform the ornithology impact assessment, field surveys were undertaken from March 2013 to March 2015, April 2019 to March 2021 and March to August 2022.

Based on baseline survey results and historic data, seven Important Ornithological Features (IOFs) were taken forward for assessment, due to identified potential for significant effects from the Proposed Development: hen harrier, merlin, osprey, red-throated diver, curlew, lapwing and herring gull. Shielton Peatlands Site of Special Scientific Interest (SSSI) which is adjacent to the Proposed Development Area, was also taken forward for assessment, due to identified potential for significant effects from the Proposed Development on the breeding bird assemblage which names foraging hen harrier and merlin as part of the designated features.

It was also concluded that prior to further assessment as part of the Habitats Regulations Appraisal (HRA) process, a Likely Significant Effect could not be discounted for the Caithness and Sutherland Peatlands Special Protection Area (SPA), designated for, among other features, its breeding populations of hen harrier, merlin and red-throated diver; and the Caithness and Sutherland Peatlands Ramsar site which includes breeding red-throated diver as a qualifying feature. These sites are adjacent to the east and south Proposed Development Area. A Likely Significant Effect also could not be discounted for the East Caithness Cliffs SPA designated for, among other features, its breeding population of herring gull. This site is located 15.4 km southeast of the Proposed Development.

Ornithological interests were taken into consideration during the iterative design layout process. The following embedded mitigation is integral to the final layout:

- Locating infrastructure at least 500 m from any known nest site of a Schedule 1 breeding species; and
- Locating infrastructure at least 750 m during the construction phase and 500 m during the operation phase from potential hen harrier roost sites.

Construction, operational and decommissioning effects were considered for each IOF.

Construction effects included temporary and long-term habitat loss, and disturbance over a short-term construction period. The Proposed Development's design iteration process identified at an early stage the potential for IOFs to be disturbed during construction, and so efforts were made to avoid locating infrastructure close to important habitats. This means that the likelihood of disturbance to nest and roost sites of Schedule 1 species in particular is low.

Unmitigated, a construction disturbance effect of Moderate/Minor adverse and Not Significant was predicted for the hen harrier, curlew and lapwing Natural Heritage Zone (NHZ) 5 populations and an effect of Minor adverse and Not Significant was predicted for the merlin, osprey, red-throated diver and herring gull populations. A Bird Disturbance Protection Plan is proposed which would ensure reasonable measures are taken to avoid the destruction or disturbance of any nest site, with additional species-specific temporal and spatial restrictions around hen harrier roosts.

Operational effects (displacement and collision risk) were considered for each IOF. Again, the design iteration process took these into consideration, thereby minimising risks. Unmitigated, a displacement effect of Moderate adverse and Not Significant was predicted for the NHZ 5 population of non-breeding roosting hen harrier and Moderate/Minor and Not Significant was predicted for breeding curlew and lapwing. Non-significant unmitigated effects were predicted for all other IOFs and effects. With habitat management as part of a Habitat Management Plan offering improvements to breeding, foraging and roosting habitats away from the Proposed Development for all IOFs, the residual effects were no more than Moderate/Minor adverse for hen harrier and Minor beneficial for curlew and lapwing and therefore Not Significant for all IOFs.

Decommissioning effects were considered to be similar to those predicted for construction effects and were no more than Moderate/Minor adverse and Not Significant for each IOF when mitigation is considered.

No adverse effects on the integrity of the Caithness and Sutherland Peatlands SPA and Ramsar site, or the East Caithness Cliffs SPA were predicted as a result of the Proposed Development, when mitigation measures were taken into consideration.

Cumulative operational effects on curlew and lapwing were assessed for other projects at an NHZ 5 level. For these species, a worst-case cumulative displacement scenario (assuming all projects become fully operational) would lead to a minor adverse effect, but the contribution of the Proposed Development towards the cumulative effect would be negligible, when habitat management is considered.

5.4. Hydrology, Geology and Hydrogeology

An assessment of the potential effects on hydrology, geology and hydrogeology are presented in Chapter 9 of the EIA.

Chapter 9 assessed that the Proposed Development, due to the embedded design buffer distances and the implementation of a Construction Environmental Management Plan (CEMP), the potential for all effects was not significant in terms of the Environmental Impact Assessment (EIA) Regulations in relation to hydrology, geology and hydrogeology

Chapter 9 evaluates the effects of the Proposed Development on surface water hydrology, geology and hydrogeology. The Chapter is supported by the following Technical Appendices:

- A9.1 Watercourse Crossing Assessment,
- A9.2 Private Water Supply Risk Assessment,
- A9.3 Ground Water Dependent Terrestrial Ecosystems (GWDTE) Assessment;
- A9.4 Phase 1 and Phase 2 Peat Depth and Coring Survey Report;
- A9.5 Draft Peat Management Plan,
- A9.6 Carbon Calculator Assessment; and
- A9.7 Peat Landslide and Hazard Risk Assessment.

This process established hydrological features that could potentially be affected by the Proposed Development. No potential effects on geology, private water supplies, public water supplies, GWDTE or statutory designated sites (including the nominated Flow Country World Heritage Site) were identified. The following receptors were taken forward to the assessment stage:

- surface hydrology;
- fluvial flood risk,
- runoff volumes and rates;
- groundwater/hydrogeology; and
- peat.

No significant decommissioning or cumulative effects were identified on hydrology, geology and hydrogeology.

5.5. Cultural Heritage

An assessment of the potential effects on cultural heritage are presented in Chapter 10 of the EIAR.

The assessment has been compiled with reference to all relevant legislation, planning policy and guidance documents of HES, the Chartered Institute for Archaeologists (CIfA) and IEMA. Through Scoping, Headland Archaeology (UK) Ltd, part of the RSK Group, consulted with statutory consultees to agree the methodology employed in the assessment and to identify specific heritage assets requiring detailed assessment. The methodology and study areas used in the assessment have been formulated as a result of this consultation.

Within the Inner Study Area (ISA), also referred to as Proposed Development Area, all heritage assets are assessed for potential construction and operational effects. The Outer Study Area (OSA) is defined by the zone of theoretical visibility (ZTV) of the development to identify any heritage assets that may be affected by the operation of the Proposed Development, i.e. through effects within their settings and the contribution setting makes to the cultural significance of the asset. The baseline for the assessment has been informed by a Cultural Heritage Baseline and Stage 1 Setting Assessment (Volume 3, Technical Appendix 10.1) based on all relevant and readily available documentary sources and site visits.

There are no designated heritage assets within the ISA, although Scheduled Monument SM13634 Bail A' Chairn, broch is surrounded on all sides by the ISA boundary, having been excluded from the Proposed Development Area.

There are 12 known non-designated heritage assets recorded on the National Record of the Historic Environment (NRHE)/THC Historic Environment Record (HER) within the ISA. In addition, this assessment has identified a further nine heritage assets within the ISA from a review of historic mapping and aerial photos, and walkover survey.

Within 2 km of the proposed turbines there are four scheduled monuments and 42 non-designated heritage assets. Within 2-5 km of the proposed turbines there are 13 scheduled monuments, one Category A listed building and one Category B listed building. Within 5-10 km of the proposed turbines there are 36 scheduled monuments. Within 10-20 km of the proposed turbines there are 16 Category A listed buildings and nine scheduled monuments within the ZTV. Setting Assessment considers each heritage asset in the OSA in turn to identify those assets in the ZTV which have a wider landscape setting that contributes to their cultural significance and whether it is likely that cultural significance could be harmed by the Proposed Development. In agreement with consultees, the potential impact of the Proposed Development within the settings of five scheduled monuments (including one Property in Care), one Category A listed building (LB) and one non-designated heritage asset have been assessed in detail.

5.5.1.1. Potential Impacts

No direct or indirect physical impacts upon known heritage assets during the construction phase are identified, and accidental impacts are considered unlikely.

The ISA is considered to hold archaeological potential for hitherto unknown archaeological remains, particularly in the eastern part of the ISA proposed for habitat Management Unit B: Grassland Enhancement for Waders. There also remains a potential for palaeoenvironmental/archaeological remains to be exposed as a result of the removal of peat during the construction phase.

A programme of mitigation shall be agreed with THC Historic Environment Team to offset any potential direct effects on unknown heritage assets which may exist within the ISA, to include potential impacts upon or beneath peat. Following agreement of these works, No Residual Effects are anticipated upon potential heritage assets within the ISA.

In respect of the setting of heritage assets, residual operational effects of Minor Adverse significance which are Not Significant are predicted upon four Scheduled Monuments: SM90056/PiC297 Grey Cairns of Camster (only if/when

intervening plantation is harvested), SM13632 Carn A' Chladha, broch, SM13634 Bail A' Chairn, broch, and SM721 Scouthal Burn, Chapel and The Clow.

Cumulative impact assessment, considering other operational, consented and submitted applications for wind farms in the OSA, has identified **No Significant Effects**.

5.6. Forestry

An assessment of the potential effects on forestry are presented in Chapter 11 of the EIAR. Chapter 11 includes a description of the forest, and then explains the ways in which it may be affected by the development and what the likely effects will be.

Part of the Proposed Development is located within commercial forestry. The forestry assessment has identified that areas of forestry would require to be felled for the construction and operation of the Proposed Development.

Forestry is not being regarded as a receptor for EIA purposes. Commercial forests are dynamic and their structure continually undergoes change due to normal felling and restocking by the landowner; natural events, such as storm damage, pests or diseases; and external factors, such as a wind farm or other developments. The forestry proposals are interrelated with environmental effects, which are assessed separately in other chapters of the EIA Report.

The forestry proposals have been developed to identify areas of forest to be removed for the construction and operation of the Proposed Development; and those areas which may or may not be replanted on site.

The Forestry Study Area (FSA) extends to approximately 141.30 ha of privately owned and managed woodlands. The forests are comprised largely of commercial conifers with areas of mixed broadleaves and open ground planted in the late 1990s. The crops are in the mid rotation phase and there are no current felling or replanting programmes.

A total of 11.24 ha will require to be felled to enable the construction and operation of the Proposed Development. The majority of the areas to be felled for the proposed development would be restocked except for land required for the Proposed Development's permanent infrastructure and land to be left unplanted for forest management; or forest design purposes.

On site replanting of felled areas and additional planting of native woodland results in an increase in the area of stocked woodland. There would be an increase of 3.84 ha within the FSA. No additional off site compensatory planting will be required.

5.7. Traffic and Transport

An assessment of the potential effects on Traffic and Transport is presented in Chapter 12 of the EIAR.

The traffic and transport assessment has assessed the traffic impacts associated with the Proposed Development. The assessment considered a worst-case scenario and assumes all stone would need to be imported onto site and all foundation concrete would need to be brought to site in ready mix lorries.

In addition, the traffic impacts associated with the abnormal load deliveries were also assessed. An Abnormal Load Access Assessment, including swept path analysis at particular pinch points was also prepared demonstrating the viability of the proposed abnormal load route and is included in Technical Appendix 12.

The assessment concludes that, with the incorporation of suitable mitigation measures secured through a Construction Traffic Management Plan (CTMP), there will be no significant traffic effects associated with the Proposed Development.

In relation to potential cumulative impacts, these are predicted to be 'Negligible / Low' depending on if other developments are constructed concurrently. If the construction of the Proposed Development coincided with another, using the same transport routes, then communication with the other developers would take place with the aim to mitigate effects to a non-significant level. This would be delivered through the CTMP.

5.8. Telecommunication and Aviation

Chapter 13 of the EIAR assesses Telecommunication and Aviation and describes the existing environment with respect to telecommunications and aviation (including radar), and the potential impacts to their operations as a result of construction and operation of the Proposed Development. Where required, the associated impact significance is provided, and the appropriate mitigation options are presented.

Telecommunications infrastructure was identified through consultation with the relevant communication stakeholders. Details of the Proposed Development were presented to the stakeholders, who then apply their own safeguarding criteria radii based on the turbine locations to identify telecommunications infrastructure.

Aviation guidelines define aviation stakeholder consultation criteria based on recommended distances between proposed wind turbines and aviation infrastructure. The consultation process was led by aviation guidelines and discussions guided by prompts brought forward by Pager Power working on behalf of the Applicant based on their industry experience.

The Joint Radio Company (JRC) provided an initial objection to the Proposed Development because one communications link crosses the Proposed Development Area. One wind turbine is currently located within the exclusion zone associated with this communications link, as defined by the JRC. Consultation with the JRC to understand their position and to identify a way forward is ongoing. Mitigation will be required.

The Proposed Development would currently infringe the Minimum Sector Altitude associated with aviation operations at Wick John O'Groats Airport, which is located approximately 14.5km east of the nearest wind turbine. This means the Minimum Obstacle Clearance Altitude will not be maintained in the Proposed Development's/airspace's current design. This is due to the overall altitude of the Proposed Development. Consultation with Wick John O'Groats Airport is ongoing to identify whether an airspace change is achievable to accommodate the Proposed Development. Crane operations will be considered within this change.

All other aviation and communications concerns have been addressed through consultation.

Aviation lighting will be a requirement, and a lighting scheme should be established post-consent. The Proposed Development will require to be marked on the associated aviation chart.

5.9. Noise

A noise assessment was undertaken to determine the potential significant noise effects from the operational phase of the Proposed Development.

Construction noise activities will be undertaken during typical working hours and in accordance with appropriate guidance and best practise and as such a detailed construction noise assessment was not required.

Background noise monitoring was previously undertaken at a number of properties proximate to the Proposed Development as part of the noise assessment work undertaken for Halsary Windfarm. Halsary is now an operational wind farm located immediately to the south west of the Proposed Development. Due to the number of existing operational wind farms within the area, additional noise monitoring was not undertaken due to the potential influence of operational wind turbine noise on the measured levels. Background noise data previously collected for Halsary Windfarm was used to set the Total ETSU-R-97 Noise Limits for the Proposed Development. A correction was applied to the data used from Halsary Windfarm to take account of wind shear and the difference in hub heights for the turbines at Halsary Windfarm and the Proposed Development.

The operational noise assessment was undertaken in three stages, which involved setting the Total ETSU-R-97 Noise Limits (which are limits for noise from all wind farms in the area) at the nearest noise sensitive receptors, predicting the likely effects (undertaking a cumulative noise assessment where required) and setting SNNL for the Proposed Development.

Predicted cumulative operational noise levels indicate that for noise sensitive receptors neighbouring the Proposed Development, cumulative wind turbine noise (which considers noise predictions from all nearby operational and consented wind farms and the Proposed Development) would meet the Total ETSU-R-97 Noise Limits at all Noise Assessment Locations.

The Total ETSU-R-97 Noise Limit is applicable to all operational and consented wind farms in the area so Site Specific Noise Limits (SSNL) have also been derived to control the specific noise from the Proposed Development. In accordance with the guidance in Institute of Acoustics (IOA) Good Practice Guidance (GPG), the SSNL have been derived with due regard to cumulative noise by accounting for the proportion of the Total ETSU-R-97 Noise Limit which is potentially being used by other nearby developments. The SSNL have been derived in accordance with the IOA GPG.

Predictions of wind turbine noise from the Proposed Development have been made in accordance with good practice using a candidate wind turbine, the Vestas V162, 6.8 MW with serrated trailing edge blades, a hub height of 139 m. Predicted operational noise levels from the Proposed Development indicate that for noise sensitive receptors neighbouring the Proposed Development, wind turbine noise from the Proposed Development would meet the SSNL at all Noise Assessment Locations (NAL) and are therefore deemed to be not significant. In order to meet the noise limits at one receptor, mode management would be required for one turbine at 6 ms^{-1} for certain wind directions based on the candidate turbine considered in this assessment.

The use of SSNL would ensure that the Proposed Development could operate concurrently with other operational wind farm developments in the area and would also ensure that the Proposed Development's individual contribution could be measured and enforced if required.

The wind turbine model was chosen in order to allow a representative assessment of the noise impacts. Should the Proposed Development receive consent the final choice of wind turbine would be subject to a competitive tendering process. The final choice of wind turbine would, however, have to meet the SSNL presented in the noise assessment.

5.10. Socioeconomics, Recreation and Tourism

The Proposed Development has the potential to offer positive socioeconomic benefits at a local, Scottish and UK level. There would be economic benefits through the entire lifecycle of the project, including at the development, construction and operational phases. The Proposed Development has the potential to create significant job opportunities throughout the construction and operational phases..

Chapter 15 of the EIAR assesses the economic baseline of the area, including the importance of the tourism sector. A review of recent research published by BiGGAR Economics in 2021 indicates that there is no correlation between wind farm development and trends in tourism employment.

5.10.1. Socio-economics

In terms of development and construction impact, of the £69.9 million wind farm development and construction values, there is potential for £8.5 million to benefit the local economy and £26.8 million to benefit the regional economy. Applying industry assumptions provides an estimate on the level of development and construction employment at the regional for the Proposed Development as 204.8 jobs contributing £12.6 million in Gross Value Added (GVA). At the local level, the development construction phase of the Proposed Development could sustain up to 63.6 jobs and contribute £3.9 million in GVA.

The operation and maintenance phase is also expected to generate beneficial economic impacts. Applying the data from the RenewableUK research to the Proposed Development (47.6 megawatts (MW)), an estimate of the total operations and maintenance phase equals approximately £2.8 million. Of this, £1.2 million could benefit the local economy and £1.7 million could be injected into the regional economy on an annual basis. Applying the industry assumptions gives the level of operational employment at the regional level for the Proposed Development as 13.6

jobs, contributing £710,707 GVA per annum. At the local level, the operation and maintenance phase of the Proposed Development is expected to sustain 9.8 jobs, contributing £513,650 in GVA per annum.

These direct economic benefits should be set against the socio-economic conditions in THC area, and particularly the region of Caithness and Sutherland and Ross and Cromarty which is fourth lowest Gross Disposable Household Income (GDHI) out of six within the sub-regions of the Highlands and Islands. In addition, the levels of economically inactive populations are higher in THC (25.6 %) in comparison to the Scottish average (22.9 %). Retired populations are also expected to increase along with a decrease in working age populations in 2043.

Within the context of EIA legislation, none of the economic impacts considered are significant.

In addition to the economic opportunities from the development, construction and operation phases, there are also a variety of wider economic impacts which are excluded from the assessment itself. The wider impacts which should also be noted as having positive effects on the regional and national economies include:

- Supporting local policy objectives: the Proposed Development can play an important role in supporting regional and national policy objectives. It will promote renewable technologies and support the path to Net Zero which is a key ambition in many of the Scottish Government strategies.
- Local supply chain opportunities: the research carried out by RenewableUK which estimated that the expenditure of workers who visit the local area benefit the accommodation and food service sector to the value of around £7,500 per MW constructed. The wider 'knock-on' effects can in turn support the supply chain of other activities such as the spending habits of retail operations and accommodation providers;
- Income effects: the economic analysis has focused on the GVA impact of generated employment as this is the 'real' impact on the economy. However, it is worth noting that new employment will generate additional wages and salaries, much of which will be spent in the UK; and
- Community benefits. In addition, the Applicant is offering to provide a community benefit fund and shared ownership which will involve a community consultation exercise should the Proposed Development be consented to ensure the appropriate management, distribution and access to the fund and shared ownership is well considered.

5.10.2. Tourism and Recreation

In terms of tourism effects, the literature review indicates that wind farms have a minor impact on visitor activity. Studies from 2017 on wind farms and tourism trends (BiGGAR Economics) determined that whilst the number of wind farms increased across almost all local authority areas, employment in sustainable tourism also grew substantially. The study found no correlation between tourism employment and the number of turbines at the national or local authority area.

More recent research published in 2021 on the economic impact of the wind farms on tourism (BiGGAR Economics) analysed trends at the local authority area and found no relationship between growth in the number of turbines and the level of tourism employment. In addition, the analysis found that tourism related employment in the vicinity of wind farms had outperformed the trend for Scotland as a whole and for the local authority area in which the wind farm was based.

A national tracker survey published in 2021 also outlined that support for renewable energy had been consistently high with 87 % expressing support for the use of renewables with the opposition being very low at 1 %.

The tourism baseline indicates that across THC area, the tourism sector is heavily reliant on the domestic market in terms of visitor numbers and expenditure with Scottish residents travelling more to THC area in 2019 compared to previous years.

The assessment has considered the impact on baseline conditions of tourism and recreational assets arising from the Proposed Development. The findings conclude that the likelihood for potential negative impacts of the Proposed

Development on tourism and recreational assets is considered to be low. There are no top paid or free tourism attractions within 15 km of the Proposed Development

Several of the Core Paths in Achavanich and Munsary and Spittal have been assessed as having a **major** or **moderate** effect during both construction and operation however these effects will only be short lived as the visitor will be moving through the landscape away from the Proposed Development and construction noise is temporary in nature. The assessment therefore does not consider that these effects are adverse enough to deter a significant number of visitors away from these assets. It is important to highlight that these core paths are not within the Proposed Development Area and are situated out with 5 km from the site. Therefore, the Proposed Development is not likely to have any detrimental significant impacts on visitor numbers or visitor economy.

During construction (as would be for the decommissioning phase) it is proposed that an Access Management Plan (AMP) will be prepared to indicate the restrictions for users and any proposed mitigation (through means of alternative routes and enhancement opportunities). Final details will be confirmed post-consent through an appropriately worded planning condition.

Any potential negative impacts on tourism are likely going to be far outweighed by the wider positive benefits for the local area and Scotland as a whole in terms of employment opportunities, enhanced access and investment into the area.

5.11. Other Matters

In relation to shadow flicker, modelling has shown one receptor location to be potentially in exceedance of the recommended limits, however a scheme to satisfactorily alleviate the incidence of shadow flicker at any affected premises lawfully in existence at the date of any consent will be agreed with THC prior to commissioning.

A wind farm has the potential to make savings on greenhouse gas (GHG) emissions compared to electricity generation which involves the burning of fossil fuels. The carbon balance assessment has considered the current electricity generation mix and assesses the level of carbon dioxide (CO₂) savings that could potentially be saved depending on the source of electricity generation the wind farm is displacing at any given time. An assessment has been undertaken in accordance with Scottish Government recommended methodology¹.

No significant effects are anticipated for utilities – electricity, water and gas as a result of the Proposed Development.

The proposed Battery Energy Storage System (BESS) would be expected to utilise a modern lithium-ion cell chemistry and surrounding systems. There is very limited risk of fires starting or spreading through what is called ‘thermal runaway’ with the latest generation of lithium-ion battery energy storage systems, which benefit from a layered protection strategy. In the specific forested context of the Proposed Development, an external buffer of 10 m from the very edge of the battery storage hardstanding area to any trees mitigates the risk of any uncontrolled fire spreading, it is therefore concluded that fire risks from the proposed battery energy storage are low. However, the final design details of any battery energy storage, including fire monitoring and suppression systems, can be approved by the local authority via a deemed planning permission condition.

Due to the safety features of modern wind turbines and battery energy storage systems, the results of detailed assessments into, shadow flicker, climate and carbon balance, utilities, and planning conditions to mitigate the potential effects, it is concluded that the Proposed Development would not present a significant safety risk to the public.

¹ The Scottish Government. (2008) *Calculating carbon savings from wind farms on Scottish peat lands: a new approach* [Online] Available from - <https://www.gov.scot/publications/calculating-carbon-savings-wind-farms-scottish-peat-lands-new-approach/pages/13/> [Accessed: 03/02/2023]

5.12. Synergistic Effects

An assessment of synergistic effects considers the combination of different effects upon the same receptor. This is provided in Chapter 17 of the EIAR. It ensures that the assessments provided in the EIAR for each topic are not considered in isolation.

During the construction and decommissioning phases, potential adverse synergistic effects are limited to areas that are within or close to the Proposed Development where there will be heavy plant operations, earth works, forestry operations and vehicle movements. These could result in potential synergistic effects upon receptors where there are overlaps between ecology, ornithology, hydrology, geology and hydrogeology, and forestry. These effects would be temporary in nature, and will be managed through a CEMP, TMP and an OBEMP. In isolation, these effects have been assessed in the EIAR as not significant after mitigation is applied. These potential effects will also be monitored by an EnvCoW. Given the limited number and extent of receptors, the limited effects predicted, and their temporary nature, the synergistic effects during construction and decommissioning phases are considered not significant.

Potential synergistic effects during the operational phase are limited to areas which are within or close to the Proposed Development and surrounding area where there may be a combination of potential visual, noise and shadow flicker effects.

These effects then need to be considered and balanced against the ongoing socio-economic and wider environmental benefits which will arise from the project over this extended period. In terms of impacts on human health and population it is considered that the overall balance of effects remains positive and acceptable.

5.13. Residual, Synergistic Effects & Mitigation and Conclusions

This chapter of the EIAR summarises the potential effects of the Proposed Development as well as potential synergistic effects which consider such effects in combination. Noted in Table 17.1 of the EIAR; the effects identified are commonly associated with wind farms and in this regard need to be balanced against the benefits.

A BEMP will be developed and agreed to create biodiversity net gain within the Proposed Development Area and the Proposed Development will provide socioeconomic benefits through continuing employment opportunities it has already provided at the planning stage through the lifetime of the project following consent.

6. Conclusions

This NTS has provided a non-technical summary of the Proposed Development, which is assessed in greater detail throughout the EIAR.

The Proposed Development has been located in a suitable area for wind farm development following a site selection and design process. The design stages have taken place over several years utilising a number of iterations in response to environmental data, new policies, market dynamics and consultee responses. Through balancing the various site constraints with the scale of development required to be economically viable, the Applicant considers that the Proposed Development provides the best use of the Proposed Development Area with respect to the potential renewable electricity generating capacity balanced against the potential environmental and other effects.

The Applicant has proposed enhancements including biodiversity enhancement and management which will restore peatland and wader and raptor enhancement, grasslands enhancement for waders and riparian planting which will in turn improve natural flood drainage and improve habitat for some breeding bird species amongst other ecological benefits, resulting in a biodiversity net gain. Socioeconomic benefits include continued employment opportunities, it has already provided from the development stage throughout the lifetime of the project following consent. The Proposed Development will contribute towards meeting national renewable energy targets and have a significant positive effect on reducing carbon dioxide emissions to help reach the national carbon net zero target.



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